SPIRE_AST_REP_003161

Title: Test Report for HERSCHEL SATELLITE IST - REFERENCE MISSION SCENARIO

CI-No: 100 000

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Issue	Date	Sheet	Description of Change	Release
1	15/09/2008	All	Formal Issue	

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1 Scope

This document reports on the Reference Mission Scenario (RMS) Test performed on the HERSCHEL FM Satellite to check correct operation in the frame of the HERSCHEL IST. The test was split up into 3 Autonomous periods (APs) and 4 Daily TeleCommunication Phases (DTCPs). The second DTCPs was simulating a missing contact phase.

The test configuration was with the S/C mounted on the MPT in 20 degrees tilt wrt vertical position. The S/C was executed in He2 conditions. The test was executed using the Herschel CCS & I-EGSE. The time on the CCS and all connected system was set the future: 17/05/2009 (= 2/09/2008).

The test has been performed in accordance with the IST Leading Procedure and RMS test procedure.

1.1 Objective

The objective of this sequence is to test the satellite during its nominal long term operation, especially comprising the scientific instruments operations.

1.2 Summary Conclusion

The test has been successfully completed. All DTCPs and APs ran as expected with minor problems. All tests have been performed.

- PACS: The test was successful.
- HIFI: There are no problems seen in the data stream and no major anomalies have been identified.
- SPIRE: Apart from the failed observations the test was deemed successful.
- SVM: The test is deemed successful

The Non-Conformance Reports (listed below), as raised during the test, did not affect the test objectives.

2 Documents / Drawings

2.1 Applicable Documents

AD-1	HERSCHEL Integrated Satellite Test Specification	H-P-2-ASP-0939, Issue 6 (red-lined)
AD-2	Leading Procedure for Herschel Integrated Satellite Test	HP-2-ASED-TP-0134, Issue 6
AD-3	Test Specification for HERSCHEL Instruments FM tests performed at satellite level	H-P-2-ASP-TS-1083, Issue 2
AD-4	Herschel Satellite IST – Reference Mission Scenario	HP-2-ASED-TP-0193, Issue 1
AD-5	HERSCHEL MTL Release Note	H-P-2-ASP-LI-1660, Issue 2
AD-6	TRR for Herschel IST RMS MoM, dated 27/08/2008	H-P-2-TASF-MN-10758
AD-7	Delta TRR for Herschel IST RMS MoM, dated 1-2/09/2008	H-P-2-TASF-MN-10772
AD-8	PTR for Herschel IST RMS MoM, dated 2-5/09/2008	H-P-2-TASF-MN-10778

2.2 Reference Documents

RD-1	As-Run (2-5/09/2008) Herschel Integrated Satellite Test Leading Procedure	HP-2-ASED-TP-0134 Issue 6
RD-2	As-Run (2-5/09/2008) Herschel Satellite IST – Reference Mission Scenario	HP-2-ASED-TP-0193, Issue 1

2.3 Other Documents

2.4 Acronyms & Abbreviations

See “as-run” procedure.

3 Test characteristics

3.1 Title

HERSCHEL Satellite IST – Reference Mission Scenario

3.2 Unit tested

HERSCHEL S/C (SVM, PLM and Instruments)

3.3 Description

The tests performed functionally check the nominal operations of the S/C during 48 hours. Both DTCP and AP periods are done. During the AP period, the S/C telemetry is received via the umbilical link. During the entire test, extensive instrument operations are performed.

All instrument tests were performed on primary units.

3.4 Applied procedures

See AD-4, AD-2

3.5 Requirements to be verified

For the satellite on system level chapter 5.8.9 of “Herschel S/C IST specification”, ref H-P-2-ASP-SP-0939.

For PACS: chapter 4.7.2.2 of “Test Specification for HERSCHEL Instruments FM tests performed at satellite level”, ref. H-P-2-ASP-TS-1083 [AD-3].

For SPIRE: chapter 4.7.3.2 of “Test Specification for HERSCHEL Instruments FM tests performed at satellite level”, ref. H-P-2-ASP-TS-1083 [AD-3].

For HIFI: chapter 4.7.4.2 of “Test Specification for HERSCHEL Instruments FM tests performed at satellite level”, ref. H-P-2-ASP-TS-1083 [AD-3].

3.6 Corresponding minutes of meetings

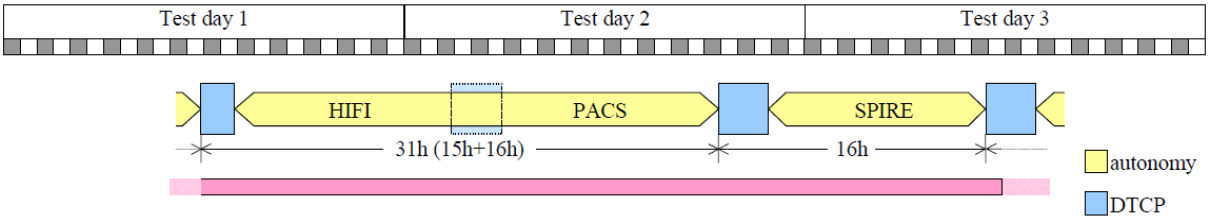
TRR: AD-6

ΔTRR: AD-7

PTR: AD-8

3.7 General test flow

The Test flow, was as follows:



1. Prepare S/C (including upload of initial MTL)
2. DTCP 1
3. AP 1 (HIFI)
4. DTCP 2 (simulating a missed pass)
5. AP 2 (PACS)
6. DTCP 3
7. AP 3 (SPIRE)
8. DTCP 4
9. Dump onboard stores and switch of S/C

4 Test execution

4.1 Date and time

The CCS time was set to the future for this test.

All dates in this chapter are given in the future time. The following time couple could be used to correlate to local time.

Local time: 2/09/2008 19:30

CCS Time: 17/05/2009 23:30

Power ON and initial S/C configuration:

17/05/2009 23:30 UTC

Test configuration and actual test:

18/05/2009 08:20 – 18/05/2009 11:20 (DTCP1)

18/05/2009 08:57 – 18/05/2009 21:29 (HIFI)

18/05/2009 23:20 – 19/05/2009 02:20 (DTCP2)

18/05/2009 23:57 – 19/05/2009 15:10 (PACS)

19/05/2009 15:20 – 19/05/2009 18:20 (DTCP3)

19/05/2009 15:57 – 20/05/2009 06:59 (SPIRE)

20/05/2009 07:20 – 20/05/2009 13:20 (DTCP4 + switch-off)

Power OFF:

20/05/2009 21:09 UTC

4.2 Tag / session reference

SESSION_ID: 2009_05_17_23_24_hercdmu_hpws22_REALTIME_RMS_1

TAG: IST1_PART2_TP_0193_iss1_RMS_END_001

4.3 Personnel

Test Director: S. Mooney

Test Conductor : S. Hamer / S. Ilsen

HPCCS Operator : See As-Run

AIT QA: See As-Run

4.4 Detailed test timeline

See section 4.1 for a global overview. For a summary of the main events of the test timeline refer to section 4.7.

4.4.1 Start of test / end of test

See section 4.1.

Further details are provided in the as-run procedures annexed to this test report. The AIT logbooks covering the test are also attached for information.

4.4.2 Time of event as deviation

Details are provided in the as-run procedures annexed to this test report. The AIT logbooks covering the test are also attached for information.

4.4.3 Time zone to be ignored in case of deviation

Details are provided in the as-run procedures annexed to this test report. The AIT logbooks covering the test are also attached for information.

4.4.4 Time of SPR / NCR

Details are provided in the as-run procedures annexed to this test report. The AIT logbooks covering the test are also attached for information.

4.4.5 Time of milestone in test

Details are provided in the as-run procedures annexed to this test report. The AIT logbooks covering the test are also attached for information.

4.5 Problems found during the test

4.5.1 Procedure Variations

4.5.1.1 RMS Procedure (HP-2-ASED-TP-0193 Issue 1)

PVS No	Description and Impact on Test (If any)	Impacts Test Objectives (Y/N)
1.	Specification of Cryo cooling for test[1]	N
2.	Define RWL limits for stiction region[1]	N
3.	Do not remove HIFI CVV window red tag[1]	N
4.	Change from CCCU mode 1 to mode 2 for test[1]	N
5.	~~Perform SPIRE Cooler recycle before RMS start~~ - Deleted[1]	N
6.	Instrument “safing” in case of anomalies[1]	N
7.	NCR 442/NCR4470 Mandatory constraints[1]	N
8.	Known deviations from specification[1]	N
9.	Dump ACMS diagnostic packet for ESOC[1]	N
10.	Recovery if Bolometer temp >400K[1]	N
11.	Not used[1]	N
12.	Manual commanding for SPIRE cooler[1]	N
13.	Re-establish TM downlink (SPR-718)[1]	N
14.	No connection to SPIRE EGSE	N
15.	Error in RMS master script	N
16.	RWLs nominal values different from procedure	N
17.	Errors in procedure	N
18.	Subscribe scripts no longer needed	N
19.	MTL upload will not run with comments	N
20.	New step required after step 640	N
21.	Load remaining MTL commands for OD346-347	N
22.	Disable about time sync on DFE for DTCPs	N
23.	Split Tm dump file before it gets too big	N
24.	Configure TM in High Rate for AP	N

[1] Agreed in TRR (H-P-TASF-MN-10758)

25.	Re-establish RF TC link recovery	N
26.	Wrong SPIRE power ON script used - Switch on SPIRE AC & DC Thermistors	N
27.	Perform Manual dump for pkt store 3 again	N
28.	Disconnect and re-connect cryo-scoe (PFM_CRYO)	N
29.	Additional TCs required by SPIRE	N
30.	Error in script (SPR 723)	N
31.	Interrupt RMS switch off for SPIRE to run follow on test (FDIR OBCP for SPIRE).	N
32.	Get report of SPIRE on board tables (for NCR sinvestigation)	N
33.	Step over wait period in master script	N
34.	CDMU DFE + TMTC SCOE Recovery	N

4.5.2 NCR/SPR Summary

4.5.2.1 NCRs Opened/Recurred/Closed

NCR No	Title	O/R/C
3300	RMS MTL SCM mode commands reported failed	R
4181	CCS Reports no telemetry packet received	R
4395	HIFI LO operational constraints in ambient	R
3318	RMS MTL SCM line scan command overlaps	R
4479	PACS SPT He2 & SPIRE SPT He2: Cooler Hold Times	R + Update
4483	SPIRE MTL - Biasing parameters wrong for transition to PHOTSTBY	O
4484	MTL Upload Script will not run	O
4485	Time Sync on TM DFE Causing Missing Frames at ESOC.	O
4487	CCS communication errors during IST RMS dry run	O
4488	IST RMS SPIRE PUMP HEATER SWITCH UNEXPECTED Switch OFF	O
4491	IST RMS - Loss of SC TLM due to TMTC SCOE Crash	O
4495	IST RMS - SPIRE jiggle map observations failed	O
4496	IST RMS - Anomalous RWL values after bias	O
4497	IST RMS - PACS command not executed	O
4498	IST RMS - S/C attitude jumps reported by star tracker	O

4.5.2.2 SPRs Opened/Recurred/Closed

SPR No	Title	O/R/C
719	Command parameters missing from script	O
720	Wrong logm in script	O
721	Extra bracket in script	O
722	RT DL in 150 kbps at end of DTCP	O
723	Script error turning RF SCOE offline	O

4.5.3 List of NCRs and SPRs raised and what action was taken if any

4.5.3.1 NCRs

NCR No	Action taken	Impacts Test Objectives (Y/N)
3300	No specific action	N
4181	Script repeated	N
4395	Incorporated inside the procedure	N
3318	No specific action	N
4479	No specific action	N
4483	MTLs adapted prior to test	N
4484	PVS 19 (modify MTL files)	N
4485	PVS 22 (disable time sync between CCS server and CDMU DFE during DTCP)	N
4487	No specific action	N
4488	PVS 12	N
4491	PVS 25	N
4495	PVS 32 –Dump table	N
4496	No specific action	N
4497	No specific action	N
4498	No specific action	N

4.5.3.2 SPRs

SPR No	Action taken	Impacts Test Objectives (Y/N)
719	Fixed script error and online patched	N
720	No specific action – Procedure to be updated	N
721	Fixed script error and online patched	N
722	PVS 24	N
723	PVS 25 5o recover – Script needs to be updated	N

4.5.4 Procedure changes

See PVS sheets in section 8 of the “as-run” procedures and summarised in 4.5.1.

4.6 Deviations from Test Requirements

N/A

4.7 Test Execution Summary

The test has been successfully completed. All planned tests have been performed apart from the grating health check which was aborted during the test (NCR 4489).

4.7.1 RMS timeline 17-20/05/2009 (2-5/09/2008)

Date(DoY) & Time UTC	**Event**	**NCR/SPR**
17/05/2009 (137) 23:30	Start CCS session	
18/05/2009 (138) 05:00	Start upload of MTL day 344_345 & 345_346	
18/05/2009 (138) 08:20	Start DTCP 1 Including upload of MTL day 346_347	
18/05/2009 (138) 08:51	Problem with MTL upload	NCR 4484
18/05/2009 (138) 08:57	Start HIFI test	
18/05/2009 (138) 09:52	Problem with missing frames at ESOC	NCR 4485
18/05/2009 (138) 11:20	End DTCP 1	
18/05/2009 (138) 21:29	End HIFI test	
18/05/2009 (138) 23:20	Start DTCP 2 Simulated missed DTCP. No MTL upload.	
18/05/2009 (138) 23:57	Start PACS test Start PACS cooler recycle	
19/05/2009 (139) 02:20	End DTCP 2	

Date(DoY) & Time UTC	Event	NCR/SPR
19/05/2009 (139) 15:10	End PACS test	
19/05/2009 (139) 15:20	Start DTCP 3 Including upload of MTL day 347_348 and dummy MTL	
19/05/2009 (139) 15:57	Start SPIRE test	
19/05/2009 (139) 18:20	End DTCP 3	
20/05/2009 (140) 06:59	End SPIRE test	
20/05/2009 (140) 07:20	Start DTCP 4	
20/05/2009 (140) 08:48	HIFI OFF	
20/05/2009 (140) 08:52	PACS OFF	
20/05/2009 (140) 13:03	SPIRE OFF	

Table 4-1 RMS Timeline

4.8 Summary conclusion

The test has been successfully completed. All DTCPs and APs ran as expected with minor problems. All tests have been performed.

- PACS: The test was successful.
- HIFI: There are no problems seen in the data stream and no major anomalies have been identified.
- SPIRE: Apart from the failed observations the test was deemed successful.
- SVM: The test is deemed successful

The Non-Conformance Reports (listed below), as raised during the test, did not affect the test objectives.

4.9 Open issues

None

4.10 Requirements Verified

With the above test the requirement for the following requirements are verified:

For PACS: chapter 4.7.2.2 of “Test Specification for HERSCHEL Instruments FM tests performed at satellite level”, ref. H-P-2-ASP-TS-1083 [AD-3], has been verified.

For SPIRE: chapter 4.7.3.2 of “Test Specification for HERSCHEL Instruments FM tests performed at satellite level”, ref. H-P-2-ASP-TS-1083 [AD-3], has been verified.

For HIFI: chapter 4.7.4.2 of “Test Specification for HERSCHEL Instruments FM tests performed at satellite level”, ref. H-P-2-ASP-TS-1083 [AD-3], has been verified.

For the satellite on system level chapter 5.8.9 of “Herschel S/C IST specification”, ref H-P-2-ASP-SP-0939, has been verified.

5 Post-Test Data Retrieval

Post test data is stored in a common location on the Astrium-EADS FTP server at Friedrichshafen. The directory structure is common to all IST tests with only the top level directory name changing to reflect the test concerned. In this instance the top level directory **<Session Name>** s are:

Session:

2009_05_17_23_24_hercdmu_hpws22_REALTIME_RMS_1

The Common structure is as follows:

```
<Session Name>
-  sub-directory >> Session_archive
-  sub-directory >> SSMM_dump_data
-  sub-directory >> TM_Pkt_history
-  sub-directory >> TM_history
-  sub-directory >> TC_Pkt_history
-  sub-directory >> TMTC_DFE_data
       -  sub-directory >> CLTU
       -  sub-directory >> Tc_packets
       -  sub-directory >> Tm_packets
       -  sub-directory >> Tm_frame
-  sub-directory >> 1553_DFE_data  (if data has been extracted for this
                                    session)
-  sub-directory >> ACMS_SCOE_data  (if data has been extracted for this
                                    session)
-  sub-directory >> TTC_SCOE data  (if data has been extracted for this
                                    session)
-  sub-directory >> Cleanliness_data
```

5.1 Engineering values stored during test

See data on attached CD.

5.2 Raw values stored during test

See data on attached CD.

6 Attachments – Supporting Documentation

6.1 Contamination control report

See CD containing test data.
All environmental values were within specification, No NCR raised.

6.2 Pictures taken on the specimen in test configuration

Not applicable.

6.3 Record (CD-ROM) of all acquired data during test

See CD containing test data.

6.4 Test measurements devices calibration reports

EGSE	UNIT NAME	Manufacturer	P/N or Model	S/N	TAS-I C.I	TAS-I ID & Calibration		
						Instrument n. (SSS)	Calibration performed	Calibration expires
BCE SCOE	DC electonic load simulator	Agilent	6050A	3620A04731	3A2140-23.1.06	6344	30.01.2008	30.01.2009
BCE SCOE	DC power supply	Agilent	6654A	MY40001318	3A2140-23.1.05	6819	30.01.2008	30.01.2009
BS SCOE	DC electonic load simulator	Agilent	6060B	US37350708	3A2140-22.1.11	4002	30.01.2008	30.01.2009
BS SCOE	DC power supply	Agilent	6674A	3637A01524	3A2140-22.1.10	301	30.01.2008	30.01.2009
TT&C SCOE	Signal generator 9KHz - 3.3GHz SML03	Rhode & Schwarz	1090.3000.13	101398	3A2150.1.13	6297	31.01.2008	31.01.2009
TT&C SCOE	Signal generator 9KHz - 3.3GHz SML03	Rhode & Schwarz	1090.3000.13	101399	3A2150.1.8	6295	31.01.2008	31.01.2009
TT&C SCOE	Signal generator 9KHz - 3.3GHz SML03	Rhode & Schwarz	1090.3000.13	101400	3A2150.1.14	6296	31.01.2008	31.01.2009
TT&C SCOE	ESG series signal generator 250MHz - 4GHZ	Agilent	E4422B	MY43350106	3A2150.1.12	6290	31.01.2008	31.01.2009
TT&C SCOE	Network analyser 10KHz-180MHz	Agilent	E5100A	MY40500710	3A2150.1.11	6288	01.02.2008	01.02.2009
TT&C SCOE	EPM Series Power Meter	Agilent	E4416B	GB43313104	3A2150.1.5	6287	01.02.2008	01.02.2009
TT&C SCOE	20MHz Function/Arbitrary Waveform Generator	Agilent	33220A	MY40500710	3A2150.1.6	6948	01.02.2008	01.02.2009
TT&C SCOE	FSP Spectrum analyser 9KHz - 13.6GHz	Rhode & Schwarz	1164.4391.13	100018	3A2150.1.4	6294	01.02.2008	01.02.2009

6.5 Logbook Extracts from Test

Note the following logbook extracts are for information only and do not necessarily represent a complete and accurate sequence of events. All essential information is provided in the signed off “as-run” procedures appended to this report.

Date	2/09/2008 (17/05/2009 on CCS)	
Operator	B. Chen, U. Klenke	
Conductor	S. Hamer, S. Ilsen	
QA	B. Hogg (early), R. Vascotto (late), D. Lamonby (night)	
EGSE	I. Luck	
Test Case	RMS formal run	
OBSW	CDMS 3.6.0.4, ACMS 3.8	
HPSDB	H-P-2-ASP-LI-1441 issue 17	
HPCCS Release	HPCCS_2.0-1317	
Test Environment / Version	IST1_PART2_TP_0193_ISS1_RMS_END_001	
Session ID	2009_05_17_23_24_hercdmu_hpws22_REALTIME_RMS_1	
Purpose of test	Debugging	
	NCR Investigation	
	Calibration/Maintenance	
	Unit Integration Testing	
	Dry/ Formal	X

Time/Date UTC	Test Procedure / Step / Script / Command / Event / Anomaly	Remarks / Cause of anomaly / Corrective action	NCR ref. (P)
23:20	Created TAG for RMS	IST1_PART2_TP_0193_ISS1_RMS_END_001	
23:24	Start CCS session	2009_05_17_23_24_hercdmu_hpws22_REALTIME_RMS_1	
23:56	HIFI cooling cart switched-on		
18-05-2009			
00:40	Loss of power in Fu building! I-EGSE off!		
01:44	Power is back in Fu building! I-EGSE on!		

02:23	IST_START finished		
02:33	Cannot connect to SPIRE EGSE	PVS#14 raised	**PVS#14** **TP-0193**
03:30	CCS getting very slow during IST start, on CCS server display, message indicating CPU overload. Autorun process running on CCS server which takes 45% of CPU time. herEGSE user logged-out on CCS server. Autorun process no longer seen, but CCS still slow!!		
03:50	Problem RMS master script	PVS#15 raised	**PVS#15** **TP-0193**
03:50	Command Parameters missing from script	SPR#719 raised	**SPR#719** **TP-0193**
03:55	Problem with SREM status word: 0x0000 – test continued		
04:49	RWL's Nominal values different from procedure	We left the values as fetched from the system PVS#16 raised	**PVS#16** **TP-0193**
	Errors (typos) in procedure	'General PVS' to capture typos arising in procedure. PVS#17 raised	**PVS#17** **TP-0193**
05:18	Terminate all subscribe scripts (no longer needed)	Test step 430 PVS#18 raised	**PVS#18** **TP-0193**
05:35	The MTL upload of 345 & 346 has failed.	PVS#19 raised to cover patch of file. NCR4484 raised Verifies closeout of NCR4465	**PVS#19** **TP-0193** **NCR4484**
	Test Step 600. This test failed in Olivier's script due to NCR4181 which caused the test to fail. A manual check was made on the parameter to be checked, the value of parameter YMAVV920=1 which is closed loop.	Script name: Z010999MCVT153_IST_STATUS.tcl	
	Test Step 600. LCL TX1 is closed, status is reported that it should be open SPR#670. see attachment in as-run.		
	PVS#9 not executed as this was done by Martijn on Sat 30 August.		

07:48	TM parameter HM062193 was out of limits (HIFI laser temperature) ➔ applied operator note 45 at 08:06		
08:18	RF downlink started, waiting for lock.		
08:19:42	RF Lock established.		
08:28:48	CEL was downloaded		
08:43	The time sync between the DFE and the CCS is to be broken as an experiment to see if the missing frames re-appear.	Some frames were reported to be missing.	
08:51	MTL Upload Script Error, comments in TC send lines	Script:MTL_tclgen37_H_IST1_MTL_D346_347_20080801_V01_SEG004_800_end.tcl (many lines within script)	**Added to NCR4484**
	Wrong LOGM Message		**SPR#720**
	New step reqd. after step 640		**PVS#20**
	Load remaining MTL Commands for 0D346-347		**PVS#21**
09:17	Running modified script to complete MTL upload		
09:20	Terminating Erroneous script		
09:52	RE-starting the time synchronization on the DFE		
	Time sync on TM DFE causing Missing Frames at ESOC	NCR raised	**NCR4485**
	Disable About Time sync on DFE for DTCP		**PVS#22**
10:15	HIFI panel cooling modified for HIFI-2 panel (WOV and HRV)	Laser Temp went too high	
10:36	Script Problem IST Data Watch – invalid Cmd name	One too many Brkts, modified and checked in online	**SPR#721** **TP-0193**
11:00	Start XPND1 Ranging		
11:15	Missing step in Master RMS Procedure TP-0193 after step 240 of Sect 7.2.1		**PVS#20-3** **TP-0193**
11:20	XPND1 TWTA off		
11:20	DTCP1 Completed starting AP1 - HIFI		
11:26	Several OOL's for HIFI	As expected – laser temp	
15:02	Connect spire IEGSE asked by IEGSE people		
17:45	New tm dump file for VC 1		**PVS#23** **TP-0193**

22:03	CCS problem, strange alarm sound from HPCCS Server.	This occurred during the split of the CCS archive. Many error messages were displayed that files could not be generated. Eventually, these messages stopped and a final message was displayed that the archive split was successful. Checking the test session directory it could be seen that the pre-split archives were stored in an “old” directory and new archive files were being generated as expected	**This info added in NCR4487, correlation to be investigate**
22:15	Errors reported on HPWS22 and other workstations. HFAretEV failed. The full list of errors can be found in the session log file.	Restarted manually. Following this many messages were generated on three workstations (21, 22 & 24) that there were “Communication error reported from TM cache.” Following a discussion with A.Armitage (Terma), it was recommended to leave the test session on the affected workstations and then rejoin (without leaving HPCCS). This was performed on WS 21 & 24 successfully, and the error messages stopped. During this re-joining the RMS test was kept under control via WS22. Leaving and re-joining the session on WS22 would have resulted in all test scripts being stopped. Prior to this action an analysis was performed to ensure that the scripts could be restarted without affecting the overall RMS test. Before this analysis was completed, the error messages on WS22 also stopped (by themselves). WS22 was therefore not restarted. Note: no error messages were seen on WS23 at any time.	**NCR4487 raised**
23:32	Confirmation from B. Collaudin, wrt table in TRR MoM MN-10772: T107 not relevant for PACS testing, T222, T223, T102 to be monitored (to be < 1.95 K)		

23:57	DTCP2 started, PACS Cooler Recycling started	T222=1.91 (OK,<1.95 K) T223=1.90 (OK,<1.95 K) T102=1.89 (OK,<1.95 K) T231=2.22 (OK,<5 K) T233=2.79 (OK,<5 K) T235=3.26 (OK,<5 K) T237=3.69 (OK,<5 K) T254=9.29 (OK, <15 K)	
19-05-2009			
02:57	Several TM 1,8 reported on ACMS: Mode SCM Cmd Interrupt		**NCR-3318 re-occurrence**
03:11:57	System reported: CdmuBsw Event 5,4 VC1 queue full. VC1 overflow, (1 overflow reported) We may have lost data as a result.		**SPR 722 raised TP-0193**
03:40	Configure TM in High Rate for AP	PVS#24 raised	**PVS#24 TP-0193**
03:53	R-T D/L in 150kbps at end of DTCP2	SPR#722 raised	**SPR#722**
Early Shift - SE,SI,BH,IL			
	Due to lack of disk space on the CDMU DFE no data logging has been performed between 21:37 on the 18th May til 12:32 on the 19th May (session time and date).		
15:11	DTCP3 started		
15:11	New TM dump file VC1		**PVS#23 TP-0193**
15:12	Perform PVS#22 stop About Time on TMTC DFE		**PVS#22 TP-0193**

15:24	TC error DCT18170 not executed, TLM check failure RMB27442 expected ON value is OFF	XPND not locked, Scoe uplink offline. Script error in Z010999MCVT091_IST_RMS_DTCP This sets the SCOE offline when it should not. Reconnect SCOE, XPND now locked, Manually send Cmd DCT18170 again Cmd not executed. Connection test has failed. Previous cmd sent in AD mode therefore TC link IN DFE frozen. Need to start SPIRE cooler recycle however the thermistors for spire appear to be off in while SPIRE is in ready mode, need to manually switch these on before the cooler cycle can start. Need to switch to umbilical to send these Cmd's and then re-establish the RF-Link. Perform PVS# However we are in AD mode so only have TLM. Cmd to B**D** mode. Send Spire Cmds Now establish RF link for TC, send connection test cmd's - OK Need to then Cmd back to AD Mode resetting the service. Confirm back in AD Mode RF link OK for both TC & TM	**SPR723** **PVS#25**

	Send Cmd's SCD06505,0xA085FFFF SCD06505,0xA0860001	Switch on Spire AC & DC thermometry Note wrong power on script/procedure was used apparently used. Should have used SPT ON	**NCR???? To be discussed in PTR PVS#26 TP-0193**
16:09	Dump pkt store completed	Finished far too quickly, appears no data in pkt store 3 (science data) Decided to Re-perform dump of 3	
	Manually cmd Dump Pkt store 3 again	Cmd rejected as this was already sent and queued at CDMS level by IST_DUMP_PKT_STORE, however this was unclear to us as the script completed No NCR required as expected.	**PVS#27 TP-0193**
16:20	Cmd problems found in dummy MTL		**To Be Added to NCR4484**
18:20	AP3 started		
18:23	Perform PVS#22 start About Time on TMTC DFE		**PVS#22 TP-0193**
18:26	Switch ON SPIRE PUMP HEAT Switch perform PVS#12-3	The pump switch was switched OFF at the end of the cooler cycle this is not expected. MANUAL Cmd sent to switch ON. The current for the switch appears to be lower than expected as informed by SPIRE.	**NCR4488 Raised**
18:42	Disconnect Cyro SCOE		**PVS#28 TP-0193**
18:49	SPIRE request additional Cmds to be sent to check DCU Data from the Photometer.		**PVS#29 TP-0193**
20:00	HIFI cooling filters were frozen. De-iced with heat gun and restarted		

20:22	SPIRE temperature check	T102=1.87 (OK,<1.95 K) T107=1.96 (NOK,>1.95 K, expected, acceptable to TAS Eng.) T231=2.18 (OK,<6 K) T237=3.63 (OK,<6 K) T254=9.31 (OK, <15 K) T207= ool, calib curve checked [12-273] => below 12K	
23:18	Another temp check	T102=1.87 (OK,<1.95 K) T107=1.96 (NOK,>1.95 K, expected, acceptable to TAS Eng.) T231=2.19 (OK,<6 K) T237=3.71 (OK,<6 K) T254=9.47 (OK, <15 K) T207= ool, calib curve checked [12-273] => below 12K	
20-05-2009			
01:45	HIFI cooling system was set at 17 degC, but laser temperature shows a 'knee' & an increase in temperature (lasers are off, but heaters on). HIFI cooling system temperature was adjusted to 16degC.		
	Error in Script (existing SPR 723) *(PVS prepared & will be run near end of test)*	PVS raised, step 20 (script to run)	**PVS#30** **TP-0193**
	Interrupt RMS switch-off for SPIRE FDIR OBCP *(PVS prepared & will be run near end of test)*	PVS raised	**PVS#31** **TP-0193**
03:12	Get report of SPIRE onboard tables (NCR investigation)	PVS raised	**PVS#32** **TP-0193**
03:20	Tracking set-up to monitor SVMCPYTBLFLT 5,1 Events. (SPIRE) These are the times where they appeared so-far in the system: 140.02.54 -- 140.03.20		

07:25	Problems within master script, at end of AP3 inside IST_RMS_ASTRIUM. There is a wait period of 2 x 14 hours in script. This is unacceptable. Olivier recommends we pause the script, modify it to step over the wait statement and proceed thereafter.	Telephoned Simon for his advice. (03:35 local time) Simon agrees with Olivier's intended actions. PVS raised to manage the master script and proceed without the wait period. (PVS, not NCR as it is our script) PVS/SPR raised against script:IST_RMS_ASTRIUM.tcl	**PVS#33** **SPR#725**
07:44	Executed PVS#22	Switch off abouttime on CDMU DFE	
08:01	Executed PVS#30		
08:12	Procedure did not match script, procedure wording incorrect.	"General PVS for typos"	**PVS#17-6**
08:22	Procedure did not match script, procedure wording incorrect.	"General PVS for typos"	**PVS#17-7**
08:42	Procedure did not match script, procedure wording incorrect.	"General PVS for typos"	**PVS#17-8**
08:49	HIFI is OFF		
08:52	PACS is OFF		
08:54	Executed PVS#31-1 (skip step 130)		
08:57	Step 140, script checks current to be OFF, but it should check for **value** of 0 Amps.	Script:IST_RMS_ASTRIUM.tcl	**SPR#726**
09:05	Executed PVS#31-2		
09:05	Executed PVS#31-3		
09:07	Executed PVS#22	Switch on abouttime on CDMU DFE	
09:10	Follow PVS#31-3 (Switch to IST_END (TP-0134))		
10:00	Pkt Store		

6.6 Copy of the raised SPRs / NCRs

For NCRs, reference should be made to PRISMA for an accurate and detailed status of each, see section 4.5.2.1 & 4.5.3.1 for a summary of the NCRs related to this test.

A copy of SPRs raised during the test are attached (pdf copy of this report only).

A copy of NCRs raised during the test are attached (pdf copy of this report only).

6.7 As-Run Procedures

A copy of the “as-run” procedures are attached (pdf copy of this report only).

6.8 TRR, PTR

A copy of the TRR, ΔTRR and PTR+ are attached (pdf copy of this report only).

6.9 Script File Configuration

TBC

6.10 Engineering (Pre-Evaluation)

N/A

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

	Name	Dep./Comp.		Name	Dep./Comp.
	Baldock Richard	FAE12	X	Sonn Nico	ASG51
	Barlage Bernhard	AED13		Steininger Eric	AED321
	Bayer Thomas	ASA42	X	Stritter Rene	AED11
	Brune Holger	ASA45		Suess Rudi	OTN/ASA44
X	Chen Bing	HE Space	X	Theunissen Martijn	DSSA
X	Davis William	Captec	X	Vascotto Riccardo	HE Space
	Edelhoff Dirk	AED21		Wagner Klaus	ASG23
	Fehringer Alexander	ASG15	X	Wietbrock Walter	AET12
X	Fricke Wolfgang Dr.	AED 65		Wöhler Hans	ASG23
	Geiger Hermann	ASA42		Wössner Ulrich	ASE252
	Grasl Andreas	OTN/ASA44		Zumstein Armin	AED15
	Grasshoff Brigitte	AET12			
X	Hamer Simon	Terma			
X	Hanka, Erhard	FI522			
X	Hendrikse Jeffrey	HE Space			
X	Hendry David	Terma			
	Hengstler Reinhold	ASA42			
	Hinger Jürgen	ASG23			
X	Hohn Rüdiger	AED65			
	Hopfgarten Michael	AET32			
	Huber Johann	ASA42			
	Hund Walter	ASE252			
X	Idler Siegmund	AED312			
	Iványi von András	FAE12			
	Jahn Gerd Dr.	ASG23			
	Jolk Matthias	AET1	X	ESA/ESTEC	ESA
X	Klenke Uwe	ASG72	X	Thales Alenia Space Cannes	TAS-F
X	Kölle Markus	ASA43		Thales Alenia Space Torino	TAS-I
	König Werner	AET32			
X	Koppe Axel	AED312			
	Kroeker Jürgen	AED65		**Instruments:**	
X	La Gioia Valentina	Terma	X	MPE (PACS)	MPE
	Lang Jürgen	ASE252	X	RAL (SPIRE)	RAL
	Langenstein Rolf	AED15	X	SRON (HIFI)	SRON
	Langfermann Michael	ASA41			
	Leitermann Stefan	AET12			
X	Liberatore Danilo	Rhea		**Subcontractors:**	
X	Martin Olivier	Altec		Austrian Aerospace	AAE
X	Maukisch Jan	ASA43		Austrian Aerospace	AAEM
X	Much Christoph	ASA43		BOC Edwards	BOCE
X	Müller Martin	ASA43		Dutch Space Solar Arrays	DSSA
	Pietroboni Karin	AED65		EADS Astrium Sub-Subsyst. & Equipment	ASSE
	Reichle Konrad	ASA42		EADS CASA Espacio	CASA
	Runge Axel	OTN/ASA44		EADS CASA Espacio	ECAS
	Saal Christoph	External		European Test Services	ETS
	Schink Dietmar	AED321		Patria New Technologies Oy	PANT
	Schmidt Thomas	AED15		SENER Ingenieria SA	SEN
	Schweickert Gunn	ASG23		Thales Alenia Space, Antwerp	TAS-ETCA

Attachment 1 to Section 6.6 :
SPRs Raised during RMS test

SPR Formsheet

Nr.: 719	Date: 03-09-2008	Author: D. LAMONBY	Classification:
Test: RMS	Session ID: 2009_05_17_23_24_herodmu_hpws22_REALTIME_RMS_1		Subsystem:

Title: COMMAND PARAMETERS MISSING FROM SCRIPT

Type: (Script/Picture /Test structure):	Name:	Version:
	Z010999MCVT085_IST_RMS_ASTRIUM.tcl	1.27 (HEAD)

Problem description (to be filled by Test conductor (TC) / Test operator (TO)):

Time (UTC): 03:50 Step no: 120

PROBLEM WITH SCRIPT DUE TO MIGRATION FROM CDMS 3.4 to 3.6.

(SEE ATTACHMENT)

Proposed solution (to be filled by TC / TO):

Review board decision (to be filled by TC, TO, QA plus Engineering / experts if required):

Implement as proposed: ☐ Reject: ☐

Other: ---

Proposed rerun (Date / Test case): ---

Date:	Participants:

Implemented: ☐ Code inspected: ☐

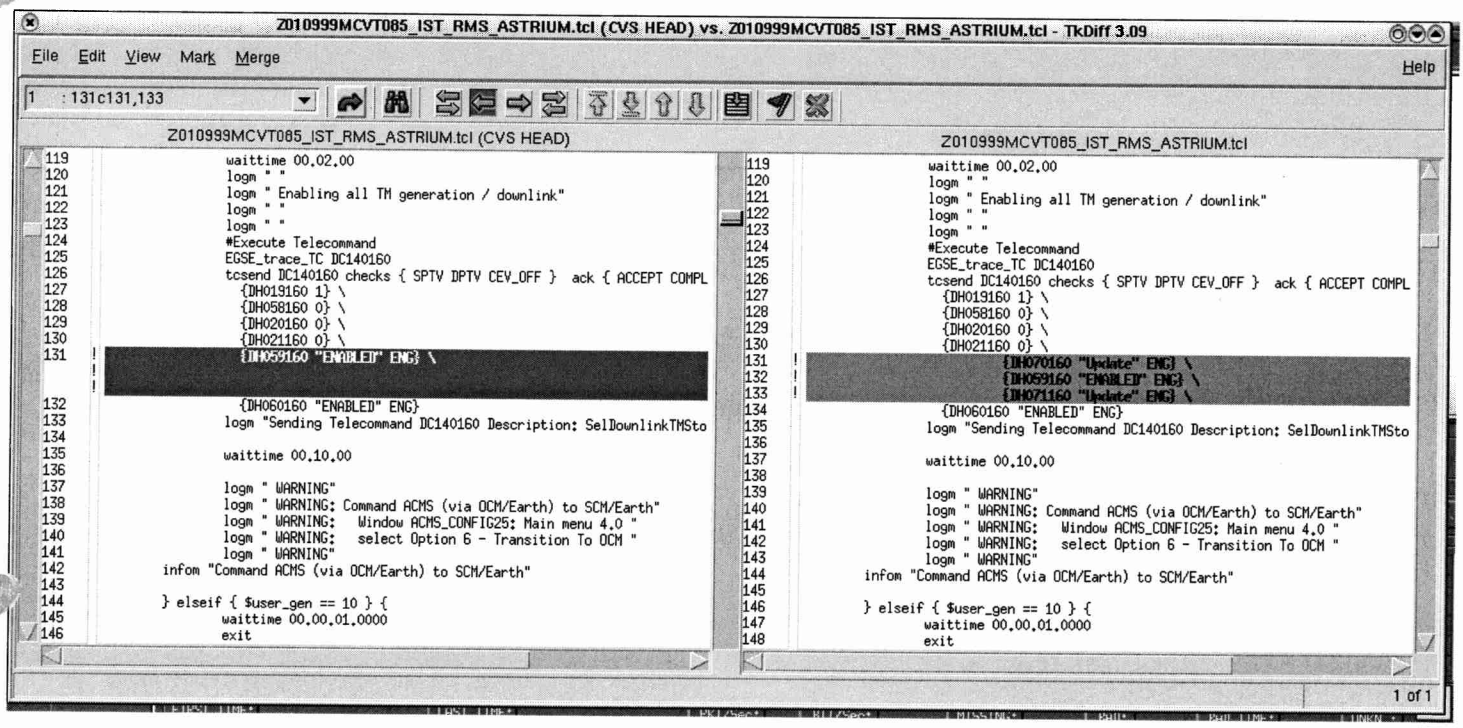
Confirmed by Test Conductor(s) / Experts to check-in: ☐

Date:	Name:

Close out (Functional team member & QA):

Verified during test case / ID: ---

Date:	Version:	Func. Team Name:
Date:	QA:	


Z010999MCVT085_IST_RMS_ASTRIUM.tcl (CVS HEAD) vs. Z010999MCVT085_IST_RMS_ASTRIUM.tcl - TkDiff 3.09
File Edit View Mark Merge
Help
1 : 131c131,133
Z010999MCVT085_IST_RMS_ASTRIUM.tcl (CVS HEAD)
Z010999MCVT085_IST_RMS_ASTRIUM.tcl
waittime 00.02.00
logm " "
logm " Enabling all TM generation / downlink"
logm " "
logm " "
#Execute Telecommand
EGSE_trace_TC DC140160
tcsend DC140160 checks { SPTV DPTV CEV_OFF } ack { ACCEPT COMPL
{DH019160 1} \
{DH058160 0} \
{DH020160 0} \
{DH021160 0} \
{DH059160 "ENABLED" ENG} \
{DH060160 "ENABLED" ENG}
logm "Sending Telecommand DC140160 Description: SelDownlinkTMSto
waittime 00.10.00
logm " WARNING"
logm " WARNING: Command ACMS (via OCM/Earth) to SCM/Earth"
logm " WARNING: Window ACMS_CONFIG25: Main menu 4.0 "
logm " WARNING: select Option 6 - Transition To OCM "
logm " WARNING"
infom "Command ACMS (via OCM/Earth) to SCM/Earth"
} elseif { $user_gen == 10 } {
waittime 00.00.01.0000
exit
{DH070160 "Update" ENG} \
{DH059160 "ENABLED" ENG} \
{DH071160 "Update" ENG} \
1 of 1

SPR Formsheet

Nr.:	Date:	Author:	Classification:
720	03/09/08	S. HAMER	MINOR

Test:	Session ID:	Subsystem:
RMSIST1		S/C

Title: ~~2010999~~ Wrong logm message in script

Type: (Script/Picture /Test structure):	Name:	Version:
	20109999MCVT091_IST_RMS_DTCP	

Problem description (to be filled by Test conductor (TC) / Test operator (TO)):

Time (UTC): **Step no:**

Line 203 should read DOWNLINK CELA & CELB

Proposed solution (to be filled by TC / TO):

Update as above

Review board decision (to be filled by TC, TO, QA plus Engineering / experts if required):

Implement as proposed: [X] **Reject:** [ ]

Other:

Proposed rerun (Date / Test case): RMS IST2

Date: 03/09/08	Participants: S. HAMER

Implemented: [X] **Code inspected:** [X]

Confirmed by Test Conductor(s) / Experts to check-in: [X]

Date: 03/09/08	Name: S. HAMER

Close out (Functional team member & QA):

Verified during test case / ID:

Date:	Version:	Func. Team Name:
Date:	QA:	

SPR Formsheet

Nr.:	Date:	Author:	Classification:
721	03/09/08	S HAMER	MINOR

Test:	Session ID:	Subsystem:
IST1 RMS		SLC RMS

Title: ~~BRS~~ Extra } in script

Type: (Script/Picture /Test structure):	Name:	Version:
	Z01099 9TCVT093IST_RMS_Date_Watch	1.10

Problem description (to be filled by Test conductor (TC) / Test operator (TO)):
Time (UTC): 10:35 **Step no:** DTCP1

Remove additional close bracket.

Proposed solution (to be filled by TC / TO):

As above

Review board decision (to be filled by TC, TO, QA plus Engineering / experts if required):

Implement as proposed: [X] **Reject:** [ ]

Other:

Proposed rerun (Date / Test case): IST1 RMS 03/09/08.

Date: 03/09/08	Participants: S. HAMER,

Implemented: [X] **Code inspected:** [X]

Confirmed by Test Conductor(s) / Experts to check-in: [X]

Date: 03/09/08	Name: S. HAMER

Close out (Functional team member & QA):

Verified during test case / ID: IST1 RMS 03/09 - 05/09/08

Date:	Version:	Func. Team Name:
Date:	QA:	

SPR Formsheet

Nr.: 722	Date: 03-09-2008	Author: S. HAMER	Classification: MINOR
Test: RMS	Session ID: 2009-05-17-23-24_hercdmu_hpws22_REALTIME_RMS_1		Subsystem: RMS
Title: R-T DIL in 150kbps at end of DTCP2			
Type: (Script/Picture /Test structure):	Name: 20109999 MCVT085_IST_RMS_ASTRIUM 20109999 MCVT091_IST_RMS_DTCP		Version:

Problem description (to be filled by Test conductor (TC) / Test operator (TO)):

Time (UTC): **Step no:** Error reported: CdmuBsw Event 5,4 VC1 queue

Scripts to be updated to handle switching to HBR at end of DTCP2 (after MTL has switched to MBR).
Procedure to be updated inline with modification

Proposed solution (to be filled by TC / TO):

Review board decision (to be filled by TC, TO, QA plus Engineering / experts if required):

Implement as proposed: ☐ **Reject:** ☐

Other:

Proposed rerun (Date / Test case):

Date:	Participants:

Implemented: ☐ **Code inspected:** ☐

Confirmed by Test Conductor(s) / Experts to check-in: ☐

Date:	Name:

Close out (Functional team member & QA):

Verified during test case / ID:

Date:	Version:	Func. Team Name:
Date:	QA:	

SPR Formsheet

Nr.: 723	Date: 04/09/08	Author: B. HOGG	Classification:
Test: RMS	Session ID: 2009-05-17-23-24-hercdmu-hpus22 REALTIME_RMS_1		Subsystem:

Title: SCRIPT ERROR TURNING RF SCOE OFFLINE

Type: (Script/Picture /Test structure):	Name: Z010999MCAT091_1ST_RMS_DTCP	Version:

Problem description (to be filled by Test conductor (TC) / Test operator (TO)): / QA

Time (UTC): 15:24 Step no: TP0193 7.4.1. STEP 40

SCRIPT CMD'S THE SCOE OFFLINE WHEN IT SHOULD STILL BE ONLINE.

Proposed solution (to be filled by TC / TO):

Review board decision (to be filled by TC, TO, QA plus Engineering / experts if required):

Implement as proposed: ☐ Reject: ☐

Other: ---

Proposed rerun (Date / Test case): ---

Date:	Participants:

Implemented: ☐ Code inspected: ☐

Confirmed by Test Conductor(s) / Experts to check-in: ☐

Date:	Name:

Close out (Functional team member & QA):

Verified during test case / ID: ---

Date:	Version:	Func. Team Name:
Date:	QA:	

Attachment 2 to Section 6.6 :
NCRs Raised during RMS test

Company	**Project Name**	NCR-No: HP-100000-ASED-NC-3300
DUTCH SPACE B.V.	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 1
		Page 1 of 5

Nonconformance Report

NCR **Title** RMS MTL SCM mode commands reported failed	
NC Item **Identification** ACMS,HERSCHEL SVM,HERSCHEL SATELITE	
Next Higher Assembly HERSCHEL-PLANCK CORE SERVICE MODULE,HERSCHEL SATELITE,HERSCHEL-PLANCK COMPOSITE	
Drawing No	Sr No.
Procedure No	
Supplier TAS-I	Purchase Order
Subsystem	Model PFM
NC Observation Date: 10-MAY-07 Location: ASED FN	NC Detected During Test

Description of Nonconformance Requirements Violated

During RMS debug, a number of SCM (?) mode commands in the RMS MTL are reported failed. It appears from the
packet that the slew timeout period in the command is too short. See also NCR 2826.

Initiator: Date, Name and Signature 12-MAY-07 S. Hamer / R. Vascotto

Cause of NC

Corrective/Preventative Action(s)

Verification

NCR Close Out

Close Out Status: Open Close Out Date

Reference:

Disposition:

Internal NRB Dispositions

Added by A Knight

NRB 13 June 2007

AK/GB/RV/MK/CM/OM/PM

An, apparently, similar anomaly has been seen on Planck where all time out values had to be overwritten.

Action TASF (AK) to request a copy of this NCR and attach it to this Herschel NCR.

Action TASF (GB) to perform further investigations to analyse whether these 2 Herschel and Planck anomalies have the same root cause.

The similar problem on Planck concerns an ACMS time out command for safety reasons.

The ESOC MTL flight dynamics computes these times using old values and thus the time is too short. This could be the same issue as seen now on Herscel.

Action ASED to provide the time tag of the ACMS command that failed due to this time

Classification:

Major ☐ **Minor** ☒

Customer Notification

Company	Project Name	NCR-No: HP-100000-ASED-NC-3300
DUTCH SPACE B.V.	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 1
		Page 2 of 5

Nonconformance Report - Continuation Sheet -

out, and the exact error message (i.e. ASED to replay the session and print the (1,8) message to get the exact error code.

Action TASF (GB) With this input to ask ESOC about how they compute these time out values for these commands and check that the formula used is up to date.

Added by A Knight 26 June 2008
Reviewed as part of NCR wash up for ACMS OBSW 3.8 IRR (H-P-TASF-MN-10590)

NC-3300: RMS MTL SCM Mode Commands reported failed

The NCR states:

During RMS debug, a number of SCM mode commands in the RMS MTL are reported failed. It appears from the packet that the slew timeout period in the command is too short. See also NCR 2826.

Looking to NCR 2826, this NCR is closed!

This seems to have been closed with use-as-is, as follows:

Option 1 - Use as is the formula.
The MTL used during the IST is defined using the slew time prediction formula as they are defined in the DS user manual (H-P-4-DS-MA-001 issue 4.1 section 9.1.4) by the [GCP-H-SCMSLEW] specified ground procedure.
The impact will be that completion event failure TM(1,8) will be raised and OTF will be raised with a delay with respect to flight.
As during IST, no direct and real time link between ACMS and Instrument exists (spacecraft is not moving), no direct impact on the test execution is expected.
The impact might exist during TM post processing analysis and usage of ACMS data for correlation with instruments data.

The previous NRB for 3300 stated:

The ESOC MTL flight dynamics computes these times using old values and thus the time is too short.

This seems to agree with the above. Further, this time out does not affect the test itself. The command completes anyway and just the failure message is received.

Thus it shall be clarified whether this NCR can also be closed (email sent to ESOC / M Schmidt 26 June 2008)

Added by A Knight 30 August 2008

PTS for RMS debug 13 & 14 August 2008: H-P-TASF-MN-10729

Re-occurred during RMS debug.
Addressed with ESOC at SOVT TRR
ESOC to clarify.

NRB held on 10.09.08

Partecipants:

TAS-F:T.Grassin

DS:M.Oort

TAS-I:A.Bacchetta,A.Cocito,G.Chlewicki,D.Oddenino,D.Roma

Company	**Project Name**	NCR-No: HP-100000-ASED-NC-3300
DUTCH SPACE B.V.	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 1
		Page 3 of 5

Nonconformance Report - Continuation Sheet -

D. Salt, ESOC: also seen on H SOVT.
To be adressed during H SVT NRB.

See also T.Grassin xls file as CRR session 09 sept 08 outcome (attachment 3).

Ref. to MoMs H-P-TASF-MN-10590

Date:
Name:
Signature:

Company	Project Name	NCR-No: HP-100000-ASED-NC-3300
DUTCH SPACE B.V.	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 1
		Page 4 of 5

Nonconformance Report - Continuation Sheet -

NCR Treatment Sequence / Findings / Statements / Actions

Int. Ref	Actionee	Due Date	Action	Conclusion / Remark	Closed
I0-1	TASF - AK	20-JUN-07	Action TASF (AK) to request a copy of the similar Planck NCR and attach it to this Herschel NCR		Yes ☐ No ☒
I0-2	TASF - GB	22-JUN-07	Action TASF (GB) to perform further investigations to analyse whether these 2 Herschel and Planck anomalies have the same root cause.		Yes ☐ No ☒
I0-3	ASED - OM	20-JUN-07	Action ASED to provide the time tag of the ACMS command that failed due to this time out, and the exact error message (i.e. ASED to replay the session and print the (1,8) message to get the exact error code.		Yes ☐ No ☒
I0-4	TASF - GB	29-JUN-07	Action TASF (GB) With this input to ask ESOC about how they compute these time out values for these commands and check that the formula used is up to date.		Yes ☐ No ☒

Company	Project Name	NCR-No: HP-100000-ASED-NC-3300
DUTCH SPACE B.V.	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 1
		Page 5 of 5

Nonconformance Report - Continuation Sheet -

NCR/NRB Attachments

	Description	Filename	Last Updated
1	Log file	SCMFailures.log	12-MAY-07 12:36:22
	Description	Filename	Last Updated
2	ACMS email to ESOC 26 June 08	ACMS email to ESOC 26 June 08.pdf	26-JUN-08 13:37:34
	Description	Filename	Last Updated
3	ACMS NCR status_TG_100908_NRB	ACMS NCR status_TG_100908_NRB.xls	15-SEP-08 11:40:41
	Description	Filename	Last Updated
4	TC sequences (APFs) and "Timeout exceed" TC execution failur	HSOVT1 TM_1_8_135 analysis(all_TCs).zip	15-SEP-08 13:23:38
	Description	Filename	Last Updated
5	APFs, TM_1_8_135 packets and all ACC events (Type 5)	HSOVT1 TM_1_8_135 analysis(all_TCs_Events).zip	15-SEP-08 13:24:16
	Description	Filename	Last Updated
6	ESOC Anomaly report HP-785 during SOVT-1	ARTS1_HP_HP-785_20080912_112311.pdf	15-SEP-08 13:32:22
	Description	Filename	Last Updated
7	H-SOVT-1 ACMS events file operational day 126	0126_evts.txt	15-SEP-08 13:33:49
	Description	Filename	Last Updated
8	H-SOVT-1 ACMS events file operational day 127	0127_evts.txt	15-SEP-08 13:34:16
	Description	Filename	Last Updated
9	H-SOVT-1 ACMS events file operational day 128	0128_evts.txt	15-SEP-08 13:34:49

Company	**Project Name**	NCR-No: HP-100000-ASED-NC-3318
DUTCH SPACE B.V.	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 1 of 5

Nonconformance Report

NCR **Title** RMS MTL SCM line scan command overlaps

NC Item **Identification** ACMS,HERSCHEL SATELITE

Next Higher Assembly HERSCHEL-PLANCK CORE SERVICE MODULE,HERSCHEL-PLANCK COMPOSITE

Drawing No	Sr No.
Procedure No	
Supplier	Purchase Order
Subsystem	Model NA(GSE)

NC Observation
Date: 24-MAY-07 Location: ASED FN

NC Detected During Test

Description of Nonconformance Requirements Violated

During RMS debugging, "SCM line scan" and "SCM raster pointing" commands return a "completion execution
failure" event due to an interruption. The next command is executed while the previous one has not been accomplished yet.

Initiator: Date, Name and Signature 24-MAY-07 S. Hamer / R. Vascotto

Cause of NC
This is an ESOC commanding error (the ASW starts one command before the previous one has completed, i.e. the S/C has not reached the theoretically required configuration, thus introducing ACMS errors).

Corrective/Preventative Action(s)
Run RMS debug i.a.w HP-2-ASED-SD-0401 13 August 2008

Verification
PTS RMS debug H-P-TASF-10729

NCR solved for RMS debug, anomally not seen during
test run 13 & 14/8/08
PTS agrees NCR can be closed (AK/BC/SM/SH/JH/PD)

Session ID:
2009_05_17_17_07_hercdmu_hpws22_REALTIME_RMS_DEBUGHEA
D

NCR Close Out
Close Out Status: Closed Close Out Date 30-AUG-08
Reference: H-P-TASF-10729

Disposition:
Modify

Internal NRB Dispositions
Added by A Knight

NRB 13/6/07

AK/GB/RV/MK/CM/OM/PM

See also NCR 3297 and related actions

Classification:
Major ☐ **Minor** ☒

Customer Notification
30-AUG-08

Company	Project Name	NCR-No: HP-100000-ASED-NC-3318
DUTCH SPACE B.V.	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 2 of 5

Nonconformance Report - Continuation Sheet -

This NCR is also related to NCs 3317 & 3318. This involves a discrepancy between the ESOC DB and the HPSDB. In this case, the ESOC database overwrites some of the parameters in the HPSDB (2 ACMS commands) this is due to the compatability with the automatic tool that generates the MTL. This was not implemented correctly and thus the TCs were incompatible with the CCS. In order to solve this problem, firstly these parameters were modified by hand but this failed. Secondly a fix was implemented in the HPSDB by adding the ESOC calibrations. However, due to human error these were input incorrectly and thus wrongly executed (see NC 3317 & 3318). Finally the HPSDB has been modified correctly, this should work but has not been tried as yet. Action Astrium to verify this modification of the HPSDB by re-running the RMS (planned for July 2007). Only the 2 ACMS parameters are affected by this anomaly. This was confirmed by ESOC via email. Action TASF (GB) to provide this email to be attached as evidence to this NCR.

Reviewed on NRB 8.10.2007-10-08

Added by A Knight HPSDB wash up 12/3/2008
AK/GB/SdS/FC/FB/JH/OM

TASF Engineering (GB) indicated that this anomaly is based on the way in which the gyro is simulated ("lag" longer than expected) Apparently there is an email from M Ooort explaining this issue (ACMS SCOE). GB to clarify

Added by A Knight 22 April 2008

Response from M Oort...

Yes I can explain the issue, although it is completely irrelevant for this NCR....

The issue in the ACMS SCOE concerns the fact that it introduces an extra delay in the GYR output. The ASW control law assumes that the information is 129 ms "old", whereas it is actually between 140 and 180 ms old. This results in an overshoot in the target after rapid deceleration, and so it takes longer to settle. This longer settling time can sometimes cause the maximum slew time specified in the TC to be exceeded, resulting in a completion execution failure at the end of the slew.

If I understand the NCR correctly, though, the execution failure event occurs when a new TC is sent. When the TC is received by the ASW before the combined duration of the slew time and the pointing time has expired, the ASW gives a warning. This warning just means that the previous TC has to be discarded in favor of the next one before it has completely done its job. This is unrelated to any GYR performance, because the extended slew time needed in the case of longer settling is "borrowed" from the pointing duration, allowing the TC to be completed in the planned time. What I had understood from this NCR (I seem to remember a conversation on this) was that the tslew+tpoint were incorrectly added up (or the incorrect start time used), resulting in the second TC to be sent one or two cycles too early.

Added by A Knight
Input from T Grassin (ACMS NCR wash up for ACMS 3.8 + HPSDB)
ASED to close this NCR as soon as verification of HPSDB modification solved the problem (no impact on ACMS S/W)

Added by A Knight 26 June 2008
Reviewed as part of NCR wash up for ACMS OBSW v 3.8 IRR (H-P-TASF-MN-10590)

NC-3318: RMS MTL line scan command overlaps.

Regarding this NCR it was understood that this was a database problem but this now appears not to be the case (after discussion with AIT / Engineering).

This is an ESOC commanding error (the ASW starts one command before the previous one has

Company	Project Name	NCR-No: HP-100000-ASED-NC-3318
DUTCH SPACE B.V.	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 3 of 5

Nonconformance Report - Continuation Sheet -

completed, i.e. the S/C has not reached the theoretically required configuration, thus introducing ACMS errors).

ESOC shall confirm that this is an error introduced by the MTL commanding and any changes made subsequently to correct this.

Added by A Knight: PTS RMS debug H-P-TASF-10729

NCR solved for RMS debug, anomally not seen during test run 13 & 14/8/08
PTS agrees NCR can be closed (AK/BC/SM/SH/JH/PD)

Ref. to MoMs H-P-TASF-MN-10590 / 1072

	PA	**Engineering**						
Date:	13-JUN-07	13-JUN-07	13-JUN-07	13-JUN-07	13-JUN-07	13-JUN-07	13-JUN-07	
Name:	Knight	Collaudin	Knight	Mooney	Hamer	Huesler	Dieleman	
Signature:								

Company	Project Name	NCR-No: HP-100000-ASED-NC-3318
DUTCH SPACE B.V.	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 4 of 5

Nonconformance Report - Continuation Sheet -

NCR Treatment Sequence / Findings / Statements / Actions

Int. Ref	Actionee	Due Date	Action	Conclusion / Remark	Closed
I0-1	AIT	27-JUN-08	ASED to verify closure with HPSDB delivered with ACMS 3.8		Yes ☒ No ☐
Int. Ref	**Actionee**	**Due Date**	**Action**	**Conclusion / Remark**	**Closed**
I0-2	ESOC / Schmidt	11-JUL-08	ESOC shall confirm that this is an error introduced by the MTL commanding and any changes made subsequently to correct this.	NCR can be closed	Yes ☒ No ☐

Company	Project Name	NCR-No: HP-100000-ASED-NC-3318
DUTCH SPACE B.V.	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 5 of 5

Nonconformance Report - Continuation Sheet -

NCR/NRB Attachments

	Description	Filename	Last Updated
1	ACMS email to ESOC 26 June 08	ACMS email to ESOC 26 June 08.pdf	26-JUN-08 13:36:33

Company	**Project Name**	NCR-No: HP-130000-ASED-NC-4181
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 3
		Page 1 of 10

Nonconformance Report

NCR **Title** CCS Reports no telemetry packet received

NC Item **Identification** HERSCHEL SVM,HERSCHEL SATELITE,HIFI,CCS (2 servers)

Next Higher Assembly HERSCHEL SATELITE,HERSCHEL-PLANCK COMPOSITE,HERSCHEL INSTRUMENTS AND TELESCOPE (CFE),SVM EGSE

Drawing No	Sr No.
Procedure No HP-2-ASED-TP-0197	
Supplier	Purchase Order
Subsystem	Model FM
NC Observation Date: 03-MAY-08 Location: Estec	NC Detected During Test

Description of Nonconformance Requirements Violated

29th April PACS Power ON
Whilst running Instruments FDIR OBCP procedure TP-0197, section 7.2, test step 32:
An error was signalled on TM PM020380 (DP_SPS_LINK) No telemetry packet received (telemetry parameter isn't
validated). The same problem occurred for the PM024380 (DP_SPUL_CMD) and other TM parameters.

3rd May HIFI Power ON
Investigation into this problem was done from TOPE shell, which showed that the "fetch" command returned
what appeared to be a
null value when retrieving parameters from certain packets (e.g. parameter YM004962 in packet SPID-250004962), yet a similar "fetch" was successful in retrieving parameter YM000962 in packet SPID-250000962.
Both packets and parameters were seen as received on CCS (TMPH & TQD)). The test script ALL_SubscribeParams
was running at the time.

When the script HIFIST_nom_Startup_LCU_table_load_warm was stopped and restarted, it ran successfully and
the fetch from TOPE shell also worked for parameter YM0004962. It appears that the
fetch command sometimes does not work on certain parameter/packet combinations.
SCI-PT-52009 05.06.08
Packets are received at CCS but scripts dont see them , could be CCS processor loading: High priority for Terma investigation :ASED/TASF PA to hold NRB

Update 23/08/08 by R. Vascotto (Session ID: 2008_08_19_18_25_hercdmu_hpws22_REALTIME_SPIRE_SPT):
1) weird reoccurrences after CCS cache increase, see att. #3 for details.
2) Running script ACMS_event_buffer_dump.tcl, activated by script ACMS_CONFIG25.tcl, the subscribe-packet handler recieved 2 packets in wrong order, though S/C did send all
packets in correct order (see att.#4). Possible cause: CCS too busy, an individual packet-handler-thread got
delayed causing it to release its packet too late hence being caught-up by the next packet.

Initiator: Date, Name and Signature 03-MAY-08 D.Lamonby/ R. Goossens

Cause of NC

Corrective/Preventative Action(s)

Company	Project Name	NCR-No: HP-130000-ASED-NC-4181
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 3
		Page 2 of 10

Nonconformance Report - Continuation Sheet -

HP-2-ASED-TP-0197

Verification

NCR Close Out

Close Out Status: Open Close Out Date Disposition:

Reference:

Classification

Initiator: Customer: Prime:

Internal NRB Dispositions

3rd May 2008
Participants: RG, SH, FdB

The problem first observed on 29th May recurred during the week and got progressively worse. See attachment 1 for details.

This anomaly appears to be related to NCR-3140 raised on PLANCK SVM (dated 4th April 2007 still open).
W.r.t. to NCR-3140, the CCS Mtg (ref. TER/HPCCS/MOM/0010 21st September 2007) TERMA recommended that for parameters updated only by one packet is to subscribe to that parameter in advance. In the instances that have been reported on Herschel CCS over the last week, it is confirmed that this recommendation has been implemented, however the problem still occurred.

Two similar instances to those mentioned in the NRB on 19/12/2007 for NCR-3140 have been observed.
1) A "null" value, this appears to be retrieved if there has been no previous packet received.
2) A non-"null" value is retrieved but this appears to an old value (from a previous packet). Clearly seen on Instrument CCS/IEGSE scripts as a check is made on parameter which is a timestamp for the packet. For S/C TM packets this is not so obvious but possibly seen as parameter value check failure (e.g. status parameter does not return current value but instead previous status) for instance 2), or if first packet (instance 1) then possibly the message returned as detailed in the description of this NCR (NCR4181).

NB: As part of the investigation of the problem the following steps were performed in sequence:

1)Rebooted the Herschel CCS completely
2)Run HIFI CCS/IEGSE script without subscribe parameters. Appears that "null" value returned by fetch command. Script is constantly waiting for up to date packet.
3)ALL_SubscribeParams script executed (HIFI script still running). No change in status. Manual commanding fetch parameter from TOPE at this time also retrieves "null" value.
4) HIFI script aborted and restarted. Parameters successfully retrieved and manual commanding of fetch also works.

It appeared that the reboot of the CCS had some positive effect on the problem. As S/C TM and HIFI script execution have been successful since the reboot. This should be addressed at the next NRB as a potential workaround.

Given the wide impact of this NCR on all ongoing and upcoming test on Herschel, TAS-I/TERMA support is requested to investigate and resolve this NCR urgently - AI

Classification:
Major ☒ **Minor** ☐

Customer Notification
13-AUG-08

Company	Project Name	NCR-No: HP-130000-ASED-NC-4181
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 3
		Page 3 of 10

Nonconformance Report - Continuation Sheet -

TAS-F requested to inform directly TERMA/TAS-I and the TAS-F PLANCK team about this NCR and arrange for follow on NRB on Monday May 5th, with copy to ESA/FdB.

Ref. to MoMs

	PA	Engineering			
Date:	03-MAY-08	03-MAY-08	03-MAY-08	03-MAY-08	
Name:	R. Goossens	S. Hamer	F. de Bruin	R. Goossens	
Signature:					

Customer NRB Dispositions (Class Major Only) Ref. to MoMs

Added by A Knight 6 May 2008
Inout to NRB from TERMA (AA):
Looking at the attached material for the NC (I can see it now)

It appears to be repetition of

NC 3798: EMC test debug - HIFI TM pkt reported as not received

From what I understand, this is reporting of "TM not received" is coming from instrument specific test sequences not the CCS. In the context of NC 3798 we tried to examine the test sequences but found:

- written in a way that is extremely sensitive to changes in timing of the test sequence (many explicit waittime's with explicit time, with implicit assumption that TM packet is received before parameter) therefore inherently unportable
- transferred from I-EGSE to CCS where you might expect the test sequence timing to be very different
- appears to be automatically generated / not human editable (certainly difficult to understand)
- test sequence begins with a statement "you are NOT AUTHORISED TO MODIFY THIS TEST SEQUENCE"

So we were not able to solve it. If it is the same issue, then the new NC should be closed referring to the old one
and I'm sorry but we cannot just fix these test sequences. To really solve this issue, I believe the original author
of the test sequence needs to look at making the behavriour more portable, and less vulnerable to a slight
change in the timing of arrival of packets/update of parameters (e.g. maybe using "trace" statement)

Note:
- it is NOT guaranteed that a packet or parameter update will arrive at a test sequence in a given order
(on CCS *or* I-EGSE) if these worked on I-EGSE it is just luck
- it is NOT guaranteed that test sequences working on an I-EGSE will work "out of the box" on CCS.

Of course I could be wrong, and this is a new issue, but from looking today, it appears to be the same kind of
issue, with some new test sequence names added.

Company	Project Name	NCR-No: HP-130000-ASED-NC-4181
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 3
		Page 4 of 10

Nonconformance Report - Continuation Sheet -

Rebooting solved the problem? well OK I think unlikely but if running on an otherwise completely unloaded CCS
it's possible that the timing became more similar to the I-EGSE. Certainly not a long term solution.

We have seen an issue where if a test sequence very frequently subscribes and unsubscribes to many packets,
then a packet can be missed. The workaround was to subscribe to all at start up of the sequence.

For the NRB, no problem for a teleconf, but of course we only just received the access in PRISMA.
The above quick evaluation is equivalent to what I would say in an NRB.

Request for Waiver	Alert
Yes ☐ No ☐ Reference:	Yes ☐ No ☐ Reference:

NRB Participants

Organization/
Name

Date, Signature

Company	Project Name	NCR-No: HP-130000-ASED-NC-4181
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 3
		Page 5 of 10

Nonconformance Report - Continuation Sheet -

Customer NRB Dispositions (Class Major Only) Ref. to MoMs H-P-TASF-MN-10476

From H-P-TASF-MN-10476 CCS NCR wash-up 22/05/08:

1st idea: The time for parameter access after receipt of the TM too short. This was not found to be the case.
2nd idea: Subscription to packet. Workaround tried. Does not work.
Theory: Packets are delivered to CCS not in sequential time order (delay up to 16s).
Test sequence reports no TM (as the sequence fetches the parameter) not the CCS. This is the workaround that does not work.
Potentially test sequence to be written in a different way (as the test sequence was written for instrument testing without subscription but uses fetch/subscription mechanism).
Under investigation by TERMA.

Same as 3799/3798. Ref to these NCRs to be added into this NCR
SCI-PT-52009 05.06.08
Packets are received at CCS but scripts dont see them , could be CCS processor loading:
High priority for Terma investigation :ASED/TASF PA to hold NRB

Update 7/7/08 by R. Vascotto:
1) full data package for session 2007_11_28_06_50_hercdmu_hpws23_REALTIME_ACS214 provided to TERMA via FTP. Related to

NCR 3798, to be closed in favor of this NCR.
2) NCR 3799 is closed in favor of this NCR.
3) full data package for session 2008_12_13_23_13_hercdmu_hpws22_REALTIME_SVT1_DAY8 provided to TERMA via FTP. Related to NCR 4068, already closed in favor of this NCR.

Update by D.Lamonby on 15 Jul 2008
While executing HIFIST_master_IST_nominal_warm.tcl Diplexer tuning step HIFIST_nom_IST_Init_4a_key_warm script was looping, waiting for an update of a packet/parameter from the HIFI IEGSE which had arrived on the CCS but was not seen by the script.
Executing the fetch command for the parameter concerned also failed to retrieve the latest parameter value and was reporting the value from the previous packet.
WORKAROUND FOUND (for this specific type of anomaly (IEGSE-CCS): From the Command History
save the last command sent to the IEGSE as a command stack save file. Load this file onto the manual stack save file. Load this file onto the manual stack and send it. This should then trigger the sending of an updated packet from the IEGSE which the script re-synchronises to and continues. (TO BE CONFIRMED BY SRON)

Updated 18-07-08 by BH,
SCI-PT-52586 dated 02.06.08 Participants: SRON-PR, ESA-CS,MC,JR,JH ASED-DH,SH,NS,SI TASF-
BC
Terma analysis details required . TASF/ASED to progress tech meeting with Instruments , IEGSE working group and Terma

NRB 24 July 2008
AK/SH/FC/AG/JH/AdJ/NM/EW

See actions placed

Terma believe that this is actually 2 separate issues:
1, HKTM which arrives continuously with subscribe parameters not being updated
2, HIFI commands not being sent continuous but only on demand. The TCs are sent, waits, but the packets never arrive.
It was noted that no problems have been seen during PACS or SPIRE tests.
HIFI uses larger scripts which could lead to greater load.
A possible workaround was tabled to repeat sending the TM packets (say 3 times with a 5 second delay). The NRB agreed that this was not a feasable solution at this time.
It was eventually decided to provide a patch for the CCS handler, see action c2-2 for

Company	Project Name	NCR-No: HP-130000-ASED-NC-4181
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 3
		Page 6 of 10

Nonconformance Report - Continuation Sheet -

details.
To further reduce the load on the system it was agreed to run instrument individual subscribe_param scripts during HIFI tests (see C2-7)
In parallel AIT will send further logs to Terma and Terma wil analyse the CCS limitations
(see actions).
Fianlly it was agreed that Terma will be available for on site support to this NRB on Monday 28 July 2008 during HIFI testing (AIT will inform Terma at least 1 hour before their presence is required at Estec)

Added by A Knight 7 August 2008

HIFI SPT He II PTR: H-P-TAS-TN-10704

Not seen during this test, NCR remains open pending Terma analysis.

Update 21/08/08 by R. Vascotto: actions #4,5,7,8 closed.

Update 23/08/08 by R. Vascotto: weird reoccurrences after CCS cache increase during SPIRE SPT. See att#3 for details.

Request for Waiver	Alert
Yes ☐ No ☐ Reference:	Yes ☐ No ☐ Reference:

NRB Participants	Chairman						
Organization/ Name	ASED Hendry	ESA Rautakoski	ASED Sonn	TASF Collaudin	ESA Scharmberg	SRON Dieleman	
Date, Signature	26-JUN-08	26-JUN-08	26-JUN-08	26-JUN-08	26-JUN-08	26-JUN-08	

Customer NRB Dispositions (Class Major Only) Ref. to MoMs

Update 23/08/08 by R. Vascotto: new problems, see NCR description field.

Request for Waiver	Alert
Yes ☐ No ☐ Reference:	Yes ☐ No ☐ Reference:

NRB Participants

Organization/ Name

Date, Signature

Company	Project Name	NCR-No: HP-130000-ASED-NC-4181
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 3
		Page 7 of 10

Nonconformance Report - Continuation Sheet -

Customer NRB Dispositions (Class Major Only) Ref. to MoMs

Updated by BH 02/09/09
A patch has been supplied and implemented on to the CCS by Nicholas Mecredy of Terma. See attachments 5&6 for Terma's description of the function of the patch and the report on the problem. NCR to be monitored during performed run of RMS.

Updated by J. Hall
NRB 3/9/2008 JHa/AG/SI/AK/SH/AA (Teleconf)

Subscribe_all params script is still being executed. It is unclear whether this is still required.

The only thing different was that the script took more than the usual 8 minutes, in fact it took an hour.

AA states that the process that performs delivery of parameter to test sequences EXIF_TM has a mechanism that if packets are identified as being in a backlog situation it will skip and process the latest packets (all are archived).

This is to try to ensure all MMIs are displaying latest and not old data in an overload situation.

Mechanism was turned off. Therefore SCOS does not skip and will continue processing no matter how far behind the processing falls. This would appear to be what was seen.

This could lead to system collapse, however the CCS has a lot of memory installed so should handle temporary overload situations.

It is not possible to run multiple processes to share the processing.

An option is to reduce load: have fewer packets or subscribe to fewer packets.

If there are lots of parameters being updated by many SPIDs this would also impact the processing.

A previous run of IST-START without the all_subscribe process running started OK.

Many fetch problems are identified however this could be due to the buffering of TC.

It is believed by AA that the core problem identified in 4181 has always been a problem with an overloaded situation with packets being discarded.

SI to evaluate the log to see if the backlog message was displayed.

The initial evaluation of why the all_subscribe_params process took so long to initialise shows that it is unclear why it took so long.

However, it was run in parallel to IST_START which is not usual.

Planned activities:
?? Keep the patch and redo test but do not execute the all_subscribe_parameters script.
?? Evaluate if any parameters are being updated by multiple SPIDS in the DB.

This could be performed on Friday 5/9/2008 in the morning.

Update 5/9/2008 by R. Vascotto: The patch installed on CCS 2.0-1317 for (NCR4181, TERMA bug 4711, file start_EXIF_TM) has been removed by TERMA (previous version of file restored). The patch, as noted e.g. during RMS, was not fixing the problem, and slowing down CCS data processing.

Company	Project Name	NCR-No: HP-130000-ASED-NC-4181
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 3
		Page 8 of 10

Nonconformance Report - Continuation Sheet -

Request for Waiver	Alert
Yes ☐ No ☐ Reference:	Yes ☐ No ☐ Reference:

NRB Participants

Organization/
Name

Date, Signature

Company	Project Name	NCR-No: HP-130000-ASED-NC-4181
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 3
		Page 9 of 10

Nonconformance Report - Continuation Sheet -

NCR Treatment Sequence / Findings / Statements / Actions

Int. Ref	Actionee	Due Date	Action	Conclusion / Remark	Closed
C2-2	IEGSE Working group / EW	25-JUL-08	The CCS handler shall be modified to ensure that if a TC is re-sent (from the CCS)requiring the same "chunk" then the IEGSE sends this same chunk and not the next		Yes ☐ No ☒
C2-3	HIFI / AdJ	25-JUL-08	The "patch" from action C2-2 shall be uploaded to IEGSE (for the next HIFI commissioning in He2)		Yes ☐ No ☒
C2-4	AIT / Allegretti	24-JUL-08	The additional test session logs shall be forwarded to TERMA for analysis	Action can be closed.	Yes ☒ No ☐
C2-5	AIT / Hamer	25-JUL-08	AIT shall update the all_subscribe_ params test script to add a log message when finished	Action can be closed.	Yes ☒ No ☐
C2-6	Terma / NM	25-JUL-08	Terma will perform tests to verify whether the heavy load from the all_subscribe_params can push the system beyond its limits		Yes ☐ No ☒
C2-7	AIT / Hamer	25-JUL-08	AIT will run the HIFI commissioning tests in He2 using only the individual subscribe parameter script to verify if reduced load reduces anonmaly	Action superseded, can be closed.	Yes ☒ No ☐
C2-8	Terma / NM	25-JUL-08	Terma will verify whether there is a limit to the number of parameters that can be subscribed to	Verification successful, action closed.	Yes ☒ No ☐
I0-1	R. Goossens	03-MAY-08	TAS-F is requested to inform directly TERMA/TAS-I and the TAS-F PLANCK team about this NCR and arrange for follow on NRB on Monday May 5th, with copy to ESA/FdB.		Yes ☒ No ☐

Company	Project Name	NCR-No: HP-130000-ASED-NC-4181
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 3
		Page 10 of 10

Nonconformance Report - Continuation Sheet -

NCR/NRB Attachments

	Description	Filename	Last Updated
1	Supporting info for NCR (inputs to 1st NRB)	Supporting information for NCR4181.doc	03-MAY-08 18:27:29
	Description	Filename	Last Updated
2	Previous NCR 3112 closed in favour of this 4181	Linked NCR ASP-3112.pdf	27-JUN-08 11:45:39
	Description	Filename	Last Updated
3	NCR reoccurrence	NCR4181 reoccurrence during SPIRE SPT after CCS cache increase.pdf	23-AUG-08 10:19:30
	Description	Filename	Last Updated
4	NCR4181 log of new problems	att4 to NCR4181.PDF	23-AUG-08 13:38:59
	Description	Filename	Last Updated
5	Patch function description	NCR 4181 terma patch description.pdf	02-SEP-08 15:42:58
	Description	Filename	Last Updated
6	Terma bugzilla report on problem	NCR4181 Terma bug id 4711.pdf	02-SEP-08 15:43:51

Company	**Project Name**	NCR-No: HP-111000-ASED-NC-4395
SRON	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 1 of 2

Nonconformance Report

NCR **Title** HIFI LO operational constraints in ambient	
NC Item **Identification** HIFI	
Next Higher Assembly HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)	
Drawing No	Sr No.
Procedure No	
Supplier SRON	Purchase Order
Subsystem	Model PFM
NC Observation Date: 27-JUL-08 Location: ESTEC NL	NC Detected During Analysis

Description of Nonconformance

SRON advised that for ambient testing the LO chains had been operated outside their qualification and were going to be operated outside of their qualification limits again- See attached email from SRON:
The intended operation of the LO during SFT He2 and Commissioning was therefore supressed.
NRB to be held to determine future on ground testing and constraints.

Requirements Violated

Life time

Initiator: Date, Name and Signature 31-JUL-08 Hendry

Cause of NC

Corrective/Preventative Action(s)

Verification

NCR Close Out

Close Out Status: Open

Close Out Date

Reference:

Disposition:

Internal NRB Dispositions

Customer NRB to be held to determine future LO on ground testing and constraints.
Subsystem Qualification status and ADP documentation including PA related (FMECA, Parts stress analysis,DCL, PADS,Reliability analysis,worst case analysis,CIL,Life limited Items list, etc) to be reviewed and assessed for update.

Ref. to MoMs

Classification:
Major [X] **Minor** [ ]

Customer Notification
31-JUL-08

	PA	**Engineering**	
Date:	31-JUL-08	31-JUL-08	31-JUL-08
Name:	Hendry	Idler	Hendry
Signature:			

Company	Project Name	NCR-No: HP-111000-ASED-NC-4395 Related internal NCR-No: Critical Item: Yes [X] No [ ] Revision 0 Page 2 of 2
SRON	HERSCHEL-PLANCK	

Nonconformance Report - Continuation Sheet -

NCR/NRB Attachments

	Description	Filename	Last Updated
1	SRON email on LO operational constraints	HIFI LO operations under room temperature conditions.txt	31-JUL-08 13:37:35

Company	**Project Name**	NCR-No: HP-113000-ASED-NC-4479
ESTEC	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 1 of 4

Nonconformance Report

NCR **Title**	PACS SPT He2 & SPIRE SPT He2: Cooler Hold Times
NC Item **Identification**	SPIRE,HERSCHEL SVM,HERSCHEL SATELITE,PACS
Next Higher Assembly	HERSCHEL INSTRUMENTS AND TELESCOPE (CFE),HERSCHEL SATELITE,HERSCHEL-PLANCK COMPOSITE,HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)

Drawing No	Sr No.
Procedure No	
Supplier	Purchase Order
Subsystem	Model FM
NC Observation Date: 28-AUG-08 Location: ESTEC	NC Detected During Test

Description of Nonconformance Requirements Violated

As a result of the PACS SPT He2 PTR this NCR was raised:
PACS Cooler hold time.

This is a system / onground issue (i.e. not a problem with the PACS cooler itself)

Further analysis needed.

sessionid= 2008_08_24_04_55_hercdmu_hpws22_REALTIME_PACS_HE2
&
2008_08_28_07_11_hercdmu_hpws22_REALTIME_PACS_SPT2

Same observation was noted for SPIRE Cooler during SPIRE SPT, seep attachment 1 for plot of parameter
SMK0K520 (SUBKTEMP)

CDMS=3.6.0.4
ACMS=3.8
HPSDB= Li-1441 iss 17
HPCCS=2.0-1317

17.9.2008 SPIRE ASLM#13
Possible impact on IFAR. Analysis from SPIRE required to confirm in-flight performance. Cryo conditions to be
improved for SOVT2 (HTT fill level and temperature).

18.9.2008 PACS ASLM#11
The same applies to PACS as for SPIRE.

Initiator: Date, Name and Signature 30-AUG-08 R. Goossens

Cause of NC

Corrective/Preventative Action(s)

Verification

Company	Project Name	NCR-No: HP-113000-ASED-NC-4479
ESTEC	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 2 of 4

Nonconformance Report - Continuation Sheet -

NCR Close Out

Close Out Status: Open

Close Out Date

Disposition:

Reference:

Internal NRB Dispositions

NRB to be organised

Added by A Knight 18 September 2008

SPIRE ASL SCI-PT-53147

Possible Impact on IFAR, Spire
Analysis required to confirm in flight performance, also cryo conditions (fill lavel and HTT temperature) to be improved for SOVT2 to achieve longer hold time

18.9.2008 PACS ASLM#11
The same applies to PACS as for SPIRE.

23.9.2008. ESA: J. Rautakoski, M. Cesa, C. Scharmberg. ASED: S. Ilsen, A. Koppe. ESAC: I. Valtchanov. PACS: H. Feuchtgruber. SPIRE: S. Sidher. E. Sawyer.
Analysis ongoing.

Ref. to MoMs

Classification:
Major ☒ **Minor** ☐

Customer Notification

Date:
Name:
Signature:

Company	Project Name	NCR-No: HP-113000-ASED-NC-4479
ESTEC	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 3 of 4

Nonconformance Report - Continuation Sheet -

NCR Treatment Sequence / Findings / Statements / Actions

Int. Ref	Actionee	Due Date	Action	Conclusion / Remark	Closed
I0-1	SPIRE / RAL	14-OCT-08	Spire Analysis required to confirm in flight performance		Yes ☐ No ☒

Int. Ref	Actionee	Due Date	Action	Conclusion / Remark	Closed
I0-2	Cryo Team	14-OCT-08	cryo conditions (fill level and HTT temperature) to be improved for SOVT2 to achieve longer hold time		Yes ☐ No ☒

Int. Ref	Actionee	Due Date	Action	Conclusion / Remark	Closed
I0-3	PACS / MPE	15-OCT-08	PACS Analysis required to confirm in flight performance		Yes ☐ No ☒

Company	Project Name	NCR-No: HP-113000-ASED-NC-4479
ESTEC	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 4 of 4

Nonconformance Report - Continuation Sheet -

NCR/NRB Attachments

	Description	Filename	Last Updated
1	Spire cooler hold time	Spire cooler hold time.jpg	05-SEP-08 12:19:17

Company	**Project Name**	NCR-No: HP-130000-ASED-NC-4483
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 1 of 4

Nonconformance Report

NCR **Title** SPIRE MTL - Biasing parameters wrong for transition to PHOTSTBY	
NC Item **Identification** HERSCHEL SVM,SPIRE	
Next Higher Assembly HERSCHEL SATELITE,HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)	
Drawing No	Sr No.
Procedure No	
Supplier	Purchase Order
Subsystem	Model FM
NC Observation Date: 02-SEP-08 Location: ESTEC	NC Detected During Analysis

Description of Nonconformance Requirements Violated

Problem identified in the RMS MTL for SPIRE: biasing parameters are wrong for transition to PHOTSTBY.

This affects the MTL test script supplied by TAS-F:
MTL_tclgen37_H_IST1_MTL_D346_347_20080801_v01_SEG004_800_end_M.tcl

Only the default bias parameters are applied, which will not allow for meaningful results from RMS/SOVT tests.

Test script to be updated to include additional commands (4) to assert the correct biasing.

Initiator: Date, Name and Signature 02-SEP-08 Vascotto/Hamer

Cause of NC

Corrective/Preventative Action(s)

Verification

NCR Close Out

Close Out Status: Open Close Out Date

Reference:

Disposition:
Modify

Internal NRB Dispositions

To be held 2/9/08 20:00 tbc.

Update 2/09/08 19:15 by RV: new MTL (delivered by RAL) has been verified (see att. 2 and 3) is updated on the CCS and checked in wrt to the NCR.

Added by A Knight
NRB 2 September 2008 @ 21:00
AK/SIIs/AG/SM/DL/TR/SS
A consistency check was successfully performed on the MTL updated with the SPIRE additional commands (see attached).
The attached difference file of the updated MTL shows that the only difference between the original MTL and the new file are the 4 commands provided by SPIRE (i.e. as expected).

Classification:
Major [X] **Minor** [ ]

Customer Notification
02-SEP-08

Company	Project Name	NCR-No: HP-130000-ASED-NC-4483
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 2 of 4

Nonconformance Report - Continuation Sheet -

(RAL / SS noted that the 4 new commands are inserted at a time when no other commanding is taking place).
The NRB agrees that the new MTL can be uploaded i.a.w the RMS planning (at around 04:00 3 Spet 2008) and the RMS may proceed as planned.

The updates will be verified / NCR closed by the RMS test

Added by A Knight 18 September 2008

SPIRE ASL SCI-PT-53147

Scripts to be updated for TB/TV
problem understood.

Ref. to MoMs

Date:
Name:
Signature:

Company	Project Name	NCR-No: HP-130000-ASED-NC-4483
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 3 of 4

Nonconformance Report - Continuation Sheet -

NCR Treatment Sequence / Findings / Statements / Actions

Int. Ref	Actionee	Due Date	Action	Conclusion / Remark	Closed
I0-1	SPIRE / RAL	14-OCT-08	Scripts to be updated for TB/TV		Yes [ ] No [X]

Company	Project Name	NCR-No: HP-130000-ASED-NC-4483
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 4 of 4

Nonconformance Report - Continuation Sheet -

NCR/NRB Attachments

	Description	Filename	Last Updated
1	RAL input for MTL correction	Input from RAL.pdf	02-SEP-08 18:35:54

	Description	Filename	Last Updated
2	new MTL checked	consistency check + differences with previous version.PDF	02-SEP-08 19:25:26

Company	**Project Name**	NCR-No: HP-ASED-130000-NC--4484
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 1 of 2

Nonconformance Report

NCR **Title** MTL Upload Script will not run

NC Item **Identification** HERSCHEL SVM

Next Higher Assembly HERSCHEL SATELITE

Drawing No	Sr No.
Procedure No	
Supplier	Purchase Order
Subsystem	Model FM

NC Observation Date: 03-SEP-08 Location: ESTEC	NC Detected During Test

Description of Nonconformance Requirements Violated

Test: RMS
Procedure: Herschel Satellite IST - Reference Mission Scenario.
Procedure No:HP-2-ASED-TP-0193 iss:1.0
Test Step: 540 Time: 05:35

MTL Upload 345-346 failed on TC DCT18170
TC send does not allow comments which are contained within line # 315

Update by D.Lamonby on 03-09-2008
MTL Upload 346-347 failed.
TC send does not allow comments within a number of command lines (approx 20-off) within the script.

Update by R. Goossens on 04-09-2008
Another problem is seen in the dummy MTL file. Different commands DC140160 at the end of the dummy were
rejected. They are not inline with CDMS 3.6.0.4.

Session i.d. 2009_05_17_23_24_hercdmu_hpws22_REALTIME_RMS_1
CDMS=3.6.0.4
ACMS=3.8
HPSDB= Li-1441 iss 17
HPCCS=2.0-1317

Initiator: Date, Name and Signature 03-SEP-08 D.Lamonby.

Cause of NC

Corrective/Preventative Action(s)

Verification

NCR Close Out		
Close Out Status: Open	Close Out Date	Disposition:
Reference:		Fix

Company	**Project Name**	NCR-No: HP-ASED-130000-NC--4484
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 2 of 2

Nonconformance Report - Continuation Sheet -

Internal NRB Dispositions

Added by A Knight 3 September 2008:

Notification S Ilsen to F Chatte:

During the MTL upload during the RMS we found a TCL/TOPE problem in 3 MTL files. It concerns the files that contain the command DCT18170. (345_346; 346_347; 347_348)

In the last delivery you changed a parameter in this command. The problem is that you have commented out the old parameter. TOPE does not allow this. There cannot be a comment inside a tcsend command.

I have removed it from all files an online patched it onto the CCS session. Upload went OK after that.

Ref. to MoMs

Classification:

Major ☐ **Minor** ☒

Customer Notification

03-SEP-08

Date:
Name:
Signature:

Company	**Project Name**	NCR-No: HP-ASED-130000-NC--4485
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 1 of 2

Nonconformance Report

NCR **Title** Time Sync on TM DFE Causing Missing Frames at ESOC.	
NC Item **Identification** HERSCHEL SVM	
Next Higher Assembly HERSCHEL SATELITE	
Drawing No	Sr No.
Procedure No	
Supplier	Purchase Order
Subsystem	Model FM
NC Observation Date: 03-SEP-08 Location: ESTEC	NC Detected During Test

Description of Nonconformance Requirements Violated

Test: RMS
Procedure: Herschel Satellite IST - Reference Mission Scenario.
Procedure No:HP-2-ASED-TP-0193 iss:1.0

Time Sync on TM DFE causing ESOC to see missing frames on the NDIU.
This happens every minute and this is consistent between the time synchronisation of DFE and CCS.
As a work-around, we stopped the time synchronisation before each DTCP and re-started it after each DTCP.

This is applicable to SOVT as well as RMS.

Session i.d. 2009_05_17_23_24_hercdmu_hpws22_REALTIME_RMS_1
CDMS=3.6.0.4
ACMS=3.8
HPSDB= Li-1441 iss 17
HPCCS=2.0-1317

Initiator: Date, Name and Signature 03-SEP-08 D.Lamonby.

Cause of NC

Corrective/Preventative Action(s)

Verification

NCR Close Out		
Close Out Status: Open	Close Out Date	Disposition:
Reference:		Fix

Company	**Project Name**	NCR-No: HP-ASED-130000-NC--4485
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 2 of 2

Nonconformance Report - Continuation Sheet -

Internal NRB Dispositions	Classification:
NRB to be organised.	**Major** ☒ **Minor** ☐
Ref. to MoMs	Customer Notification
	03-SEP-08

Date:
Name:
Signature:

Company	**Project Name**	NCR-No: HP-3A2110-ASED-NC-4487
TERMA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 1 of 3

Nonconformance Report

NCR **Title** CCS communication errors during IST RMS dry run

NC Item **Identification** CCS (2 servers),HERSCHEL SVM

Next Higher Assembly SVM EGSE,HERSCHEL SATELITE

Drawing No	Sr No.
Procedure No	
Supplier	Purchase Order
Subsystem	Model NA(GSE)

NC Observation
Date: 03-SEP-08 Location: ESTEC

NC Detected During Test

Description of Nonconformance

Requirements Violated

Errors reported on HPWS22 and other workstations (full list of errors can be found in the session log file, to be attached).
HFAretEV failed. Restarted manually.
Following this, many messages were generated on three workstations (21, 22 & 24) that there were Communication Error Reported from TM cache.
A.Armitage (Terma) recommended to leave the test session on the affected workstations and then rejoin, without leaving HPCCS.
This was performed on WS 21 & 24 successfully, and the error messages stopped. During this re-joining the RMS
test was kept under control via WS22.
Leaving and re-joining the session on WS22 would have resulted in all test scripts being stopped. Prior to this action an analysis was performed to ensure that the scripts could be restarted without affecting the overall RMS test.
Before this analysis was completed, the error messages on WS22 also stopped (by themselves).
WS22 was therefore not restarted.
Note: no error messages were seen on WS23 at any time.

About 12 minutes before the problem occurred, an HPCCS server alarm sound occurred during the split of the
CCS archive. Many error messages were displayed that files could not be generated.
Eventually, these messages stopped and a final message was displayed that the archive split was successful.
Checking the test session directory it could be seen that the pre-split archives were stored in an ?old? directory and new archive files were being generated as expected.
Possible correlation between the two events shall be investigated.

Update by D.Lamonby on 04_09_2008
System reported CdmuBsw Event 5,4. VC1 queue full.
VC1 overflow (1 overflow reported) See attachment 4487_1

Initiator: Date, Name and Signature 03-SEP-08 Vascotto/Luck

Cause of NC

Corrective/Preventative Action(s)

Verification

Company	**Project Name**	NCR-No: HP-3A2110-ASED-NC-4487
TERMA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 2 of 3

Nonconformance Report - Continuation Sheet -

NCR Close Out

Close Out Status: Open

Close Out Date

Disposition:

Reference:

Internal NRB Dispositions

To be held with TERMA on 5/9/2008.

Ref. to MoMs

Classification:

Major [X] **Minor** [ ]

Customer Notification

03-SEP-08

Date:
Name:
Signature:

Company	Project Name	NCR-No: HP-3A2110-ASED-NC-4487
TERMA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 3 of 3

Nonconformance Report - Continuation Sheet -

NCR/NRB Attachments

	Description	Filename	Last Updated
1	4487_1	NC4487_lostOfTMs.txt	04-SEP-08 01:02:59

Company	**Project Name**	NCR-No: HP-100000-ASED-NC-4488
ESTEC	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 1 of 3

Nonconformance Report

NCR **Title** IST RMS SPIRE PUMP HEATER SWITCH UNEXPECTED Switch OFF

NC Item **Identification** HERSCHEL INSTRUMENTS AND TELESCOPE (CFE),SPIRE,HERSCHEL SATELITE

Next Higher Assembly HERSCHEL SATELITE,HERSCHEL INSTRUMENTS AND TELESCOPE (CFE),HERSCHEL-PLANCK COMPOSITE

Drawing No	Sr No.
Procedure No	
Supplier	Purchase Order
Subsystem	Model FM

NC Observation Date: 04-SEP-08 Location: estec	NC Detected During Test

Description of Nonconformance Requirements Violated

During formal run of IST RMS an unexpected pump heat switch was switched OFF at the end of the cooler cycle.

Manual Cmd was sent to switch back on the pump heat switch.
SPIRE_SEND_DRCU_COMMAND(0xA0c40A2A,0)
The current for the switch appears to be lower than expected as informed by SPIRE.

Sess ID: 2009_05_17_23_24_hercdmu_hpws22_REALTIME_RMS_1
TAG: IST1_PART2_TP_0193_iss1_RMS_END_001

CDMS 3.6.0.4
ACMS 3.8
H-P-2-ASP-LI-1441 issue 17
HPCCS_2.0-1317

17.9.2008 SPIRE ASLM#13
SPIRE to update cooler recycling parameters (parameter M Pump Temp Threshold) in MTL and test scripts, before
TBTV test.

Initiator: Date, Name and Signature 04-SEP-08 B. Hogg

Cause of NC

Corrective/Preventative Action(s)

Verification

NCR Close Out Close Out Status: Open Reference:	Close Out Date	Disposition:

Company	**Project Name**	NCR-No: HP-100000-ASED-NC-4488
ESTEC	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 2 of 3

Nonconformance Report - Continuation Sheet -

Internal NRB Dispositions

For information, NRB to be arranged

Added by A Knight 18 September 2008

SPIRE ASL SCI-PT-53147

Spire to update cmd parameter M (pump temperatue threshold in cooler recycling VM, MTL and scripts to be updated for TB/TV.

Ref. to MoMs

Classification:
Major [X] **Minor** [ ]

Customer Notification
04-SEP-08

Date:
Name:
Signature:

Company	Project Name	NCR-No: HP-100000-ASED-NC-4488
ESTEC	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 3 of 3

Nonconformance Report - Continuation Sheet -

NCR Treatment Sequence / Findings / Statements / Actions

Int. Ref	Actionee	Due Date	Action	Conclusion / Remark	Closed
I0-1	SPIRE / RAL	14-OCT-08	Spire to update cmd parameter M (pump temperatue threshold in cooler recycling VM, MTL and scripts to be updated for TB/TV.		Yes [ ] No [X]

Company	**Project Name**	NCR-No: HP-100000-ASED-NC-4491
ASTRIUM	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 1 of 3

Nonconformance Report

NCR **Title** IST RMS - Loss of SC TLM due to TMTC SCOE Crash

NC Item **Identification** HERSCHEL GSE AND MTD,HERSCHELS-C EGSE,S-C TM-TC Front end,HERSCHEL SATELITE

Next Higher Assembly HERSCHEL SATELITE,HERSCHEL S-C GSE,HERSCHELS-C EGSE,HERSCHEL-PLANCK COMPOSITE

Drawing No	Sr No.
Procedure No	
Supplier	Purchase Order
Subsystem	Model FM

NC Observation Date: 05-SEP-08 Location: ESTEC	NC Detected During Test

Description of Nonconformance Requirements Violated

During the mass memory dumping during the end of the formal run of IST RMS it was observed that there was a
loss of SC TLM. On inspection of the CDMU DFE several errors were reported, please see attachment 1 for
screen shot of errors.

The TMTC Scoe and CDMU DFE incl Bus Monitor were rebooted and SC TLM was re-established.

Status of SC after recovery of TLM was healthy.

The loss of TLM was a duration of 1.5hrs.

Time of loss of TLM 09:11 regained at 10:40.

Sess ID: 2009_05_17_23_24_hercdmu_hpws22_REALTIME_RMS_1
TAG: IST1_PART2_TP_0193_iss1_RMS_END_001

CDMS 3.6.0.4
ACMS 3.8
H-P-2-ASP-LI-1441 issue 17
HPCCS_2.0-1317

Initiator: Date, Name and Signature 05-SEP-08 B. Hogg

Cause of NC

Corrective/Preventative Action(s)

Verification

NCR Close Out Close Out Status: Open Reference:	Close Out Date	Disposition:

Company	**Project Name**	NCR-No: HP-100000-ASED-NC-4491
ASTRIUM	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 2 of 3

Nonconformance Report - Continuation Sheet -

Internal NRB Dispositions	Classification:
For Notification NRB to be arranged	**Major** [X] **Minor** [ ]
Ref. to MoMs	Customer Notification 05-SEP-08

Date:
Name:
Signature:

Company	Project Name	NCR-No: HP-100000-ASED-NC-4491
ASTRIUM	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 3 of 3

Nonconformance Report - Continuation Sheet -

NCR/NRB Attachments

	Description	Filename	Last Updated
1	TMTC DFE crash reported errors	05092008_ERROR_CMS_processor.bmp	05-SEP-08 09:48:35

Company	**Project Name**	NCR-No: HP-130000-ASED-NC-4495
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 1 of 3

Nonconformance Report

NCR **Title** IST RMS - SPIRE jiggle map observations failed	
NC Item **Identification** HERSCHEL SVM,SPIRE Digital Processing Unit	
Next Higher Assembly HERSCHEL SATELITE,SPIRE warm units	
Drawing No	Sr No.
Procedure No	
Supplier	Purchase Order
Subsystem	Model FM
NC Observation Date: 07-SEP-08 Location: ESTEC	NC Detected During Analysis

Description of Nonconformance Requirements Violated

During RMS test:
SPIRE: The 7-point and 64-point jiggle map observations failed because of a bug in the OBS (version 2.2.H). A
patch to the jiggle map table has been prepared and will be tested on the AVM before delivery. Should be correct in next version of DPU Software

17.9.2008 SPIRE ASLM#13
Will be corrected in the next DPU SW, needed by TBTV tests.

Initiator: Date, Name and Signature 07-SEP-08 Vascotto

Cause of NC

Corrective/Preventative Action(s)

Verification

NCR Close Out		
Close Out Status: Open	Close Out Date	Disposition:
Reference:		Fix

Company	**Project Name**	NCR-No: HP-130000-ASED-NC-4495
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 2 of 3

Nonconformance Report - Continuation Sheet -

Internal NRB Dispositions

Added by A Knight 18 September 2008

SPIRE ASL SCI-PT-53147

SPIRE to fix in new DPU sw

Ref. to MoMs

Classification:
Major [X] **Minor** [ ]

Customer Notification
07-SEP-08

Date:
Name:
Signature:

Company	Project Name	NCR-No: HP-130000-ASED-NC-4495
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 3 of 3

Nonconformance Report - Continuation Sheet -

NCR Treatment Sequence / Findings / Statements / Actions

Int. Ref	Actionee	Due Date	Action	Conclusion / Remark	Closed
I0-1	SPIRE / RAL	14-OCT-08	RAL to update DPU OBSW by TB/TV		Yes [ ] No [X]

Company	**Project Name**	NCR-No: HP-130000-ASED-NC-4496
SAAB	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 1 of 3

Nonconformance Report

NCR **Title** IST RMS - Anomalous RWL values after bias

NC Item **Identification** ACMS BSW HERSCHEL,HERSCHEL SVM

Next Higher Assembly ACMS BSW,HERSCHEL SATELITE

Drawing No	Sr No.
Procedure No HP-2-ASED-TP-0193	
Supplier	Purchase Order
Subsystem	Model FM

NC Observation Date: 02-SEP-08 Location: ESTEC	NC Detected During Test

Description of Nonconformance Requirements Violated

During RMS test:

DTCP1: DTCP1 RWL commanding. Comparing result at end of new RWL bias values comparing value to 10.7 Nms.
(recovered via PVS 16).

Investigation by Gottlob Gienger ESOC Flight Dynamics 2008-09-08:
1. Attachment RMS_RWB_0445.txt added
2. RWB was planned at 2009-05-18T08:35:00Z
3. According to industry plots, RWB was executed at 2008-09-03T04:35 local time
4. However there was a TM drop from 04:33 local time to 04:38 local time (instantaneous drop to zero speeds)
5. After the TM drop, industry plots show an exponential approach from zero to steady state RW speeds, which
appears to be an artefact
6. The final wheel speeds in the plot provided by industry deviate only by about 5 radian/s from the predictions in the attachment, ie. difference in angular momentum ~0.5 Nms, which is completely normal.

Results show 2 at approx 9Nms and 2 at approx -9Nms. Should be notified to ESOC for SOVT but does not impact
the test.

Initiator: Date, Name and Signature 07-SEP-08 Vascotto

Cause of NC

Corrective/Preventative Action(s)

Verification

NCR Close Out Close Out Status: Open Reference:	Close Out Date	Disposition:

Company	**Project Name**	NCR-No: HP-130000-ASED-NC-4496
SAAB	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 2 of 3

Nonconformance Report - Continuation Sheet -

Internal NRB Dispositions	Classification:
To be held	**Major** [X] **Minor** [ ]
Ref. to MoMs	Customer Notification
	07-SEP-08

Date:
Name:
Signature:

Company	Project Name	NCR-No: HP-130000-ASED-NC-4496
SAAB	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 3 of 3

Nonconformance Report - Continuation Sheet -

NCR/NRB Attachments

	Description	Filename	Last Updated
1	Extract FD EPOS and RW predictions OD 445	RMS_RWB_0445.txt	08-SEP-08 15:07:54

Company	**Project Name**	NCR-No: HP-130000-ASED-NC-4497
ESTEC	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 1 of 2

Nonconformance Report

NCR **Title** IST RMS - PACS command not executed

NC Item **Identification** PACS,HERSCHEL SVM,PACS DEC-MEC

Next Higher Assembly HERSCHEL INSTRUMENTS AND TELESCOPE (CFE),HERSCHEL SATELITE,PACS warm units

Drawing No	Sr No.
Procedure No HP-2-ASED-TP-0139	
Supplier	Purchase Order
Subsystem	Model FM
NC Observation Date: 05-SEP-08 Location: ESTEC	NC Detected During Test

Description of Nonconformance Requirements Violated

During RMS test:

PACS for 02.52.49.078 (MTL time, day 139) with code 775 (0x307) which according to DMC User Manual means
ERR_SEQUENCER_COULD_NOT_EXECUTE_COMMAND to be raised.

This appeared to have no subsequent affects on the test.

This may occur during SOVT but the loss of 1 observation has no major impact on test execution.

This has reoccurred during SOVT OD1.

18.9.2008 PACS ASLM#11
Nominal only affected. PACS is investigating to localise fault, probable HW failure BOLC WIH or DECMEC.
Dedicated NRB to be arranged after PACS failure investigation. NRB in week 41/2008 (TBC).

Initiator: Date, Name and Signature 07-SEP-08 Vascotto

Cause of NC

Corrective/Preventative Action(s)

Verification

NCR Close Out

Close Out Status: Open Close Out Date

Reference:

Disposition:
Fix

Company	**Project Name**	NCR-No: HP-130000-ASED-NC-4497
ESTEC	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 2 of 2

Nonconformance Report - Continuation Sheet -

Internal NRB Dispositions	Classification:
PACS to investigate	**Major** ☒ **Minor** ☐
Ref. to MoMs	Customer Notification
	07-SEP-08

Date:
Name:
Signature:

Company	**Project Name**	NCR-No: HP-130000-ASED-NC-4498
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 1 of 2

Nonconformance Report

NCR **Title** IST RMS - S/C attitude jumps reported by star tracker

NC Item **Identification** HERSCHEL SVM

Next Higher Assembly HERSCHEL SATELITE

Drawing No | Sr No.

Procedure No HP-2-ASED-TP-0193

Supplier | Purchase Order

Subsystem | Model FM

NC Observation
Date: 05-SEP-08 Location: ESTEC

NC Detected During Test

Description of Nonconformance Requirements Violated

During RMS test, Day 138 at 04:54.

In SCM Tracking. RWL are acting normally but there appears to be an attitude problem (as reported by the star
tracker). The reported attitude freezes for 20 seconds. Then attitude jumps. Could be a star tracker issue.
Does not impact the test.

This may occur during SOVT.

Initiator: Date, Name and Signature 07-SEP-08 Vascotto

Cause of NC

Corrective/Preventative Action(s)

Verification

NCR Close Out
Close Out Status: Open Close Out Date

Reference:

Disposition:

Internal NRB Dispositions

To be investigated

Ref. to MoMs

Classification:
Major [X] **Minor** [ ]

Customer Notification
07-SEP-08

Date:
Name:
Signature:

Company	Project Name	NCR-No: HP-130000-ASED-NC-4498
ALENIA	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 2 of 2

Nonconformance Report - Continuation Sheet -

Attachment 1 to Section 6.7:

As-Run Procedure: HP-2-ASED-TP-0134 Issue 6.0 - Herschel Integrated Satellite Test Leading Procedure

"As-Run" Master in Red

Title: **Leading Procedure for Herschel Integrated Satellite Test**

Session i.d: 2009_05_17_23_24_hscdmu_hpws22_REALTIME_RMS_1

TAG: IST1_PART2_TP_0193_ISS1_RMS_END_001

CI-No:

Prepared by:	Functional Team	Date: 25/08/08
Checked by:	C. Much	27/8/2008
Product Assurance:	J. Hall	27/8/2008
Configuration Control:	W. Wietbrock	29.08.2008
TASF Engineering	F. Chatte	27/08/2008
TASF Test Director	S. Mooney	27/8/2008
Project Management:	Dr. W. Fricke	27/08/2008
Project Management	Denis Montet	27/08/08

Distribution: See Distribution List (last page)

Change Record:

Issue	Date	Sheet	Description of Change	Release
1	11.01.2008		Initial version	1
1.1	04.02.2008		- see change bar	
1.2	27.02.2008		Update IST START step description according to AS RUN procedures, Add Operator note in Annex D, Add IST_GUI pictures, Update Hierarchy Script	
2.0	11.03.2008		5.4.3.1 Add CCS Light in EGSE Hardware Configuration 7.1.2 change all RFDN SM values from BBBB to ABBB (See procedure variations) 7.1.2 change value of "Bat.SCOE in table for launch clean run 7.1.2 change value of "TTR in SM" in table for "FDIR" and "Nom mode Robustness" 7.1.2 Correct SSMM configuration for ACMS commissioning 7.1.3 Step 1 add script name 7.1.3 Step 2 describe how to open window 7.1.3 Step 4 additional remark N/A for "Launch Clean Run" 7.1.3 Step 5 additional remark N/A for "Launch Clean Run" 7.1.3 Step 7 additional remark N/A for "Launch Clean Run" 7.1.3 Move Step 7b as 9b 7.1.3 Step 8-9 appears always (not only for launch cases) 7.1.3 step 20 add Operator Note 11 reference 7.1.3 step 22 deleted 7.1.3 step 23 added "Satellite state displayed" 7.1.3 step 29 remark deleted 7.1.3 step 33-34 Remark moved from step 34 to step 33 7.1.3 step 39 additional remark 7.1.4.1 step 9 add SPR 282 7.1.4.2 step 4 correct script name 7.1.4.2 step 5-6-7 clarify N/A 7.1.4.2 step 8 move remark to step 10 7.1.4.2 step 10 add SPR and NCR and expected TM(5,1) 7.1.4.2 step 13 add PM_reset TC Not Acknowledged 7.3 step 2 change YES to Confirm	

			7.3 step 2 add "RWL ON" condition 7.3 step 5 correct typo 7.3 step 7 add out of limit comment 7.3 add step 12a 7.3 remove step24 7.3 move step21 after WRITE_CROME step 23 7.3.1 4th Step 31 Add event TM(5,1) expected during ACC OFF Annex D add Operator Note 11 Rename Chapter 7 as IST Test Create new subchapters 7.1 HPCCS configuration for IST Test 7.1.1 Apply Tag on test files	
3	17.04.08		Update IST START procedure according to the AS RUN procedure for Nominal Mode Robstness (minor changes), 4.3.1 & 4.3.2 to include SCOE Sk01J04 and to correct hcu connector ident Typo's 7.2.1 Insert IST Start overview test flow diagram 7.2.2 update table 5.8.12 Nom Mode Robustness table to be i.a.w. the IST Specification	
4	24.04.08		Update IST START procedure according to the AS RUN procedure for minor updates, Include step 21 in Section 7.2.4 - start a CCU log file to monitor temperature TLM's	
5	24.07.08		Update IST START procedure according to the AS RUN procedure for minor updates, Step added to startup a session on the CCS Lite Including Annex E to adjust CCS Time.	
5.1	24.08.08		Configuration Table update for Test Case 5.8.4.6 IST GUI Picture update Annex E – User logon change (su now root)	

Table of Content

Table of Figures

None

List of Tables

1 Scope

This Test Procedure contains the overall IST start-up and shutdown procedures for the satellite covering all the defined test cases as well as being the entry point for calling the appropriate test configuration.

It also contains the supporting definition of the relevant supporting infrastructure and pre test conditions required for the IST tests to be performed correctly.

All pre-requisites for the Helium II procedures shall be incorporated into a future issue of this document.

1.1 Objective

This document is the entry point for the Integrated Satellite Test - IST - test cases to be executed as part of the overall IST campaign for the Herschel project.

This document shall act as the leading procedure, to become 'as run' procedure for each IST test case that is executed, and shall be identified on the front sheet in 'Red' before start of test. A new 'as run' copy of the procedure shall be used for each test run, and will become a accurate history of the test performed. All activities will be recorded, with results obtained. Any anomalies found will be noted in the step by step section as they arise, and where applicable an SPR (Software Problem reports) will be raised.

The identification of hazardous conditions associated with the test article and the operations, which might damage equipment, cause injury or invalidate test data, will be herein provided. Precautions to be observed, with correlation to the specific areas of applicability, will be provided as well in the descriptions of the test set-up to be adopted.

1.2 Flow

The test flow is divided into two main areas: IST1 pre-environmental testing and IST2 which will be performed post environmental testing. For IST1 the tests will be grouped into 3 main test groups: Warm Case, He I, and He II condition. (See list below). For IST2 all testing shall be performed in He II condition.

IST 1

- **Warm case**
  - Launch clean run
  - Launch phase, separation and post separation
  - Satellite Commissioning warm case
  - ACMS commissioning
  - Launch sequence robustness
  - Mode transitions Warm case

- **He I**
  - Mode transitions He I or He II
  - S/C reconfiguration
  - NOM mode robustness
  - Test of Instrument FDIR OBCP

- **He II**
  - Instruments commissioning and performance verification
  - CDMS management
  - DTCP worst case scenario
  - Satellite/ CCU Commissioning He II only
  - Reference Mission Scenario

IST 2

All tests will be performed in He II

Tests may be run in any order

2 Documents

2.1 Applicable Documents

This section contains the list of documents originator of the test procedure, the list of documents filled with the requirement applicable to the activities explained in this procedure, the list of documents used to define the activities on the items (like design reports)

AD 2.1.1 Herschel Integrated Satellite Test Specification H-P-2-ASP-0939

2.2 Reference Documents

This section contains a list of documents filled with statements necessary to organise and to detail the operative execution of the test activities

RD 2.2.1.a.	Herschel/Planck Reference Mission Scenario	SCI-PT-12759
RD 2.2.1.b.	H/P ACMS S/S AVM SIT Specification	H-P-SP-AI-0059
RD 2.2.1.c.	H CDMS SIT Specification	H-P-SP-AI-0065
RD 2.2.1.d.	H TT&C SIT Specification	H-P-SP-AI-0078
RD 2.2.1.e.	H PCS SIT Specification	H-P-SP-AI-0079
RD 2.2.1.f.	Packet Store Usage on H/P	PT-CMOC-OPS-TN-6603
RD 2.2.1.g.	Software user's Manual	P-HPL-NOT-0029-SE
RD 2.2.1.h.	CDMU ASW Requirement Specification	H-P-SP-AI-0031
RD 2.2.1.l.	Basic Software Requirement Specification	H-P-SP-AI-0006
RD 2.2.1.m.	H/P ACMS Requirement Specification	H-P-SP-AI-0011
RD 2.2.1.n.	SVM FDIR Design Specification	H-P-TN-AI-0024
RD 2.2.1.o.	Herschel Planck PSICD	SCI-PT-ICD-07527
RD 2.2.1.p.	H-P-CDMU ASW User Manual	H-P-4-SSF-MA-0001
RD 2.2.1.q.	H-P ACMS Design Report	H-P-4-DS-TN-0011
RD 2.2.1.r.	H-P ACMS TC Definition	H-P-4-DS-TN-0024
RD 2.2.1.s.	ACMS FDIR Analysis Report	H-P-4-DS-TN-0010
RD 2.2.1.t.	CDMU HW User Manual	P-HPL-NOT-0009

2.3 Other Documents

Additional to the IST Leading procedure there are the Step by Step IST procedure for each test case and a separate Instrument Power ON/OFF Switching procedure (see the table below).

IST Step by Step Test Procedures	HP-2-ASED-	Test to be performed
Herschel IST Test Case 'Launch Phase, Separation and Post Separation'	TP-0185	
Herschel IST Test Case 'Satellite Commissioning'	TP-0186	
Herschel IST Test Case 'ACMS Commissioning'	TP-0187	
Herschel IST Test Case 'Instruments Commissioning and Performance Verification'	TP-0188	
Herschel IST Test Case 'Mode Transitions'	TP-0189	
Herschel IST Test Case 'S/C Reconfiguration'	TP-0190	
Herschel IST Test Case 'CDMS Management'	TP-0191	
Herschel IST Test Case 'DTCP Worst Case Scenario'	TP-0192	
Herschel IST Test Case 'REFERENCE Mission Scenario'	TP-0193	
Herschel IST Test Case 'Launch Clean Run'	TP-0194	
Herschel IST Test Case 'Launch Sequence Robustness'	TP-0195	
Herschel IST Test Case 'NOM Mode Robustness'	TP-0196	
Herschel IST Test Case 'Test of Instrument FDIR OBCP'	TP-0197	
Herschel Instrument Power On/Off and Mode Switching Procedure for Functional Testing	TP-0206	

3 Requirements to be verified

See AD 2.1.1 "Herschel Integrated Satellite Test Specification" section 9

4 Configuration

4.1 Hardware Configuration

The activities described in this test procedure require the complete system configuration according to the hardware matrix here below reported.

S/S	Unit	Configuration	SCOE simulated equipments	Remarks
		Herschel		
EGSE	CCS	1		
	CCS lite	1		
	TM/TC DFE	1		
	CDMU SCOE	1		
	ACMS SCOE	1		
	TT&C SCOE	1		
	POWER SCOE	1		
	CCU SCOE			
IGSE	**HIFI IGSE**	1		
	PACS IGSE	1		
	SPIRE IGSE	1		
PCS	PCDU	1+1		
	Battery	1 Installed. Only connected for Launch clean run	1	Battery Simulation for other tests
	Solar Array	30 nom sections not required for IST	1	Power SCOE
CDMS	CDMU	1+1		
ACMS	ACC	1+1		
	RWA	3+1		
	GYRO	3+1		
	STR	2		
	CRS	2		
	AAD	1+1 internal red		
	SAS	2+2 internal red		
TT&C	XPND	2		
	TWT	2		
	EPC	2		
	LGA	2 (not used during the IST)		

S/S	Unit	Configuration	SCOE simulated equipments	Remarks
	MGA	1 (not used during the IST)		
RCS		1+1 (not used during the IST)		ACMS SCOE
TCS		1 (partially installed)		
VMC		1		
SREM		1		
HIFI		1		
PACS		1		
SPIRE		1		
Telescope		1		
HSS		1		

Table 1: Satellite configuration required for IST

4.2 SW Configuration

The Satellite IST will be run with the on-board software configuration as detailed in the IST TRR.

The actual configuration of the software should be noted here to ensure correct system status

- CDMS OBSW: _____
- ACMS OBSW: _____
- STR PROM SW: _____
- STR EEPROM SW: _____
- PACS DPU SW: _____
- PACS SPU SW: _____
- PACS DMC SW: _____
- HIFI ICU SW: _____
- SPIRE DPU SW: _____

4.3 SCOE Cables Connection

For the IST there are four different SCOE cables configuration.

- Configuration 1 for "Nominal Launch" and "RMS" see 4.3.1
- Configuration 2 for " Instrument Commissioning", "Mode Transitions", "S/C Reconfiguration", "Launch Mode Robustness", "CDMS management", "ACMS Commissioning", "Satellite commissioning" and "DTCP Worst Case Scenario" " NOM Mode Robustness" 4.3.2
- Configuration 3 for " Launch Clean Run" 4.3.3

4.3.1 SCOE cable connection for "RMS"

SCOE CABLES CONNECTION to HERSCHEL S/C					
SKIN-01	PWR Panel (PCDU)				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
	BS Nom Power	SK01BJ09	PCDU		PCDU Flight Plug SK01BP09 Plugged
	BS Red Power	SK01BJ10	PCDU		PCDU Flight Plug SK01BP10 Plugged
	BDR1 AIT	SK01BJ11	PCDU	LPS SCOE Cable Plugged	
	BDR2 AIT	SK01BJ12	PCDU	LPS SCOE Cable Plugged	
	SA Nom Power	SK01AJ01	PCDU	POWER SCOE Cable Plugged	
	SA Nom Power	SK01AJ02	PCDU	POWER SCOE Cable Plugged	
	SA Nom Power	SK01AJ03	PCDU	POWER SCOE Cable Plugged	
	SA Red Power	SK01AJ04	PCDU	Connector Cover	
	SA Red Power	SK01AJ05	PCDU	POWER SCOE Cable Plugged	
	SA Red Power	SK01AJ06	PCDU	POWER SCOE Cable Plugged	
	SA Red Power	SK01AJ07	PCDU	POWER SCOE Cable Plugged	
SKIN-02	PWR Panel (ACC, CDMU, RCS, 1553 & Thruster)				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-02	DMS 1553 Bus_A	J01	CDMU	Bus Monitor Cable Plugged	
SKIN-02	DMS 1553 Bus_B	J02	CDMU	Bus Monitor Cable Plugged	
SKIN-02	ACMS 1553 Bus_A	J03	ACC	ACMS SCOE Cable Plugged	
SKIN-02	ACMS 1553 Bus_B	J04	ACC	ACMS SCOE Cable Plugged	
SKIN-02	LV1/FCV 20N CMD S/A M	J05	ACC/RCS	ACMS SCOE Cable Plugged	
SKIN-02	LV2/FCV 20N CMD S/A R	J06	ACC/RCS	ACMS SCOE Cable Plugged	

SKIN-02	RCS Press/Tank Temp/PT Pwr	J07	ACC/PT&TH	ACMS SCOE Cable Plugged	Flight Plug SK02 P07 plugged
SKIN-02	Thruster Temp M/LV1 Sts	J08	ACC/RCS	ACMS SCOE Cable Plugged	
SKIN-02	CDMU and ACC EEPROM reprogramming input	J09	ACC/CDMU		Flight Plug SK02P09 Plugged
SKIN-02	CDMU and ACC EEPROM reprogramming input	J10	ACC/CDMU		Flight Plug SK02P10 Plugged
SKIN-02	Thruster Temp R/LV2 Sts	J11	ACC/RCS	ACMS SCOE Cable Plugged	
SKIN-02	Thruster C/B Heaters M	J12	ACC/CBH	ACMS SCOE Cable Plugged	
SKIN-02	Thruster C/B Heaters R	J13	ACC/CBH	ACMS SCOE Cable Plugged	
SKIN-02	Str1/2 On/Off Cmd M/Str1 Sts	J14	ACC/STR-1		ACMS Flight Plug SK02P14 Plugged
SKIN-02	Str1/2 On/Off Cmd R/Str2 Sts	J15	ACC/STR-2		ACMS Flight Plug SK02P15 Plugged
SKIN-02	Gyro A On/Off Cmd	J16	ACC/GYRO-E1		ACMS Flight Plug SK02P16 Plugged
SKIN-02	Gyro B On/Off Cmd	J17	ACC/GYRO-E2		ACMS Flight Plug SK02P17 Plugged
SKIN-03	TTC Panel				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-03	Test point TC + protection jumper EPC1	SK03J01	XPND1/EPC1		Plastic cap (See note1)
SKIN-03	Test point TC + protection jumper EPC2	SK03J02	XPND2/EPC2		Plastic cap (See note1)
	RF LINK				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
	RF link for antenna LGA1	N/A	LGA1	RF SCOE LGA1 Plugged	LGA1 Anechoic Cap
	RF link for antenna LGA2	N/A	LGA2	RF SCOE LGA2 Plugged	LGA2 Anechoic Cap
	RF link for antenna MGA	N/A	MGA	RF SCOE MGA Plugged	MGA Anechoic Cap
SKIN-04	ACMS Panel (RWE)				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-04	RWL1 Sgn	J01	ACC/RWL-1		ACMS Flight Plug SK04P01 Plugged
SKIN-04	RWL2 Sgn	J02	ACC/RWL-2		ACMS Flight Plug SK04P02 Plugged
SKIN-04	RWL3 Sgn	J03	ACC/RWL-3		ACMS Flight Plug SK04P03 Plugged

integrated 29/05/08 left for RMS

Flight Plug

Flight Plug

Low ok 02.09.08

SKIN-04	RWL4 Sgn	J04	ACC/RWL-4		ACMS Flight Plug SK04P04 Plugged
SKIN-05	GYR/QRS Panel				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-05	CRS1 AOCS Sgn	J01	CRS-1/ACC		ACMS Flight Cap
SKIN-05	CRS2 AOCS Sgn	J02	CRS-2/ACC		ACMS Flight Cap
SKIN-05	GYRO RS422 / Test	J03	GYRO	ACMS SCOE Cable Plugged	
SKIN-05	CRS 1/2 Stimuli	J04	CRS-1,2	ACMS SCOE Cable Plugged	
SKIN-05	AAD Sgn M	J05	AAD/ACC	ACMS SCOE Cable Plugged	
SKIN-05	SAS1/2 Sgn M	J06	SAS/ACC	ACMS SCOE Cable Plugged	
SKIN-05	SAS1/2 Sgn R	J07	SAS/ACC	ACMS SCOE Cable Plugged	
SKIN-05	AAD Sgn R	J08	AAD/ACC	ACMS SCOE Cable Plugged	
SKIN-06	STR Panel				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-06	STR1 Stimuli	J01	STR1	ACMS SCOE Cable Plugged	
SKIN-06	STR2 Stimuli	J02	STR2	ACMS SCOE Cable Plugged	
	UMBILICAL				
	Connector Function	Connector	S/C unit	SCOE CABLE	
	Power/Data	HU1 J01	SYSTEM	SCOEs cable Plugged	
	Power/Data	HU2 J01	SYSTEM	SCOEs cable Plugged	

ok 02.09.2

CryoSCOE harness setup for ACS/PR/TP No.:

Annex No.:

315 100 — on top of

Connector Function	Connector	S/C unit	SCOE	CryoSCOE connected	CCU Flight connected
Temperature Sensors	315100-J01	T117, T118, T207, T211, T238, T239, T249,T251, T253, T255, T423, T443, T463, T851, T852, T853, T861	Cryo SCOE J07 & J15	X ✓	no flight
Temperature & pressure Sensors	315100-J03	T702, T872, P101, T103, T115, T116, T704, T802, T803, T805, T806, T871	Cryo SCOE J01 & J17	X ✓	no flight
Temperature Sensors	315100-J05	T331, T333, T335, T337, T339, T341 (Telescope)	Cryo SCOE J14		X ✓
Temperature Sensors	315100-J06	T332, T334, T336, T338, T340, T342 (Telescope)	Cryo SCOE J10		X ✓

316 100 — on top of

Connector Function	Connector	S/C unit	SCOE	CryoSCOE connected	CCU Flight connected
Valve Sensor	316100-J01	VS501, VS504			X ✓
Valve Sensor	316100-J02	VS503, VS505			X ✓

321 100 — on top of

Connector Function	Connector	S/C unit	SCOE	CryoSCOE connected	CCU Flight connected
	321100-J01	L701, H701	Cryo SCOE J11	not connected	no flight ✓
	321100-J02	LL702, H702	Cryo SCOE J03	not connected	no flight ✓
	321100-J03	H502, H503	Cryo SCOE J06	not connected	no flight ✓
	321100-J04	P501	Cryo SCOE J01	X ✓	no flight

Ok 02.09.08

		321100-J05	H103, H701, L102, VT102, VT103, VT105, VT701, VH102, VH103, VH105, VH701, VS102, VS105, VS701	Cryo SCOE J11	X ✓	no flight
		321100-J06	H104, H702, L101, VT104, VT106, VT702, VH104, VH106, VH702, VS104, VS702	Cryo SCOE J03	X ✓	no flight
		321100-J07	H501	Cryo SCOE J06	not connected	no flight ✓
		321100-J08	T502	Cryo SCOE J01	not connected	no flight ✓

321 200 on top of

Connector Function	Connector	S/C unit	SCOE	CryoSCOE connected	CCU Flight connected
	321200-J01	T202, T212, T221, T223, T227, T228, T232, T234, T236, T242, T244, T246, T250, T254, T258, T424, T464	Cryo SCOE J08	X ✓	X
	321200-J02	T102, T105, T106, T111, PR_P701, T421, T442, T461, H101	Cryo SCOE J04	X ✓	X
	321200-J03	T321, T323, T501, T505, T651, T901, T903, T907, T911	Cryo SCOE J09		X ✓
	321200-J04	T312, T314, T316, T905, T909, T931, T933, T935	Cryo SCOE J09		X ✓
	321200-J05	VS103, H102	Cryo SCOE J04		X ✓

321 300 on top of

Connector Function	Skin Connector	S/C unit	SCOE	SCOE Cable connected	Flight Cap connected

ok 02.09.08

		321300-J01	T208, T213, T222, T224, T225, T226, T231, T233, T235, T237, T247, T248, T252, T256, T862, T444	Cryo SCOE J02		X
		321300-J02	T101, T104, T107, T112, T703, T422, T441, T462, T701, H102	Cryo SCOE J04		X
		321300-J03	P502,T322, T324, T504, T506, T507, T652, T902, T908, T912	Cryo SCOE J18		X
		321300-J04	T311, T313, T315, T904, T906, T910, T932, T934	Cryo SCOE J14		X
		321300-J05	VS106, H102	Cryo SCOE J04		X

CVSE I/F — on top of

Connector Function	Skin Connector	S/C unit	SCOE	SCOE Cable connected	Flight Cap connected
			Cryo SCOE J18	X	✓

to be approved & released before start of ACS/PR/TP by Floor-Manager	Date: 02.09.08	Sign:

SAFE / ARM plug setup for ACS/PR/TP No.:						
Annex No.:						
314 200	on top of					
	Connector Function	Connector	S/C unit	SAFE	ARM	Sign
	SAFE / ARM plug	314 200-J03	NED (601)	X ✓		
	SAFE / ARM plug	314 200-J04	NED (602)	X ✓		
	SAFE / ARM plug	314 200-J05	SI 601	X ✓		
	SAFE / ARM plug	314 200-J06	SI 602	X ✓		
to be approved & released before start of ACS/PR/TP by Floor-Manager		Date: 02.09.08		Sign:		

4.3.2 SCOE cable connection for " Nominal Launch", " Satellite Commissioning",,"Instrument Commissioning "ACMS Commissioning", "Mode Transitions", S/C Reconfiguration", "CDMS management", DTCP Worst Case Scenario", "Launch Mode Robustness",."NOM Mode Robustness" and "Instrument FDIR"

SCOE CABLES CONNECTION to HERSCHEL S/C					
SKIN-01	PWR Panel (PCDU)				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
	BS Nom Power	SK01BJ09	PCDU	BS SCOE Cable Plugged	
	BS Red Power	SK01BJ10	PCDU	BS SCOE Cable Plugged	
	BDR1 AIT	SK01BJ11	PCDU	LPS SCOE Cable Plugged	
	BDR2 AIT	SK01BJ12	PCDU	LPS SCOE Cable Plugged	
	SA Nom Power	SK01AJ01	PCDU	POWER SCOE Cable Plugged	
	SA Nom Power	SK01AJ02	PCDU	POWER SCOE Cable Plugged	
	SA Nom Power	SK01AJ03	PCDU	POWER SCOE Cable Plugged	
	SA Red Power	SK01AJ04	PCDU	Connector Cover	
	SA Red Power	SK01AJ05	PCDU	POWER SCOE Cable Plugged	
	SA Red Power	SK01AJ06	PCDU	POWER SCOE Cable Plugged	
	SA Red Power	SK01AJ07	PCDU	POWER SCOE Cable Plugged	
SKIN-02	PWR Panel (ACC, CDMU, RCS, 1553 & Thruster)				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-02	DMS 1553 Bus_A	J01	CDMU	Bus Monitor Cable Plugged	
SKIN-02	DMS 1553 Bus_B	J02	CDMU	Bus Monitor Cable Plugged	
SKIN-02	ACMS 1553 Bus_A	J03	ACC	ACMS SCOE Cable Plugged	
SKIN-02	ACMS 1553 Bus_B	J04	ACC	ACMS SCOE Cable Plugged	
SKIN-02	LV1/FCV 20N CMD S/A M	J05	ACC/RCS	ACMS SCOE	

				Cable Plugged	
SKIN-02	LV2/FCV 20N CMD S/A R	J06	ACC/RCS	ACMS SCOE Cable Plugged	
SKIN-02	RCS Press/Tank Temp/PT Pwr	J07	ACC/PT&TH	ACMS SCOE Cable Plugged	
SKIN-02	Thruster Temp M/LV1 Sts	J08	ACC/RCS	ACMS SCOE Cable Plugged	
SKIN-02	CDMU and ACC EEPROM reprogramming input	J09	ACC/CDMU		Flight Cap SK02P09 Plugged
SKIN-02	CDMU and ACC EEPROM reprogramming input	J10	ACC/CDMU		Flight Cap SK02P10 Plugged
SKIN-02	Thruster Temp R/LV2 Sts	J11	ACC/RCS	ACMS SCOE Cable Plugged	
SKIN-02	Thruster C/B Heaters M	J12	ACC/CBH	ACMS SCOE Cable Plugged	
SKIN-02	Thruster C/B Heaters R	J13	ACC/CBH	ACMS SCOE Cable Plugged	
SKIN-02	Str1/2 On/Off Cmd M/Str1 Sts	J14	ACC/STR-1		ACMS Flight Cap SK02P14 Plugged
SKIN-02	Str1/2 On/Off Cmd R/Str2 Sts	J15	ACC/STR-2		ACMS Flight Cap SK02P15 Plugged
SKIN-02	Gyro A On/Off Cmd	J16	ACC/GYRO-E1		ACMS Flight Cap SK02P16 Plugged
SKIN-02	Gyro B On/Off Cmd	J17	ACC/GYRO-E2		ACMS Flight Cap SK02P17 Plugged
SKIN-03	TTC Panel				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-03	Test point TC + protection jumper EPC1	SK03J01	XPND1/EPC1		Plastic cap (See note1)
SKIN-03	Test point TC + protection jumper EPC2	SK03J02	XPND2/EPC2		Plastic cap (See note1)
	RF LINK				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
	RF link for antenna LGA1	N/A	LGA1	RF SCOE LGA1 Plugged	LGA1 Anechoic Cap
	RF link for antenna LGA2	N/A	LGA2	RF SCOE LGA2 Plugged	LGA2 Anechoic Cap
	RF link for antenna MGA	N/A	MGA	RF SCOE MGA Plugged	MGA Anechoic Cap
SKIN-04	ACMS Panel (RWE)				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-04	RWL1 Sgn	J01	ACC/RWL-1		ACMS Flight Cap SK04P01 Plugged
SKIN-04	RWL2 Sgn	J02	ACC/RWL-2		ACMS Flight Cap

					SK04P02 Plugged
SKIN-04	RWL3 Sgn	J03	ACC/RWL-3		ACMS Flight Cap SK04P03 Plugged
SKIN-04	RWL4 Sgn	J04	ACC/RWL-4		ACMS Flight Cap SK04P04 Plugged
SKIN-05	GYR/QRS Panel				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-05	CRS1 AOCS Sgn	J01	CRS-1/ACC		ACMS Flight Cap
SKIN-05	CRS2 AOCS Sgn	J02	CRS-2/ACC		ACMS Flight Cap
SKIN-05	GYRO RS422 / Test	J03	GYRO	ACMS SCOE Cable Plugged	
SKIN-05	CRS 1/2 Stimuli	J04	CRS-1,2	ACMS SCOE Cable Plugged	
SKIN-05	AAD Sgn M	J05	AAD/ACC	ACMS SCOE Cable Plugged	
SKIN-05	SAS1/2 Sgn M	J06	SAS/ACC	ACMS SCOE Cable Plugged	
SKIN-05	SAS1/2 Sgn R	J07	SAS/ACC	ACMS SCOE Cable Plugged	
SKIN-05	AAD Sgn R	J08	AAD/ACC	ACMS SCOE Cable Plugged	
SKIN-06	STR Panel				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
SKIN-06	STR1 Stimuli	J01	STR1	ACMS SCOE Cable Plugged	
SKIN-06	STR2 Stimuli	J02	STR2	ACMS SCOE Cable Plugged	
	UMBILICAL				
	Connector Function	Connector	S/C unit	SCOE CABLE	
	Power/Data	HU1 J01	SYSTEM	SCOEs cable Plugged	
	Power/Data	HU2 J01	SYSTEM	SCOEs cable Plugged	

CryoSCOE harness setup for ACS/PR/TP No.:

Annex No.:

315 100 — on top of

Connector Function	Connector	S/C unit	SCOE	CryoSCOE connected	CCU Flight connected
Temperature Sensors	315100-J01	T117, T118, T207, T211, T238, T239, T249,T251, T253, T255, T423, T443, T463, T851, T852, T853, T861	Cryo SCOE J07 & J15		no flight
Temperature & pressure Sensors	315100-J03	T702, T872, P101, T103, T115, T116, T704, T802, T803, T805, T806, T871	Cryo SCOE J01 & J17		no flight
Temperature Sensors	315100-J05	T331, T333, T335, T337, T339, T341 (Telescope)	Cryo SCOE J14		X
Temperature Sensors	315100-J06	T332, T334, T336, T338, T340, T342 (Telescope)	Cryo SCOE J10		X

316 100 — on top of

Connector Function	Connector	S/C unit	SCOE	CryoSCOE connected	CCU Flight connected
Valve Sensor	316100-J01	VS501, VS504			X
Valve Sensor	316100-J02	VS503, VS505			X

321 100 — on top of

Connector Function	Connector	S/C unit	SCOE	CryoSCOE connected	CCU Flight connected
	321100-J01	L701, H701	Cryo SCOE J11		no flight
	321100-J02	LL702, H702	Cryo SCOE J03		no flight
	321100-J03	H502, H503	Cryo SCOE J06		no flight

		321100-J04	P501	Cryo SCOE J01		no flight
		321100-J05	H103, H701, L102, VT102, VT103, VT105, VT701, VH102, VH103, VH105, VH701, VS102, VS105, VS701	Cryo SCOE J11		no flight
		321100-J06	H104, H702, L101, VT104, VT106, VT702, VH104, VH106, VH702, VS104, VS702	Cryo SCOE J03		no flight
		321100-J07	H501	Cryo SCOE J06		no flight
		321100-J08	T502	Cryo SCOE J01		no flight
321 200	on top of					
	Connector Function	Connector	S/C unit	SCOE	CryoSCOE connected	CCU Flight connected
		321200-J01	T202, T212, T221, T223, T227, T228, T232, T234, T236, T242, T244, T246, T250, T254, T258, T424, T464	Cryo SCOE J08		X
		321200-J02	T102, T105, T106, T111, PR_P701, T421, T442, T461, H101	Cryo SCOE J04		X
		321200-J03	T321, T323, T501, T505, T651, T901, T903, T907, T911	Cryo SCOE J09		X
		321200-J04	T312, T314, T316, T905, T909, T931, T933, T935	Cryo SCOE J09		X
		321200-J05	VS103, H102	Cryo SCOE J04		X

321 300	on top of					
	Connector Function	Skin Connector	S/C unit	SCOE	SCOE Cable connected	Flight Cap connected
		321300-J01	T208, T213, T222, T224, T225, T226, T231, T233, T235, T237, T247, T248, T252, T256, T862, T444	Cryo SCOE J02		X
		321300-J02	T101, T104, T107, T112, T703, T422, T441, T462, T701, H102	Cryo SCOE J04		X
		321300-J03	P502,T322, T324, T504, T506, T507, T652, T902, T908, T912	Cryo SCOE J18		X
		321300-J04	T311, T313, T315, T904, T906, T910, T932, T934	Cryo SCOE J14		X
		321300-J05	VS106, H102	Cryo SCOE J04		X
CVSE I/F	on top of					
	Connector Function	Skin Connector	S/C unit	SCOE	SCOE Cable connected	Flight Cap connected
				Cryo SCOE J18		X

to be approved & released before start of ACS/PR/TP by Floor-Manager	Date:	Sign:

SAFE / ARM plug setup for ACS/PR/TP No.:						
Annex No.:						
314 200	on top of					
	Connector Function	Connector	S/C unit	SAFE	ARM	Sign
	SAFE / ARM plug	314 200-J03	NED (601)	X		
	SAFE / ARM plug	314 200-J04	NED (602)	X		
	SAFE / ARM plug	314 200-J05	SI 601	X		
	SAFE / ARM plug	314 200-J06	SI 602	X		
to be approved & released before start of ACS/PR/TP by Floor-Manager		Date:		Sign:		

4.3.3 SCOE cable connection for" Launch Clean Run"

SVM / EGSE harness setup for ACS/PR/TP No.:							
Annex No.:							
SKIN-01	PWR Panel (PCDU)						
	Connector Function	SCOE	S/C unit	Skin Connector	Connection		Sign
	SA Nom Power	SAS SCOE	PCDU	SK01A J/P01	disconnected		
	SA Nom Power	SAS SCOE	PCDU	SK01A J/P02	disconnected		
	SA Nom Power	SAS SCOE	PCDU	SK01A J/P03	disconnected		
			Battery	SK01A J/P04	EMC cover		
	SA Red Power	SAS SCOE	PCDU	SK01A J/P05	disconnected		
	SA Red Power	SAS SCOE	PCDU	SK01A J/P06	disconnected		
	SA Red Power	SAS SCOE	PCDU	SK01A J/P07	disconnected		
	BS Nom Power	BS SCOE	PCDU	SK01B J/P09	Flight		
	BS Red Power	BS SCOE	PCDU	SK01B J/P10	Flight		
	BDR1 AIT	SAS SCOE	PCDU	SK01B J/P11	LPS SCOE Cable Plugged		
	BDR2 AIT	SAS SCOE	PCDU	SK01B J/P12	LPS SCOE Cable Plugged		
SKIN-02	PWR Panel (ACC, CDMU, RCS, 1553 & Thruster)						
	Connector Function	SCOE	S/C unit	Skin Connector	Connection		Sign
	DMS 1553 Bus_A	CDMU SCOE	CDMU	SK02 J/P01	Flight		
	DMS 1553 Bus_B	CDMU SCOE	CDMU	SK02 J/P02	Flight		
	ACMS 1553 Bus_A	ACMS SCOE	ACC	SK02 J/P03	Flight		
	ACMS 1553 Bus_B	ACMS SCOE	ACC	SK02 J/P04	Flight		
	LV1/FCV 20N CMD S/A M	ACMS SCOE	ACC/RCS	SK02 J/P05	disconnected		
	LV2/FCV 20N CMD S/A R	ACMS SCOE	ACC/RCS	SK02 J/P06	disconnected		
	RCS Press/Tank Temp/PT Pwr	ACMS SCOE	ACC/PT&TH	SK02 J/P07	Flight		
	Thruster Temp M/LV1 Sts	ACMS SCOE	ACC/RCS	SK02 J/P08	Flight		

	Quick S/W load	grey ACMS	black CDMS	SK02 J/P09	disconnected		
	Quick S/W load	grey ACMS	black CDMS	SK02 J/P10	disconnected		
	Thruster Temp R/LV2 Sts	ACMS SCOE	ACC/RCS	SK02 J/P11	Flight		
	Thruster C/B Heaters M	ACMS SCOE	ACC/CBH	SK02 J/P12	disconnected		
	Thruster C/B Heaters R	ACMS SCOE	ACC/CBH	SK02 J/P13	disconnected		
	Str1/2 On/Off Cmd M/Str1 Sts	ACMS SCOE	ACC/STR-1	SK02 J/P14	Flight		
	Str1/2 On/Off Cmd R/Str2 Sts	ACMS SCOE	ACC/STR-2	SK02 J/P15	Flight		
	Gyro A On/Off Cmd		ACC/GYRO-E1	SK02 J/P16	Flight		
	Gyro B On/Off Cmd		ACC/GYRO-E2	SK02 J/P17	Flight		
SKIN-03	TTC Panel						
	Connector Function	SCOE	S/C unit	Skin Connector	Connection		Sign
	Test point TC + protection jumper EPC1	Plastic Cap	XPND1/EPC1	SK03 J/P01	Flight		
	Test point TC + protection jumper EPC2	Plastic Cap	XPND2/EPC2	SK03 J/P02	Flight		
	RF LINK						
	Connector Function	SCOE	S/C unit	Skin Connector	Connection		Sign
	RF link for antenna LGA1	TT&C SCOE	LGA1	LGA1 Anechoic Cap	RF-SCOE		
	RF link for antenna LGA2	TT&C SCOE	LGA2	LGA2 Anechoic Cap	RF-SCOE		
	RF link for antenna MGA	TT&C SCOE	MGA	MGA Anechoic Cap	RF-SCOE		
SKIN-04	ACMS Panel (RWE)						
	Connector Function	SCOE	S/C unit	Skin Connector	Connection		Sign
	RWL1 Sgn		ACC/RWL-1	SK04 J/P01	Flight		
	RWL2 Sgn		ACC/RWL-2	SK04 J/P02	Flight		
	RWL3 Sgn		ACC/RWL-3	SK04 J/P03	Flight		
	RWL4 Sgn		ACC/RWL-4	SK04 J/P04	Flight		

SKIN-05	GYR/QRS Panel						
	Connector Function	SCOE	S/C unit	Skin Connector	Connection		Sign
	CRS1 AOCS Sgn		CRS-1/ACC	SK05 J/P01	Flight		
	CRS2 AOCS Sgn		CRS-2/ACC	SK05 J/P02	Flight		
	GYRO RS422 / Test	ACMS SCOE	GYRO	SK05 J/P03	disconnected		
	CRS 1/2 Stimuli	ACMS SCOE	CRS-1,2	SK05 J/P04	disconnected		
	AAD Sgn M	ACMS SCOE	AAD/ACC	SK05 J/P05	Flight		
	SAS1/2 Sgn M	ACMS SCOE	SAS/ACC	SK05 J/P06	Flight		
	SAS1/2 Sgn R	ACMS SCOE	SAS/ACC	SK05 J/P07	Flight		
	AAD Sgn R	ACMS SCOE	AAD/ACC	SK05 J/P08	Flight		
SKIN-06	STR Panel						
	Connector Function	SCOE	S/C unit	Skin Connector	Connection		Sign
	STR1 Stimuli	STR1	STR1	SK06 J/P01	disconnected		
	STR2 Stimuli	STR2	STR2	SK06 J/P02	disconnected		
UMBILICAL							
	Connector Function	SCOE	S/C unit	Connector	Connection		Sign
	Power/Data	System	SYSTEM	HUJ01	SCOE		
	Power/Data	System	SYSTEM	HUJ02	SCOE		
approved SE		approved AIT		approved PA/Safety		approved Floor-Manger	
sign off:							

CryoSCOE harness setup for ACS/PR/TP No.:

Annex No.:

315 100 — on top of

Connector Function	Connector	S/C unit	SCOE	CryoSCOE connected	CCU Flight connected
Temperature Sensors	315100-J01	T117, T118, T207, T211, T238, T239, T249,T251, T253, T255, T423, T443, T463, T851, T852, T853, T861	Cryo SCOE J07 & J15		no flight
Temperature & pressure Sensors	315100-J03	T702, T872, P101, T103, T115, T116, T704, T802, T803, T805, T806, T871	Cryo SCOE J01 & J17		no flight
Temperature Sensors	315100-J05	T331, T333, T335, T337, T339, T341 (Telescope)	Cryo SCOE J14		X
Temperature Sensors	315100-J06	T332, T334, T336, T338, T340, T342 (Telescope)	Cryo SCOE J10		X

316 100 — on top of

Connector Function	Connector	S/C unit	SCOE	CryoSCOE connected	CCU Flight connected
Valve Sensor	316100-J01	VS501, VS504			X
Valve Sensor	316100-J02	VS503, VS505			X

321 100 — on top of

Connector Function	Connector	S/C unit	SCOE	CryoSCOE connected	CCU Flight connected
	321100-J01	L701, H701	Cryo SCOE J11		no flight
	321100-J02	LL702, H702	Cryo SCOE J03		no flight
	321100-J03	H502, H503	Cryo SCOE J06		no flight
	321100-J04	P501	Cryo SCOE J01		no flight

		321100-J05	H103, H701, L102, VT102, VT103, VT105, VT701, VH102, VH103, VH105, VH701, VS102, VS105, VS701	Cryo SCOE J11		no flight
		321100-J06	H104, H702, L101, VT104, VT106, VT702, VH104, VH106, VH702, VS104, VS702	Cryo SCOE J03		no flight
		321100-J07	H501	Cryo SCOE J06		no flight
		321100-J08	T502	Cryo SCOE J01		no flight
321 200	on top of					
	Connector Function	Connector	S/C unit	SCOE	CryoSCOE connected	CCU Flight connected
		321200-J01	T202, T212, T221, T223, T227, T228, T232, T234, T236, T242, T244, T246, T250, T254, T258, T424, T464	Cryo SCOE J08		X
		321200-J02	T102, T105, T106, T111, PR_P701, T421, T442, T461, H101	Cryo SCOE J04		X
		321200-J03	T321, T323, T501, T505, T651, T901, T903, T907, T911	Cryo SCOE J09		X
		321200-J04	T312, T314, T316, T905, T909, T931, T933, T935	Cryo SCOE J09		X
		321200-J05	VS103, H102	Cryo SCOE J04		X
321 300	on top of					
	Connector Function	Skin Connector	S/C unit	SCOE	SCOE Cable connected	Flight Cap connected

		321300-J01	T208, T213, T222, T224, T225, T226, T231, T233, T235, T237, T247, T248, T252, T256, T862, T444	Cryo SCOE J02		X
		321300-J02	T101, T104, T107, T112, T703, T422, T441, T462, T701, H102	Cryo SCOE J04		X
		321300-J03	P502,T322, T324, T504, T506, T507, T652, T902, T908, T912	Cryo SCOE J18		X
		321300-J04	T311, T313, T315, T904, T906, T910, T932, T934	Cryo SCOE J14		X
		321300-J05	VS106, H102	Cryo SCOE J04		X

CVSE I/F — on top of

Connector Function	Skin Connector	S/C unit	SCOE	SCOE Cable connected	Flight Cap connected
			Cryo SCOE J18		X

to be approved & released before start of ACS/PR/TP by Floor-Manager	Date:	Sign:

SAFE / ARM plug setup for ACS/PR/TP No.:

Annex No.:

314 200 on top of

Connector Function	Connector	S/C unit	SAFE	ARM	Sign
SAFE / ARM plug	314 200-J03	NED (601)	X		
SAFE / ARM plug	314 200-J04	NED (602)	X		
SAFE / ARM plug	314 200-J05	SI 601	X		
SAFE / ARM plug	314 200-J06	SI 602	X		

to be approved & released before start of ACS/PR/TP by Floor-Manager	Date:	Sign:

5 Conditions

5.1 Personnel

The following table shall be filled in detailing which personnel are required to be present for the test. The signature of the appropriate responsible is classified as agreement to start the test as stated in the TRR.

Responsibility	Required for Test (Y/N)	Name / Organization	Signature
Floor Manager	Y		
Test Director	Y		
Test Conductor	Y		
EGSE Operator			
SVM Support Engineer			
Cryo Support Engineer			
HIFI Instrument Support Engineer			
PACS Instrument Support Engineer			
Spire Instrument Support Engineer			
PA Responsible	Y		
Customer Representative			

Table 2: List of IST test attendants

Persons, other than test personal as mentioned in the test team organization and participants of the TRR, are allowed to observe the test at the discretion of the Test Director and Test Conductor.

5.2 Environmental

During all the phases of the test the HERSCHEL Satellite shall be maintained in a controlled environment in order to prevent degradation or contamination of the satellite equipment and surface, which could result in operational failures.

ESTEC site clean room will be used.

Ambient conditions shall comply with ISO14644-1 for cleanliness requirement.

The characteristic shall be:

- Temperature = 22C ± 3C
- Relative Humidity = 50 % +/- 10%
- Delta Pressure = above 0.6 mm H2O
- Clean Conditions = Class 100 000

The following table defines the S/C conditions for each IST test sequence with respect to Cryostat He I/He II status, tilting angle and usage of the real battery.

IST 1 Part 1 Warm preferred

Chapter of IST Spec Issiue 4		Instr. Mode	Real Battery required	Satellite X- Axis tilting	Ambient or cool down (deviating from IST Spec !!!)	He I HTT venting >20mg/sec	He II HTT venting >20mg/sec
5.8.2	**Launch phase, separation and post separation**	3 shift	4 shift	5 shift	6 shift	7 shift	8 shift
5.8.2.3	Initial configuration	OFF	Y	n.a	Preferred	alternative	alternative
5.8.2.4.2	Satellite power ON	OFF	Y	n.a	Preferred	alternative	alternative
5.8.2.4.4	Configuration for launch	OFF	Y	n.a	Preferred	alternative	alternative
5.8.2.4.5	Launch	OFF	Y	n.a	Preferred	alternative	alternative
5.8.2.4.6	Separation	OFF	Y	n.a	Preferred	alternative	alternative
5.8.2.4.7	Post separation	OFF	Y	n.a	Preferred	alternative	alternative
5.8.2.4.8	Initial check out in SAM mode	OFF	Y	n.a	Preferred	alternative	alternative
5.8.2.4.9	CDMS transition to NOM mode	OFF	Y	n.a	Preferred	alternative	alternative
5.8.2.4.10	Orbit Control Manoeuvre	OFF	Y	n.a	Preferred	alternative	alternative
5.8.2.4.11	End of the sequence	OFF	Y	n.a	Preferred	alternative	alternative
5.8.3	**Satellite Commissioning**						
5.8.3.3	Test start configuration	OFF	N	n.a	Preferred	alternative	alternative
5.8.3.4	TTC commissioning	OFF	N	n.a	Preferred	alternative	alternative
5.8.3.5	CDMS commissioning	OFF	N	n.a	Preferred	alternative	alternative
	TCS commissioning	OFF	N	n.a.	Preferred	alternative	alternative
5.8.3.7	PCS commissioning	OFF	N	n.a	Preferred	alternative	alternative
5.8.3.10	SREM commissioning	OFF	N	n.a	Preferred	alternative	alternative
5.8.3.11	TCS commissioning	OFF	N	n.a	Preferred	alternative	alternative
5.8.3.12	Telescope decontamination	OFF	N	n.a	Preferred	alternative	alternative
5.8.3.13	Cryo Cover opening	OFF	N	n.a	Preferred	alternative	alternative
5.8.3.14	Test end	OFF	N	n.a	Preferred	alternative	alternative
5.8.3.9	**ACMS commissioning**						
5.8.3.9.1	AAD, SAS, CRS, STR, GYR, RCS unit check	OFF	N	n.a	Preferred	alternative	alternative
5.8.3.9.2	RWLs health check	OFF	N	n.a	Preferred	alternative	alternative
5.8.3.9.3	STR functional verification	OFF	N	n.a	Preferred	alternative	alternative
5.8.3.9.4	ACC health check	OFF	N	n.a	Preferred	alternative	alternative
5.8.3.9.5	ACMS dynamic verification	OFF	N	n.a	Preferred	alternative	alternative
5.8.5	**Mode transitions**						
5.8.5.3	Test start configuration	OFF	N	n.a	Preferred	alternative	alternative
5.8.5.4	Launch to Launch	OFF	N	n.a	Preferred	alternative	alternative
5.8.5.5	Launch to SAM	OFF	N	n.a	Preferred	alternative	alternative
5.8.5.6	SAM to SAM	OFF	N	n.a	Preferred	alternative	alternative
5.8.5.7	SAM to NOM	OFF	N	n.a	Preferred	alternative	alternative
5.8.10	**Launch clean run**						
		OFF	Y	n.a	Preferred	alternative	alternative
5.8.11	**Launch sequence robustness**						
5.8.11.3.2	Satellite power on	OFF	N	n.a	Preferred	alternative	alternative
5.8.11.3.4	Configuration for launch (status)	OFF	N	n.a	Preferred	alternative	alternative
5.8.11.3.5	Configuration for launch	OFF	N	n.a	Preferred	alternative	alternative
5.8.11.3.6	Separation	OFF	N	n.a	Preferred	alternative	alternative
5.8.11.3.7	S/C acquisition	OFF	N	n.a	Preferred	alternative	alternative
5.8.11.3.8	Initial checkout in SAM mode	OFF	N	n.a	Preferred	alternative	alternative
5.8.11.3.9	Transition to NOM mode	OFF	N	n.a	Preferred	alternative	alternative
5.8.11.3.10	Orbit control manoeuvre	OFF	N	n.a	Preferred	alternative	alternative

IST 1 Part 2 He I or He II

Chapter of IST Spec Issiue 4		Instr. Mode	Real Battery required	Satellite X- Axis tilting	Ambient or cool down (deviating from IST Spec !!!)	He I HTT venting >20mg/sec	He II HTT venting >20mg/sec
5.8.5	**Mode transitions**						
5.8.5.8	NOM to NOM	PACS spectro SPIRE STBY HIFI STBY	N	0-23		alternative	Preferred
5.8.5.9	NOM to EAM	PACS STBY SPIRE STBY HIFI STBY	N	0-23		alternative	Preferred
5.8.5.10	EAM to EAM	PACS STBY SPIRE STBY-> Photo->STBY HIFI STBY	N	0-23		alternative	Preferred
5.8.5.11	EAM to NOM	PACS STBY SPIRE STBY- >Photo	N	0-23		alternative	Preferred
5.8.5.12	NOM to SM	PACS STBY->OFF SPIRE Photo->OFF HIFI STBY->OFF	N	0-23		alternative	Preferred
5.8.5.13	SM to SM	OFF	N	0-23		alternative	Preferred
5.8.5.14	SM to SAM	OFF	N	0-23		alternative	Preferred
5.8.5.17	EAM to SAM (needs new SAM to NOM and NOM to EAM)	PACS STBY SPIRE STBY HIFI Science -> STBY	N	0-23		alternative	Preferred
5.8.5.18	NOM to SAM (needs new SAM to NOM)	PACS Burst- >STBY SPIRE STBY	N	0-23		alternative	Preferred
5.8.5.19	Test end	OFF	N	0-23		alternative	Preferred
5.8.6	**S/C reconfiguration**						
5.8.6.2	Test start configuration	PACS STBY SPIRE STBY HIFI STBY	N	0-23		alternative	Preferred
5.8.6.3	CDMS level 3a	PACS STBY SPIRE STBY HIFI Prime-	N	0-23		alternative	Preferred
5.8.6.4	CDMS level 3b	PACS STBY SPIRE STBY HIFI STBY	N	0-23		alternative	Preferred
5.8.6.5	ACMS level 4	PACS Prime->OFF SPIRE STBY->OFF HIFI STBY->OFF	N	0-23		alternative	Preferred
5.8.6.6	ACMS recovery from Survival Mode (ACMS SASM to SAM)	OFF	N	0-23		alternative	Preferred
5.8.6.7	CDMS level 4	PACS Prime->OFF SPIRE STBY->OFF HIFI STBY->OFF	N	0-23		alternative	Preferred
5.8.6.8	Test end	OFF	N	0-23		alternative	Preferred
5.8.12	**NOM mode robustness**						
5.8.12.3.1	Initial State	PACS STBY SPIRE Photo HIFI STBY	N	0-23		alternative	Preferred
5.8.12.3.2	CDMS PM 1553 BC failure simulation	PACS STBY SPIRE Photo- >STBY	N	0-23		alternative	Preferred
5.8.12.3.3	CDMS PM 1553 BC failure recovery	PACS Photo SPIRE STBY HIFI STBY	N	0-23		alternative	Preferred
5.8.12.3.4	Initial state second test	PACS Photo SPIRE STBY HIFI STBY	N	0-23		alternative	Preferred
5.8.12.3.5	ACMS 1553 RT failure simulation	PACS Photo - >STBY SPIRE STBY	N	0-23		alternative	Preferred
5.8.12.3.6	ACMS 1553 RT failure recovery	PACS STBY->OFF SPIRE STBY->OFF HIFI STBY->OFF	N	0-23		alternative	Preferred
5.8.13	**Test of Instrument FDIR OBCP**						
5.8.13.4	SPIRE FDIR OBCP	SPIRE	N	0-23		alternative	Preferred
5.8.13.5	PACS FDIR OBCP	PACS	N	0-23		alternative	Preferred
5.8.13.6	HIFI FDIR OBCP	HIFI	N	0-23		alternative	Preferred
5.9	**DEGRADED CASES**						
5.9.1	S/C ability to be operated in degraded modes					alternative	Preferred

IST 1 Part 3 He II only

Chapter of IST Spec Issiue 4		Instr. Mode	Real Battery required	Satellite X- Axis tilting	Ambient or cool down (deviating from IST Spec !!!)	He I HTT venting >20mg/sec	He II HTT venting >20mg/sec
5	**Satellite Commissioning**						
5.1	CCU (cryostat) commissioning	OFF	N	23			Required
5	**Instruments commissioning and performance verification**						
5.2	Test start (restart) configuration	OFF	N	23			Required
5.2.1							Required
5.2.2	SPIRE commissioning test	Spire	N	23 -> 90			Required
5.2.3	PACS commissioning test	PACS	N	23			Required
5.2.4	HIFI commissioning test	HIFI	N	0-23			Required
5.2.5	SPIRE and PACS parallel mode	SPIRE/PACS	N	23			Required
5.2.6	Test end or interruption	OFF	N				Required
5.3	**CDMS management**						
5.3.1	General Sequence (Integration with RMS DTCP number 2)	PACS Prime STBY -> Burst -> X SPIRE STBY HIFI STBY	N	0-23		alternatively if MTL is compatible with instrument operations	Preferred
5.3.2	MTL management	PACS Prime STBY -> Burst -> X SPIRE STBY HIFI STBY	N	0-23		alternatively if MTL is compatible with instrument operations	Preferred
5.3.3	OBCP management	PACS Prime STBY -> Burst -> X SPIRE STBY HIFI STBY	N	0-23		alternatively if MTL is compatible with instrument operations	Preferred
5.3.4	SSMM management	PACS Prime STBY -> Burst -> X SPIRE STBY HIFI STBY	N	0-23		alternatively if MTL is compatible with instrument operations	Preferred
5.3.5	FDIR level 1 & 2	PACS Prime STBY -> Burst -> X SPIRE STBY HIFI STBY	N	0-23		alternatively if MTL is compatible with instrument operations	Preferred
5.3.6	OBT management	PACS Prime STBY -> Burst -> X SPIRE STBY HIFI STBY	N	0-23		alternatively if MTL is compatible with instrument operations	Preferred
5.4	**DTCP worst case scenario**						
		PACS (Burst) SPIRE STBY HIFI Prime	N	0-23		*TBC*	Preferred
5.5	**REFERENCE Mission Scenario**						
5.5.1	Test start configuration		Y				Required
5.5.2	Test steps		Y				Required
5.5.3	HIFI OD	HIFI OD	Y	0-23			Required
5.5.4	PACS OD	PACS OD	Y	0-23			Required
5.5.5	SPIRE OD	SPIRE OD	Y	0-23			Required
5.5.6	Test end		Y				Required

Table 3: S/C conditions for each IST test sequence

5.3 General Precautions and Safety

5.3.1 General Safety Requirements, Precautions

Special condition and hazards

The following Operational restrictions shall be carefully taken into account:

1. Before any test article modification the relevant power sources shall be switched OFF
2. Protective caps shall be installed on each harness or unit connector when these are not linked to their equipment
3. All the test data shall be recorded
4. Before starting the test sequence, care must be taken in verifying that all hardware links are correctly connected.
5. to avoid possible damages, no signal shall be applied in no powered units, except where otherwise specified
6. During testing the step by step procedure shall be followed. Changes will be possible and will be managed by a Procedure Variation Sheet approved by the AIV and PA.
7. In case of any failure, the activities shall be stopped until troubleshooting plan is generated and approved.
8. In case of non-conformance, the procedure addressed in [AD 2.1.2.b] shall be applied.
9. The time of usage (ON/OFF cycles and ON duration) of each limited life equipment (FPGAs', etc?) shall be noted and recorded by the QA.
10. No stimulus has to be applied to any CRS switched-OFF
11. The EPC cannot be switched-ON for more than 5 minutes without any TWT turned-ON.
12. Care must be exercised when working around the S/C; in particular, if real IMU(s) or CRS rate sensors are involved, which may register any mechanical vibration affecting the responses of the ACC and/or invalidating the overall test results.
13. In case of AC failure, when the AC power will be again available, preliminary checks will be performed to verify that no damage has be caused to EGSE, SLE and S/L. The test conductor can decide to restart or to continue the test depending on the point where the failure happened.
14. Considering the SVM NCR affecting the XPND FM4, the transponder will be continuously flushed with Nitrogen during the tests.
15. Due to the use of liquid Helium during the Herschel mechanical test campaign, particular safety precautions need to be taken. The cryostat operations which require handling of liquid Helium are described in a dedicated procedure.
16. It shall be ensured that, for the beginning of each IST_START, the BDR's have been switched offi in order that skin plug reconfiguration can be carried out safely in presence of the flight battery. Note : During IST End the power down sequence, commands to turn the BDR's off (to isolate the battery)are issued via the CDMU. If it is suspected for any reason the battery has not been isolated by

switching the BDR's off then the stand alone procedure "BDR Isolation" from HP-2-ASED-TP-0215 shall be executed, startup from the power down state.

17. The maximum continuous battery discharge limit of 36 A shall be respected at all times.

5.3.1.1 Instrument specific safety requirements and precautions

HIFI

LOU being at ambient temperature, IMT objectives on HIFI will be limited. Specifically, the LO power should be limited and higher frequency channel should not used (IID-B). The bias range to the mixers and electromagnets should also be restricted

PACS

Whenever PACS FPU is at HEII conditions:

Prior to any PACS instrument switch-on within this procedure, the FDIR mechanisms as described in "PACS Failure Detection Isolation and Recovery"(PACS-ME-GP-002, Issue 1.2) must be in place and have to be up and running on the CDMU. This shall remain activate during all modes of the PACS instrument, except the off mode.

5.3.2 ESD constraints

- The spacecraft must be grounded
- All connectors have to be covered with ESD dust caps when not mated
- All AIT personnel have to wear antistatic shoes and clothes
- The clean room floor around and under the item under test shall be covered with an antistatic carpet, which is grounded to facility ground.

5.3.3 Grounding Configuration

A distributed single point grounding (DSPG) approach is used between the facility GSE and the satellite for electrical integration and performance tests.

Instrument signal ground isolation to the EGSE data processing electronics will be
ensured.

5.3.4 Test Equipment Calibration and Performances

All equipment used for test activities shall be within their normal calibration period performed and certified either by the Facility or equipment supplier. Certification and calibration labels shall be available for inspections before activity start. Calibration shall be performed by/with qualified personnel/procedures under PA/QA supervision and approval. All the instrumentation to be used for the test shall follow the relevant PA rules.

Item Name	Item Type	Serial Number	Calibration Status

5.3.5 Special QA Requirements

The QA/PA representative shall be present during all test activities.
All documentation shall be inspected and approved before start and end of each test activity. The responsible PA engineer shall ensure that all 'as run' procedures have all the relevant information correctly recorded.

5.4 GSE

Test Equipment List					
Item	Manuf.	Model No.	SN No.	Invent No.	Next Calib.

5.4.1 MGSE

No additional mechanical GSE is required to perform the test described in this test procedure.

5.4.2 CVSE

The set-up of the CVSE will be performed according to HP-2-ASED-0095

Helium operations will be performed according

The cool down and filling procedure: HP-2-ASED-PR-0082 for Helium I

The Helium II top-up procedure: HP-2-ASED-TP-0083 for Helium II

The cover cooling procedure: HP-2-ASED-PR-0048 for special instrument stimulation

A list of the CVSE hardware which might be used is given below.

Qty.	Designation/Manufacturer	Provided by	Drawing/Ident. NR:	Calibr. Date
2	LHe Service Vacuum Pumping Unit I	BOCE	CI No. 142 310-01	
2	LHe Service Vacuum Pumping Unit II	BOCE	CI No. 142 310-02	
1	Main High Vacuum Pumping Unit	BOCE	CI No. 142 310-03	
1	Mobile High Vacuum Pumping Unit	BOCE	CI No. 142 310-03	
3	Molecular Turbo pumps	BOCE	CI No. 142 310-03	
1	Laboratory Vacuum Pump in safety unit	BOCE	CI No. 142 310-04	
1	Laboratory Vacuum Pump in scaffolding	BOCE	CI No. 142 310-04	
1	Laboratory Vacuum Pump in scaffolding (Ex proof.)	BOCE	CI No. 142 310-05	
2	CVSE Monitoring Rack	BOCE	CI No. 142 310-06	
2	Leak Detector Spectron 5000	BOCE	CI No. 142 310-07	
3	He I transfer lines (Y0211/Y0221/Y0231)	DeMaCo	CI No. 142 310-08	
3	He II transfer lines (Y0201-1, -2, -3)	De MaCo	CI No. 142 310-08	
2	Dewar to dewar transfer lines (Y0241 - Y0242)	De MaCo	CI No. 142 310-08	
1	Cover flushing line inlet (L1 + L2, separable)	AAE	CI No. 155 210	
1	Cover flushing line outlet (L3 + L4, separable)	AAE	CI No. 155 210	
1	Heater unit for cover inlet line	DeMaCo		
3	Venting line (Y0601/Y0602/Y0601-3)	DeMaCo	CI No. 142 310-09	
2	Pumping lines (Y0611-1 / Y0611-2)	DeMaCo	CI No. 142 310-09	
Set	Bake out lines (Y0633)	ASED	CI No. 142 310-09	
Set	HiVac Pumping lines (Y0673)	ASED	CI No. 142 310-09	

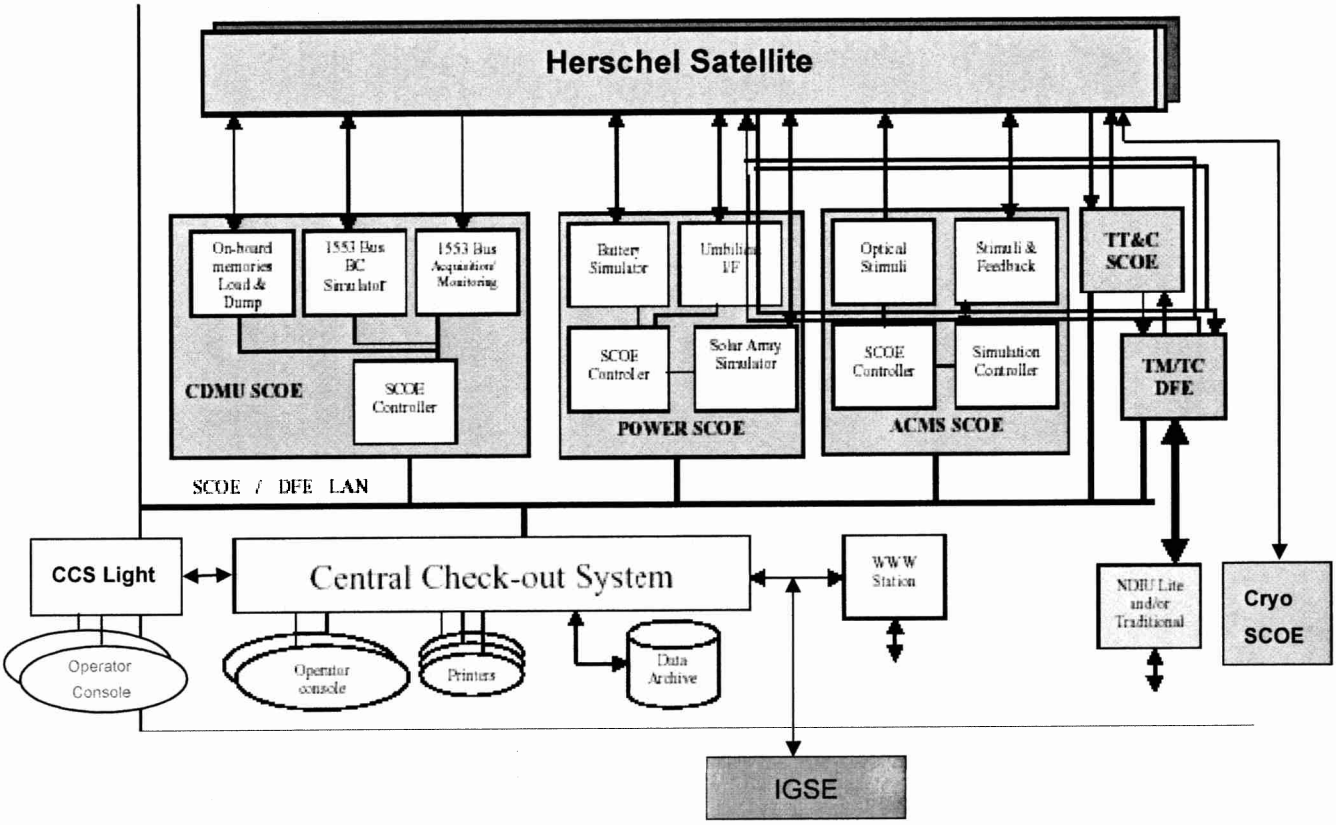
Qty.	Designation/Manufacturer	Provided by	Drawing/Ident. NR:	Calibr. Date
Set	Helium I lines (Y0612)	ASED	CI No. 142 310-09	
Set	Helium II Pumping lines (Y0602)	ASED	CI No. 142 310-09	
2	Scaffolding for He lines	ASED	CI No. 142 310-10	
10	450 l LHe Dewars type HDS 450 -EIPS	Linde		
1	Spiro pump DryTel 1025	ASED		
2	Liquid level sensor	ASED		
2	Helium depth indicator	ASED		
3	Pressure indicator (Keller)	ASED		
1	Laminar flow meter (0-10 mg/s / 0-70 mg/s)	ASED		
1	Standard flow meter (0-5 g/s)	ASED		
2	Gas flow counter	ASED		
Set	Vacuum houses	ASED		
Set	Miscellaneous vacuum seals	ASED		
Set	Vacuum parts	ASED		
Set	Special tools	ASED		
1	Scale	ASED		
1	Pressure Control unit (0-1500 mbar, Ziegler)	ASED		
Set	Plastic pipes (Diameter 20-40 mm, different length)	ASED		
1	HEXA He heating unit	CryoVac	S-21-7021	
Set	Stands	ASED		
Set	Trip tray	ASED		
Set	Special adapters	ASED		
1	Gate valve DN160	ASED		
1	He II bypass valve	ASED		

5.4.3 EGSE

5.4.3.1 EGSE Hardware Configuration

The EGSE configuration, when completed, is shown in the figure below

S/S	Unit	Configuration			SCOE simulated equipments	Remarks
		Herschel				
EGSE	CCS	1				
	CCS Light	1				
	TM/TC DFE	1				
	CDMU SCOE	1				
	ACMS SCOE	1				
	TT&C SCOE	1				
	POWER SCOE	1				
	Cryo SCOE					
	NDIU					



The Herschel/ EGSE will be built with the following equipment:

- Central Check Out System (CCS)

- Central Check Out System Light (CCS Lite)
- The Power Control Subsystem SCOE (Power SCOE)
- The Telemetry, Tracking and Command SCOE (TT&C SCOE)
- The Telemetry and Telecommand Data Front End Equipment (TM/TC DFE)
- The Attitude and Control Measurement Subsystem SCOE (ACMS SCOE)
- The Central Data Management Unit SCOE (CDMU SCOE)
- The Cryo SCOE which performs four general tasks
  - Control and monitoring the Cryostat Instrumentation either directly by the Cryo SCOE, i.e. locally or initiated by the CCS, i.e. remotely.
  - Substitution of the real CCU if the CCU is not available
  - Monitoring of several parameters of the Cryo Vacuum Support Equipment (CVSE).
  - Simulate the launcher interface by providing "dry loop commands" to be sent to the CCU.

All the above items are interconnected through an Ethernet Local Area Network (LAN) used to exchange both data and command & control information.

The CCS Lite will be used and configured in order to have a hot TM/TC backup in case of main CCS crashes.

The NDIU will be configured to put ESOC in listening mode.

5.4.3.2 EGSE User Software

Most of the Test Software will be developed on the CCS, based on SCOS 2k, and will interface the HPSDB. It will consists mainly of:

- Test Sequences
- Synoptic Displays
- Data Evaluation and Test Analysis Software
- Simulation Software Master sequences (mainly for ACMS S/S).

On the contrary, on the SCOE's/DFE only a very peculiar type of software will be developed; it will mainly consist of:

- Configuration/set-up files for SCOE's/DFE instrumentation
- Sequence of commands
- Simulation files for Dynamic control and ACMS Sensors simulation
- Telemetry Simulation file for Missing Unit (Experiments).

A complete list of EGSE SW version (particularly CCS and HPSDB) shall be provided before start of test and attached to this procedure.

5.4.4 OGSE

No OGSE is required to carry out the test activities of the IST.

5.4.5 Special Equipment

5.4.5.1 Cooling device

The HIFI units when equipped with MLI (WEV, WEH, HRV, HRH) exceed their maximum operating temperature, WEV 35,5°C vs30°C, HRV 40,1°C vs 40°C, WEH 35,3°C vs 30°C, HRH 41,9°C vs 40°C.

Therefore the implementation of a cooling system for the two HIFI panels (forced convection directed in these areas) is mandatory.

All the units stay in their operating temperature range with comfortable margins, except:

- GYRO baseplate 63,5°C vs 55°C, due to use of flight thermal control parameters, covered by RFD HP-300000-AI-RD-0011 issue 03.
- CRS1 and CRS2 around 50°C, due to use of flight thermal control parameters, covered by RFD H-P-300000-AI-RD-0014 issue03.

6 Verification Requirements and Test Criteria

PASS/FAIL CRITERIA

At each test stage completion, the test success is determined comparing the results obtained against the expected values.

If the compliance between obtained and expected values has been met, and authorisation to proceed with the next stage of the test is given, then the actual test stage must be considered satisfactory completed.

The success of the overall testing activities is determined from the satisfactory completion of all test stages.

Successful criteria to be satisfied in each test stage shall be:

- Test conditions according to specification requirement;
- Complete verification of the requirement aspects according to the test specifications
- Fulfilment of test results with respect to required data;
- Verification that all the TM parameters used to monitor the SAT do not exceed the limit thresholds loaded in the HPSDB (OOL display);
- Verification that the TM (5,2), TM (5,4) and TM (1,8) received event reports are only those ones expected to fulfil the pass test criteria.

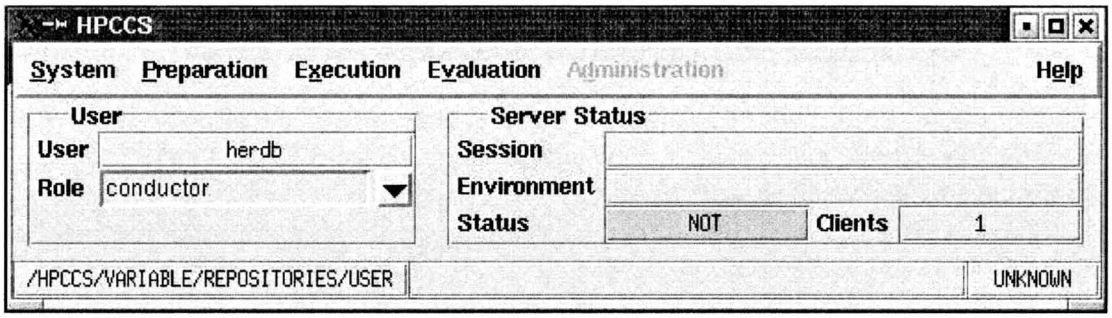
7 IST Test

7.1 HPCCS Configuration for IST Test

7.1.1 Apply Tag on test files

The **EGSE operator** has to perform the following steps **before starting IST test**:

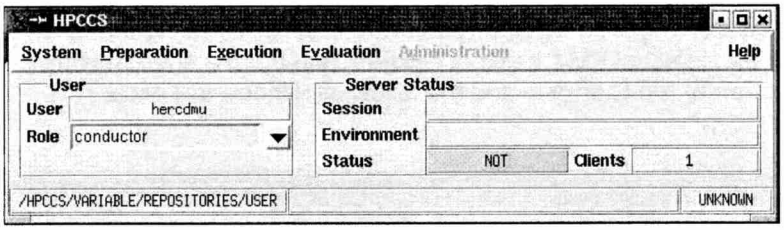
1. On a Workstation login as **herdb** (password **hertest**), being this user dedicated to DB operations for Herschel FM Checkout System, and open a shell (xterm).
2. Logged as herdb, run Startmmi and the following window will occur



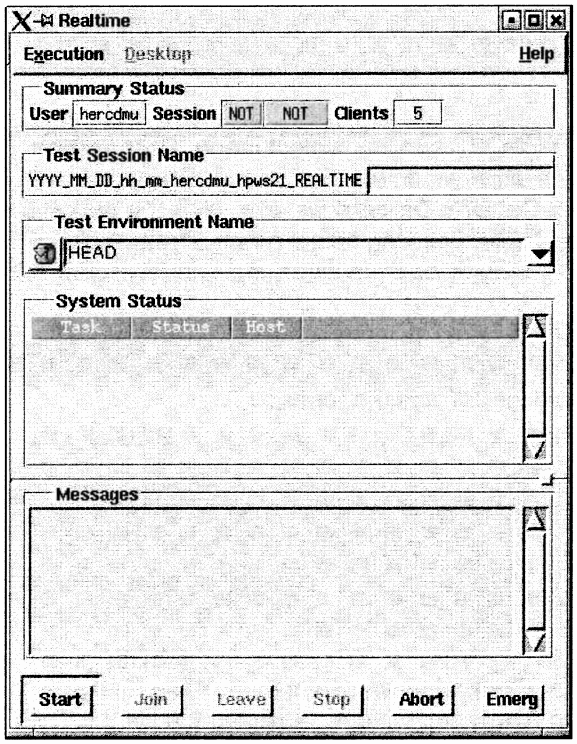
3. Logged as herdb, in HPCCS window, select menu "**Preparation → Prepare**"
4. Logged as herdb, In **PREP** window, select menu "**Preparation→ Discard all**"
5. Logged as herdb, In **Confirm Discard** window, click the button **Discard**
6. Logged as herdb, in **PREP** window, select menu "**Preparation→ Update**"
7. Logged as herdb, in **Check out environment** window**,** click the button **Check out** and then **Close**
8. Logged as herdb, in **PREP** window**,** select menu "**Tag → Apply**"
9. Logged as herdb, in the window **Apply Tag →New Tag,** insert TAG name
   Currently, TAG name for IST has the format:
   IST_x_PART_x_TP_xxxx_x_x_BEGIN_xxx
10. Logged as herdb, push **Apply → Apply**
11. Logged as herdb, confirm Tag Application Push Apply button
12. Logged as herdb, open a new **shell** window (xterm)
13. Logged as herdb, execute the command **update_tag**
14. Logged as herdb, insert the name of **TAG**
    IST_x_PART_x_TP_xxxx_x_x_BEGIN_xxx
15. Logged as herdb, in **PREP** window, select menu "**Tag → Apply**"
16. Logged as herdb, in **Apply tag** window, select in the list the TAG
    IST_x_PART_x_TP_xxxx_x_x_BEGIN_xxx
17. Logged as herdb, push **Copy selected tag**
18. Logged as herdb, modify the TAG name with **IST_x_PART_x_TP_xxxx_x_x_END_xxx**
19. Logged as herdb, push **Apply → Apply**
20. Logged as herdb, confirm Tag Application Push Apply button

7.1.2 Start test session on HPCCS

Logged as **hercdmu** or **heracms** run "startmmi"



On **HPCCS** window, select menu **"Execution → Start"** in order to open the following window. In the **"Test Session Name"** field, insert an abbreviation describing which IST test will be performed and click the button **"Start"** to proceed.



Once the real time session initialized, the button **"Join"** is enabled and shall be clicked. Then configure desktop of different CCS stations throught the menu "Desktop" and the following menus:

- Monitoring → Telemetry Desktop
- Monitoring → Telemetry Packet history
- Monitoring → Out of limit
- Monitoring → On Board Event History
- Test Sequences → Test Conductor Console
- Command → Telecommand History

NOTE: A session must be started on the 'CCS Lite' with a similar session name.

7.2 IST START for Spacecraft configuration

7.2.1 Diagram Overview

The flow of the "IST START" sequence is depicted in the diagram below. To save time during the satellite power on, the SSMM initialising and the ACMS switch on is performed in parallel.

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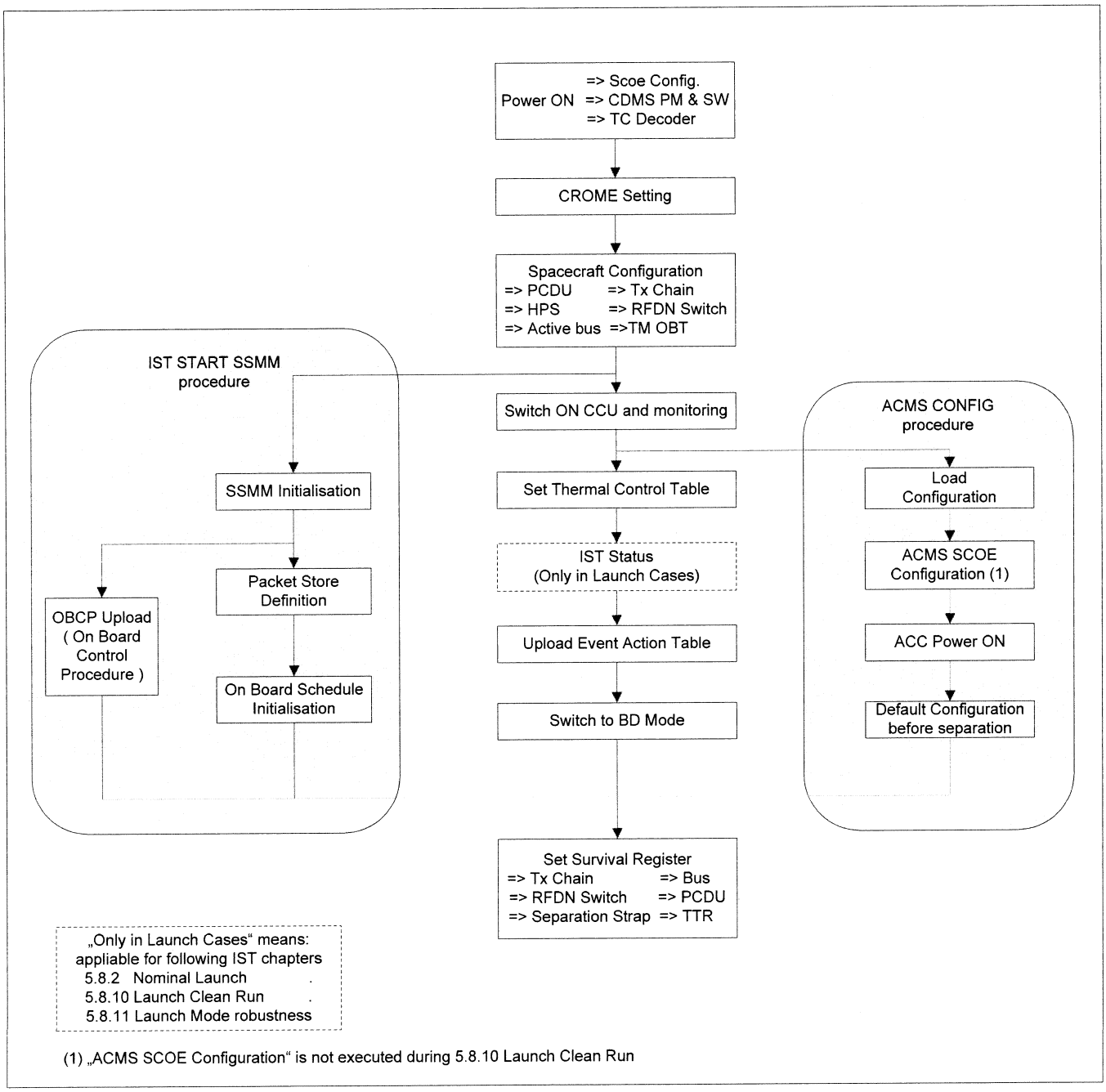


7.2.2 IST Configuration Table

The Herschel Satellite configuration for each IST test case is listed in the table below.

SASLPS SCOE	Bat. SCOE	Crome PAP/CCS	Sep. Strap SM	TTR SM	TM OBT	TC Dec.	PM SW	SSMM	Bus SM		PCDU SM		HPS	TxChain SM		RFDN SM		CCU ON	CCU Mode	ACMS Config. File
5.8.2 NOMINAL LAUNCH																				
SAS	Sim. Charged + Launch	PM A Nominal	Not Separated	B	A	A	A1	A 0-1-2 B 0-1-2	A	B	A	B	A	A	B	1&3	ABBB	A&B	2	IST_FN
5.8.3a ACMS Commissioning																				
SAS	Sim. Charged	PM A Nominal	Separated	B	A	B	A1	A 0-1-2 B 0-1-2	A	B	A	B	A	A	B	1&3	ABBB	A&B	1	IST_SCA1
5.8.3b S/C Commissioning																				
SAS	Sim. Charged	PM A Nominal	Separated	B	A	A	A1	A 0-1-2 B 0-1-2	A	B	A	B	A	A	B	1&3	ABBB	A&B	1	IST_MOD
5.8.4.5.1 SPIRE Commissioning																				
SAS	Sim. Charged	PM A Nominal	Separated	B	A	A	A1	A 1 B 1	B	A	A	B	A	A	B	1&3	ABBB	A&B	1	IST_COM1
5.8.4.5.2 SPIRE Spectrometer Complementary Test																				
SAS	Sim. Charged	PM B Nominal	Separated	A	B	B	B1	A 3 B 3	B	A	B	A	B	B	A	2&4	AABB	A&B	1	IST_COM2

SASLPS SCOE	Bat. SCOE	Crome PAP/CCS	Sep. Strap SM	TTR SM	TM OBT	TC Dec.	PM SW	SSMM	Bus SM		PCDU SM		HPS	TxChain SM		RFDN SM		CCU ON	CCU Mode	ACMS Config. File
5.8.4.6 PACS Commissioning																				
SAS	Sim. Charged	PM A Nominal	Separated	A	B	B	A1	A 2 B 2	B	A	B	A	B	B	A	2&4	AABB	A&B	1	IST_COM6
5.8.4.7 HIFI Commissioning																				
SAS	Sim. Charged	PM B Nominal	Separated	B	A	A	B1	A 3 B 3	A	B	A	B	A	A	B	1&3	ABBB	A&B	1	IST_COM7
5.8.4.8 Parallel Mode Commissioning																				
SAS	Sim. Charged	PM B Nominal	Separated	A	B	B	B1	A 0 B 0	A	B	B	A	B	B	A	2&4	AABB	A&B	1	IST_COM8
5.8.5 Mode Transition																				
SAS	Sim. Charged	PM A Nominal	Separated	B	A	A	A1	A 1 B 1	A	B	A	B	A	A	B	1&3	ABBB	A&B	2	IST_MOD
5.8.6 SC Reconfiguration																				
SAS	Sim. Charged	PM A Nominal	Separated	A	B	B	A1	A 2 B 2	B	A	B	A	B	B	A	2&4	AABB	A&B	1	IST_FD_B
5.8.7 CDMS Management																				
SAS	Sim. Charged	PM B Nominal	Separated	A	B	B	B1	A 0 B 0	A	B	B	A	B	B	A	2&4	AABB	A&B	1	IST_CDMS
5.8.8 DTCP Worst Case Scenario																				
SAS	Sim. Charged	PM B Nominal	Separated	A	B	B	B2	A 2 B 2	B	A	B	A	B	B	A	2&4	AABB	A&B	2	IST_WCS

SASL PS	Bat. SCOE	Crome PAP/CCS	Sep. Strap SM	TTR SM	TM OBT	TC Dec.	PM SW	SSMM	Bus SM		PCDU SM		HPS	TxChain SM		RFDN SM		CCU ON	CCU Mode	ACMS Config. File
5.8.9 RMS Reference Mission Scenario																				
SAS	REAL	PM A Nominal	Separated	B	A	A	A1	A 0-1-2 B 0	A	B	A	B	A	A	B	1&3	ABBB	A&B	1	IST_RMS1
5.8.9 Launch Clean Run																				
LPS	REAL	PM A Nominal	Not Separated	B	A	A	A1	A 0-1-2 B 0-1-2	A	B	A	B	A	A	B	1&3	ABBB	A&B	2	IST_CLN
5.8.11 Launch Mode Robustness																				
SAS	Sim. Charged +Launch	PM A Nominal	Not Separated	B	A	A	A1	A 0 B 0	A	B	A	B	A	A	B	1&3	ABBB	A&B	2	IST_LSR
5.8.12 NOM Mode Robustness																				
SAS	Sim. Charged	PM A Nominal	Separated	A	B	B	A1	A 3 B 3	B	A	B	A	B	B	A	2&4	AABB	A&B	1	IST_NMR
5.8.13 Instrument FDIR																				
SAS	Sim. Charged	PM A Nominal	Separated	B	A	A	A2	A 1 B 1	A	B	A	B	A	A	B	1&3	ABBB	A&B	1	IST_CDMS

ok

7.2.3 *Initialisation*

Step-No.	Initialisation-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	TT&C SCOE initialisation						
1	Verify that TT&C SCOE application SW is running Otherwise go on TTC SCOE or access remotely (command "startCMD ttcvnc" on shell window") and click "TTC SCOE Herschel" icon on TT&C SCOE desktop controller and wait for self test completion.					✓	
2	On TT& SCOE application, in window ":: CONF namespace" (that can be open by menu "windows/SCOE config"), select menu "Config/Load", load the file "Herschel.conf" then click "open" button.					✓	
	SPACECRAFT SKIN CONNECTORS CONFIGURATION						
3	**Verify that all the SCOE skin connectors cables are installed** • Goto chapter 4.3 • Choose according to the IST Test case the related skin configuration table • Check the list and sign off (together with PA and Floor Manager).					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	3/9/08	18/5/09	00 : 10

Step-No.	Initialisation-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	ACMS SCOE CHECK						
4 N/A for "Launch Clean Run"	Verify that the ACMS SCOE is ON and operational					✓	
5 N/A for "Launch Clean Run"	In the Clean Room, check on the ACMS SCOE that STR UCE Electrical Stimuli program on PC2 and PC3 are enabled (i.e. double click on "scroll lock" and check "01-02 & 01-03" that mouse pointer can be moved). Otherwise execute Annex D Operator Note 3					✓	
	TMTC DFE & CCS TIME CHECK						
6	Check that the TMTC DFE time is the same as the CCS time. If the is a difference correct the DFE by right clicking on the time in the bottom right hand corner and select 'Adjust Time/Date'.					✓	

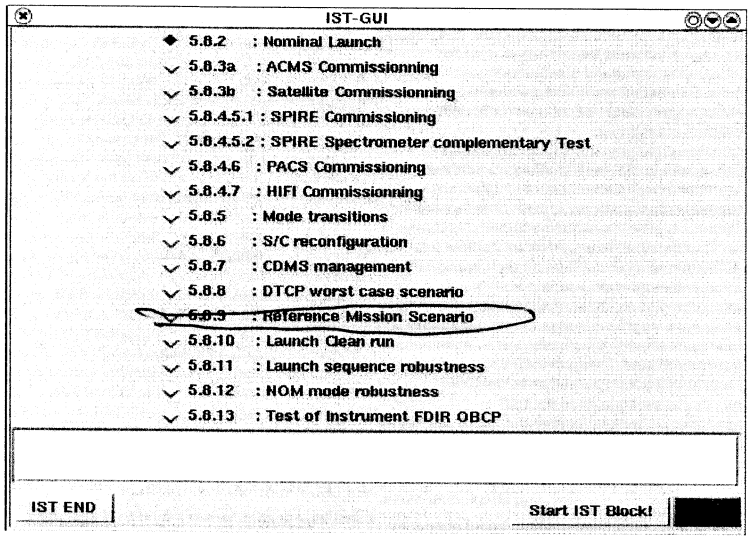
Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. chen	[signature] 4/9/08	18/5/09	0:11

Step-No.	Initialisation-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	CCS SESSION STARTUP						
7	Start a session on the CCS, applying a relevant session name with respect to the test case being performed	Refer to chapter 7.1.2 (Page 70)				✓	
8	Start a session on the CCS Lite And from the Test Conductor console execute connect TMTCDFE					✓	

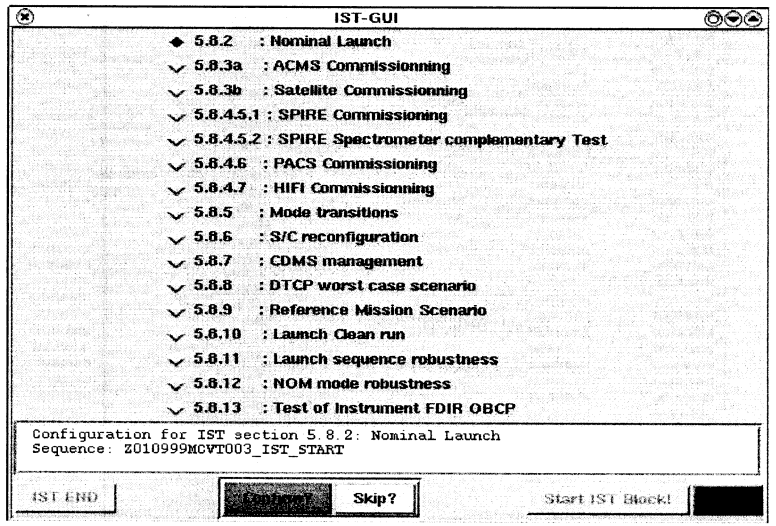
Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	B. Varcolo	18/5/09	0:01

7.2.4 IST Start Step by Step Procedure

At the CCS test sequence console call the sequence "Z010999MCVT201_IST_GUI " to start an IST test. When the Graphical User Interface (see Picture 1) occurs, select the appropriate test case (and note it down in this Test Procedure) followed by a click on the "Start IST Block".



Picture 1

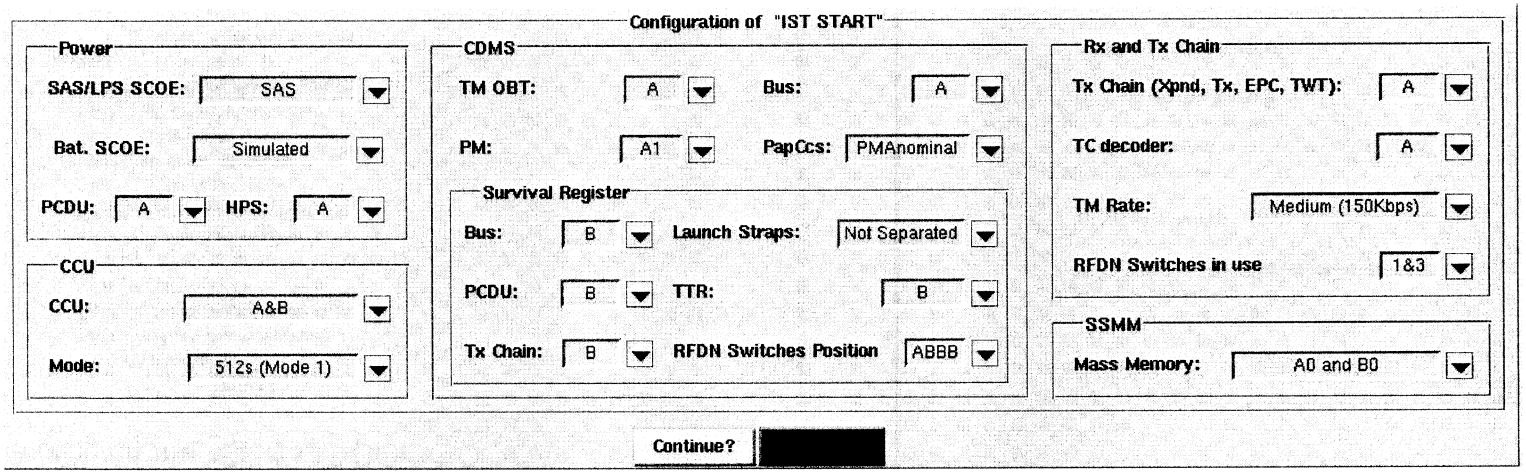


Picture 2

Then configuring the spacecraft for the selected IST Test is proposed to be run or skipped (see Picture 2).
If the button “Confirm” has been clicked, continue with step 1 of the following IST START step description. Otherwise pressing the button “Skip” will lead to chapter 7.4

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. chan		18/7/09	0 :13

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
1	**Z010999MCVT003_IST_START** At the bottom of the window, the IST_START configuration panel displays all parameters applied during the IST_START. ⇨ Click the button "Continue" to proceed	To Check in Config. Table (Page 73)					



IST_START Configuration Panel

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	20:15 M. Varcoe 2/9/08	18/5/09	0:16

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
2	**Z010999MCVT003_IST_START** Note the execution diagram, resuming each configuration steps and check all parameters are set as previously (particularly if any modification has been done on configuration panel) **"START Satellite HERSCHEL "IST_START""** ⇨ Choose "Yes" or "No"	YES		Yes		✓	
3	**Z010999MCVT097_ASDGEN_CRIT_PARS_CHECK** This script will run during the whole session to monitor critical parameters. As soon as wrong value will be detected. A popup window will occur alerting the operator about incorrect TM checks ⇨ Minimise this window by clicking the corresponding button (on corner top right, first button from left)					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen		18/5/09	0:17

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
4	**Z010999MCVT003_IST_START** Reply to the prompt: **"SPACECRAFT POWER_ON"** ⇨ Click the button "Confirm" to proceed					✓	
5	**Z010999MCVT001_POWER_ON_HER_IST** **Set Battery ??????????** **Set TCDecoder to ?** **Set PM_SW ??** Do you want to continue with the upper configuration: If these parameter values are in accordance with the IST Configuration Table (Page 73), ⇨ click the button "OK" to proceed	To Check in Config. Table (Page 73) Bat.SCOE TCDec. PM/SW				✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	R. Vasco	18/5/09	0:17

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
6	**Z010999MCVT001_POWER_ON_HER_IST** A Popup window occurs asking to verify data reception on TM/TC Data Front End workstation: In window "System Status", check following panels ➔ TM chain / TM Acquisition synchronised and locked Status expected ➔ View / TM Transfer Frame Monitor TM frame data should be received before few minutes ⇨ click the button "OK" to proceed					✓	
7	**Z010999MCVT001_POWER_ON_HER_IST** A Popup Window occurs asking to start a new acquisition in Bus Monitor with name IST on the CDMU SCOE: - start a new acquisition by clicking "Menu Mode/Start new Acquisition" If an acquisition is already started, please stop and restart ⇨ click the button "OK" to proceed After few minutes Data transfer should be visible on the Bus Monitor.				N/A for "Launch Clean Run" as the cables for CDMU BUS monitor are disconnected	✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. che-	A. Vasconcelos	18/5/09	0:30

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
8	**D102159SCVT001_GET_ALARM_STATUS** Check that both DOD ext1 and ext2 are "Not Asserted". Otherwise execute Annex D – Operator Note 8 ⇨ Click the button "End TS!" to proceed					✓	
9	**D102159SCVT001_GET_ALARM_STATUS** Check that both DOD ext1 and ext2 are "Not Asserted". Otherwise execute Annex D – Operator Note 8 ⇨ Click the button "End TS!" to proceed					✓	
9b when BCR OCP are detected ACTIVE	**Z010999MCVT001_POWER_ON_HER_IST** Temporary workaround until **SPR-107 / NCR-3312** are solved ⇨ click the button "YES" to proceed the workaround **See SPR 107 / NCR 3312**	YES		Yes	NCR **3492**: TTRMMemCorEr_A 1 := 0 SPR **244**: OutOfLimit for SA_Pan?_Temp_N/R (WMB0?569) SPR **285**: many TCs not acknowleged For launch clean run with real Battery fully charged, parameters BCR1, BCR2 are expected active.	✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen		18/5/09	0:33

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
10	**D102159SCVT032TIMESYNCRO** Wait until the synchronization between CDMS On-board Time and CCS is finished ⇨ Click the button "End TS!" to proceed Note: The time synchronisation (step 10) is performed in parallel to the rest of the procedure. The test operator can continue with the following step (11 onwards) whilst this occurs.				TM parameter ZE00999 out of limits and back in limits again at synchronisation to be expected.	✓	
11	**Z010999MCVT001_POWER_ON_HER_IST** ⇨ Click the button "End TS!" to proceed					✓	
12	**D102159SCVT001_GET_ALARM_STATUS** Check that both DOD ext1 and ext2 are "Not Asserted". Otherwise execute Annex D – Operator Note 8 ⇨ Click the button "End TS!" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen		18/5/09	0:39

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
13	**Z010999MCVT003_IST_START** Reply to the prompt: **"CDMS Configuration:"** **"CROME settings [redacted]"** If the CROME settings is in accordance with the CROME PAP/CCS of IST Configuration Table (Page73), Click the button "Confirm" to proceed	To Check in Config. Table (Page 73) CROME PAP/CCS				✓	
14	**D102159SCVT176_WRITE_CROME** ⇨ Click the button "End TS!" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	R. Vascotto	18/5/09	0:47

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
15	**Z010999MCVT003_IST_START** Reply to the prompt: **"CDMS Configuration:"** **"Set configuration"** **"Bus ? PCDU ? HPS ? TxChain ? RFDN ???"** **"TM-OBT ? TMrate ?)"** If all these parameter value are in accordance with the IST Configuration Table (Page 73), ⇨ Click the button "Confirm" to proceed	To Check in Config. Table (Page 73) BUS PCDU HPS TxCh. RFDN TM-Obt			Please note that the TMrate Medium (150 Kbps) is not specified in IST Config. Table on page 73.	V	
16 Only if Encoder B is req.	**D102159SCVT104_ENCODER_SELECT** ⇨ Click the button "End TS!" to proceed				SPR 286: TM check needs repeat N/A		
17	**D102159SCVT174_IST_REDUNDANT_CONF** ⇨ Click the button "End TS!" to proceed					V	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	D. Chen	A. Vasconcelos	18/5/09	0:48

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
18	**Z010999MCVT003_IST_START** Reply to the prompt: **"SSMM Configuration" 22222222"** ⇨ Click the button "Confirm" to proceed	To Check in Config. Table (Page 73) SSMM				✓	
19	**Z010999MCVT005_IST_START_SSMM** Start initialising with Steps 1-2 of IST START SSMM Procedure (see Page 98). Then continue with the next test step of IST_START. **NOTE:** After completion of Mass Memory initialisation (roughly 12 minutes per bank), i.e. when **ALL** affected mass memory banks are **ON**, continue with step 3 of IST START SSMM Procedure (see Page 98).				In Launch cases, IST_START_SSMM shall be completely performed before next step	✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen		18/7/09	00 : 48

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
20	**Z010999MCVT003_IST_START** Reply to the prompt: **"SWITCH ON CCU [redacted] and"** **"START MONITORING in MODE [redacted]"** ⇨ Click the button "Confirm" to proceed In case that TM checks for CCU valves are failed, see Annex D Operator note 11 and perform actions if required.	To Check in Config. Table (Page 73) CCU On Mode			**NCR-3119:** Alarms for TMs o KM130300 o KM120300 o KM110300 fails status consistency check during CCU A on And for TMs o KM130301 o KM120301 o KM110301 fails status consistency check The following is expected until TC DCT53170 is sent: o Events 28417 CCU A monitoring discarded	V	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	R. Vaccaro	18/5/09	0:50

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
21	**Z010999MCVT003_IST_START** Reply to the prompt: **"Record CCU Temp In Background"** ⇨ Click the button "Confirm" to proceed				**Minimise Log file after starting**	✓	
22	**Z010999MCVT003_IST_START** From the Test Conductor Console command line, execute the following command to clear the failed consistency check alarms from the CCU resetsccparams K*					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B chen	R. Varela	18/5/09	01:01

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
23 applicable only in launch (IST spec. 5.8.2 5.8.10 5.8.11)	**Z010999MCVT003_IST_START** Reply to the prompt : **"STATUS SPACECRAFT and EGSE (Power ON)"** ⇨ Click the button "Confirm" to proceed Reply to the next prompt: **"Do you want to stop and notice each failure?"** ⇨ Choose "YES" to proceed				N/A		
24 applicable only in launch (IST spec. 5.8.2 5.8.10 5.8.11)	**Z010999MCVT1533_IST_STATUS** Check the Satellite status displayed and ⇨ Click the button "OK" to proceed				N/A		

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen		18/5/09	01:01

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
25	**Z010999MCVT003_IST_START** Reply to the prompt: **ACMS SCOE Configuration – ACMS Power ON** ⇨ Click the button "Confirm" to proceed Execute ACMS CONFIG procedure (Page 102) in parallel to the IST_START master					✓	
26	**Z010999MCVT003_IST_START** Reply to the prompt: **"SET TCT Table for Ambient Temperature"** ⇨ Click the button "Confirm" to proceed					✓	
27	**D102159SCVT032EnNomTCSLoops** ⇨ Click the button "End TS!" to proceed					✓	
28	**D102159SCVT115_CHECK_HCS_OFF** ⇨ Click the button "End TS!" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	D. chen	2/9/08	18/5/09	01: 11

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
29	**Z010999MCVT003_IST_START** Reply to the prompt: **"EAT UPLOADING"** ⇨ Click the button "Confirm" to proceed"					✓	
30	**D102159SCVT192_GET_EAT_REPORT** Check that every initial entries of the Event Action Table are successfully checked ⇨ Click the button "End TS!" to proceed					✓	
31	**D102159SCVT192_GET_EAT_REPORT** Check that every initial entries of the Event Action Table are correctly set ⇨ Click the button "End TS!" to proceed					✓	
32	**D102159SCVT192_IST_UPLOAD_EAT** ⇨ Click the button "End TS!" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. chen		18/5/09	1:19

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
33	**Z010999MCVT003_IST_START** Ckeck that ACC is running on TM Packet history with filter on APID 512 (set on Step 1 of ACMS Configuration Procedure 7.2.4.2 Page 102) and checking packets reception.					✓	
34	**Z010999MCVT003_IST_START** Do not perform before the completion of the procedures: - IST START SSMM and - ACMS Configuration Cannot be run in parallel with other "active" sequences or TCs send in parallel Reply to the prompt: **"CDMS CONFIGURATION:"** **"SURVIVAL REGISTER SETTING"** **"(Bus ?, PCDU ?, RFDN ????, TxChain ?, TTR ?, Sep Strap ?????)"** ⇨ Click the button "Confirm" to proceed	To Check in Config. Table (Page 73) Bus PCDU RFDN TxCh. TTR Sep Strap				✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen		18/5/09	2:06

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
35	**D102159SCVT175_SET_SURV_REG** ⇨ Click the button "End TS!" to proceed					✓	
36 (only in launch test cases	**Z010999MCVT003_IST_START** Prompt: "Check CDMS Tables" ⇨ Click the button "Confirm" to proceed				N/A		
37 (only in launch test cases	**D102159SCVT219_GET_BSW_HEALTH_UIU** ⇨ Click the button "End TS!" to proceed				N/A		
38 (only in launch test cases)	**D102159SCVT204_GET_MOT** ⇨ Click the button "End TS!" to proceed				N/A		

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen		18/5/09	2:10

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
39 (only in launch test cases)	**D102159SCVT192_GET_EAT_REPORT** Check that every uploaded entries of the Event Action Table are correctly set ⇨ Click the button "End TS!" to proceed				N/A		
40 (only in launch test cases)	**D102159SCVT205_SAT_COM_TCT** ⇨ Click the button "End TS!" to proceed				Expected that checks will fail as the uploaded TCT is for ambient but the checks are performed against the N/A		
41 (only in launch test cases)	**D102159SCVT207_SAT_COM_FCCT** ⇨ Click the button "End TS!" to proceed				N/A		

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen		18/5/07	2:10

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
42	**Z010999MCVT003_IST_START** Reply to the prompt: **"DOWNLINK SSMM PACKET STORE and CEL A&B"** ⇨ Click the button "Confirm" to proceed					✓	
43	**D102159SCVT188_IST_DUMP_PKT_STORE** ⇨ Click the button " End TS!" to proceed				With parameters: 0 80 1 81 2 82 3 83	✓	
44	**D102159SCVT188_IST_DUMP_PKT_STORE** ⇨ Click the button " End TS!" to proceed				With parameters: CEL_A CEL_B **All events, warnings and alarms recorded before the dump, re-occur during this step**	✓	
45	**Z010999MCVT003_IST_START** ⇨ Click the button "End TS!" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen		18/5/09	:

7.2.4.1 IST_START_SSMM Procedure

Step-No.	IST_START_SSMM-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
1	**Z010999MCVT005_IST_START_SSMM** Reply to the prompt: **"SSMM CONFIGURATION ??????"** ⇨ Click the button "Confirm" to proceed	To Check in Config. Table (Page 73) SSMM				✓	
2	**D102159SCVT186_IST_SSMM_ON** **Reply to the prompt "Do you want to continue" "with such configuration?"** Check the SSMM configuration and then ⇨ Click the button "Continue" to proceed				Mass Memory config. takes about 12 minutes per bank. Therefore, the next step in IST_START procedure can be executed.	✓	
3	**D102159SCVT186_IST_SSMM_ON** ⇨ Click the button "End TS!" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	R. Vasco 2/9/01	18/5/08	1:41

Step-No.	IST_START_SSMM-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
4	**Z010999MCVT005_IST_START_SSMM** Reply to the prompt: **"OBCP UPLOADING"** ⇨ Click the button "Confirm" to proceed **Let run in parallel the sequence** **D102159SCVT193_IST_UPLOAD_OBCP** and continue with next step "Packet Store Definition"				occurrence of 2 BSW problems EvtID 30738 expected when starting OBCP Management for the 1st time.	✓	
5	**Z010999MCVT005_IST_START_SSMM** Reply to the prompt: **"Definition of the Packet Store"** ⇨ Click the button "Confirm" to proceed					✓	
6	If only 1 Bank (bank 0, 1, 2 or 3) is initialised on each SSMM **D102159SCVT185_IST_PACKET_STORE_DEF** If 3 banks (banks 0, 1 and 2) are initialised on each SSMM **D102159SCVT189_IST_PACKET_STORE_DEF2** If SSMM A banks 0, 1 and 2 and only SSMM B bank 0 are initialised **D102159SCVT178_RMS_PKT_STORE_DEF** When the requested SSMM bank are initialised ⇨ Click the button "Yes" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	R. Vasco	18/5/09	1:46

Step-No.	IST_START_SSMM-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
7	If only 1 Bank is initialised on SSMM A & B **D102159SCVT185_IST_PACKET_STORE_DEF** If 3 banks are initialised on SSMM A & B **D102159SCVT189_IST_PACKET_STORE_DEF2** If 3 banks on SSMM A and only 1 on SSMM B are initialised **D102159SCVT178_RMS_PKT_STORE_DEF** ⇨ Click the button "End TS!" to proceed				**NCR-3492** occurs: (TTRRMMemCorEr_A 2 := 1)!	✓	
8	**Z010999MCVT005_IST_START_SSMM** Reply to the prompt: **"Initialise MTL Service Buffers"** ⇨ Click the button "Confirm" to proceed				TM(5,4) alarms expected: o Evt_MTLBufADel (ID:26914) o Evt_MTLBufBDel (ID 26915)	✓	
9	**D102159SCVT209_START_ON_BOARD_SCHEDULE** ⇨ Click the button "End TS!" to proceed					✓	
10	**D102159SCVT193_IST_UPLOAD_OBCP** ⇨ Click the button "End TS!" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	D. Cha	D. Lamarre	18/5/09	2:05

Step-No.	IST_START_SSMM-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
11	**Z010999MCVT005_IST_START_SSMM** ⇨ Click the button "End TS!" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	D. Lamarby	18/5/09	2:05

7.2.4.2 ACMS Configuration Procedure

Step-No.	ACMS_CONFIG-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
1	Open the ACMS_H_BLOC MIM Display to verify the telemetry status updating. Configure a "Telemetry Packet History" window set with filter APID = 512					✓	
2	**A102109SPVT003_ACMS_CONFIG25** At the prompt "Enter your choice", insert **"1"** to select **"Select/Load ACMS_CONFIG Input File"** ⇨ Click the button "OK" to proceed	1				✓	
3	**A102109SPVT003_ACMS_CONFIG25** ⇨ Click the button "Continue" to proceed					✓	
4	**A102109SPVT004_ACMS_LOADCONFIG1** At the prompt, **"Enter your choice:** ⇨ Click the button "OK" to proceed	To Check in Config. Table (Page 73) ACMS Config. File			IST_RMS1	✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. chen		18/5/09	01:03

Step-No.	ACMS_CONFIG-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
5 N/A for "Launch Clean Run"	**A102109SPVT003_ACMS_CONFIG25** At the prompt "Enter your choice", insert **"6"** to select **"ACMS SCOE Configuration"** ⇨ Click the button "OK" to proceed	6				✓	
6 N/A for "Launch Clean Run"	**A102109SPVT003_ACMS_CONFIG25** ⇨ Click the button "Continue" to proceed					✓	
7 N/A for "Launch Clean Run"	**A102109SPVT003_ACMS_CONFIG25** Verify on AND YA001939 AMCS SCOE - AS_PSEUDO 1 of 1 the parameters YMACT939 (ACMS SCOE state) YMASE939 (Simulator stata) YMAMS939 (MILFE state) YMAUS939 (UIFE state)	executing executing executing executing			Alarms are expected for TM with APID 2018 and EVID 4 when the parameters on the left have not reached the executing stage yet.	✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B Chen	M. Vasconcelos	18/5/09	1:15

Step-No.	ACMS_CONFIG-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
8	**A102109SPVT003_ACMS_CONFIG25** At the prompt "Enter your choice", insert **"4"** to select **"ACMS Power ON (in Pre-Sep configuration)"** ⇨ click the button "OK" to proceed	4				✓	
9	**A102109SPVT003_ACMS_CONFIG25** ⇨ Click the button "CONTINUE" to proceed					✓	
10	**A102109SPVT011_ACMS_ON** During this sequence, following events are expected: - TM(5,4) Event Report and Reconfiguration Log - TM(5,2) APID:2018 (ACMS_SCOE) indicates ACMS "TestDataWord" needs to be switched ON. A few seconds later when the corresponding TC is sent, this TM(5,2) must disappear. - Multiple other events TM(5,1), such as "Fdir Task Overrun" or "Fdir Rm Parity Error"				Expected Out of Limit of AEYYY109 (synchronisation) ACC may become INVALID for a short time SPR **245** NCR **2862**: Out of Limit of HKA_ANTH?_Data SPR **334** OutOfLimit of Gyro Calib Curve in LCR	✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	M. Kasaka	18/5/09	1:27

Step-No.	ACMS_CONFIG-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
11	**A102109SPVT003_ACMS_CONFIG25** At the prompt "Enter your choice", Insert **"5"** to select **"Modify ACC SGM/RM content"** ⇨ Click the button "OK" to proceed	5				✓	
12	**A102109SPVT003_ACMS_CONFIG25** ⇨ Click the button "Continue" to proceed					✓	
13	**A102109SPVT003_ACMS_CONFIG25** At the prompt "Enter your choice", Insert **"20"** for **"Default configuration for separation"** ⇨ Click the button "OK" to proceed	20			Expected Out of Limit of AEYYY109 (synchronisation) ACC may become INVALID for a short time TC PM_Reset (ACY42109) not acknowledge expected	✓	
14	**A102109SPVT003_ACMS_CONFIG25** ⇨ Click the button "Continue" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen		18/5/09	1:28

Step-No.	ACMS_CONFIG-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
15	**A102109SPVT003_ACMS_CONFIG25** After about 10 min verify that ACMS Sequences are correctly terminated and ACMS CONFIG MAIN MENU 1.0 is available.					✓	
16	**A102109SPVT003_ACMS_CONFIG25** At the prompt "Enter your choice", Insert **"99"** to select **"Return to Main Menu 1.0"** ⇨ Click the button "OK" to proceed	99				✓	
17	**A102109SPVT003_ACMS_CONFIG25** ⇨ Click the button "Continue" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	R. Vasconcelos	18/5/09	1:41

7.3 IST Test Case

According to the actual IST Test Case, IST_GUI will prompt with following window(see Figure 1) to execute the relevant test sequence / procedure as listed below.

Click the button "Confirm" to call the appropriate sequence displayed in the message box.

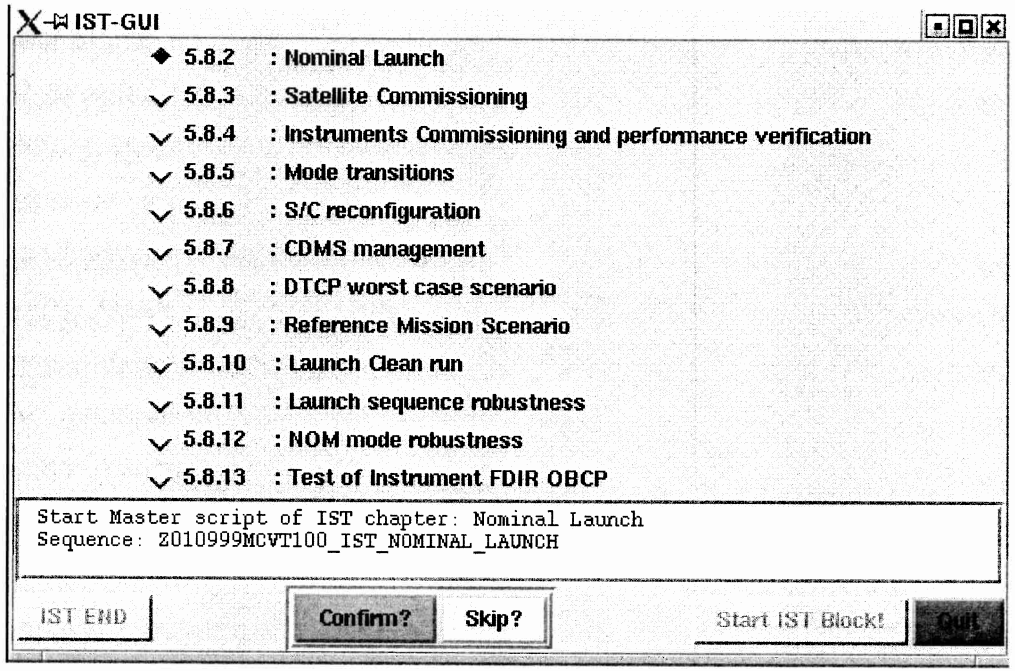


Figure 1: IST_GUI calling Master sequence, for instance "Nominal Launch"

Test location:	Operator	Product-Assurance:	Date: Time :

Important Note: After execution of the IST Test Case, S/C has to be switched off with the "IST END" procedure as described in chapter 7.4.

Herschel IST Test Case 'Launch Phase, Separation and Post Separation':	HP-2-ASED-TP-0185
Herschel IST Test Case 'Satellite Commissioning':	HP-2-ASED-TP-0186
Herschel IST Test Case 'ACMS Commissioning':	HP-2-ASED-TP-0187
Herschel IST Test Case 'Instruments Commissioning and Performance Verification':	HP-2-ASED-TP-0188
Herschel IST Test Case 'Mode Transitions':	HP-2-ASED-TP-0189
Herschel IST Test Case 'S/C Reconfiguration':	HP-2-ASED-TP-0190
Herschel IST Test Case 'CDMS Management': ..	HP-2-ASED-TP-0191
Herschel IST Test Case 'DTCP Worst Case Scenario': ..	HP-2-ASED-TP-0192
Herschel IST Test Case 'REFERENCE Mission Scenario':	HP-2-ASED-TP-0193
Herschel IST Test Case 'Launch Clean Run':	HP-2-ASED-TP-0194
Herschel IST Test Case 'Launch Sequence Robustness':	HP-2-ASED-TP-0195
Herschel IST Test Case 'NOM Mode Robustness':	HP-2-ASED-TP-0196
Herschel IST Test Case 'Test of Instrument FDIR OBCP'	HP-2-ASED-TP-0197

Highlight the TEST Case to be performed in the above

Test location:	Operator	Product-Assurance:	Date:	Time :

7.4 IST END Procedure

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
VS#31-3 1.	**IST_GUI** ⇨ Click the button "OK" and then ⇨ Click the button "IST_END" to proceed			IST_END		✓	
VS#31-3 2.	**D102159SCVT188_IST_DUMP_PKT_STORE** ⇨ Click the button "Confirm" to proceed			Confirm		✓	
VS#31-3 3.	**D102159SCVT188_IST_DUMP_PKT_STORE** ⇨ Click the button " End TS!" to proceed			END TS	PVS#34	✓	

~~Test location:~~ Date	Operator	Product-Assurance:	~~Date:~~ Test Location Time
20/5/2009	Uwe Klenke		ESTEC 12:54

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
PVS#31-3 4. Only if PACS, SPIRE or HIFI is still ON	**Z010999MCVT004_IST_END** If one of the instruments is detected "ON" reply to the prompt: "Should the sequence" Z102999SCVT011_ASDGEN_PACSPWROFF_P Z102999SCVT005_ASDGEN_SPIREPWROFF_P Z102999SCVT015_ASDGEN_HIFIPWROFF_P "be called?" ⇨ Click the button "YES" to proceed					✓ S. Elsley 13:05 20/5/09	
5. Only if CCU A is ON	**Z010999MCVT004_IST_END** If CCU is detected "ON" reply to the prompt: Should the sequence "K102999ECVT001_ASDGENCCU_ABPWROFF be called ⇨ Click the button "YES" to proceed				NEW SESSION STARTED.		

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	S ELSLEY		20/5/09	:

7.4 IST END Procedure

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
1.	**IST_GUI** ⇨ Click the button "OK" and then ⇨ Click the button "IST_END" to proceed					✓	
2.	**D102159SCVT188_IST_DUMP_PKT_STORE** ⇨ Click the button "Confirm" to proceed					✓	
3.	**D102159SCVT188_IST_DUMP_PKT_STORE** ⇨ Click the button " End TS!" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. chen		5/9/08	19:52

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
4. Only if PACS, SPIRE or HIFI is still ON	**Z010999MCVT004_IST_END** If one of the instruments is detected "ON" reply to the prompt: "Should the sequence" Z102999SCVT011_ASDGEN_PACSPWROFF_P Z102999SCVT005_ASDGEN_SPIREPWROFF_P Z102999SCVT015_ASDGEN_HIFIPWROFF_P "be called?" ⇨ Click the button "YES" to proceed				N/A		
5. Only if CCU A is ON	**Z010999MCVT004_IST_END** If CCU is detected "ON" reply to the prompt: Should the sequence "K102999ECVT001_ASDGENCCU_ABPWROFF be called ⇨ Click the button "YES" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chan	A. Vasco	5/9/08	19:53

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
6. Only if RWL ON and ACMS is still in SCM	**Z010999MCVT004_IST_END** "Please ensure that ACMS is set in OCM mode, otherwise select the correct menu in the ACMS_CONFIG25" Perform Step 1 of Chapter 7.4.1 then click OK					✓	
7. Only if RWL are still spinning	**Z010999MCVT004_IST_END** Start the sequence A102109SPVT061_RWL_SPINDOWN? ⇨ Click the button "YES" to proceed				Out of Limits concerning RWL speed are expected during RWL spin down	✓	
8. Only if ACMS is still ON	**Z010999MCVT004_IST_END** Start the sequence A102109SPVT012_ACMS_OFF ? ⇨ Click the button "YES" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. chen	R. Vasco	9/9/2008	20:17

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
9. Only if ACMS is still ON	**A102109SPVT012_ACMS_OFF** During this sequence, following event are expected to occur: • TM(5,2) EvtID: 33 Event Report - ACB Rx Failed • TM(5,2) EvtID: 33 Event Report - ACB Rx Failed • TM(5,4) EvtId:16426 Mode SBSM Entry • Event Report - Boot Report and Reconfiguration Log • Event Report - SDB Unhealthy • Multiple "New Tm 251004939" • Multiple "New Tm 251001939" • Multiple "New Tm 251002939" This sequence needs time to be completely run, so let run in parallel with the following steps.					✓	
10. Only if SREM is still ON	**Z102999SCVT002_SREM_OFF** ⇨ Click the button "End TS!" to proceed					✓	
11.	**D102159SCVT174_IST_REDUNDANT_CONF** ⇨ Click the button "Ens TS" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. chen		5/9/08	20 : 21

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
12. Only if Survival Register set with separated flag	**Z010999MCVT004_IST_END** At the prompt "The survival register is set with the launch flag "separated". It must be set to "not separated" to avoid any reconfiguration during power off" ⇨ Click the button "Yes" to proceed					✓	
13. Only if Survival Register set with separated flag	**D102159SCVT175_SET_SURV_REG** ⇨ Click the button "End TS!" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	R. Vaccolk	5/9/08	20:31

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
14. Only if CROME wrongly set	**Z010999MCVT004_IST_END** Reply to the prompt "The CROME registers are not configured " "in PMA or PMB nominal " "Such configuration will block TM during Power OFF" ⇨ Click the button "YES" to proceed					✓	
15. Only if CROME wrongly set	**D102159SCVT176_WRITE_CROME** ⇨ Click the button "End TS!" to proceed					✓	
16. Only if SSMM is ON	**D102159SCVT188_IST_DUMP_PKT_STORE** ⇨ Click the button "End TS!" to proceed					✓	
17. Only if SSMM is ON	**D102159SCVT181_Disable_PKT_STORE** ⇨ Click the button "End TS!" to proceed						

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	R. Vaccaro	5/9/08	20:54

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
18. Only if SSMM is ON	**D102159SCVT187_IST_SSMM_OFF** During this sequence, the following events are expected: • TM(5,2) EvtId: 84 PM COCOS SPW C Reconnection • TM(5,4) EvtId: 88 MM A COCOS RT Failure • TM(5,4) EvtId: 148 MM SPW C address transfer error • TM(5,2) EvtId: 85 PM COCOS SPW C Reconnection • TM(5,4) EvtId: 89 MM A COCOS RT Failure • TM(5,4) EvtId: 149 MM SPW C address transfer error ⇨ Click the button "End TS!" to proceed					✓	
19. Not for Launch Cases	**D102159SCVT001PM_SELECT** ⇨ Click the button "End TS!" to proceed					✓	
20.	**Z010999MCVT002_POWER_OFF_HER_IST** ⇨ Click the button "End TS!" to proceed					✓	
21.	**Z010999MCVT004_IST_END** ⇨ Click the button "End TS!" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen	R. Vaccaro	5/3/08	21:09

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
22.	**IST_GUI** ⇨ Click the button "Quit" to terminate the test sequence				N/A	.	
23.	**Update CVS Tag** 1. Log on as herdb 2. Open a **shell** (xterm) 3. Execute the command **update_tag** Insert the name of **TAG** → **IST_x_PART_x_TP_xxxx_x_x_END_xxx**					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. chen	R. Vasaltz	5/9/08	21 :10

7.4.1 ACMS SCM to OCM transition for power off

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
1	**A102109SPVT003_ACMS_CONFIG25** At the prompt "Enter your choice", insert **"2"** to select **"Transition SCM to OCM"** ⇨ Click the button "OK" to proceed, then "Continue"	2				✓	
2	**A102109SPVT003_ACMS_CONFIG25** At the prompt Menu 7 "Enter your choice", insert **"5"** to select **"Reaction wheels spin down"** Click the button "OK" to proceed, then "Continue"	5				✓	
3	**A102109SPVT003_ACMS_CONFIG25** At the prompt Menu 9 "Enter your choice", insert **"1"** to select **"Switch off ACMS"** Click the button "OK" to proceed, then "Continue"	1				✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chan	R. Vaccaro	5/9/08	21:11

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
4	**A102109SPVT012_ACMS_OFF** During this sequence, following event are expected to occur: • TM(5,4) EvtId:16426 Mode SBSM Entry • Event Report - Boot Report and Reconfiguration Log • Event Report - SDB Unhealthy • TM(5,2) EvtID: 33 Event Report - ACB Rx Failed • TM(5,2) EvtID: 33 Event Report - ACB Rx Failed • Multiple "New Tm 251004939" • Multiple "New Tm 251001939" • Multiple "New Tm 251002939" • Multiple TM(5,1) such as "FDir Task Overrun", etc...				SKIPPED		
5	**A102109SPVT003_ACMS_CONFIG25** At the prompt "Enter your choice", insert **"99"** to select **"Terminate ACMS_CONFIG25"** Click the button "OK" to proceed, then "Confirm" and continue in parallel with the next step.	99			SKIPPED		
6	**A102109SPVT017_ACMS_CRS_BACKGROUND** ⇨ Terminate the sequence.				SKIPPED		

Test location:	Operator	Product-Assurance:	Date:	Time :

8 Summary Sheets

8.1 Procedure Variation Summary

	Test Change	Curr. No.: Date Page of	
Test designation	Test Procedure	Issue	Rev.
Test step changed	Reason for Change		
Prepared by:	Resp. Test Leader	Project Engineer	
PA/QA	Prime	Customer	

Table 8.1-1: Procedure Variation Sheet

8.2 Non Conformance Report (NCR) and SPR Summary

The status of all NCRs/SPRs generated during the test shall be given in the table below:

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

Table 8.2-2: NCR/SPR Record Sheet

8.3 Sign-off Sheet

To finalise the test campaign, all responsible personnel shall sign off the filled-in procedure in the following table:

	Date	Signature
Test Director	11/9/08	
Test Conductor	11/9/08	
PA Responsible	11/9/08	

Annex B: Script Hierarchy

```
============  IST START ================

>Z010999MCVT001_POWER_ON_HER_IST $PM $tcDec $batScoe
 |-----> Y102989EPVT007_IST_PWR_SCOE_ON $configBS
 |-----|-----> Z010999MMXX002UNITS_CHECK
 |-----> async referby timeSynchronisation D102159SCVT032TIMESYNCRO
 |-----> D102159SCVT210_GET_ALARM_STATUS
 |-----> D102159SCVT210_GET_ALARM_STATUS
 |-----> W102584EPVT007_IST_CHECK_PCDU
 |-----> Z010999MMXX002UNITS_CHECK
 |-----> R102479ECVT009_UNITS_SELECTION
> Z010999MCVT001_POWER_ON_HER_IST $PM $tcDec $batScoe
 |-----> Y102989EPVT007_IST_PWR_SCOE_ON $configBS
 |-----|-----> Z010999MMXX002UNITS_CHECK
 |-----> async referby timeSynchronisation D102159SCVT032TIMESYNCRO
 |-----> D102159SCVT210_GET_ALARM_STATUS
 |-----> D102159SCVT210_GET_ALARM_STATUS
 |-----> W102584EPVT007_IST_CHECK_PCDU
 |-----> Z010999MMXX002UNITS_CHECK
 |-----> R102479ECVT009_UNITS_SELECTION
> D102159SCVT210_GET_ALARM_STATUS
> D102159SCVT176_WRITE_CROME $papCcs 1
> D102159SCVT174_IST_REDUNDANT_CONF $bus $pcduTmTc $hps $txChain $rfdn $tmObt
$tmRate
 |-----> D102159SCVT104_ENCODER_SELECT $tmObt $tm_Enc_Config
> async referby istStartSSMM Z010999MCVT005_IST_START_SSMM $ssmm]
> K102999ECVT001_ASDGENCCU_ABPWRON
 |-----> K102999ECVT001_ASDGENCCU_MnDisDLC
 |-----> K102999ECVT001_ASDGENCCUA_POWERON
 |-----|-----> Z010999MMXX002UNITS_CHECK
 |-----> K102999ECVT001_ASDGENCCUA_ChkEssTM
 |-----> K102999ECVT001_ASDGENCCUB_POWERON
 |-----|-----> Z010999MMXX002UNITS_CHECK
 |-----> K102999ECVT001_ASDGENCCUB_ChkEssTM
> K102999ECVT001_ASDGENCCU_MnEBOTH2
> K102999ECVT001_ASDGENCCU_MnEBOTH1
> K102999ECVT001_ASDGENCCUA_POWERON
 |-----> Z010999MMXX002UNITS_CHECK
> K102999ECVT001_ASDGENCCUA_MnEnaMd2
> K102999ECVT001_ASDGENCCUA_MnEnaMd1
> K102999ECVT001_ASDGENCCUB_POWERON
 |-----> Z010999MMXX002UNITS_CHECK
> K102999ECVT001_ASDGENCCUB_MnEnaMd2
> K102999ECVT001_ASDGENCCUB_MnEnaMd1
> Z010999MCVT153_IST_STATUS 5.8.2.4.2
 |-----> ACMS_get_RM_status RMA
 |-----> ACMS_get_RM_status RMB
> async A102109SPVT003_ACMS_CONFIG25
|-----> A102109SPVT004_ACMS_LOADCONFIG1
|-----> A102109SPVT010_ACMS_SCOE_CONFIG1
|-----|-----> async A102109SPVT017_ACMS_CRS_BACKGROUND
|-----> A102109SPVT011_ACMS_ON
|-----|-----> Z010999MMXX002UNITS_CHECK
|-----|-----> ACMS_get_RM_status RMA
```

```
|-----|-----> ACMS_get_RM_status RMB
|-----> A102109SPVT021_ACMS_ACC_SEPARA
> D102159SCVT032EnNomTCSLoops ist_herschel_tcs_config
> D102159SCVT115_CHECK_HCS_OFF
> D102159SCVT192_IST_UPLOAD_EAT
 |-----> D102159SCVT192_GET_EAT_REPORT
 |-----> D102159SCVT192_GET_EAT_REPORT 1
> D102159SCVT175_SET_SURV_REG $busSM $pcduSM $rfdnSM $txChainSM $ttrSM $sepStsSM
> D102159SCVT219_GET_BSW_HEALTH_UIU 1
> D102159SCVT204_GET_MOT 1
> D102159SCVT192_GET_EAT_REPORT 1
> D102159SCVT205_SAT_COM_TCT 1
> D102159SCVT207_SAT_COM_FCCT 1
> D102159SCVT188_IST_DUMP_PKT_STORE 0 80 1 81 2 82 3 83
> async referby celDownlink D102159SCVT188_IST_DUMP_PKT_STORE CEL_A CEL_B


==========  IST END ===============

> $swOFFsequence
> A102109SPVT061_RWL_SPINDOWN
> async referby acmsOff A102109SPVT012_ACMS_OFF
> Z102999SCVT002_SREM_OFF
> D102159SCVT174_IST_REDUNDANT_CONF A A 0 0  0 0 0
|-----> D102159SCVT104_ENCODER_SELECT $tmObt $tm_Enc_Config
> D102159SCVT175_SET_SURV_REG B B ABBB B B not
> D102159SCVT176_WRITE_CROME AB 1
> D102159SCVT181_DISABLE_PKT_STORE
> D102159SCVT187_IST_SSMM_OFF
> Y102989ETVT020_TTC_SCOE_OFF
|-----> Y102989ECVT018_TTC_TC_OP_METHOD OFFLINE
|-----|-----> Y102989ETVT017_TTC_CHECK_ROUTINE
|-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
> W102584SPVT101_PCDU_TRANSITION_FDIR 5
> Z010999MCVT002_POWER_OFF
|-----> D102159SCVT028SSMM_OFF
|-----> D102159SCVT001PM_SELECT B
|-----|-----> D102159SCVT003DISTHERMALCONTROL
|-----|-----> Z010999MMXX002UNITS_CHECK
|-----> D102159SCVT001PM_SELECT A
|-----|-----> D102159SCVT003DISTHERMALCONTROL
|-----|-----> Z010999MMXX002UNITS_CHECK
|-----> R102479SMXX001_XPND_HUM_TXT
|-----> Y102989EPVT002_PWR_SCOE_OFF
|-----|-----> Z010999MMXX003UNITS_CHECK_PWR_OFF
|-----|-----> Z010999MMXX003UNITS_CHECK_PWR_OFF
|-----|-----> Z010999MMXX003UNITS_CHECK_PWR_OFF
|-----> Z010999MMXX003UNITS_CHECK_PWR_OFF
```

Annex C: Session Record

Test Description	
Session ID	
Start Time:	
End Time	
CVS Tag for Test	
Applicable IST Specification	
Test conductor	
QA Approval	

Test Description	
Session ID	
Start Time:	
End Time	
CVS Tag for Test	
Applicable IST Specification	
Test conductor	
QA Approval	

Test Description	
Session ID	
Start Time:	
End Time	
CVS Tag for Test	
Applicable IST Specification	
Test conductor	
QA Approval	

Annex D: Operation Notes

Operation Note 3

Title: ACMS SCOE does not boot	Date: 06/02/08
Observation: The ACMS SCOE does not boot. Reason: One of the STR UCE (Unit Checkout Equipment) electrical stimuli programs hangs.	
Operator Action: Until NCR / SPR is solved the following workaround is proposed (by Martijn): During powering the Power SCOE in the cleanroom: 1) Go to the STR UCE (in cleanroom) and select electrica stimuli PC on the KVM switch, press 2 time 'scroll lock' and select PC#2. 2) Kill the running application, by pressing the cross in the upper right corner. 3) Start the UCE application by double clicking the icon 'SMI', an application 'Star Mapper Analogue Chain Simulation' should start up. 4) Press 2 time 'scroll lock' and select PC#3 and repeat step 3.	

Operation Note 8

Title: DOD Alarm	Date: 14/02/08

Observation:

During each Power on within the "IST_START" there is a check of the DOD flag. Directly after the "D102159SVT32TIMESYNCRO" the dump of the RM LOG and the DOD Flag check is performed by the "D102159SCVT210_Get_ALARM_STATUS".

If the DOD alarm is present it has to be reset , otherwise the S/C will enter Save Mode directly after separation.

Operator Action:

For resetting the DOD alarm decrease the Vbat under the DoD threshold and then increasing the Vbat upper the DoD threshold therefore perform the following steps:
Open a shell window -> startCMD bsvnc
On the window "H-P BS SCOE" switch to local
On the window "BS SCOE Config" change the Battery Voltage from 25,4 to 19
The push the button save&update
On the window "BS SCOE Config" change the Battery Voltage from 19 to 25,4
The push the button save&update
On the window "H-P BS SCOE" switch to remote

Execute the script: D102159SCVT210_Get_ALARM_STATUS
to dump the RM Log to check DOD Flag Check if DOD alarm is still present

Operation Note 11

Title: Failure in TM Check of CCU Valves	Date: 14/02/08

Observation:

If CCU Valves sensing lines are connected to CRYO SCOE instead of CCU the valves status check fails at CCU Power ON

Operator Action:

1) On Test conductor Console, perform "connect PFM_CRYO"

2) Thanks Telemetry Query Display (TQD) check following TMs
- YM648958 (VLV_STATUS_V103) instead of KM269302 = "CLOSED"
- YM649958 (VLV_STATUS_V106) instead of KM269303 = "CLOSED"
- YM640958 (VLV_STATUS_V501) instead of KM270302 = "CLOSED"
- YM641958 (VLV_STATUS_V503) instead of KM270303 = "CLOSED"
- YM643 958 (VLV_STATUS_V505) instead of KM271303 = "OPEN"

3) On Test conductor Console, perform "disconnect PFM_CRYO"

Annex E: CCS Time Adjustment Notes

To Adjust time to be TIME IN FUTURE.

Step No.	EGSE item	User / Psw	File	Action
Important note N.1 Before starting with time setting verify that – on all EGSE equipments – all the real time applications are terminated.				
Important note N.2 In case it would be required to run the EGSE in future time for a period longer than 1/2 days, it has to be kept into account that the MTP internal clock – if not synchronized with some external reference time source – is drifting. This drift can have serious impacts if ESOC is in the loop. ESOC machines are quite sensitive respect to synchronization and timing business and they experience big problems if the EGSE time goes in the future of more than 1 sec. respect to their own time: one of the side effects is that TM is received "before" the relevant TC are sent. In order to avoid this problem the EGSE and ESOC time must be perfectly aligned and MTP drift adjusted at least once a day.				
Important note N.3 If during the following steps, an error message is displayed " CPU overload error .....". this message can be ignored. Select **OK** to continue.				

Step No.	EGSE item	User / Psw	File	Action
Step 1	HPWS27 (in cleanroom)	Login User: root Password: changeME Logout Reboot the workstation.		Check the synchronization with NDIU and if CCS is not synchnized, execute the following command to set the time: ***ssh root@hp2-s*** *(pwd:* ***changeME****)* ***date monthdayhourminute.second*** Check on MTP screen that the date/time have been updated as required typing the command: ***date***
Step 2	Wait for at least 2 minutes before preceding			
Step 3	Any WS	Login User: heregse Password: hertest Logout		From whichever workstation execute the command: ***startCMD syncWs***
Step 4	Reboot all of the CSS workstations (don't forget the workstations in the IEGSE areas).			
NOTE: Time updating on DS is not mandatory; relevant steps could also be skipped.				

Step No.	EGSE item	User / Psw	File	Action
NOTE: Before executing the above mentioned operation on the BS SCOE it is better to check if the whole CCS restart is completed by at least a 4/5 minutes of minutes. In order to be sure of this, it can be useful to issue the following command: ***ntpq –p*** and check that the value shown in column "reach" is > 17.				
Step 5	BS SCOE	Open shell User: root Password: HPP_ad Exit shell		From a terminal execute the command: ***/etc/init.d/xntpd restart***
Step 6	SAS/LPS SCOE	Open shell User: root Password: HPP_ad Exit shell		From a terminal execute the command: ***/etc/init.d/xntpd restart***
Step 7	TT&C SCOE	Open shell User: root Password: HPTTC_ad Exit shell		From a terminal execute the command: ***/etc/init.d/xntpd restart***

Step No.	EGSE item	User / Psw	File	Action
Step 8	TMTC DFE Ws	User: H-P_User Password: H-P		Use "**AboutTime**" program (select the **Globe Icon** in the bottom right of screen) to synchronize the DFE with CCS time: in "Control/Time Client" tab click on "**Set Time**" button one or two times to reduce up to few milliseconds the difference between MTP and DFE time. In Option remove the option "**Set time**" and push **Apply**.
Step 9	TMTC DFE Platform	User: H-P_User Password: H-P		Remotely connect to TM/TC Platform (address 192.168.90.2) Use "**AboutTime**" program (globe Icon) to synchronize the Platform as already done for the TMTC DFE WS
Step 10	CDMU SCOE Ws	User: H-P_User Password: H-P		Same as per TMTC DFE
Step 11	CDMU SCOE Platform	User: H-P_User Password: H-P		Same as per TMTC DFE (address 192.168.90.32)

Step No.	EGSE item	User / Psw	File	Action
Step 12	ACMS asim	Login User: root Password: hpscoe Logout		In shell window, type in : **cd /etc/init.d/** and press **Enter** In shell window, type in : ***./ntpd restart*** and press **Enter**
Further checks to be done before starting a Real Time session				
Step 13	On any WS	Login User: heregse Password: hertest Logout		At least on the WS where the Real time session will be started, check the time is set to the desired value typing: ***chronyc sources –v*** In case the synchronization is not as expected type again: ***startCMD syncWs***

To Adjust time back to the PRESENT TIME.

Step no	EGSE item	User / Psw	File	Action
Important note: before starting with time setting verify that – on all EGSE equipments – all the real time applications are terminated.				
Step 1	HPx-S (MTP) (in checkout)	Login User: root Password: changeME Logout		Execute the following command to set the UTC time: ***date monthdayhourminute.second*** Check on MTP screen that the date/time have been updated as required typing the command: ***date***
Step 2	Wait for at least 2 minutes before preceding			
Step 3	Any WS	Login User: heregse Password: hertest Logout		From whichever workstation execute the command: ***startCMD syncWs***
Step 4	Reboot all of the CSS workstations (don't forget the workstations in the IEGSE areas).			
NOTE: Time updating on DS is not mandatory; relevant steps could also be skipped.				

Step no	EGSE item	User / Psw	File	Action
NOTE: Before executing the above mentioned operation on the BS SCOE it is better to check if the whole CCS restart is completed by at least a 4/5 minutes of minutes. In order to be sure of this, it can be useful to issue the following command: ***ntpq –p*** and check that the value shown in column "reach" is > 17.				
Step 5	BS SCOE	Open shell User: root Password: HPP_ad Exit shell		From a terminal execute the command: ***/etc/init.d/xntpd restart*** In the main application window, select: ***File > Exit*** Select to exit the application only Logout and reboot the platform. Restart the BS application from the desktop icon. When requested select **Herschel** and **Normal**. Select **OK** Enter **yes** to continue.

Step no	EGSE item	User / Psw	File	Action
Step 6	SAS/LPS SCOE	Open shell User: root Password: HPP_ad Exit shell		From a terminal execute the command: ***/etc/init.d/xntpd restart*** In the main application window, select: ***File > Exit*** Select to exit the application only Logout and reboot the platform. Restart the SAS application from the desktop icon. When requested select **Herschel** and **Normal**. Select **OK**
Step 7	TT&C SCOE	Open shell User: root Password: HPTTC_ad Exit shell Login User: hpttc Password: HPTTC_us		From a terminal execute the command: ***/etc/init.d/xntpd restart*** In the main application window, select: ***File > Exit*** Select to exit the application only Logout and reboot the platform. Restart the TT&C application from the desktop icon **HPTTC main**.

Step no	EGSE item	User / Psw	File	Action
Step 8	TM/TC DFE Ws	User: H-P_User Password: H-P		Use "**AboutTime**" program (select the **Globe Icon** in the bottom right of screen) to synchronize the DFE with CCS time: in "Control/Time Client" tab click on "Set Time" button one or two times to reduce up to few milliseconds the difference between MTP and DFE time. If required, select the option "Set time at 240" and push Apply.
Step 9	TM/TC DFE Platform	User: H-P_User Password: H-P		Remotely connect to TM/TC Platform (address 192.168.90.2) Use "**AboutTime**" program (globe Icon) to synchronize the Platform as already done for the WS If required, select the option "Set time at 480'" and push Apply.
Step 10	CDMU SCOE Ws	User: H-P_User Password: H-P		Same as per TM/TC DFE.
Step 11	CDMU SCOE Platform	User: H-P_User Password: H-P		Same as per TM/TC DFE (address 192.168.90.32).
Step 12	ACMS asim	Login User: root Password: hpscoe	/etc//init.d/	In shell window, type in : **cd /etc/init.d/** and press **Enter** In shell window, type in : ***./ntpd restart*** and press **Enter** *Logout & reboot the SCOE controller*
Further checks to be done before starting a Real Time session				

Step no	EGSE item	User / Psw	File	Action
Step 13	WS	User: heregse Password: hertest (or any other user)		At least on the WS where the Real time session will be started, check the time is set to the desired value typing: ***chronyc sources –v*** In case the synchronization is not as expected type again: ***startCMD syncWs***

END OF DOCUMENT

	Name	Dep./Comp.
	Baldock Richard	FAE12
	Barlage Bernhard	AED13
	Bayer Thomas	ASA42
	Brune Holger	ASA45
	Chen Bing	HE Space
	Davis William	Captec
	Edelhoff Dirk	AED21
	Fehringer Alexander	ASG15
X	Fricke Wolfgang Dr.	AED 65
	Geiger Hermann	ASA42
	Grasl Andreas	OTN/ASA44
	Grasshoff Brigitte	AET12
X	Hamer Simon	Terma
	Hanka, Erhard	FI522
X	Hendrikse Jeffrey	HE Space
	Hendry David	Terma
	Hengstler Reinhold	ASA42
	Hinger Jürgen	ASG23
X	Hohn Rüdiger	AED65
X	Hopfgarten Michael	AET32
	Huber Johann	ASA42
	Hund Walter	ASE252
X	Idler Siegmund	AED312
	Iványi von András	FAE12
	Jahn Gerd Dr.	ASG23
	Jolk Matthias	AET1
	Klenke Uwe	ASG72
X	Kölle Markus	ASA43
	König Werner	AET32
X	Koppe Axel	AED312
X	Kroeker Jürgen	AED65
X	La Gioia Valentina	Terma
	Lang Jürgen	ASE252
	Langenstein Rolf	AED15
	Langfermann Michael	ASA41
	Leitermann Stefan	AET12
	Liberatore Danilo	Rhea
	Martin Olivier	Altec
X	Maukisch Jan	ASA43
X	Much Christoph	ASA43
X	Müller Martin	ASA43
	Pietroboni Karin	AED65
	Reichle Konrad	ASA42
	Runge Axel	OTN/ASA44

	Name	Dep./Comp.
X	Sonn Nico	ASG51
	Steininger Eric	AED321
X	Stritter Rene	AED11
	Suess Rudi	OTN/ASA44
X	Theunissen Martijn	DSSA
X	Vascotto Riccardo	HE Space
	Wagner Klaus	ASG23
	Wietbrock Walter	AET12
	Wöhler Hans	ASG23
	Wössner Ulrich	ASE252
	Zumstein Armin	AED15
X	ESA/ESTEC	ESA
X	Thales Alenia Space Cannes	TAS-F
X	Thales Alenia Space Torino	TAS-I
	Instruments:	
	MPE (PACS)	MPE
	RAL (SPIRE)	RAL
	SRON (HIFI)	SRON
	Subcontractors:	
	Austrian Aerospace	AAE
	Austrian Aerospace	AAEM
	BOC Edwards	BOCE
	Dutch Space Solar Arrays	DSSA
	EADS Astrium Sub-Subsyst. & Equipment	ASSE
	EADS CASA Espacio	CASA
	EADS CASA Espacio	ECAS

	Name	Dep./Comp.		Name	Dep./Comp.
	Saal Christoph	External		European Test Services	ETS
X	Schink Dietmar	AED321		Patria New Technologies Oy	PANT
	Schmidt Thomas	AED15		SENER Ingenieria SA	SEN
	Schweickert Gunn	ASG23		Thales Alenia Space, Antwerp	TAS-ETCA

Attachment 2 to Section 6.7:

As-Run Procedure: HP-2-ASED-TP-0193, Issue 1 - Herschel Satellite IST – Reference Mission Scenario

"As Run" MASTER IN RED

Session i.d: 2009_05_17_23_24_hercdmu_hpws22_REALTIME_RMS_1

Title: **Herschel Satellite IST - Reference Mission Scenario**

CI-No: 100000

TAG : IST1_PART2_TP_0193_ISS1_RMS_END_001

Prepared by:	V. La Gioia/TERMA S. Hamer / TERMA S. Ilsen /TASF	Date:27th August 2008
~~Checked by:~~	~~C. Much~~ C. Much	27/8/2008
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Configuration Control:	W. Wietbrock	
TASF Engineering	F. Chatte	27/8/2008
TASF Test Director	S. Mooney	27/8/2008
Project Management:	Dr. W. Fricke / ASED	27/08/2008
Project Management	D. Montet / TASF	27/08/08

Distribution: See Distribution List (last page)

Issue	Date	Sheet	Description of Change	Release
1	27.08.2008		Initial version	

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1 Scope

1.1 Objective

The objective of this procedure is to check the Herschel Spacecraft's capability of supporting a representative and continuous 48hr RMS (Reference Mission Scenario) in Hell conditions for 3 (reduced for test purposes) Operational Days (ODs); one for each instrument HIFI (15hrs), PACS (16hrs) and SPIRE (16hrs). Each OD starts with a 3hr Daily Tele-Communication Period (DTCP), which is then followed by an Autonomy Period (AP) for the instrument concerned.

In nominal flight operations there is no real-time downlink during the AP, however for the purpose of ground testing the real-time TC/TM link is maintained throughout the AP on umbilical, with the TM downlink rate set to 1.5Mbps to support the downlink of Instrument Science TM in conjunction with S/C HKTM (as this may exceed the nominal 150kbps during the AP). Detailed specification of the test is provided in AD-1 (S/C specifics, section 5.8.9) and AD-3 (Instrument specifics).

1.2 Operational Flow

Section 7 provides the detailed step-by-step test procedure. A summary basic timeline is given below:

Year-DOY	Date	Time (Future) UTC	Event
2009-137	17th May	22:10:00	Start EGSE Set-up, S/C switch ON and configuration for test
2009-138	18th May	08:10:00	First MTL command
		08:20:00	Start DTCP1
		11:20:00	Start AP1 (HIFI)
		23:20:00	Start DTCP2 (missed pass)
2009-139	19th May	02:20:00	Start AP2 (PACS)
		15:20:00	Start DTCP3
		18:20:00	Start AP3 (SPIRE Photometry)
2009-140	20th May	07:20:00	Start DTCP4
		07:20:09	Last MTL command
		08:20:00	Start S/C Switch OFF
		13:20:00	S/C OFF

2 Documents/Drawings

This document incorporates, by dated or undated references, provisions from other publications. These normative references are cited at appropriate places in the text and publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these apply to this document only when incorporated into it by amendment or revision. For undated references, the latest edition of the publication referred to apply.

2.1 Applicable Documents

AD-1	Herschel Integrated Satellite Test Specification	H-P-2-ASP-SP-0939
AD-2	S/C I.S.T. Routine Mission Scenario – Operation day framework	ASP-06-AIT-AVIO-PL-008030 iss.2
AD-3	Test Specification for Herschel Instruments AVM and FM Tests performed at Satellite Level	HP-2-ASP-TS-1083
AD-4	Emergency switch off procedure	H-P-ASED-PR-0071
AD-5	Herschel IST Leading Procedure	H-P-ASED-TP-0134
AD-6	Procedure for setup and operation of the HIFI cooling system	HP-2-ASED-PR-0125
AD-7	HIFI I-EGSE Set-up	SRON-U/HIFI/PR/2007-005

2.2 Reference Documents

RD-1	Herschel SVM User Manual	H-P-MA-AI-0001
RD-2	Reference Mission Scenario, Herschel / Planck project	SCI-PT / 12759, issue 3.1, dated August 6th 2004
RD-3	Herschel Instrument Power ON-OFF and Mode Switching Procedure for Functional Testing	HP-2-ASED-TP-0206, Iss 1.3

2.3 Other Documents

2.4 Acronyms

Refer to AD-5

3 Requirements to be verified

AD-1 chapter 5.8.9

4 Configuration

4.1 Herschel S/C Configuration

Refer to AD-5, for IST specifications chapter 5.8.9 "TEST OF REFERENCE MISSION SCENARIO",

4.1.1 Hardware Configuration

Refer to AD-5, for IST specifications chapter 5.8.9 "TEST OF REFERENCE MISSION SCENARIO",

4.1.2 Software Configuration

Refer to AD-5

4.1.3 Test Configuration

Refer to AD-5

4.1.4 Simulated Equipments

Refer to AD-5

4.2 Set-up

Refer to AD-5

5 Conditions

5.1 Personnel

Refer to AD-5

5.2 Environmental

Refer to AD-5 for general Environmental conditions. Specific instrument related conditions are detailed below:

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

S/C Environmental	All Instruments	Actual
S/C Orientation	20° tilted and no movement during test	
Cryostat Connection (Valves)	N/A	
Cryostat Status (Hel/Hell)	Hell	
Cryostat Level 0 Temp (T107)	1.75 – 1.90 K (Pods are inside liquid)	
Cryostat Level 1 Temp (T231 – T237)	< 7 K	
Cryostat Level 2 OBP Temp (T254, T207)	< 12 K	
Cryostat Level 3 Temp	N/A	
L0, L1 & L2 Stability	L0 drifting 15 mK/ day; L1 & L2 <100 mK/h	
Thermal Shield & CVV	No constraint	
Cryo Cover Cooling	~~N/A – TBC PACS~~	

PVS1

5.3 General Precautions and Safety

Refer to AD-5

5.3.1 General Safety Requirements, Precautions

Refer to AD-5

5.3.2 ESD constraints

Refer to AD-5

5.3.3 Special QA Requirements

Refer to AD-5

5.4 GSE

Refer to AD-5

5.4.1 MGSE

Refer to AD-5

5.4.2 CVSE

Refer to AD-5

5.4.3 EGSE

5.4.3.1 EGSE Hardware Configuration

Refer to AD-5

NOTE: IEGSEs shall be running and connected for all Instruments for real-time monitoring during RMS!

5.4.3.2 EGSE User Software

Refer to AD-5

5.4.3.3 Grounding Configuration

Refer to AD-5

5.4.3.4 Test Equipment

Refer to AD-5

5.4.3.5 Data Acquisition System

Refer to AD-5

5.4.4 OGSE

Refer to AD-5

5.4.5 Special Equipment

Refer to AD-5

6 Verification Requirements and Test Criteria

PASS/FAIL CRITERIA

At each test stage completion, the test success is determined comparing the results obtained against the expected values.

If the compliance between obtained and expected values has been met, and authorisation to proceed with the next stage of the test is given, then the actual test stage must be considered satisfactory completed.

The success of the overall testing activities is determined from the satisfactory completion of all test stages.

Successful criteria to be satisfied in each test stage shall be:

Test conditions according to specification requirement;

Complete verification of the requirement aspects according to the test specification [AD-1];

Fulfilment of test results with respect to required data;

Verification that all the TM parameters used to monitor the SVM do not exceed the limit thresholds loaded in the HPSDB (OOL display);

Verification that the TM(5,2), TM(5,4) and TM(1,8) received event reports are only those ones expected to fulfil the pass test criteria.

NOTE:

Due to the fact that SSMM B has only 1 bank ON in this test, some events type (5, 2) with mass memory full are expected and do not indicate failure of the test.

7 Test Execution Step-by-Step Procedure

Responsibility	Name / Organisation
Test Director	
Test Conductor	
EGSE Operator	
PA Responsible	
Cryo Engineer	
Instrument Responsible PACS	
Instrument Responsible SPIRE	
Instrument Responsible HIFI	
Customer Representative	
ESA Representative	

Test Location:	
Test Session Id:	
Test Environment:	

The overall flow of the RMS is described in the following schema:

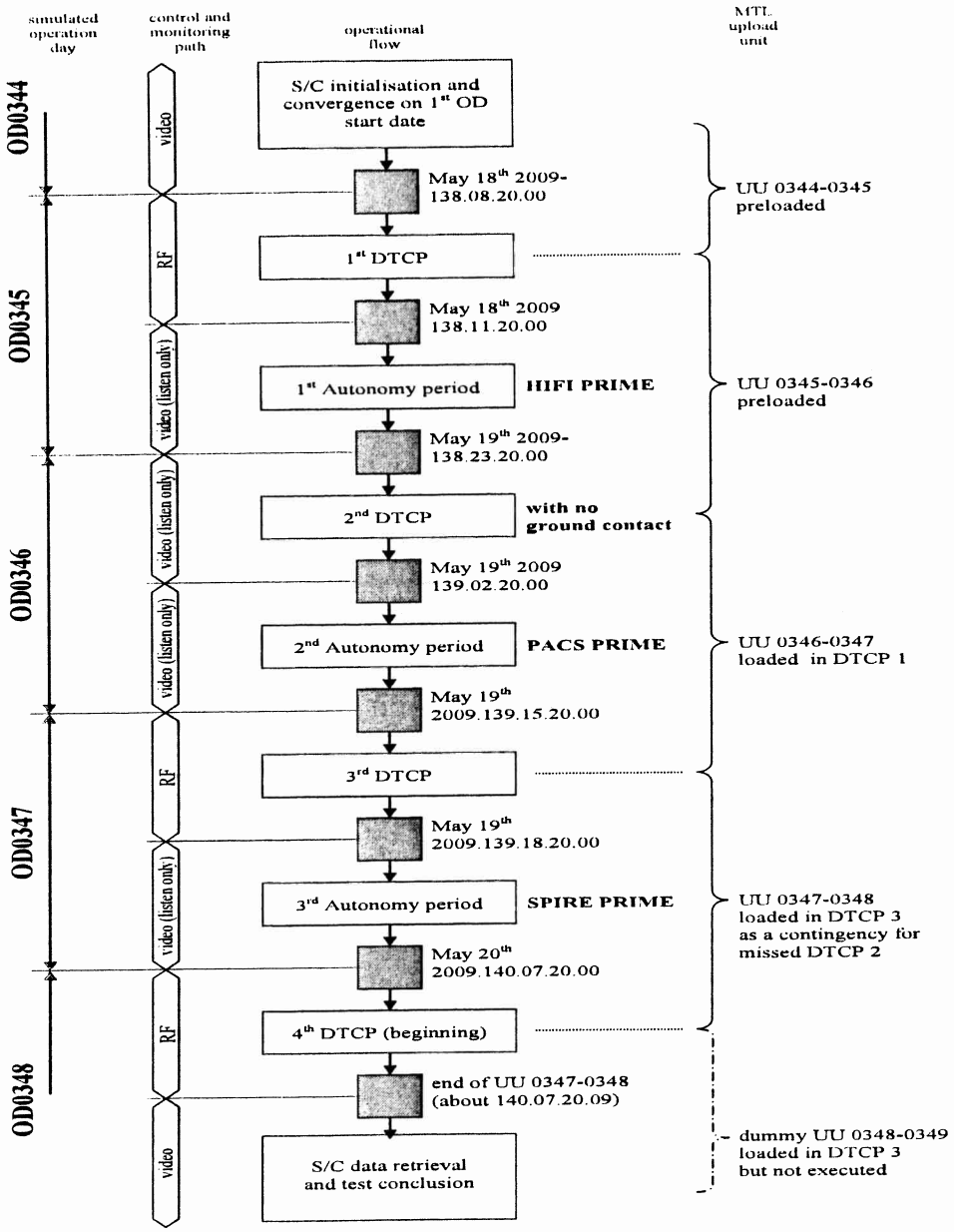


Figure 1 – RMS Operational Day Flow

7.1 OD0344 - S/C Initialization and convergence on 1st OD start date

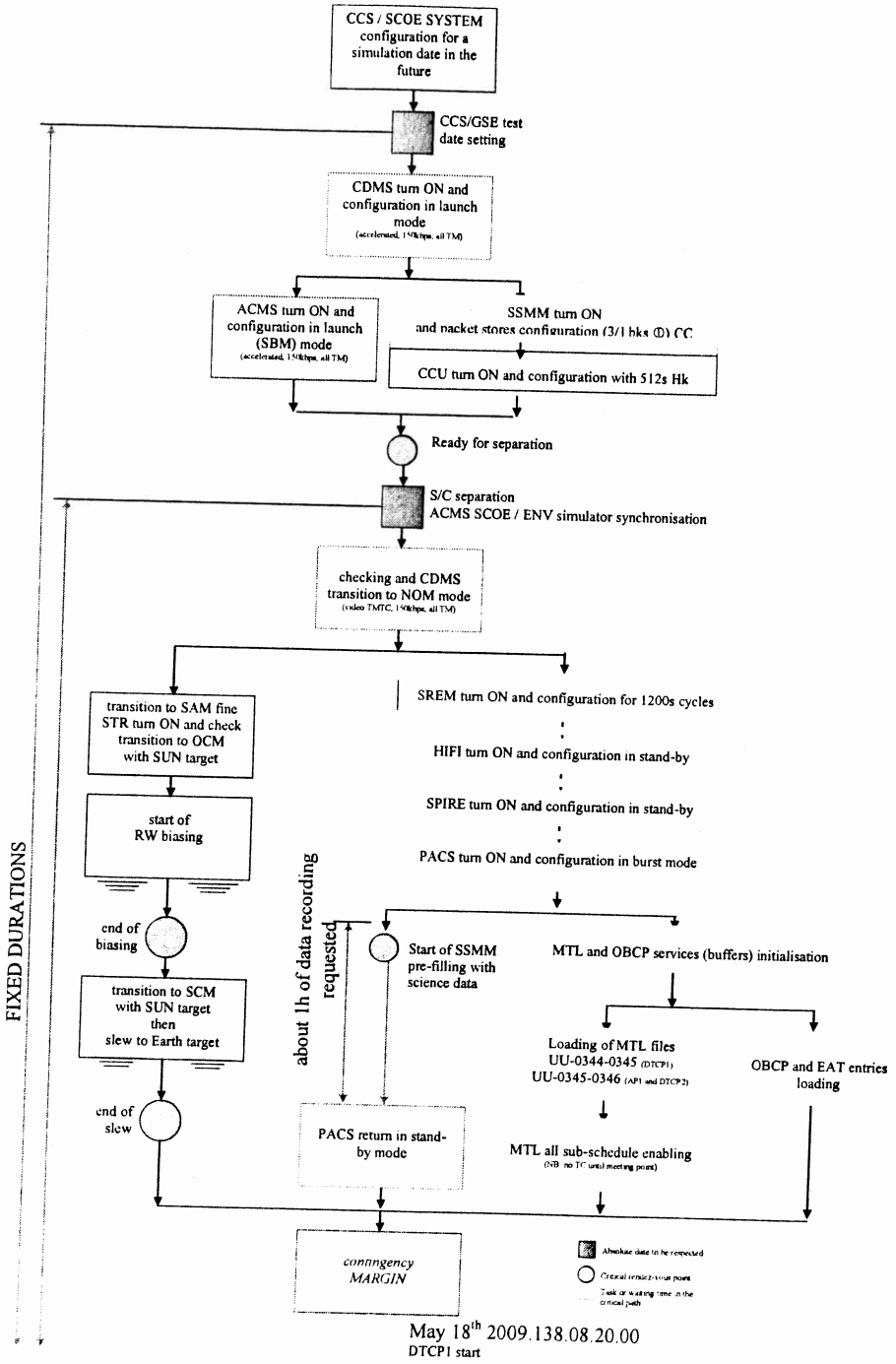


Figure 2 – Initial Configuration Flow For RMS

7.1.1 EGSE Set up RMS Specific

Step No	Operations	Results		Remarks and Record (mark off when performed)
		Required Value	Actual Value	
10	Configure CCS and SCOE system for simulation date in the future (i.e. 2009.137.22.20.00 – init time for start of configuration for RMS with DTCP1 EPOCH at 2009.138.08.20.00) according to procedure **AD-5** Annex E Remember to split archive when necessary during the test (best, DTCP2 after cooler recycling).			Note down real and simulated future time of the CCS server: Simulated Time: 17/5/2009 23:26 Local Time: 2/9/2008 19:30 Note down times of new archives in logbook and below: Split1: 22:03 18/5/09 Split2: 14:38 20/5/09 Split3: Split4:
20	Set CCS to accept MCMDs up to 10days in the future and also to accept TM up to 10days old (from SSMM) by typing at the TC console, also disable warning messages for packets arriving outside OBT_THRESHOLD: **setparameter CMD_FUTURE_TIME 010.00.00** **setparameter IFMGR_OBT_THRESHOLD 864000**	OK ✓ ✓	OK	✓

Date:	Time:	Operator:	Product-Assurance:
17/5/09	23:44	D. che	2/9/08

Step No	Operations	Results		Remarks and Record
		Required Value	Actual Value	(mark off when performed)
	setparameter IFMGR_OBT_VERBOSE NO	✓		✓
30	Switch on SCOEs according to standard procedure AD-5			✓
40	Start up CCS session with UNIQUE NAME (e.g. xxxx_RMS48_1) Setup of CCS WS: Monitoring and control of the RMS will require the majority of CCS workstations. 1) Main 2 screen (Left 2)) WS for overall control and event monitoring 3) Main 2 screen (Right) WS for Instrument monitoring 4) Single screen WS left of above for MTL and OBQ monitoring 4) Single screen WS left of above for ACMS monitoring 5) 1 other WS possibly required for CMDS and TT&C monitoring 6) WS in cleanroom for back up overall monitoring – RMS 48hr debug wk32 7) 1 WS for monitoring with NO COMMANDING (ESA observer) 8) Migrate logbook from CCS to PC for duration of the test (put			✓

Date: 12/3/09	Time: 23:30	Operator: B. chen	Product-Assurance:

Step No	Operations	Results		Remarks and Record (mark off when performed)
		Required Value	Actual Value	
	back afterwards) to free up a workstation 9) CCSLite running in Monitoring mode (NB this could be also used to monitor ACMS RWL or other background parameters, e.g. CCU temperatures) 10) Ensure that all used IEGSEs have synchronised with the future RMS CCS time. If not and no instrument IEGSE support available, perform Operator Note 48. 11) Ensure that HIFI Cooling Cart is configured as per AD-6			✓

Date:	Time:	Operator:	Product-Assurance:
17/5/09	23:35	D. Cha	

Step No	Operations	Results		Remarks and Record (mark off when performed)
		Required Value	Actual Value	
50	MAIN CONTROL WS: 1) Onboard event display ✓ 2) SAT.ilv, LCL_HERSCHEL. Ilv ✓ 3) Command history and TM packet history ✓ 4) Manual command stack, Test Sequence console ✓ 5) Prep environment for patching scripts ✓ 6) ANDs for packet stores pointers : ZADC3999, ZADC4999, ZADC5999, ZADC6999; for ephemerides: ✓ 7) Packet history filtered for TM(15,13) packet store pointers report 8) Packet history filtered for TM(5,2), TM(5,4) and TM(1,8) 9) OOL Display ✓			During the test execution the following test sequences' windows will be always open and must be visible: **Z010999MCVT085_IST_RMS_ASTRIUM** **Z010999MCVT093_IST_RMS_Date_Watch** During DTCPs also **Z010999MCVT091_IST_RMS_DTCP**

Date: 18/05/09 ~~2/9/08~~	Time: 23:37	Operator: B. chen	Product-Assurance: 2/9/08

Step No	Operations	Results		Remarks and Record (mark off when performed)
		Required Value	Actual Value	
60	INSTRUMENTS WS 1) INSTRUMENTS.ilv for power on 2) Open packet history windows for the following: HIFI APIDs:1024 SPIRE APIDs:1280 PACS APIDs: 1152			N.B. TERMA have indicated that CCS performance may be affected by having many packet history windows open. They are planning to provide a test script to perform the basic APID monitoring function.
70	ACMS WS Operator should always monitor the momentum of the reaction wheels. If it converges to 0 (below a certain threshold ~~TBD~~ 20 rad/sec) the following recovery sequence shall be performed: **ACMS_RECOVERY_from_AutoPeriod.tcl** 2) LCLs_HERSCHEL.ilv to check that QRS LCLs (15 and 24) are always CLOSED. If not, close them immediately!			Recovery sequence does: If speed of wheels is ~ 0: Check that the ephemerides are not being updated and biasing is over. If not, wait. Disable MTL commands for ACMS Store last quaternion Change momentum to the initial one Command SCM with the last quaternion Re-enable MTL release of ACMS commands
80	MTL WS 1) Start the OBQ manager BEFORE starting the MTL service and leave it running throughout the session (open			a) If OBQ is opened after upload of MTL you might get unreliable information. b) To enable/disable release of TCs per APID or for all APIDs, all commands are available in a

PVS 2

Date:	Time:	Operator:	Product-Assurance:
~~3/9/08~~ 18/5/09	06:01	B. Cher	2/9/08

Step No	Operations	Results		Remarks and Record (mark off when performed)
		Required Value	Actual Value	
	second OBQ manager on cleanroom WS as a backup) 2) Filter one TM history per type 11 and subtype 13 (MTL reports) 3) Plotting tool with parameter DEA74170 (MTL_BufFree. When MTL is empty this is = 50000 4) Manual command stack			saved stack: /HPCCS/VARIABLE/CONFIG/CMD/STACKS/* Press "Filter" **En_Dis_Rel_TCs_MTL.hpws25** c) for deleting TCs over time period use: DC82F170 with time in sec from 1/1/1958 = expr [asdtosec 2009.xxx.xx.xx.xx.xxx + **378691200**]

7.1.2 IST RMS START

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	Satellite & EGSE Switch On					
10.	Confirm I-EGSEs are physically connected to HPCCS	OK	ok		✓	
20.	Switch on HPCCS, SCOEs and Satellite/SVM and configure into Basic Test Mode, with SSMM initialised OBCP/EAT load/active and CCU monitoring in Mode 1 i.a.w. AD-5 sections 7.1 and 7.2. In section 7.2.4 selecting the test case Reference Mission Scenario 5.8.9, in the Master GUI	OK	ok		✓	finished on 2:23
30.	If CryoSCOE connected to CCU-A sensors then connect to it to monitor those sensors during the test: connect PFM_CRYO	OK	ok	*Note if it is not possible to change CryoSCOE to (CCS) future time for the test then do not connect otherwise the CCS will constantly report time synchro warning messages*	✓	
RVS3 40.	~~Confirm that the for HIFI CVV window cover (red tag) is removed.~~	~~OK~~	skip			
50.	Confirm that the HIFI Cooling Cart is installed and the HIFI panels are not covered by bubble foil, then switch ON cooling cart i.a.w. AD-6	OK	ok		✓	
60.	If not already ON Switch on & configure HIFI I-EGSE i.a.w. AD-7	OK		N/A	~~✓~~	
70.	Confirm HIFI I-EGSE is in the correct configuration (including CUS configuration for HIFI nominal units) as per AD-7	OK	ok		✓	

Date:	Time:	Operator:	Product-Assurance:
18/5/09	00:03	B. Cher	D. Lamonby

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
80.	On HPCCS execute test script: **[redacted]All_SubscribeParams** Wait until script reports that suscriptions have been completed and it is running in an endless loop	OK	OK		✓	
90.	On the HPCCS perform HL ptv checksum patch by executing: **HIFIST_ASED_PatchPtvChecksum**	OK	OK		✓	
100.	On the HPCCS perform change of temperature limits patch for warm conditions by executing: **HIFIST_ASED_PatchTempLimits**	OK	OK		✓	
110	From HPCCS Test Conductor console issue command to connect to HIFI, SPIRE & PACS (I-EGSEs) **connect HHIFIEGSE** **connect HSPIREEGSE** **connect HPACSEGSE**	 OK OK OK	 OK NOK OK	SPIRE & PACS connections required for monitoring. HIFI required for commanding as well Cannot connect SPIRE EGSE	✓	
120	Confirm from HPCCS and I-EGSEs that the connections have been established	YZS27940 = CONNECTED ✓ YZS28940 = CONNECTED ✓ YZS29940 =		SYS_PARS Cannot connect SPIRE EGSE	✓	

PVS #17-2

PVS #14

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	02:50	Uwe Klenke	D. Lamonby.

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
		CONNECTED				
130	Verify that I-EGSEs are receiving CCU Cryo packets (mode 1, 512sec)	OK	OK		✓	
140	If requested by the instruments the CCU monitoring can be changed temporarily to mode 2 (8sec) by executing: **K102999ECVT001_ASDGENCCU_MnDBOTH1** **K102999ECVT001_ASDGENCCU_MnEBOTH2**	OK	OK		✓	
150	After instruments have confirmed receipt of monitoring packets and checked temperatures the CCU monitoring must be switched back to mode 1 (512sec) by executing the following scripts: **K102999ECVT001_ASDGENCCU_MnDBOTH2** **K102999ECVT001_ASDGENCCU_MnEBOTH1**	OK	Skip			
160	Verify HPCCS HIFI-IEGSE connection and time synchronisation by executing the following script: **Y102999ETVT037_ASDGEN_VERHIFIIEGSE**	OK	OK		✓	
	READY FOR RMS INITIALISATION					

RMS 4.

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	02:55	Uwe Klenke	D. Lamonby

7.1.3 Test Specific Initialisation

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
10	*Enter the following In the CCS Test Console:* *callasync* ***Z010999MCVT085_IST_RMS_ASTRIUM***	PASS	Pass		✓	
20	*During* ***Z010999MCVT085_IST_RMS_ASTRIUM*** *START HERSCHEL RMS, Section 5.8.9* *⇨ Click the button "YES" to proceed*	YES	Yes	If NO, the sequence is terminated. Z010999MCVT093_IST_RMS_Date_Watch		

Date:	Time:	Operator:	Product-Assurance:
18/5/2008	02:57	Uwe Klenke	D. Lamonby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
30	*Z010999MCVT093_IST_RMS_Date_Watch* *is called asynchronously to keep trace of the timing of the different phases.* It pops up with a separate window, with an overview on the RMS phase, current time, next phase and time left to the next phase. It checks if the DTCP asynchronous tasks are still running 45 minutes prior to the end of the DTCP. If so it warns the operator and asks him to terminate/suspend the timed out sequences. The script takes care of the synchronization with the master when the time has come for the next RMS phase. The script sets a shared variable "phase" according to the time constraints (derived from MTL). The master waits for the phase to change, before calling the subsequent DTCP sequence. ⇨ keep window on a side and continue with next steps			This window shall be visible throughout the test!!	✓	
40	*During Z010999MCVT085_IST_RMS_ASTRIUM* *" TT&C SCOE CONNECTION"* *⇨ Click the button "Confirm" to proceed*	CONFIRM	Confirm	Y102989ETVT021_TTC_SCOE_ON is called	✓	

Date:	Time:	Operator:	Product-Assurance:
18/5/2008	02:58	Uwe Veenker	D. Lamonby.

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
50	*During* *Z010999MCVT085_IST_RMS_ASTRIUM* *"CDMS setting for separation"* *⇨ Click the button "Confirm" to proceed*	CONFIRM	Confirm	A102109SPVT202_ACMS_STATUS_H is called asynchronously and D102159SCVT138_IST_LAUNCH_SUNACQ synchronously	✓	
60	*At end of* *A102109SPVT208_OBDB_MASS_INERTIA* *⇨ Click the button "End TS!" to proceed*	ENDTS	EndTs		✓	
70	*During …* *D103159SCVT138_IST_LAUNCH_SUNACQ* *When prompted "wait for separation straps to be opened…* *⇨continue to next step*	PASS	Pass		✓	

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	03:14	Uwe Veenhe	D. Lamouby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
80	*During A102109SPVT103_ACMS_CONFIG25* ⇨ *enter option 88, to go to Main Menu 3* ⇨ *Click the button "OK"* ⇨ *then press "Continue"*	88 OK CONTINUE	88 OK Continue		✓	
90	*During A102109SPVT103_ACMS_CONFIG25* *(1,6,4,5,20,99,88)* *SEPARATION (open separation straps)* *Main Menu 3.0: option 2* ⇨ *Click the button "OK" and then* ⇨ *Click the button "Continue"*	2 OK CONTINUE	2 OK Continue		✓	
100	*During A102109SPVT034_ACMS_SAM_MON* *Do you want to continue to monitor SAM Sun Pointing mode?* ⇨ *Enter your choice: no*	no	no		✓	
110	*At end of D102159SCVT138_IST_LAUNCH_SUNACQ* ⇨ *Click the button "End TS!" to proceed*	ENDTS	EndTs		✓	

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	03:39	Uwe Veenhu	D. Lamonby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
120	*Back to Master Script,* *Z010999MCVT085_IST_RMS_ASTRIUM* *TRANSITION TO NOMINAL* *⇨ Click the button "Confirm" to proceed*	CONFIRM	Confirm		✓	
130	*Script D102159SCVT137_IST_SUNACQ_NOM shall pop-up. Check that script ends without any 'No-Go'* *⇨ Click the button "End TS!" to proceed*	ENDTS	EndTS		✓	
140	*During Z010999MCVT085_IST_RMS_ASTRIUM* *At the prompt "Command ACMS (via OCM/Earth) to SCM/Earth. "* *⇨ Click the button "OK" to proceed*	OK	OK	**⇨ Perform following steps 150 to 250 (ACMS in SCM) in parallel with steps 260 – 440 (PCDU transition, Instruments ON)**	✓	
150	*During A102109SPVT103_ACMS_CONFIG25* *Select Transition to OCM.* *Main Menu 4.0 SAM Phase: Option 6* *⇨ Click the button "OK" and then* *⇨ Click the button "Continue" to proceed*	6 OK CONTINUE	6 OK Continue		✓	

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	03:58	Uwe Klenke	D. Lamouby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
160	*During A102109SPVT036_ACMS_STR_ON* *Do you want to change the current STR in use? Type no* *⇨ Click the button "OK" to proceed*	no	no		✓	
170	*During A102109SPVT043_TRANSITION_TO_OCM* *Only for info:* *⇨ Verify after ca.7 min if ACMS mode is = OCM point fine (Earth pointing)* *⇨ Verify in AND: ZAA00999 if Est Attitude Q1..Q4 is close to Target (absolute value)* *⇨ Verify AESM3002 = OCM point fine or in synoptic SAT – ACMS – ACC – Mode Nominal*	PASS PASS PASS	PASS PASS PASS		✓	
180	*During A102109SPVT043_TRANSITION_TO_OCM* *If the sequence prompts as SUSPENDED (fcv duty cycle higher than 0.01)* *⇨ click on script name in Test Console* *⇨ Click the button "RESUME" to proceed*	RESUME	N/A			

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	04:26	Uwe Vlenke	DLamanby.

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
190	*During A102109SPVT103_ACMS_CONFIG25* *Main Menu 7.0: Option 3* *Select Transition to SCM (Science mode).* *⇨ Click the button "OK" and then* *⇨ Click the button "Continue" to proceed*	3 OK CONTINUE	3 OK Continue		✓	
200	*During A102109SPVT038_RWL_ON* *"Do you want to change actual on-board wheel set selected in the nominal configuration?* *RWL 1-2-3-4 selected* *⇨ Click the button "NO" to proceed ?*	NO	NO	AEW1A002, AEW2A002, AEW3A002, AEW4A002 LOW expected until wheels are spun up.	✓	

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	04:27	Uwe Völker	D. Lamonby.

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
210	*During A102109SPVT042_RWL_SPINUP* *"Change actual Angular Momentum (initial values)?"* *Option: no* ⇨ *Wait for about 10 minutes*	RWL-1 ang momentum 8.76073169708 RWL-2 ang momentum 8.24755954742 RWL-3 ang momentum -6.74463796616 RWL-4 ang momentum -7.25781011581 no	no	RWL-1 : 10.510000 2289 RWL-2: 11.119999 8856 RWL-3: -8.760000 22888 RWL-4: -9.659999 84741	✓	

PVS # 16

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	04:37	Uwe Veenka	D. Lamarty.

PVS # 17-1

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
220	Only for info: ⇨ Verify RWL speed in plotting window 1. Select REALTIME => DESKTOP => MONITORING => TM Plotting Tool 2. Select Directory: Home/heracms/plotting 3. Select FILE => LOAD => /home/heracms/~~plotter~~plotting/RWLsSPEED.txt				✓	
230	Only for info: ⇨ Verify 4x RWL momentum parameters are within +/-20% AEWMA002 = 10.7 (RWL1 momentum) AEWMB002 = 10.7 (RWL2 momentum) AEWMC002 = 10.7 (RWL3 momentum) AEWMD002 = 10.7 (RWL4 momentum) ⇨ Verify in SAT synoptic SAT – ACMS – ACC – Mode Nominal = OCM Point Fine ⇨ Verify in Telemetry window ZAAF0999 (diagnostic TM) As long as the ACMS is switched On the Menu Box has to be present !!!	PASS PASS PASS	Pass Pass	Values in IST_RMS1 file RWL1: 8.52 RWL2: 9.08 RWL3: −7.28 RWL4: −7.62 Note: The values of RWL 1, RWL 3 and RWL 4 are outside +/− 20%	✓	

Date: 18/5/2009 | Time: 04:49 | Operator: Uwe Veenka | Product-Assurance: D. Lamonby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
240	*During A102109SPVT042_RWL_SPINUP* *SUSPEND* *⇨ Click the button "RESUME" in the test sequence console to proceed*	RESUME	Resume		✓	
250	*At end of A102109SPVT042_RWL_SPINUP* *⇨ Click the button "End TS!" to proceed*	ENDTS	End Ts	During transition to SCM for ACMS, ACZ2T109 may timeout because of slew time too short.		
260	*During Z010999MCVT085_IST_RMS_ASTRIUM* *"Transition from SAS 900W and BS 24V to SAS 1475W and BS full charged"* *⇨ Click the button "Confirm" to proceed*	CONFIRM	Confirm		✓	
270	*During Z010999MCVT085_IST_RMS_ASTRIUM* *"Switch on SREM"* *⇨ Click the button "Confirm" to continue*	CONFIRM	confirm		✓	
280	During Z102999SCVT003_SREM_ACQ_START *⇨ Click the button "End TS!" to proceed*	ENDTS	End Ts		✓	

04:05

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	04:05	Uwe Klenke	D. Lamouby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
290	During Z010999MCVT085_IST_RMS_ASTRIUM *"POWER ON HIFI NOMINAL"* ⇨ *Click the button "Confirm" to continue*	CONFIRM	Confirm		✓	
300	During **H102999SCVT015_ASDISTHIFI_PWR_ON_P** *"FM HIFI Switch ON for IST or SFT in Hel/Hell conditions with warm LOU - Select NO to abort TS if not correct"* ⇨ *Click the button "YES" to confirm*	YES	Yes	See RD3 for current expected prompt and OOLs	✓	

Date: 18/5/2009	Time: 04:20	Operator:	Product-Assurance: D. Lamonby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
310	*During* **H102999SCVT015_ASDISTHIFI_PWR_ON_P** At prompt to record OBS_ID_per_hk during subsequent table readback commanding (which starts when OK is pressed); record value of HM003190 (typical reading = 9000xxxx hex), Note: at start & end value is 90000000 hex "Select OK to continue" Select OK	OK	OK		✓	
320	*During* **H102999SCVT015_ASDISTHIFI_PWR_ON_P** Record value of OBS_ID during table read commanding. Give both Hex and Dec values: : **HM003190**	N/A	Hex <OBSID>= Dec <OBSID>=	0x 90004803 2415937747	✓	

Date:	Time:	Operator:	Product-Assurance:
18/05/09	04:35		D Lamonby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
330	*During* **H102999SCVT015_ASDISTHIFI_PWR_ON_P** Request the nominated I-EGSE operator to run the command 'verifyreadback <OBSID>' from a terminal window (opened from the terminal icon " >_ " at bottom left of HIFIEGSE workstation screen) using the **Dec <OBSID>** value retrieved in the previous step. If the word **PASS** does not appear on the screen at the end of the verifyreadback, this is a nogo on this test procedure. If OK respond to prompt accordingly, otherwise contact SRON to investigate and resolve before continuing.	OK	OK		✓	
340	*During* **H102999SCVT015_ASDISTHIFI_PWR_ON_P** *"Set Bus Profile back to original setting?"* ⇨ *Click the button "YES" to confirm*	YES	YES		✓	

Date: 28/08/08	Time: 04:53	Operator:	Product-Assurance:

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
350	<<<MANDATORY STEP AFTER HIFI POWERED>>> <<<DO NOT SKIP>>>			AND: HA003289		
	Ensure HIFI LO operations disabled during the test:	OK	OK	********** IF VERIFICATION FAILS DO NOT CONTINUE WITH TEST. CONTACT HIFI INSTRUMENT RESPONSIBLE **********	√	
	Execute test script: **HIFIST_nom_IST_LO_disable_warm**	OK	OK			
	Execute test script: **HIFIST_nom_IST_LO_on_1a_warm**	OFF	OFF			
	Verify HL_Channel_S is OFF **HM003194**					

Date:	Time:	Operator:	Product-Assurance:
18/05/09	05:01		D. Lamarby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
360	Start monitoring the following HIFI temperature parameters (HIFI WEV & WEH Lasers, TCS HRV & HRH foot temps): HM023193 (*HWH_Laser_T*) HM062193 (*HWV_Laser_T*) DEA91170 *(TCS HRH Temp)* DEAA2170 *(TCS HRV Temp)*	OK		Use TM plotting tool to monitor these parameters. **Note 1)** Laser temperatures should not go above 30degC or HPSDB will report HIGH HIGH OOLs. If this cannot be prevented then if the temperatures are reasonably stable the High limit can be increased i.a.w. Operator Note 45 **Note 2)** TCS HRS temperatures must not exceed 40degC (note HIFI internal HRS temperatures may do not have the same limits). If the HIFI Panel Cooling is operating correctly this should not happen. If the trend shows that temperatures are rising towards this limit, then first check cooling cart if operating correctly i.a.w. AD-6. If it is and temperatures still rise then HIFI needs to be switched down to STANDBY1	V	

Date: 18/05/09 | Time: 05:04 | Operator: | Product-Assurance: D. Lamontagne

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
370	Back to Master, Z010999MCVT085_IST_RMS_ASTRIUM *"POWER ON PACS NOMINAL"* ⇨ *Click the button " Confirm" to continue*	CONFIRM	Confirm		✓	
380	*During* **P102999SCVT905_ASDISTPACS_PWR_ON_N** *"Power on PACS NOMINAL and enable MIL 1553 I/F. FM PACS Switch on in warm or cold conditions, FPU connected ... - Select NO to abort TS if not correct"* ⇨ *Click the button "YES" to confirm*	YES	Yes	See RD3 for current expected prompt and OOLs	✓	
390	*During* **P102999SCVT905_ASDISTPACS_PWR_ON_N** *PACS FDIR OBCPs/EATs loaded and enabled? If not select NO to abort TS. If not sure, check with D102159SCVT192_GET_EAT_REPORT. Then select "YES"* ⇨ *Click the button "YES" to confirm*	YES	Yes		✓	

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
400	*During* **P102999SCVT905_ASDISTPACS_PWR_ON_N** If AFO mode not already selected for CDMU the script will prompt that AFO will be commanded next. Click **OK** to continue the script if the prompt appears.	OK	DE81D170 = AFO		✓	
410	*During* **P102999SCVT905_ASDISTPACS_PWR_ON_N** *"Set Bus Profile back to original setting?"* ⇨ *Click the button "YES" to confirm*	YES	Yes		✓	
420	*Back to Master Script* *Z010999MCVT085_IST_RMS_ASTRIUM* *"Power On Spire NOMINAL"* ⇨ *Click the button "Confirm" to continue*	CONFIRM	Confirm		✓	
430	*During* **S102999SCVT017_ASDGENSPIR_PWR_ON_P** "SPIRE Switch ON for IST activities in any conditions - Select NO to abort TS if not correct" ⇨ *Click the button "YES" to confirm*	YES	Yes		✓	

PVS #18 →

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	05:15	Uwe Vilenius	D. Lamonby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
440	*During* **S102999SCVT017_ASDGENSPIR_PWR_ON_P** *"Set Bus Profile back to original setting?"* ⇨ *Click the button "YES" to confirm*	YES	Yes		✓	
450	Back to Master, Z010999MCVT085_IST_RMS_ASTRIUM Reply to the prompt: " Final Setting to test start" ⇨ Click the button "Confirm" to continue	CONFIRM	Confirm		✓	
460	At the end of the step check that the following have been applied: TWTA 1 is OFF, RX-2 is 125 bps, TX-1 is off	PASS	Pass		✓	
470	Back to Master, Z010999MCVT085_IST_RMS_ASTRIUM Reply to the prompt: *"FILL SSMM for 60 minutes by setting PACS in 'Burst Mode'* ⇨ Click the button "Confirm" to continue	CONFIRM	Confirm		✓	

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	05:24	Uwe Klenke	D. Lamonby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
480	During Z010999MCVT085_IST_RMS_ASTRIUM Reply to the prompt: *"ACMS shall be already in SCM mode (ACMS MASTER)"* ⇨ Click the button "OK" to continue	OK	OK	Check that ACMS mode is "SCM pnt F rdy" and step 250 is completed	✓	
490	During **P102999SCVT913_ASDGENPACS_BurstMode** *"FM PACS Burst Mode for tests in ANY conditions – abort TS if not correct"* ⇨ Click the button "YES" to continue	YES	Yes	SSMM will continue in parallel	✓	
500	During **P102999SCVT913_ASDGENPACS_BurstMode** When prompted: "Enter burst mode duration in seconds: (default is 3600)" Enter a value of 3600 and click OK	3600	3600 OK	Script runs asynchronously and continues in parallel with next activities in order to fill SSMM	✓	

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	05:27	Uwe Klenke	D. Lamarby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
510	Back to Master, Z010999MCVT085_IST_RMS_ASTRIUM Reply to the prompt: *"Start MTL service disabling release of ALL SSID"* ⇨ Click the button "Confirm" to continue	CONFIRM	Confirm	Open an OnBoardQueue Display	✓	
520	During Z010999MCVT085_IST_RMS_ASTRIUM, at prompt: "Press OK only AFTER MTL upload completion" Do NOT press OK but continue to the next step (the procedure will indicate when to press OK at the appropriate time).	No Action required	ok	MTL_rms_init is called asynchronously. This sequence will upload 2 MTL segments OD344-345 and OD345-346	✓	

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
530	During MTL_rms_init.tcl at the prompt: "Script is going to load 2 files for ODs 344-345 and 345-346" ⇨ Open an ON BOARD QUEUE display (if not already open) ⇨ Filter TM PKT histories with TM(1,7), TM(1,8) and TM(1,2) to monitor completed, failed or not acknowledged TCs ⇨ press OK	PASS PASS OK	PASS PASS OK		✓	

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
540	During MTL_rms_init.tcl at the prompt: "Click OK when the next MTL can be loaded (completion flag on last load command)" ⇨ check that no TM(1,8) or TM(1,2) have been received during the upload ⇨ check that TM(1,7) have been received throughout the upload ⇨ check that the CCS had finished processing all TCs of the last MTL (no completion flag is P, pending) ⇨ press OK	 PASS PASS PASS OK	 PASS PASS PASS OK	For the last check, you will need to stop and put live the TC history display many times until every "load TC" commands are yellow or green.	✓	
550	Repeat previous step to load second file then back to the prompt in Z010999MCVT085_IST_RMS_ASTRIUM "Press OK only AFTER MTL upload completion" ⇨ press OK	 OK	 OK		✓	

PVS #19

NCR-4484

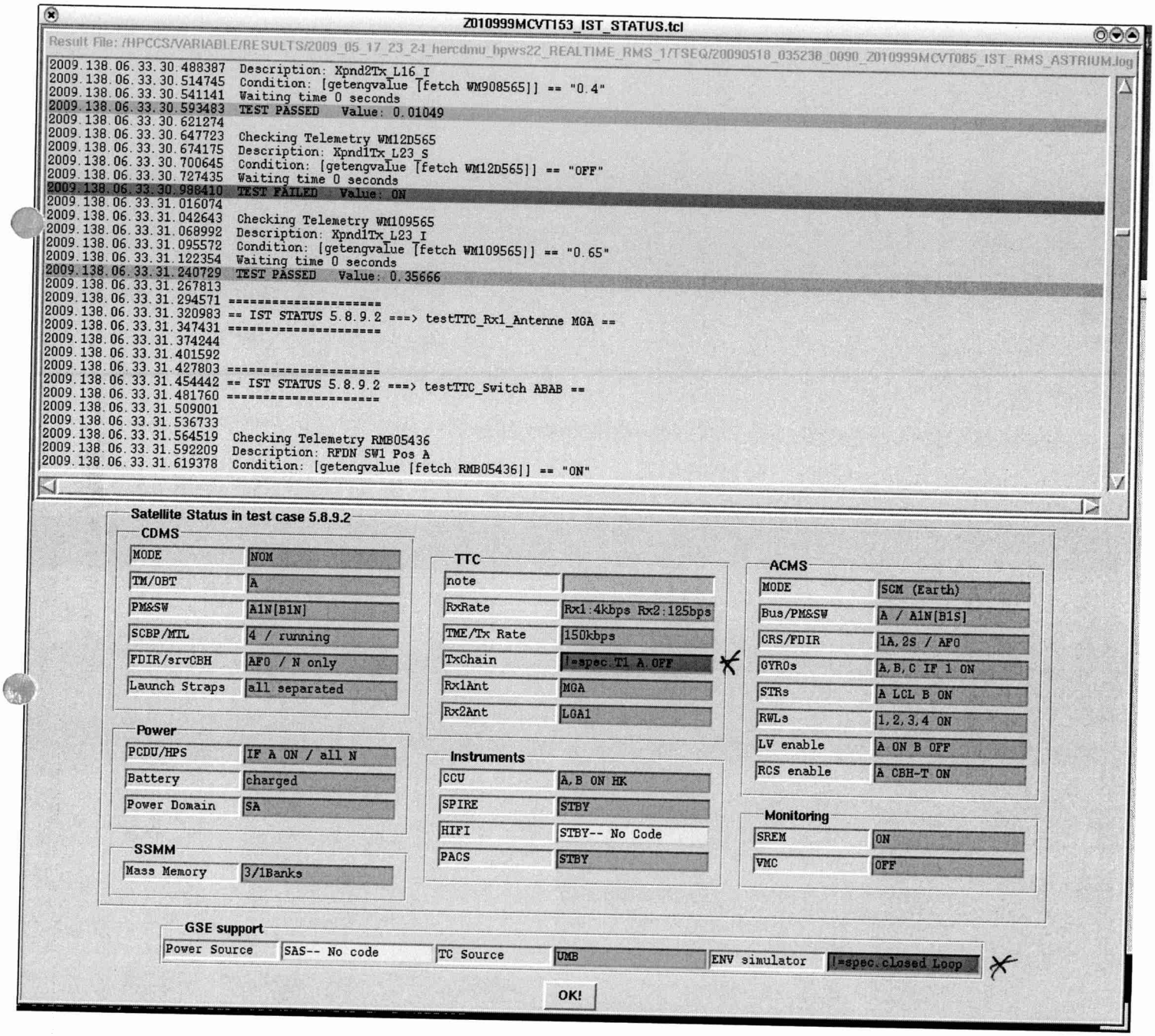
Date: 18/5/2009	Time: 06:04	Operator: Uwe Wenke	Product-Assurance: D Lamarby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
560	Back to **P102999SCVT913_ASDGENPACS_BurstMode** When prompted: *"Is the data flow finished ?"* ⇨ press OK Script completes commanding and terminates. **Do not continue until the script has finished**	OK	OK	Verify that the the VC1 .txt and .bin files in the test session's TMDUMP folder are no longer increasing in size. This is the only way of telling that the dataflow is finished.	✓	
570	*Back to Master,* *Z010999MCVT085_IST_RMS_ASTRIUM* *COMMAND THE S/C BUS PROFILE TO 4 (PACS PRIME)* ⇨ *Click the button "Confirm" to continue*	CONFIRM	Confirm		✓	
580	*During* *Z010999MCVT085_IST_RMS_ASTRIUM* *"STATUS SPACECRAFT (RMS Starting Point)"* ⇨ Click the button "Confirm" to continue	CONFIRM	Confirm		✓	

Date:	Time:	Operator:	Product-Assurance:
18/6/2009	06:32	Uwe Vlenke	D. Lamarby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
590	*During* *IST_STATUS* *At prompt* *"Do you want to Stop and notice for each failure"* ⇨ Click the button "NO" to continue	NO	No		✓	
600	*During* *Z010999MCVT153_IST_STATUS* ⇨ *CHECK STATUS then click the button "OK" to continue*	OK	OK		✓	
	END OF INITIAL CONFIGURATION					

18/5/2009 Step 600



* red colour

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
610	*During* *Z010999MCVT085_IST_RMS_ASTRIUM* *"MTL Execution"* ⇨ Click the button "Confirm" to continue	CONFIRM	Confirm		✓	
620	*During* *Z010999MCVT085_IST_RMS_ASTRIUM* *"Click OK when You want to start the MTL"* ⇨ Click the button "OK" to continue	OK	OK		✓	
630	*During* *Z010999MCVT085_IST_RMS_ASTRIUM* *"Check that all SSIDs are enabled"* ⇨ Perform activity then click the button "OK" to continue	OK	OK		✓	
640	*During* *Z010999MCVT085_IST_RMS_ASTRIUM* *"Downlink and delete CEL A and B"* ⇨ Click the button "Confirm" to continue	Confirm	confirm		✓	

PVS#20-645 During D102159SCVT188_IST_DUMP_PKT_STORE
⇒ click the button "EndTs" to continue EndTs ✓

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	06:59	Uwe Vienke	D. Lamaby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
650	*During* *Z010999MCVT085_IST_RMS_ASTRIUM* switch to AD Mode *"~~Setting TM/TC DFE for AD mode commanding~~"* ⇨ Click the button "Confirm" to continue	CONFIRM	Confirm		✓	
660	*During* *Z010999MCVT085_IST_RMS_ASTRIUM* *"Locking XPND-1"* ⇨ Click the button "Confirm" to continue	CONFIRM	Confirm		✓	

PVS#17-3 ✓

PVS#17-4 ✓

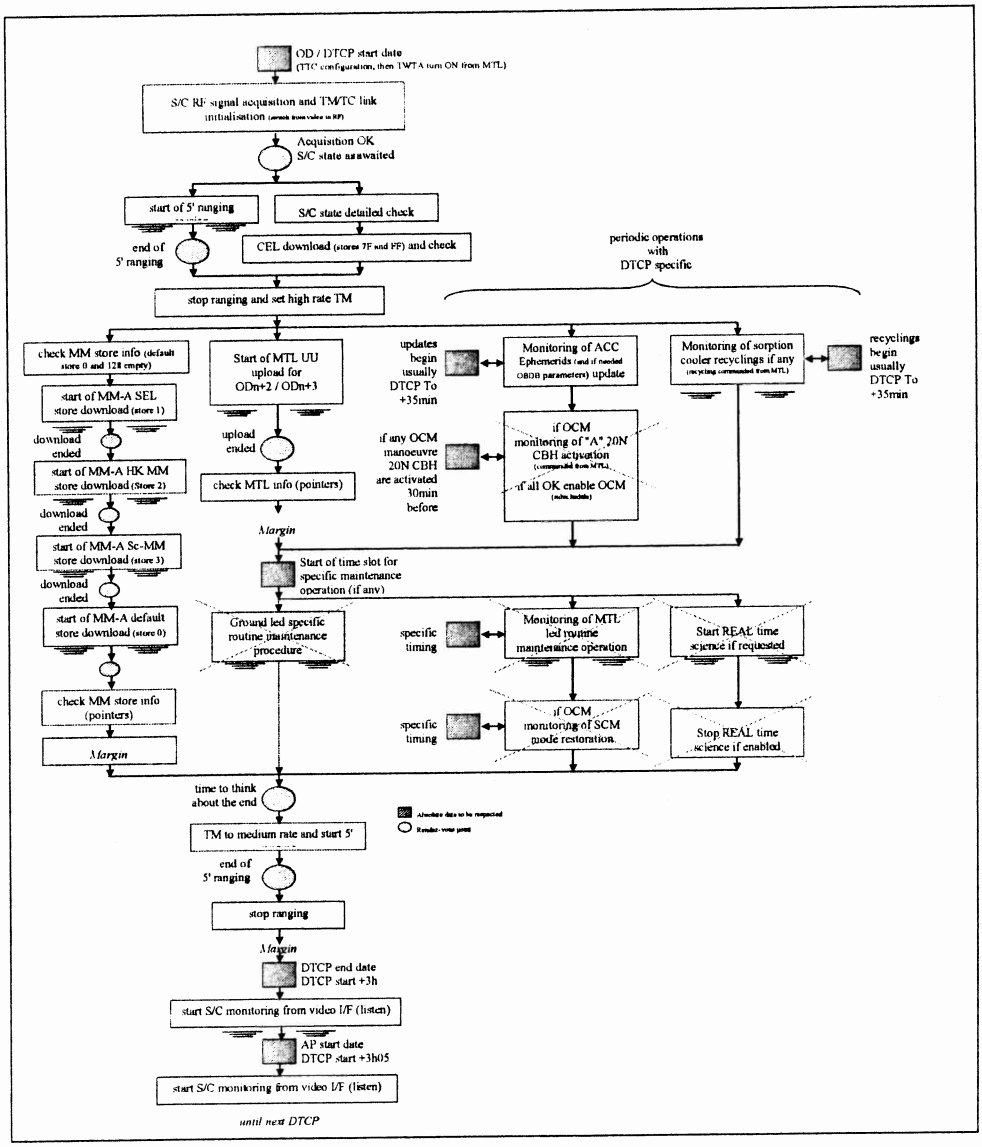
~~PVS#9~~ →

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
670	During Z010999MCVT085_IST_RMS_ASTRIUM "OD management start"" ⇨ Click button "Confirm" to continue	CONFIRM	Confirm	The sequence waits until the content of the shared variable "phase" (set by date_watch.tcl sequence) becomes "DTCP1". Then calls asynchronously the script Z010999MCVT091_IST_RMS_DTCP with argument DTCP1 Continue to - section 7.3 DTCP3	✓	

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	07:20	Uwe Vilenke	D. Lamonby.

7.2 OD0345: HIFI PRIME

Figure 3 – Generic DTCP + AP operations



7.2.1 DTCP-1

Note:

All DTCPs have the same structure except DTCP 2 (that is totally missed as per IST Spec). The following steps apply to DTCP 1 - 3 - 4 (with small highlighted differences). In DTCP 2 the operator has just to wait until the end of AP2 and beginning of DTCP 3.

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
10	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "START HERSCHEL RMS DTCP1"	YES	Yes		✓	
20	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Switching from Umbilical to RF (TC and TM)"	Confirm	confirm		✓	
30	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Start ranging"	Confirm	confirm	RF downlink switched to 150Kbps	✓	

Date: 18/5/2009	Time: 08:25	Operator: Uwe Veenhu	Product-Assurance: D.Lamarby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
40	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "SETUP OF THE DTCP TRACING OF EPHEMERIDES AND OF COOLER RECYCLING (IF ANY)"	Confirm	Confirm	Asynchronous tasks let sequences run in parallel. Log messages will be reported at the end if they have not completed before end of the current DTCP	✓	
50	**Z010999MCVT090_IST_DTCP_TRACE_EPH** Reply to prompt: SET UP ephemerides update monitoring	Confirm	Confirm	Note down the time tag of the TC to update the ephemerides from the On Board Queue. Day 138.11.16	✓	
60	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "CEL downloading & stop ranging"	Confirm	Confirm	Note: if no TM (1, 2), TM (1, 8), TM (5, 2) and TM (5, 4) has been received from board after IST_START the CEL is empty.	✓	
70	**D102159SCVT188_IST_DUMP_PKT_STORE** Press ENDTS to continue	END TS	EndTs		✓	
80	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Set TM DownLink to: high rate"	Confirm	Confirm		✓	

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	08:32	Uwe Klenke	D. Lamarby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
90	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Check from TM Pkt History (all APIDS that TM is coming down"	OK	OK	When TM is coming down, it means that the MTL has commanded the switch to RF link in high rate	✓	
100	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: SSMM Packet Stores Download"	Confirm	confirm	Asynchronous task. D102159SCVT182_DUMP_PKT_STORE_RMS_DTCP DTCP1 Continue in parallel with with steps 110 to 210, then press ENDTS when sequence D102159SCVT182_DUMP_PKT_STORE_RMS_DTCP prompts.	✓	
110	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Start uploading the next MTL"	Confirm	confirm	Note that for MTL upload TC aggregation is enabled (disabled at the end of upload)	✓	

08:36

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
120	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "While uploading the next MTL, please check that DE081170 (NrOfTcsInMtl) and DE82F170 (MtlTcCnt) are consistently updated"	OK	OK	Plot parameters in TM plotting tool	✓	
130	**Z010999MCVT091_IST_RMS_DTCP** Reply to prompt: *"Uploading MTL OD0346-0347?"* ⇨ press OK	OK	OK		✓	
140	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Press OK only AFTER MTL upload completion" ⇨ first perform following 2 steps and then continue procedure from the subsequent step	WAIT	WAIT	MTL_rms_dtcp1 is called asynchronously. This sequence will upload all segments of MTL OD 0346-0347	✓	

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	08:39	Uwe Veenke	D Lamarby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
150	During MTL_rms_dtcp1.tcl at the prompt: "Script is going to load 1 file for ODs 0346-0347" ⇨ Open an ON BOARD QUEUE display ⇨ Filter TM PKT histories with TM(1,7), TM(1,8) and TM(1,2) to monitor completed, failed or not acknowledged TCs ⇨ press OK	PASS PASS OK	OK		✓	
160	During **MTL_rms_dtcp1.tcl** at the prompt: "Click OK when the MTL load complete (completion flag on last load command)" ⇨ check that no TM(1,8) or TM(1,2) have been received during the upload ⇨ check that TM(1,7) have been received throughout the upload ⇨ check that the CCS had finished processing all TCs of the last MTL (no completion flag is P, pending) ⇨ press OK	PASS PASS PASS OK	OK	For the last check, you will need to stop and put live the TC history display many times until every "load TC" commands are yellow or green.	✓	

PVS#20-2

08:39

NCR-4484

PVS#21

Date: 18/5/2009 | Time: 09:21 | Operator: Uwe Veenke | Product-Assurance: D. Lamarby.

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
170	Back to the prompt in **Z010999MCVT091_IST_RMS_DTCP** "Press OK only after completion of the MTLs upload" ⇨ press OK	OK	OK		✓	
180	*During Z010999MCVT085_IST_RMS_ASTRIUM* *"Check that all SSIDs are enabled"* ⇨ Perform activity then click the button "OK" to continue	OK	OK		✓	

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	09:27	Uwe Vlenka	D. Lamarby

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
190	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Check synchronization between end of MTL upload and start maintenance tasks"	Confirm	confirm	This test checks the status of the asynchronous activities: - next MTL upload It waits until the completion of all these activities then returns to the operator. If the MTL upload is still running, date_watch.tcl gives a warning to SUSPEND the sequence and the operator should check that there are no problems with the upload	✓	
200	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Start maintenance tasks"	Confirm	confirm	There are no maintenance tasks defined for the RMS.	✓	

Date: 18/5/2009	Time: 09:29	Operator: Uwe Vienke	Product Assurance:

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N	
210	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Check synchronization between end of SSMM packet stores download and MTL operations"	Confirm	Confirm	The sequence waits until the end of the SSMM download (asynchronous task). If the SSMM download is still running 45 minutes before the end of the DTCP, date_watch.tcl gives a warning, asks the user to issue the commands to stop the download (8, 4) and TERMINATE the sequence at an appropriate time (i.e. before starting ranging).	✓		
220	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Set TM DownLink to: Medium rate and perform 5 minutes ranging"	Confirm	CONFIRM		✓		PVS#17-5 11:00
230	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Check end of DTCP and reset video link"	Confirm			✓		11:00

Date:	Time:	Operator:	Product-Assurance:
18/5/2009	11:10	Uwe Vieenke S. ELSEN	

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
240	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "At around end of DTCP."	OK	OK	Around the end of the DTCP (e.g. 20 minutes before) give the OK to set up the transmission back to video (i.e. test time = 2009.138.11.00.00). The downlink is also switched back to HBR (1.5Mbps) for the next AP	✓	
250	**Z010999MCVT090_IST_DTCP_TRACE_EPH** Click ENDTS to continue	ENDTS		If it appears. SCRIPT RAN AND COMPLETED BUT NO "END TS"		
260	**Z010999MCVT091_IST_RMS_DTCP** Click ENDTS to continue	ENDTS	ENDTS		✓	

PVS #20-3 →

PVS #17-5

7.2.2 AP-1

No planned operator activities. However execution of MTL will be monitored and in the in event of anomaly information acquired and recovery/safing actions initiated.

START: 11:20

Date: 18/5/09	Time:	Operator:	Product-Assurance:

PVS 23! between 21:30 → 23:20 system time (17:30 2 19:20 local) ✓ done on 21:45, 18/5/09

7.3 OD0346: PACS PRIME

PVS10

7.3.1 DTCP-2

PVS22 No ground operations (to simulate missed communication). However execution of MTL will be monitored and in the in event of anomaly information acquired and recovery/safing actions initiated. Downlink remains in 1.5Mbps (on umbilical).

7.3.2 AP-2

No planned operator activities. However execution of MTL will be monitored and in the in event of anomaly information acquired and recovery/safing actions initiated.

PVS23 ✓ between 15:20 → 15:50 (11:20 & 11:50 local) 15:11 S.Elsner

7.4 OD0347: SPIRE PHOTOMETRY

PVS12 PVS22 ✓ 15:12

7.4.1 DTCP-3

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
10	DTCP3 - note: The sequence waits 99900 against start of DTCP3 (should be say 15mins before) seconds after start of DTCP1 (30.75hrs - necessary to reduce the volume of the logs). Than it waits until the value of the shared variable "phase" changes into "DTCP3" (AP1, DTCP2 and AP2 are over) Then calls asynchronously the DTCP sequence with parameter DTCP3.				✓	
20	Z010999MCVT091_IST_RMS_DTCP Reply to the prompt: "START HERSCHEL RMS DTCP3"	YES			✓	

Date:	Time:	Operator:	Product-Assurance:
19/5/09	15:20	S.Elsner	

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
30	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Switching from Umbilical to RF (TC and TM)"	Confirm			✓	
40	Z010999MCVT091_IST_RMS_DTCP Reply to the prompt: "Start ranging"	Confirm		RF downlink switched to 150Kbps	✓	
50	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "SETUP OF THE DTCP TRACING OF EPHEMERIDES AND OF COOLER RECYCLING (IF ANY)"	Confirm		Asynchronous tasks let sequences run in parallel. Log messages will be reported at the end if they have not completed before end of the current DTCP	✓	
60	**Z010999MCVT090_IST_DTCP_TRACE_CR** Reply to prompt: SET UP Cooler recycling	Confirm		Note down the time tag of the TC to start SPIRE Cooler recycling (if in He2) on On Board Queue. Note: in He1 the cooler recycling will not be perfor med, do KILL the sequence and type the following in the test conductor console: setshared CR_completed 1	✓	

PVS#25
PVS#26

Date:	Time:	Operator:	Product-Assurance:
19/5/08	15:48	S. Elsley	

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
70	Z010999MCVT090_IST_DTCP_TRACE_EPH Reply to prompt: SET UP ephemerides update monitoring	Confirm		Note down the time tag of the TC to update the ephemerides from the On Board Queue.	✓	
80	Z010999MCVT091_IST_RMS_DTCP Reply to the prompt: "CEL downloading & stop ranging"	Confirm		Note: if no TM (1, 2), TM (1, 8), TM (5, 2) and TM (5, 4) has been received from board after IST_START the CEL is empty.	✓	
90	D102159SCVT188_IST_DUMP_PKT_STORE Press ENDTS to continue	END TS			✓	
100	Z010999MCVT091_IST_RMS_DTCP Reply to the prompt: "Set TM DownLink to: high rate"	Confirm			✓	
110	Z010999MCVT091_IST_RMS_DTCP Reply to the prompt: "Check from TM Pkt History (all APIDS) that TM is coming down"	OK		When TM is coming down, it means that the MTL has commanded the switch to RF link in high rate	✓	

Date:	Time:	Operator:	Product-Assurance:
19/5/09	16:00	S. ELSEN	

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
120	Z010999MCVT091_IST_RMS_DTCP Reply to the prompt: SSMM Packet Stores Download"	Confirm		Asynchronous task. D102159SCVT182_DUMP_PKT_STORE_RMS_DTCP DTCP3 Continue in parallel with steps 130 to 230, then press ENDTS when sequence D102159SCVT182_DUMP_PKT_STORE_RMS_DTCP prompts.	✓	
130	Z010999MCVT091_IST_RMS_DTCP Reply to the prompt: "Start uploading the next MTL"	Confirm			✓	
140	Z010999MCVT091_IST_RMS_DTCP Reply to the prompt: "While uploading the next MTL, please check that DE081170 (NrOfTcsInMtl) and DE82F170 (MtlTcCnt) are consistently updated"	OK		Plot parameters in TM plotting tool	✓	
150	Z010999MCVT091_IST_RMS_DTCP Reply to prompt: uploading MTL OD0347-0348 plus Dummy MTL?	OK		Note that for MTL upload TC aggregation is enabled (disabled at the end of upload)	✓	

Date: 19/5/09	Time: 6:02	Operator: [signature]	Product-Assurance: [signature]

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
160	Z010999MCVT091_IST_RMS_DTCP Reply to the prompt: "Press OK only AFTER MTL upload completion" ⇨ first perform following 2 steps then continue procedure from the subsequent step	wait		MTL_rms_dtcp3 is called asynchronously. This sequence will upload all segments of MTLs for OD0347-0348 and the dummy MTL timed for after DTCP4 (i.e. never executed)	✓	
170	During MTL_rms_dtcp3.tcl at the prompt: "Script is going to call 2 files for OD 347-348 and Dummy starting 2009.140.13.15.00" ⇨ Open an ON BOARD QUEUE display ⇨ Filter TM PKT histories with TM(1,7), TM(1,8) and TM(1,2) to monitor completed, failed or not acknowledged TCs ⇨ press OK	PASS PASS OK			✓	

PVS#20-4

Date: 19/5/09	Time: 16:09	Operator: S. Eggen	Product-Assurance:

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
180	During MTL_rms_dtcp3.tcl at the prompt: "Click OK when the next MTL can be loaded (completion flag on last load command)" ⇨ check that no TM(1,8) or TM(1,2) have been received during the upload ⇨ check that TM(1,7) have been received throughout the upload ⇨ check that the CCS had finished processing all TCs of the last MTL (no completion flag is P, pending) ⇨ press OK	PASS PASS PASS OK		For the last check, you will need to stop and put live the TC history display many times until every "load TC" commands are yellow or green.	✓	
190	Back to the prompt in Z010999MCVT091_IST_RMS_DTCP "Press OK only AFTER MTL upload completion" ⇨ press OK	OK			✓	

RS #20-5

RS #27

Date: 19/5/09	Time: 16:30	Operator: S. Eggy	Product-Assurance:

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
200	*During Z010999MCVT085_IST_RMS_ASTRIUM* *"Check that all SSIDs are enabled"* ⇨ Perform activity then click the button "OK" to continue	OK			✓	
210	Z010999MCVT091_IST_RMS_DTCP Reply to the prompt: "Check synchronization between end of MTL upload and start of maintenance tasks"	Confirm		This test checks the status of the asynchronous MTL upload It waits until the completion of all this activity then returns to the operator. If the MTL upload is still running, date_watch.tcl gives a warning to SUSPEND the sequence and the operator should check that there are no problems with the upload	✓	
220	Z010999MCVT091_IST_RMS_DTCP Reply to the prompt: "Start maintenance tasks"	Confirm		There are no maintenance tasks defined for the RMS.	✓	

Date: 19/5/09	Time: 16:37	Operator: S.Easey	Product-Assurance:

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
230	Z010999MCVT091_IST_RMS_DTCP Reply to the prompt: "Check synchronization between end of SSMM packet stores download and MTL operations"	Confirm		The sequence waits until the end of the SSMM download (asynchronous task). If the SSMM download is still running 45 minutes before the end of the DTCP, date_watch.tcl gives a warning, asks the user to issue the commands to stop the download (8, 4) and TERMINATE the sequence. OBS10160	17.47 DOWNLINK FINISHED ✓	
240	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Set TM DownLink to: Medium rate and perform 5 minutes ranging"	Confirm			✓	PS#17-5
250	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Check end of DTCP and reset video link"	Confirm			18:00 ✓	
260	Z010999MCVT091_IST_RMS_DTCP Reply to the prompt: "At around end of DTCP."	OK		Around the end of the DTCP (e.g. 10 minutes before) give the OK to set up the transmission back to video (i.e. test time = 2009.139.18.10.00). The downlink is also switched back to HBR (1.5Mbps) for the next AP	✓	

Date:	Time:	Operator:	Product-Assurance:
19/5/09	18:14	S. Eggel	

PVS #20 -3 ✓

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
270	Z010999MCVT090_IST_DTCP_TRACE_EPH Click ENDTS to continue	ENDTS		If it appears.	✓	
280	Z010999MCVT090_IST_DTCP_TRACE_CR Click ENDTS to continue	ENDTS		If it appears.		
290	Z010999MCVT091_IST_RMS_DTCP Click ENDTS to continue	ENDTS			✓	

PVS22 ⇒ ✓ 18:23

7.4.2 AP-3

No planned operator activities. However execution of MTL will be monitored and in the in event of anomaly information acquired and recovery/safing actions initiated.

18:26 PVS#12-3. SWITCH ON PUMP HEAT SWITCH 3/4. OK.

18:49 PVS#29 - ADDITIONAL SPIRE CMDS AS REQUESTED BY SPIRE - OK

03:12 PVS#32 Get report of SPIRE onboard tables (NCR investigation)

7.5 OD0348 DTCP Only (Test End)

7.5.1 DTCP 4

PVS22 → ~~PVS30~~

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
10	**Z010999MCVT085_IST_RMS_ASTRIUM** The sequence waits 45900 against start of DTCP4 (should be say 15mins before) seconds after start of DTCP3 (15.75hrs - necessary to reduce the volume of the logs). Than it waits until the value of the shared variable "phase" changes into "DTCP4" (DTCP3 and AP3 are over) Then calls asynchronously the DTCP sequence with parameter DTCP4.			If the DTCP sequence is still running when DTCP 4 starts, the sequence date_watch.tcl gives a warning and the operator has to react / interrupt the test. NOTE DTCP4 will skip all the steps after the ranging / CEL download. The S/C will remain in medium rate and RF. After the end of the DTCP, the first step of the master will be to switch back to umbilical before data retrieval and test conclusion.		
PVS30 → 20	**Z010999MCVT091_IST_RMS_DTCP** **Reply to the prompt:** **"START HERSCHEL RMS DTCP4"**	YES	Yes		✓	

PVS #33-1

08:01

Date:	Time:	Operator:	Product-Assurance:
20/05/2009	08:07	Uwe Klenke	D. Lamouly

Step No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
30	**Z010999MCVT091_IST_RMS_DTCP** Moving RF from Umbilical to RF (TC and TM) Reply to the prompt: ~~"S/C RF acquisition and TM/TC link initialization"~~		confirm		✓	
40	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "Start ranging"		Confirm		✓	
50	**Z010999MCVT091_IST_RMS_DTCP** Reply to the prompt: "CEL downloading & stop ranging"		Note: if no TM (1, 2), TM (1, 8), TM (5, 2) and TM (5, 4) has been received from board after IST_START the CEL is empty. confirm		✓	
60	**D102159SCVT188_IST_DUMP_PKT_STORE** **Press "END TS!" to continue**		EndTs		✓	
70	**Z010999MCVT091_IST_RMS_DTCP** **Press "END TS!"**	END TS!	EndTs			

PVS#17-6

PVS#33-2,3,4

Date:	Time:	Operator:	Product-Assurance:
20/5/2009	08:23	Uwe Valenke	D. Lamonby

7.6 Data retrieval and test conclusion

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
10	**Z010999MCVT085_IST_RMS_ASTRIUM** The sequence waits until the shared variable "phase" changes to "End" then goes on with the final operations				Normally the duration of DTCP4 would be 3 hours. For this test, the end of the DTCP has been set much earlier and the date_watch will set the shared variable phase to "End" much earlier. If you want to anticipate even more the end of the DTCP4: complete the DTCP4 sequence, terminate the sequence date_watch and issue the following command: setshared phase "End"	✓	
20	**Z010999MCVT085_IST_RMS_ASTRIUM** Reply to the prompt: "Check end of MTL"	Confirm		Confirm	Test Conductor should check that this procedure is synchronised with the on-board execution of the MTL; i.e. only Dummy MTL commands still on the OBQ. Last RMS time-tagged TC will execute at 07:20:09.		

Date:	Time:	Operator:	Product-Assurance:
20/5/2009	08:34	Uwe Vlenke	[signature]

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
30	**Z010999MCVT085_IST_RMS_ASTRIUM** Reply to the prompt: "Click OK to Stop MTL"	OK		OK		✓	
40	**Z010999MCVT085_IST_RMS_ASTRIUM** Reply to the prompt: "reset video link "	Confirm		confirm		✓	
50	**Z010999MCVT085_IST_RMS_ASTRIUM** Reply to prompt: Press OK when you see new telemetry coming in"	Check TM and OK		OK	. Some minutes are required to set back to umbilical	✓	
IVS#17-7> 60	**Z010999MCVT085_IST_RMS_ASTRIUM** switch to BD mode ~~"Setting TM/TC DFE for BD mode commanding"~~ ⇨ Click the button "Confirm" to continue	Confirm		confirm		✓	
70	**Z010999MCVT085_IST_RMS_ASTRIUM** ⇨ *Confirm end of BD mode switch by pressing "END TS"*	END TS!		END TS		✓	
IVS#17-8> 80	**Z010999MCVT085_IST_RMS_ASTRIUM** check and if required set SPIRE back to STBY mode If prompted: ~~"Set SPIRE PHOT back to STBY mode"~~	Confirm		confirm	If the command to set SPIRE in STBY is in the MTL, the sequence just logs that "SPIRE is correctly set in REDY mode" and the test step ends. If not and the status is PHOTSTBY the	✓	

Date: 20/5/2009 | Time: 08:41 | Operator: Uwe Vilenius | Product-Assurance: D. Lamonby

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
					sequence gives a warning and calls S102999SCVT908_ASDDBGSPIR_PHOT STBY2STBY If the status is not REDY and not PHOTSTBY, the sequence gives a warning and waits for user action. The two warnings are in the following 2 steps		
90	**Z010999MCVT085_IST_RMS_ASTRIUM** Reply to the prompt (if prompted): "SPIRE is in mode <mode> not in REDY (STDBY) mode. Please execute the proper configuration script and press OK when SPIRE is in REDY"	Execute proper script then OK		N/A			
100	**Z010999MCVT085_IST_RMS_ASTRIUM** Reply to the prompt (if prompted): "SPIRE is in mode <mode> not in REDY (STDBY) mode. Please execute the proper configuration script and press OK when SPIRE is in REDY"	Execute proper script then OK		N/A			
110	**Z010999MCVT085_IST_RMS_ASTRIUM**	Confirm		Confirm	Refer to RD3 for current prompts and expected OOLs.		

Date:	Time:	Operator:	Product-Assurance:
20/5/2009	08:43	Luc Vilenbe	D'Amonby

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	Reply to the prompt: "POWER OFF HIFI NOMINAL"						
120	**Z010999MCVT085_IST_RMS_ASTRIUM** Reply to the prompt: "POWER OFF PACS NOMINAL"	Confirm		Confirm	Refer to RD3 for current prompts and expected OOLs.	✓	
130	**Z010999MCVT085_IST_RMS_ASTRIUM** Reply to the prompt: "POWER OFF SPIRE NOMINAL"	Confirm		Skip	Refer to RD3 for current prompts and expected OOLs.	✓	
140	**Z010999MCVT085_IST_RMS_ASTRIUM** Reply to the prompt: "Switching OFF TT&C Chain"	Confirm		Confirm		✓	
150	**Z010999MCVT085_IST_RMS_ASTRIUM** Reply to the prompt: "TTC SCOE OFF and TMTC DFE in NotAggregate mode"	Confirm		Confirm	Done just in case	✓	
160	**Z010999MCVT085_IST_RMS_ASTRIUM** **Click EndTS to continue**	ENDTS		EndTs		✓	

PRS31_1

SPR-726

Date:	Time:	Operator:	Product-Assurance:
20/5/2008	09:02	Uwe Klenke	D. Lamarby.

7.6.1 IST RMS END

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	INSTRUMENT EGSE RELATED DISCONNECTION						
10	From HPCCS Test Conductor console issue command to disconnect from HIFI, SPIRE & PACS (I-EGSEs) **disconnect HHIFIEGSE** **disconnect HSPIREEGSE** **disconnect HPACSEGSE**	 OK OK OK		 OK – OK		✓	
20	Confirm from HPCCS that I-EGSEs have been disconnected	YZS27940 = DISCONNECTED YZS28940 = DISCONNECTED YZS29940 = DISCONNECTED		disconnected disconnected connected		✓	
	HIFI SPECIFICS						
30	Switch off the HIFI Cooling Cart i.a.w. AD-6	OK					
40	If no longer required Switch off HIFI I-EGSE i.a.w. AD-7	OK					
50	On HPCCS stop test script: **HIFI_All_SubscribeParams**	OK					
	Satellite & EGSE Switch OFF						
60	Switch off Satellite/SVM and HPCCS, SCOEs i.a.w. AD-5 section 7.4	OK					
	END OF TEST						

PVS-31-2

PVS31-3

RVS22

Date:	Time:	Operator:	Product-Assurance:
20/5/2009	09:06	Uwe Klenke	D. Lamonby

7.7 Emergency Recovery Procedures

In case of problem with a specific instrument OD execution (either internally to the instrument or externally from the SVM or Cryo), the following procedures are defined to:

- Disable the MTL subschedule(s) for the instrument(s) concerned
- If required put the instrument into a SAFE condition (could be either STANDBY or OFF)
- Re-enable the Meta MTL subschedule(s) for the instrument(s) concerned (the latter assumes that the problem has been resolved, instrument(s) concerned returned to the required configuration for resumption of the instrument MTL)

7.7.1 ACMS Gyro Reconfiguration Recovery

In case of Gyro reconfiguration due to mechnical disturbance during the test execute Operator Note 52 to return the Gyros to nominal test configuration.

7.7.2 Disable MTL Subschedule

As an initial action to prevent further commanding of the instrument/sub-system concerned the corresponding subschedules shall be disabled as follows:

1. Disable HIFI subschedules to make sure no new commands are sent to HIFI; from the console execute test script:
   Z010999MCVT220_IST_HIFI_Disable_Subschedules.tcl

Date:	Time:	Operator:	Product-Assurance:

2. Disable PACS subschedules to make sure no new commands are sent to PACS; from the console execute test script:
   Z010999MCVT221_IST_PACS_Disable_Subschedules.tcl
3. Disable SPIRE subschedules to make sure no new commands are sent to SPIRE; from the console execute test script:
   Z010999MCVT222_IST_SPIRE_Disable_Subschedules.tcl

7.7.3 Switch Instruments to Safe

Next put instrument concerned to the agreed SAFE state as follows:

1) For HIFI
Switch HIFI to STANDBY1 by executing TBD

RWS6

2) For PACS
Switch PACS to SAFE by executing TBD

3) For SPIRE
Switch SPIRE to REDY by executing TBD

Convene NRB and then perform agreed recovery actions.

7.7.4 Re-Enable MTL Subschedule

At time agreed at the NRB re-enable the MTL Meta-subschedule for the instrument concerned.

Date:	Time:	Operator:	Product-Assurance:

8 Summary Sheets

8.1 Procedure Variation Summary

	Test Change	Curr. No.: Date Page of	
Test designation	Test Procedure	Issue	Rev.
Test step changed	Reason for Change		
Prepared by:	Resp. Test Leader	Project Engineer	
PA/QA	Prime	Customer	

Table 8.1-1: Procedure Variation Sheet

	Test Change	Curr. No.: 1 Date: 02/09/2008 Page 1 of 2	
Test designation IST1 RMS	Test Procedure HP-2-ASED-TP-0193	Issue 1	Rev. -
Test step changed 5.2	Reason for Change Specification of Cryo cooling for test		

Cryo cover flushing will be performed for the duration of the PACS test in order to maintain the cover temperature at 15K.

Note however temperature is allowed to drift up to 100 degK without affecting the test and is not required for HIFI. It is ~~requested~~ Preferred for SPIRE but is not mandatory.

The following revised constraints are applicable for the test (02-05/09/2008)

Temperature Constraints, RMS

S/C Orientation: 20° tilted and no movement during test

Cryostat status: He2

		Temp Sensor	Temperature / K
HIFI	Level 0 (HTT)	T107 / T102	< 3
	Level 1	T231-T237	< 15
	Level 2	T254, T207	< 30
	Level 3	N/A	N/A
PACS			
PODS INSIDE ← LIQUID	Level 0 (HTT)	T107 / T102	1.95
	Level 1	T231-T237	< 5
	Level 2	T254, T207	< 15
	Level 3	N/A	N/A
SPIRE			
	Level 0 (HTT)	T107 / T102	1.95
	Level 1	T231-T237	< 6
	Level 2	T254, T207	< 15
	Level 3	N/A	N/A

No Stability Requirement (L0, L1 & L2)

Cryo Cover Flushing:

- **HIFI**:No Cryo Cover Flushing is required for HIFI testing
- **PACS**: Cryo Cover Flushing is required for PACS testing.
- **SPIRE**: For SPIRE, Cryo Cover Flushing is preferable but not essential

Cryostat Operations during RMS

Once the requisite HTT temperature has been reached, the mass flow will be throttleled to 25 – 30 mg/s for the remainder of the test.

Prepared by: S. Hamer	Resp. Test Leader	Project Engineer
PA/QA PA 2/9/08	Prime	Customer

	Test Change	Curr. No.: 2 Date: 27/08/2008 Page 1 of 1

Test designation	Test Procedure	Issue	Rev.
IST1 RMS	HP-2-ASED-TP-0193	1	-

Test step changed	Reason for Change
Section 7.1.1 step 70	Define Reaction Wheel Limits for Stiction Region

in procedure

TBD threshold is 20 rad/sec

Prepared by:	Resp. Test Leader	Project Engineer F. Chatte
S. Hamer		
PA/QA	Prime	Customer

	Test Change	Curr. No.: 3 Date: 27/08/2008 Page 1 of 1

Test designation	Test Procedure	Issue	Rev.
IST1 RMS	HP-2-ASED-TP-0193	1	-

Test step changed	Reason for Change
Section 7.1.2 Step 40	Do not remove HIFI CVV Window Red Tag

Skip step. It is agreed at the TRR that the Red-Tag need not be removed for test.

Prepared by:	Resp. Test Leader	Project Engineer F. Chatte
S. Hamer		
PA/QA	Prime	Customer

	Test Change	Curr. No.: 4 Date: 27/08/2008 Page 1 of 1

Test designation	Test Procedure	Issue	Rev.
IST1 RMS	HP-2-ASED-TP-0193	1	-

Test step changed	Reason for Change
Section 7.1.2 Steps 140-150	Change from CCU Mode 1 to Mode 2 for test

As agreed at the TRR the CCU will be switched to Mode 2 for the duration of the test.

- Perform step 140
- Skip step 150

Prepared by:	Resp. Test Leader	Project Engineer
S. Hamer		F. Chatte
PA/QA	Prime	Customer

	Test Change	Curr. No.: 5 Date: 27/08/2008 Page 1 of 1	
Test designation IST1 RMS	Test Procedure HP-2-ASED-TP-0193	Issue 1	Rev. -
Test step changed Section 7.1.2	Reason for Change Perform SPIRE Cooler Recycling before RMS start		

As agreed at TRR perform a SPIRE cooler recycling operation immediately after switching on SPIRE.

Execute the following script:

SPIRE-IST-CCS-CRECa.tcl

Note: execution time is approximately 2hrs, and should be complete before Dewar exchange

DELETED as AGREED at Delta TRR

Prepared by: S. Hamer	Resp. Test Leader	Project Engineer	Agreement for deletion
PA/QA	Prime	Customer	

	Test Change	Curr. No.: 6 Date: 27/08/2008 Page 1 of 1

Test designation	Test Procedure	Issue	Rev.
IST1 RMS	HP-2-ASED-TP-0193	1	-

Test step changed	Reason for Change
Section 7.7.3	Instrument "Safing" in case of anomaly

The following sections in HP-2-ASED-TP-0206 shall be used to bring the instruments into a safe mode (OFF) if deemed necessary during the test:

1) For HIFI , TBD should reference Section 7.6.5
2) For PACS, TBD should reference Section 7.6.1
3) For SPIRE, TBD should reference Section 7.6.3

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

	Test Change	Curr. No.: 7 Date: 29/08/2008 Page 1 of 1

Test designation	Test Procedure	Issue	Rev.
IST1 RMS	HP-2-ASED-TP-0193	1	-

Test step changed	Reason for Change
Applicable to complete test	NCR-4442 / NCR-4470 MANDATORY Constraints during test

NCR-4442

As reported in this NCR, requesting a report of the OBQ MTL Whole TC status when the MTL is "Stopped" (possibly after an earlier reconfiguration) can trigger a reconfiguration.

Therefore before requesting the status of the OBQ ensure the MTL is already running

DEH26170 = "Running"

NCR-4470

If a running RMS MTL is stopped (**DEH26170 = "Stopped"**) for whatever reason (ground command or reconfiguration or OBCP), it MUST always be restarted (after NRB agreement to do so) with all permanent and transient sub-schedules disabled by sending the following command:

DCS0G170

Then as per NRB decision:

1) Perform the necessary maintenance to the OBQ and
2) Restart the MTL subschedules agreed

Prepared by:	Resp. Test Leader	Project Engineer
S. Hamer		
PA/QA R. Goossens	Prime	Customer

	Test Change	Curr. No.: 8 Date: 27/08/2008 Page 1 of 1	
Test designation IST1 RMS	Test Procedure HP-2-ASED-TP-0193	Issue 1	Rev. -
Test step changed General	Reason for Change Known Deviations from Spec.		

This PVS reports the known deviations from the IST SPEC at the start of test:

1) Cryo SCOE connected to key CCU-A sensors
2) Uplink clock always on prior to start of first DTCP
3) Real-time downlink of data at 1.5Mbps will be maintained during the autonomy periods
4) New ODs have been defined for formal test

Prepared by: S. Hamer	Resp. Test Leader	Project Engineer F. Chatto
PA/QA	Prime	Customer

	Test Change	Curr. No.: 9 Date: 28/08/2008 Page 1 of 1

Test designation	Test Procedure	Issue	Rev.
IST1 RMS	HP-2-ASED-TP-0193	1	-

Test step changed	Reason for Change
Section 7.1.2 After Step 660	Dump ACMS diagnostic packets for ESOC

When S/C in final configuration for RMS and NDIU link synchronised with ESOC enable downlink of ACMS diagnostic packets for a few minutes by executing the following script:

A102109SPVT215_DUMP_OBDB

Note this is not a mandatory step and shall only be done if time allows.

Already performed prior to start of test

Prepared by:	Resp. Test Leader	Project Engineer
S. Hamer		
PA/QA R. Goossens	Prime	Customer

	Test Change	Curr. No.: 10 Date: 27/08/2008 Page 1 of 1

Test designation	Test Procedure	Issue	Rev.
IST1 RMS	HP-2-ASED-TP-0193	1	-

Test step changed	Reason for Change
Section 7.3	Recovery if Bolometer Temp > 400mK

If the bolometer sorption cooler temperature exceeds 400mK a PACS SAFE OBCP will be triggered.

If this occurs it will be necessary to perform the OBCP recovery actions as per Operator Note 29.

The parameter indicating the temperature is PM411410 (BOL_TEMP_EV). However it should be noted that it is not expected to exceed this temperature during the test.

Prepared by:	Resp. Test Leader	Project Engineer
S. Hamer		
PA/QA	Prime	Customer
R. Goossens		

	Test Change	Curr. No.: 12 Date: 02/03/2008 Page 1 of 1	
Test designation IST1 RMS	Test Procedure HP-2-ASED-TP-0193	Issue 1	Rev. -
Test step changed 7.4	Reason for Change Manual Commanding for SPIRE Cooler Recycle		

The automatic cooler recycling in the SPIRE DTCP may not complete correctly due to the current Cryo temperatures/fill level. If this is the case and when authorised to do so by SPIRE onsite support execute the following commands from the manual command stack:

From the MTL the recycle will start at

2009.139.15.57.05 (corresponding to 11:57.05 CEST, Thursday 4th Sept)

and nominally it should finish at

2009.139.18.17.03 (14.17.03 CEST).

If by RMS time 2009.139.18.15.0 (14.15.00 CEST), the pump heat switch voltage parameter SPHSV (SCOS mnemonic SMH0A520) is still reading close to ~0mV (+/- 10mV), then the following 3 TCs will need to be executed within the next 2 minutes :

1) Switch off the Pump Heater

SPIRE_SEND_DRCU_COMMAND(0xA0C70000,0)

Parameter SPHTRV (SCOS mnemonic SMT1A520) should go to ~0V, if not already ~0V

2) Switch off the Evaporator Heat Switch

SPIRE_SEND_DRCU_COMMAND(0xA0C50000,0)

Parameter EVHSV (SCOS mnemonic SMT0A520) should go to ~0V, if not already ~0V

3) Switch on the Pump Heat Switch

SPIRE_SEND_DRCU_COMMAND(0xA0C40A2A,0)

Parameter SPHSV (SCOS mnemonic SMH0A520) should go to ~410mV.

Prepared by: S. Hamer	Resp. Test Leader	Project Engineer
PA/QA PA. 2/9/08	Prime	Customer

	Test Change	Curr. No.: 13 Date: 02/09/2008 Page 1 of 1	
Test designation IST1 RMS	Test Procedure HP-2-ASED-TP-0193	Issue 1	Rev. -
Test step changed General	Reason for Change Re-establishing TM downlink (SPR-718)		

In case of loss of TM downlink when switching from HBR to MBR when in RF then execute Operator Note 54

Prepared by: S. Hamer	Resp. Test Leader	Project Engineer
PA/QA 2/9/08	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No.#14 Date 02-09-2008 TIMELINE 18-05-2009 Page 1 of	
Test designation RMS	Test Procedure TP_0193	Issue 1	Rev.
Test step changed Skp 110 & 120	Reason for Change No connection to SPIRE IEGSE		

SPIRE IEGSE was rebooted because of problems with the power to the FO building.
IEGSE could not be restarted remotely (then connection to remote PC should stay open for the rest of AMS).

Connection to SPIRE EGSE will be made later on. (prior to SPIRE test)

SPIRE HK is stored on CCS

Prepared by: S. Ilan	Resp. Test Leader S Ilan	Project Engineer
PA/QA D. Lamarthy.	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No: #15 Date 02-09-2008 TIMELINE 18-05-2009 Page 1 of	
Test designation	Test Procedure TP_0193	Issue 1	Rev.
Test step changed 120	Reason for Change ERROR IN RMS MASTER SCRIPT		

→ 20109SS MC VT 005_IST_RMS-ASTRIUM.tcl

Crashed on TC DC 16 16

→ patch online. Herculus had the correct version, but this one was not checked in.

→ rerun script

→ close Date_Watch script → opened twice

→ skip all parts before transition to nominal

→ abort IST_SW4CQ_Nom.tcl (already performed)

Prepared by:	Resp. Test Leader	Project Engineer
S. Ilan	S. Ilan	
PA/QA	Prime	Customer
D. Lamontagne		

Procedure Variation Summary

	Test Change	Curr. No.# 16 Date 03-09-2008 TIMELINE 18-05-2009 Page 1 of

Test designation	Test Procedure	Issue	Rev.
RMS	TP-0193	1	

Test step changed	Reason for Change
210	RWL's Nominal Values different from procedure

At step 210

Nominal values for RWL's are different from those stated in the procedure.

We used the actual values as retrieved from the system.

Continue.

Prepared by:	Resp. Test Leader	Project Engineer
D. LAMONBY		
PA/QA	**Prime**	**Customer**
D Lamonby		

Procedure Variation Summary

	Test Change	Curr. No.: 17 Date 03-09-2008 TIMELINE 18-05-2009 Page 1 of 7	
Test designation RMS	Test Procedure TP-0193	Issue 1	Rev.
Test step changed See below	Reason for Change Errors in Procedure		

1/ Step 220/3

IS	SHOULD BE
/home/heracms/plotter/RWLs SPEED.txt	/home/heracms/plotting/RWLs SPEED.txt

2/ Step 80

IS	SHOULD BE
HIFI_All_SubscribeParams	All_SubscribeParams

3/ Step 650

IS	SHOULD BE
Setting TM/TC DFE for AD mode commanding	Switch to AD Mode

4/ Before Step 660
During Z010999MCVT132_TCprotMode_BD_AD_BD.tcl
Click the button "End TS" to continue.

5/ Para. 7.2.1. Step 240 + 7.4.1 STEP 260
Move contents of Remarks box into step 220 Remarks -box. Also change wording in the box :
(e.g. 10 minutes before) to (e.g. 20 minutes before) and change test-time to 2009.138.11.00.00

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

Procedure Variation Summary

	Test Change	Curr. No.# 17 Date 03-09-2008 TIMELINE 18-05-2009 Page 2 of 2	
Test designation: RMS	Test Procedure: TP-0193	Issue: 1	Rev.: 9
Test step changed	Reason for Change: Errors in Procedure		

Chapter 7.5.1. Step 30

6/

IS	SHOULD BE
"S/C RF acquisition and TM/TC link initialisation"	"Moving RF from umbilical to RF (TC and TM)"

~~7/ Chapter 7.6 – after step 20~~

7/ Chapter 7.6 Step 60

IS	SHOULD BE
"Setting TM/TC DFE for BD mode commanding"	"Switch to BD Mode"

Chapter 7.6 Step 80

8/

IS	SHOULD BE
"Set SPIRE PHOT back to STBY mode"	"Check, and if required set SPIRE back to STBY mode"

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

Procedure Variation Summary

	Test Change	Curr. No.# 18 Date 03-09-2008 TIMELINE 18-05-2009 Page 1 of

Test designation	Test Procedure	Issue	Rev.
RMS	TP-0193	1	

Test step changed	Reason for Change
430	Subscribe scripts no longer needed

Terminate all subscribe scripts

Prepared by:	Resp. Test Leader	Project Engineer
D LAMONBY		
PA/QA	**Prime**	**Customer**
D. Lamonby.		

Procedure Variation Summary

	Test Change	Curr. No.: 19 Date 03-09-2008 TIMELINE 18-05-2009 Page of	
Test designation: RMS	Test Procedure: TP-0193	Issue: 1	Rev.
Test step changed: 540	Reason for Change: MTL Upload will not run with comments		

MTL upload 345-346 failed on TC DCT18 170

All comands after 2009.138.11.40.15.0000 send manually from TOpe

↳ TC send does not allow coments. NCR to be raised
↳ Send from Tope console between 2009.138.11.40.15 to 2009.138.11.24.46
↳ Remaing comands copied to
MTL_tdgn37_M_IST1_MTL_D345_346_20080801_001_ ver 1.4
SEQ003_800_end_REMAING.td
(from 2009.138.11.24.47 to end)

-> executed new file.
Updated MTL_tdgn37_M_IST1_MTL-D346_347_20080801_v01_SEQ004_800_end.td
↳ remove coment inside DCT18 170
MTL_tdgn37_M_IST1_MTL_D347_348_20080801_v01_SEQ004_800_end.td

+ online patched!

Prepared by: S. Ilse	Resp. Test Leader: S. Ilse	Project Engineer
PA/QA: D. Lamouly	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No. ~~#~~ 20 Date 03-09-2008 TIMELINE 18-05-2009 Page 1 of

Test designation	Test Procedure	Issue	Rev.
RMS	TP-0193	1	

Test step changed	Reason for Change
~~After 640~~ See Below	New step reqd after step 640

1. After Step 640
During D102159SCVT188_1ST_DUMP_PKT_STORE

=> Click the button "End TS" to continue

2. Chapter 7.2.1 after step 150

3. NEW STEP AFTER 240 — Sect. 7.2.1 (+7.4.1 260) — REPLY TO THE PROMPT "WAIT UNTIL THE MTL has set the XPND IN USE OFF"

4. NEW STEP AFTER 170 SECTION 7.4.1 CLICK END TS

5. " " 180 " "

Prepared by:	Resp. Test Leader	Project Engineer
D. LAMONBY	Uwe Klenke	
PA/QA	**Prime**	**Customer**
D. Lamonby		

Procedure Variation Summary

	Test Change	Curr. No.: 21 Date 03/09/08 Page 1 of 1	
Test designation IST 1 RMS	Test Procedure TP-0193	Issue 1	Rev. –
Test step changed 7.2.1 Step 150	Reason for Change Load remaining MTL cmds for 0346-347		

Execute the following script to load remaining 0346-347 commands missing due to NCR:

MTL_0346_347_remaining_cmds_temp.tcl

Prepared by: S. HAMER	Resp. Test Leader	Project Engineer
PA/QA D. Lamoureux	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No. #22 Date 03-09-2008 TIMELINE 18-05-2009 Page of	
Test designation: RMS	Test Procedure: TP-0193	Issue: 1	Rev.
Test step changed: See below.	Reason for Change: Disable AbsoluteTime Sync on DFF for DTCPs		

ESOC seeing large time jumps on NDIU every minute corresponding to the TMTC DFF time sync with the CCS (AbsoluteTime application). This will cause a problem for ESOC when ingesting data during the DTCP SSMM downlinks. To avoid this the AbsoluteTime application should be stopped just before the start of a DTCP and restarted after the end of the DTCP as follows:

2009.138.23.15	Stop AbsoluteTime on TMTC DFF
2009.139.02:25	Start AbsoluteTime
2009.139.15.15	Stop AbsoluteTime ← 15:12
2009.139.18:25	Start AbsoluteTime ← 18:24
2009.140.07.15	Stop AbsoluteTime ← 07:44
SIC OFF	Start AbsoluteTime.

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

	Test Change	Curr. No.: 23 Date: 03/09/2008 Page 1 of 1	
Test designation RMS	Test Procedure TP-0193	Issue 1	Rev. -
Test step changed	Reason for Change Split TMdumpfile before it gets too big		

After HIFI/PACS/SPIRE tests, the tmdumpfile for VC1 (realtime science) should be split after every instrument.

To split the tmdumpfile, execute from the Test Conductor Console: *newtmdumpfile 1* ✓ executed on 21:45 Bing Chen

1. First should be performed after HIFI tests:
   - Between 18/05/09 21:30 and 18/05/09 23:20 (local time 03/09/08 17:30 and 19:20)
2. Second split should be performed after PACS tests: ✓ 15:11 S. Ilsen
   - Between 19/05/09 15:10 and 19/05/09 15:50 (local time 04/09/08 11:10 and 11:50)

No split is needed after SPIRE tests, since this is the end of the test.

A successful new tm dump file can be checked by going to */HPCCS/VARIABLE/RESULTS/$SESSION_OF_RMS/TMDUMP/*

Check that a new file is started for VC1 in this directory

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

Procedure Variation Summary

	Test Change	Curr. No.# 24 Date 03-09-2008 TIMELINE 19-05-2009 Page 1 of	
Test designation RMS	Test Procedure TP-0193	Issue 1	Rev.
Test step changed	Reason for Change Configure TM in High Rate for A.P.		

(Sent at 03:40)

Send Command: DC27F170

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

Procedure Variation Summary

	Test Change	Curr. No.: #25 Date 04/09/08 Page 1 of 1	
Test designation RMS	Test Procedure TP-0193	Issue 1	Rev.
Test step changed 7.4.1 STEP 40	Reason for Change TO ESTABLISH RF TC LINK		

RF TC LINK RECOVERY SPR723.

RECONNECT RF SCOE

MANUALLY SEND DCT18170 - FAILED) SC IN AD MODE

NEED TO SEND CMD'S FOR SPIKE URGENTLY (PVS#26) BEFORE ESTABLISHING RF LINK.

SWITCH TO UMBILICAL - OK

PERFORM PVS #26

CMD SC PROTOCAL TO BD

ESTABLISH RF LINK FOR TC BY PERFORMING CONNECTION TEST - OK

CMD SC BACK TO AD.

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

Procedure Variation Summary

	Test Change	Curr. No.: #26 Date 04/09/08 Page 1 of 1	
Test designation: RMS	Test Procedure: TP-0193	Issue: 1	Rev.
Test step changed: 7.4.1. STEP 40	Reason for Change: WRONG SCRIPT/PROCEDURE USED TO PWR ON SPIRE.		

Manually Send Cmds

SCD06505, 0xA085FFFF
SCD06505, 0xA0860001

TO SWITCH ON SPIRE AC & DC THERMOMETRY

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

Procedure Variation Summary

	Test Change	Curr. No.: #27 Date 04/09/08 Page 1 of 1	
Test designation: RMS	Test Procedure: TP-0193	Issue: 1	Rev.
Test step changed	Reason for Change: No DATA IN FILE		

Perform dump Pkt STORE 3.

MANUALLY SEND CMD.

DC 169160, 3

→ previous dump was still ongoing. TC not needed (only found afterwards)

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

Procedure Variation Summary

	Test Change	Curr. No.: #28 Date 19/05/09 Page 1 of 1	
Test designation RMS	Test Procedure TP-0193	Issue 1	Rev. —
Test step changed	Reason for Change Disconect + reconect PFM-CRYO		

→ action (reboot) PFM cryo axe needed

18:42 disconect PFM-CRYO

19:52 connect PFM-CRYO

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

Procedure Variation Summary

	Test Change	Curr. No.: 29 Date 19/05/09 Page 1 of 1	
Test designation RMS	Test Procedure TP-0193	Issue 1	Rev. —
Test step changed	Reason for Change additional TC for SPIRE required		

* TC's needed to check DCU Data from the photometer

Send_DACU_Command (0x843C 0000)
Send_DACU_Command (0x843E 0001)) 18:49

after analysis from Spire

Send_DACU_Command (0x843E 0000)
Flush_Fifo (0x1000)) 18:51

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

Procedure Variation Summary

	Test Change	Curr. No.: 30 Date 05/09/08 Page 1 of 1	
Test designation IST 1 RMS	Test Procedure TP-0193	Issue 1	Rev. —
Test step changed Section 7.5.1, Step 20	Reason for Change Error in Script - SPR-723		

At prompt in step 20 run the following script (takes about 10-15 mins):

Y102989ECVT018_TTC_TC_OP_METHOD{ONLINE}

Prepared by: S. HAMER	Resp. Test Leader	Project Engineer
PA/QA D. Lamarby	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No.: 31 Date 05/09/08 Page of	
Test designation IST 1 RMS	Test Procedure TP-0193	Issue 1	Rev. —
Test step changed See below	Reason for Change Interrupt RMS switch off for SPIRE FDIR OBCP		

1) Section 7.6; skip step 130

2) Section 7.6.1; skip step 30-50

3) Section 7.6.1; step 60

- In AD-5 section 7.4 (IST_END) perform only steps 1-3 ensuring all packet stores are successfully downlinked (both A & B) ✓
- At step 4 when prompted to switch off SPIRE click YES ✓
- Stop test session and create new tag and session for FDIR OBCP TP-0197. FAILED
  PERFORM OF NOTE FOR RESTARTING NEW SESSION
- After completion of FDIR OBCP complete switch off of S/C using IST_END. ~~NB: this step covered by FDIR OBCP procedure~~

2009_05_20_15_42_herodmm_hpws22_REALTIME_FDIR_OBCP.

TAG: SPIRE_FDIR_OBCP_TP-0197_20080905_END.001

Prepared by:	Resp. Test Leader	Project Engineer
S. HAMER		
PA/QA	Prime	Customer
D. Lamarby		

	Test Change	Curr. No.: 32 Date: 04/09/2008 Page 1 of 1

Test designation	Test Procedure	Issue	Rev.
IST1 RMS	HP-2-ASED-TP-0193	1	-

Test step changed	Reason for Change
Section 7.4.2	Get report of SPIRE onboard tables (NCR investigation)

From manual command stack send the following to acquire reports of SPIRE onboard tables:

```
1) SCB01500 REPORT_TABLE(TABLEID_REPTAB=50, INDEX_REPTAB=0,
COUNT_REPTAB=0)
Wait ~10 seconds

2) SCB01500 REPORT_TABLE(TABLEID_REPTAB=51, INDEX_REPTAB=0,
COUNT_REPTAB=0)
Wait ~10 seconds

3) SCB01500 REPORT_TABLE(TABLEID_REPTAB=72, INDEX_REPTAB=0,
COUNT_REPTAB=0)
```

Done 03:12

Prepared by:	Resp. Test Leader	Project Engineer
S. Hamer		
PA/QA D. Lamouly	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No# 33 Date 05-09-2008 TIMELINE 20-05-2009 Page 1 of	
Test designation RMS	Test Procedure TP-0193	Issue 1	Rev.
Test step changed Section 7.5.1 before step 10	Reason for Change Stepover wait period in master script		

1) Execute the following steps on the test conductor console:

setshared DTCP_completed 0
setshared Eph-completed 0
setshared CR-completed 0
setshared MTL_upL-completed 0
setshared SSMM-dwnl-completed 0

callasync Z010999MCVT091_1ST_RMS_DTCP_DTCP4

3) terminate Z010999MCVT085_1ST_RMS_ASTRIUM

2) check the "getshared phase" = "End"

4) restart Z010999MCVT085_1ST_RMS_ASTRIUM

Prepared by: Uwe Vlenke	Resp. Test Leader	Project Engineer
PA/QA D. Lamonby	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No.: 34 Date 05/09/08 Page 1 of	
Test designation: IST RMS	Test Procedure: TP-0193	Issue: 1	Rev.: —
Test step changed: DURING PVS#31	Reason for Change: ~~CDH~~ CDMUDFE RECOVERY.		

LOSS of TM. TO RECOVER PERFORM THE FOLLOWING

REBOOT SCOE IN CLEAN RM.
REBOOT CDMU DFE & BUS
CONNECT TMTCDFE
ATTACH TMTCDFE
TC SEND) YC005946
YC002946
YC043946, 0
YC035946, 1
YC042946, 0
YC035946, 1

DETACH TMTCDFE

RE-ESTABLISH DUMPING MASS MEM
RESTART DUMP PKT STORE 2.

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

8.2 Non Conformance Report (NCR) Summary

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

Table 8.2-1: Non-Conformance Record Sheet

8.3 Sign-off Sheet

	Date	Signature
Test Director	11/9/08	
Test Conductor	11/9/08	
Operator	5th September 2008	
PA Responsible	11/9/08	
ESA Representative		

9 ANNEX A : RMS Command Summary

This annex provides a summary of the time-tagged commands executed during the 48hrs RMS. Due to the size of the spreadsheets these are attached as paper copies only.

OD344 – OD345

OD345 – OD346

OD346 – OD347

OD347 – OD348

10 ANNEX B : RMS Test Script List

This annex provides a list of the test scripts used specifically for the actual IST RMS test (note the IST Start/End scripts are listed in AD-5):

Z010999MCVT085_IST_RMS_ASTRIUM

- Z010999MCVT093_IST_RMS_Date_Watch
- Y102989ETVT021_TTC_SCOE_ON
- A102109SPVT208_OBDB_MASS_INERTIA
- A102109SPVT202_ACMS_STATUS_H
- D102159SCVT138_IST_LAUNCH_SUNACQ
- D102159SCVT137_IST_SUNACQ_NOM
- W102584SPVT101_PCDU_TRANSITION_FDIR 1
- Z102999SCVT001_SREM_ON 60
- Z102999SCVT014_ASDGEN_HIFIPWRON_P
- Z102999SCVT010_ASDGEN_PACSPWRON_P
- Z102999SCVT004_ASDGEN_SPIREPWRON_P
- P102999SCVT913_ASDGENPACS_BurstMode
- MTL_rms_init
- Z010999MCVT153_IST_STATUS
- D102159SCVT188_IST_DUMP_PKT_STORE CEL_A CEL_B
- Z010999MCVT132_TCprotMode_BD_AD_BD AD
- Y102989ECVT007_TTC_UL_PARAM_SET {MGA} {-67.4} {OFF} {T} {1} {0.5} {0.06} {A}
- Y102989ECVT008_TCRG_MI_SET_TTC {1.0} {0.7} {4000}
- Y102989ECVT018_TTC_TC_OP_METHOD {ONLINE}

- Y102989ECVT006_TTC_DL_PORT_SET {MGA}
- Z010999MCVT091_IST_RMS_DTCP DTCP1
- Z010999MCVT091_IST_RMS_DTCP DTCP3
- Z010999MCVT091_IST_RMS_DTCP DTCP4
- Y102989ECVT001_TMTC_LINK {BOTH} {SCPRI}
- Y102989ECVT018_TTC_TC_OP_METHOD OFFLINE
- Z010999MCVT132_TCprotMode_BD_AD_BD BD
- S102999SCVT908_ASDDBGSPIR_PHTSTBY2STBY
- Z102999SCVT015_ASDGEN_HIFIPWROFF_P
- Z102999SCVT011_ASDGEN_PACSPWROFF_P
- Z102999SCVT005_ASDGEN_SPIREPWROFF_P
- Y102989ETVT020_TTC_SCOE_OFF

Z010999MCVT091_IST_RMS_DTCP

- Y102989ECVT003_TC_DFE_OUT_2_TTC {4000}
- Y102989ECVT005_TM_DFE_IN_FROM_TTC {MGA} {MBR}
- Z010999MCVT090_IST_DTCP_TRACE_CR
- Z010999MCVT090_IST_DTCP_TRACE_EPH
- Z010999MCVT090_IST_DTCP_TRACE_EPH
- D102159SCVT188_IST_DUMP_PKT_STORE CEL_A CEL_B
- Y102989ECVT006_TTC_DL_PORT_SET {MGA}
- Y102989ECVT001_TMTC_LINK BOTH TTC
- D102159SCVT188_IST_DUMP_PKT_STORE 0 1 2 3
- MTL_rms_dtcp1

- MTL_rms_dtcp3
- Y102989ECVT001_TMTC_LINK {TM} {SCPRI}
- Y102989ECVT006_TTC_DL_PORT_SET {MGA}
- Y102989ECVT005_TM_DFE_IN_FROM_TTC {MGA} {MBR}
- Y102989ECVT001_TMTC_LINK {BOTH} {SCPRI}
- Y102989ECVT018_TTC_TC_OP_METHOD OFFLINE

Z010999MCVT093_IST_RMS_Date_Watch

MTL_rms_init

- MTL_tclgen37_H_IST1_MTL_D344_345_20080801_v01_SEG000_800_end
- MTL_tclgen37_H_IST1_MTL_D345_346_20080801_v01_SEG003_800_end

MTL_rms_dtcp1

- call TC_aggregation_enable
- call MTL_tclgen37_H_IST1_MTL_D346_347_20080801_v01_SEG004_800_end
- call TC_aggregation_disable

MTL_rms_dtcp3

- call TC_aggregation_enable
- call MTL_tclgen37_H_IST1_MTL_D347_348_20080801_v01_SEG004_800_end
- call MTL_tclgen37_H_IST1_MTL_Dummy_20070504_v01_SEG009_800_end
- call TC_aggregation_disable

ACMS_RECOVERY_from_AutoPeriod

HIFI_All_SubscribeParams

HIFIST_ASED_PatchPtvChecksum

HIFIST_ASED_PatchTempLimits

HIFI_All_SubscribeParams

K102999ECVT001_ASDGENCCU_MnDBOTH1

K102999ECVT001_ASDGENCCU_MnEBOTH2

K102999ECVT001_ASDGENCCU_MnDBOTH2

K102999ECVT001_ASDGENCCU_MnEBOTH1

Y102999ETVT037_ASDGEN_VERHIFIIEGSE

HIFIST_nom_IST_LO_disable_warm

HIFIST_nom_IST_LO_on_1a_warm

Z010999MCVT220_IST_HIFI_Disable_Subschedules

Z010999MCVT221_IST_PACS_Disable_Subschedules

Z010999MCVT222_IST_SPIRE_Disable_Subschedules

END OF DOCUMENT

	Name	Dep./Comp.
	Baldock Richard	FAE12
	Barlage Bernhard	AED13
	Bayer Thomas	ASA42
	Brune Holger	ASA45
X	Chen Bing	HE Space
X	Davis William	Captec
	Edelhoff Dirk	AED21
	Fehringer Alexander	ASG15
X	Fricke Wolfgang Dr.	AED 65
	Geiger Hermann	ASA42
	Grasl Andreas	OTN/ASA44
X	Grasshoff Brigitte	AET12
X	Hamer Simon	Terma
X	Hanka, Erhard	FI522
X	Hendrikse Jeffrey	HE Space
X	Hendry David	Terma
	Hengstler Reinhold	ASA42
	Hinger Jürgen	ASG23
X	Hohn Rüdiger	AED65
	Hopfgarten Michael	AET32
	Huber Johann	ASA42
	Hund Walter	ASE252
X	Idler Siegmund	AED312
	Iványi von András	FAE12
	Jahn Gerd Dr.	ASG23
	Jolk Matthias	AET1
X	Klenke Uwe	ASG72
X	Kölle Markus	ASA43
	König Werner	AET32
X	Koppe Axel	AED312
X	Kroeker Jürgen	AED65
X	La Gioia Valentina	Terma
	Lang Jürgen	ASE252
	Langenstein Rolf	AED15
	Langfermann Michael	ASA41
	Leitermann Stefan	AET12
X	Liberatore Danilo	Rhea
X	Martin Olivier	Altec
X	Maukisch Jan	ASA43
X	Much Christoph	ASA43
X	Müller Martin	ASA43
	Pietroboni Karin	AED65
	Reichle Konrad	ASA42
	Runge Axel	OTN/ASA44
	Saal Christoph	External
	Schink Dietmar	AED321
	Schmidt Thomas	AED15
	Schweickert Gunn	ASG23

	Name	Dep./Comp.
X	Sonn Nico	ASG51
	Steininger Eric	AED321
X	Stritter Rene	AED11
	Suess Rudi	OTN/ASA44
X	Theunissen Martijn	DSSA
X	Vascotto Riccardo	HE Space
	Wagner Klaus	ASG23
X	Wietbrock Walter	AET12
	Wöhler Hans	ASG23
	Wössner Ulrich	ASE252
	Zumstein Armin	AED15
X	ESA/ESTEC	ESA
X	Thales Alenia Space Cannes	TAS-F
	Thales Alenia Space Torino	TAS-I
	Instruments:	
X	MPE (PACS)	MPE
X	RAL (SPIRE)	RAL
X	SRON (HIFI)	SRON
	Subcontractors:	
	Austrian Aerospace	AAE
	Austrian Aerospace	AAEM
	BOC Edwards	BOCE
	Dutch Space Solar Arrays	DSSA
	EADS Astrium Sub-Subsyst. & Equipment	ASSE
	EADS CASA Espacio	CASA
	EADS CASA Espacio	ECAS
	European Test Services	ETS
	Patria New Technologies Oy	PANT
	SENER Ingenieria SA	SEN
	Thales Alenia Space, Antwerp	TAS-ETCA

Attachment 1 to Section 6.8:

TRR Minutes: H-P-2-TASF-MN-10758

ThalesAlenia Space A Thales / Finmeccanica Company	TRR - RMS	REF.: **H-P-TASF-MN-10758**	
		HERSCHEL FM	
		DATE : 27 August 2008	PAGE : 1 of 18
MINUTES OF MEETING		*PLACE : ESTEC*	

PURPOSE CLASSIFICATION :

Test Readiness Review: Herschel FM IST: RMS Test

ATTENDEES	FIRM	SIGNATURE	ATTENDEES	FIRM	SIGNATURE
A. Knight	TASF		C Scharmberg	ESA	
D Hendry	ASED		R Stritter (pt)	ASED	
S Hamer	ASED		N Sonn	ASED	
B Collaudin	TASF		K Goodey	ESA	
S Mooney	TASF		M Cesa	ESA	
F Chatte	TASF		U Gageur (pt)	ESA	
WRITTEN BY :	A Knight		*Chair:*	A. Knight	

Additional Participants: O Bauer (pt / tc) / MPE, A Gatti / ESA, G Pilbratt / ESA, C Much / ASED, E Sawyer & A Dowell (tc) / RAL, P Dieleman (tc) / SRON, J Huesler / ESA, R Hohn (pt) / ASED, J Hendrickse / ASED, D Teyssier (tc) / SRON

CONCLUSION :

Based upon the agenda points reviewed within this Test Readiness review, the participants agree to allow the formal go-ahead for the Herschel FM RMS test pending the successful completion of the PACS SPT and closure of the points highlighted in the attached **"Test Release Sheet".**

DISTRIBUTION : *ATTENDEES*	*FOR FURTHER ACTION :*
	FOR INFORMATION : ASED, TAS-F, ESA:

APPROVED BY

NAME				
SIGNATURE				

Introduction:

The objective of this TRR shall be to assess the requisite inputs to allow the formal go-ahead for the Reference Mission Scenario test case (part of Herschel IST) for the Herschel FM S/C.

For reference, note the following applicable MoM:

Checkpoint for RMS debug with CDMS v 3.4: H-P-TASF-MN-10709
Post Test Summary, for RMS debug with CDMS v 3.4: H-P-TASF-MN-10729

Integration Readiness Review, Mission timeline for RMS Test: H-P-TASF-MN-70159

NCR Review for RMS Test: See Table in Annex 1 **ANNEX 1**

The standard Herschel TRR agenda shall be followed.

- Test Item Identification
- Integration / Inspection Status
- NCR / RfD/W Status
- Open Work / Open Actions
- Test Specification / Procedures
- Safety Hazards and Hazardous operations
- Test Equipment / facility and Calibration Status
- Cleanliness
- Test Personnel and Responsibilities
- Problem Areas
- AOB
- Conclusion

1. Test Item Identification:

As-Designed:

Herschel FM S/C: CI # 100000
CIDL: H-P-2-ASP-L-1054 Iss 1

As- Built:

Herschel FM S/C Integration Status List:

See Annex 2

- Herschel H-EPLM Integration Status for HE II production: HP-2-ASED-LI-0032_18 — **ANNEX 2A**
  - Status: 14.08.08
- Herschel SVM Integration Status List for He II Production: HP-2-ASED-LI-0033, issue: 19 — **ANNEX 2B**
  - Status: 12.08.08

The following summarizes any deviation of the current integration status from the full FM configuration:

- HIFI LOU baffle
- HIFI LOU radiator

None of the above deviations have any impact on the RMS test case.

S/W Configuration Status

See Annex 3 — **ANNEX 3**

Red Tag / Green Tag Status

See Annex 4 — **ANNEX 4**

Note: The HIFI LOU red tag foil will remain in place for the RMS test.

MTL Status

See Integration Readiness Review for RMS MYL: H-P-TASF-MN-10759

Release Note for RMS MTL: H-P-2-ASP-LI-1660 Iss 2

This MTL has been manually updated by TASF to take into account:

- **NC-4430 : Exit statements from the MTL load commands test scripts are missing**
  - Exit statements are now included in this version of the MTL
  - NCR can be verified during RMC
- MTL Commanding Updates i.a.w CDMS v 3.6
- MTL updates i.a.w input from SPIRE as a result of SPIRE Instrument SPT

Several Open works were identified in the IRR, these are summarised in the OPEN WORK section of these TRR MoM.

2. Integration / Inspection Status

As-built – See section 1

Inspection Status:

Prior to the start of the RMS, a hardware inspection will be performed by the Test Director / Conductor & PA/QA.
The purpose shall be to inspect the test specimen, facility and test equipment to ensure that all is correctly configured for this test.
w.r.t The Skin Configuration Status List in Annex to the RMS Test Procedure.
Specific points:

- *The Flight Battery shall be connected*
- *The HIFI cooling equipment shall be implemented*

OPEN WORK

3. NCR / RfD/W Status

NCR Status

See Annex 1:

ANNEX 1

Open NCRs applicable for RMS :

NC-3258: Initial Monitoring Packets from CCU do not contain valid data

- AIT (SH) states that the sequence for switch on should be: wait for a period for the
- stabilisation of the TM data, wait for 2 cycles to ensure all TM data is valid and then
- reset the Status consistency check value.:Updated CCS SW ver 2.0-1317 allows clearing status consistency check errors.Operator note to be raised for On gnd. For in orbit flight opts constraint to be documented.
- **Operator note to be raised (SH) – Not blocking RMS**

NC-3299: Update of RMS MTL SPIRE time-tagged TCs in verification history

- Problem fix to be verified with CCS sw 2.0-1317 during next IST RMS run. Anomaly improved (as seen during RMS debug 14/8/08) but not totally fixed. To be discussed with Terma CW 34
- **May be seen during RMS and possible post test analysis impact trace of successful cmd completion – No impact on RMS**

NC-3300: RMS MTL SCM mode commands reported failed

- The ESOC MTL flight dynamics computes these times using old values and thus the time is
- too short.
- This time out does not affect the test itself. The command completes anyway and just the failure
- message is received.
- **Still fails during RMS debug (14/8/08) Awaiting clarification from ESOC**
- **Fix for RMS: Updated configuration parameter for ACMS, shall be verified during RMS test**

NCR to be verified for closure during RMS

<u>NC-3511 : During RMS 48hrs, DECMEC Command timing problem in PACS OBCP</u> o This has been corrected. New AOT logic has been implemented and has been checked at o instrument level. o Part of it will be tested during SPT AOT test. o In case one observation fails, it is possible to resume observation at the next entry o point (at the start of observation (OBSID)) o **To be verified during RMS**	**NCR to be verified for closure during RMS**
<u>NC-3572 : SPIRE Unknown type (5,x) packet during SPIRE cooler recycle, RMS 48hrs</u> o SPIRE Investigations ongoing o Check if seen during Spire SPT**, verify during RMS ,no impact**	**NCR to be verified for closure during RMS**
<u>NC-4181 : CCS Reports no telemetry packet received</u> o Terma investigation ongoing o Re-occurred during RMS debug 14/8/08. **Will be seen during RMS ,slight impact**. o Note: For RMS this should not affect SPIRE or PACS as no commanding interaction between the CCS and IEGSE is necessary o *<u>Open Work: The CCS workstation in the IEGSE room shall be exchanged for a CCS-lite workstation</u>*	**OPEN WORK**
<u>NC-4278 : Instrument Warm Units temperature limits</u> o New limits agreed but not yet implemented in HPSDB, cooling of SVM panel still needed o during HIFI testing o To be monitored manually, no CSS operator interaction necessary o Remain open pending HPSDB update (not included in V 17) o **Monitor temperatures during test (this is included within the RMS test procedure)**	
<u>NC-4395 : HIFI LO operational constraints in ambient</u> o Switch on of LOU in ambient restricted, **AIT procedure has been updated for both RMS and SOVT to disable execution of TCs of LOU** o LO was disabled for RMS debug 14/8/08. NB: HL_error_word_s=HIGH when commands sent to LO	
<u>NC-4430 : Exit statements from the MTL load commands test scripts are missing</u> o **New MTL to be implemented**	**NCR to be verified for closure during RMS**
<u>NC-4129: PACS unexpected switch off after jamming</u> o Trigger of OBCP results in PACS going OFF o This represents no danger to the instrument if this occurs during RMS o **Potential effect on RMS but not blocking**	
<u>NC-4138 : NOM to EAM does not trigger payload stand by OBCPs</u> o Should have been solved in CDMS 3.6: but re-occurred during regression test of mode transition. o **BLOCKING NCR** o ***<u>NRB to be performed 28 August 2008</u>***	**<u>BLOCKING NCR</u>** **OPEN WORK**

NC-4451 : IST mode transition HIFI doesn't switch to stby Mode after OBCP trigger

- Under investigation: clarification from TASF engineering
- **Confirmed by SRON (Dieleman) that this NCR is NOT BLOCKING RMS / SOVT.**
- Further investigations required prior to TBTV.

NC-4463 : CDMS cmd completion failure during PACS safe OBCP

- Under investigation :clarification by TASF engineering
- **NOT BLOCKING RMS / SOVT**
- TASF state that this NCR can be closed as this is expected behaviour

NC-4465: Time tag TC not marked as completed

- CCS or HPSDB issue, needs further investigation
- **workaround check if cmds have uploaded**
- **NOT BLOCKING RMS / SOVT**
- Hampers post test analysis

From IRR for RMS MTL:

NC-4442: IST S/c Reconf regr test: Unexpected reconf 3A after ReportWholeTcSchedule — **OPEN WORK**

- This should have only a minor impact on RMS as this test does not include FDIR steps.
- This occurred after the second level 3A reconfiguration.
- *PVS to be raised (if reconfiguration occurs – don't dump MTL) – Action Hamer*

NC-4443: ACMS not in SCM point CIR, but SCM slew CIR — **OPEN WORK**

- *Status for RMS to be confirmed (Hamer / Theunissen)*

RfD / W Status

None

4. Open Work / Open Actions

Action Status from IRR for RMS MTL H-P-TASF-MN-10759

- ***MTL Release note to be signed (incorporating the following review cycle)***:
  - *ESOC to verify changes to MTL i.a.w CDMS v 3.6*
  - *SPIRE to verify changes to MYL i.a.w latest MTL inputs*
  - *PACS to review MTL (lower priority, review to ensure that no impact on MTL for recent tests, SPT)* — **OPEN WORK**
  - *HIFI to review MTL (lower priority, review to ensure that no impact on MTL for recent tests, SPT)*
  - ***AIT to perform a syntax check of MTL w.r.t recent SPIRE changes form SPT*** — **Completed 27/8/08**

Action Status from RMS Debug PTS H-P-TASF-MN-10729

Procedure Variation Sheet Status to be checked at RMS TRR:

• The baseline for RMS shall be to use the Instrument emergency procedures (as provided for SVT / SOVT) to switch the instruments to safe mode in case of problems, see HP-2-ASED-TP-0206 Iss 1.3 (note, PACS is protected by OBCPs). *A procedure variation sheet shall be raised to call the relevant section of TP-0206 if necessary (action Hamer)*.	**OPEN WORK**
• *A PVS shall be raised to keep CCU in Mode2 + call to IEGSE Sync Script* (**CCU mode 2 will be required for data monitoring throughout RMS).**	**OPEN WORK**
• For RMS the configuration of CCU will be as for debug with CCU A sensors connected to Cryo SCOE for accurate cryo monitoring. This is a deviation w.r.t the specification. *A PVS will be raised to cover this.*	**OPEN WORK**
• ACMS Gyro recovery: **(The Test Director / Test Conductor must be made aware in advance of any and all parallel mechanical activities on the S/C hardware during RMS. Great care shall be taken when performing any operations on the S/C and connected hardware to ensure that no / minimum shocks are imparted).** In case of a gyro event, a recovery procedure is available.	**WARNING!!**

SPR Status to be checked at RMS TRR:

• **639: Error in test script performing dump PKT store.** ○ SPR fixed	**SPR to be verified for closure during RMS**

• **641 / 670: IST STATUS check error**
  ○ Seen again during debug
  ○ **This SPR is a "nice to have" and is considered as NOT BLOCKING for RMS**
  ○ **668 : CEL dump not working as expected** – empty file created, **AIT (Martin) to provide status at RMS debug. This SPR is a "nice to have" and is considered as NOT BLOCKING for RMS**	

• 665 – SPR fixed	
• 664 – SPR fixed	**SPRs to be verified for closure during RMS**
• 653 – SPR fixed	
• 652 – SPR fixed	
• 700 – Not applicable to RMS	
• 702 – SPR fixed	**SPR to be verified for closure**

	during RMS
• 686 – SPR to be closed "use-as-is"	
• **<u>687 / 691 – SPR BLOCKING RMS TEST – Script Update required to allow status reporting of MTL (Action O Martin)</u>**	**OPEN WORK**
• 699 – Open but NOT BLOCKING RMS TEST • 707 – SPR Fixed	**SPR to be verified for closure during RMS**
Miscellaneous:	
• Update of Ephemrides at end of DTCP – ESOC places a few minutes before end of DTCP in new RMS MTL and SOVT UUs, previously was about 1hr into DTCP!!! This cause a problem of synchronisation for scripts. Scripts and procedure have been updated as required, no further action necessary.	
• RF lock period ca. 15mins (however only 5mins prior to DTCP in MTL) – Scripts and procedure have been updated as required, no further action necessary.	
• IST Spec Update with new MTL diagrams (or generic timings) + DTCPs (also impacted by Ephemeredes updated) – To be progressed by TASF (FC). **Completed (see Specification section of these TRR MoM)**	
• *<u>Flight battery to be connected for formal RMS run</u>*. Included in Test Procedure.	**OPEN WORK**
5. <u>Test Specification / Procedures</u>	
Test Specification: H-P-2-ASP-SP-0939 Iss 7 (draft 4)	
Note that several "deviations" between the specification and the procedure to be run exist. At the PTR, a redlined copy of the relevant RMS section of the IST Specification (0939) shall be available highlighting all such deviations (Action F Chatte).	**OPEN ACTION FOR PTR**
Test Procedure	
RMS Procedure: HP-2-ASED-TP-0193 Iss 1	
Note: The 1.5Mbps downlink rate will be used during RMS. This (including all configuration / set up steps) is covered by the RMS procedure.	

Note: w.r.t timing / synchronisation, the future time UTC will be the same as "local time" (at Estec). The first step shall be to set up the IEGSE (planned 28 August 2008 late, ~ 22:00)	**OPEN WORK**
AIT (Hamer) will agree / coordinate the set up (establish link with NDIU) with ESOC	**OPEN WORK**
A PVS shall be raised for step 70 (7.1.1) w.r.t RWL momentum	**OPEN WORK**
Functional Test Procedure	
Leading Procedure: HP-2-ASED-TP-0134 Iss 6	
The following procedure is used as a reference document:	
Instrument Procedure: HP-2-ASED-TP-0206 Iss 1.3 (29/7/08)	
Cryo Operations Procedure: *Reference to be provided by AIT (Action C Much)*	**OPEN WORK**
Cryo Conditions for RMS Test (see AOB)	

6. Safety Hazards and Hazardous operations

Safety File for ETS (Herschel Cryostat) HP-2-ASED-RP-0157

7. Test Equipment / facility and Calibration Status

A full calibration list for the Herschel SCOEs is attached in Annex 5.	**ANNEX 5**
The HIFI cooling equipment shall be used for this test. *This will be run continuously throughout the RMS test and require periodic inspection (make sure that the bucket is emptied!!)*	**OPEN WORK**
Action for SOVT: TASF will investigate whether the Planck cooling equipment could be available for Herschel SOVT as a spare in case of failure.	**Action for SOVT TRR**

8. Cleanliness

All activities will be performed under cleanroom class 100 000 conditions in the Estec "Hydra" Cleanroom.

9. Test Personnel and Responsibilities

Test Director: S Mooney

Test Conductor:

- 29 August 2008: S Hamer / S Ilsen
- 30 & 31 August 2008: C Much / N Sonn

Herschel Safety Officer: R Stritter

Functional Test Operators: *Shift Plan to be provided by C Much*

OPEN WORK

AIT Team contact details at Estec:

- + 31 715656006 Checkout
- + 31 715658301 S. Hamer desk

Cryo Operations: R Hohn / H Wohler (24 hr coverage)

Product Assurance: R Stritter / A Knight

Quality Assurance:

- Functional : R Goossens / D Lamonby
- Cryo : R Langenstein

ESA Support: TBC

Herschel AIT "Floor Manager": N Sonn

Instrument Support:

HIFI:

- ~22:00 Thursday to 06:00 Friday
  - Albrecht de Jonge +31653604322
- Friday:
  - 06:00 - 13:00
    - Rob de Haan +31 6 30219553
  - 13:00 - 19:00
    - David Teyssier
      - +34 91 813 1355(office)
      - +34 91 813 1254 (secretary, no mobile coverage in the building)
      - +34667097169 (mobile)
  - 19:00 - end
    - P. Dieleman +31 6 12234766

Albrecht will contact Simon on the I-EGSE - CCS synchronization steps.

- **PACS:** Stefano Pezzuto + Roland Vavrek (ESAC)
- SPIRE: A Dowell

10. Problem Areas

None

11. AOB

Planning / Timeline:
The following planning is based upon the successful conclusion of PACS SPT on 28/8/08 (current status at time of TRR is encouraging!)

Day	Time Local	Date RMS	DoY RMS	Time RMS	Activity
Week 35					
					MTL delivery incl corrections (ACSM, SPIRE, PACS, HIFI)
Wed 27th Aug	10:00			N/A	IST1 RMS TRR
Thu 28th	22:20	18/05/2009	137	22:20:00	EGSE Time Adjustment to RMS time & Max upload time
	22:20			22:20:00	RMS Initial Configuration (incl RF U/L lock)
Fri 29th		19/05/2009	138	07:30:00	**RMS CONFIGURATION COMPLETE AND MTL SUBSCHEDULES RELEASED**
				08:10:00	First MTL Commanding Starts
				08:15:05	TWT/XPND Switched ON
	08:20:00			**08:20:00**	**DTCP1 Start (RF D/L locked switchover from umbilical to RF)**
	08:57:01			**08:57:01**	**HIFI Commanding Starts**
	11:20:00			**11:20:00**	**DTCP1 End/AP1 Start (HIFI OD)**
	21:29:53			**21:29:53**	**HIFI Commanding Ends**
	23:20:00			**23:20:00**	**AP1 End/DTCP2 Start**
	23:57:01			**23:57:01**	**PACS Commanding Starts**
Sat 30th	**02:20:00**	**20/05/2009**	**139**	**02:20:00**	**DTCP2 End/AP2 Start (PACS OD)**
	15:10:00			**15:10:00**	**PACS Commanding Ends**
	15:20:00			**15:20:00**	**AP2 End/DTCP3 Start (RF D/L locked switchover from umbilical to RF)**
	15:57:00			**15:57:00**	**SPIRE Photometer Commanding Starts**
	18:20:00			**18:20:00**	**DTCP3 End/AP3 Start (SPIRE PHOT OD)**
Sun 31st	**06:59:21**	**21/05/2009**	**140**	**06:59:21**	**SPIRE Commanding Ends**

Week 36	**07:20:00**			**07:20:00**	**AP3 End/Abbreviated DTCP4 Start**	**OPEN WORK**
	07:20:09			**07:20:09**	**MTL commanding Ends**	
	07:20:09			**07:20:09**	**Abbreviated DTCP4 End/OB Data Retrieval Start (RF D/L locked switchover from umbilical to RF)**	
	13:20:00			13:20:00	OB Data Retrieved and S/C Switched Off	
					Contingency	

Cryo Activities:

Temperature of L0/L1/L2 is to be monitored during the test

The following is noted in the procedure:

S/C Environmental	All Instruments	Actual
S/C Orientation	20° tilted and no movement during test	
Cryostat Connection (Valves)	N/A	
Cryostat Status (Hel/Hell)	Hell	
Cryostat Level 0 Temp (T107)	1.75 – 1.90 K (Pods are inside liquid)	
Cryostat Level 1 Temp (T231 – T237)	< 7 K	
Cryostat Level 2 OBP Temp (T254, T207)	< 12 K	
Cryostat Level 3 Temp	N/A	
L0, L1 & L2 Stability	L0 drifting 15 mK/ day; L1 & L2 <100 mK/h	
Thermal Shield & CVV	No constraint	
Cryo Cover Cooling	N/A – TBC PACS	

For SPIRE, mainly L1 red alarms for the FPU will be triggered (during dewer exchange). No action is to be taken.

SPIRE shall provide a list of FPU alarms	**OPEN WORK**
PACS alarms on FDIR only on sorption cooler. These are not expected to be triggered.	
The cryo cover cooling will be maintained at 15K. This will be verified during the test. The cover could drift to 100K without affecting the test.	
Instrument interface temperatures will be maintained by shield flushing.	
A timeline for dewer exchange / coordination will be provided by B Collaudin	**Action CLOSED ANNEX 6**
During dewer exchange, L1 temperatures could drift to ~30K.	
It is preferred not to perform dewer exchange during cooler recycling / observations.	
It is proposed to perform dewer exchange 1.5 hrs prior to cooler recycling.	
AIT / cryo team shall verify that sufficient helium dewers are available to maintain shield flushing at the expected mass flow rates throughout RMS + Agreement with schedule in Annex 6.	**OPEN WORK**
SPIRE Cooler Recycling:	
The hold time for SPIRE cooler shall be validated.	
A PVS shall be raised based upon the SPIRE script to perform SPIRE cooler recycling during the initial RMS configuration step.	**OPEN WORK**
This shall act as an input to SOVT.	
Emergency Switch Off Procedure	
The emergency switch off procedure shall be updated taking in to account the Flight Battery connection. QA (Vascotto) shall brief the AIT team accordingly prior to the start of RMS.	**OPEN WORK**

12. Conclusion

Based upon the agenda points reviewed within this Test Readiness review, the participants agree to allow the formal go-ahead for the Herschel FM RMS test pending the successful completion of the PACS SPT and closure of the points highlighted in the attached **"Test Release Sheet".**

TEST RELEASE SHEET: Herschel FM IST Reference Mission Scenario Test Case

The following points shall be confirmed as closed prior to the release of the test on the Herschel S/C FM hardware

Inspections

- *Prior to the start of the RMS, a hardware inspection will be performed by the Test Director / Conductor & PA/QA.*
- *The purpose shall be to inspect the test specimen, facility and test equipment to ensure that all is correctly configured for this test. w.r.t The Skin Configuration Status List in Annex to the RMS Test Procedure.*
  - *The Flight Battery shall be connected*
  - *The HIFI cooling equipment shall be implemented*

- *The HIFI cooling equipment shall be used for this test.*
  - *This will be run continuously throughout the RMS test and require periodic inspection (make sure that the bucket is emptied!!)*

NCRs / SPRs

NC-4181 : CCS Reports no telemetry packet received
- *Open Work: The CCS workstation in the IEGSE room shall be exchanged for a CCS-lite workstation*

NC-4138 : NOM to EAM does not trigger payload stand by OBCPs
- ***NRB to be performed 28 August 2008***

NC-4442: IST S/c Reconf regr test: Unexpected reconf 3A after ReportWholeTcSchedule

- *PVS to be raised (if reconfiguration occurs – don't dump MTL) – Action Hamer*

NC-4443: ACMS not in SCM point CIR, but SCM slew CIR
- *Status for RMS to be confirmed (Hamer / Theunissen)*

SPR - 687 / 691 – SPR BLOCKING RMS TEST – *Script Update required to allow status reporting of MTL (Action O Martin)*

Documentation

***MTL Release note to be signed (incorporating the following review cycle)*:**
- *ESOC to verify changes to MTL i.a.w CDMS v 3.6*
- *SPIRE to verify changes to MYL i.a.w latest MTL inputs*
- *PACS to review MTL (lower priority, review to ensure that no impact on MTL for recent tests, SPT)*
- *HIFI to review MTL (lower priority, review to ensure that no impact on MTL for recent tests)*

- Instrument emergency procedures (as provided for SVT / SOVT) to switch the instruments to safe mode in case of problems, see HP-2-ASED-TP-0206 Iss 1.3.*A procedure variation sheet shall be raised to call the relevant section of TP-0206 if necessary (action Hamer)*.
- *A PVS shall be raised to keep CCU in Mode2 + call to IEGSE Sync Script* (CCU mode 2 will be required for data monitoring throughout RMS).
- For RMS the configuration of CCU will be as for debug with CCU A sensors connected to Cryo SCOE for accurate cryo monitoring. This is a deviation w.r.t the specification. *A PVS will be raised to cover this.*
- *A PVS shall be raised for step 70 (7.1.1) w.r.t RWL momentum (RMS procedure)*
- **Cryo Operations Procedure:** *Reference to be provided by AIT (Action C Much)*
- *A PVS shall be raised based upon the SPIRE script to perform SPIRE cooler recycling during the initial RMS configuration step.*
- *The emergency switch off procedure shall be updated taking in to account the Flight Battery connection. QA (Vascotto) shall brief the AIT team accordingly prior to the start of RMS.*

Miscellaneous:

- *Functional Test Operators: Shift Plan to be provided by C Much*
- *AIT (Hamer) will agree / coordinate the set up (establish link with NDIU) with ESOC*
- *AIT / cryo team shall verify that sufficient helium dewers are available to maintain shield flushing at the expected mass flow rates throughout RMS*

Notes / Warnings to QA:

- ACMS Gyro recovery: **(The Test Director / Test Conductor must be made aware in advance of any and all parallel mechanical activities on the S/C hardware during RMS. Great care shall be taken when performing any operations on the S/C and connected hardware to ensure that no / minimum shocks are imparted).** In case of a gyro event, a recovery procedure is available.
- The cryo cover cooling will be maintained at 15K. This will be verified during the test. The cover could drift to 100K without affecting the test.
- *Reminder: w.r.t timing / synchronisation, the future time UTC will be the same as "local time" (at Estec). The first step shall be to set up the IEGSE (planned 28 August 2008 late, ~ 22:00)*

Test Release Sheet Completed:

Test Director:

Test Conductor:

QA / PA:

NCRs Potentially closed during RMS

- NC-3300: RMS MTL SCM mode commands reported failed
- NC-3511 : During RMS 48hrs, DECMEC Command timing problem in PACS OBCP
- NC-3572 : SPIRE Unknown type (5,x) packet during SPIRE cooler recycle, RMS 48hrs
- NC-4430 : Exit statements from the MTL load commands test scripts are missing

SPRs Potentially closed by RMS

- 665 – SPR fixed
- 664 – SPR fixed
- 653 – SPR fixed
- 652 – SPR fixed
- 702 – SPR fixed
- 707 – SPR Fixed
- 686 – SPR to be closed “use-as-is”

Actions to be forwarded to forthcoming Meetings:

RMS PTR:

- Note that several “deviations” between the specification and the procedure to be run exist.
  - At the PTR, a redlined copy of the relevant RMS section of the IST Specification (0939) shall be available highlighting all such deviations (Action F Chatte).

SOVT TRR Close –out:

- Action for SOVT: TASF will investigate whether the Planck cooling equipment could be available for Herschel SOVT as a spare in case of failure.

Attachment 2 to Section 6.8:

deltaTRR Minutes: H-P-2-TASF-MN-10772

ThalesAlenia Space	Delta TRR - RMS	REF.: **H-P-TASF-MN-10772**	
		HERSCHEL FM	
		DATE : 1 & 2 Sept 2008	PAGE : 1 of 6
MINUTES OF MEETING		*PLACE : ESTEC*	

PURPOSE CLASSIFICATION :

Delta TRR: Herschel RMS (Cryo Constraints)

ATTENDEES	FIRM	SIGNATURE	ATTENDEES	FIRM	SIGNATURE
A Knight	TASF		A Gatti	ESA	
D Hendry	ASED		T Passvogel	ESA	
R Hohn	ASED		C Jewell	ESA	
N Sonn	ASED		D Montet	TASF	
K Goodey	ESA		C Much	ASED	
M Cesa	ESA		S Mooney	TASF	
WRITTEN BY :	Knight		*Chair:*	Knight	

Additional Participants: S Hamer (ASED), G Pilbratt (ESA), M Langfermann (ASED), U Gageur (ESA), B Collaudin (TASF, tc), E Sawyer / A Dowell / M Griffin / D Griffin (RAL), O Bauer / H Feuchtgruber (MPE), P Roelfsema / P Dieleman (SRON), D Teyssier (ESAC), M Schmidt (ESOC), R Stritter (ASED), S Ilsen (TASF)

CONCLUSION :

As stated, the ventline blockage has only recently been removed and thus there is currently insufficient data to allow an accurate prediction for the temperature requirements for the start of RMS.

Thus, the delta-TRR will reconvene at 13:00 hrs on Tuesday 2 September 2008.

At this time the cryo predictions based on the above table shall be presented and the timeline for RMS established.

In the meantime cryo & functional debug activities shall continue.

DISTRIBUTION: *ATTENDEES*	*FOR FURTHER ACTION :*
	FOR INFORMATION : ASED, TAS-F, ESA:

APPROVED BY

NAME	Knight / PA	Mooney / TD	Hamer / TC	ESA
SIGNATURE				

Introduction

The objective of this Delta TRR shall be establish the conditions in order to allow the go ahead for the Herschel RMS Test.

Applicable MoM:

Test Readiness Review: Herschel FM IST RMS Test: H-P-TASF-MN-10758
Checkpoint for RMS: H-P-TASF-MN-10769

This meeting has been convened as a result of the following NCR:

NC-4476: Shield cooling via external Dewar failed

Status overview

The current cryostat conditions (1 September 2008) are as follows:

- HTT stability has been reached via pumping.
- The temperature of the OBA is slowly decreasing but the thermal shields have not yet started to decrease.
- He venting is via the OBA and ventline with a mass flow of 80 mg/s and an HTT temperature of 2.163K.

The blockage of the vent path (see NCR) was removed today (1/9/08) at around 09:20 hours.

Currently the stability of the temperature decrease gradient is not suitable to allow for accurate prediction of cool down rates / times.

UPDATE 2 SEPTEMBER 2008 @ 13:00

The current cryostat conditions (2 September 2008) are as follows:

- He venting is via the OBA and ventline with a mass flow of 187 mg/s and an HTT temperature of 2.075K.
- The cool down rate of the HTT is currently 7 mK/hr
- Current HTT filling level = 84%
- Predicted to reach an HTT temperature of 1.95K at 10:30 tomorrow (3 September 2008)
- At 10:30 on 3/9/08, the predicted HTT fill level will be 81 %
- Temperature levels are currently:
- L1 = 2.5K
- L2 ~ 5K
- L3 = 6K

Updated input for RMS TRR

The following input table of temperature constraints for RMS was agreed:

Temperature Constraints, RMS

S/C Orientation: 20° tilted and no movement during test

Cryostat status: He2

HIFI		**Temp Sensor**	**Temperature / K**
	Level 0 (HTT)	T107 / T102	< 3
	Level 1	T231-T237	< 15
	Level 2	T254, T207	< 30
	Level 3	N/A	N/A
PACS			
	Level 0 (HTT)	T107 / T102	1.95
	Level 1	T231-T237	< 5
	Level 2	T254, T207	< 15
	Level 3	N/A	N/A
SPIRE			
	Level 0 (HTT)	T107 / T102	1.95
	Level 1	T231-T237	< 6
	Level 2	T254, T207	< 15
	Level 3	N/A	N/A

No Stability Requirement (L0, L1 & L2)

Cryo Cover Flushing:

- **HIFI**:No Cryo Cover Flushing is required for HIFI testing
- **PACS**: Cryo Cover Flushing is required for PACS testing.
- **SPIRE**: For SPIRE, Cryo Cover Flushing is preferable but not essential

Cryostat Operations during RMS

Once the requisite HTT temperature has been reached, the mass flow will be thritteled to 25 – 30 mg/s for the remainder of the test.

The test will start with HIFI (L0 constraint is higher) however, due to the predicted HTT temperature of > 1.95K at this time, *the PVS to perform the SPIRE Cooler Recycling at the start of RMS (to investigate the hold time) shall now be removed*.	**Action AIT / Hamer**
SPIRE stated that the cooler recycle has been tested during SPT at 1.92K and there are concerns regarding the automatic commanding of the recycle at the above temperature. Should the SPIRE Automatic Cooler Recycle fail, then manual commanding intervention (via command stack) may be necessary.	
Several out of limits were detected during SPIRE SPT. *RAL will forward the table of limits to be monitored during RMS*	**Action RAL / Dowell**
It was noted that the PACS cooler FDIR limit of 400 mK is the only applicable FDIR limit within the cryostat.	
Way Forward: As stated, the ventline blockage has only recently been removed and thus there is currently insufficient data to allow an accurate prediction for the temperature requirements for the start of RMS. Thus, the delta-TRR will reconvene at 13:00 hrs on Tuesday 2 September 2008. At this time the cryo predictions based on the above table shall be presented and the timeline for RMS established. In the meantime cryo & functional debug activities shall continue.	
UPDATE TUESDAY 2 SEPTEMBER 2008 @ 13:00 As a result of the current temperature distribution and trends presented today (see above) the decision is taken to start the RMS Test at the earliest available opportunity (Note: TBTV debugging is currently ongoing but a suitable exit point will be reached at which time the S/C will be powered off and reconfigured for RMS). The proposed updated timeline is given below:	

Time Local	Date RMS	DoY RMS	Time RMS	Activity	TEAM	Instrument Support
				MTL delivery incl corrections (ACSM, SPIRE, PACS, HIFI)		
13:00			N/A	IST1 RMS delta TRR		
18:20:00	**17/05/2009**	**137**	22:20:00	EGSE Time Adjustment to RMS time & Max upload time	EGSE	
18:20:00			22:20:00	RMS Initial Configuration (incl RF U/L lock)	RMS	
02:30:00	**18/05/2009**	**138**	07:30:00	**RMS CONFIGURATION COMPLETE AND MTL SUBSCHEDULES RELEASED**	RMS	
04:10:00			08:10:00	First MTL Commanding Starts	AUTO	
04:15:05			08:15:05	TWT/XPND Switched ON	AUTO	
04:20:00			**08:20:00**	**DTCP1 Start (RF D/L locked switchover from umbilical to RF)**	RMS	
04:57:01			**08:57:01**	**HIFI Commanding Starts**	AUTO	
07:20:00			**11:20:00**	**DTCP1 End/AP1 Start (HIFI OD)**	RMS	
17:29:53			**21:29:53**	**HIFI Commanding Ends**	AUTO	
19:20:00			**23:20:00**	**AP1 End/DTCP2 Start**	RMS	
19:57:01			**23:57:01**	**PACS Commanding Starts**	AUTO	
22:20:00	**19/05/2009**	**139**	**02:20:00**	**DTCP2 End/AP2 Start (PACS OD)**	RMS	
11:10:00			**15:10:00**	**PACS Commanding Ends**	AUTO	
11:20:00			**15:20:00**	**AP2 End/DTCP3 Start (RF D/L locked switchover from umbilical to RF)**	RMS	
11:57:00			**15:57:00**	**SPIRE Photometer Commanding Starts**	AUTO	
14:20:00			**18:20:00**	**DTCP3 End/AP3 Start (SPIRE PHOT OD)**	RMS	
02:59:21	**20/05/2009**	**140**	**06:59:21**	**SPIRE Commanding Ends**	AUTO	
03:20:00			**07:20:00**	**AP3 End/Abbreviated DTCP4 Start**	RMS	
03:20:09			**07:20:09**	**MTL commanding Ends**	AUTO	
03:20:09			**07:20:09**	**Abbreviated DTCP4 End/OB Data Retrieval Start (RF D/L locked switchover from umbilical to RF)**	RMS	
09:20:00			13:20:00	OB Data Retrieved and S/C Switched Off	RMS	
				Contingency		
				QL Data Analysis & Summary	TAS-F / Inst / RMS/ ESA	

				PTR	TAS-F / Inst / RMS/ESA	

Conclusion:

The go-ahead is hereby given for the start of the Herschel RMS Test

Attachment 3 to Section 6.8:

PTR Minutes: H-P-2-TASF-MN-10778

ThalesAlenia Space	**RMS PTR PTS**	REF.: **H-P-TASF-MN-10788**
		HERSCHEL FM
		DATE : 3/09/08 / PAGE : 1 of 21
MINUTES OF MEETING		*PLACE : FU Meeting Room*

PURPOSE :
RMS PTR

CLASSIFICATION :

ATTENDEES	FIRM	SIGNATURE	ATTENDEES	FIRM	SIGNATURE
J. Hall	TASF		M. Oort	DS	
S. Mooney	TASF		C. Scharmberg	ESA	
S. Hamer	ASED		S. Idler	ASED	
J. Huesler	ESA		G. Pilbratt	ESA	
A. Gatti	ESA		P. Roefsema		
Y. Roche	TASF		H. Fauchgruber		
F. Sauvage	TASF		S. Sidher		
A. Knight (PT)	TASF		D. Teyssier		
M. Cesa	ESA		T. Marston		
B. Collaudin	TASF		T. Lynn		
K. Goodey	ESA		E. Sawyer		
C. Jewell	ESA		D. Griffen		
			A. Dow		
WRITTEN BY : J. Hall			*Chair:*	J. Hall	

CONCLUSION :

The cryo conditions during the test were maintained at nominal levels.
PACS: The test was successful.
HIFI: There are no problems seen in the data stream and no major anomalies have been identified.
SPIRE: Apart from the failed observations the test was deemed successful.
SVM: The test is deemed successful
The board agrees that the test was deemed successful pending any further anomalies identified during post test analysis.

DISTRIBUTION : *ATTENDEES*	*FOR FURTHER ACTION :*	See MoM and action item table at end of minutes
	FOR INFORMATION :	ASED : TAS-F : ESA:

APPROVED BY

NAME	J. Hall	S. Mooney	B. Collaudin	J. Huesler
SIGNATURE				

	ACTION
Introduction This Meeting is the PTR for the RMS test performed on 2-5/9/2008-	
Identification of the test item Session ID : 2009_05_17_23_24_hercdmu_hpws22_REALTIME_RMS_1 Baseline As Built configuration including deviations to the nominal configuration are listed in: H-P-TASF-MN-10758 dated 27/8/2008 (TRR MOM) H-P-TASF-MN-10772 dated 1-2/9/2008 (Delta TRR MOM)	
Status of the Procedure The RMS test session was run under control of procedure This used the following procedures: ■ Test of RMS TP-0197 iss 2 dated 28/8/2008 34 PVS were raised during the test **PVS#1**: Specification of Cryo cooling for test **PVS#2**: Do not remove HIFI CVV window red tag **PVS#3**: Define RWL limits for stiction region **PVS#4**: Change from CCCU mode 1 to mode 2 for test **PVS#5**: Deleted **PVS#6**: Instrument safing in case of anomalies **PVS#7**: NCR 442/NCR4470 Mandatory constraints **PVS#8**: Known deviations from specification **PVS#9**: Dump ACMS diagnostic packet for ESOC **PVS#10**: Recovery if Bolometer temp >400K **PVS#11**: recycling **PVS#12**: Manual commanding for SPIRE cooler **PVS#13**: Re-establish TM downlink **PVS#14**: No connection to SPIRE EGSE	

PVS#15: Error in RMS master script **PVS#16**: RWLs nominal values different from procedure **PVS#17**: Errors in procedure **PVS#18**: Subscribe scripts no longer needed **PVS#19**: MTL upload will not run with comments **PVS#20**: New step required after step 640 **PVS#21**: Load remaining MTL commands for OD346-347 **PVS#22**: Disable about time sync on DFE for DTCPs **PVS#23:** Split Tm dump file before it gets too big **PVS#24:** Configure TM in High Rate for AP **PVS#25**: Re-establish RF TC link recovery **PVS#26:** Switch on SPIRE AC & DC Thermistors **PVS#27**: Perform Manual dump for pkt store 3 again **PVS#28:** Disconnect and re-connect cryo-scoe **PVS#29:** Additional TCs required by SPIRE **PVS#30:** Error in script (SPR 723) **PVS#31:** Interrupt RMS switch off for SPIRE to run follow on test (FDIR OBCP for SPIRE). **PVS#32**: Get report of SPIRE on board tables (for NCR investigation) **PVS#33:** Step over wait period in master script **PVS#34**: CDMU DFE + TMTC SCOE Recovery	
Raised Anomalies • **SPRs from TRR:** None • **SPRs Re-seen:** None • **NCRs from TRR:** **NCRs re-seen** **NCR 3300**	

NCR has re-occurred. ACMS commands. **No impact on test**.

NCR-4181 has re-occurred numerous times during startup
Delay in TM due to overloading of the CCS.at start-up. Only impacted start-up. Did not re-occur during the test. **No impact on test**

NCR 4395 LO disabled commanding anomaly reoccurred, as expected. Known issue due to not being able to use the LO. **No impact on test**.

NCR 3318: RMS MTL SCM line scan command overlaps
Occurred during pointing phase
No impact on test

NCR 4479: Hold time
Updated NCR to cover both SPIRE and PACS hold time.
No impact on test

- **SPRs raised**

719: Command Parameters missing from script

720: Wrong LOGM message

721: Extra Bracket in script

- **NCRs raised**

New NCRs

NCR-4483: SPIRE MTL - Biasing parameters wrong for transition to PHOTSTBY. RAL have provided update which has been corrected manually in the MTL. NRB given to go ahead with test.
MTL to be delivered. Manual command stack has been issued to ESOC for the SOVT.
Open

NCR-4484: MTL Upload Script will not run. The comments were removed from the MTL and patched on-line.
Open

NCR-4485: Time sync will be stopped prior to each DTCP.
Work around available.
Open

NCR 4487: CCS communication errors during IST RMS dry run.

Due to the archive split, The workstations lost synchronisation.
Open

NCR 4488: SPIRE Pump unexpected switch off
Second parameter has not been corrected.
SOCT requires manual commanding.
Open

NCR 4491 CDMU SCOE crash
Real time data loss.
Open

- **Additional SPRs to be raised**

None

- **Additional NCR to be raised**

SPIRE: The 7-point and 64-point jiggle map observations failed because of a bug in the OBS (version 2.2.H). A patch to the jiggle map table has been prepared and will be tested on the AVM before delivery. Should be correct in next version of DPU Software
Will impact SOVT

DTCP1: DTCP1 RWL commanding. Comparing result at end of new RWL bias values comparing value to 10.7 Nms. (recovered via PVS 16). Results show 2 at approx 9Nms and 2 at approx -9Nms. **Should be notified to ESOC for SOVT but does not impact the test.**

PACS for 02.52.49.078 (MTL time, day 139) with code 775 (0x307) which according to DMC User Manual means ERR_SEQUENCER_COULD_NOT_EXECUTE_COMMAND to be raised. This appeared to have no subsequent affects on the test.
This may occur during SOVT but the loss of 1 observation has no major impact on test execution.

Day 138 at 04:54. In SCM Tracking. RWL are acting normally but there appears to be an attitude problem (as reported by the star tracker). The reported attitude freezes for 20 seconds. Then attitude jumps. Could be a star tracker issue. Does not impact the test.
This may occur during SOVT.

Deviations from the test

None	
Actions from Previous meetings None	
Test Evaluation <u>Summary 3/9/2008 @ 08:00</u> 4 scripts added to the MTL (**NCR-4483**). An NRB was held on delivery of the data. Power problem in HIFI room in FU building (21:00). Site services called and resolved the problem. This caused PACS and SPIRE to trip. All computers then powered individually. Power for PACS and SPIRE come from same CB. Power for these rooms to be changed to distribute the power. Instrument I-EGSE for SPIRE is not currently configured due to the crash. This will be configured when SPIRE arrives Thursday (4/9/08) prior to switch on SPIRE **NCR-4181** has re-occurred numerous times during start-up. Also System get slows with multiple activities in parallel and during start-up. This related to the patch for 4181. TMTC DFE resynchronisation with CCS every minute is causing problems at ESOC with loss of frames (**NCR-4485**). Time sync will be stopped prior to each DTCP. Is this related to the patch as this was not seen during RMS debugs? During MTL upload there were problems in the some files. A command parameter changed and the old command was commented out. However this is in the middle of the macro command which cannot be handled (**NCR-4484** raised). The comments were removed from the MTL and patched on-line. It is important to ensure future MTL updates are checked for comments in invalid positions. Initial evaluation of the dumps after DTCP 1 appears to show valid data	

dumping. This will be further evaluated. Some commands not recorded as accepted or completed at about 11:00 (system time). **NCR 3300** Fine pointing NCR has re-occurred. Laser temperature got to 31.5 (upper limit of 35) and temperature was increasing. The cooling was found to be not correctly positioned. After re-positioning the temperature decreased. T107 1.99 and T102 1.91. Required to be less than 1.95 Summary 3/9/2008 @ 22:30 *Hamer, Lamonby, Mooney, Gatti, Collaudin, Cesa, Idler, Vascotto, Roche, Sauvage* New NCR raised: **NCR 4487** CCS communication errors during IST RMS dry run. This did not stop the test; nevertheless some data (e.g. HK) may have been lost during actions to recover. To be checked by AIT/OM. NRB is planned for Friday 5th, with on-site TERMA support. New PVS raised: PVS#23 Split Tmdump file before it gets too big. Executed successfully. It is recommended to implement this PVS at proper time during SOVT. **The split of the TM dump file (PVS#23) caused the problems highlighted in NCR 4487. Thus when the split was performed all workstations displayed communication errors with the TM cache and had to be restarted. Including the ws22 which was the master controlling all running scripts. Re-connecting this workstation was performed with minimal impact after it was verified that stopping and restarting the scripts would have no impact. Therefore further splitting of the TM archive must be handled with great care.** LO disabled commanding anomaly (NCR 4395) reoccurred, as expected.	**AIT/OM**

No anomaly reported from HIFI.

Reoccurrence of NCR3300 SCM fine pointing …

Cooling recycle was performed successfully.

Key temperatures (refer to AIT logbook for list) monitored, in the limits.

T222=1.91 (OK,<1.95 K)
T223=1.90 (OK,<1.95 K)
T102=1.89 (OK,<1.95 K)
T231=2.22 (OK,<5 K)
T233=2.79 (OK,<5 K)
T235=3.26 (OK,<5 K)
T237=3.69 (OK,<5 K)
T254=9.29 (OK, <15 K)

During the test, TASF Engineering confirmed that T107 was not to be below 1.95 K to run the test, as previously reported in the last TRR MoM. T107 can be ignored during temperature monitoring.

Flow rate is currently 20mg/sec. Cryo engineers expect to get L2 rising above 15 K overnight, due to current flow rate. This should not be a problem for PACS and SPIRE, as long as L1 temperatures do not exceed their limits, according to TASF Engineering.

Nothing to report on CDMS side.

No other comment.

PACS and DTCP3 to continue as planned, no ground-led activity.

Next CPM 4/9/2008 @ 14:30.

Summary 4/9/2008 @ 14:30

GB/AG/KG/MC/MKoe/SM/JHa/OB (Teleconf)/BC/SH/FS

Autonomy period 2 performed

Re-occurrence of TM 1,8 reports (NCR 3318)

DTCP 3 performed.

Test report from PACS is attached to annex A

PACS for 02.52.49.078 (MTL time, day 139) with code 775 (0x307) which according to DMC User Manual means ERR_SEQUENCER_COULD_NOT_EXECUTE_COMMAND to be raised.
This appeared to have no subsequent affects on the test.
This may occur during SOVT but the loss of 1 observation has no major impact on test execution.

VC1 overflow occurred (SPR-722). **PVS #24** executed to set to high rate. **This may impact SOVT.**

SPIRE power on script uses generic power on script which does not switch on the thermistors. **Procedure is to be updated for RMS/SOVT (PVS #26)**

At start of DTCP, XPND not locked as there was a TC error. SPR-723. **PVS-25** used to manually reset RF link. Script is only for SOVT/RMS. **This will impact the SOVT.**

Cooler recycling everything looked nominal but the pump heat switch was switched off after. This is part of the MTL and thus will also occur in the SOVT. **NCR 4488** is raised. **For SOVT it is important to be ready with a manual command to resolve this after cooler recycling.**

SSMM downlink error end of TM(1,7) interpretation mistake leading to downlink of next store too early. Specific to when a downlink is occurring at same time as SSMM. **SPR to be raised**. **Recovered via PVS #27. SSMM not automated in SOVT so no impact. Recovered via**

No anomalies in the cryo condition (mass flow increased from 20 to 26 g/s). No impact for SOVT.

Next CPM 5/9/2008 @ 09:00.

Summary 5/9/2008

MKoe/SI/AG/FS/BC/JHu/SM/JHa

Command problems found dumping the dummy MTL. Commands in the dummy MTL are still based on CDMS 3.4. **NCR 4484 (updated).**
No upload of last 20 commands (of the 300+ commands) as they were not

to be executed.

Restarted time sync after DTCP (**PVS 22**).

Restart the SPIRE pump heater: **NCR 4488. To be updated for next RMS.**

It was believed there was a problem with the Cryo SCOE so the cryo SCOE was disconnected and rebooted then reconnected (**PVS 28**). Data was lost. In fact it was seen during the power off that there was an open dialogue box causing this issue and was an operator error.

SPIRE requested extra TCs be send to check DCU data (**PVS 29**). Check with SPIRE if this is needed to next RMS/SOVT

HIFI cooling unit filter frozen. De-iced with heat gun. Recommended that it should be checked for ice every day whilst in continuous use.
The temperature of the cooling unit should not be set less than 19 degrees.

Reoccurrence of DTCP XPND error. Error in script (SPR 723). Recovered via **PVS-30**.

SPIRE stated they had a problem missing an on board table that is required for the virtual machine. This should have be loaded into the DPU during the power on.
SPIRE requested that the on board tables be dumped. This was performed via **PVS 32.**

Problem with master script at end of AP3 in IST_RMS_ASTRIUM. It contains a delay of 2 x 14 hours. The script was stopped, updated and restarted (SPR 725) **PVS 33** used to recover.

Typos in procedure generically covered by **PVS 17**.

Script error in IST_RMS_ASTRIUM (checks for OFF should check for a value of 0 Amps (SPR 726). Continued. Script to be updated.

RMS switch off for follow on debug activities via **PVS 31**.

CDMU SCOE crashed at 05:11 (zulu time) and only notice an hour later. Recovered by **PVS #34**, rebooting of CDMU DFE and TMTC DFE SCOE.. **NCR 4491**.
Complete dump of all data then performed again.

1.5 hour of real time data lost. No science data lost. PACS and HIFI instruments were on standby at this time. SPIRE was on. After cooler recycling it can be seen that the hold time of the cooler is 18 hours. This is already covered by **NCR 4479**. **This may impact the last 2 hours of a standard 20 hour observation period in SOVT.**	
AOB A discussion is required to clarify the definition and operation of schedules/sub schedules (NRB for NCR 4470)	**ASED** **PA** **10/9/2008**
Conclusion: The cryo conditions during the test were maintained at nominal levels. PACS: The test was successful. HIFI: There are no problems seen in the data stream and no major anomalies have been identified. SPIRE: Apart from the failed observations the test was deemed successful. SVM: The test is deemed successful The board agrees that the test was deemed successful pending any further anomalies identified during post test analysis.	

Annex A: PACS RMS test report

RV, SP

Date : 2008-Sep-03/04
StartTime : Sep-03, 19:30h local time (CEST) 17:30h UT
EndTime : Sep-04, 11:10h local time (CEST) 09:10h UT
Location : ESTEC (FU)

PACS Status: - FM nominal (DPU, SPU, DMC, BOLC, WIH)
- DPU v9.00, SPU HLSW v13.8, DMC v6.023
- MIB 9.2
PACS RMS :- MTL execution
- MTL release note: H-P-2-ASP-LI-1660
- OD 446 (RMS day 2)

Data : - Note, individual telemetry files were recorded for each observation:
- HPACSEGSE dump directory: /home/pacs/20080903
- MPE: data@pacs1.mpe-garching.mpg.de:./FM_IST_data/20080903/

==========

Post-test notes:

On commanding side: DPU received a total of 2373 telecommands. All of them have been correctly received (no TM(1,2)) and executed (no TM(1,8)). A total of 347 TM(1,3) and TM(1,7) have been generated which means that PACS executed with success 347 OBCP

DMC reported 5 errors during the test. The first two appeared during the switch-on sequence and are normal; a third error was reported at 02.52.49.078 (MTL time, day 139) with code 775 (0x307) which according to DMC User Manual means ERR_SEQUENCER_COULD_NOT_EXECUTE_COMMAND. At this time DPU was executing an OBCP, apparently this error did not have any impact on the OBCP execution (see below), however it should be investigated in more detail with the help of DMC OBSW specialist. Two other errors appeared at 06.09.36.234 (MTL time) with error code 516 (0x204)which means ERR_LINK_DEC_BLUE. At this time no OBCP was under execution, it is possible that an error occurred in the 1355 link between MEC and DEC and then the link was automatically reconfigured. But again this error should investigated in more detail off line.
DPU also reported a number of event (5,1), some of them are due to the previous DMC errors (DPU checks that the error counter in DMC is not incremented, if an error is reported than the DPU raises this event). The other events (5,1) will be investigated off line, but it seems that they were not relevant for testing activities.
is a counter of DMC that was not incremented correctly

On instrument side: The DMC sequence was interrupted related to the third error reported at 02.52.49.078 (MTL time). This did not caused the crash of the OBCP since the DMC sequence was anyhow finished before the OBCP. The reason should be investigated off-line. Other observations using the same DMC sequence were not aborted.

The calibration source temperature (CS1) did not reach its plateau before the first observation started. This may be an indication to extend the photometer orbit prologue.

We have not experienced any further problem; few minor issues are listed below linked to the observations.

==========
PACS Timeline in local time (MTL time = local time + 4 hrs)
==========

2009-09-03 19:57:00 OBS NAME PacsEng_BOLO_cool_recycle_36 OBS ID 1170 OBS MODE PacsEng_BOLO_cool_recycle
==========
At the end of recycling:

TEMP_SP at 2.16K
TEMP_EV at 290mK
==========

-> MODE: ENG
-> FIST_RMS_01_PacsEng_BOLO_cool_recycle_36_20080903.tm (PacketRecorder has been started ~1 min too late)
-> OK

2009-09-03 22:19:11 OBS NAME PacsEng_PHOT_orbit_prologue_41 OBS ID 1175 OBS MODE PacsEng_PHOT_orbit_prologue
-> MODE: ENG
-> FIST_RMS_02_PacsEng_PHOT_orbit_prologue_41_20080903.tm
-> OK

2009-09-03 22:52:01 OBS NAME PPhoto-RMS-04 OBS ID 1035 OBS MODE PacsPhoto
-> MODE: Scan map
-> FIST_RMS_03_PPhoto-RMS-04_20080903.tm
-> Check the aborted DMC sequence

2009-09-03 23:11:01 OBS NAME PPhoto-RMS-01 OBS ID 1032 OBS MODE PacsPhoto
-> MODE: Point source
-> FIST_RMS_04_PPhoto-RMS-01_20080903.tm
-> OK

2009-09-03 23:15:37 OBS NAME PPhoto-RMS-06 OBS ID 1037 OBS MODE PacsPhoto
-> MODE: Chopped raster (4x3)
-> FIST_RMS_05_PPhoto-RMS-06_20080903.tm (PacketRecorder has been stopped few seconds too early)
-> OK

2009-09-13 23:53:44 OBS NAME PPhoto-RMS-07_copy_1 OBS ID 1057 OBS MODE PacsPhoto
-> MODE: Scan map
-> FIST_RMS_06_PPhoto-RMS-07_copy_1_20080903.tm
-> OK

2009-09-04 00:07:15 OBS NAME PPhoto-RMS-07 OBS ID 1054 OBS MODE PacsPhoto

-> MODE: Scan map
-> FIST_RMS_07_PPhoto-RMS-07_20080903.tm
-> OK

2009-09-04 00:20:04 OBS NAME PPhoto-RMS-01_copy_2 OBS ID 1056 OBS MODE PacsPhoto
-> MODE: Point source
-> [FIST_RMS_08_PPhoto-RMS-01_copy_2_20080903.tm] -> due to an extra white space in the shell command, the TM packet file has not been recorded
-> OK

2009-09-04 00:24:41 OBS NAME PPhoto-RMS-01_copy_1 OBS ID 1055 OBS MODE PacsPhoto
-> MODE: Point source
-> FIST_RMS_09_PPhoto-RMS-01_copy_1_20080903.tm
-> OK

2009-09-04 00:29:48 OBS NAME PPhoto-RMS-03 OBS ID 1034 OBS MODE PacsPhoto
-> MODE: Small source
-> FIST_RMS_10_PPhoto-RMS-03_20080903.tm
-> OK

2009-09-04 01:17:06 OBS NAME PPhoto-RMS-02 OBS ID 1033 OBS MODE PacsPhoto
-> Point source
-> FIST_RMS_11_PPhoto-RMS-02_20080903.tm
-> OK

2009-09-04 01:30:42 OBS NAME PPhoto-RMS-05 OBS ID 1036 OBS MODE PacsPhoto
-> MODE: Mapping / chop-nod (2x2)
-> FIST_RMS_12_PPhoto-RMS-05_20080903.tm
-> Check the asymmetry of chopper plateau lengths
-> OK

2009-09-04 02:08:59 OBS NAME PacsEng_orbit_epilogue_38 OBS ID 1172 OBS MODE PacsEng_orbit_epilogue
-> FIST_RMS_13_PacsEng_orbit_epilogue_38_20080903.tm
-> OK

==========

At the end of the PHOT block:

TEMP_SP at 2.10K
TEMP_EV at 293mK

- Temperature of the L0 T107 = 1.88 K (should be 1.75 - 1.85 K)
- Temperature of the L0 T221 = 1.94 K
- Temperature of the L0 T223 = 1.93 K

- Temperature of the L1 T242 = 8.71 K
- Temperature of the L2 T202 = 8.78 K
- Temperature of the L2 T254 = - K
- Temparature at cryo cover T601 = - K
  T602 = - K
  (YM440958 = T601, YM441958 = T602)
- Cryo shield temperatures: T424 = - K
  T444 = 77.79 K
  T464 = - K

==========

Switch to SPEC

==========

2009-09-04 02:09:13 OBS NAME PacsEng_SPEC_orbit_prologue_40 OBS ID 1174 OBS MODE PacsEng_SPEC_orbit_prologue
-> MODE: ENG
-> FIST_RMS_14_PacsEng_SPEC_orbit_prologue_40_20080903.tm
-> OK

==========

DM_DECB_TS_1_3 = 5.23 K
DM_DECB_TS_2_3 = 2.85 K (heater on)
DM_DECR_TS_1_1 = 5.13 K
DM_DECR_TS_2_1 = 2.08 K

==========

2009-09-04 02:45:12 OBS NAME PSpecL-RMS-09 OBS ID 1053 OBS MODE PacsLineSpec
-> MODE: Pointed with dither / bright lines/ chop-nod
-> FIST_RMS_15_PSpecL-RMS-09_20080903.tm
-> OK

2009-09-04 02:56:34 OBS NAME PSpecL-RMS-06 OBS ID 1043 OBS MODE PacsLineSpec
-> MODE: Pointed / wavelength switching
-> FIST_RMS_16_PSpecL-RMS-06_20080903.tm
-> The RMS wavelength switching logic is obsolete!
-> OK

2009-09-04 03:22:12 OBS NAME PSpecL-RMS-01 OBS ID 1038 OBS MODE PacsLineSpec
-> MODE: Pointed / chop-nod
-> FIST_RMS_17_PSpecL-RMS-01_20080903.tm
-> OK

2009-09-04 03:28:45 OBS NAME PSpecL-RMS-02 OBS ID 1039 OBS MODE PacsLineSpec
-> MODE: Pointed / chop-nod
-> FIST_RMS_18_PSpecL-RMS-02_20080903.tm

-> Check the grating position curve, some well enhanced ripples can be seen
-> Check the duration of up-down scans
-> OK

2009-09-04 04:15:12 OBS NAME PSpecL-RMS-09_copy_2 OBS ID 1059 OBS MODE PacsLineSpec
-> MODE: Pointed with dither / bright lines/ chop-nod
-> FIST_RMS_19_PSpecL-RMS-09_copy_2_20080903.tm
-> OK

2009-09-04 04:26:35 OBS NAME PSpecL-RMS-09_copy_1 OBS ID 1058 OBS MODE PacsLineSpec
-> MODE: Pointed with dither / chop-nod / bright lines
-> FIST_RMS_20_PSpecL-RMS-09_copy_1_20080903.tm
-> OK

2009-09-04 04:36:44 OBS NAME PSpecL-RMS-05 OBS ID 1042 OBS MODE PacsLineSpec
-> MODE: Mapping / chop-nod (2x2)
-> FIST_RMS_21_PSpecL-RMS-05_20080903.tm
-> OK

2009-09-04 05:17:20 OBS NAME PSpecL-RMS-08 OBS ID 1045 OBS MODE PacsLineSpec
-> MODE: Mapping / wavelength switching (3x2)
-> FIST_RMS_22_PSpecL-RMS-08_20080903.tm
-> The RMS wavelength switching logic is obsolete!
-> OK

2009-09-04 05:34:56 OBS NAME PSpecL-RMS-07 OBS ID 1044 OBS MODE PacsLineSpec
-> MODE: Pointed with dither / wavelength switching
-> FIST_RMS_23_PSpecL-RMS-07_20080903.tm
-> The RMS wavelength switching logic is obsolete!
-> OK

2009-09-04 06:47:06 OBS NAME PSpecL-RMS-04 OBS ID 1041 OBS MODE PacsLineSpec
-> MODE: Mapping / chop-nod (2x2)
-> FIST_RMS_24_PSpecL-RMS-04_20080903.tm
-> OK

2009-09-04 07:27:56 OBS NAME PSpecL-RMS-03_copy_1 OBS ID 1062 OBS MODE PacsLineSpec
-> MODE: Pointed with dither / chop-nod
-> FIST_RMS_24_PSpecL-RMS-04_20080903.tm (same file as before)
-> OK

2009-09-04 07:58:35 OBS NAME PSpecL-RMS-03 OBS ID 1040 OBS MODE PacsLineSpec
-> MODE: Pointed with dither / chop-nod
-> FIST_RMS_24_PSpecL-RMS-04_20080903.tm (same file as before)

-> OK

2009-09-04 08:29:23 OBS NAME PacsEng_SPEC_curing_37 OBS ID 1171 OBS MODE PacsEng_SPEC_curing
-> MODE: ENG
-> FIST_RMS_25_SPEC_curing_37_20080903.tm
-> OK

2009-09-04 08:52:52 OBS NAME PSpecR-RMS-01 OBS ID 1046 OBS MODE PacsRangeSpec
-> MODE: Pointed / chop-nod
-> FIST_RMS_26_PSpecR-RMS-01_20080903.tm
-> OK

2009-09-04 08:56:25 OBS NAME PSpecR-RMS-02 OBS ID 1047 OBS MODE PacsRangeSpec
-> MODE: Pointed / chop-nod
-> FIST_RMS_27_PSpecR-RMS-02_20080903.tm
-> Supply group 1 and 2 show a ~2% systematic difference in signal level (strong contrast on QLA)
-> OK

2009-09-04 10:11:45 OBS NAME PSpecR-RMS-06_copy_1 OBS ID 1060 OBS MODE PacsRangeSpec
-> MODE: Mapping with off-position (2x2)
-> FIST_RMS_28_PSpecR-RMS-06_copy_1_20080903.tm
-> OK

2009-09-04 10:18:37 OBS NAME PSpecR-RMS-07_copy_1 OBS ID 1061 OBS MODE PacsRangeSpec
-> MODE: Pointed / chop-nod
-> FIST_RMS_29_PSpecR-RMS-07_copy_1_20080903.tm
-> OK

2009-09-04 10:22:35 OBS NAME PSpecR-RMS-03 OBS ID 1048 OBS MODE PacsRangeSpec
-> MODE: Pointed / chop-nod / SED blue
-> FIST_RMS_30_PSpecR-RMS-03_20080903.tm
-> OK

2009-09-04 10:35:45 OBS NAME PSpecR-RMS-04 OBS ID 1049 OBS MODE PacsRangeSpec
-> MODE: Ponted with dither / chop-nod
-> FIST_RMS_31_PSpecR-RMS-04_20080903.tm
-> OK

2009-09-04 10:43:33 OBS NAME PSpecR-RMS-07 OBS ID 1052 OBS MODE PacsRangeSpec

-> MODE: Pointed / chop-nod
-> FIST_RMS_31_PSpecR-RMS-04_20080903.tm (included in the previous tm file)
-> OK

2009-09-04 10:47:00 OBS NAME PSpecR-RMS-05 OBS ID 1050 OBS MODE PacsRangeSpec
-> MODE: Mapping / chop-nod (2x2)
-> FIST_RMS_32_PSpecR-RMS-05_20080903.tm
-> OK

2009-09-04 11:03:17 OBS NAME PSpecR-RMS-06 OBS ID 1051 OBS MODE PacsRangeSpec
-> MODE: Mapping / off-position (2x2)
-> FIST_RMS_33_PSpecR-RMS-06_20080903.tm
-> OK

2009-09-04 11:10:46 OBS NAME PacsEng_orbit_epilogue_39 OBS ID 1173 OBS MODE PacsEng_orbit_epilogue
-> MODE: ENG
-> FIST_RMS_34_PacsEng_orbit_epilogue_39_20080903.tm
-> OK

Annex B: SPIRE SUMMARY

RMS summary for SPIRE:

1) The automatic cooler recycle was successful, although it timed out while waiting for the pump heater temperature to fall below 2K. This timeout, which is consistent with the cryostat conditions during the RMS, resulted in the pump heat switch being turned off. It had to be turned on manually before the transition from REDY to PHOTSTBY.

2) The transition from REDY to PHOTSTBY was successful. The nominal biases were set correctly.

3) Early SPIRE scan map observations appear to be successful, although the data need to be looked at in detail.

4) The 7-point and 64-point jiggle map observations failed because of a bug in the OBS (version 2.2.H). A patch to the jiggle map table has been prepared and will be tested on the AVM before delivery.

5) Connection to the CCS lost at 20th May 2009, ~03:17 due to PipeGW connection errors. Problem is being investigated.

Annex C: RWL/Pointing Graphs

Annex D: SPIRE Laser Temperatures (cooling adjustment)