SPIRE_AST_REP_003160

Title: HIFI IST1 Commissioning in He2 Test Report

CI-No: 125100

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Distribution: See Distribution List (last page)

Issue	Date	Sheet	Description of Change	Release
1	01/10/2008	All	Formal Issue	

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1 Scope

This document reports on the HIFI Integrated System Test 1 (IST1) Commissioning Test performed in Helium-2 (He2) conditions with the Spacecraft at ESTEC, Hydra Cleanroom, Noordwijk, NL (ref. AD-3).

The HIFI IST1 Commissioning Test at Spacecraft (S/C) level comprised a subset of the HIFI Commissioning procedure (RD-3) performed on nominal units only but with a cross-strapped Spacecraft configuration as per AD-7 section 5.8.4.6, specifically:

- HIFI Performance Test (RD-3 Section 3.10.3)
- HIFI Peak-Up Test (RD-3 Section 3.10.11)

Reporting of the HIFI Instrument specific aspects of this test are reported separately by the SRON instrument team responsible for HIFI (RD-6 refers).

NB: The remaining tests from RD-3 were performed as part of the HIFI Specific Performance Tests (ref. RD-4 & RD-5).

1.1 Objective

The objective of the test is to check partial performance of HIFI FM Instrument FPU in He2 conditions, with LOU and warm units at ambient temperatures using a flight representative Satellite configuration in order to verify the spacecraft's ability to support the in-orbit instrument commissioning and performance verification operations.

1.2 Summary Conclusion

From an S/C IST viewpoint the HIFI IST Commissioning test in He2 has been successfully completed. One minor deviation from the IST specification has been identified, namely CCU A was connected to the Cryoscoe and not CCU-B as required, due to the need for engineering to constantly (24/7) monitor the cryostat when in He2.

The HIFI specific results of the SPT FP Performance test are presented in RD-6. The peak-up test was unsuccessful (NCR-4388 refers) and needs to be repeated at sometime in the future.

2 Documents / Drawings

2.1 Applicable Documents

AD 1	Herschel IST Lead Procedure, Issue 4	HP-2-ASED-TP-0134
AD 2	S/C Configuration for IST Instrument Commissioning, Issue 1	HP-2-ASED-TP-0237
AD 3	IST Instrument Commissioning: HIFI FM Performance & Peak-Up Test, Issue 1	HP-2-ASED-TP-0188
AD 4	PA Plan	HP-2-ASED-PL-0007
AD 5	HIFI IEGSE Setup Procedure	SRON-U/HIFI/PR/2007-005
AD 6	Test Specification for Herschel Instrument AVM & FM Tests Performed at Satellite Level, Issue 2	H-P-2-ASP-TS-1083
AD 7	Herschel Integrated Satellite Test Specification, Issue 5	H-P-2-ASP-SP-0939
AD 8	H-P GDIR	H-P-1-ASPI-SP-0027
AD 9	TRR for HIFI-SFT He2 and Commissioning	HP-2-ASED-MN-1587
AD 10	PTR for HIFI SFT He II & Commissioning	H-P-TAS-MN-10682

2.2 Reference Documents

RD 1	HIFI IID-B	SCI-PT-IIDB/HIFI-02125
RD 2	HIFI Power-up and Power-down Procedures for IST & TV Tests	SRON-G/HIFI/PR/2007-017
RD 3	HIFI IST Commissioning	SRON-G/HIFI/AIV/2007-009
RD 4	HIFI SPT in He1	HP-2-ASED-TP-0210
RD 5	HIFI SPT in He2	HP-2-ASED-TP-0238
RD-6	HIFI IST Commissioning Test Report	SRON-G/HIFI/TR/2008-021

2.3 Other Documents

N/A

2.4 Acronyms & Abbreviations

See AD-3.

3 Test characteristics

3.1 Title

Herschel IST Test Case:

"Instrument Commissioning and Performance Verification – HIFI Commissioning Test"

3.2 Unit tested

HIFI Commissioning procedures (subset) in S/C Operational Configuration.

3.3 Description

The tests performed functionally check the validity of HIFI instrument commissioning procedures in a cross-strapped S/C configuration as defined in AD-7 section 5.8.4.6:

3.4 Applied procedures

See AD-2

3.5 Requirements to be verified

Not applicable

3.6 Corresponding minutes of meetings

[AD 9] through [AD 10]

3.7 General test flow

General note: After powering on the Spacecraft into the required IST HIFI commissioning configuration, the HIFI SFT He2 was performed (detailed in separate test report). The HIFI Commissioning continued after successful completion of this

test. Although not detailed, the HIFI SFT is therefore indicated on the general test flow and timeline (All times HPCCS UTC) shown below for completeness:

Time	Activity	Remark	Duration
28/07/2008 04:24	Start Test Session 1: **2008_07_28_04_24_hercdmu_hpws22_REALTIME_HifiSftCO**		0:46
05:10	Power on S/C i.a.w. AD-1 Section 7.2 omitting ACMS		2:11
07.21	Configure S/C i.a.w. AD-2 Section 7.4		2:37
09:58	Load corrected HPSDB (synthetic parameters in lower case)	NCR-4387 refers (closed)	0:46
10:44	Start New Test Session: **2008_07_28_10_44_hercdmu_hpws22_REALTIME_HifiSftC2**		0:52
11:38	Gyro reconfiguration due to S/C movement (recovered prior to start of commissioning - no impact on test)	NCR-4385 refers (closed)	N/A
12:15	Power on HIFI and perform Redundant SFT, Power off HIFI		
13:33	Reconfigure IEGSE for merged MIB update and Nominal configuration	NCR-4389	
16:06	Power on HIFI and perform Nominal SFT leaving HIFI in Standby1		
	Start of HIFI Commissioning: AD-3		
19:35	Switch HIFI from Stdby1 to Stdby2		0:06
19:41	Start SPT_FP_Performance test (reduced duration due to LOU ground ambient life-limit being exceeded – NCR-4395) AD-3 Section 7.2.3	NCR-4381 NCR-4395 NCR-3951 (recurrence)	1:40
21:21	Start HIFI Peak-up test AD-3 Section 7.2.4	NCR-4388	0:17
21:38	Switch HIFI to Standby1	NCR-4382	0:06
21:44	Start HIFI Power OFF		0:18
22:02	Start IST_END		1:37

23:39	Test END		
	Overall HIFI Commissioning duration		**11:16**

4 Test execution

4.1 Date and time

28/07/2008 04:24 UTC

4.2 Personnel

Test Director:	S. Mooney (IST) / B. Collaudin (Instruments)
Test Conductor :	S. Idler
HPCCS Operator :	See As-Run
AIT QA:	See As-Run

4.3 Detailed test timeline

This section references the relevant documentation detailing the test execution timeline. For a summary of the main events of the test timeline refer to section 4.6.

4.3.1 Start of test / end of test

See section 3.7 for summary timeline.

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.

4.3.2 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.

4.3.3 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.

4.3.4 Time of SPR / NCR

Details are provided in the as-run procedures annexed to this test report and summarised in section 3.7. The AIT logbooks covering the test are also attached for information.

4.3.5 Time of milestone in test

Details are provided in the as-run procedures annexed to this test report and summarised in section 3.7. The AIT logbooks covering the test are also attached for information.

4.4 Problems found during the test

4.4.1 Procedure Variations

4.4.1.1 IST Lead Procedure (TP-0134)

PVS No	Description and Impact on Test (If any)	Impacts Test Objectives (Y/N)
1.	Redline procedure with agreed updates for Issue 5	N

4.4.1.2 IST Procedure for Instrument Commissioning (TP-0237)

PVS No	Description and Impact on Test (If any)	Impacts Test Objectives (Y/N)
1.	Procedure redline corrections	N
2.	Procedure redline corrections plus manual commanding due to problem with TTC SCOE	N
3.	TM Failure requiring execution of Operator Note 35	N
4.	Recovery of Gyros for test (following NCR-4385 recovery)	N
5.	Restart Test Session, and perform Operator Note 15 (following NCR-4387 recovery)	N

4.4.1.3 HIFI Instrument Commissioning (TP-0188)

PVS No	Description and Impact on Test (If any)	Impacts Test Objectives (Y/N)
1.	Skip Power ON of S/C and HIFI as already performed in SFT	N
2.	Call HIFI_AllSubscribeParams instead of AllSubscribeParams to reduce system load	N
3.	Perform section 7.1 (instrument test case selection) before section 7.4	N
4.	AD/BD mode switching for test (SPR-624)	N
5.	Change of Master Script plus procedure redlines for reduced LOU usage (NCR-4395)	N

4.4.2 NCR/SPR Summary

4.4.2.1 NCRs Opened/Recurred/Closed

NCR No	Title	During	O/R/C
4387	HPSDB synthetic parameter files names in lower case	Power ON of S/C	O/C
4385	ACS Gyro Reconfiguration due to Satellite Movement	Power ON of S/C	O/C
4389	Merged MIB does not work	Configuration of HIFI IEGSE for Nominal power	O/C
4381	Invalid Initial State from HIFI Master Scripts	HIFI Performance Test	C
4382	Invalid Switch to Standby1	HIFI Performance Test	C
4395	LOU life limit for ambient ground operations	Full Test	O
3951	During HIFI WARM SFT 4 runtime error (5,4) events reported	HIFI Performance Test	R
4388	HIFI peak-up commands rejected by ACMS	HIFI Peak-up Test	O
4100	Laser Temperature	Not observed	C
4101	HIFI HPSDB/MIB errors reported during Instrument FDIR OBCP	Not observed	C
4110	Command Completion Failures	Not observed	C
4175	HIFI HPSDB/MIB errors reported during Instrument FDIR OBCP	Full Test	R
4181	Scripts Halting Waiting for Updated Parameters	Full Test	R
4278	WU Temp Monitoring Limits	Not observed	C

4.4.2.2 SPRs Opened/Recurred/Closed

SPR No	Title	O/R/C
622	ACS Gyro reconfiguration due to satellite movement (NCR4385)	O/C
623	Infinite Loop in IST_STATUS	O
624	AD Mode not configured for Instrument Commissioning	O
625	Install Master Script for HIFI Commissioning	O

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

4.4.3.1 NCRs

NCR No	Action taken	Impacts Test Objectives (Y/N)
4387	File names converted manually as interim workaround. Future zipped deliveries unzipped using correct application. Only impact was delay to start of test.	N
4385	Gyros recovered to nominal configuration prior to start of commissioning test.	N
4389	Merged MIB not used for test. Corrected afterwards and validated during HIFI SPT	N
4381	Master Script corrected and redelivered. Procedure updated accordingly	N
4382	Script corrected and redelivered. Procedure updated accordingly	N
4395	Due to LOU Life limit LO testing was limited to < 5 min per channel. PTR stated that this did not affect test objectives. NCR remains open for duration of ambient ground testing of HIFI	N
3951	OBSW were to be expected with the LOU temperature seen for the test	N
4388	Movement outside range allowed by Peak-up command requested resulting in rejected command TM(1,8) from ACMS. Investigation ongoing.	Y
4175	HIFI parameter overflow errors observed again on CCS but did not impact test	N
4181	Workarounds used to minimise delays when performing test	N

4.4.3.2 SPRs

SPR No	Action taken	Impacts Test Objectives (Y/N)
622	NCR4385 raised to cover anomaly, SPR closed on this basis	N
623	Corrected, to be closed by verification in different IST	N
624	Corrected, awaiting closure verification.	N
625	Implemented, verified – to be closed	N

4.4.4 Procedure changes

See PVS sheets in section 8 of the “as-run” procedures and summarised in 4.4.1.

4.5 Deviations from Test Requirements

Specification	*Test Procedure*	*Agreed at TRR*
Baseline is that the CCU B sensors are connected to the CRYOSCOE to monitor the test.	CCU A sensors were connected to CRYOSCOE as required by Cryo Engineers (He2 filling/contamination problems)	Not Discussed

4.6 Test Execution Summary

The HIFI Commissioning test was successfully performed with the exception of the peak-up test nor any of the PVSs raised directly affected the test objectives. A brief timeline summary of the main events is given in section 3.7.

4.7 Summary conclusion

From an S/C IST viewpoint the HIFI IST Commissioning test in He2 has been successfully completed. One minor deviation from the IST specification has been identified, namely CCU A was connected to the Cryoscoe and not CCU-B as required, due to the need for engineering to constantly monitor the cryostat (NCR-4375).

The HIFI specific results of the SPT FP Performance test are presented in RD-6. The peak-up test was unsuccessful (NCR-4388 refers) and needs to be repeated at sometime in the future.

All SPRs raised during the test have been or are in the process of being closed.

4.8 Open issues

Those NCRs still open that were raised during the test:

NCR-4385 will remain open for all ambient ground testing of HIFI (LOU life limit).

NCR-4175 will be corrected for TBTV and requires a HIFI MIB and corresponding HPSDB update.

NCR-4181 is still under ongoing investigation, however workarounds are in place to minimise the impacts on future test execution.

NCR-4388, although not a major NCR, has resulted in an unsuccessful Peak-up command test. A correction and successful execution of HIFI Peak-Up test still pending completion of investigation and agreement on way forward.

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 1 (S/C Power ON, Session aborted due to HPSDB problem NCR4387):

2008_07_28_04_24_hercdmu_hpws22_REALTIME_HIFISFTCO

Session 2 (HIFI Commissioning (+SFT)):

2008_07_28_10_44_hercdmu_hpws22_REALTIME_HifiSftC2

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.

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 Extract 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	28/7/2008	
Operator	B. Chen/ S. Ilsen/ S. Elsley	
QA	B. Hogg/ D. Lamonby/ R. Goossens	
EGSE	Luigi Luck/ E. Hanka / ?	
Test Case	HIFI SFT & COMMISSONING at He2	
OBSW	CDMS 3.4.0.9, ACMS 3.8	
HPSDB	H-P-2-ASP-LI-1441 issue 15	
HPCCS Release	HPCCS_2.0-1317	
Test Environment / Version	TP_0188_iss1_TP0219_iss1_4_HIFI_SFT_He2_NCR_4181_END_001 TP_0188_iss1_TP0219_iss1_4_HIFI_SFT_He2_NCR_4181_END_002	
Session ID	2008_07_28_04_24_hercdmu_hpws22_REALTIME_HIFISFTCO 2008_07_28_10_44_hercdmu_hpws22_REALTIME_HifiSftC2	
Purpose of test	Debugging	
	NCR Investigation	
	Calibration/Maintenance	
	Unit Integration Testing	
	Formal	X

Time UTC	Test Procedure / Step / Script / Command / Event / Anomaly	Remarks / Cause of anomaly / Corrective action	C/A type (T/P)	NCR ref. (P)
	Loss of Logbook due to crash of hpws24 recovery at 10:44			
04:24	Start up the session			

05:00	Perform TP0219 HIFI SFT in He2	PVS to patch HIFI laser upperlimits to 31deg		PVS1-TP0219
	Perform TP0188 section 7.2.1 HIFI Commissoning Initialisation	PVS to perform section 7.2.1 of TP0188 instead of section 7.2.1 of TP0219		PVS2-TP0219
	TP0188 Prior to start of 7.2.1	PVS raised but not applicable		PVS1-TP0188
05:10	TP0188 step 2 calls TP0134 to switch on SC	PVS to subsittute steps 1 to 45 of iss4 TP0134 with iss5 draft of TP0134.		PVS1 -TP0134
	OOL reported	Transponder OOL values Database issues NCR to be raised.		
06:46	SC Switch ON Completed using TP0134			
06:46	Continue TP0188 at step 3 of section 7.2.1	PVS raised to perform section 7.1 prior section 7.4		PVS3 -TP0188
07:20	Step 3 of TP-0188 calls TP-0237 INSTR COMM SC Config Perform TP-0237 section 7.1	Procedure not inline with script prompts. PVS. step3 of section 7.1		PVS1 -TP0237
07::22	Perform section 7.4 of TP-0237	PVS redline changes to procedure		PVS2 -TP0237
08:15	Step103 of TP-0237 OOL for RWL1 motor current	Wheels just started. NEED TO CHECK LOG and RAISE SPR.	**(Normal)**	PVS reqd for procedure
08:18	Step104 of TP-0237 script reports TM failure but TM OK	PVS to perform OP NOTE 35 NEED TO CHECK LOG and RAISE SPR.		PVS3 -TP0237 SPR??
08:53	Step116 of TP-0237 script hung when switching to RF.	Terminated script and sent Cmds Manually.NEED TO CHECK LOG and RAISE SPR.		PVS2-TP0237 SPR??
08:53	Step117 of TP-0237	Missing Step in Procedure to verify TM by RF PVS		PVS2-TP0237
	Step 121 IST STATUS fail due to script error	Z010999MCVT153_IST_STATUS		SPR623
10:30	New database loaded on CCS need to stop session and start a new tag	TP_0188_iss1_TP0219_iss1_4_HIFI_SFT_He2_NCR_4181_END_002		
10:44	New session started	2008_07_28_10_44_hercdmu_hpws22_REALTIME_HIFISFTCO2		
11:38	Gyro reconf due to alignment of Satellite	Movement of SC caused ACMS & Gyro		PVS4-TP0237

		Reconfiguration		SPR622 NCR4385
12:00	Perform OP NOTE 15 due to starting a new session while S/C is Powered up.	**Database issue speak to Martijn Theunissen & Ian Luck about this.**		PVS5-TP0237 NCR4387
12:03	HIFI Commissoning Initialisation complete TP-0237 rtn to TP0188 step3			
12:04	Connect to IEGSE	Connection OK		
12:15	Perform Sect 7.2.5 of TP0219 HIFI SFT Red Switch ON			PVS2-TP0219
	Skip steps 2 to 6 of TP0219	Steps already performed in TP0188		PVS3-TP0219
13:15	Pre-check of PACS magnetic test bed completed.			
13:33	Perform a disconnect to HIFI IEGSE, Reconnect to HIFI IEGSE.	HIFI performed an IEGSE dissconnect without informing CCS, HIFI to had to reconfigure on IEGSE Hifi had a merged MIB which required to be reconfigured prior use, hence they needed to be in standalone. Hifi to provide information to S. Hamer for raising an NCR on the Merged MIB issue.		PVS4-TP0219 NCR4389
14:40	Out of Limit received in script for HM222191	Value received: -3.84411299306		NCR4378 raised
15:39	Disconnect and reconnect after IEGSE reconfiguration to nominal and resend test connect to verify link			
16:06	Power ON/OFF HIFI Primary for SFT2			
16:39	Readback completed,			
16:41	HIFI is ON in Stby 1 mode			
16:44	Step 11, Out of Limit received in script for HM222191	Value received: -7.72377201495 NCR4378 applies.		
16:50	Step 13, Out of Limit received in script for HM222191	Value received: -8.74275817502 NCR4378 applies.		
17:18	HIFI_OBS_runtime_error received Runtime error code in Hex is: 0948	This relates to existing NCR3951		
17:38	HIFI_OBS_runtime_error received Runtime error code in Hex is: 0948	This relates to existing NCR3951		

17:39	HIFI_OBS_runtime_error received Runtime error code in Hex is: 0948	This relates to existing NCR3951		
17:40	HIFI_OBS_runtime_error received Runtime error code in Hex is: 0948	This relates to existing NCR3951		
17:42	HIFI_OBS_runtime_error received Runtime error code in Hex is: 0948	This relates to existing NCR3951		
17:43	HIFI_OBS_runtime_error received Runtime error code in Hex is: 0948	This relates to existing NCR3951		
17:44	Step finished, continue with SFT_LO_nominal			
19:13	**SFT Nominal is finished, this completes SFT Testing**			
19:30	The last procedure step of TP-0219, does not put HIFI into the correct state. **NCR required**	**NCR Required**		NCR4380 raised
19:35	Switched HIFI primary from Stby1 to Stby 2.			
19:41	Started SPT_FP_Peformance			
	HIFIST_master_IST_nominal_warm.tcl contains invalid initial state.	**NCR Required**		NCR4381 raised
19:52 & 19:53 & 20:49 & 20:50 & 20:58 & 21:00 & 21:08 & 21:10	HIFI OBS runtime error (related to LOU setup)	error_code = LOTUNE_NOBRCKT. HIFI engineer indicates this is nominal with the current LOU temperature		Known NCR-3951
21:10:51 (2x)	HIFI_OBS_runtime_error received Runtime error code in Hex is: 0948	This relates to existing NCR3951		
21:10:54	HIFI_OBS_runtime_error received Runtime error code in Hex is: 0948	This relates to existing NCR3951		
21:15	Step finished, next step = 7.2.4.SPT Peak-up Test			
21:21:55	7.2.4.SPT Peak-up Test started			
21:24	HIFI_OBS_runtime_error received Runtime error code in Hex is: 0948	This relates to existing NCR3951		

21:24:15 & 21:26:31	H_peakup received			NCR 4388
21:27	Step 7.2.4.SPT Peak-up Test finished			
21:38	Step 7.2.5 Switch HIFI to stdby(= switch off HIFI Nominal)			
21:38	TM failure : HM005191 = 1 expected 0	= HF_DH1_MXBAND; procedure error		NCR 4382 raised
21:42	TM failure : HM096191 = 1 expected 0	= HF_APR_CS_C; procedure error		NCR 4382 raised
	TM failure : HM258194 = normal expected stdby	= HL_Mode_S; procedure error		NCR 4382 raised
21:44	Step 7.2.5 finished			
21:44	Step 7.2.5.HIFI power off			
21:49	HIFI switched off	Requested to set IEGSE to redundant mode for DTCP test tomorrow		
21:50	Switch to BD mode acc PVS#4 TP-0188			
21:52	Switch s/c control to UMB			
21:57	Switch off TTC chain			
22:02	Start of IST_END			
22:15	Switch off Cooling HIFI panels	B. Collaudin		
22:52	Separation straps still open	Looks like similar like problem encountered on 20/7 s/c comm debug (see SPR601/PVS#2 from that day); A. Di Capua – Has identified an error in the operators note and has update.		PVS#2 TP-134
23:34	S/c powered off			
23:39	IST END finished			

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 4.4.2.1 & 4.4.3.1 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).

Attachment to Section 6.6 : SPRs Raised During HIFI IST Commissioning in He2

SPR Formsheet

Nr.: 622	Date: 28-7-08	Author: D.LAMONBY	Classification:

Test: HIFI SFT/COMM ATME2	Session ID: 2008_07-28_10-44_heredmo_hpws22_REALTIME_HIFISTCO	Subsystem:

Title: ACS GYRO RECONFIGURATION DUE TO SATELLITE MOVEMENT

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

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

Time (UTC): 11:38 **Step no:** 120 (TP-0237)

Due to Movement of the Satellite, there was an ACS Gyro re-configuration. PVS # was raised -- see below.

(NCR 4385 raised)

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

PVS#4 was raised to set the gyros as healthy/operational. (TP-0237)

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: CLOSED WRT NCR-4385.

Date:	Version:	Func. Team Name:

Date: CLOSED SFT 30/7/08. **QA:** J. HALL (PA)

SPR Formsheet

Nr.: 623	Date: 28/07/08	Author: O.Martin	Classification:

Test:	Session ID:	Subsystem:

Title: Infinite Loop during IST_STATUS.

Type: (Script/Picture /Test structure):	Name: Z010935MCNT153_IST_STATUS	Version: 1.51

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

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

Increase TM failure should not stop an infinite loop sending TC occurs by checking CSE_ENV_Simulator.

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

correct as possible

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): ---

Date: 28/07/08	Participants:

Implemented: [x] **Code inspected:** [ ]

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

Date: 28/07/08	Name:

Close out (Functional team member & QA):

Verified during test case / ID: ---

Date:	Version:	Func. Team Name:

Date:	QA:

SPR Formsheet

Nr.: 624	Date: 28/07/08	Author: S. Hamer	Classification: MINOR.
Test: Instr. Comm.	Session ID:		Subsystem:

Title: AD Mode not configured in Instr. Commissioning Start up.

Type: (Script/Picture /Test structure):	Name:	Version:
	ZO1099SMCNTI30_ISTR_INSTR_COMMISSIONING	1.8

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

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

Nothing has been implemented for BD_AD mode Transition

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

implement with adequate TC/script.

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

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

Other:

Proposed rerun (Date / Test case): will not be rerun

Date: 28/07/08	Participants:

Implemented: [x] **Code inspected:** [x]

Confirmed by Test Conductor(s) / Experts to check-in: [x] 1.9

Date: 28/07/08	Name:

Close out (Functional team member & QA):

Verified during test case / ID: Code inspection. Will not be run again. Minor script correction only (NONCE)

Date: 30/09/08	Version: 1.13	Func. Team Name: WATER
Date:	QA:	

SPR Formsheet

Nr.:	Date:	Author:	Classification:
625	28/07/08	S. HAMER	MINOR

Test:	Session ID:	Subsystem:
HIFI ~~SIM~~ / Comm.	2008-07-28-10-44_herdmv_hpw22_REALTIME (HifiSFTC2)	HIFI

Title: Install master script to be used in commissioning to skip LO steps (no ambient Life Limit constraint)

Type: (Script/Picture /Test structure):	Name:	Version:
	HIFIST_master_IST_nominal_warm_V1202.tcl	—

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

Time (UTC): — Step no: —

Install script received from SRON

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): 28/07/08 HIFI TP-01888. Commissioning

Date: 28/07/08	Participants: S. HAMER

Implemented: [X] Code inspected: [X]

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

Date: 28/07/08	Name: S. HAMER

Close out (Functional team member & QA): Sfg Ilsm

Verified during test case / ID: 2008-07-28-10-44_herdmv_hpw22_REALTIME_HifiSFTC2

Date: 28/07/08	Version: 1.1	Func. Team Name: S. Ilsm
Date: 28-7-08	QA: D. Lamonby	

CLOSED SRD 30/9/08. G. HALL PA.

6.7 Minutes of Meetings

A copy of the minutes of meetings follow (pdf copy of this report only).

Attachment 1 to Section 6.7:

MoM: HP-2-ASED-MN-1587
TRR for HIFI-SFT He2 and Commissioning

Minutes of Meeting

Date:	25.07.08	**Herschel**	
Doc.-No.:	HP-2-ASED-MN-1587		
Meeting place:	ESTEC NL	Chairman:	D.Hendry
Date/Time:	25.07.08/13-00	Secretary	D.Hendry
Agenda dated:		Close of Meeting:	25.07.08/15-30hrs

Subject: **TRR for HIFI SFT He2 and Commissioning**

Participants:	P.Dieleman SRON P.Roelfsema SRON A.de Jonge SRON pt A.Gatti ESA C.Scharmberg, ESA J.Rautakoski ESA S. Hamer, ASED	Additional Distribution:	ESA TAS-F

Page: 1 of Page(s)

☐ Brief-Minutes (except following sheets) ☐ Summary of Results of Sheets 2 till

Summary :

Testing can start as scheduled pending completion of open work as listed, including upload of the new OBSW and HPSDB.
Final release will be given by the Test director and HIFI after HW inspection.
NC-4371 needs to be resolved (NRB planned) or can be blocking for the test.

Reference	Results	Remarks
	AGENDA 0. Introduction 1. As Built / As Designed Configuration Status / S/W Status 2. Inspection / Integration Status 3. NCR / RFW Status 4. Open Work / Open Actions 5. Test Procedures / Test Reports 6. Safety Hazards and Hazardous Operations 7. Test Equipment / Facility and Calibration Status 8. Cleanliness 9. Test Personnel and Responsibilities 10. Problem Areas 11. AOB 12. Conclusion	

Reference	Results	Remarks
	0. Introduction This TRR covers the HIFI SFT in He2 and the Commissioning The related procedures are: SFT :-HP-2-ASED-TP-0219 iss 1.4 Commissioning :-HP-2-ASED-TP-0188 iss 1 **1.As Built / As Designed Configuration Status / S/W Status** **1.1 HW Status** HIFI is fully integrated in the flight configuration, with the following exceptions:- LOU heatable baffle is integrated (old design) will not be operational during this test. Cooling for SVM panel is included in the procedure SC is vertical on MPT **1.2 SW Status :** HPSDB: HP-ASP-LI-1441_15 With manual change on HPSDB performed by TASF HIFI MIB: 11.8 as confirmed by HIFI (unchanged from last test) For this test the HIFI MIB 11.8 will be loaded on the IEGSE Merged MIB will not be used	OW

Reference	Results	Remarks
	<u>OBSW:</u> Presently the OBSW is as follows:- Version 5.4 in ICU Partition 1 ; main and redundant Version 5.2 in ICU partition 2 ; main and redundant New OBSW version 5.8 will be uploaded in 1st partition nom and red Version 5.4 will be moved to 2nd partition nom and red <u>CDMS:</u> Version 3.4.0.9 TCL Scripts: New scripts delivered yesterday Ref v 1.20 SRON have provide a formal release note. This review authorizes that the New scripts will be uploaded on the CCS To be put on ASED configuration control data base IEGSE needs to be updated with CUS 14.35 and loaded on Monday morning prior to the test. CCS handler update for NCR 4181 tbc SRON advise with CUS 15.29 an error message will appear when OBSW 5.8 is used. HIFI will be switched on in standby 1 for DTCP WCS and RMS prior to CUS update. ACMS Version 3.8	OW OW OW OW

Reference	Results	Remarks
	In case of problems with OBSW 5.8 then the testing can continue with 5.4 with expected anomalies. **2. Inspection / Integration Status** **2.1 Inspection Status** H/W inspection will be performed together with SRON prior to the start of the test **2.2 Integration Status** <u>Red/Green tag status.</u> To be verified during H/W inspection prior to start of the test Goggle slider is removed <u>Cryo conditions:</u> He2 See Section 5.2 TP-0188 L0 (T222)=2K +- 0.5K L1 (T234)=4-8K OBA(T254)=10-15K Cryo SCOE temperature will be available at start of the test Cryo cover cooling is not needed	OW

Reference	Results	Remarks
	Shield cooling not need Mass flow through the OB and shields in parallel to the main pumping has been clarified by ASED Cryo specialist. Understood to be nominal configuration After filling is completed pumping is stopped on filling port line but continued on vent line This results in increase in mass flow and drift in OBA temperature. Cryo conditions will be reviewed prior to start of testing and on a daily basis, the initial CP should include time estimation for end of top up. **2.3 Parallel operations being performed** Possible PACS Harness investigation, this will not impact HIFI PACS H-Field setup and functional test. ESA will advise the Test director and HIFI when the test will be performed if it is performed during the HIFI testing. HIFI do not have any objection to this test but ask for notification to monitor any effect on HIFI Cryo top up will be on going and may result in OBA temperature drift. **2.4 Constraints:** • Thermal test environment as 2.2 above CCU A is operational but does not acquire cryo data , this is taken from the Cryo SCOE	OW NOTE

Reference	Results	Remarks
	3. NCR / RFW Status: NCR list as already discussed during the last HIFI ASL #8 SCI-PT-52586 02.07.08 NCRs relevant to the Test NC 4278 Temp limits WU temperatures need to be monitored during the test HPSDB v 15 does not include the new limits therefore warnings will not be activated therefore monitoring will be implemented. NC-4181 Scripts halting waiting for updated parameter May be seen and could affect on test time. Actions are on going to improve the situation and Terma will be onsite to support any investigations in real time. NC-4187 Cmd type 1.8 completion Check for Closure with this test NC-4188 TC HC 148289 rejected twice May be seen during test, Terma to monitor during test in real time. NC-4250 OBS run time errors Should be solved by OBSW 5.8 but OBCP won't be intentionally triggered during this test. NC-4175 Unexpected behaviour of CCS May be seen during this test, this is a HIFI MIB problem	OW

Reference	Results	Remarks
	NC-4110 Command completion failure NCR should be closed NC-4101 OOL on HRS and HRV Check implementation of new current limits in HPSDB, monitor and close during this test, new current limits were included in 11.8 NC-4090 Wrong order in LCU/LSU SFT script Check for Closure with this test NC-4100 Laser temperature Monitor temperatures during test Patch (for the 2 lasers) limit increase to 31 degrees C NC-3951 Run time errors Should be fixed by OBSW 5.8 and will be verified and closed during this test. NC-3698 Cmd completion May be seen during this test, Terma to investigate on line during testing. NC-4273 No Ack for table upload May be due to config parameter on CCS, change parameter to 10 secs Mis config parameter has now been changed to 10 sec monitor during test. NC-4371 Check PM Cmd completion failure. Could have major impact on testing , NRB to be held prior to test start. RFD/W	OW

Reference	Results	Remarks
	none identified	
	4. Open Work / Open Actions See open Work list in annex	
	5. Test Procedures / Test Reports	
	SC will be connection umbilical not RF therefore	
	HP-2-ASED-TP-0219 Issue 1.4 SC and Instrument will be switched on in commissioning configuration and left on and Start with redundant PVS to be raised.	OW
	IEGSE configuration will need to be changed between redundant and nominal sides, PVS to be raised.	OW
	HIFI ask that a LO heater test is included in the SFT PVS to be raised.	OW
	HIFI request down link data rate of 1.5mbs is now included in the TP	
	OBCP FDIR will be loaded for this test	
	6. Safety Hazards and Hazardous operations See TP 219 sec 5.3.4.safety issues related to test and TP-188 sec 5.3.4.	
	7. Test Equipment / Facility and Calibration Status	
	See procedures.	

Reference	Results	Remarks

8. Cleanliness

CL 100000 ETS facility see FRR Ref ETS/MOM/MECH/2253

9. Test Personnel and Responsibilities

Responsibility	Name	Company	Contact Number
Test Director	B.Collaudin	TASF	
Test Conductor	S.Idler	ASED	
HIFI engineering	See E-mail	SRON	
HIFI	See Email	SRON	
QA	FAIT Shift plan	TASF	
CCS	S.Hamer/ S.Ilsen	ASED	
PA	D.Hendry	ASED	
Instrument coordinator	K,Goodey	ESA	
ESA Engineering	C.Scharmberg	ESA	
ESA PA	J.Huesler	ESA	

HIF will notify their engineering support personnel and provide contact telephone numbers eg mobiles.

10. Problem Areas

None

Reference	Results	Remarks
	11. AOB 11.1 Planning: Test is scheduled for Monday 28.07.08 starting 06-00 power on SVM , HIFI will be switched on at 11-00 hrs, 2 days and 3 shifts H/W Inspection with HIFI at 10-00 **12. Conclusion** Testing can start as scheduled pending completion of open work as listed, including upload of the new OBSW and HPSDB. Final release will be given by the Test director and HIFI after HW inspection. NC-4371 needs to be resolved (NRB planned) or can be blocking for the test.	

Meeting: HP-2-ASED-MN- 1587

Action Item List

Herschel

Title:
Date: 25.07.08

No.:	Description:	Due Date	Originator Comp./Pers.	Actionee Comp./Pers.	Source	Completion

Meeting: HP-2-ASED-MN-1587

Open Work List

Herschel

Title: Date: 25.07.08

Item	Description	Actionee	Status	Comment
1.	HIFI MIB 11.8 will be loaded on the IEGSE	HIFI		
2	OBSW version 5.8 uploaded in 1st partition nom and red, Version 5.4 moved to 2nd partition nom and red	ASED (SH)		
3	New scripts will be uploaded on the CCS	ASED (SH)		
4	CUS 14.35 and loaded on Monday morning prior to the test	HIFI		
5	CCS handler update for NCR 4181 tbc	ASED (SH)		
6	H/W inspection will be performed together with SRON prior to the start of the test	All		
7	Cryo conditions will be reviewed prior to start of testing and on a daily basis, the initial CP should include time estimation for end of top up.	ASED (ML)		
8	WU temperatures need to be monitored during the test	ASED (CCS Op)		
9	Patch (for the 2 lasers) limit increase to 31 degrees C	HIFI		
10	SC and Instrument will be switched on in commissioning configuration and left on and Start with redundant PVS to be raised.	ASED (SH)		
11	IEGSE configuration will need to be changed between redundant and nominal sides, PVS to be raised.	HIFI		
12	HIFI ask that a LO heater test is included in the SFT PVS to be raised	ASED (SH)		

Test Conductor Approved	PA	TASF	Instrument

Note: To be completed and Signed off prior to start of the Test

Attachment 2 to Section 6.7:

MoM: H-P-TAS-MN-10682
PTR for HIFI-SFT He2 and Commissioning

ThalesAlenia Space	PTR – HIFI	REF.: **H-P-TAS-MN-10682**	
		HERSCHEL FM	
		DATE : 29 July 2008	PAGE : 1 of 8
MINUTES OF MEETING		*PLACE : ESTEC*	

PURPOSE
PTR for HIFI SFT He II & Commissioning

CLASSIFICATION :

ATTENDEES	FIRM	SIGNATURE	ATTENDEES	FIRM	SIGNATURE
D.Hendry	ASED		Sean Mooney	TASF	
B Collaudin	TASF		C Scharmberg	ESA	
S Ilsen	TASF		K Goodey (PT)	ESA	
S.Idler	ASED		D Teyssier (PT)	SRON/ESAC	
S Hamer	ASED		P.Dieleman	SRON	
J Huesler	ESA		A.Gatti	ESA	
WRITTEN BY :	B.Collaudin		*Chair:*		

CONCLUSION :

DISTRIBUTION : *ATTENDEES*	*FOR FURTHER ACTION :*
	FOR INFORMATION : ASED, TAS-F, ESA:

APPROVED BY				
NAME				
SIGNATURE				

ThalesAlenia Space	PTR for HIFI SFT He II & Commissioning	REF.: **H-P-TAS-MN-10682**	
		HERSCHEL FM	
		DATE : 29 July 2008	PAGE : 1 of 9
MINUTES OF MEETING		*PLACE : ESTEC*	

PURPOSE CLASSIFICATION :

PTR for HIFI SFT He II & Commissioning

ATTENDEES	FIRM	SIGNATURE	ATTENDEES	FIRM	SIGNATURE
D.Hendry	ASED		Sean Mooney	TASF	
B Collaudin	TASF		C Scharmberg	ESA	
S Ilsen	TASF		K Goodey	ESA	
S.Idler	ASED		D Teyssier	SRON/ESAC	
S Hamer	ASED		P.Dieleman	SRON	
J Huesler	ESA		A.Gatti	ESA	
WRITTEN BY :	B.Collaudin		*Chair:*		

CONCLUSION :

The PTR agrees that the HIFI SFT & Commissioning tests have been successfully completed, except for peak-up test. Problem to be understood and corrected for SPIRE peak up on 30/7

DISTRIBUTION : *ATTENDEES*	*FOR FURTHER ACTION :*
	FOR INFORMATION : ASED, TAS-F, ESA:

APPROVED BY				
NAME				
SIGNATURE				

Minutes	Actions
Agenda: • **Introduction** • **Test Item Identification** • **Review of Test Data Completeness** • **Review of Completeness of Test Documentation** • **NCR status** • **Open Work / Open Actions** • **Conclusion**	
Introduction The purpose of this Post test review shall be to present a preliminary evaluation regarding the HIFI He II SFT + Commissioning at Estec on 28 July 2008. Applicable minutes of meeting: • Test Readiness review: HP-2-ASED-MN-1587	
Test Item Identification: See: • Test Readiness review: HP-2-ASED-MN-1587 After TRR, the HIFI commissioning a mail from HIFI asked for limitation of usage of the LOU running at room temperature. (NC to be raised). HIFI to provide the technical input for the NCR For this purpose, the HIFI commissioning sequence was modified to reduce the usage of each LOU channel to <5mn. This is traced by PVS 5 on Commissioning Procedure HP-2-ASED-TP-0188_1 PACS H-Field test was performed during the satellite switch on (not during HIFI tests). Cryostat was in He II pumping State:: Level=62%, L0 at 1.9K, L1 at 2 to 3K, L2 at 6K.	**AI 1 HIFI**
Review of Test Data Completeness: **Test Session Id:** 2008_07_28_04-24-hercdmu-hpws22_REALTIME_HIFI_SFT_CO 2008_07_28_10-44-hercdmu-hpws22_REALTIME_HIFI_SFT_C2 **Test Environment:**	

Minutes	Actions
HP_2_ASED_TP_0188_iss1_TP0219_ISS1_4_HIFI_SFT_He2_NCR_4181_END_0001 HP_2_ASED_TP_0188_iss1_TP0219_ISS1_4_HIFI_SFT_He2_NCR_4181_END_0002 HIFI data : Data is on IEGSE. Internet connection was broken (after reshuffling internet on IEGSE rooms). Data to be sent to SRON (normal work HIFI). On CCS: All data stored under above session Merged MIB was not used by HIFI (NCR to be raised) CCU/Cryoscoe data to be sent to HIFI separately. LCL currents to be sent to HIFI	**AI 2 AIT**

Review of Completeness of Test Documentation

The As-Run Procedure:
1: **HP-2-ASED-TP-0188_1.4: Instrument Commissioning HIFI FM Performance & Peak-up test**
= Leading procedure
2: **HP-2-ASED-TP-0134_4_relined: Herschel IST Leading Procedure**
= S/C Switch on SVM for commissioning:
3: **HP-2-ASED-TP-0237_1: Herschel Satellite IST - Instruments Commissioning - S/C Configuration**
=SVM configuration for commissioning
4: **HP-2-ASED-TP-0219_1.4: HIFI SFT in He I or He II**
=SFT

After satellite switch on, test sequence was SFT He II then Commissioning.

The following **Procedure Variation Sheets** have been raised (attached to the as run procedure)

HP-2-ASED-TP-0219_1.4: HIFI SFT in He I or He II

- PVS 1/0219: Patch for Laser temperature in database monitoring high hard limit (30→31°C for red limit)
- PVS 2/0219 : Use of commissioning procedure SVM Switch on for both SFT + commissioning
- PVS 3/0219: skip Sw on redundant as already performed in TP 188
- PVS 4/0219: Reconnect IEGSE manually (merged mib did not work)
- PVS 5/0219 table load failed (NCR 4181)

HP-2-ASED-TP-0188_1.4: Instrument Commissioning HIFI FM Performance & Peak-up test

- PVS 1/0188: Skip power on for commissioning (see above)
- PVS 2/0188 / NCR 4181 investigation (alternative for subscribe parameters):
- PVS 3/0188: Change of sequence order (TP 219 section 7.1 before 7.4
- PVS 4/0188 Change BD to AD mode for commissioning
- PVS 5/0188: Change of master script & redline procedure 188 to reduce LOU usage (NCR to be raised)

HP-2-ASED-TP-0134_4 redlined: Herschel IST Leading Procedure

Minutes	Actions
• PVS 1/0134: refinement for switch on sequence related to issue 5 of document PR0134, (not published yet) • PVS 2/0134: Separation strap not closed during ACMS off. (script error) SPR to be raised. **HP-2-ASED-TP-0237_1: Herschel Satellite IST - Instruments Commissioning - S/C Configuration** • PVS 1/0237: Procedure not in line with scripts (typo) • PVS 2/0237: red line changes (typos) • PVS 3/0237: TM failure (known NCR 4181) • PVS 4/0237: Move of S/C for top up →Gyro reconfiguration (→SPR 622 was raised →NCR to be raised) • PVS 5/0237: Stop & restart session while S/C is ON The as-run for SFT & commissioning procedures will be scanned and put on the ftp server. SVM Cooler switch off was missing from the AIT procedures SFT for commissioning procedures. To be added on all next procedures with HIFI Cooler operation procedure (HP-2-ASED-PR-0125) to be left near the cooler	**AI3 AIT**
Preliminary evaluation of the test data from HIFI: **HIFI SFT** was successful, pending detailed analysis. Mixers at 2.2K instead of 5. LO heater has been added wrt previous tests. (was not in previous SFT, only in SFT with dummy) to be analysed. No NCR wrt SFT were generated. **HIFI Commissioning** Was reduced wrt original plan to use each channel <5mn (total test 2h compared to 6h). HIFI performances have been measured and are similar to ILT (to be confirmed by detailed analysis) All objectives have been met. For peak-up: the rotation were generated by HIFI However, the Satellite response was not as expected. (command rejected) Further analysis needed. NCR to be raised. **Satellite commissioning:** See above remark on peak up. The gyro were not in the correct configuration due to the move of the satellite The parallel operation of satellite in commissioning state & HIFI SFT/Commissioning was OK. The test report will be available in 1 month.	
NCR status: **NCRs highlighted at the TRR** (see HP-2-ASED-MN-1587)	

Minutes	Actions
NC-3698 Cmd completion May be seen during this test, Terma to investigate on line during testing. Has not been observed here. May occur again – remains Open. **NC-3951** (similar 4343) During HIFI WARM SFT, 4 runtime error (5,4) events reported Should be fixed by OBSW 5.8 and will be verified and closed during this test. Has been observed (error message 948) OBSW 5.8 was not modified as expected. Will be implemented in the next release of HIFI software. – remains Open. **NC-4090** Wrong order in LCU/LSU SFT script Check for Closure with this test Has been corrected & not observed.. NCR Can be closed **NC-4100** Laser temperature Monitor temperatures during test Patch (for the 2 lasers) limit increase to 31 degrees C Patch has been implemented (to be re-patched at each test, except TV) The change of the cooler setting to 15°C avoid the red limit to be reached. Procedure HP-2-ASED-PR-0125 (cooler operation for HIFI) has been updated NCR Can be closed **NC-4101** HIFI HPSDB/MIB errors reported during Instrument FDIR OBCP Check implementation of new current limits in HPSDB, monitor and close during this test, new current limits were included in 11.8. Has been corrected & not observed again. NCR Can be closed **NC-4110** Command completion failure Has been corrected, and not observed again NCR Can be closed **NC-4175** HIFI HPSDB/MIB errors reported during Instrument FDIR OBCP Has been observed. HIFI MIB to be corrected – remains Open.	**AI 4**

Minutes	Actions
NC-4181 Scripts halting waiting for updated parameter Has been seen 2 times (See PVS's) Terma was onsite to support any investigations in real time. – remains Open. N**C-4187** Cmd type 1.8 completion (during diplexer tuning) Check for Closure with this test → has not been observed here. HIFI to continue investigation – remains Open. **NC-4188** TC HC 148289 rejected twice May be seen during test, Terma to monitor during test in real time. Has not been seen here. HIFI to perform analysis, and update the scripts (timing) to avoid these errors. – remains Open. **NC-4250** OBS run time errors during HIFI reset OBCP triggering Should be solved by OBSW 5.8 but OBCP won't be intentionally triggered during this test. This error has not been observed. OBCP not triggered. Remain Open **NC-4273** HIFI SFT He1 No acknowledgement for LCU table upload received May be due to config parameter on CCS, change parameter to 10 secs Mis config parameter has now been changed to 10 sec monitor during test. Has not been observed here. May occur again –remains Open. **NC 4278** WU Temp monitoring limits Database was not updated with new monitoring limits WU temperatures need to be monitored during the test Done Cooler temperature decreased to 15° to keep laser below 30°C Can be closed, as SVM Cooler procedure HP-2-ASED-PR-0125 was updated **NC4343** (similar 3951) HIFI Runtime errors related to LOU setup The 2nd part of the text should be reworded & related to NC 3951 " Error Code 0x0948 (meaning ?S_LOW?). According to HIFI this is again related to the temperature of the LOU,the LOU settings sometimes raise these alarms since the current test setup (warm LOU), the values set are not achieved. The runtime error should however be an event 5.1, not a 5.4" –remains Open. **NC-4371** Check PM Cmd completion failure. (during DTCP worst case scenario debug) Was due to aggregation on the TC/DFE Was not impact for this test (aggregation was not used) . Correct operation will be	**AI 5**

Minutes	Actions
used for formal run.. remains Open., but may be closed after this DTCP worst case formal run test.	
RFD/W none identified	
NCRs raised during this test: **NC4378:** Failed parameter check for SFT/LCU redundant (SFT) Test FM HIFI SFT in He2, procedure No; HP-2-ASED-TP-0219 Iss:1.4 Session i.d: 2008_07_28_10_44_hercdmu_hpws22_REALTIME_HIFISTCO2 In script HIFIST_master_SFT_redundant_warm.tcl version 1.3 Part:SFT_FCU_redundant On 3 occasions, failed parameter value for parameter: HM222191 Value received was: -3.84411299306 Problem is known by HIFI, will be solved for next release of HIFI Script/procedure.. The limits are incorrect, but the value is correct. **NC4380** HIFI not in Stby1 mode after SFT Error in procedure/script. To be corrected by HIFI. **NC4381:** Invalid initial state from HIFI master scripts In the following scripts: - HIFIST_master_SFT_nominal_warm.tcl - HIFIST_master_SFT_redundant_warm.tcl - HIFIST_master_IST_nominal_warm.tcl In these three scripts, the initial state is stated to be primary mode, but it should be standby 2 mode. Also, there is a message in the last script (HIFIST_master_IST_nominal_warm.tcl) referring to the setup without attenuators when in-fact it should be setup with attenuators. Scripts/Procedure to be corrected. (HIFI) **NC 4382:** Invalid switch to STDB 1 During extecution of switching from stby 2 to stbd 1 the following errors were reported: TM failure HM005191 (HF_DH1_MXBAND)= 1 expected 0 TM failure HM096191 (HF_APR_CS)= 1 expected 0 TM failure HM258194 (HL_MODE_S)= normal expected stdby **NC xxxx**: Merged MIB did not work. HIFI MIB was used instead. Satellite data not **NC xxxx**: Gyro reconfiguration. Satellite should not be moved when satellite is ON/ Coordination needed between teams. **NC xxxx:** Limitation of LOU Room Temperature operation (lifetime issue) **NC xxxx**: Peak up test failed. Investigation to be performed by ACMS system engineers and understood before SPIRE peak up on 30/7	

Minutes	Actions
NC xxxx: HPSDB errors – Synthetic parameter file name were in lower case and were not recognised by HPSDB. Has been corrected manually. Origin Needs to be traced & corrected in next release.	
Open Work / Open Actions • most urgent is peak up to be fixed for SPIRE test. Peak up Retest needed, but to be elaborated in an existing test slot (5h switch on for 5mn test !!!) • update of procedure scripts following above listed NCR's. • Raise NCR's	
AOB: • Thermal test (6h). Was proposed to be run during night shift. Not performed as TRR not held, merged MIB not running. • Current plan is to have it at the end of SPIRE test (night shift tomorrow). Rejected: Merged MIB still not available, HIFI needs to be ON 5h before to have hot black body at operation temperature. Proposition is to perform when He II conditions are stable together with the rest of HIFI SPT as originally planned.	
Conclusion The PTR agrees that the HIFI SFT & Commissioning tests have been successfully completed, pending detailed analysis, except for peak-up test. Problem to be understood and corrected for SPIRE peak up on 30/7	

No.:	Description:	Due Date	Originator Comp./Pers.	Actionee Comp./Pers.	Source	Completion
1	Limitation of usage of the LOU running at room temperature HIFI to provide the technical input for the NCR	30/7		HIFI		
2	CCU/Cryoscoe data to be sent to HIFI separately. LCL currents to be sent to HIFI	1/8		AIT		
3	SVM Cooler switch off was missing from the AIT procedures SFT for commissioning procedures. To be added on all next procedures with HIFI Cooler operation procedure (HP-2-ASED-PR-0125) to be left near the cooler	Next HIFI test (SPT)		AIT		
4	NC-4175 HIFI HPSDB/MIB errors reported during Instrument FDIR OBCP HIFI MIB to be corrected	Next MIB delivery		HIFI		
5	NC-4188 TC HC 148289 rejected twice HIFI to perform analysis, and update the scripts (timing) to avoid these errors.	Next HIFI test (SPT)		HIFI		
6	NC4381: Invalid initial state from HIFI master scripts Scripts/Procedure to be corrected. (HIFI)	Next HIFI test (SPT)		HIFI		

6.8 As-Run Procedures

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

Attachment 1 to Section 6.8:

As-Run Procedure HP-2-ASED-TP-0134 (IST Lead Procedure) for HIFI FM IST Commissioning

As Run

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

HIFI SFT HE2.

CI-No: 1ST: 2008_07_28_04_24_hercdmu_hpws22_REALTIME_HIFISFTC0
2ND: 2008_07_28_10_44_hercdmu_hpws22_REALTIME_HIFISTC02

1ST: TP_0188_iss1_TP0219_iss1_4_HIFI_SFT_He2_NCR_4181_END_001
2ND: TP_0188_iss1_TP0219_iss1_4_HIFI_SFT_He2_NCR_4181_END_002

Prepared by:	Functional Team	Date:
Checked by:	C. Much	25/4/2008
Product Assurance:	J. Hall	25/4/2008.
Configuration Control:	W. Wietbrock	
TASF Engineering	G. Beaufils p.o.	25 APR 08
TASF Test Director	S. Mooney	25/4/2008.
Project Management:	Dr. W. Fricke ~~AGREED AS POF MANDATORY SIGNATURE FOR START OF TEST~~	29/04/08
Project Management	Denis Montet	28/4/08

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	

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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: 3.4
- ACMS OBSW: 3.8
- STR PROM SW: ?
- STR EEPROM SW: ?
- PACS DPU SW: 9.0
- PACS SPU SW: 13.8
- PACS DMC SW: 6.023
- HIFI ICU SW: 5.8.0
- SPIRE DPU SW: 8.2.4

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 SK01BP09 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:		

4.3.2 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 ✓	✓

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				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 ✓	

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SKINS COMPARED WITH THE AS RUN OF DTCP PERFORMED ON THE PREVIOUS DAY.

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	M. THEUNISSEN	
Test Director	Y	S. IDLER	S. IDLER
Test Conductor	Y	S. HAMER	S. HAMER
EGSE Operator		B. CHEN	B. CHEN
SVM Support Engineer			
Cryo Support Engineer			
HIFI Instrument Support Engineer			
PACS Instrument Support Engineer			
Spire Instrument Support Engineer			
PA Responsible	Y	B. HOGG	B. HOGG
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

Floor-1	-2	-3	-4
21,	21,	20.9,	21.5
-1 52.7,	-2 53.0,	-3 51.5,	-4 51.7
-1 8.0,	-2 4.1,	-3 -0.4,	-4 0.4

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
5.8.12.3.6	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
5.8.3	**Satellite Commissioning**						
5.8.3.8	CCU (cryostat) commissioning	OFF	N	23			Required
5.8.4	**Instruments commissioning and performance verification**						
5.8.4.3	Test start (restart) configuration	OFF	N	23			Required
5.8.4.4							Required
5.8.4.5	SPIRE commissioning test	Spire	N	23 -> 90			Required
5.8.4.6	PACS commissioning test	PACS	N	23			Required
5.8.4.7	HIFI commissioning test	HIFI	N	0-23			Required
5.8.4.8	SPIRE and PACS parallel mode	SPIRE/PACS	N	23			Required
5.8.4.9	Test end or interruption	OFF	N				Required
5.8.7	**CDMS management**						
5.8.7.2.1	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
5.8.7.2.2	MTL management	PACS Prime STBY -> Burst -> X SPIRE STBY HIFI STBY	N	0-23		alternatively if MTL is compatible with instrument operations	Preferred
5.8.7.2.3	OBCP management	PACS Prime STBY -> Burst -> X SPIRE STBY HIFI STBY	N	0-23		alternatively if MTL is compatible with instrument operations	Preferred
5.8.7.2.4	SSMM management	PACS Prime STBY -> Burst -> X SPIRE STBY HIFI STBY	N	0-23		alternatively if MTL is compatible with instrument operations	Preferred
5.8.7.2.5	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
5.8.7.2.6	OBT management	PACS Prime STBY -> Burst -> X SPIRE STBY HIFI STBY	N	0-23		alternatively if MTL is compatible with instrument operations	Preferred
5.8.8	**DTCP worst case scenario**						
		PACS (Burst) SPIRE STBY HIFI Prime	N	0-23		*TBC*	Preferred
5.8.9	**REFERENCE Mission Scenario**						
5.8.9.2	Test start configuration		Y				Required
5.8.9.3	Test steps		Y				Required
5.8.9.4	HIFI OD	HIFI OD	Y	0-23			Required
5.8.9.5	PACS OD	PACS OD	Y	0-23			Required
5.8.9.6	SPIRE OD	SPIRE OD	Y	0-23			Required
5.8.9.7	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	

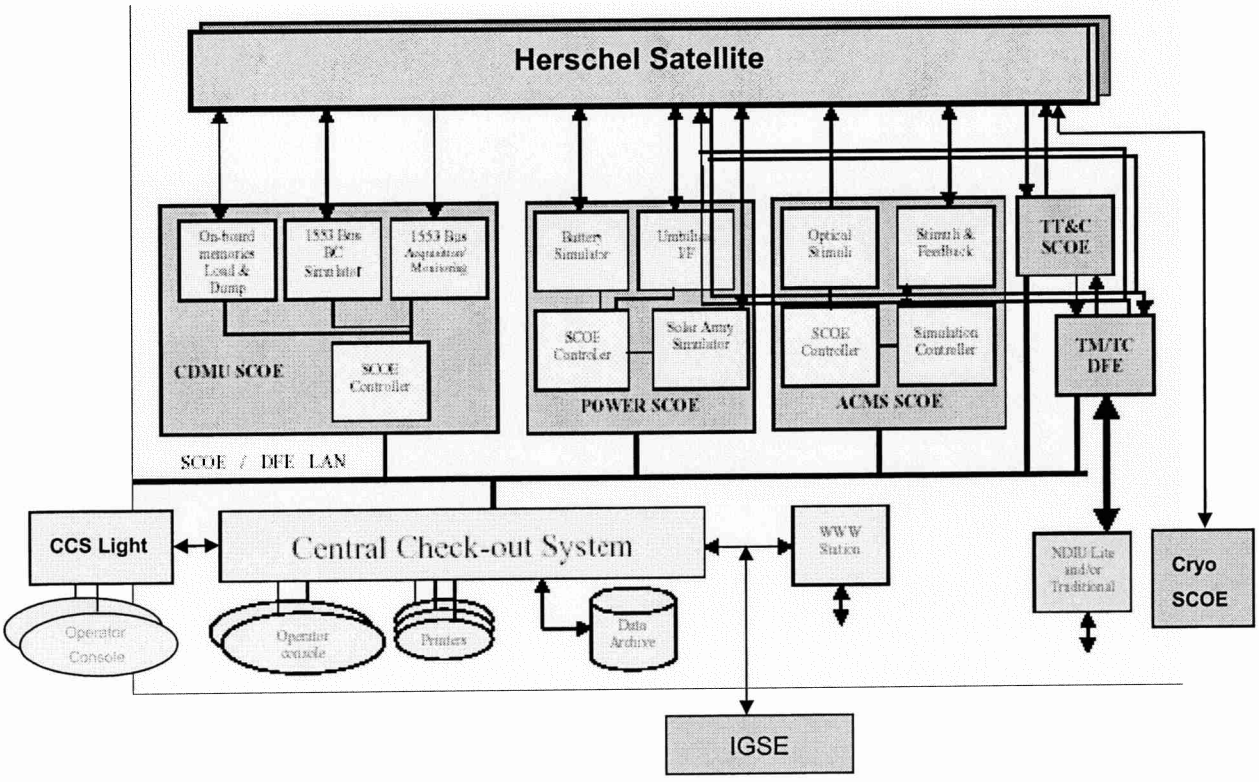
Qty.	Designation/Manufacturer	Provided by	Drawing/Ident. NR:	Calibr. Date
Set	Helium I lines (Y0612)	ASED	CI No. 142 310-09	
Set	Helium II Pumping lines (Y0602)	ASED	CI No. 142 310-09	
2	Scaffolding for He lines	ASED	CI No. 142 310-10	
10	450 l LHe Dewars type HDS 450 -EIPS	Linde		
1	Spiro pump DryTel 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.

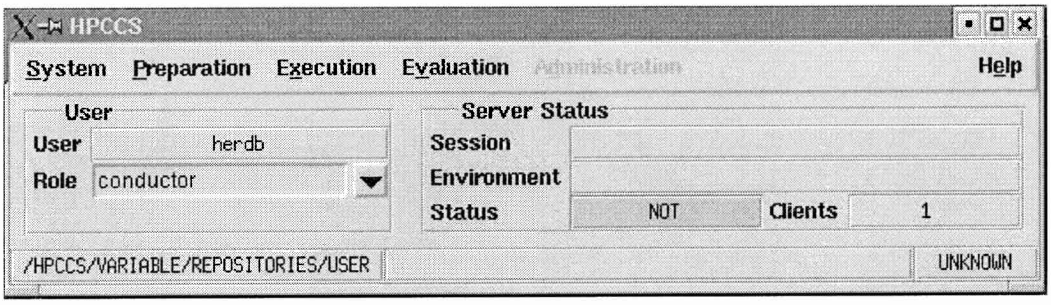
7 IST Test

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

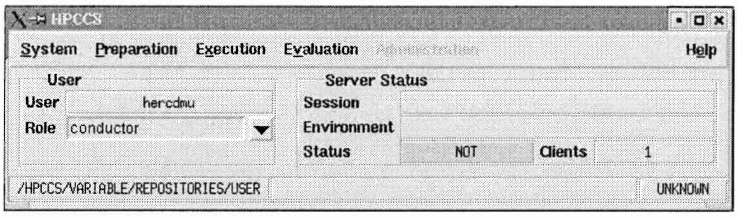
10. Logged as herdb, push **Apply → Apply**
11. Logged as herdb, confirm Tag Application Push Apply button
12. Logged as herdb, open a new **shell** window (xterm)
13. Logged as herdb, execute the command **update_tag**
14. Logged as herdb, insert the name of **TAG**

    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

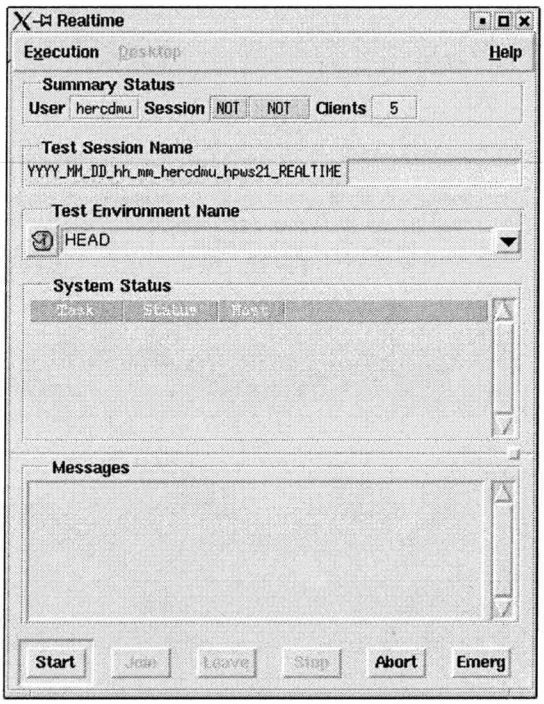
    IST_x_PART_x_TP_xxxx_x_x_BEGIN_xxx
17. Logged as herdb, push **Copy selected tag**
18. Logged as herdb, modify the TAG name with **IST_x_PART_x_TP_xxxx_x_x_END_xxx**
19. Logged as herdb, push **Apply → Apply**
20. Logged as herdb, confirm Tag Application Push Apply button

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

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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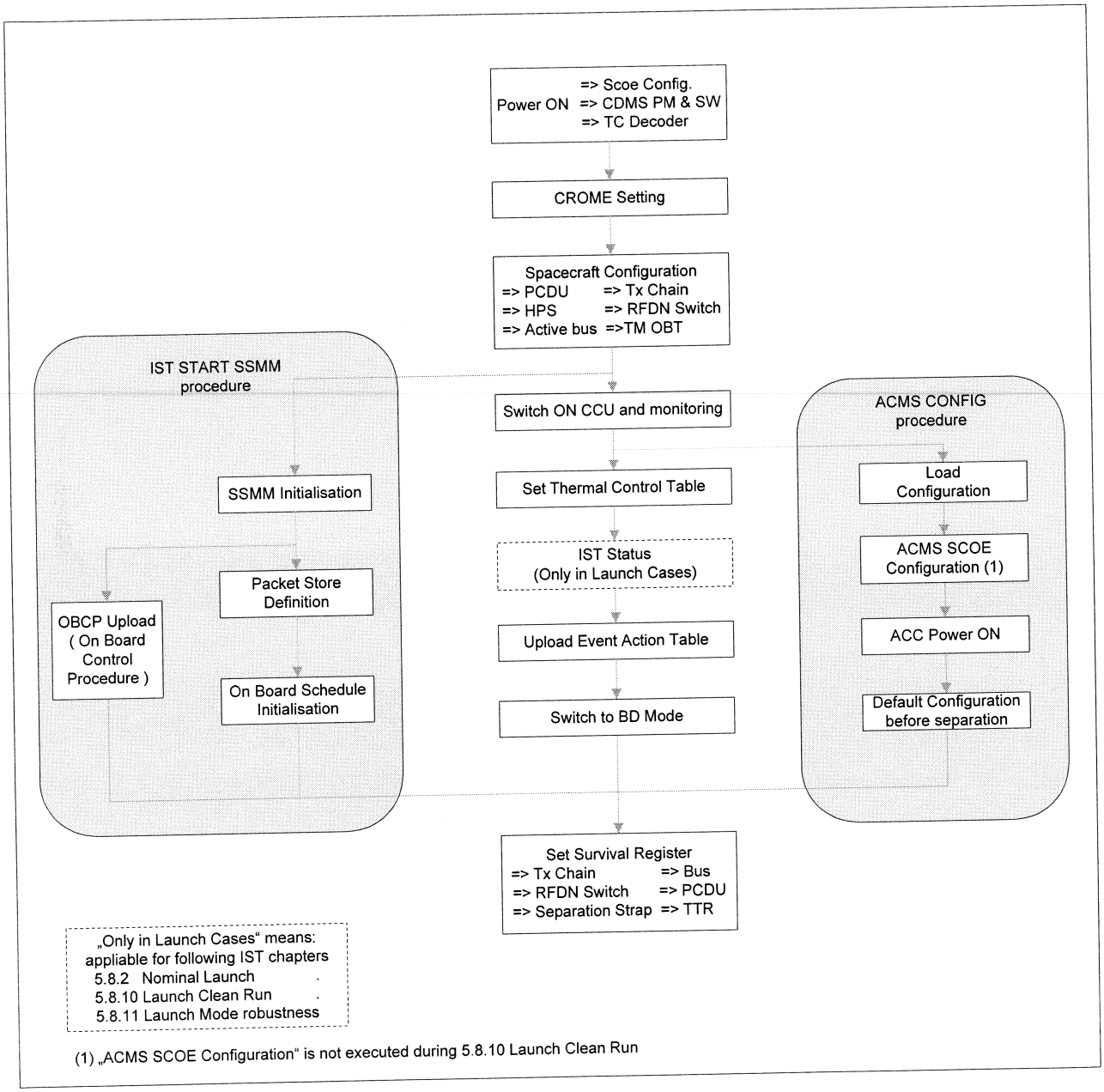


7.2.2 *IST Configuration Table*

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	
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	

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	A	B	A1	A 2 B 2	B	A	B	A	B	B	A	2&4	AABB	A&B	1	
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	
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	
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 A Nominal	Separated	B	A	A	A2	A 1 B 1	A	B	A	B	A	A	B	1&3	ABBB	A&B	2	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	Sim. Charged	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_RMS
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

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.					V	
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.					V	
	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).					V	

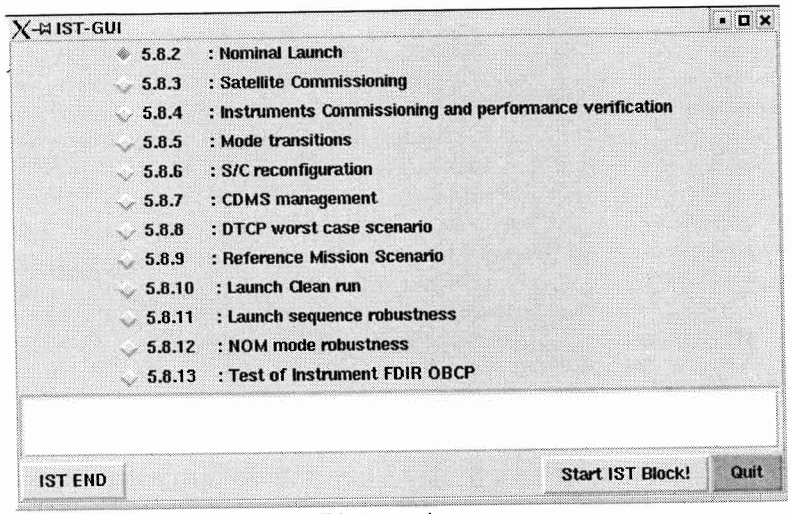
Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Chen		28/7/08	05 :07

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					✓	

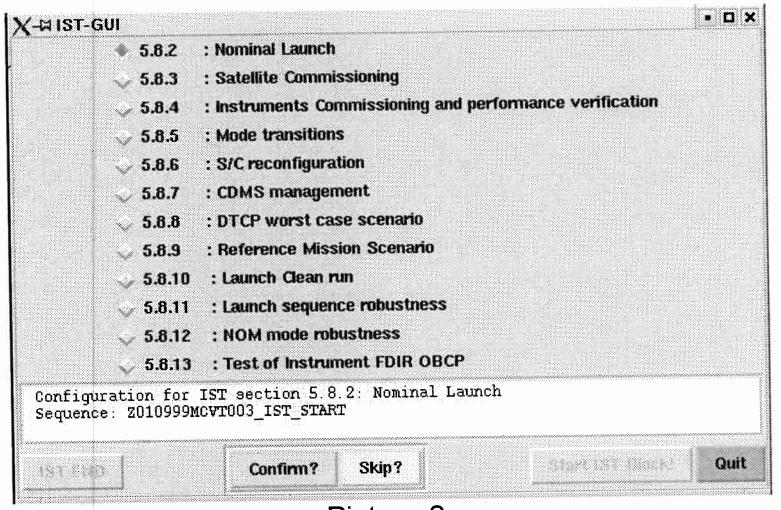
Test location:	Operator	Product Assurance:	Date:	Time
ESTEC	D. che		28/7/08	05:05

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

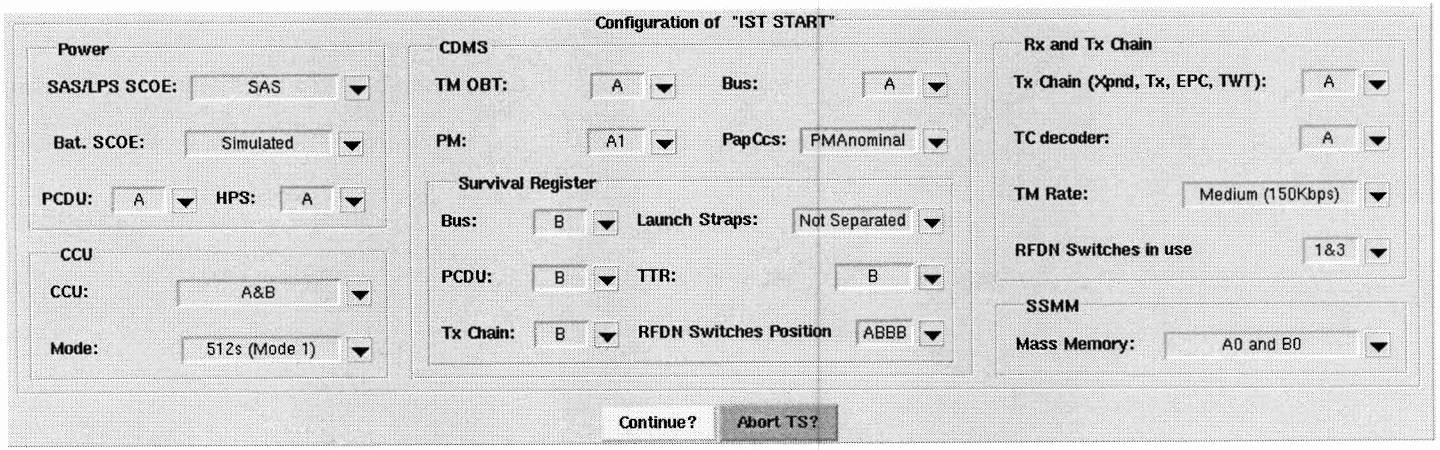


Picture 2

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 7.2

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. che		28/7/08	05:10

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	A. de		28/2/08	5:10

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			RJS#1		
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 :

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 :

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 :

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			NCR **3492**: TTRMMemCorEr_A 1 := 0 SPR **244**: OutOfLimit for SA_Pan?_Temp_N/R (WMB0?569) SPR **284**: WARNING about missing TC SPR **285**: many TCs not acknowleged For launch clean run with real Battery fully charged, parameters BCR1, BCR2 are expected active.		

RJS #1

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

	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				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						
	13	**Z010999MCVT003_IST_START** Reply to the prompt: **"CDMS Configuration:"** **"CROME settings PM?????"** 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					

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

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
14	**D102159SCVT176_WRITE_CROME** ⇨ Click the button "End TS!" to proceed						
15	**Z010999MCVT003_IST_START** Reply to the prompt: **"CDMS Configuration:"** **"Set configuration"** **"Bus ? PCDU ? HPS ? TxChain ? RFDN ???"** **"TM-OBT ? TMrate Medium (150Kbps)"** 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.		
16 Only if Encoder B is req.	**D102159SCVT104_ENCODER_SELECT** ⇨ Click the button "End TS!" to proceed				SPR 286: TM check needs repeat		

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

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
17	**D102159SCVT174_IST_REDUNDANT_CONF** ⇨ Click the button "End TS!" to proceed						
18	**Z010999MCVT003_IST_START** Reply to the prompt: **"SSMM Configuration" ????????"** ⇨ 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 96). 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 96).				In Launch cases, IST_START_SSMM shall be completely performed before next step		

PVS #1

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

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 ??? and" "START MONITORING in MODE ?"** ⇨ 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 o Events 28418 CCU B monitoring discarded		

PVS # 1

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

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 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						

PVS #1

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

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)	**Z010999MCVT1533_IST_STATUS** Check the Satellite status displayed and ⇨ Click the button "OK" to proceed						
24	**Z010999MCVT003_IST_START** Reply to the prompt: **ACMS SCOE Configuration – ACMS Power ON** ⇨ Click the button "Confirm" to proceed Execute ACMS CONFIG procedure (Page 100) in parallel to the IST_START master						

RVS #1

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

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
25	**Z010999MCVT003_IST_START** Reply to the prompt: **"SET TCT Table for Ambient Temperature"** ⇨ Click the button "Confirm" to proceed						
26	**D102159SCVT032EnNomTCSLoops** ⇨ Click the button "End TS!" to proceed						
27	**D102159SCVT115_CHECK_HCS_OFF** ⇨ Click the button "End TS!" to proceed						
28	**Z010999MCVT003_IST_START** Reply to the prompt: **"EAT UPLOADING"** ⇨ Click the button "Confirm" to proceed"						

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

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
29	**D102159SCVT192_GET_EAT_REPORT** Check that every initial entries of the Event Action Table are successfully checked ⇨ Click the button "End TS!" to proceed						
30	**D102159SCVT192_GET_EAT_REPORT** Check that every initial entries of the Event Action Table are correctly set ⇨ Click the button "End TS!" to proceed						
31	**D102159SCVT192_IST_UPLOAD_EAT** ⇨ Click the button "End TS!" to proceed						
32	**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 100) and checking packets reception.						

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

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
33	**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					
34	**D102159SCVT175_SET_SURV_REG** ⇨ Click the button "End TS!" to proceed				SPR 289 No TM return for TM check		
35 (only in launch test cases	**Z010999MCVT003_IST_START** Prompt: "Check CDMS Tables" ⇨ Click the button "Confirm" to proceed						

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

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
36 (only in launch test cases	**D102159SCVT219_GET_BSW_HEALTH_UIU** ⇨ Click the button "End TS!" to proceed						
37 (only in launch test cases)	**D102159SCVT204_GET_MOT** ⇨ Click the button "End TS!" to proceed						
38 (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						
39 (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		

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

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
40 (only in launch test cases)	**D102159SCVT207_SAT_COM_FCCT** ⇨ Click the button "End TS!" to proceed						
41	**Z010999MCVT003_IST_START** Reply to the prompt: **"DOWNLINK SSMM PACKET STORE and CEL A&B"** ⇨ Click the button "Confirm" to proceed						
42	D102159SCVT188_IST_DUMP_PKT_STORE ⇨ Click the button " End TS!" to proceed				With parameters: 0 80 1 81 2 82 3 83		
43	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, are re-occuring during this step**		

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

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
44	Z010999MCVT003_IST_START ⇨ Click the button "End TS!" to proceed						

RIS #1

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

PVS #1

7.2.2 IST Configuration Table

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

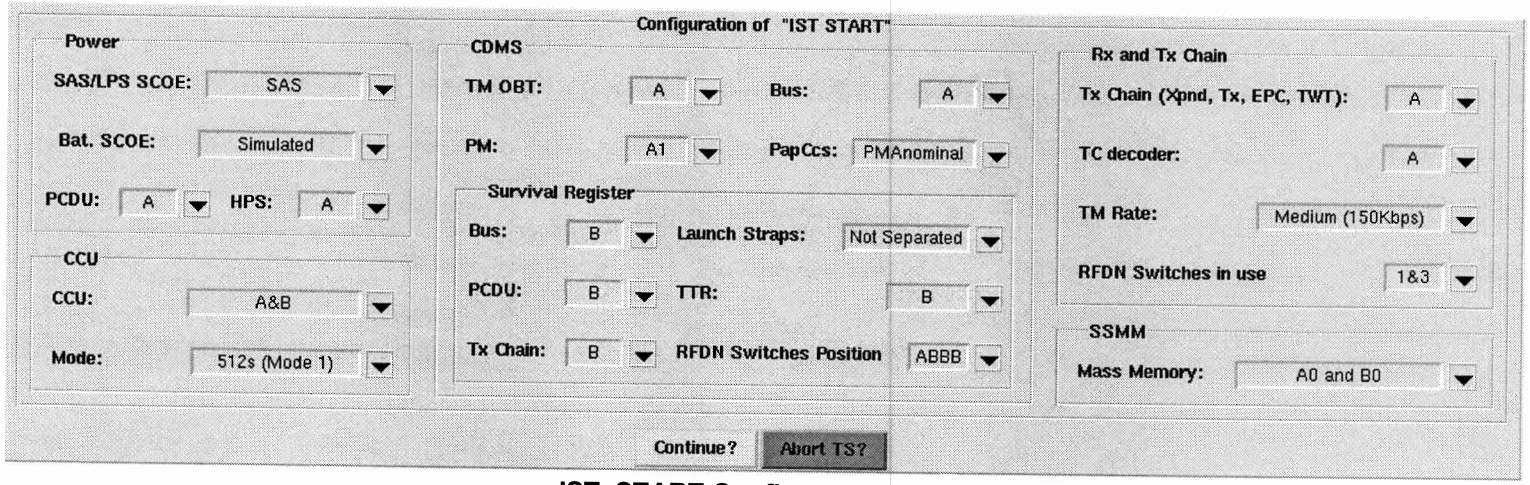
SASLPS SCOE	Bat. SCOE	Crome PAP/CCS	Sep. Strap SM	TTR SM	TM OBT	TC Dec.	PM SW	SSMM	Bus SM		PCDU SM		HPS	TxChain SM		RFDN SM		CCU ON	CCU Mode	ACMS Config. File
5.8.2 NOMINAL LAUNCH																				
SAS	Sim. Charged + Launch	PM A Nominal	Not Separated	B	A	A	A1	A 0-1-2 B 0-1-2	A	B	A	B	A	A	B	1&3	ABBB	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																				
$AS	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																				
$AS	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

PVS#1

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	A	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

PVS#1

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. de		28/7/08	15:10

PWSH1

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				✓	
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	D. Cl		28/7/08	5 : 12

PVS#1

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 Yes	To Check in Config. Table (Page 73) Bat.SCOE TCDec. PM/SW				✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	D. che		28/7/08	5 : 12

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 ✓ done 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 ✓ done					✓	
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 ✓ done 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		28/7/08	5 : 23

Prs#1

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			Not asserted		✓	
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			N-t asserte		✓	
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			NCR **3492**: TTRMMemCorEr_A 1 := 0 SPR **244**: OutOfLimit for SA_Pan?_Temp_N/R (WMB0?569) SPR **284**: WARNING about missing TC 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. ch		28/7/08	5 : 29

PVS#1

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				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					✓	
13	**Z010999MCVT003_IST_START** Reply to the prompt: **"CDMS Configuration:"** **"CROME settings PM?????"** 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				✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	D. Che		28/7/08	5:33

PVS#1

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
14	**D102159SCVT176_WRITE_CROME** ⇨ Click the button "End TS!" to proceed					✓	
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.	✓	
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	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. Che		28/7/08	5:43

PVS#1

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
17	**D102159SCVT174_IST_REDUNDANT_CONF** ⇨ Click the button "End TS!" to proceed					✓	
18	**Z010999MCVT003_IST_START** Reply to the prompt: **"SSMM Configuration" ????????"** ⇨ 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 97). 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 97).				In Launch cases, IST_START_SSMM shall be completely performed before next step	✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. che		28/7/08	5 :47

PVs#1

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 ??? and"** **"START MONITORING in MODE ?"** ⇨ 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	✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	D. de		28/7/08	5:48

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. che	BM.	28/7/08	6:01

PVSHK

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	D. de		28/7/08	06:01

PVS#1

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 101) 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	[illegible]	28/7/08	6:11

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. che		28/7/08	6:17

PVS#1

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 101) 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		28/7/08	6:53

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				SPR 289 No TM return for TM check	✓	
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. che		28/7/08	6:55

RVS#1

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 N/A performed against the		
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	D. che		28/7/08	6:57

PVS#1

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, are**	✓	
45	**Z010999MCVT003_IST_START** ⇨ Click the button "End TS!" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	D. che		28/7/08	7:05

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. che		28/7/08	6 :21

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	✓	
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. de		28/7/08	6 :24

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				SPR 282 TM failure: too quick check	✓	
10	**D102159SCVT193_IST_UPLOAD_OBCP** ⇨ Click the button "End TS!" to proceed					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	B. che		28/7/08	6:51

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
GSTOC	B. Cl		28/7/08	6:52

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_COM 7	✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	D. Che		28/7/08	8 : 04

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. Che		28/7/08	6:18

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	D. Che		28/7/08	6 : 28

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. che		28/7/08	6:29

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. che		28/7/08	6:46

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.

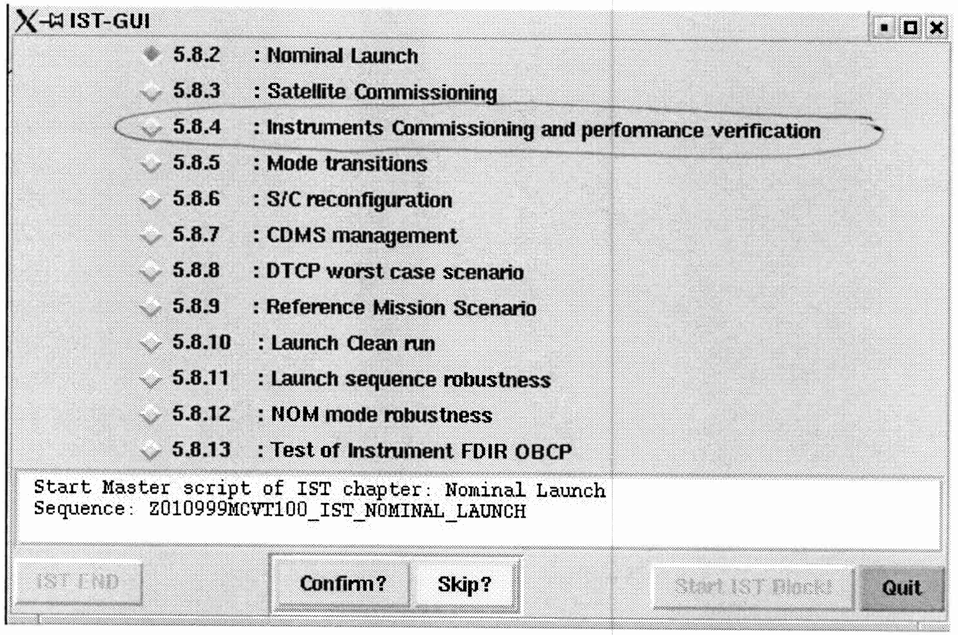


Figure 1: IST_GUI calling Master sequence, for instance "Nominal Launch"

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	h. chen	BDH	28/07/08	6:46

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
ESTEC			28/07/08	6 : 46

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	S. Eslava	R. Goossens	28/7/08	22:29

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	S. Eisum	R. Goossens	28/7/08	22:29

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 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	S. Gascon	R. Goossens	28/7/08	22:39

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.				SPR 601 REDONDANCE	✓	
10. Only if SREM is still ON	**Z102999SCVT002_SREM_OFF** ⇨ Click the button "End TS!" to proceed				SPR **35-290** NCR **3986** Wrong TM set in HPSDB	✓	
11.	**D102159SCVT174_IST_REDUNDANT_CONF** ⇨ Click the button "Ens TS" to proceed					✓	

PVS # 2

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	S. Elsley	R. Goossens	28/7/08	23 : 10

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	S. Elsen	R. Goossens	28/7/08	23:14

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				N/A		
15. Only if CROME wrongly set	**D102159SCVT176_WRITE_CROME** ⇨ Click the button "End TS!" to proceed				N/A		
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	S. Eisley	R. Goossens	28/7/08	23:24

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					✓	

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	SELSER	R Goossens	28/7/08	23:39

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
21 Only if TTC-SCOE is still ON	**Y102989ETVT020_TTC_SCOE_OFF** ⇨ Click the button "End TS!" to proceed				N/A		
21.	**Z010999MCVT004_IST_END** ⇨ Click the button "End TS!" to proceed					✓	
22.	**IST_GUI** ⇨ Click the button "Quit" to terminate the test sequence					✓	
23.	**Update CVS Tag** 1. Open a **shell** (xterm) 2. 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	S. Eaton	upto 23: R. Goossens	28/7/08	23:40

7.4.1 ACMS SCM to OCM transition for power off

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
24.	**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				✓	
25.	**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			N/A		
26.	**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			N/A		

Test location:	Operator	Product-Assurance:	Date:	Time
ESTEC	S. Elsley	R. Goossens	28/7/08	22:36

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
27.	**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...						
28.	**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					

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

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
29.	**A102109SPVT017_ACMS_CRS_BACKGROUND** ⇨ Terminate the sequence.						

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

8 Summary Sheets

Procedure Variation Summary

	Test Change	Curr. No.: #1 Date 28/07/08 Page 1 of 1	
Test designation HIFI SFT/COM IN HeZ	Test Procedure TP-0134	Issue 4	Rev. 0
Test step changed SEVERAL	Reason for Change TO USE ISS 5 (REDUNED 4)		

SWITCH ON S/C. using attached Pages from draft issS of TP0134. Pages 80 to 96 using Pages 73 & 74 as Ref (of iss 5 draft)

SKIP APPLIC STEPS OF ISS 4.

SECTION 7.2.4 STEP 1 TO 45 (INCLUDING) OF TP 0134 SKIPPED SUBSITTUTE WITH STEPS FROM DRAFT ISSUE 5 of TP0134.

Prepared by:	Resp. Test Leader	Project Engineer
PA/QA	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No.: #2 Date 28/7/08 Page 1 of 1	
Test designation IST_EMS	Test Procedure TP-0134	Issue 4	Rev. 0
Test step changed STEP 9 OF para 7.4	Reason for Change SEPERATION STRAPS NOT CLOSED DURING ACMS OFF		

PERFORM MANUALLY THE FOLLOWING STEPS TO CLOSE THE STRAPS AND TO GET THE ACMS INTO "SBM Pre-Seq"

1) attach SASLPSSCOE
   + USE TC : 4C01B952
   detach SASCPSSCOE

2) SEND THE FOLLOWING TCs

DCM21170	- RM A	ENABLE ~~DISABLE~~
DCM24170	- RM B	— " —
ACM52109	- PM B	RESET
DCM22170	- RM A	DISABLE ~~ENABLE~~
DCM25170	- RM B	— " —

Prepared by: S. Elsley	Resp. Test Leader	Project Engineer
PA/QA R. Goossens	Prime	Customer

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.
SPR 623	Infinite loop in IST-STATUS	28/7/08	open	[signature]
SPR 624	AO mode not configured	28/7/08	open	[signature]
	in IAST comining start-up			

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	28-7-08 B. GOLLADEN ~~S. IDLER~~	
Test Conductor	28-7-08 S. IDLER ~~S. HAMER~~	
PA Responsible	28-7-08 B. MOGG pp. D. Lemaby	

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	FM HIFI SFT He 2
Session ID	2008_07_28_10_44_herdmu_hpws22_REALTIME_HIFISTC02
Start Time:	07:28
End Time	
CVS Tag for Test	~~200~~TP_0188_iss1_TP0219_iss1_4_HIFI_SFT_He2_NCR_4181_END_002
Applicable IST Specification	HP-2-ASP-SP-0939
Test conductor	S. IDLER
QA Approval	D. Lamonby.

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"

END OF DOCUMENT

Insert actual distribution list

Attachment 2 to Section 6.8:

As-Run Procedure HP-2-ASED-TP-0237 (S/C Configuration for Instrument Commissioning) for HIFI FM IST Commissioning

As Run

28/07/08

EADS astrium

Test Procedure

Herschel

FM HIFI SFT/COMM @ He2

1ST: Sess ID : 2008_07_28_04_24_hercdmu_hpws22_REALTIME_HIFI SFTC0
2ND: 2008_07_28_10_44_hercdmu_hpws22_REALTIME_HIFISTC02
1ST: TAG : TP_0188_iss1_TP0219_iss1_4_HIFI_SFT_He2_NCR_4181_END_00
2ND: TP_0188_iss1_TP0219_iss1_4_HIFI_SFT_He2_NCR_4181_END_002

Title: **Herschel Satellite IST – Instruments Commissioning – S/C Configuration**

CI-No: 1000000

Prepared by:	V. La Gioia/TERMA	Date: 1st July 2008
Checked by:	C. Much	02/07/08
Product Assurance:	J. Hall	3/7/2008
Configuration Control:	W. Wietbrock	09/07/08
TASF Engineering	R Jones	04/07/08
TASF Test Director	S. Mooney	04/7/08
Project Management:	Dr. W. Fricke	11/07/2008
Approval TAS-F	D. Montet	21.07.2008

Distribution: See Distribution List (last page)

Issue	Date	Sheet	Description of Change	Release
1	01/07/2008		Initial version	

Table of Content

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List of Tables

1 Scope

1.1 Objective

This procedure provides the final part of the S/C configuration for IST Instrument Commissioning tests as defined in AD1 (note that the S/C configuration is different for each Instrument's commissioning test).

The initial basic S/C configuration for IST Instrument Commissioning will be performed using AD-2 prior to execution of this procedure.

Both this procedure and AD-2 are called from the corresponding Instrument specific commissioning procedure (refs. RD-5, RD-6 & RD-7).

At the end of the commissioning procedure, this procedure is called again to re-establish the umbilical link and switch off the RF.

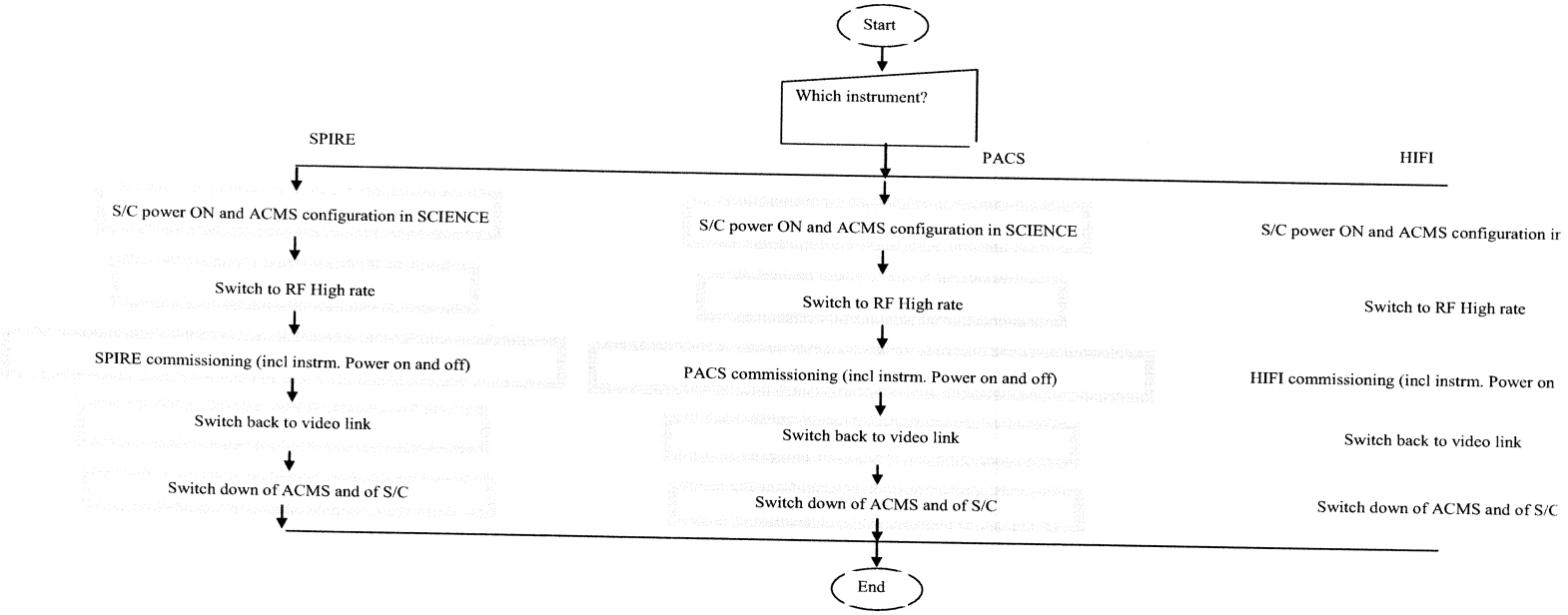
1.2 Operational Flow

The overall flow of the Instruments Commissioning is described in the following schema.

In chapter 7 the detailed step-by-step procedure is provided

.

Figure 1: S/C Specific Configuration for Instrument Commissioning



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, Issue 6 redmarked

AD-2 Leading Procedure for Herschel Integrated Satellite Test 'IST'
HP-2-ASED-TP-0134 issue 4

2.2 Reference Documents

RD-1 Herschel SVM User Manual
H-P-MA-AI-0001

RD-2 Herschel/Planck List of Acronyms
H-P-ASP-LI-0077

RD-3 Not Used

RD-4 Not Used

RD-5 HP-2-ASED-TP-0217 IST Instrument Commissioning: SPIRE Cold Functional Test

RD-6 HP-2-ASED-TP-0218 IST Instrument Commissioning: PACS FM FDIR & Full Functional Test

RD-7 HP-2-ASED-TP-0188 IST Instrument Commissioning: HIFI Performance & Peak-Up Test

2.3 Other Documents

None

2.4 Acronyms

Acronyms are specified in RD-2 and are therefore not listed in this document.

3 Requirements to be verified

AD-1 chapter 5.8.4

4 Configuration

4.1 Herschel S/C Configuration

Refer to AD-2

4.1.1 Hardware Configuration

Refer to AD-2

4.1.2 Software Configuration

Refer to AD-2

4.1.3 Test Configuration

Refer to AD-2

4.1.4 Simulated Equipments

Refer to AD-2

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5 Conditions

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5.2 Environmental

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5.3 General Precautions and Safety

Refer to AD-2

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Refer to AD-2

5.3.2 ESD constraints

Refer to AD-2

5.3.3 Special QA Requirements

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5.4 GSE

Refer to AD-2

5.4.1 MGSE

Refer to AD-2

5.4.2 CVSE

Refer to AD-2

5.4.3 EGSE

5.4.3.1 EGSE Hardware Configuration

Refer to AD-2

5.4.3.2 EGSE User Software

Refer to AD-2

5.4.3.3 Grounding Configuration

Refer to AD-2

5.4.3.4 Test Equipment

Refer to AD-2

5.4.3.5 Data Acquisition System

Refer to AD-2

5.4.4 OGSE

Refer to AD-2

5.4.5 Special Equipment

Refer to AD-2

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 satisfactorily 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.

7 Test Execution Step-by-Step Procedure

7.1 INSTRUMENT'S TEST CASE SELECTION

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
1.	*Enter the following In the CCS Test Console:* *callasync* ***Z010999MCVT130_IST_INSTR_COMMISSIONING***	PASS				✓	
2.	*During* ***Z010999MCVT130_IST_INSTR_COMMISSIONING*** *STARTINSTRUMENTS COMMISSIONING, Section 5.8.4* ⇨ *Click the button "YES" to proceed*	YES			If NO, the sequence is terminated.	✓	

Test location:	Operator	Product-Assurance:	Date:
ESTEC	D. che		28/7/08 7:21

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
3.	***Z010999MCVT130_IST_INSTR_ COMMISSIONING Changes status to "PROMPTING" in test conductor console with the following message*** ***"Which Instruments commissioning test case?(HIFI/PAS/SPIRE)"*** *⇨ type the desired instrument's name, then click button "OK"and proceed following the prompts in the master sequence window*				For SPIRE: execute §7.2 For PACS: execute §7.3 For HIFI: execute §7.4 of this procedure.	✓	

RVS#1

Test location:	Operator	Product-Assurance:	Date:
ESTEC	B. Chen		28/7/08 7:22

7.2 SPIRE COMMISSIONING

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
4.	*During* ***Z010999MCVT130_IST_INSTR_COMMISSIONING*** *Configuration of the IST section 5.8.4.5.1 SPIRE COMMISSIONING "* *⇨ Click the button "Confirm"" to proceed*	CONFIRM					
5.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *" TT&C SCOE CONNECTION"* *⇨ Click the button "Confirm" to proceed*	CONFIRM			Y102989ETVT021_TTC_SCOE_ON is called		
6.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *"CDMS setting for separation"* *⇨ Click the button "Confirm" to proceed*	CONFIRM			A102109SPVT202_ACMS_STATUS_H is called asynchronously and D102159SCVT138_IST_LAUNCH_SUNACQ synchronously		

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
7.	*During …* *D103159SCVT138_IST_LAUNCH_SUNACQ* *⇨ Wait, switch to script …ACMS_CONFIG25*	PASS					
8.	*During A102109SPVT103_ACMS_CONFIG25* *⇨ enter option 88, to go to Main Menu 3* *⇨ Click the button "OK"* *⇨ then press "Continue"*	88 OK CONTINUE					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
9.	*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					
10.	*During A102109SPVT034_ACMS_SAM_MON* *Do you want to continue to monitor SAM Sun Pointing mode?* *⇨ Enter your choice: no*	NO					
11.	*At end of D102159SCVT138_IST_LAUNCH_SUNACQ* *⇨ Click the button "End TS!" to proceed*	ENDTS					
12.	*Back to Master Script, Z010999MCVT130_IST_INSTR_COMMISSIONING* *TRANSITION TO NOMINAL* *⇨ Click the button "Confirm" to proceed*	CONFIRM					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
13.	*Script D102159SCVT137_IST_SUNACQ_NOM shall pop-up. Check that script ends without any 'No-Go'* *⇨ Click the button "End TS!" to proceed*	ENDTS					
14.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *At the prompt "Command ACMS (via OCM/Earth) to SCM/Earth. In parallel, continue with the master "* *⇨ Click the button "OK" to proceed* *⇨ Perform steps 15 to 25 (ACMS in SCM) in parallel with the following ones 26 –28 (PCDU transition, SREM)*	OK					
15.	*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					
16.	*During A102109SPVT036_ACMS_STR_ON* *Do you want to change the current STR in use? Type no* *⇨ Click the button "OK" to proceed*	NO					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
17.	*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			Check in seq. TRANSITION IN OCM Might fail. Check attitude in AND ZAA01999 until mode is OCM point fine. Then click repeat TM.		
18.	*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					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
19.	*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					
20.	*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 ?*				AEW1A002, AEW2A002, AEW3A002, AEW4A002 LOW expected until wheels are spun up.		
21.	*During A102109SPVT042_RWL_SPINUP* *"Change actual Angular Momentum (initial values)?"* *Option: no* *⇨ Wait for about 10 minutes*	RWL-1 ang momentum 10.6999999 RWL-2 ang momentum 10.6999999 RWL-3 ang momentum 10.6999999 RWL-4 ang momentum 10.6999999 NO					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
22.	*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/RWLsSPEED.txt*						

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
23.	*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			*Values in IST_RMS1 file*		
24.	*During A102109SPVT042_RWL_SPINUP* *SUSPEND* *⇨ Click the button "RESUME" in the test sequence console to proceed*	RESUME					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
25.	*At end of A102109SPVT042_RWL_SPINUP* *⇨ Click the button "End TS!" to proceed*	ENDTS			During transition to SCM for ACMS, ACZ2T109 may timeout because of slew time too short.		
26.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Transition from SAS 900W and BS 24V to SAS 1475W and BS full charged"* *⇨ Click the button "Confirm" to proceed*	CONFIRM					
27.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Switch on SREM"* *⇨ Click the button "Confirm" to continue*	CONFIRM					
28.	*During Z102999SCVT003_SREM_ACQ_START* *⇨ Click the button "End TS!" to proceed*	ENDTS			SPR-290		

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
29.	Back to Master, Z010999MCVT130_IST_INSTR_COMMISSIONING Reply to the prompt: " Final Setting to test start" ⇨ Click the button "Confirm" to continue	CONFIRM			*ACMS shall be already in SCM mode*		
30.	At the end of the step check that the following have been applied: STR 1 LCL B is ON, RX-2 is 125 bps, GYRO and STR 1 I/F on BUS B	PASS					
31.	*Back to Master,* *Z010999MCVT130_IST_INSTR_COMMISSIONING* *SET BUS PROFILE TO SPIRE PRIME* *⇨ Click the button "Confirm" to continue*	CONFIRM					
32.	*During* *Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Setting TM/TC DFE for AD mode commanding"* ⇨ Click the button "Confirm" to continue	CONFIRM					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
33.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *"switching to RF for SPIRE Photometer Commissioning"* ⇨ Click the button "Confirm" to continue	CONFIRM					
34.	*Back to Master, Z010999MCVT130_IST_INSTR_COMMISSIONING* *"CEL DOWNLINK"* ⇨ Click the button "Confirm" to continue	CONFIRM					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
35.	*Back to Master,* *D102159SCVT080_CEL_DOWNLINK* *"CEL DOWNLINK"* ⇨ Click the button "EndTS" to continue	ENDTS			IF CEL is not empty, send following TCs to clear it: DC167160 with parameters: DH002160 1 DH003160 0x7F DC167160 with parameters: DH002160 1 DH003160 0xFF		
36.	*Back to Master,* *Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Initial S/C status check "* ⇨ Click the button "Confirm" to continue	Confirm					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
37.	*During* *Z010999MCVT153_IST_STATUS* *At prompt* *"Do you want to Stop for each failure"* ⇨ Click the button "NO" to continue	NO					
38.	*During* *Z010999MCVT153_IST_STATUS* ⇨ *CHECK STATUS then click the button "OK" to continue*	OK					
39.	*Back to Master,* *Z010999MCVT130_IST_INSTR_COMMISSIONING* *"SPIRE COMMISSIONING"* ⇨ Click the button "Confirm" to continue	CONFIRM					
40.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Start specific SPIRE COMMISSIONING sequences"* When prompted as above Return to calling procedure.				Instruments power ON/OFF are not included in this procedure.		

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
41.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *Once SPIRE specific commissioning test completed and SPIRE switched off, click "Confirm" and continue from the next step*	CONFIRM					
42.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Switch S/C control (TC and TM) from RF link to umbilical"* ⇨ Click the button "Confirm" to continue	CONFIRM					
43.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Switching off TT&C Chain* ⇨ Click the button "Confirm" to continue	CONFIRM					
44.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *"TT&C SCOE OFF"* ⇨ Click the button "Confirm" to continue	CONFIRM					
45.	Return to calling procedure						

Test location:	Operator	Product-Assurance:	Date:

7.3 PACS COMMISSIONING

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
46.	*During* ***Z010999MCVT130_IST_INSTR_COMMISSIONING*** *Configuration of the IST section 5.8.4.6 PACS COMMISSIONING"* *⇨ Click the button "Confirm"" to proceed*	CONFIRM					
47.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *" TT&C SCOE CONNECTION"* *⇨ Click the button "Confirm" to proceed*	CONFIRM			Y102989ETVT021_TTC_SCOE_ON is called		
48.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *"CDMS setting for separation"* *⇨ Click the button "Confirm" to proceed*	CONFIRM			A102109SPVT202_ACMS_STATUS_H is called asynchronously and D102159SCVT138_IST_LAUNCH_SUNACQ synchronously		

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
49.	*During …* *D103159SCVT138_IST_LAUNCH_SUNACQ* *⇨ Wait, switch to script …ACMS_CONFIG25*	PASS					
50.	*During A102109SPVT103_ACMS_CONFIG25* *⇨ enter option 88, to go to Main Menu 3* *⇨ Click the button "OK"* *⇨ then press "Continue"*	88 OK CONTINUE					
51.	*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					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
52.	*During A102109SPVT034_ACMS_SAM_MON* *Do you want to continue to monitor SAM Sun Pointing mode?* *⇨ Enter your choice: no*	NO					
53.	*At end of D102159SCVT138_IST_LAUNCH_SUNACQ* *⇨ Click the button "End TS!" to proceed*	ENDTS					
54.	*Back to Master Script, Z010999MCVT130_IST_INSTR_COMMISSIONING* *TRANSITION TO NOMINAL* *⇨ Click the button "Confirm" to proceed*	CONFIRM					
55.	*Script D102159SCVT137_IST_SUNACQ_NOM shall pop-up. Check that script ends without any 'No-Go'* *⇨ Click the button "End TS!" to proceed*	ENDTS					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
56.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *At the prompt "Command ACMS (via OCM/Earth) to SCM/Earth. In parallel, continue with the master "* *⇨ Click the button "OK" to proceed* *⇨ Perform steps 55 to 65 (ACMS in SCM) in parallel with the following ones 66-68 (PCDU transition, SREM)*	OK					
57.	*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					
58.	*During A102109SPVT036_ACMS_STR_ON* *Do you want to change the current STR in use? Type no* *⇨ Click the button "OK" to proceed*	NO					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
59.	*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			Check in seq. TRANSITION IN OCM Might fail. Check attitude in AND ZAA01999 until mode is OCM point fine. Then click repeat TM.		
60.	*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					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
61.	*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					
62.	*During A102109SPVT038_RWL_ON* *"Do you want to change actual on-board wheel set selected in the nominal configuration?* *RWL 2-3-4 selected* *⇨ Click the button "NO" to proceed ?*				AEW2A002, AEW3A002, AEW4A002 LOW expected until wheels are spun up.		
63.	*During A102109SPVT042_RWL_SPINUP* *"Change actual Angular Momentum (initial values)?"* *Option: no* *⇨ Wait for about 10 minutes*	RWL-2 ang momentum 10.6999999 RWL-3 ang momentum 10.6999999 RWL-4 ang momentum 10.6999999 NO					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
64.	*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/RWLsSPEED.txt*						

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
65.	*Only for info:* *⇨ Verify 3x RWL momentum parameters are within +/-20%* *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			*Values in IST_RMS1 file*		
66.	*During A102109SPVT042_RWL_SPINUP* *SUSPEND* *⇨ Click the button "RESUME" in the test sequence console to proceed*	 RESUME					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
67.	*At end of A102109SPVT042_RWL_SPINUP* *⇨ Click the button "End TS!" to proceed*	ENDTS			During transition to SCM for ACMS, ACZ2T109 may timeout because of slew time too short.		
68.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Transition from SAS 900W and BS 24V to SAS 1475W and BS full charged"* *⇨ Click the button "Confirm" to proceed*	CONFIRM					
69.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Switch on SREM"* *⇨ Click the button "Confirm" to continue*	CONFIRM					
70.	*During Z102999SCVT003_SREM_ACQ_START* *⇨ Click the button "End TS!" to proceed*	ENDTS			SPR-290		

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
71.	Back to Master, Z010999MCVT130_IST_INSTR_COMMISSIONING Reply to the prompt: " Final Setting to test start" ⇨ Click the button "Confirm" to continue	CONFIRM			*ACMS shall be already in SCM mode*		
72.	At the end of the step check that the following have been applied: STR 2 LCL A is ON, RX-1 is 125 bps, GYRO and STR 2 I/F on BUS B	PASS					
73.	*Back to Master,* *Z010999MCVT130_IST_INSTR_COMMISSIONING* *COMMAND THE S/C BUS PROFILE TO PACS PRIME* *⇨ Click the button "Confirm" to continue*	CONFIRM					
74.	*During* *Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Setting TM/TC DFE for AD mode commanding"* ⇨ Click the button "Confirm" to continue	CONFIRM					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
75.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *"switching to RF for PACS Commissioning"* ⇨ Click the button "Confirm" to continue	CONFIRM					
76.	*Back to Master, Z010999MCVT130_IST_INSTR_COMMISSIONING* *"CEL DOWNLINK"* ⇨ Click the button "Confirm" to continue	CONFIRM					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
77.	*Back to Master,* *D102159SCVT080_CEL_DOWNLINK* *"CEL DOWNLINK"* ⇨ Click the button "EndTS" to continue	ENDTS			IF CEL is not empty, send following TCs to clear it: DC167160 with parameters: DH002160 1 DH003160 0x7F DC167160 with parameters: DH002160 1 DH003160 0xFF		
78.	*Back to Master,* *Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Initial S/C status check "* ⇨ Click the button "Confirm" to continue	Confirm					

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
79.	*During* *IST_STATUS* *At prompt* *"Do you want to Stop for each failure"* ⇨ Click the button "NO" to continue	NO					
80.	*During* *Z010999MCVT153_IST_STATUS* ⇨ *CHECK STATUS then click the button "OK" to continue*	OK					
81.	*Back to Master,* *Z010999MCVT130_IST_INSTR_COMMISSIONING* *"PACS COMMISSIONING"* ⇨ Click the button "Confirm" to continue	CONFIRM					
82.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Start specific PACS COMMISSIONING sequences"* When prompted as above Return to calling procedure.				Instruments power ON/OFF are not included in this procedure.		

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
83.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *Once PACS specific commissioning test completed and PACS switched off, click "Confirm" and continue from the next step*	CONFIRM					
84.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Switch S/C control (TC and TM) from RF link to umbilical"* ⇨ Click the button "Confirm" to continue	CONFIRM					
85.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Switching off TT&C Chain* ⇨ Click the button "Confirm" to continue	CONFIRM					
85.5	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *"TT&C SCOE OFF"* ⇨ Click the button "Confirm" to continue	CONFIRM					
86.	Return to calling procedure						

Test location:	Operator	Product-Assurance:	Date:

7.4 HIFI COMMISSIONING

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
87.	*During* ***Z010999MCVT130_IST_INSTR_COMMISSIONING*** *Configuration of the IST section 5.8.4.7 HIFI COMMISSIONING "* *⇨ Click the button "Confirm"" to proceed*	CONFIRM				✓	
88.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *" TT&C SCOE CONNECTION"* *⇨ Click the button "Confirm" to proceed*	CONFIRM			Y102989ETVT021_TTC_SCOE_ON is called	✓	
89.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *"CDMS setting for separation"* *⇨ Click the button "Confirm" to proceed*	CONFIRM			A102109SPVT202_ACMS_STATUS_H is called asynchronously and D102159SCVT138_IST_LAUNCH_SUNACQ synchronously	✓	

Test location:	Operator	Product-Assurance:	Date:
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Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
90.	*During …* *D103159SCVT138_IST_LAUNCH_SUNACQ* *⇨ Wait, switch to script …ACMS_CONFIG25*	PASS				✓	
91.	*During A102109SPVT103_ACMS_CONFIG25* *⇨ enter option 88, to go to Main Menu 3* *⇨ Click the button "OK"* *⇨ then press "Continue"*	88 OK CONTINUE				✓	

Test location:	Operator	Product-Assurance:	Date:
ESTEC	B. che		28/7/08 7:30

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
92.	*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				✓	
93.	*During A102109SPVT034_ACMS_SAM_MON* *Do you want to continue to monitor SAM Sun Pointing mode?* *⇨ Enter your choice: no*	NO				✓	
94.	*At end of D102159SCVT138_IST_LAUNCH_SUNACQ* *⇨ Click the button "End TS!" to proceed*	ENDTS				✓	
95.	*Back to Master Script, Z010999MCVT130_IST_INSTR_COMMISSIONING* *TRANSITION TO NOMINAL* *⇨ Click the button "Confirm" to proceed*	CONFIRM				✓	

Test location:	Operator	Product-Assurance:	Date:
ESTEC	D. che		28/7/08 7:37

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
96.	*Script D102159SCVT137_IST_SUNACQ_NOM shall pop-up. Check that script ends without any 'No-Go'* *⇨ Click the button "End TS!" to proceed*	ENDTS				✓	
97.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *At the prompt "Command ACMS (via OCM/Earth) to SCM/Earth. In parallel, continue with the master "* *⇨ Click the button "OK" to proceed* *⇨ Perform steps 95 to 105 (ACMS in SCM) in parallel with the following ones 106 –108 (PCDU transition, SREM)*	OK 98 to 108 109 to 111				✓	
98.	*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				✓	
99.	*During A102109SPVT036_ACMS_STR_ON* *Do you want to change the current STR in use? Type no* *⇨ Click the button "OK" to proceed*	NO				✓	

PJS #2-1

Test location:	Operator	Product-Assurance:	Date:
ESTEC	h. che		28/7/08 7:46

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
100.	*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			Check in seq. TRANSITION IN OCM Might fail. Check attitude in AND ZAA01999 until mode is OCM point fine. Then click repeat TM.	V	
101.	*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		

Test location:	Operator	Product-Assurance:	Date:
ESTEC	D. che		28/7/08 08:01

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
102.	*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				✓	
103.	*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 ?*				AEW1A002, AEW2A002, AEW3A002, AEW4A002 LOW expected until wheels are spun up.	✓	
104.	*During A102109SPVT042_RWL_SPINUP* *"Change actual Angular Momentum (initial values)?"* *Option: no* *⇨ Wait for about 10 minutes*	RWL-1 ang momentum 10.6999999 RWL-2 ang momentum 10.6999999 RWL-3 ang momentum 10.6999999 RWL-4 ang momentum 10.6999999 NO				✓	

RUS#3

Test location:	Operator	Product-Assurance:	Date:
ESTEC	B. che		28/7/08 8:18

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
105.	*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/RWLsSPEED.txt*					✓	

Test location:	Operator	Product-Assurance:	Date:
ESTEC	B. ch		28/7/08 8:28

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
106.	*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			*Values in IST_RMS1 file*	✓	
107.	*During A102109SPVT042_RWL_SPINUP* *SUSPEND* *⇨ Click the button "RESUME" in the test sequence console to proceed*	RESUME				✓	

Test location:	Operator	Product-Assurance:	Date:
ESTEC	B. che		28/10/08 8:37

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
108.	*At end of A102109SPVT042_RWL_SPINUP* *⇨ Click the button "End TS!" to proceed*	ENDTS			During transition to SCM for ACMS, ACZ2T109 may timeout because of slew time too short.	✓	
109.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Transition from SAS 900W and BS 24V to SAS 1475W and BS full charged"* *⇨ Click the button "Confirm" to proceed*	CONFIRM				✓	
110.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Switch on SREM"* *⇨ Click the button "Confirm" to continue*	CONFIRM				✓	
111.	*During Z102999SCVT003_SREM_ACQ_START* *⇨ Click the button "End TS!" to proceed*	ENDTS			SPR-290	✓	

Test location:	Operator	Product-Assurance:	Date:
ESTEC	B. che		28/7/08 8:32

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
112.	Back to Master, Z010999MCVT130_IST_INSTR_COMMISSIONING Reply to the prompt: " Final Setting to test start" ⇨ Click the button "Confirm" to continue	CONFIRM			*ACMS shall be already in SCM mode*	✓	
113.	At the end of the step check that the following have been applied: STR 1 LCL B is ON, RX-2 is 125 bps ✓	PASS				✓	
114.	*Back to Master,* *Z010999MCVT130_IST_INSTR_COMMISSIONING* *SET BUS PROFILE TO HIFI PRIME* *⇨ Click the button "Confirm" to continue*	CONFIRM				✓	
115.	*During* *Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Setting TM/TC DFE for AD mode commanding"* ⇨ Click the button "Confirm" to continue	CONFIRM				✓	

Test location:	Operator	Product-Assurance:	Date:
ESTEC	D. che		28/7/08 8:51

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
116.	*During Z010999MCVT130_IST_INSTR_COMMISSIONING* *"switching to RF for HIFI Commissioning"* ⇨ Click the button "Confirm" to continue	CONFIRM				✓	
117.	*Back to Master, Z010999MCVT130_IST_INSTR_COMMISSIONING* *"CEL DOWNLINK"* ⇨ Click the button "Confirm" to continue	CONFIRM				✓	

PVS#2-2*
PVS#2-3

Test location:	Operator	Product-Assurance:	Date:
ESTEC	D. Cha		28/7/08 9:53

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
118.	*Back to Master, D102159SCVT080_CEL_DOWNLINK* *"CEL DOWNLINK"* ⇨ Click the button "EndTS" to continue	ENDTS			IF CEL is not empty, send following TCs to clear it: DC167160 with parameters: DH002160 1 DH003160 0x7F DC167160 with parameters: DH002160 1 DH003160 0xFF	✓	
119.	*Back to Master, Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Initial S/C status check "* ⇨ Click the button "Confirm" to continue	Confirm				✓	

Test location:	Operator	Product-Assurance:	Date:
ESTEC	B. Cheu		28/7/08 P: 58

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
120.	*During* *Z010999MCVT153_IST_STATUS* *At prompt* *"Do you want to Stop for each failure"* ⇨ Click the button "NO" to continue	NO		NO	PVS #4 RE ALIGNMENT OF SC CAUSED RECONF OF GYRO's. SPR 622	✓	
121.	*During* *Z010999MCVT153_IST_STATUS* ⇨ *CHECK STATUS then click the button "OK" to continue*	OK NEW SESSION & TAG.		NOK	SPR 623 ERROR INSCRIPT. PVS#5		✓
122.	*Back to Master,* *Z010999MCVT130_IST_INSTR_COMMISSIONING* *"HIFI COMMISSIONING"* ⇨ Click the button "Confirm" to continue	CONFIRM		CONFIRM.		✓	
123.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Start specific HIFI COMMISSIONING sequences"* When prompted as above Return to calling procedure.				Instruments power ON/OFF are not included in this procedure.		

Test location:	Operator	Product-Assurance:	Date:

Step No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
124.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *Once HIFI specific commissioning test completed and HIFI switched off, click "Confirm" and continue from the next step*	CONFIRM				✓	
125.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Switch S/C control (TC and TM) from RF link to umbilical"* ⇨ Click the button "Confirm" to continue	CONFIRM				✓	
126.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *"Switching off TT&C Chain* ⇨ Click the button "Confirm" to continue	CONFIRM				✓	
127.	*Z010999MCVT130_IST_INSTR_COMMISSIONING* *"TT&C SCOE OFF"* ⇨ Click the button "Confirm" to continue	CONFIRM				✓	
128.	Return to calling procedure					✓	

Test location:	Operator	Product-Assurance:	Date:
ESTEC	S. Casey	R. Goossens	28/7/08 21.57

8 Summary Sheets

Procedure Variation Summary

	Test Change	Curr. No.: 1 Date 28/07/08 Page 1 of 1	
Test designation HIFI SFT/COMM QUAL	Test Procedure TP-0237	Issue 1	Rev. —
Test step changed Sec 7.1 STEP 3	Reason for Change INCORRECT PROMPTS		

PROCEDURE DOES NOT REFLECT SCRIPT PROMPTS.
SCRIPT Z01999MQT130-IST_INSTR_COMMISSIONING

ASKS TO CONFIG FOR IST SPIRE PHOTOMETER COMM

PRESS 'SKIP'

SCRIPT THEN ASKS TO CONFIG FOR IST PACS COMM.

PRESS 'SKIP'

SCRIPT THEN ASKS TO CONFIG FOR HIFI COMM

PRESS 'CONFIRM'

Prepared by: B. HOGG	Resp. Test Leader	Project Engineer
PA/QA	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No.: 2 Date 28/07/09 Page 1 of

Test designation	Test Procedure	Issue	Rev.
HIF SFT / COMM 2 HeZ	TP 0237	1	1

Test step changed	Reason for Change
	REDLINE PROCEDURE

(1) STEP 97 of Sec 7.4

INCORRECT STEPS REFERRED TO 95 to 105 SHOULD BE 98 to 108
106 to 108 — " — 109 to 111

(2) MISSING STEP BETWEEN 116 & 117.
NEED TO VERIFY TM IS BEING Rx.

(3) DURING SWITCHING TO RF THE SCRIPT HUNG. TTC SCOE APPLIC TERMINATED AND CMDS SENT MANUALLY.

Prepared by:	Resp. Test Leader	Project Engineer
PA/QA	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No.: 3 Date 28/07/08 Page 1 of	
Test designation: HiFi SFT/COMM @ Hz	Test Procedure: TP-0237	Issue: 1	Rev.: —
Test step changed: Sec 7.4 step 104	Reason for Change: TM FAILURE REPORTED BY SCRAFT.		

TM FAILURE BUT TM IS OK

PERFORM OP NOTE 35.

Prepared by:	Resp. Test Leader	Project Engineer
PA/QA	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No.: 4 Date 28/07/08 Page 1 of	
Test designation HIFI, SFTI Commissioning	Test Procedure TP-0237	Issue 1	Rev. -
Test step changed i20	Reason for Change Realignment of Set triggered gyro reconfiguration		

Mark Gyros as healthy again by executing attached commands.

~~PERFORM OF NOTE~~

Prepared by: S. HAMER	Resp. Test Leader	Project Engineer
PA/QA	Prime	Customer

SCOS-2000 Manual Stack 1 W/S: hpws22 S/C: HERSCHEL Current printout time: 2008.210.11.27.27.022

	LINK		STATIC PTV	DYNAMIC PTV	VERIFICATION	INTERLOCK				
TC	NO NCTRS	GLOBAL	ENABLED	ENABLED	ENABLED	NONE	MMM	WAIT MODE	AUTO REJECT	SOURCE
TM	NO TM FLOW	LOCAL	ENABLED	ENABLED	ENABLED	NONE	NONE	DISABLED	OFF	RUNNING

DISABLED SUB-SYSTEMS:

Number of Commands: 3

Num	Name	Description	Stat.PTV	Chk	Dyn.PTV	Chk MD	Release Time	IL	G	B	CEV	Execution Time	Parent	Sub-System
1	ACYAA109	GYR3 healthy SGMAB	GO	E	GO	E M	ASAP				E	IMMEDIATE		ACMS
	AHFH1001	UnHlthDF86 Cmd	Eng			Enable 86								
	AHFH2001	UnHlth DD86Cmd	Eng			Enable 86								
2	ACYK4109	GYR1 healthy SGMAB	GO	E	GO	E M	ASAP				E	IMMEDIATE		ACMS
	AHFH1001	UnHlthDF86 Cmd	Eng			Enable 86								
	AHFH2001	UnHlth DD86Cmd	Eng			Enable 86								
3	ACYZ2109	GYR2 healthy SGMAB	GO	E	GO	E M	ASAP				E	IMMEDIATE		ACMS
	AHFH1001	UnHlthDF86 Cmd	Eng			Enable 86								
	AHFH2001	UnHlth DD86Cmd	Eng			Enable 86								

Push to TP-C2?

Procedure Variation Summary

	Test Change	Curr. No.: 5 Date 28/07/08 Page of	
Test designation HIFI SFT /COMM @ He2	Test Procedure TP 0237	Issue 1	Rev. —
Test step changed See 7.4 Stp 120	Reason for Change DUE REQUIREMENT TO LOAD NEW CCS DB.		

DUE TO STARTING NEW SESSION NEED TO PERFORM OP NOTE 15.

Prepared by: B.HOGG	Resp. Test Leader	Project Engineer
PA/QA	Prime	Customer

8.2 Non Conformance Report (NCR) Summary

/SPR

NCR - No.	NCR – Title	Date	Open Closed	PA sig.
SPR 622	ACS Gyro reconfiguration due to satellite movement	23/07/08	open	Manually

Table 8.2-1: Non-Conformance Record Sheet

8.3 Sign-off Sheet

	Date	Signature
Test Director B. Collaudin	28/7/08	
Test Conductor S. Edler	28/07/08	
Test operator S. Ilsen	28/7/08	
PA Responsible D. Lamarly	28-7-08	
ESA Representative		

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
	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
	Ivády von András	FAE12
	Jahn Gerd Dr.	ASG23
	Jolk Matthias	AET1
X	Klenke Uwe	ASG72
	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
	Theunissen Martijn	DSSA
	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 3 to Section 6.8:

As-Run Procedure HP-2-ASED-TP-0188 (Performance and Peak-Up Test) for HIFI FM IST Commissioning

As Run

28/07/08

EADS Astrium

Procedure

Herschel

FM HIFI SFT He2

Sess ID: 2008_07_28_04_24_herodmu_hpws22_REALTIME_HIFI SFT Co

TAG: TP_0188_iss1_TP0219_iss1_4_HIFI_SFT_He2_NCR_4181_END_00

Title: **IST Instrument Commissioning**
HIFI FM Performance & Peak-Up Test

CI-No: 125100

Prepared by:	S. Hamer (TERMA AS) S. Ilsen (McGinley)	Date:	25th July 2008
Checked by:	for N. Sonn		25.07.2008
Product Assurance:	R. Stritter		28/07/08
Configuration Control:	W. Wietbrock		
Project Management:	W. Fricke		
TAS-F Approval:	D. Montet		

Distribution: See Distribution List (last page)

Issue	Date	Sheet	Description of Change	Release
1	25.07.08	All	First Formal Release (in line with Issue 1.20 HIFI Procedures)	

Table of Content

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1 Scope

This Test Procedure contains the step by step procedure for the IST Test case "Instrument Commissioning - HIFI" to be run in Helium II conditions. This procedure specifically covers the HIFI Performance Test as defined in RD10 section 3.10.3 and HIFI Peak-up Test as defined in RD10 section 3.10.10.

The start-up configuration for the test and shutdown of the satellite after completion is covered by the IST Lead Procedure AD2. Specific configuration for the HIFI Commissioning as required by AD8 section 5.8.4.7 is covered by AD9.

The leading procedure also contains the definition of the relevant supporting infrastructure and pre test conditions required for the IST tests to be performed correctly. However, any specific supporting hardware or software required for the test is detailed within this procedure.

HIFI Commissioning IST is only performed on the Prime (Nominal) Units, the specific configuration required for HIFI is given in section 5.

Constraints

- The I-EGSE is required to be connected to the HPCCS to perform this test with the CCS Handler operational.
- This procedure requires the presence of HIFI personnel as the I-EGSE will be required to assess the results online as part of the pass/fail criteria.
- Before carrying out the next procedure within the test sequence always ask for the go ahead by the HIFI personnel.
- CCU must be connected to Cryostat Sensors
- The red tag has to be removed from the CVV optical windows (window slider) before start of test
- The HIFI cooling system has to be properly installed (e.g. no bubble foil covering the HIFI panels)
- In the event of a complete power loss to the S/C (e.g. Safety loop trip or similar), HIFI shall not be re-powered without NRB/SRON approval)
- HIFI must be in Standby2 mode for at least 5hrs prior to start of the performance test
- LOAA is required

1.1 Objective

The objective of the test is to check partial performance of HIFI FM Instrument FPU in Hell conditions, with LOU and warm units at ambient temperatures using a flight representative Satellite configuration.

1.2 Test Flow

This test flow is structured to reflect nominal operations of the HIFI as much as possible.

The flow is as follows:

1. Power on and configure EGSE for test
2. Power on and configure SVM including CCU for test
3. Power on NOMINAL HIFI and enable Mil1553B-bus interface
4. HIFI to STANDBY2
5. HIFI Performance Test
6. HIFI Peak-Up Test
7. HIFI to STANDBY1
8. Disable Mil1553B-bus interface and Power off NOMINAL HIFI units
9. Power off SVM and CCU
10. Switch off all EGSE

2 Documents/Drawings

2.1 Applicable Documents

AD 1	FM HIFI Warm Units Electrical Integration	HP-2-ASED-TP-0146
AD 2	Herschel IST Lead Procedure	HP-2-ASED-TP-0134
AD 3	Herschel SAT Emergency Switch Off Procedure Issue 2	HP-2-ASED-PR-0071
AD 4	PA Plan	HP-2-ASED-PL-0007
AD 5	HIFI IEGSE Setup Procedure	SRON-U/HIFI/PR/2007-005
AD 6	Test Specification for Herschel Instrument AVM & FM Tests Performed at Satellite Level, Issue 2	H-P-2-ASP-TS-1083
AD 7	H-P GDIR	H-P-1-ASPI-SP-0027
AD 8	Herschel Integrated Satellite Test Specification, Issue 5	H-P-2-ASP-SP-0939
AD 9	S/C Configuration for IST Instrument Commissioning, Issue 1	HP-2-ASED-TP-0237

2.2 Reference Documents

RD 1	Herschel Planck Central Checkout System System User Manual	H-P-4-TE-MA-0010
RD 2	Herschel CDMU ASW S/W Interface Control Document	H-P-4-SSF-IC-0001
RD 3	Herschel CDMU BSW S/W Interface Control Document	H-P-4-SES-NT-0076
RD 4	HIFI IID-B	SCI-PT-IIDB/HIFI-02125
RD 5	HIFI Power-up and Power-down Procedures for IST & TV Tests	SRON-G/HIFI/PR/2007-017
RD 6	Description FPU-cryostat Simulator	FPSS-01069
RD 7	Warm harness for testcryostats	SRON-U/FCU/SP/2004-001
RD 8	Specifications LOA dummy	SRON-G/HIFI/AIV/2005-016
RD 9	Instrument Interface Document – Part B –	SCI-PT-IIDB/HIFI-02125

	HIFI	
RD 10	HIFI IST Commissioning	SRON-G/HIFI/AIV/2007-009

2.3 Other Documents

None

2.4 Acronyms & Abbreviations

1553	MIL-STD-1553B conform communication interface
AAD	Attitude Anomaly Detector
ACC	ACMS Control Computer
ACMS	Attitude Control and Measurement Subsystem
AD	Applicable Document
AIR	ACC In Reconfiguration
AIT	Assembly, Integration and Test
AIV	Assembly, Integration and Verification
APID	Application Process ID
ASW	Application Software
AVM	Avionics Model
BOLC	BOLometer Control unit (PACS)
BSW	Basic Software
CBH	Catalyst Bed Heater
CCS	Central Check-out System
CCSDS	Consultative Committee for Space Data Systems
CDMU	Control and Data Management Unit
CDMS	Control and Data Management Sub-system
CIR	CDMU In Reconfiguration
CLCW	Command Link Control Word
CLTU	Command Link Transmission Unit
CPDU	Command Pulse Distribution Unit
CRS	Coarse Rate Sensor
CTR	Central on board Reference Time

DCU	Detector Control Unit (SPIRE)
DEC	Detectors Electronics Control unit (PACS)
DMC	Detector and Mechanism Control unit (PACS)
DPU	Digital Processing Unit
DRCU	Detector Readout & Control Unit (SPIRE)
EEPROM	Electrically Erasable PROM
EGSE	Electrical Ground Support Equipment
FCL	Fold-back Current Limiter
FCU	FPU Control Unit
FCV	Flow Control Valves
FDIR	Failure Detection, Isolation, and Recovery
FPU	Focal Plane Unit
GDIR	General Design and Interface Requirement
GRP	Group Heaters Switch
HBR	High Bit Rate
HL/HLC	High Level command
HP/HPC	High Priority commands
HPLM	Herschel PayLoad Module
HPSDB	Herschel Planck System Data Base
HRH	HRS – Horizontal Polarisation (HIFI)
HRS	High Resolution Spectormeter (HIFI)
HRV	HRS – Vertical Polarisation (HIFI)
HW	Hardware
i.a.w.	In accordance with
I/F	InterFace
I/O	Input/Output
ICD	Interface Control Document
ICU	Instrument Control Unit(HIFI)
IF	Intermediate Frequency
IFH	IF up-converter Horizontal (HIFI)
IFV	IF up-converter Vertical (HIFI)
IST	Integrated System Test

LBR	Low Bit Rate
LCL	Latching Current Limiter
LCU	Local Oscillator Control Unit (HIFI)
LOU	Local Oscillator Unit (HIFI)
LSU	Local Oscillator Source Unit (HIFI)
LV	Latching Valves
MAP	Multiplexed Access Point
MBR	Medium Bit Rate
MCU	(SPIRE)
MEC	Mechanisms Electronics Control unit (PACS)
ML 16	Memory Load command (ML 16)
MM	Memory Module
MOIS	Mission Operations Information System
MTL	Mission Timeline
NRZ-L	Non Return to Zero – Level
OBCP	On-Board Control Procedure
OBDH	On-Board Data Handling
OBMF	On-Board Monitoring Function
OBRT/OBT	On-Board Reference Time
OIRD	Operation Interface Requirement Document
PACS	Photodetector Array Camera & Spectrometer
P/L	Payload
PCDU/PCS	Power Control Distribution Unit/Power Control Subsystem
PM	Processor Module
PROM	Programmable Read Only Memory
PSK	Phase Shift Keying
RA	Rate Anomaly
RAM	Random Access Memory
RCS	Reaction Control Subsystem
RD	Reference Document
RF	Radio Frequency
RM	Reconfiguration Module

RT	1553 Remote Terminal
RTU	RT Unit
RTA	RTU
RWL	Reaction Wheel Assembly
SA	1553 Remote Terminal Sub Address
SAS	Sun Acquisition Sensor
SCOE	Special Check-out Equipment
SCU	(SPIRE)
SFT	Short Functional Test
SIR	S/C In Reconfiguration
SIT	Subsystem Integrated Test
SP	Sun Pointing
SPIRE	Spectral & Photometric Imaging Receiver
SPU	Signal Processing Unit (PACS)
SSMM	Solid State Mass Memory
STR	Star Tracker
SVM	Service Module
SW	Software
TAI	International Atomic Time
TC	TeleCommand
TFG	Transfer Frame Generator
TM	TeleMetry
TTC	Telemetry Tracking & Command subsystem
TTR	Telemetry Telecommand and Reconfiguration
UFT	Unit Functional Test
VC	Virtual Channel
WBS	Wide Band Spectrometer
WD	Watchdog

3 Requirements to be verified

This is a partial performance check of the FM HIFI Instrument and SVM interfaces with the Cryostat in Hell conditions.

No specific requirements are defined.

4 Configuration

The figure below shows the overall EGSE/Satellite configuration for the SFT with LOU and FPU connected.

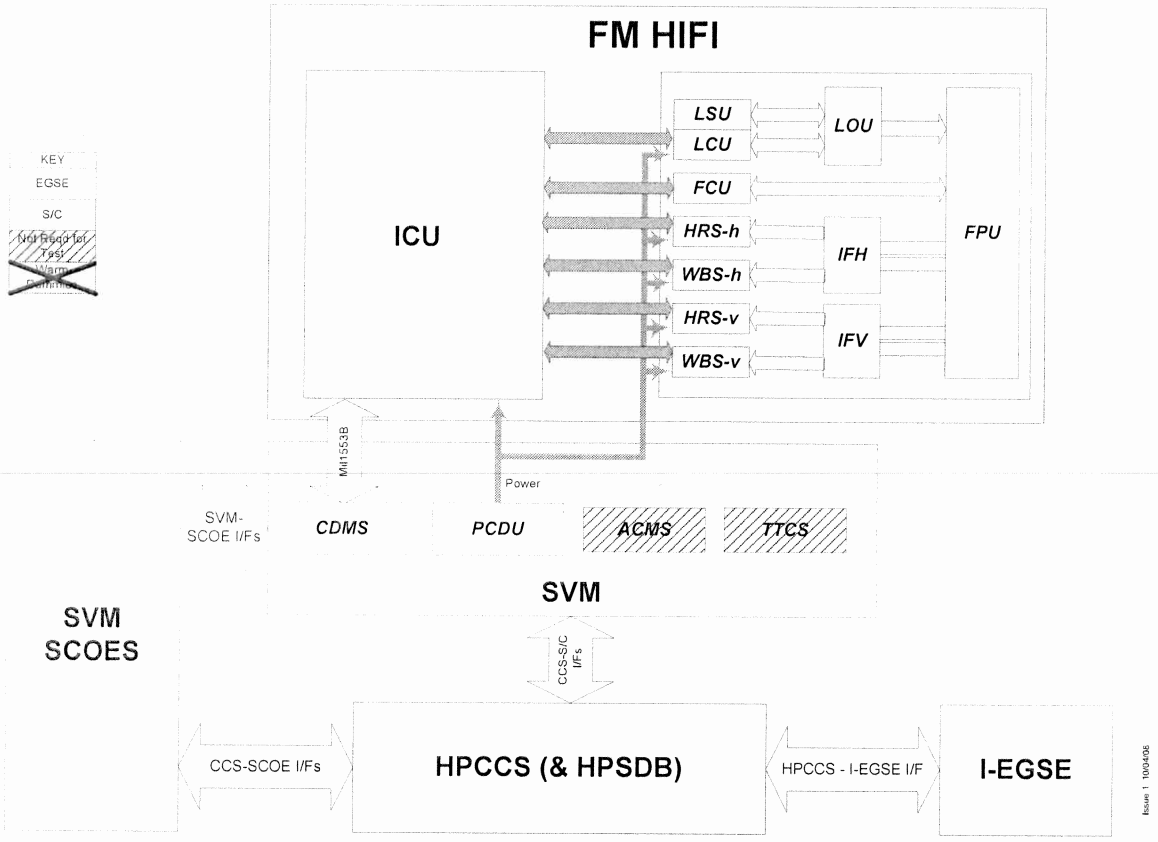

Figure 4-1: FM HIFI Commissioning Configuration

4.1 Satellite Configuration

As per AD8 section 5.8.4.7.

4.2 EGSE Configuration

This test requires the EGSE to be configured and elements powered on in accordance with AD 2.

I-EGSE shall be configured and connected to the HPCCS in accordance with AD 5.

4.3 Set-up

The following main Test Scripts are called from this procedure, these may call lower level test scripts, all scripts are required to be installed and checked in on the HPCCS prior to start of test:

Number	Tcl Script Name	Confirmed Installed on HPCCS
1.	ALL_SubscribeParams	✓
2.	HIFIST_ASED_PatchPtvChecksum	✓
3.	HIFIST_ASED_PatchTempLimits	✓
4.	H102999SCVT015_ASDISTHIFI_PWR_ON_P	✓
5.	HIFIST_master_IST_nominal_warm (and associated su-scripts for SPT_FP_Performance & SPT_peakup	✓
6.	H102999SCVT016_ASDISTHIFI_PWR_OFF_P	✓

The HPCSS has the following software for test:

HPCCS Software	Version	Comment
HPCCS version	20-13/17	
HPSDB version	15	

The HIFI I-EGSE has the following software for the test:

I-EGSE Software	Version	Comment
HIFI MIB version	ASPI-11_8 (8140)	
CUS version	14.35	
SCOS version	R2.3E	patch P5

Current HIFI ICU On-board Software Version Details:

OBS	Version	Description
FM HIFI ICU Main	5.8.0	EEPROM Partition 1
FM HIFI ICU Red.	5.8.0	EEPROM Partition 1

5 Conditions

5.1 Personnel

Responsibility	Name / Organisation
Test Director	B. Collaudin
Test Conductor	S. Ilsen
EGSE Operator	S. Ilsen / S. Hamer
PA Responsible	D. Lamarby
Instrument Representative	P. Dieleman
Customer Representative	/
ESA Representative	/

5.2 Environmental (Clean Room & S/C)

Environmental	Nominal	Actual
Clean Room Class	class 100000 or better	
Temperature	22°C ± 3°C	21°C
Rel. Humidity	40 % - 60 %	51,5 %
Pressure	Ambient	Ambient

S/C Environmental	Reqd	Actual
S/C Orientation	N/A	Vertical
Cryostat Connection (Valves)	N/A	/
Cryostat Status (Hel/Hell)	Hell	He II
Cryostat Level 0 Temp (T222)	2 K	2,174 K
Cryostat Level 1 Temp (T234)	4 – 8 K	2,577 K
Cryostat OBA (T254)	10 – 15 K	5,24 K
Cryostat Level 3 Temp	N/A	/
Cryostat Cover Temp		/

5.3 General Precautions and Safety

Non-test specific precautions and safety considerations are detailed in section 5.3 of AD 2. Specific safety issues and general precautions for the tests to be performed are detailed in the following sections.

5.3.1 General Safety Requirements, Precautions

In the event of unrecoverable anomaly requiring emergency switch off of the satellite, the switch off shall be performed in accordance with AD 3.

5.3.2 ESD constraints

Normal ESD constraints are to be observed when handling HIFI units.

5.3.3 HIFI Instrument Specific Safety Requirements

To ensure that the WBS laser temperatures (HM023193 HWH_Laser_T and HM062193 HWV_Laser_T) do not rise above the red limit in the HIFI MIB, the HIFI cooling cart has to be set up at the HIFI panels. Ensure that the HIFI panels are not covered from the outside (e.g. by protective bubble foil). If the red limit is exceeded, the time of occurrence should be logged; there is no other impact on the test which can continue.

5.3.4 Cryogenic System Specific Safety Requirements

During the test the CCU may be connected to the Cryostat sensors and valves. Although no valve operation is performed in this test all Cryogenic specific safety requirements shall be considered when running this procedure as indicated below.

Safety instructions for cryogenic hazards coming from the Helium system are as follows:

1	Helium itself is a non-toxic gas. The hazards to be expected are personal injuries from frostbites (cold surfaces, cold gas plumes), asphyxiation due to insufficient oxygen in the remaining air, loss of orientation due to dense fog generation and impacts of cold damaged structures.
2	Due to the amount of stored energy the Herschel cryostat is a pressure vessel and the general rules for pressure vessel design have to be followed. In addition to these general rules, the safety regulations at CSG launch site have to be considered. The application of these rules leads to a safety concept, which is based on the 'leak before burst' criterion. Herschel is based on the following safety and reliability philosophy: a. Two failure tolerant b. Three independent paths for overpressure relief c. Passive safety system for all operation modes (no active controls for monitoring is required at any time) As emergency situations may occur at unexpected points in time and typically need immediate action, the full hierarchy of the project cannot be deployed and consultation of all knowledgeable persons may not be possible.
3	The main intent of immediate actions will therefore be to ensure safety of personnel and to bring the S/C into a safe waiting condition. The priority of safeguarding is 1) Personnel 2) S/C 3) Facility 4) Support equipment The second aim is to keep the cryostat near the foreseen test conditions in order to continue the test without unnecessary time delay if the failure can be corrected.
4	The ASED test director (or his representative) will be informed by the test personnel of any non-conformances, alarm and unforeseen events that might lead to emergency situations. The ASED test director (or his representative) will initiate immediate steps and call the decision committee (ASED test director, ASED PA, ESA test director, ASP representative, ETS representative) if necessary.
5	Prior to begin a pre-task briefing shall be performed to inform all participants about purpose of operation, possible hazards and emergency shut down
6	In case of operation of the Cryostat safety system the following IMMEDIATE activities shall be performed: • Operation of the safety valve: EVERYBODY has to leave the test room, except test Conductor and necessary CVSE operations personnel • Operation of burst disc: EVERYBODY has to leave the test room

5.3.5 Special QA Requirements

None.

5.4 GSE

Non-test specific GSE details are provided in section 5.4 of AD 2. Specific GSE needs for the tests to performed are detailed in the following sections.

5.4.1 MGSE

None.

5.4.2 CVSE

None.

5.4.3 EGSE

The I-EGSE is required to be connected to the HPCCS for execution of this procedure.

5.4.4 OGSE

None.

5.4.5 Special Equipment

None.

6 Verification Requirements and Test Criteria

Functional performance and status parameter actual values recorded will be checked during the test and must be the same as the nominal status value indicated.

The test will only be deemed successful once all offline analysis of the results has been performed. Typically, the PTR will be held before completion of this activity and therefore only a preliminary assessment of the test success can be provided to allow any disconnection of specific GSE required for the test, and which needs to be removed before further activities can be performed.

Enter Start Date|Time:			

7 Test Procedure

7.1 Initial EGSE and Satellite Configuration for the Test

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

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

In the event of emergency the Satellite SHALL be switched down according to AD 3.

HIFI staff are to be warned and if advised procedure aborted in the following cases:

- *HK red out-of-limit values not explicitly mentioned in the procedure steps*
- *On-board event generated by the HIFI on-board software*

The actual test result (passed/failed) will be established by analysis of the data collected by the IEGSE, to be performed by HIFI personnel.

Enter Start Date|Time:	28/7/08	04:59	

7.2 Step by Step Procedure

Test Location:	ESTEC
Test Session Id:	2008_07_28_04_24_heradmu_hpw22_REALTIME HIFISFTCO
Test Environment:	TP_0188_iss1_TP0219_iss1_4_HIFI_SFT_Hel_NCR_4181_END_001

PVS1-1

7.2.1 *EGSE & Satellite Switch On*

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	Satellite & EGSE Switch On						
1	Confirm I-EGSE physically connected to HPCCS	OK				✓	
2	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 2 sections 7.1 and 7.2. In section 7.2.4 selecting the test case HIFI Commissioning 5.8.4.7, in the Master GUI	OK				✓	
3	Configure the Satellite specifically for HIFI Commissioning i.a.w. with AD9 Section 7.4 continuing up to step 123					✓	
4	Confirm that EGSE and Satellite are in the correct configuration as	OK				✓	

PVS#3

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Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
	per AD 2						
5	Confirm that the CVV window cover (red tag) is removed.	OK		OK		✓	
6	Confirm that the HIFI Cooling Cart is installed and the HIFI panels are not covered by bubble foil.	OK		OK		✓	
7	Switch on & configure HIFI I-EGSE i.a.w. **AD5**	OK		OK		✓	
8	Confirm HIFI I-EGSE is in the correct configuration as per AD5	OK		OK		✓	
9	From HPCCS Test Conductor console issue command to connect to HIFI (I-EGSE) **connect HHIFIEGSE**	OK		OK		✓	
10	Confirm from HPCCS and HIFI I-EGSE that the connection has been established	YZS27940 = CONNECTED		CONNECTED		✓	
11	Verify that I-EGSE is receiving CCU Cryo packets	OK		OK		✓	
12	Verify HPCCS-IEGSE connection by sending the following test command from manual command stack (repeater value 0) and verify received OK on IEGSE: **YC00X962**	OK		OK		✓	
13	On HPCCS start the following test script: **HIFI_ALL_SubscribeParams.tcl**	OK		OK		✓	
14	On the HPCCS perform HL ptv checksum patch by executing: **HIFIST_ASED_PatchPtvChecksum**	OK		OK		✓	

RVS2.

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Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
15	On the HPCCS perform change of temperature limits patch for warm conditions by executing: **HIFIST_ASED_PatchTempLimits**	OK		OK		✓	
	READY FOR START OF HIFI COMMISSIONING						

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Enter Start Date|Time:			

RVS1-2

7.2.2 *Switch On HIFI Nominal*

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
1.	On HPCCS start Packet History displays for the following APIDs:1024,1026	OK				
2.	From the HPCCS test conductor console start the test script: **H102999SCVT015_ASDISTHIFI_PWR_ON_P**	OK		ANDs HA000289 HA004289		
3.	On HPCCS when prompted: "FM HIFI Switch ON for IST or SFT in Hel/Hell conditions with warm LOU - Select NO to abort TS if not correct" **Select YES**	YES				
	If **YES** is selected the test script will go on to automatically power on all HIFI warm units, force boot the DPU ASW and configure the instrument to Standby.					
4.	See Remarks !! On HPCCS when prompted:	OK		The HIFI instrument support responsible shall be connected remotely to		

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Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	"During execution of next sub-script HIFIST_Startup_LCU_table_read, Record HIFI OBSID (HM003190) and inform I-EGSE operator" Select OK to continue			observe the status of the HIFI Instrument. **So he should be contacted before this test step**		
5.	During execution of following script HIFIST_Startup_LCU_table_read When HM003190 becomes > 90000000 hex, record the value and inform the I-EGSE operator. (Note: at start & end value is 90000000 hex)	> 90000000 hex	OBSID: _____hex _____dec			
6.	On HPCCS when prompted: "Press OK when IEGSE confirms LCU status OK" request I-EGSE operator to run the command 'verifyreadback <OBSID>' using the OBSID retrieved in the previous step. **Note:** Only continue if I-EGSE operator confirms that the verification is PASSED, otherwise contact SRON to investigate and resolve before continuing	OK		If the word PASS does not appear on the screen of the I-EGSE, this is a nogo on this test procedure.		

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Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	Select OK to continue					
7.	On HPCCS when all autonomous actions have been completed by the power on script H102999SCVT015_ASDISTHIFI_PWR_ON_P it will prompt: *"Set Bus Profile Back to Original Setting?"* Select NO	NO				
8.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select OK to continue	OK				
9.	Verify HK TM packets are being received on APIDs 1024 & 1026					
	HIFI Powered and in Standby1 mode					

Additional steps are needed if HIFI needs to be in STANDBY2 mode (see starting conditions of specific test)

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NCR 4380

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PVS5 #2

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
10.	From the HPCCS test conductor console start the test script: **H102999SCVT032_ASDISTHIFI_STBY1_STBY2_P**	OK		ANDs HA000289 HA004289	V	
	HIFI in Standby2 mode					

PVS4-1 +

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7.2.3 *Perform HIFI Commissioning Performance Test*

Prior to this test, HIFI should have been configured in STANDYBY1/2 mode for at least 5 hours (stabilisation requirement)

SPT FP Performance Test					
					Created on 23-Jul-08 17:53:30 from \\Venus\albrecht\public_html\istscripts\release.1.20\procedures\IST_nominal_warm.csv
123-228	06:03:32	css	run tcl script	file HIFIST_master_IST_nominal_warm.tcl section SPT_FP_Performance	-U_1_20_2.tcl
			comment	✓	123 00:00:18 run tcl script HIFIST_nom_IST_Init_1a_key_warm.tcl Testmode_Init band 1a lo_freq 522.0
			comment	✓	124 00:00:40 run tcl script HIFIST_nom_IST_LO_on_1a_warm.tcl Testmode_LCU_switchon band 1a
			comment	✓	125 00:00:51 run tcl script HIFIST_nom_IST_LOtune_1a_key_warm.tcl Testmode_LO_tuning band 1a lo_freq 522.0
RVS#5 (1)			comment		126 00:07:21 run tcl script HIFIST_nom_IST_short_stab_1_warm.tcl Testmode_stability_internal_load band 1a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 n 50 backend both
			comment		127 00:20:38 run tcl script HIFIST_nom_IST_chopcal_1_warm.tcl Testmode_Chopper_calibration band 1 integ_time 4
			comment	✓	128 00:02:34 run tcl script HIFIST_nom_IST_perform_1a_522.0_warm.tcl Testmode_HIFI_Performance band 1a hrs_mode_h wb1 hrs_mode_v wb1 lo_freq 522.0 integ_time 4 backend both

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SPT FP Performance Test					
					Created on 23-Jul-08 17:53:30 from \\Venus\albrecht\public_html\istscripts\release.1.20\procedures\IST_nominal_warm.csv
			comment		129 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
			comment		130 00:04:38 run tcl script HIFIST_nom_IST_FT_unp_1_warm.tcl Testmode_FT_unpumped band 1a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 backend both
			comment		131 00:00:13 run tcl script HIFIST_nom_IST_Init_1b_key_warm.tcl Testmode_Init band 1b lo_freq 591.0
			comment		132 00:00:40 run tcl script HIFIST_nom_IST_LO_on_1b_warm.tcl Testmode_LCU_switchon band 1b
			comment		133 00:00:51 run tcl script HIFIST_nom_IST_LOtune_1b_key_warm.tcl Testmode_LO_tuning band 1b lo_freq 591.0
			comment		134 00:07:21 run tcl script HIFIST_nom_IST_short_stab_1_warm.tcl Testmode_stability_internal_load band 1a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 n 50 backend both
			comment		135 00:02:34 run tcl script HIFIST_nom_IST_perform_1b_591.0_warm.tcl Testmode_HIFI_Performance band 1b hrs_mode_h wb1 hrs_mode_v wb1 lo_freq 591.0 integ_time 4 backend both
			comment		136 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
			comment		137 00:04:38 run tcl script HIFIST_nom_IST_FT_unp_1_warm.tcl Testmode_FT_unpumped band 1a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 backend both

PVS#5

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SPT FP Performance Test					
					Created on 23-Jul-08 17:53:30 from \\Venus\albrecht\public_html\istscripts\release.1.20\procedures\IST_nominal_warm.csv
			comment		138 00:00:13 run tcl script HIFIST_nom_IST_Init_2a_key_warm.tcl Testmode_Init band 2a lo_freq 652.0
			comment		139 00:00:40 run tcl script HIFIST_nom_IST_LO_on_2a_warm.tcl Testmode_LCU_switchon band 2a
			comment		140 00:00:51 run tcl script HIFIST_nom_IST_LOtune_2a_key_warm.tcl Testmode_LO_tuning band 2a lo_freq 652.0
			comment		141 00:07:21 run tcl script HIFIST_nom_IST_short_stab_2_warm.tcl Testmode_stability_internal_load band 2a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 n 50 backend both
			comment		142 00:20:38 run tcl script HIFIST_nom_IST_chopcal_2_warm.tcl Testmode_Chopper_calibration band 2 integ_time 4
			comment		143 00:02:34 run tcl script HIFIST_nom_IST_perform_2a_652.0_warm.tcl Testmode_HIFI_Performance band 2a hrs_mode_h wb1 hrs_mode_v wb1 lo_freq 652.0 integ_time 4 backend both
			comment		144 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
			comment		145 00:04:40 run tcl script HIFIST_nom_IST_FT_unp_2_warm.tcl Testmode_FT_unpumped band 2a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 backend both
			comment		146 00:00:13 run tcl script HIFIST_nom_IST_Init_2b_key_warm.tcl Testmode_Init band 2b lo_freq 732.0

PVS#5

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SPT FP Performance Test					
					Created on 23-Jul-08 17:53:30 from \\Venus\albrecht\public_html\istscripts\release.1.20\procedures\IST_nominal_warm.csv
			comment		147 00:00:40 run tcl script HIFIST_nom_IST_LO_on_2b_warm.tcl Testmode_LCU_switchon band 2b
			comment		148 00:00:51 run tcl script HIFIST_nom_IST_LOtune_2b_key_warm.tcl Testmode_LO_tuning band 2b lo_freq 732.0
			comment		149 00:07:21 run tcl script HIFIST_nom_IST_short_stab_2_warm.tcl Testmode_stability_internal_load band 2a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 n 50 backend both
			comment		150 00:02:34 run tcl script HIFIST_nom_IST_perform_2b_732.0_warm.tcl Testmode_HIFI_Performance band 2b hrs_mode_h wb1 hrs_mode_v wb1 lo_freq 732.0 integ_time 4 backend both
			comment		151 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
			comment		152 00:04:40 run tcl script HIFIST_nom_IST_FT_unp_2_warm.tcl Testmode_FT_unpumped band 2a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 backend both
			comment		153 00:00:13 run tcl script HIFIST_nom_IST_Init_3a_key_warm.tcl Testmode_Init band 3a lo_freq 807.0
			comment		154 00:00:40 run tcl script HIFIST_nom_IST_LO_on_3a_warm.tcl Testmode_LCU_switchon band 3a
			comment		155 00:00:51 run tcl script HIFIST_nom_IST_LOtune_3a_key_warm.tcl Testmode_LO_tuning band 3a lo_freq 807.0

RVS#5

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SPT FP Performance Test

						Created on 23-Jul-08 17:53:30 from \\Venus\albrecht\public_html\istscripts\release.1.20\procedures\IST_nominal_warm.csv
RVS#5				comment		156 00:07:21 run tcl script HIFIST_nom_IST_short_stab_3_warm.tcl Testmode_stability_internal_load band 3a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 n 50 backend both
				comment		157 00:20:38 run tcl script HIFIST_nom_IST_chopcal_3_warm.tcl Testmode_Chopper_calibration band 3 integ_time 4
				comment		158 00:02:34 run tcl script HIFIST_nom_IST_perform_3a_807.0_warm.tcl Testmode_HIFI_Performance band 3a hrs_mode_h wb1 hrs_mode_v wb1 lo_freq 807.0 integ_time 4 backend both
				comment		159 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
				comment		160 00:04:40 run tcl script HIFIST_nom_IST_FT_unp_3_warm.tcl Testmode_FT_unpumped band 3a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 backend both
				comment		161 00:00:13 run tcl script HIFIST_nom_IST_Init_3b_key_warm.tcl Testmode_Init band 3b lo_freq 906.0
				comment		162 00:00:40 run tcl script HIFIST_nom_IST_LO_on_3b_warm.tcl Testmode_LCU_switchon band 3b
				comment		163 00:00:51 run tcl script HIFIST_nom_IST_LOtune_3b_key_warm.tcl Testmode_LO_tuning band 3b lo_freq 906.0
RVS#5				comment		164 00:07:21 run tcl script HIFIST_nom_IST_short_stab_3_warm.tcl Testmode_stability_internal_load band 3a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 n 50 backend both

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SPT FP Performance Test

						Created on 23-Jul-08 17:53:30 from \\Venus\albrecht\public_html\istscripts\release.1.20\procedures\IST_nominal_warm.csv
			comment		✓	165 00:02:34 run tcl script HIFIST_nom_IST_perform_3b_906.0_warm.tcl Testmode_HIFI_Performance band 3b hrs_mode_h wb1 hrs_mode_v wb1 lo_freq 906.0 integ_time 4 backend both
			comment		✓	166 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
			comment		✓	167 00:04:40 run tcl script HIFIST_nom_IST_FT_unp_3_warm.tcl Testmode_FT_unpumped band 3a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 backend both
			comment		✓	168 00:00:13 run tcl script HIFIST_nom_IST_Init_4a_key_warm.tcl Testmode_Init band 4a lo_freq 979.0
			comment		✓	169 00:00:40 run tcl script HIFIST_nom_IST_LO_on_4a_warm.tcl Testmode_LCU_switchon band 4a
			comment		✓	170 00:00:51 run tcl script HIFIST_nom_IST_LOtune_4a_key_warm.tcl Testmode_LO_tuning band 4a lo_freq 979.0
RVS#5			comment			171 00:07:21 run tcl script HIFIST_nom_IST_short_stab_4_warm.tcl Testmode_stability_internal_load band 4a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 n 50 backend both
			comment			172 00:20:38 run tcl script HIFIST_nom_IST_chopcal_4_warm.tcl Testmode_Chopper_calibration band 4 integ_time 4
			comment		✓	173 00:02:34 run tcl script HIFIST_nom_IST_perform_4a_979.0_warm.tcl Testmode_HIFI_Performance band 4a hrs_mode_h wb1 hrs_mode_v wb1 lo_freq 979.0 integ_time 4 backend both

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Enter Start Date|Time:			

SPT FP Performance Test

					Created on 23-Jul-08 17:53:30 from \\Venus\albrecht\public_html\istscripts\release.1.20\procedures\IST_nominal_warm.csv
			comment		174 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
			comment		175 00:04:43 run tcl script HIFIST_nom_IST_FT_unp_4_warm.tcl Testmode_FT_unpumped band 4a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 backend both
			comment		176 00:00:13 run tcl script HIFIST_nom_IST_Init_4b_key_warm.tcl Testmode_Init band 4b lo_freq 1065.0
			comment		177 00:00:40 run tcl script HIFIST_nom_IST_LO_on_4b_warm.tcl Testmode_LCU_switchon band 4b
			comment		178 00:00:51 run tcl script HIFIST_nom_IST_LOtune_4b_key_warm.tcl Testmode_LO_tuning band 4b lo_freq 1065.0
PVS#5			comment		~~179 00:07:21 run tcl script HIFIST_nom_IST_short_stab_4_warm.tcl Testmode_stability_internal_load band 4a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 n 50 backend both~~
			comment		180 00:02:34 run tcl script HIFIST_nom_IST_perform_4b_1065.0_warm.tcl Testmode_HIFI_Performance band 4b hrs_mode_h wb1 hrs_mode_v wb1 lo_freq 1065.0 integ_time 4 backend both
			comment		181 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
			comment		182 00:04:43 run tcl script HIFIST_nom_IST_FT_unp_4_warm.tcl Testmode_FT_unpumped band 4a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 backend both

Enter Date/Time:	28/07/08	20:52	Sign Off	TC:	PA: R. Goossens

Enter Start Date|Time:			

SPT FP Performance Test

					Created on 23-Jul-08 17:53:30 from \\Venus\albrecht\public_html\istscripts\release.1.20\procedures\IST_nominal_warm.csv
			comment		183 00:00:13 run tcl script HIFIST_nom_IST_Init_5a_key_warm.tcl Testmode_Init band 5a lo_freq 1152.0
			comment		184 00:00:40 run tcl script HIFIST_nom_IST_LO_on_5a_warm.tcl Testmode_LCU_switchon band 5a
			comment		185 00:00:51 run tcl script HIFIST_nom_IST_LOtune_5a_key_warm.tcl Testmode_LO_tuning band 5a lo_freq 1152.0
			comment		186 00:07:21 run tcl script HIFIST_nom_IST_short_stab_5_warm.tcl Testmode_stability_internal_load band 5a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 n 50 backend both
			comment		187 00:20:38 run tcl script HIFIST_nom_IST_chopcal_5_warm.tcl Testmode_Chopper_calibration band 5 integ_time 4
			comment		188 00:02:58 run tcl script HIFIST_nom_IST_perform_5a_1152.0_warm.tcl Testmode_HIFI_Performance band 5a hrs_mode_h wb1 hrs_mode_v wb1 lo_freq 1152.0 integ_time 4 backend both
			comment		189 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
			comment		190 00:04:40 run tcl script HIFIST_nom_IST_FT_unp_5_warm.tcl Testmode_FT_unpumped band 5a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 backend both
			comment		191 00:00:13 run tcl script HIFIST_nom_IST_Init_5b_key_warm.tcl Testmode_Init band 5b lo_freq 1188.0

RVS#5

Enter Date/Time:	28/07/08	20:57	Sign Off	TC:	PA: R. Goossens

Enter Start Date|Time:			

SPT FP Performance Test

					Created on 23-Jul-08 17:53:30 from \\Venus\albrecht\public_html\istscripts\release.1.20\procedures\IST_nominal_warm.csv
			comment	✓	192 00:00:40 run tcl script HIFIST_nom_IST_LO_on_5b_warm.tcl Testmode_LCU_switchon band 5b
			comment	✓	193 00:00:51 run tcl script HIFIST_nom_IST_LOtune_5b_key_warm.tcl Testmode_LO_tuning band 5b lo_freq 1188.0
PVS#5			comment		194 00:07:21 run tcl script HIFIST_nom_IST_short_stab_5_warm.tcl Testmode_stability_internal_load band 5a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 n 50 backend both
			comment	✓	195 00:02:58 run tcl script HIFIST_nom_IST_perform_5b_1188.0_warm.tcl Testmode_HIFI_Performance band 5b hrs_mode_h wb1 hrs_mode_v wb1 lo_freq 1188.0 integ_time 4 backend both
			comment	✓	196 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
			comment	✓	197 00:04:40 run tcl script HIFIST_nom_IST_FT_unp_5_warm.tcl Testmode_FT_unpumped band 5a hrs_mode_h wb1 hrs_mode_v wb1 integ_time 4 backend both
			comment		198 00:00:13 run tcl script HIFIST_nom_IST_Init_6a_key_warm.tcl Testmode_Init band 6a lo_freq 1520.0
PVS#5			comment		199 00:00:40 run tcl script HIFIST_nom_IST_LO_on_6a_warm.tcl Testmode_LCU_switchon band 6a
			comment		200 00:00:51 run tcl script HIFIST_nom_IST_LOtune_6a_key_warm.tcl Testmode_LO_tuning band 6a lo_freq 1520.0

Enter Date/Time:			Sign Off	TC:	PA: R. Goossens

Enter Start Date|Time:			

SPT FP Performance Test

					Created on 23-Jul-08 17:53:30 from \\Venus\albrecht\public_html\istscripts\release.1.20\procedures\IST_nominal_warm.csv
			comment		201 00:07:21 run tcl script HIFIST_nom_IST_short_stab_6_warm.tcl Testmode_stability_internal_load band 6a hrs_mode_h wb8 hrs_mode_v wb8 integ_time 4 n 50 backend both
			comment		202 00:20:38 run tcl script HIFIST_nom_IST_chopcal_6_warm.tcl Testmode_Chopper_calibration band 6 integ_time 4
PVS#5			comment		203 00:02:12 run tcl script HIFIST_nom_IST_perform_6a_1520.0_warm.tcl Testmode_HIFI_Performance band 6a hrs_mode_h wb8 hrs_mode_v wb8 lo_freq 1520.0 integ_time 4 backend both
			comment		204 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
			comment		205 00:01:18 run tcl script HIFIST_nom_IST_FT_unp_6_warm.tcl Testmode_FT_unpumped band 6a hrs_mode_h wb8 hrs_mode_v wb8 integ_time 4 backend both
			comment	✓	206 00:00:13 run tcl script HIFIST_nom_IST_Init_6b_key_warm.tcl Testmode_Init band 6b lo_freq 1584.0
			comment	✓	207 00:00:40 run tcl script HIFIST_nom_IST_LO_on_6b_warm.tcl Testmode_LCU_switchon band 6b
			comment	✓	208 00:00:51 run tcl script HIFIST_nom_IST_LOtune_6b_key_warm.tcl Testmode_LO_tuning band 6b lo_freq 1584.0
PVS#5			comment		209 00:07:21 run tcl script HIFIST_nom_IST_short_stab_6_warm.tcl Testmode_stability_internal_load band 6a hrs_mode_h wb8 hrs_mode_v wb8 integ_time 4 n 50 backend both

Enter Date/Time:	28/07/08	21:06	Sign Off	TC:	PA: R. Cassens

Enter Start Date|Time:			

SPT FP Performance Test

					Created on 23-Jul-08 17:53:30 from \\Venus\albrecht\public_html\istscripts\release.1.20\procedures\IST_nominal_warm.csv
			comment		210 00:02:12 run tcl script HIFIST_nom_IST_perform_6b_1584.0_warm.tcl Testmode_HIFI_Performance band 6b hrs_mode_h wb8 hrs_mode_v wb8 lo_freq 1584.0 integ_time 4 backend both
			comment		211 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
			comment		212 00:01:18 run tcl script HIFIST_nom_IST_FT_unp_6_warm.tcl Testmode_FT_unpumped band 6a hrs_mode_h wb8 hrs_mode_v wb8 integ_time 4 backend both
			comment		213 00:00:13 run tcl script HIFIST_nom_IST_Init_7a_key_warm.tcl Testmode_Init band 7a lo_freq 1746.0
			comment		214 00:00:40 run tcl script HIFIST_nom_IST_LO_on_7a_warm.tcl Testmode_LCU_switchon band 7a
			comment		215 00:00:51 run tcl script HIFIST_nom_IST_LOtune_7a_key_warm.tcl Testmode_LO_tuning band 7a lo_freq 1746.0
			comment		216 00:07:21 run tcl script HIFIST_nom_IST_short_stab_7_warm.tcl Testmode_stability_internal_load band 7a hrs_mode_h wb8 hrs_mode_v wb8 integ_time 4 n 50 backend both
			comment		217 00:20:38 run tcl script HIFIST_nom_IST_chopcal_7_warm.tcl Testmode_Chopper_calibration band 7 integ_time 4

RVS#5

Enter Date/Time:	28/07/08	21:16	Sign Off	TC:	PA: R. Goossens

Enter Start Date|Time:			

RVS#5

PVS#5

SPT FP Performance Test					
					Created on 23-Jul-08 17:53:30 from \\Venus\albrecht\public_html\istscripts\release.1.20\procedures\IST_nominal_warm.csv
			comment		218 00:02:12 run tcl script HIFIST_nom_IST_perform_7a_1746.0_warm.tcl Testmode_HIFI_Performance band 7a hrs_mode_h wb8 hrs_mode_v wb8 lo_freq 1746.0 integ_time 4 backend both
			comment		219 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
			comment		220 00:01:18 run tcl script HIFIST_nom_IST_FT_unp_7_warm.tcl Testmode_FT_unpumped band 7a hrs_mode_h wb8 hrs_mode_v wb8 integ_time 4 backend both
			comment		221 00:00:13 run tcl script HIFIST_nom_IST_Init_7b_key_warm.tcl Testmode_Init band 7b lo_freq 1764.0
			comment		222 00:00:40 run tcl script HIFIST_nom_IST_LO_on_7b_warm.tcl Testmode_LCU_switchon band 7b
			comment		223 00:00:51 run tcl script HIFIST_nom_IST_LOtune_7b_key_warm.tcl Testmode_LO_tuning band 7b lo_freq 1764.0
			comment		224 00:07:21 run tcl script HIFIST_nom_IST_short_stab_7_warm.tcl Testmode_stability_internal_load band 7a hrs_mode_h wb8 hrs_mode_v wb8 integ_time 4 n 50 backend both
			comment		225 00:02:12 run tcl script HIFIST_nom_IST_perform_7b_1764.0_warm.tcl Testmode_HIFI_Performance band 7b hrs_mode_h wb8 hrs_mode_v wb8 lo_freq 1764.0 integ_time 4 backend both

Enter Date/Time:	28/07/08	21:16	Sign Off	TC:	PA: R. Goossens

Enter Start Date|Time:			

SPT FP Performance Test					
					Created on 23-Jul-08 17:53:30 from \\Venus\albrecht\public_html\istscripts\release.1.20\procedures\IST_nominal_warm.csv
			comment		226 00:00:18 run tcl script HIFIST_nom_IST_LO_off_warm.tcl Testmode_LCU_switchoff
			comment		227 00:01:18 run tcl script HIFIST_nom_IST_FT_unp_7_warm.tcl Testmode_FT_unpumped band 7a hrs_mode_h wb8 hrs_mode_v wb8 integ_time 4 backend both
			comment		228 00:00:29 run tcl script HIFIST_nom_IST_standby_warm.tcl Testmode_standby_hbb_on band 0 hrs_mode_h wb1 hrs_mode_v wb1

PVS#5

After this test, HIFI is in STANDBY2 mode

Enter Date/Time:	28/07/08	21:16	Sign Off	TC:	PA: R. Goossens

Enter Start Date|Time:			

7.2.4 *Perform HIFI Commissioning Peak-Up Test*

Prior to this test, HIFI should have been configured in STANDYBY1/2 mode for at least 5 hours (stabilisation requirement)

The above is only applicable if the peak-up test is not immediately following the HIFI Commissioning Performance Test (Chapter 7.2.3)

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
1.	*The following HIFI step will generate peak-up command(s) to be sent to the ACMS. However because the test configuration is not a dynamic one (i.e. MTL controlled), these commands will have no direct effect on the ACMS (i.e. no manoeuvre performed), instead the ACMS will generate 5,1 events (initially).*	N/A			✓	

Enter Date/Time:	28/7/08	21:20	Sign Off	TC:	PA: R. Goossens

Enter Start Date|Time:			

Step-No.	Test-Step-Description				Nominal Value	Actual Value	Remarks	P	N
2.	SPT Peak-up test								
	598	00:05:00	ccs	Verify satellite ACMS ready to execute peakup					
	599-600	00:04:25	css	run tcl script	file HIFIST_master_IST_nominal_warm.tcl section SPT_peakup	21:21			
				comment		✓	599 00:02:14 run tcl script HIFIST_nom_IST_peakup_hrs_warm.tcl Testmode_Peakup_test band 1 backend hrs integ_time 2 mixer_polarization H peakup_matrix centred		
				comment		✓	600 00:02:11 run tcl script HIFIST_nom_IST_peakup_wbs_warm.tcl Testmode_Peakup_test band 1 backend wbs integ_time 2 mixer_polarization H peakup_matrix centred		
3	Verify that the ACMS reports corresponding 8,6 packets with the correct content for the peak-up commands sent by HIFI.				OK				

After this test, HIFI is in STANDBY2 mode

210.21.24.15 → H_peakup (5,1) received.

210.21.26.31 → "

Enter Date/Time:	28/7/08	21:31	Sign Off	TC:	PA: R. Goossens

Enter Start Date|Time:			

7.2.5 *Switch Off HIFI Nominal*

HIFI needs to be commanded from STANDBY2 to STANDBY1 mode before switching OFF.

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
1.	From the HPCCS test conductor console start the test script: **H102999SCVT033_ASDISTHIFI_STBY2_STBY1_P**	OK	ok	ANDs HA000289 HA004289	✓	
	HIFI in Standby1 mode					

21:38 S

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
2.	From the HPCCS test conductor console start the test script: **H102999SCVT016_ASDISTHIFI_PWR_OFF_P**	OK	ok		✓	
3.	On HPCCS when prompted: "FM HIFI Switch OFF for IST or SFT in Hel/Hell conditions with warm LOU - Select NO to abort TS if not correct" Select YES	YES	YES		✓	

21:44 S

S

Enter Date/Time:	28/07/08	21:47	Sign Off	TC:	PA: R. Goossens

Enter Start Date|Time:			

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	If **YES** is selected the test script will go on to automatically power off all HIFI warm units.					
4.	On HPCCS when all autonomous actions have been completed by the power on script **H102999SCVT016_ASDISTHIFI_PWR_OFF_P** it will prompt: *"Set Bus Profile Back to Original Setting?"* Select NO	NO	NO		V	
5.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select OK to continue	OK	ok		V	
6.	On HPCCS stop Packet History displays for the following APIDs:1024,1026	OK	ok		V	
	HIFI OFF	OK	ok			

PVS 4-2

Enter Date/Time:	28/7/08	21:49	Sign Off	TC:	PA: R. Goossens

Enter Start Date|Time:			

→ PV 5 4 (2)

7.2.6 *Satellite & EGSE Switch Off*

Step-No.	Test-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
	Satellite & EGSE Switch Off						
	Initial Conditions: Nominal HIFI OFF						
1	On HPCCS terminate the following test script: **ALL_SubscribeParams.tcl**	OK					
2	From HPCCS Test Conductor console issue command to disconnect from HIFI I-EGSE **disconnect HHIFIEGSE**	OK					
3	Confirm from HPCSS and HIFI I-EGSE that the disconnection was successful	YZS27940 = DISCONNECTED					
4	Switch off Satellite/SVM, HPCCS and SCOEs i.a.w. procedure AD9 Section 7.4 continuing from step 122, then return to lead procedure AD2 section 7.4 to complete the switch-off	OK					
5	If no longer required switch OFF I-EGSE i.a.w. AD 5	OK					
6	Confirm both Satellite and EGSE powered down	OK					
	End Conditions: Satellite and EGSE OFF						
	END OF TEST						

Enter Date/Time:			Sign Off	TC:	PA:

8 Summary Sheets

	Test Change	Curr. No.:1 Date 28 July 2008 Page 1 of	
Test designation HIFI IST Commissioning in HeII	Test Procedure HP-2-ASED-TP-0188	Issue 1	Rev. -
Test step changed See below	Reason for Change Satellite and HIFI already powered after SFT		

1) If Satellite a already powered (nominal) after SFT then Skip section 7.2.1

2) If HIFI already powered (nominal) after SFT then Skip section 7.2.2 steps 1 to 9 continue with step 10;

Prepared by: S. Hamer	Resp. Test Leader	Project Engineer
PA/QA R. Goossens	Prime	Customer

	Test Change	Curr. No.:2 Date 28 July 2008 Page 1 of	
Test designation HIFI IST Commissioning in HeII	Test Procedure HP-2-ASED-TP-0188	Issue 1	Rev. -
Test step changed See below	Reason for Change NCR-4181 Investigation		

Section 7.2.1 Step 13

1) In order to support NCR4181 investigation a trace version of subscribe parameters script is used. Therefore call: HIFI_ALL_SubscribeParams_trace.tcl in place of script in step 13

Prepared by: S. Hamer	Resp. Test Leader	Project Engineer
PA/QA R. Goossens	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No.: 3 Date 28/07/08 Page of	
Test designation HIFI SFT/COM @ HeZ	Test Procedure TP-0188	Issue 1	Rev. —
Test step changed 7.2.1 step 3	Reason for Change MISSING STEP		

Perform Section 7.1 of AD9 (TP-0237)
PRIOR TO SECTION 7.4 of AD9 (TP-0237)

Prepared by: E. HOGG	Resp. Test Leader	Project Engineer
PA/QA	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No.# 4 Date 28-7-08 Page 1 of	
Test designation HIFI FM Performance & Peak-UP test	Test Procedure TP-0188	Issue 1	Rev.
Test step changed See below	Reason for Change ~~Set/Reset~~ AD/BD mode ~~for~~ test		

1) Section 7.2.2 after step 10. execute the following script and verify slc in AD mode:

✓ callasync Z010999MCVTB2_TCprot Mode_BD_AD_BD AD

2) Section 7.2.5 after step 6 execute the following script and verify slc in BD mode:

✓ callasync Z010999MCVT132_TCprot Mode_BD_AD_BD BD

Prepared by: S. HAMER	Resp. Test Leader	Project Engineer
PA/QA D Lanarby	Prime	Customer

Procedure Variation Summary

	Test Change	Curr. No.: 5 Date 28-7-08 Page 1 of	
Test designation HIFI FM Performance & Peak-Up Test	Test Procedure HP-2-ASED-TP-0188	Issue 1	Rev. 25-7-08
Test step changed Chapter 7.2.3. Numerous - see as-run TP-0188	Reason for Change LO ambient Life Limit constraint.		

1) TCL SCRIPT : HIFIST_master_IST_nominal_warm~~el~~ _V1_202.tcl
Many parts/steps of this script have been edited-out and will not be contained within it when it runs.
The procedure has been marked-up to clearly show the relevant steps that have been removed from Chapter 7.2.3

2) Switch Hifi from Standby 1 to Standby 2
Step 10 of chapter 7.2.2 (HP-2-ASED-TP-0188)
↳ NCR 4380 (switch to standby after SFT not ok!)

Prepared by: D. LAMONBY	Resp. Test Leader	Project Engineer
PA/QA D. Lamonby.	Prime	Customer

8.2 Non Conformance Report (NCR) Summary

/SPR

NCR - No.	NCR - Title	Date	Open Closed	PA sig.
SPR 625	Install Master script for Hifi commissioning	28/7/08	Closed	D.Lemke
4381	Invalid initial state from Hifi master script	28/07/08	open	D.L.
4382	Invalid switch to Stndby1	28/7/8	open	D.L

Table 8-2: Non-Conformance Record Sheet

8.3 Sign-off Sheet

	Date	Signature
Test Director B. Collaudin	28/7/08	28/7/08
Operator S. Ilsen	28/7/08	
PA Responsible D. Lamarly	28-7-08	D. Lamarly
ESA Representative		

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
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
	Klenke Uwe	ASG72
X	Kölle Markus	ASA43
	König Werner	AET32
	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
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
	Vascotto Riccardo	HE Space
	Wagner Klaus	ASG23
X	Wietbrock Walter	AET12
	Wöhler Hans	ASG23
	Wössner Ulrich	ASE252
	Zumstein Armin	AED15
X	Ilsen Stijn	McGinley
X	ESA/ESTEC	ESA
X	Thales Alenia Space Cannes	TAS-F
	Thales Alenia Space Torino	TAS-I
	Instruments:	
	MPE (PACS)	MPE
	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

END OF DOCUMENT

	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
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	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			
X	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