



Test Report

Herschel

Title: Herschel IST2 Test Case "Launch Clean Run (He 1)"
 HP-2-ASED-TP-0194 *Iss. 2*

CI-No: *100000*

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Issue	Date	Sheet	Description of Change	Release
1	30/01/2009	All	Formal Issue	

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1 Scope

This document reports on the Launch Clean Run test performed as part of the Integrated System Test (IST) 2 in Helium-1 conditions at ESTEC, Noordwijk, NL.

1.1 Objective

The objective of this sequence is to test the satellite during the launch and separation sequence until the lack of coherent closed loop information stalls the ACMS.

1.2 Summary Conclusion

All test steps for the launch clean run were successfully executed as planned. A number of NCR & SPRs were raised, but none appear to have directly affected the objectives of the test.

2 Documents / Drawings

2.1 Applicable Documents

AD-1	Herschel IST Specification, Issue 8	HP-2-ASP-SP-0939
AD-2	Leading Procedure for Herschel IST, Issue 7	HP-2-ASED-TP-0134
AD-3	Herschel IST Launch Clean Run, Issue 2	HP-2-ASED-TP-0194
AD-4	Minutes of Meeting TRR Launch Clean Run	H-P-TASF-MN-11220
AD-5	Minutes of Meeting PTR Launch Clean Run	H-P-TASF-MN-11229

2.2 Reference Documents

2.3 Other Documents

2.4 Acronyms & Abbreviations

See AD-1.

3 Test characteristics

3.1 Title

Herschel IST2 Test Case “Launch Clean Run”

3.2 Unit tested

See AD-1 Chapter 5.8.10

See AD-5 for system configuration

3.3 Description

The test performed checks the correct execution of the launch and separation action of the space craft.

3.4 Applied procedures

See AD-2, AD-3

3.5 Requirements to be verified

Not applicable

3.6 Corresponding minutes of meetings

See AD-4, AD-5

3.7 General test flow

The test was executed in the following order:

Specification	Test Procedure
5.8.10 Test Start Configuration	<i>H-P-2-ASED-TP-0134, all steps</i>
5.8.10. Launch and Separation	<i>H-P-2-ASED-TP-0194, all steps</i>

4 Test execution

4.1 Date and time

Power ON and initial S/C configuration:

28/01/2009 – 08:30 UTC

Power OFF:

28/01/2009 – 16:30 UTC

4.2 Tag / session reference

2009_01_28_07_25_hercdmu_hpws23_REALTIME_LCH_CLEAN

Start tag IST_2_TP_0194_iss2_Launch_Clean_Run_END_002

End tag : ???

4.3 Personnel

Test Director: S. Mooney

Test Conductor : C. Much

PA: J. Hall

HPCCS Operator : See As-Run

AIT QA: See As-Run

4.4 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.

4.4.1 Start of test / end of test

See section 4.1.

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

4.4.2 Time of event as deviation

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

4.4.3 Time zone to be ignored in case of deviation

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

4.4.4 Time of SPR / NCR

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

4.4.5 Time of milestone in test

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

See test log book below



Test Report

Herschel

Date	28/01/2009							
Operator	S. Elsley							
Test Director	S.Mooney							
Test Conductor	C.Much							
QA	D.Lamonby							
EGSE	L.Allegretti							
Test Case	Launch Clean Run							
OBSW	CDMS 3.8.0.1, ACMS 4.0							
HPSDB	HP-2-ASP-LI-1441 issue 28							
HPCCS Release	HPCCS_2.0-1317							
Test Environment / Version	IST_2_TP_0194_iss2_Launch_Clean_Run_END_002							
Session ID	2009_01_28_07_25_hercdmu_hpws23_REALTIME_LCH_CLEAN							
Purpose of Test	Regression							
	Debugging							
	NCR Investigation							
	Calibration/Maintenance							
	Unit Integration Testing							
	Drv / Formal							X
SW upload :	PACS	SPIRE	HIFI	CDMS	ACMS	CCS	HPSDB	

Time/Date UTC	Test Procedure / Step / Script / Command / Event / Anomaly	NCR'S/ SPR's
Wednesday January 28th 2009		
08:30	Temperature checked: 20C, Humidity checked: 51%	Temperature/Humidity within limits
08:30	All red tags removed (VMC, Sun Sensors, SAS UCE) SAS Lamps set up, VMC set-up with lamp, but no image sheet in-use.	
08:55	Start S/c switch-on with IST_START	

09:25	Battery voltage= 25.14V, BCR1 active, BCR2 & BCR3 not active.	The script ISD_PCU is not geared for a real battery and needs to be updated before launch.	Re-occurrence SPR#1128
09:33	Error in CHECK_PCDU: wrong TM check for ISAS	Due to not entirely correct implementation in SPR#764 (in LPS configuration unused channels are set with I _{sc} =0.5A and that's considered as active by the script (because the threshold is set at 0.2 A); therefore problem solved by increasing the threshold to 0.6 A	SPR#1169
13:07	VALVE STATUS for V504 & V505 complain again to be open instead of closed but they should be open		NCR3997 reoccurrence
11:39	Some MOT entries show failed status	Related to NCR-4783	Known SPR- #1132
11:54	S/C powered-on and ready for the LCR	We noticed that the light on the power SCOE is once more not working	Noted to Luigi
	Babysit for lunchtime and wait for a short checkpoint mtg		
13:08	Start with Launch Clean Run via TP-0194 iss 2		
13:53	Launch sequence started, running on Batteries from now on		
14:02	Launch !!!!!	Vulcain was ignited, Ariane 5 Liftoff succesfull	
14:19	Opening of Fairing	AAD lamp on	
14:20	IST_STATUS Warning received: expected in 150 Kbps but actual = 5kbps, this is however ok, as expected		
14:20	RX carrier status shows locked but is expected unlocked		
14:29	Separation of S/c, Umbilical connectors separated		
14:33	Signal from S/c received via RF		
14:42	Continue with test, restoring umbilical with 150 kbps		
14:43	Reconnected the umbilicals and switched off AAD lamps		
14:49	Umbilical reconnected , SAS UCE and AAD stimuli switched off		
15:18	TM 8.8 VMC dump finished, 2658 packets received		
15:19	IST End started		



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15:30	Perform a quick script debug of IST Status		PVS#3-TP0134
15:31	SSMM dump finished		
15:55	Commence IST_END		
16:11	5-4 Events reported by the CCS as expected when switching off the SSMM		
16:30	SC is OFF		

Problems found during the test

4.4.6 Procedure Variations

4.4.6.1 Lead Procedure (TP-0134)

PVS No	Description and Impact on Test (If any)	Impacts Test Objectives (Y/N)
3	Perform script debug, this was performed after SMM dump when the test was already finished	N

4.4.6.2 IST Procedure Launch Clean Run (TP-0194)

PVS No	Description and Impact on Test (If any)	Impacts Test Objectives (Y/N)
1	Lower AAD threshold	N
2	Open BDR1,2, this PVS was not performed	N

NCR/SPR Summary

4.4.6.3 NCRs Opened/Recurred/Closed

NCR No	Title	During	O/R/C

4.4.6.4 SPRs Opened/Recurred/Closed

SPR No	Title	O/R/C
1169	Wrong TM check for ISAS	To be closed
1170	Wrong TC "Stop OBCP Management" sent	To be closed
1172	Incorrect TM rate check 150Kbps	To be closed

4.4.7 List of NCRs and what action was taken if any

4.4.7.1 NCRs

NCR No	Action taken	Impacts Test Objectives (Y/N)
4265	Data acquired send to engineering	
4467	Data acquired send to engineering	
4490	HPSDB update requested	
4784	Workaround in place	
4783	Workaround in place	
4814	To be closed	
4815	NRB to be held	

4.4.7.2 SPRs

SPR No	Action taken	Impacts Test Objectives (Y/N)
1169	Script corrected after the test	N
1170	Script corrected after the test	N
1172	Script corrected after the test	N

4.4.8 Procedure changes

See PVS sheets in section 8 of the "as-run" procedures and summarised in 4.4.6.

4.5 Deviations from Test Requirements

Specification	Test Procedure	Agreed at TRR

4.6 Test Execution Summary

The test was successfully performed

4.7 Summary conclusion

The test has been run successfully according to the IST Specification. A number of NCRs & SPRs were raised (some during debug of the test), but none appear to have directly affected the objectives of the test.

4.8 Open issues

Verification of the corrections as traced by the SPR's

.

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:

5.1 Archive complete test session

See in the corresponding subdirectory 'Session_Archive' on the CDs labelled with:
2009_01_28_07_25_hercdmu_hpws23_REALTIME_LCH_CLEAN

5.2 Dump and save the TC history

5.2.1 Location of TC history files

See in the corresponding subdirectory 'TC_history' on the CDs labelled with:
2009_01_28_07_25_hercdmu_hpws23_REALTIME_LCH_CLEAN

5.3 Save the SSMM data

See in the corresponding subdirectory 'SSMM_dump_data' on the CDs labelled with:
2009_01_28_07_25_hercdmu_hpws23_REALTIME_LCH_CLEAN

5.4 Dump and save the TM history

See in the corresponding subdirectory 'TM_history' on the CDs labelled with:
2009_01_28_07_25_hercdmu_hpws23_REALTIME_LCH_CLEAN

5.4.1 List of print specifications

Print specifications are compiled as per AD-3.

5.5 Dump DFE TM

See in the corresponding subdirectory 'TMTC_DFE_data' on the CDs labelled with:
N/A

5.6 Dump the ACMS SCOE simulator data

See in the corresponding subdirectory 'ACMS_SCOE_data' on the CDs labelled with:
N/A

5.7 Dump the CDMS Milbus data

See in the corresponding subdirectory 'MILBUS_data' on the CDs labelled with:
N/A

5.8 Prepare CD to hand-over to TAS-F system engineering

See the CDs labelled with:
2009_01_28_07_25_hercdmu_hpws23_REALTIME_LCH_CLEAN

6 Attachments

6.1 Supporting documentation

6.1.1 *As-Run Procedure*

As annexed

6.1.2 *Tag / session reference for the SSMM_A data replay*

See the CDs labelled with:

****2009_**_**_**_**_hercdmu_hpws54_RPL****

6.1.3 *List of data file provided with respect to TN1482*

- A copy of the section of the test log for the test session run, See Logbook in chapter 4.4.5
- A copy of the raised SPRs / NCRs. As annex
- A copy of any procedure deviations. See attached As-Run Procedures TP-0134 & TP-0194

6.1.4 *Contamination control report*

The test was performed in Hel in the Estec Hydra cleanroom 100000, at ambient temperature.

See in the corresponding subdirectory 'Contamination_control_data' on the CDs labelled with:

2009_01_28_07_25_hercdmu_hpws23_REALTIME_LCH_CLEAN

6.1.5 *Logbook reporting all significant events about specimen*

See chapter 4.4.5

6.1.6 *Pictures taken on the specimen in test configuration*

N/A

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


See separate CD delivery

6.1.8 Test measurements devices calibration reports

As annexed

END OF DOCUMENT

	Name	Dep./Comp.		Name	Dep./Comp.
X	Alberti von Mathias Dr.	ASG22		Schweickert Gunn	ASG22
	Baldock Richard	FAE12	X	Sonn Nico	ASG51
	Barlage Bernhard	AED13		Steinger Eric	AED32
	Bayer Thomas	ASA42	X	Stritter Rene	AED11
	Brune Holger	ASA45		Suess Rudi	OTN/ASA44
	Edelhoff Dirk	AED2		Wagner Klaus	ASG22
	Fehringer Alexander	ASG13	X	Wietbrock Walter	AET12
X	Fricke Wolfgang Dr.	AED 65		Wöhler Hans	ASG22
	Geiger Hermann	ASA42		Wössner Ulrich	ASE252
	Grasl Andreas	OTN/ASA44	X	Martin Olivier	ASA43
	Grasshoff Brigitte	AET12	X	Theunissen Martijn	DutchSpace
X	Hamer Simon	Terma			
X	Hendry David	Terma			
	Hengstler Reinhold	ASA42			
	Hinger Jürgen	ASG22			
X	Hohn Rüdiger	AED65			
	Hölzle Edgar Dr.	AED32			
	Huber Johann	ASA42			
	Hund Walter	ASE252			
X	Idler Siegmund	AED312			
	Ivány von András	FAE12			
	Jahn Gerd Dr.	ASG22			
	Kalde Clemens	ASM2			
	Kameter Rudolf	OTN/ASA42			
	Kettner Bernhard	AET42			
	Knoblauch August	AET32	X	Thales Alenia Space Cannes	TAS-F
X	Koelle Markus	ASA43		Thales Alenia Space Torino	TAS-I
X	Koppe Axel	AED312	X	ESA/ESTEC	ESA
X	Kroeker Jürgen	AED65			
X	La Gioia Valentina	Terma		Instruments:	
	Lang Jürgen	ASE252	X	MPE (PACS)	MPE
	Langenstein Rolf	AED15	X	RAL (SPIRE)	RAL
	Langfermann Michael	ASA41	X	SRON (HIFI)	SRON
X	Maukisch Jan	ASA43			
X	Much Christoph	ASA43			
	Müller Jörg	ASA42		Subcontractors:	
X	Müller Martin	ASA43		Thales Alenia Space Antwerp	ABSP
	Peltz Heinz-Willi	ASG13		Austrian Aerospace	AAE
	Pietroboni Karin	AED65		Austrian Aerospace	AAEM
	Platzer Wilhelm	AED2		BOC Edwards	BOCE
	Reichle Konrad	ASA42		Dutch Space Solar Arrays	DSSA
	Runge Axel	OTN/ASA44		EADS Astrium Sub-Subsyst. & Equipment	ASSE
	Schink Dietmar	AED32		EADS CASA Espacio	CASA
	Schlosser Christian	OTN/ASA44		EADS CASA Espacio	ECAS
	Schmidt Rudolf	FAE12		European Test Services	ETS
	Schmidt Thomas	ASA42		Patria New Technologies Oy	PANT
	Schuler Günter	ASA42		SENER Ingenieria SA	SEN

	TRR Minutes Applicable H-P-ASED-MN- <u>11220</u>	REF.: H-P-TASF-AS-RUN-LOG	
		HERSCHEL	
		DATE : <u>28-1-2009</u>	PAGE : <u>1</u> of
AS-RUN DOCUMENTS RAISED		PLACE : <u>ESTEC</u>	

TEST NAME: <u>LAUNCH CLEAN RUN</u>	TEST CONDUCTOR: <u>C. MUCH</u>
---------------------------------------	-----------------------------------

ACTIVITY CONTROL SHEET No's:

PROCEDURES USED (Title)	Doc No	Issue
<u>1ST LEADING PROCEDURE</u>	<u>HP-2-ASED-TP-0134</u>	<u>7.0</u>
<u>LAUNCH CLEAN RUN</u>	<u>HP-2-ASED-TP-0194</u>	<u>2.0</u>

Session ID/s & Tag


Session : 2009-01-28_07.25_herodmu-hpws23-REALTIME_LCH-CLEAN
 Tag : 1ST-2-TP-0194-iss2-Launch-Clean-Run-END-002

PVS # / Raised against	Description (brief summary of reason document is raised)
<u># 1 TP-0194</u>	<u>To Lower AAD Threshold</u>
<u># 2 TP-0194</u>	<u>In case BDR-2 & BDR-1 cannot be opened,</u>
<u># 3 TP-0134</u>	<u>PERFORM SCRIPT DEBUG.</u>
SPR # / Raised against	Description (same as SPR title)
<u>1169 / CHECK_PDCU</u>	<u>WRONG TM CHECK for ISAS</u>
NCR # / Raised against	Description (same as NCR title)

THALES

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100183093P-EN

	TRR Minutes Applicable	REF.: H-P-TASF-AS-RUN-LOG	
	H-P-ASED-MN-_____	HERSCHEL	
		DATE :	PAGE :
AS-RUN DOCUMENTS RAISED Continuation Sheet		PLACE :	

<i>PVS # / Raised against</i>	<i>Description (brief summary of reason document is raised)</i>
<i>SPR # / Raised against</i>	<i>Description (same as SPR title)</i>
<i>NCR # / Raised against</i>	<i>Description (same as NCR title)</i>



TRR Minutes Applicable
H-P-ASED-MN-_____

REF.: H-P-TASF-AS-RUN-LOG

HERSCHEL

DATE :

PAGE : of

AS-RUN DOCUMENTS RAISED Continuation Sheet

PLACE :

<i>PVS # / Raised against</i>	<i>Description (brief summary of reason document is raised)</i>

8.1 Procedure Variation Summary

		Test Change	Curr. No. # 2	
			Date 28-1-2008	
			Page 1	of
Test designation LAUNCH CLEAN RUN		Test Procedure TP-0194	Issue 2	Rev.
Test step changed		Reason for Change In case BDR-2 & BDR-1 cannot be opened		
<p>In case BDR_2 and BDR_1 cannot be opened, send the following #IT commands:</p> <p style="text-align: center;">YCO2A352 {YP2A0352 "id:ALL action=OFF"}</p> <hr/> <p style="text-align: center;">PVS Not beanked HJL</p>				
Prepared by:		Resp. Test Leader	Project Engineer	
PA/QA D. Demary		Prime	Customer	

Table 8.1-1: Procedure Variation Sheet

8.1 Procedure Variation Summary

	Test Change	Curr. No.: # 1	
		Date 28-1-2009	
		Page 1	of
Test designation LAUNCH CLEAN RUN	Test Procedure TP-0134	Issue 2	Rev.
Test step changed	Reason for Change TO LOWER AAD THRESHOLD		
<p>For lowering the #AD threshold perform the steps in Annex 1.</p>			
Prepared by: C. Mueh.	Resp. Test Leader C. Mueh.	Project Engineer	
PA/QA D. Lancia	Prime	Customer	

Table 8.1-1: Procedure Variation Sheet

mmea 1

In Pre-Sep Mode, after ACMS_CONFIG25 options 4,5,20

- Measure the current AAD levels (when illuminating manually with lamp) parameters are :
- **AEACN001 and AEACR001,**
- change AAD threshold applying half of the value from the TM parameters above:



wait 8sec's between each TC

ACZZ4109	Get RM-A status			
AHFUN001	ASW Function ID	Raw	Dec	162
GPS08000	SPARE_8_BIT	Raw	Dec	0
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH841001	RMStat DF86Cmd	Raw	Dec	1
AH842001	RMStat DD86Cmd	Raw	Dec	1
AHF8S001	RMStatus RM ID	Raw	Dec	2
GPS14000	SPARE_14_BIT	Raw	Dec	0
ACZZ5109	Get RM-B status			
AHFUN001	ASW Function ID	Raw	Dec	162
GPS08000	SPARE_8_BIT	Raw	Dec	0
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH841001	RMStat DF86Cmd	Raw	Dec	1
AH842001	RMStat DD86Cmd	Raw	Dec	1
AHF8S001	RMStatus RM ID	Raw	Dec	1
GPS14000	SPARE_14_BIT	Raw	Dec	0
DCM22170	Ext_ACC_RM_A_Disable			
DHT20170	OutputLineIdMis	Raw	Dec	22
GPS05000	SPARE_5_BIT	Raw	Dec	0
DHT06170	Duration	Raw	Dec	1
DCM25170	Ext_ACC_RM_B_Disable			
DHT20170	OutputLineIdMis	Raw	Dec	25
GPS05000	SPARE_5_BIT	Raw	Dec	0
DHT06170	Duration	Raw	Dec	1
ACDS1001	Start database loading			
AHFUN001	ASW Function ID	Raw	Dec	201
GPS08000	SPARE_8_BIT	Raw	Dec	0
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH8D1001	DbLoad DF86 Cmd	Raw	Dec	1
AH8D2001	DbLoad DD86 Cmd	Raw	Dec	1
AHFDL001	DbLoad Nr Cmds	Raw	Dec	1
ACDL1001	Load Database			
AHFUN001	ASW Function ID	Raw	Dec	201
AHFDA001	DbLoad AID Cmd	Raw	Dec	202
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH8D1001	DbLoad DF86 Cmd	Raw	Dec	1
AH8D2001	DbLoad DD86 Cmd	Raw	Dec	1
AHFDS001	DbLoad StartInd	Raw	Dec	1868
AHFDN001	DbLoad Nr Wrds	Raw	Dec	1
AHFDW001	DbLoad Dataword	Raw	Dec	2051
ACZ5L109	Fire Start DB loading			
AHFUN001	ASW Function ID	Raw	Dec	254

AHFFF001	FireFun AID Cmd	Raw	Dec	254
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH8F1001	FireFun DF86Cmd	Raw	Dec	1
AH8F2001	FireFun DD86Cmd	Raw	Dec	1
AHFFH001	FireFun CritFID	Raw	Dec	201
GPS08000	SPARE_8_BIT	Raw	Dec	0
ACZ5G109 ARADupd RMA AAD1curr th				
AHFUN001	ASW Function ID	Raw	Dec	203
GPS08000	SPARE_8_BIT	Raw	Dec	0
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH8A1001	AradUpd DF86Cmd	Raw	Dec	1
AH8A2001	AradUPd DD86Cmd	Raw	Dec	1
AHFA1001	AradUpd HP_ID	Raw	Dec	3
AHSSX001	AradUpd RM ID	Raw	Dec	2
AHFAT001	AradUpd UnitTyp	Raw	Dec	8
AHFAU001	AradUpd Unit ID	Raw	Dec	2
AHFAP001	AradUpdThreshld	Raw	Dec	0
AHFA6001	AradUpd AAD	Eng		1E-05
AHFAL001	AradUpd Low Lim	Raw	Dec	0
ACZ3M109 Fire Update ARAD param				
AHFUN001	ASW Function ID	Raw	Dec	254
AHFFF001	FireFun AID Cmd	Raw	Dec	254
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH8F1001	FireFun DF86Cmd	Raw	Dec	1
AH8F2001	FireFun DD86Cmd	Raw	Dec	1
AHFFH001	FireFun CritFID	Raw	Dec	203
GPS08000	SPARE_8_BIT	Raw	Dec	0
ACZ6G109 ARADupdRMA AAD2curr th				
AHFUN001	ASW Function ID	Raw	Dec	203
GPS08000	SPARE_8_BIT	Raw	Dec	0
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH8A1001	AradUpd DF86Cmd	Raw	Dec	1
AH8A2001	AradUPd DD86Cmd	Raw	Dec	1
AHFA1001	AradUpd HP_ID	Raw	Dec	3
AHSSX001	AradUpd RM ID	Raw	Dec	2
AHFAT001	AradUpd UnitTyp	Raw	Dec	8
AHFAU001	AradUpd Unit ID	Raw	Dec	1
AHFAP001	AradUpdThreshld	Raw	Dec	0
AHFA6001	AradUpd AAD	Eng		1E-05
AHFAL001	AradUpd Low Lim	Raw	Dec	0
ACZ3M109 Fire Update ARAD param				
AHFUN001	ASW Function ID	Raw	Dec	254
AHFFF001	FireFun AID Cmd	Raw	Dec	254
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH8F1001	FireFun DF86Cmd	Raw	Dec	1
AH8F2001	FireFun DD86Cmd	Raw	Dec	1
AHFFH001	FireFun CritFID	Raw	Dec	203
GPS08000	SPARE_8_BIT	Raw	Dec	0
ACZ7G109 ARADupdRMB AAD1curr th				
AHFUN001	ASW Function ID	Raw	Dec	203

GPS08000	SPARE_8_BIT	Raw	Dec	0
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH8A1001	AradUpd DF86Cmd	Raw	Dec	1
AH8A2001	AradUPd DD86Cmd	Raw	Dec	1
AHFA1001	AradUpd HP_ID	Raw	Dec	3
AHSSX001	AradUpd RM ID	Raw	Dec	1
AHFAT001	AradUpd UnitTyp	Raw	Dec	8
AHFAU001	AradUpd Unit ID	Raw	Dec	2
AHFAP001	AradUpdThreshld	Raw	Dec	0
AHFA6001	AradUpd AAD	Eng		1E-05
AHFAL001	AradUpd Low Lim	Raw	Dec	0
ACZ3M109	Fire Update ARAD param			
AHFUN001	ASW Function ID	Raw	Dec	254
AHFFF001	FireFun AID Cmd	Raw	Dec	254
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH8F1001	FireFun DF86Cmd	Raw	Dec	1
AH8F2001	FireFun DD86Cmd	Raw	Dec	1
AHFFH001	FireFun CritFID	Raw	Dec	203
GPS08000	SPARE_8_BIT	Raw	Dec	0
ACZ8G109	ARADupdRMB AAD2curr th			
AHFUN001	ASW Function ID	Raw	Dec	203
GPS08000	SPARE_8_BIT	Raw	Dec	0
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH8A1001	AradUpd DF86Cmd	Raw	Dec	1
AH8A2001	AradUPd DD86Cmd	Raw	Dec	1
AHFA1001	AradUpd HP_ID	Raw	Dec	3
AHSSX001	AradUpd RM ID	Raw	Dec	1
AHFAT001	AradUpd UnitTyp	Raw	Dec	8
AHFAU001	AradUpd Unit ID	Raw	Dec	1
AHFAP001	AradUpdThreshld	Raw	Dec	0
AHFA6001	AradUpd AAD	Eng		1E-05
AHFAL001	AradUpd Low Lim	Raw	Dec	0
ACZ3M109	Fire Update ARAD param			
AHFUN001	ASW Function ID	Raw	Dec	254
AHFFF001	FireFun AID Cmd	Raw	Dec	254
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH8F1001	FireFun DF86Cmd	Raw	Dec	1
AH8F2001	FireFun DD86Cmd	Raw	Dec	1
AHFFH001	FireFun CritFID	Raw	Dec	203
GPS08000	SPARE_8_BIT	Raw	Dec	0
DCM21170	Ext_ACC_RM_A_Enable			
DHT20170	OutputLineIdMis	Raw	Dec	21
GPS05000	SPARE_5_BIT	Raw	Dec	0
DHT06170	Duration	Raw	Dec	1
DCM24170	Ext_ACC_RM_B_Enable			
DHT20170	OutputLineIdMis	Raw	Dec	24
GPS05000	SPARE_5_BIT	Raw	Dec	0
DHT06170	Duration	Raw	Dec	1
ACY42109	PM A Reset			
AH2LN002	Pulse line ID	Raw	Dec	52
AH2DR001	Pulse duration	Raw	Dec	1

ACZZ4109	Get RM-A status			
AHFUN001	ASW Function ID	Raw	Dec	162
GPS08000	SPARE_8_BIT	Raw	Dec	0
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH841001	RMStat DF86Cmd	Raw	Dec	1
AH842001	RMStat DD86Cmd	Raw	Dec	1
AHF8S001	RMStatus RM ID	Raw	Dec	2
GPS14000	SPARE_14_BIT	Raw	Dec	0
ACZZ5109	Get RM-B status			
AHFUN001	ASW Function ID	Raw	Dec	162
GPS08000	SPARE_8_BIT	Raw	Dec	0
GPS16000	SPARE_16_BIT	Raw	Dec	0
AH841001	RMStat DF86Cmd	Raw	Dec	1
AH842001	RMStat DD86Cmd	Raw	Dec	1
AHF8S001	RMStatus RM ID	Raw	Dec	1
GPS14000	SPARE_14_BIT	Raw	Dec	0

	Test Change	Curr. No.: #3	
		Date: 28/01/2009	
		Page 1	of 1
Test designation IST2	Test Procedure TP-0134	Issue 7	Rev.
Test step changed IN PAR WITH STEPS of 7.4	Reason for Change Perfrom Script / DEBUG		
<p>Call Script</p> <p>Z010999MCVT153_IST_STATUS 5.8.7.2.5A</p> <p style="text-align: right;">15:30</p>			
Prepared by: Modesto	Resp. Test Leader 	Project Engineer	
PA/QA 	Prime	Customer	

Attachment 1 to Section 6.1.1:
As Run Procedure HP-2-ASED-TP-0134, issue 7



Herschel Integrated Satellite Test
Procedure: Leading Procedure

Herschel

AS RLIN copy
28/01/09 Launch Clear Run
2008-01-28-07-25_herschelma_hpwse3_REALTIME_LCH-TEAM

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

CI-No: 100000 / 120000

Prepared by:	Functional Team	Date: 14/12/08
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Distribution: See Distribution List (last page)

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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	

			<p>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</p> <p>Rename Chapter 7 as IST Test Create new subchapters 7.1 HPCCS configuration for IST Test 7.1.1 Apply Tag on test files</p>	
3	17.04.08		<p>Update IST START procedure according to the AS RUN procedure for Nominal Mode Robustness (minor changes),</p> <p>4.3.1 & 4.3.2 to include SCOE Sk01J04 and to correct hcu connector ident Typo's</p> <p>7.2.1 Insert IST Start overview test flow diagram</p> <p>7.2.2 update table 5.8.12 Nom Mode Robustness table to be i.a.w. the IST Specification</p>	
4	24.04.08		<p>Update IST START procedure according to the AS RUN procedure for minor updates,</p> <p>Include step 21 in Section 7.2.4 - start a CCU log file to monitor temperature TLM's</p>	
5	24.07.08		<p>Update IST START procedure according to the AS RUN procedure for minor updates,</p> <p>Step added to startup a session on the CCS Lite</p> <p>Including Annex E to adjust CCS Time.</p>	
6	24.08.08		<p>Configuration Table update for Test Case 5.8.4.6</p> <p>IST GUI Picture update</p> <p>Annex E – User logon change (su now root)</p>	



7	14.12.08		Section 1.2 – IST Flow updated Step to checked ACMS config file added to section 7.2.3 SPR comment updates to section 7.2.4 Step36 added at pag.97 (Open LVs) AnnexD – Operation Notes Summarised	
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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 an 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, the tests listed shall be performed in He I condition.

IST 1

➤ Warm case

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

➤ He I

- Mode transitions
- S/C reconfiguration
- NOM mode robustness
- Test of Instrument FDIR OBCP

➤ He II

- Instruments commissioning and performance verification
- CDMS management
- DTCP worst case scenario
- Reference Mission Scenario

IST 1.5

- Launch phase, separation and post separation
- Satellite Commissioning
- ACMS commissioning
- Launch sequence robustness
- NOM mode robustness
- Mode Transitions



IST 2

- Launch Clean Run
- S/C Reconfiguration
- NOM mode robustness



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 6603	PT-CMOC-OPS-TN-
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.i.	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
		<i>Herschel</i>		
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	1		
	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		
VMC		1		
SREM		1		
HIFI		1		
PACS		1		
SPIRE		1		
Telescope		1		
HSS		1		

Table 1: Satellite configuration required for IST

4.2 SW Configuration

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

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

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

4.3 SCOE Cables Connection

For the IST there are four different SCOE cables configuration.

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

4.3.1 SCOE cable connection for "RMS"

SCOE CABLES CONNECTION to HERSCHEL S/C					
SKIN-01	PWR Panel (PCDU)				
	Connector Function	Skin Connector	S/C unit	SCOE CABLE	Flight Connector
	BS Nom Power	SK01BJ09	PCDU		PCDU Flight Plug SK01BP09 Plugged
	BS Red Power	SK01BJ10	PCDU		PCDU Flight Plug 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	
SKIN-06	UMBILICAL				
	Connector Function	Connector	S/C unit	SCOE CABLE	
	Power/Data	HU1 J01	SYSTEM	SCOE's cable Plugged	
	Power/Data	HU2 J01	SYSTEM	SCOE's 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	

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



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

				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



SKIN-04					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
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 ✓	lo
	SA Nom Power	SAS SCOE	PCDU	SK01A J/P02	disconnected ✓	lo
	SA Nom Power	SAS SCOE	PCDU	SK01A J/P03	disconnected ✓	lo
			Battery	SK01A J/P04	EMC cover	lo
	SA Red Power	SAS SCOE	PCDU	SK01A J/P05	disconnected ✓	lo
	SA Red Power	SAS SCOE	PCDU	SK01A J/P06	disconnected ✓	lo
	SA Red Power	SAS SCOE	PCDU	SK01A J/P07	disconnected ✓	lo
	BS Nom Power	BS SCOE	PCDU	SK01B J/P09	Flight ✓	lo
	BS Red Power	BS SCOE	PCDU	SK01B J/P10	Flight ✓	lo
	BDR1 AIT	SAS SCOE	PCDU	SK01B J/P11	LPS SCOE Cable Plugged ✓	lo
BDR2 AIT	SAS SCOE	PCDU	SK01B J/P12	LPS SCOE Cable Plugged ✓	lo	
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 ✓	lo
	DMS 1553 Bus_B	CDMU SCOE	CDMU	SK02 J/P02	Flight ✓	lo
	ACMS 1553 Bus_A	ACMS SCOE	ACC	SK02 J/P03	Flight ✓	lo
	ACMS 1553 Bus_B	ACMS SCOE	ACC	SK02 J/P04	Flight ✓	lo
	LV1/FCV 20N CMD S/A M	ACMS SCOE	ACC/RCS	SK02 J/P05	disconnected ✓	lo
	LV2/FCV 20N CMD S/A R	ACMS SCOE	ACC/RCS	SK02 J/P06	disconnected ✓	lo
	RCS Press/Tank Temp/PT Pwr	ACMS SCOE	ACC/PT&TH	SK02 J/P07	Flight ✓	lo
	Thruster Temp M/LV1 Sts	ACMS SCOE	ACC/RCS	SK02 J/P08	Flight ✓	lo

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

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	✓	<i>lgo</i>
	CRS2 AOCs Sgn		CRS-2/ACC	SK05 J/P02	Flight	✓	<i>lgo</i>
	GYRO RS422 / Test	ACMS SCOE	GYRO	SK05 J/P03	disconnected	✓	<i>lgo</i>
	CRS 1/2 Stimuli	ACMS SCOE	CRS-1,2	SK05 J/P04	disconnected	✓	<i>lgo</i>
	AAD Sgn M	ACMS SCOE	AAD/ACC	SK05 J/P05	Flight	✓	<i>lgo</i>
	SAS1/2 Sgn M	ACMS SCOE	SAS/ACC	SK05 J/P06	Flight	✓	<i>lgo</i>
	SAS1/2 Sgn R	ACMS SCOE	SAS/ACC	SK05 J/P07	Flight	✓	<i>lgo</i>
	AAD Sgn R	ACMS SCOE	AAD/ACC	SK05 J/P08	Flight	✓	<i>lgo</i>
SKIN-06	STR Panel						
	Connector Function	SCOE	S/C unit	Skin Connector	Connection		Sign
	STR1 Stimuli	STR1	STR1	SK06 J/P01	disconnected	✓	<i>lgo</i>
	STR2 Stimuli	STR2	STR2	SK06 J/P02	disconnected	✓	<i>lgo</i>
UMBILICAL							
	Connector Function	SCOE	S/C unit	Connector	Connection		Sign
	Power/Data	System	SYSTEM	HUJ01	SCOE	✓	<i>lgo</i>
	Power/Data	System	SYSTEM	HUJ02	SCOE	✓	<i>lgo</i>
approved SE		approved AIT <i>Holman</i>		approved PA/Safety		approved Floor-Manger	
sign off:			<i>28/01/09</i>			<i>28.1.09</i>	
			<i>[Signature]</i>			<i>lgo</i>	


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 ✓	

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



Herschel Integrated Satellite Test
Procedure: Leading Procedure

Herschel

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

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



5 Conditions

5.1 Personnel

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

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

Table 2: List of IST test attendants

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

5.2 Environmental

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

ESTEC site clean room will be used.

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

The characteristic shall be:

- Temperature = $22\text{C} \pm 3\text{C}$
- Relative Humidity = 50 % +/- 10%
- Delta Pressure = above 0.6 mm H₂O
- Clean Conditions = Class 100 000

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

IST 1 Part 1 Warm preferred							
Chapter of IST Spec issue 4	Instr. Mode	Real Battery required	Satellite X- Axis tilting	Ambient or cool down (deviating from IST Spec III)	He I HTI venting >20mg/sec	He II HTI 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 Issue 4		Instr. Mode	Real Battery required	Satellite X- Axis tilting	Ambient or cool down (deviating from IST Spec !!!)	He I HTT venting >20mg/sec	He II HTT venting >20mg/sec
5.8.5 Mode transitions							
5.8.5.8	NOM to NOM	PACS spectro SPIRE STBY HIFI STBY	N	0.23		alternative	Preferred
5.8.5.9	NOM to EAM	PACS STBY SPIRE STBY HIFI STBY	N	0.23		alternative	Preferred
5.8.5.10	EAM to EAM	PACS STBY SPIRE STBY-> Photo->STBY HIFI STBY	N	0.23		alternative	Preferred
5.8.5.11	EAM to NOM	PACS STBY SPIRE STBY-> Photo	N	0.23		alternative	Preferred
5.8.5.12	NOM to SM	PACS STBY->OFF SPIRE Photo->OFF HIFI STBY->OFF	N	0.23		alternative	Preferred
5.8.5.13	SM to SM	OFF	N	0.23		alternative	Preferred
5.8.5.14	SM to SAM	OFF	N	0.23		alternative	Preferred
5.8.5.17	EAM to SAM (needs new SAM to NOM and NOM to EAM)	PACS STBY SPIRE STBY HIFI Science-> STBY	N	0.23		alternative	Preferred
5.8.5.18	NOM to SAM (needs new SAM to NOM)	PACS Burst-> STBY SPIRE STBY	N	0.23		alternative	Preferred
5.8.5.19	Test end	OFF	N	0.23		alternative	Preferred
5.8.6 S/C reconfiguration							
5.8.6.2	Test start configuration	PACS STBY SPIRE STBY HIFI STBY	N	0.23		alternative	Preferred
5.8.6.3	CDMS level 3a	PACS STBY SPIRE STBY HIFI Prime-	N	0.23		alternative	Preferred
5.8.6.4	CDMS level 3b	PACS STBY SPIRE STBY HIFI STBY	N	0.23		alternative	Preferred
5.8.6.5	ACMS level 4	PACS Prime->OFF SPIRE STBY->OFF HIFI STBY->OFF	N	0.23		alternative	Preferred
5.8.6.6	ACMS recovery from Survival Mode (ACMS SASM to SAM)	OFF	N	0.23		alternative	Preferred
5.8.6.7	CDMS level 4	PACS Prime->OFF SPIRE STBY->OFF HIFI STBY->OFF	N	0.23		alternative	Preferred
5.8.6.8	Test end	OFF	N	0.23		alternative	Preferred
5.8.12 NOM mode robustness							
5.8.12.3.1	Initial State	PACS STBY SPIRE Photo HIFI STBY	N	0.23		alternative	Preferred
5.8.12.3.2	CDMS PM 1553 BC failure simulation	PACS STBY SPIRE Photo-> STBY	N	0.23		alternative	Preferred
5.8.12.3.3	CDMS PM 1553 BC failure recovery	PACS Photo SPIRE STBY HIFI STBY	N	0.23		alternative	Preferred
5.8.12.3.4	Initial state second test	PACS Photo SPIRE STBY HIFI STBY	N	0.23		alternative	Preferred
5.8.12.3.5	ACMS 1553 RT failure simulation	PACS Photo -> STBY SPIRE STBY	N	0.23		alternative	Preferred
5.8.12.3.6	ACMS 1553 RT failure recovery	PACS STBY->OFF SPIRE STBY->OFF HIFI STBY->OFF	N	0.23		alternative	Preferred
5.8.13 Test of Instrument FDIR OBCP							
5.8.13.4	SPIRE FDIR OBCP	SPIRE	N	0.23		alternative	Preferred
5.8.13.5	PACS FDIR OBCP	PACS	N	0.23		alternative	Preferred
5.8.13.6	HIFI FDIR OBCP	HIFI	N	0.23		alternative	Preferred
5.9 DEGRADED CASES							
5.9.1	S/C ability to be operated in degraded modes					alternative	Preferred

IST 1 Part 3 He II only						
Chapter of IST Spec Issue 4	Instr. Mode	Real Battery required	Satellite X- Axis tilting	Ambient or cool down (deviating from IST Spec III)	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	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		

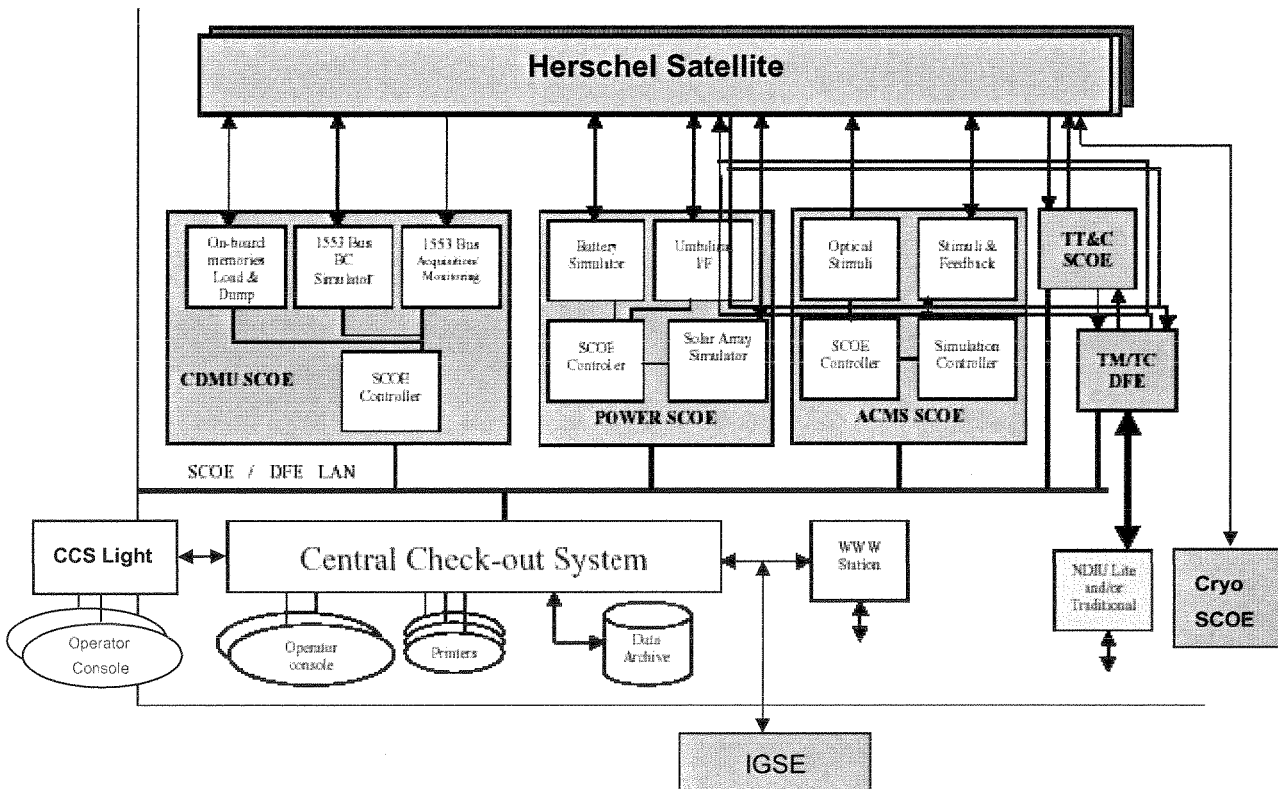


5.4.3 EGSE

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
		<i>Herschel</i>			
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 consist 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 vs 30°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 issue 03.

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

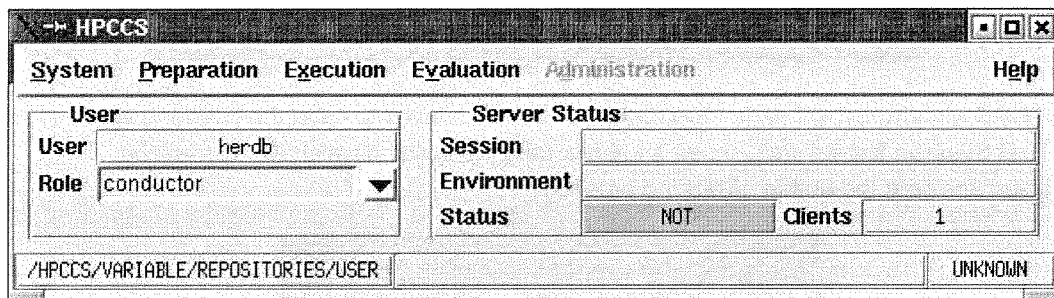


7.1 HPCCS Configuration for IST Test

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 **heratest**), 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



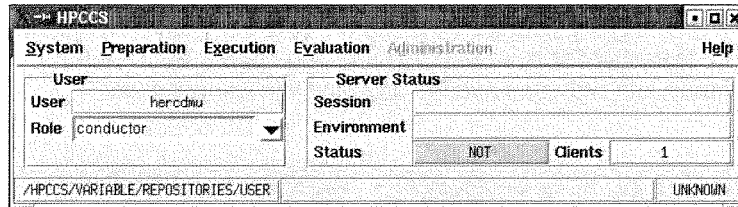
3. Logged as herdb, in HPCCS window, select menu "**Preparation → Prepare**"
 4. Logged as herdb, In **PREP** window, select menu "**Preparation → Discard all**"
 5. Logged as herdb, In **Confirm Discard** window, click the button **Discard**
 6. Logged as herdb, in **PREP** window, select menu "**Preparation → 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

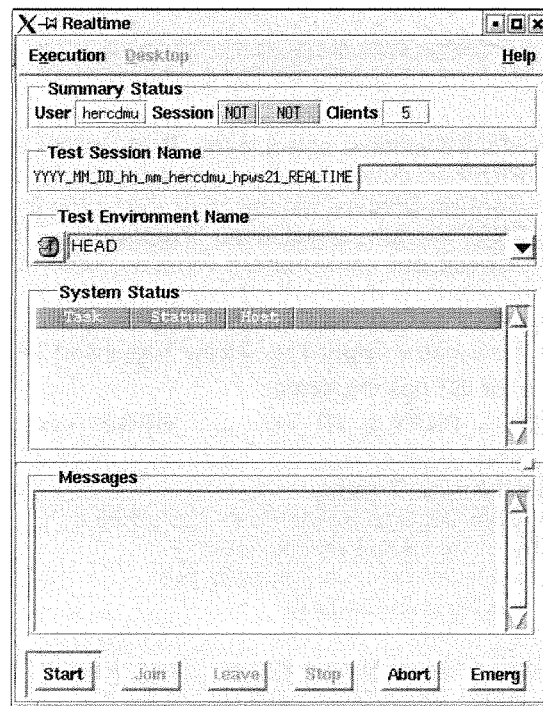
10. Logged as herdb, push **Apply → Apply**
11. Logged as herdb, confirm Tag Application Push Apply button
12. Logged as herdb, open a new **shell** window (xterm)
13. Logged as herdb, execute the command **update_tag**
14. Logged as herdb, insert the name of **TAG**
IST_x_PART_x_TP_xxxx_x_x_BEGIN_xxx
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 through the menu “Desktop” and the following menus:

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

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

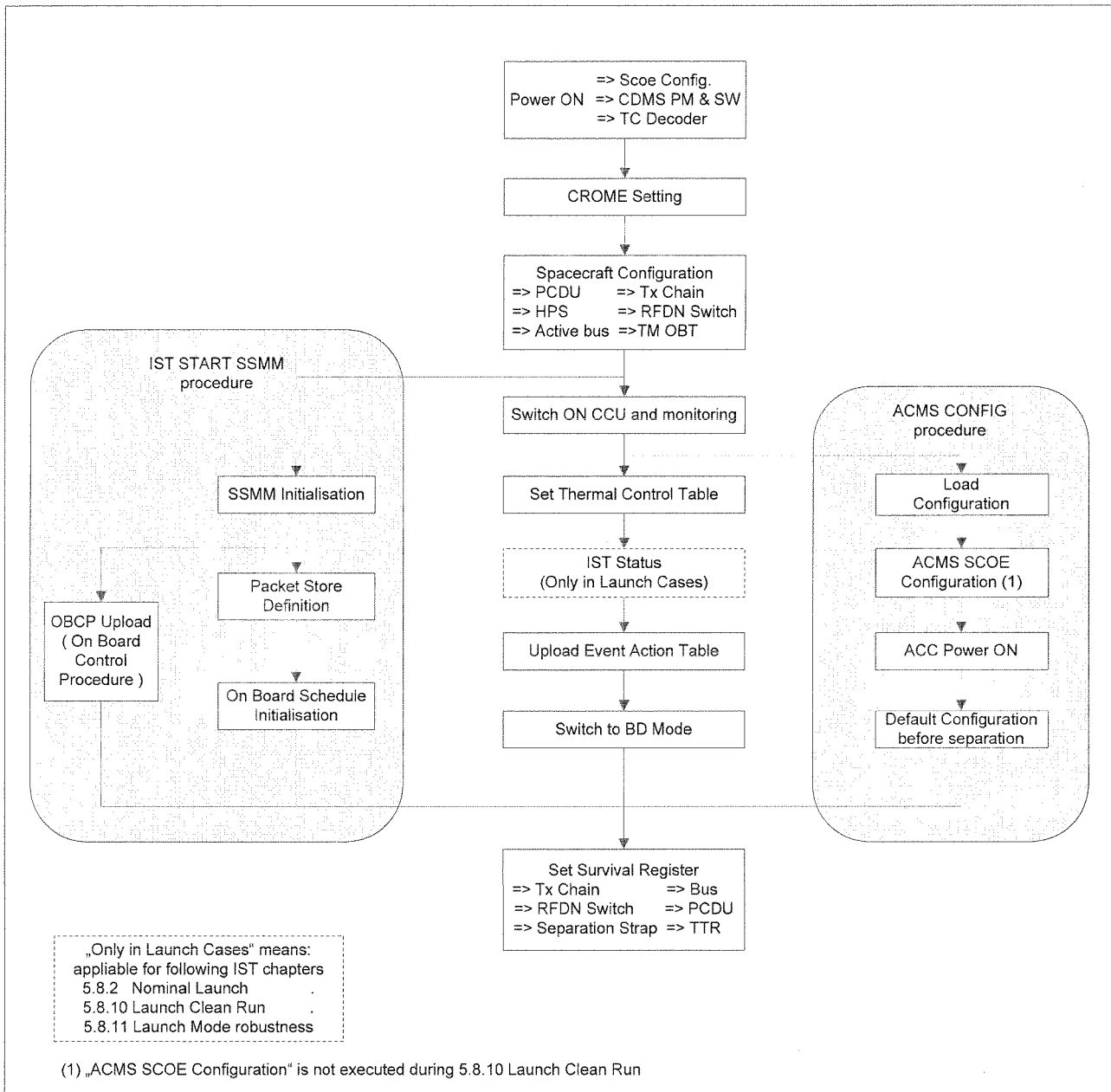


7.2 IST START for Spacecraft configuration

7.2.1 Diagram Overview

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

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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

7.2.2 IST Configuration Table

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

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



Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

SASLPS	Bat.	Crome	Sep. Strap	TTR	TM	TC	PM	SSMM	Bus	PCDU	HPS	TxChain	RFDN	CCU	ACMS
SCOE	SCOE	PAP/CCS	SM	SM	OBT	Dec.	SW		SM	SM		SM	SM	ON Mode	Config. File

5.8.4.6 PACS Commissioning																				
SAS	Sim. Charged	PM A Nominal	Separated	A	B	B	A1	A2 B2	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	A3 B3	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	A0 B0	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	A1 B1	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	A2 B2	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	A0 B0	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	A2 B2	B	A	B	A	B	B	A	2&4	AABB	A&B	2	IST_WCS



Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

SASL PS Bat. SCOE Crome PAP/CCS Sep. SM Strap SM TTR SM TM OB T Dec. TC SW PM SW SSMM Bus SM PCDU SM HPS TxChain SM RFDN SM CCU ON Mode ACMS Config. File

5.8.9 RMS Reference Mission Scenario																				
SAS	REAL	PM A Nominal	Separated	B	A	A	A1	A 0-1-2 B 0	A	B	A	B	A	A	B	1&3	ABBB	A&B	1	IST_RMS1
5.8.9 Launch Clean Run																				
LPS	REAL	PM A Nominal	Not Separated	B	A	A	A1	A 0-1-2 B 0-1-2	A	B	A	B	A	A	B	1&3	ABBB	A&B	2	IST_CLN
5.8.11 Launch Mode Robustness																				
SAS	Sim. Charged +Launch	PM A Nominal	Not Separated	B	A	A	A1	A 0 B 0	A	B	A	B	A	A	B	1&3	ABBB	A&B	2	IST_LSR
5.8.12 NOM Mode Robustness																				
SAS	Sim. Charged	PM A Nominal	Separated	A	B	B	A1	A 3 B 3	B	A	B	A	B	B	A	2&4	AABB	A&B	1	IST_NMR
5.8.13 Instrument FDIR																				
SAS	Sim. Charged	PM A Nominal	Separated	B	A	A	A2	A 1 B 1	A	B	A	B	A	A	B	1&3	ABBB	A&B	1	IST_CDMS

7.2.3 Initialisation

Step-No.	Initialisation-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
<u>TT&C SCOE initialisation</u>							
1	Verify that TT&C SCOE application SW is running Otherwise go on TTC SCOE or access remotely (command "startCMD ttcvnc" on shell window") and click "TTC SCOE Herschel" icon on TT&C SCOE desktop controller and wait for self test completion.					✓	
2	On TT& SCOE application, in window ":: CONF namespace" (that can be open by menu "windows/SCOE config"), select menu "Config/Load", load the file "Herschel.conf" then click "open" button.					✓	
<u>SPACECRAFT SKIN CONNECTORS CONFIGURATION</u>							
3	Verify that all the SCOE skin connectors cables are installed <ul style="list-style-type: none"> • Goto chapter 4.3 • Choose according to the IST Test case the related skin configuration table • Check the list and sign off (together with PA and Floor Manager). 					✓	

Test location: <i>ESTER</i>	Operator <i>S. Elsen</i>	Product-Assurance: <i>D. Lanchy</i>	Date: <i>28/1/09</i>	Time <i>08:45</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

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					N/A	✓
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					N/A	✓
6	<u>QA Check:</u> Confirm that the latest Gyro Cal values have been inputted correctly into the relevant ACMS Config file (Page 75). Record the values here /home/heracms/ACMSCONFIG_INPUT_FILE	GA_E_RATE GB_E_RATE GC_E_RATE GD_E_RATE		0.0 0.0 0.0 0.0			✓

Test location: <i>ESTEL</i>	Operator <i>S. Eddy</i>	Product-Assurance: <i>D. Lamaby</i>	Date: <i>28/1/09</i>	Time <i>08:47</i>
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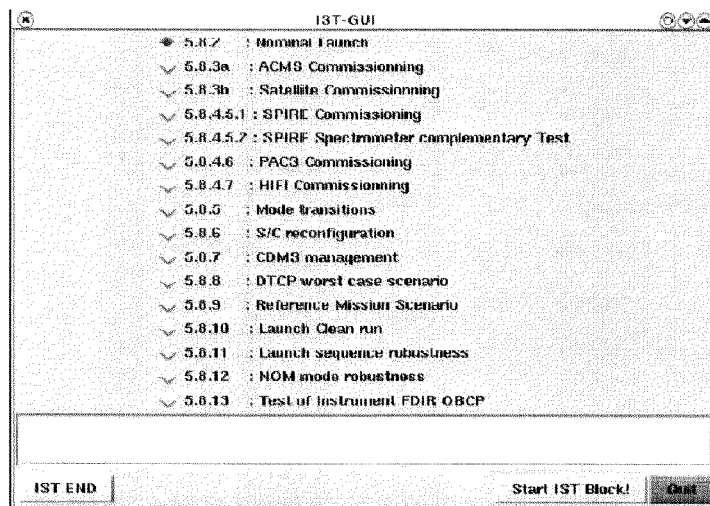


Step-No.	Initialisation-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
<u>TMTC DFE & CCS TIME CHECK</u>							
7	Check that the TMTC DFE time is the same as the CCS time. If there is a difference check that "AboutTime" is running and enabled					✓	
<u>CCS SESSION STARTUP</u>							
8	Start a session on the CCS, applying a relevant session name with respect to the test case being performed	Refer to chapter 7.1.2 (Page 72)				✓	
9	Start a session on the CCS Lite And from the Test Conductor console execute connect TMTCDFE					✓	

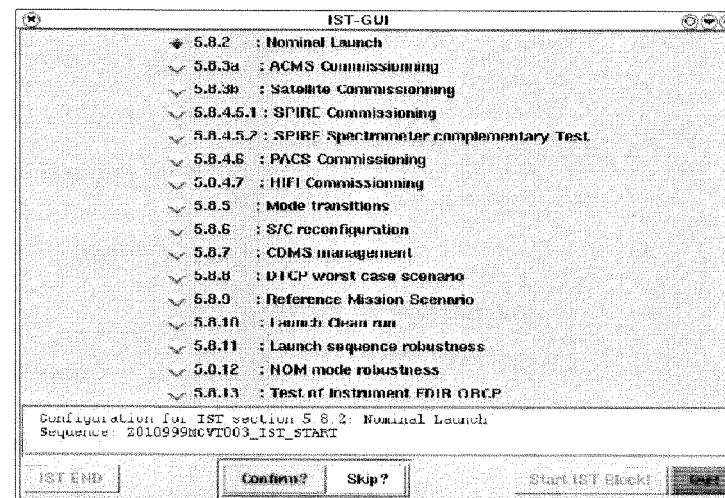
Test location: <i>ESTR</i>	Operator <i>S. E...</i>	Product-Assurance: <i>D. L...</i>	Date: <i>28/1/09</i>	Time <i>08:52</i>
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7.2.4 IST Start Step by Step Procedure

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



Picture 1



Picture 2

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

Test location:	Operator	Product-Assurance:	Date:	Time
ESTR	S. ELSLEY	D. LAMARCA	28/1/09	08:55

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 75)				✓	

Configuration of "IST START"

Power SAS/LPS SCOE: SAS Bat. SCOE: Simulated PCDU: A HPS: A	CDMS TM OBT: A Bus: A PM: A1 PapCos: PMAnominal Survival Register Bus: B Launch Straps: Not Separated PCDU: B TTR: B Tx Chain: B RFDN Switches Position: ABBB	Rx and Tx Chain Tx Chain (Xpnd, Tx, EPC, TWT): A TC decoder: A TM Rate: Medium (150Kbps) RFDN Switches in use: 1&3 SSMM Mass Memory: A0 and B0
--------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

IST_START Configuration Panel

Test location: <i>ESTR</i>	Operator: <i>S. EISEY</i>	Product-Assurance: <i>D. Lamouky</i>	Date: <i>28/1/09</i> Time: <i>09:08</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
2	<p>Z010999MCVT003_IST_START</p> <p>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)</p> <p>"START Satellite HERSCHEL "IST_START"</p> <p>⇒ Choose "Yes" or "No"</p>	YES				✓	
3	<p>Z010999MCVT097_ASDGEN_CRIT_PARS_CHECK</p> <p>This script will run during the whole session to monitor critical parameters.</p> <p>As soon as wrong value will be detected. A popup window will occur alerting the operator about incorrect TM checks</p> <p>⇒ Minimise this window by clicking the corresponding button (on corner top right, first button from left)</p>					✓	

Test location: <i>ESTR</i>	Operator <i>S. ESEY</i>	Product-Assurance: <i>D. Lamoury</i>	Date: <i>28/1/09</i>	Time <i>09:11</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

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 75), ⇒ click the button "OK" to proceed	To Check in Config. Table (Page 75) Bat.SCOE TCDec. PM/SW				✓	

Test location: <i>BTEC</i>	Operator: <i>S. EISEN</i>	Product-Assurance: <i>D. Lammby</i>	Date: <i>28/1/09</i>	Time: <i>09:11</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
6	<p>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</p> <ul style="list-style-type: none"> ➔ TM chain / TM Acquisition synchronised and locked Status expected ➔ View / TM Transfer Frame Monitor TM frame data should be received before few minutes <p>⇒ click the button "OK" to proceed</p>						✓
7	<p>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</p> <p>⇒ click the button "OK" to proceed</p> <p>After few minutes Data transfer should be visible on the Bus Monitor.</p>				N/A for "Launch Clean Run" as the cables for CDMU BUS monitor are disconnected		N/A

Test location: <i>ESTR</i>	Operator: <i>S. EISLEY</i>	Product-Assurance: <i>D. Gammaly</i>	Date: <i>28/1/09</i>	Time: <i>09:18</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step- No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
8	<p>D102159SCVT001_GET_ALARM_STATUS Check that both DOD ext1 and ext2 are "Not Asserted". Otherwise execute Annex D – Operator Note 8</p> <p>⇒ Click the button "End TS!" to proceed</p>				No DOD	✓	
9	<p>D102159SCVT001_GET_ALARM_STATUS Check that both DOD ext1 and ext2 are "Not Asserted". Otherwise execute Annex D – Operator Note 8</p> <p>⇒ Click the button "End TS!" to proceed</p>				No DOD	✓	
9b when BCR OCP are detected ACTIVE	<p>Z010999MCVT001_POWER_ON_HER_IST</p> <p>Temporary workaround until SPR-107 / NCR-3312 are solved</p> <p>⇒ click the button "YES" to proceed the workaround</p> <p>See SPR 107 / NCR 3312</p>	YES		Yes	<p>SPR 244: OutOfLimit for SA_Pan_Temp_N/R (WMB07569)</p> <p>TCs Not Acknowledged :DC20F170 :DC140160</p> <p>For launch clean run with real Battery fully charged, parameters BCR1, BCR2 are expected active.</p>	✓	

SPR 1169

Test location: <i>ESTEC</i>	Operator: <i>S. ELSLEY</i>	Product-Assurance: <i>D. Lamonty</i>	Date: <i>28/1/09</i>	Time: <i>09:24</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
10	<p>D102159SCVT032TIMESYNCRO Wait until the synchronization between CDMS On-board Time and CCS is finished ⇒ Click the button "End TS!" to proceed</p> <p>Note: The time synchronisation (step 10) is performed in parallel to the rest of the procedure. The test operator can continue with the following step (11 onwards) whilst this occurs.</p>				<p>TM parameter ZE00999 out of limits and back in limits again at synchronisation to be expected.</p> <p>CDMU 5-4 Events – Cyclic Task Overrun May Occur (NCR4158)</p>	✓	
11	<p>Z010999MCVT001_POWER_ON_HER_IST ⇒ Click the button "End TS!" to proceed</p>					✓	
12	<p>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</p>				No OOD	✓	

Test location: <i>ESTEC</i>	Operator <i>S. Eiserich</i>	Product Assurance: <i>R. Goossens</i>	Date: <i>28/1/09</i>	Time <i>09:37</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
13	<p>Z010999MCVT003_IST_START</p> <p>Reply to the prompt:</p> <p style="text-align: center;">"CDMS Configuration:" "CROME settings PM?????"</p> <p>If the CROME settings is in accordance with the CROME PAP/CCS of IST Configuration Table (Page75), Click the button "Confirm" to proceed</p>	To Check in Config. Table (Page 75)				✓	
14	<p>D102159SCVT176_WRITE_CROME</p> <p>⇒ Click the button "End TS!" to proceed</p>				09:37	✓	

Test location: <i>ESTER</i>	Operator <i>S. EISEY</i>	Product Assurance: <i>R. Boussons</i>	Date: <i>20/1/09</i>	Time <i>09:45</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
15	<p>Z010999MCVT003_IST_START</p> <p>Reply to the prompt:</p> <p style="text-align: center;">"CDMS Configuration:" "Set configuration" "Bus ? PCDU ? HPS ? TxChain ? RFDN ???" "TM-OBT ? TMrate ?)"</p> <p>If all these parameter value are in accordance with the IST Configuration Table (Page 75),</p> <p>⇒ Click the button "Confirm" to proceed</p>	<p>To Check in Config. Table (Page 75)</p> <p>BUS PCDU HPS TxCh. RFDN TM-Obt</p>			<p>Please note that the TMrate Medium (150 Kbps) is not specified in IST Config. Table on page 75.</p> <p style="text-align: right;">09:45</p>	✓	
16	<p>D102159SCVT104_ENCODER_SELECT</p> <p>Only if Encoder B is req.</p> <p>⇒ Click the button "End TS!" to proceed</p>				<p>SPR 286: TM check needs repeat</p> <p style="text-align: right;">N/A</p>		
17	<p>D102159SCVT174_IST_REDUNDANT_CONF</p> <p>⇒ Click the button "End TS!" to proceed</p>					✓	

Test location: <i>ESTEC</i>	Operator: <i>SEBURY</i>	Product Assurance: <i>R. Boussen</i>	Date: <i>28/1/09</i>	Time: <i>09:46</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
18	<p>Z010999MCVT003_IST_START</p> <p>Reply to the prompt: "SSMM Configuration" ??????????"</p> <p>⇒ Click the button "Confirm" to proceed</p>	To Check in Config. Table (Page 75) SSMM				✓	
19	<p>Z010999MCVT005_IST_START_SSMM</p> <p>Start initialising with Steps 1-2 of IST START SSMM Procedure (see Page 100). Then continue with the next test step of IST_START.</p> <p>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 100).</p>				In Launch cases, IST_START_SSMM shall be completely performed before next step	✓	

Test location: <i>ESTER</i>	Operator: <i>S. EISELEY</i>	Product Assurance: <i>K. BOONEN</i>	Date: <i>27/1/09</i>	Time: <i>09:46</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
20	<p>Z010999MCVT003_IST_START</p> <p>Reply to the prompt: “SWITCH ON CCU ??? and” “START MONITORING in MODE ?”</p> <p>⇒ Click the button “Confirm” to proceed</p> <p>In case that TM checks for CCU valves are failed, see Annex D Operator note 11 and perform actions if required.</p>	To Check in Config. Table (Page 75) CCU On Mode			<p>NCR-3119: Alarms for TMs</p> <ul style="list-style-type: none"> o KM130300 o KM120300 o KM110300 <p>fails status consistency check during CCU A on And for TMs</p> <ul style="list-style-type: none"> o KM130301 o KM120301 o KM110301 <p>fails status consistency check</p> <p>The following is expected until TC DCT53170 is sent:</p> <ul style="list-style-type: none"> o Events 28417 CCU A monitoring discarded 	✓	

Test location: <i>ESTEC</i>	Operator: <i>S. Euseby</i>	Product-Assurance: <i>F. Coassens</i>	Date: <i>28/1/09</i>	Time: <i>09:46</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

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

Test location: <i>ESTEC</i>	Operator <i>S. Elstey</i>	Product Assurance: <i>R. Goussens</i>	Date: <i>28/1/09</i>	Time <i>09:56</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

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			CONFIRM	Alarm may occur related to the usage of Real Battery: BCR aktiv/not aktiv NCR 4181 may reoccur	✓	
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					✓	

Test location: <i>ESTEC</i>	Operator: <i>S. Eiseby</i>	Product-Assurance: <i>R. Bussens</i>	Date: <i>28/1/09</i>	Time: <i>09:59</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

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 104) 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: <i>ESTEC</i>	Operator: <i>S. Euseby</i>	Product Assurance: <i>G. Coorsens</i>	Date: <i>28/1/09</i>	Time: <i>10:04</i>
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2009.028.09.58.17.363553
2009.028.09.58.17.390379 Checking Telemetry YM17D946
2009.028.09.58.17.418094 Description: RemTCvirtualCh
2009.028.09.58.17.448759 Condition: [getrawvalue [fetch YM17D946]] == "0"
2009.028.09.58.17.475519 TEST PASSED Value: 0 (0x0 unsigned integer 8 bits)
2009.028.09.58.17.503578
2009.028.09.58.17.530131 =====
2009.028.09.58.17.556548 == IST STATUS 5.8.2.4.2 ==> testGSE_ENV_SIMULATOR stand-by ==
2009.028.09.58.17.582989 =====
2009.028.09.58.17.609558
2009.028.09.58.17.637745 WARNING!! no check can be done with ACMS SCOE disconnected or OFF !!!!
2009.028.09.58.17.664256 checkCDMS MODE launch - launch
2009.028.09.58.17.690432 checkCDMS TM_OBT A - A
2009.028.09.58.17.717092 checkCDMS PMSW AlN[B1N] - AlN[B1N]
2009.028.09.58.17.743363 checkCDMS SCBP 0 - 0
2009.028.09.58.17.769473 checkCDMS MIL Stopped - Stopped
2009.028.09.58.17.795526 checkCDMS FDIR AFS - AFS
2009.028.09.58.17.821615 checkCDMS SrvCBH OFF - OFF
2009.028.09.58.17.847661 checkCDMS LaunchStraps not separated - not separated
2009.028.09.58.17.873685 checkHPS all N - all N
2009.028.09.58.17.899650 checkPCDU IF A ON - IF A ON
2009.028.09.58.17.925616 checkBAT VEOC MAX - !=spec.VEOC MAX
2009.028.09.58.17.951691 checkPowerDomain SA < 6 - SA < 6
2009.028.09.58.17.977416 checkTTC RxRate 125bps - Rx1:125bps Rx2:125bps
2009.028.09.58.18.003695 checkTTC TM Rate 150kbps - 150kbps
2009.028.09.58.18.029500 checkTTC TxChain OFF - OFF
2009.028.09.58.18.055294 checkTTC Rx1 AntennelGA1 - LGA1
2009.028.09.58.18.081187 checkTTC Rx2 AntennelGA2 - LGA2
2009.028.09.58.18.106921 checkCCU STATUS A, B ON HK 8s - A, B ON HK 8s
2009.028.09.58.18.132744 checkSPIRE OFF - OFF
    
```

STEP 23

Satellite Status in test case 5.8.2.4.2

CDMS

MODE	launch
TM/OBT	A
PMSW	AlN[B1N]
SCBP/MIL	0 / Stopped
FDIR/srvCBH	AFS / OFF
Launch Straps	not separated

Power

PCDU/HPS	IF A ON / all N
Battery	!=spec.VEOC MAX
Power Domain	SA < 6

SSMM

Mass Memory	A - B
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TTC

note	BDR Enabled
RxRate	Rx1:125bps Rx2:125bp
TME/Tx Rate	150kbps
TxChain	OFF
Rx1Ant	LGA1
Rx2Ant	LGA2

Instruments

CCU	A, B ON HK 8s
SPIRE	OFF
HIFI	OFF
PACS	OFF

ACMS

MODE	not tested
Bus/PM&SW	not tested / not tes
CRS/FDIR	OFF / not tested
GYROs	OFF
STRs	OFF
RWLs	OFF
LV enable	OFF
RCS enable	OFF

Monitoring

SREM	OFF
VMC	OFF

GSE support

Power Source	SAS 6	TC Source	UMB 4k VCO	ENV simulator	stand-by-- ACMS SCOE
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OK!



Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

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

Test location: <i>ESTEC</i>	Operator <i>S. EISEN</i>	Product Assurance: <i>R. Goussens</i>	Date: <i>28/1/09</i>	Time <i>10:09</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
33	<p>Z010999MCVT003_IST_START</p> <p>Ccheck 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 104) and checking packets reception.</p>					✓	
34	<p>Z010999MCVT003_IST_START</p> <p>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 ?, PCPU ?, RFDN ?????, TxChain ?, TTR ?, Sep Strap ?????)"</p> <p>⇒ Click the button "Confirm" to proceed</p>	<p>To Check in Config. Table (Page 75) Bus PCPU RFDN TxCh. TTR Sep Strap</p>				✓	

Test location: <i>ESTEL</i>	Operator <i>S. EISEN</i>	Product-Assurance: <i>R. Coissens</i>	Date: <i>22/1/09</i>	Time <i>11:24</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
35	⇒ Click the button "End TS!" to proceed					✓	
36	Z010999MCVT003_IST_START Prompt: "Open the RCS Latch Valves" Click the button "Confirm" to proceed				STATUS NOT CHANGED. AS EXPECTED IN LAUNCH	✓	
37 (only in launch test cases)	Z010999MCVT003_IST_START Prompt: "Check CDMS Tables" ⇒ Click the button "Confirm" to proceed					✓	
38 (only in launch test cases)	D102159SCVT219_GET_BSW_HEALTH_UIU ⇒ Click the button "End TS!" to proceed					✓	
39 (only in launch test cases)	D102159SCVT204_GET_MOT ⇒ Click the button "End TS!" to proceed				HE 4181 WILL REOCCURE SPR 1132 - WORK AROUND	✓	

* did NOT occur!
f.
CAUSES 4 MASK ERRORS.

Test location: <i>ESTR</i>	Operator <i>S. EISELEY</i>	Product-Assurance: <i>R. Coosens</i>	Date: <i>28/1/09</i>	Time <i>11:44</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	IST_START-Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
40 (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				11:45	✓	
41 (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	✓	
42 (only in launch test cases)	D102159SCVT207_SAT_COM_FCCT ⇒ Click the button "End TS!" to proceed					✓	

Test location: ESTEC	Operator: S. ELSEY	Product Assurance: K. BOASSONS	Date: 28/1/09	Time: 11:47
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

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

Test location: <i>ESTEC</i>	Operator: <i>S. Eiseley</i>	Product Assurance: <i>R. Coassens</i>	Date: <i>28/1/09</i>	Time: <i>11:54</i>
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7.2.4.1 IST_START_SSMM Procedure

Step-No.	IST_START_SSMM-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
1	<p>Z010999MCVT005_IST_START_SSMM</p> <p>Reply to the prompt: "SSMM CONFIGURATION ??????"</p> <p>⇒ Click the button "Confirm" to proceed</p>	<p>To Check in Config. Table (Page 75)</p> <p>SSMM</p>				✓	
2	<p>D102159SCVT186_IST_SSMM_ON</p> <p>Reply to the prompt "Do you want to continue" "with such configuration?"</p> <p>Check the SSMM configuration and then ⇒ Click the button "Continue" to proceed</p>				<p>Mass Memory config. takes about 12 minutes per bank. Therefore, the next step in IST_START procedure can be executed.</p>	✓	
3	<p>D102159SCVT186_IST_SSMM_ON</p> <p>⇒ Click the button "End TS!" to proceed</p>					✓	

Test location: <i>ESTEL</i>	Operator <i>S. Eisen</i>	Product Assurance: <i>R. Goossens</i>	Date: <i>28/11/09</i>	Time <i>11:00</i>
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Step-No.	IST_START_SSMM-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
4	<p>Z010999MCVT005_IST_START_SSMM</p> <p>Reply to the prompt: "OBCP UPLOADING"</p> <p>⇒ Click the button "Confirm" to proceed</p> <p>Let run in parallel the sequence D102159SCVT193_IST_UPLOAD_OBCP and continue with next step "Packet Store Definition"</p>				occurrence of 2 BSW problems EvtID 30738 expected when starting OBCP Management for the 1 st time.	✓	
5	<p>Z010999MCVT005_IST_START_SSMM</p> <p>Reply to the prompt: "Definition of the Packet Store"</p> <p>⇒ Click the button "Confirm" to proceed</p>					✓	
6	<p>If only 1 Bank (bank 0, 1, 2 or 3) is initialised on each SSMM D102159SCVT185_IST_PACKET_STORE_DEF</p> <p>If 3 banks (banks 0, 1 and 2) are initialised on each SSMM D102159SCVT189_IST_PACKET_STORE_DEF2</p> <p>If SSMM A banks 0, 1 and 2 and only SSMM B bank 0 are initialised D102159SCVT178_RMS_PKT_STORE_DEF</p> <p>When the requested SSMM bank are initialised</p> <p>⇒ Click the button "Yes" to proceed</p>					✓	

Test location: <i>ESTER</i>	Operator: <i>S. GUYEN</i>	Product-Assurance: <i>R. Grossard</i>	Date: <i>28/1/09</i>	Time: <i>11:06</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	IST_START_SSMM-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
7	<p>If only 1 Bank is initialised on SSMM A & B D102159SCVT185_IST_PACKET_STORE_DEF</p> <p>If 3 banks are initialised on SSMM A & B D102159SCVT189_IST_PACKET_STORE_DEF2</p> <p>If 3 banks on SSMM A and only 1 on SSMM B are initialised D102159SCVT178_RMS_PKT_STORE_DEF</p> <p>⇒ Click the button "End TS!" to proceed</p>				NCR-3492 occurs: (TTRRMMemCorEr_A 2 := 1)!	✓	
8	<p>Z010999MCVT005_IST_START_SSMM Reply to the prompt: "Initialise MTL Service Buffers"</p> <p>⇒ Click the button "Confirm" to proceed</p>				TM(5,4) alarms expected: o Evt_MTLBufADel (ID.26914) o Evt_MTLBufBDel (ID 26915) 11:10	✓	
9	<p>D102159SCVT209_START_ON_BOARD_SCHEDULE</p> <p>⇒ Click the button "End TS!" to proceed</p>					✓	
10	<p>D102159SCVT193_IST_UPLOAD_OBCP</p> <p>⇒ Click the button "End TS!" to proceed</p>					✓	

Test location: <i>ESTEC</i>	Operator: <i>S. Elstner</i>	Product Assurance: <i>P. Boussard</i>	Date: <i>28/1/09</i>	Time: <i>11:23</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

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: <i>ESTR</i>	Operator: <i>S. Goulet</i>	Product-Assurance: <i>R. Grossens</i>	Date: <i>28/1/09</i>	Time: <i>11:23</i>
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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 75) ACMS Config. File			IST_CLN	✓	

Test location: <i>ESTC</i>	Operator <i>S. Eisen</i>	Product Assurance: <i>R. Coussens</i>	Date: <i>28/1/09</i>	Time <i>10:00</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

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" ⇒ Click the button "OK" to proceed	6				N/A	
6 N/A for "Launch Clean Run"	A102109SPVT003_ACMS_CONFIG25 ⇒ Click the button "Continue" to proceed					N/A	
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.	N/A	

Test location: <i>ESTEC</i>	Operator: <i>S. Euseby</i>	Product-Assurance: <i>F. Grossens</i>	Date: <i>23/1/09</i>	Time: <i>10:01</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	ACMS_CONFIG-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
8	<p>A102109SPVT003_ACMS_CONFIG25</p> <p>At the prompt "Enter your choice", insert "4" to select "ACMS Power ON (in Pre-Sep configuration)"</p> <p>⇒ click the button "OK" to proceed</p>	4				✓	
9	<p>A102109SPVT003_ACMS_CONFIG25</p> <p>⇒ Click the button "CONTINUE" to proceed</p>					✓	
10	<p>A102109SPVT011_ACMS_ON</p> <p>During this sequence, following events are expected:</p> <ul style="list-style-type: none"> - 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" 				<p>Expected Out of Limit of AEYYY109 (synchronisation) ACC may become INVALID for a short time</p> <p>SPR 245 NCR 2862: Out of Limit of HKA_ANTH?_Data</p> <p>SPR 334 OutOfLimit of Gyro Calib Curve in LCR</p>	✓	

Test location: <i>ESTE</i>	Operator: <i>S. EISELEY</i>	Product Assurance: <i>R. Goossens</i>	Date: <i>28/1/09</i>	Time: <i>10:05</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

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

Test location: <i>ESTER</i>	Operator: <i>S. Eddy</i>	Product Assurance: <i>R. Coussens</i>	Date: <i>28/1/08</i>	Time: <i>10:10</i>
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

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: <i>ESTA</i>	Operator <i>S. Eisen</i>	Product-Assurance: <i>K. Boossens</i>	Date: <i>28/1/07</i>	Time <i>10:23</i>
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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.

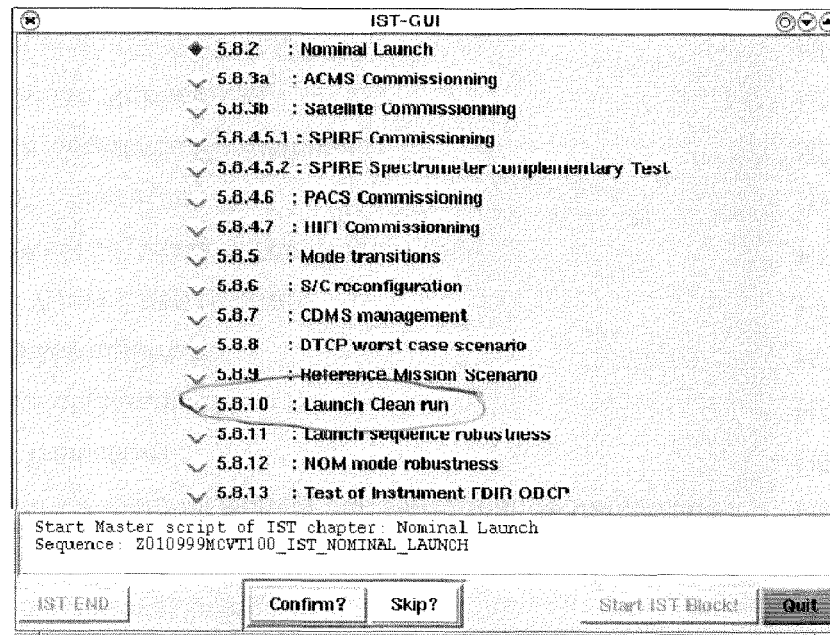


Figure 1: IST_GUI calling Master sequence, for instance “Nominal Launch”

Test location:	Operator	Product Assurance: <i>[Signature]</i>	Date: <i>28/01/08</i>	Time :
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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
		<i>BDM</i>	<i>28/01/07</i>	:

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			check if VMC data ave send to SCMM		
2.	D102159SCVT188_IST_DUMP_PKT_STORE ⇒ Click the button "Confirm" to proceed			CONF CONF		
3.	D102159SCVT188_IST_DUMP_PKT_STORE ⇒ Click the button " End TS!" to proceed			CONF		

0

Test location: ESTEC	Operator WSDA 015	Product Assurance: <i>[Signature]</i>	Date: 28-1-09	Time 15:30
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step- No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
4. Only if PACS, SPIRE or HIFI is still ON	<p>Z010999MCVT004_IST_END</p> <p>If one of the instruments is detected "ON" reply to the prompt:</p> <p style="text-align: center;">"Should the sequence"</p> <p style="text-align: center;">Z102999SCVT011_ASDGEN_PACSPWROFF_P Z102999SCVT005_ASDGEN_SPIREPWROFF_P Z102999SCVT015_ASDGEN_HIFIPWROFF_P</p> <p style="text-align: center;">"be called?"</p> <p>⇒ Click the button "YES" to proceed</p>			N/A			
5. Only if CCU A is ON	<p>Z010999MCVT004_IST_END</p> <p>If CCU is detected "ON" reply to the prompt: Should the sequence "K102999ECVT001_ASDGENCCU_ABPWROFF be called</p> <p>⇒ Click the button "YES" to proceed</p>			YES	15:30		

PUSH3
 ←
 Refound
 (IST-STATUS)
 ReRun

Test location: ESTEC	Operator WSDAVIS	Product-Assurance: [Signature]	Date: 28-1-09	Time 15:30
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
6. Only if RWL ON and ACMS is still in SCM	Z010999MCVT004_IST_END "Please ensure that ACMS is set in OCM mode, otherwise select the correct menu in the ACMS_CONFIG25" Perform Step 1 of Chapter 7.4.1 then click OK			N/A			
7. Only if RWL are still spinning	Z010999MCVT004_IST_END Start the sequence A102109SPVT061_RWL_SPINDOWN? ⇒ Click the button "YES" to proceed			N/A	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			YES	15:55		

Test location: ESTEC	Operator W.S. JAVIS	Product Assurance: <i>[Signature]</i>	Date: 28-1-09	Time 15:55
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
9. Only if ACMS is still ON	<p>A102109SPVT012_ACMS_OFF</p> <p>During this sequence, following event are expected to occur:</p> <ul style="list-style-type: none"> • 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" <p>This sequence needs time to be completely run, so let run in parallel with the following steps.</p>					✓	
10. Only if SREM is still ON	<p>Z102999SCVT002_SREM_OFF</p> <p>⇒ Click the button "End TS!" to proceed</p>			N/A		✓	
11.	<p>D102159SCVT174_IST_REDUNDANT_CONF</p> <p>⇒ Click the button "End TS" to proceed</p>			ETS	16:05	✓	

Test location: ESTEC	Operator G.S. DAUS	Product-Assurance: <i>[Signature]</i>	Date: 28-1-09	Time :
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

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			N/A			
13. Only if Survival Register set with separated flag	D102159SCVT175_SET_SURV_REG ⇒ Click the button "End TS!" to proceed			N/A			

Test location: ESTEC	Operator C. S. JAVIS	Product Assurance: <i>[Signature]</i>	Date: 28-1-09	Time 16:06
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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			N/A		/	
17. Only if SSMM is ON	D102159SCVT181_Disable_PKT_STORE ⇒ Click the button "End TS!" to proceed			N/A		/	

Test location: ESTEC	Operator L.S. DASO	Product-Assurance: 	Date: 28-1-09	Time 16:06
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Herschel Integrated Satellite Test Procedure: Leading Procedure

Herschel

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: <ul style="list-style-type: none"> • 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			ETS	16:17	✓	
19. Not for Launch Cases	D102159SCVT001PM_SELECT ⇒ Click the button "End TS!" to proceed			N/A		✓	
20.	Z010999MCVT002_POWER_OFF_HER_IST ⇒ Click the button "End TS!" to proceed			ETS	16:25	✓	
21.	Z010999MCVT004_IST_END ⇒ Click the button "End TS!" to proceed			ETS	16:30	✓	

Test location: ESTEC	Operator W.S. DAUIS	Product-Assurance: 	Date: 28-1-07	Time 16:30
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Step- No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
22.	IST_GUI ⇒ Click the button "Quit" to terminate the test sequence					✓	
23.	Update CVS Tag 1. Log on as herdb 2. Open a shell (xterm) 3. Execute the command update_tag Insert the name of TAG → IST_x_PART_x_TP_xxxx_x_x_END_xxx					✓	

Test location: <i>ESTEC</i>	Operator	Product-Assurance: <i>[Signature]</i>	Date: <i>28/01/04</i>	Time :
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7.4.1 ACMS SCM to OCM transition for power off

Step-No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
1	<p>A102109SPVT003_ACMS_CONFIG25</p> <p>At the prompt "Enter your choice", insert "2" to select "Transition SCM to OCM"</p> <p>⇒ Click the button "OK" to proceed, then "Continue"</p>	2					
2	<p>A102109SPVT003_ACMS_CONFIG25</p> <p>At the prompt Menu 7 "Enter your choice", insert "5" to select "Reaction wheels spin down"</p> <p>Click the button "OK" to proceed, then "Continue"</p>	5					
3	<p>A102109SPVT003_ACMS_CONFIG25</p> <p>At the prompt Menu 9 "Enter your choice", insert "1" to select "Switch off ACMS"</p> <p>Click the button "OK" to proceed, then "Continue"</p>	1					
Test location:		Operator	Product-Assurance:		Date:	Time :	

Step- No.	IST_END-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
4	<p>A102109SPVT012_ACMS_OFF</p> <p>During this sequence, following event are expected to occur:</p> <ul style="list-style-type: none"> • 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... 						
5	<p>A102109SPVT003_ACMS_CONFIG25</p> <p>At the prompt "Enter your choice", insert "99" to select "Terminate ACMS_CONFIG25"</p> <p>Click the button "OK" to proceed, then "Confirm" and continue in parallel with the next step.</p>	99					
6	<p>A102109SPVT017_ACMS_CRG_BACKGROUND</p> <p>⇒ Terminate the sequence.</p>						

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



8 Summary Sheets

8.1 Procedure Variation Summary

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

Table 8.1-1: Procedure Variation Sheet



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

	Date	Signature
Test Director		
Test Conductor		
PA Responsible		

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 D102159SCVT032TIMESYNCR0
|----> 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 D102159SCVT032TIMESYNCR0
|----> 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_ABPWON
|----> 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 $trSM $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
|----> D102159SCVT104_ENCODER_SELECT $tmObt $tm_Enc_Config
> D102159SCVT175_SET_SURV_REG B B AB B 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	LAUNCH CLEAN RUN
Session ID	2009_01_28-07_25-herschel-hpws23 REALTIME CLEAN CLEAN
Start Time:	07:25
End Time	16:30
CVS Tag for Test	IST_2-TP_0196_iss2-LAUNCH_CLEAN_RUN-
Applicable IST Specification	ISS 8
Test conductor	
QA Approval	

ISS-002

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: Applicable Operation Notes

No.	Title
2	Emergency S/C switch-off procedure
4	How to solve ACMS SCOE problems
8	DoD alarm
10	Launch-Clean-Run recovery
15	Recovering after CCS crash
16	Recovering after an IFMGR crash
23	HIFI, PACS & SPIRE (PRIME / REDUNDANT) emergency switch OFF procedures
29	PACS, SPIRE and HIFI OBCP recovery sequences
30	S/C recovery after a S/C emergency switch off (battery not connected)
35	TM checks fail even if parameter is correctly updated
43	Recovery: When the BS Scoe Application Stops
49	Handling of RWLs in stiction region
68	PrivateExifs tool (NCR-4181 workaround)

Annex E: CCS Time Adjustment Notes

To Adjust time to be TIME IN FUTURE.

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

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

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

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

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

To Adjust time back to the PRESENT TIME.

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

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

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

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



END OF DOCUMENT

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

Attachment 2 to Section 6.1.1:
As Run Procedure HP-2-ASED-TP-0194, issue 2

AS Run Copy
28/01/09

2008_01_28_07_25-herschelmm-hpws23-
REALTIME LCH-CLEAN

Title: **Herschel IST Test Case "Launch Clean Run"**

CI-No: *100000*

Prepared by:	Functional AIT Team	Date:	
Checked by:	C. Much <i>C. Much</i>		<i>15/01/09</i>
Product Assurance:	J. Hall <i>J. Hall</i>		<i>16/01/2009</i>
Configuration Control:	Walter Wietbrock <i>W. Wietbrock</i>		<i>22/01/2009</i>
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Project Management	Dr. W. Fricke / R. Hohn <i>Dr. Fricke</i>		<i>16.01.09</i>
Approved by TASF	D. Montet <i>D. Montet</i>		<i>14/01/2009</i>
Distribution:	See Distribution List (last page)		

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1 Scope

This Test Procedure contains the step by step procedure for the IST Test case 'Launch Clean Run'. This specific test case is called from the IST Leading procedure which performs the start-up and shutdown of the satellite.

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

1.1 Objective

This document shall act as the Step by Step procedure for the Herschel IST **Launch Clean Run** test, It will be performed in conjunction with the IST Leading Procedure HP-2-ASED-PR-0134, and will become the 'as run' procedure when 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.

1.2 Flow

See Herschel IST Procedure Leading Procedure HP-2-ASED-PR-0134 Issue 7

2 Documents/Drawings

2.1 Applicable Documents

See Herschel IST Procedure Leading Procedure HP-2-ASED-PR-0134 Issue 7

2.2 Reference Documents

See Herschel IST Procedure Leading Procedure HP-2-ASED-PR-0134 Issue 7

2.3 Other Documents

See Herschel IST Procedure Leading Procedure HP-2-ASED-PR-0134 Issue 7

3 Requirements to be verified

See Herschel IST Procedure Leading Procedure HP-2-ASED-PR-0134 Issue 7

4 Configuration

4.1 Hardware Configuration

See Herschel IST Procedure Leading Procedure HP-2-ASED-PR-0134 Issue 7

4.2 Software Configuration

See Herschel IST Procedure Leading Procedure HP-2-ASED-PR-0134 Issue 7

4.3 SCOE Cables Configuration

See Herschel IST Procedure Leading Procedure HP-2-ASED-PR-0134 Issue 7

5 Conditions

5.1 Personnel

See Herschel IST Procedure Leading Procedure HP-2-ASED-PR-0134 Issue 7

5.2 Environmental

See Herschel IST Procedure Leading Procedure HP-2-ASED-PR-0134 Issue 7

5.3 General Precautions and Safety

See Herschel IST Procedure Leading Procedure HP-2-ASED-PR-0134 Issue 7

As the test is performed with the real battery, it is mandatory to take precautions for not discharging the battery below 20 V

If the battery voltages goes below 20 V a DOD alarm is set.

5.4 GSE

See Herschel IST Procedure Leading Procedure HP-2-ASED-PR-0134 Issue 7

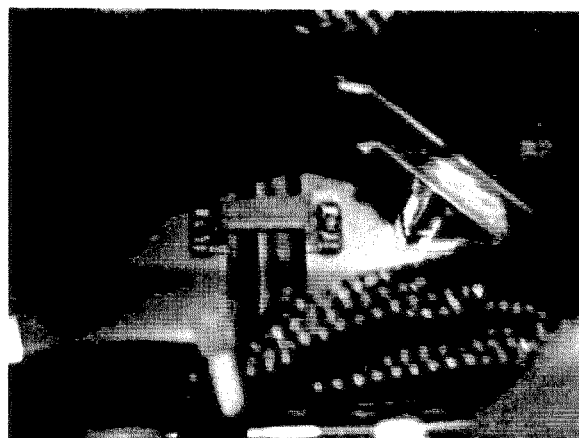
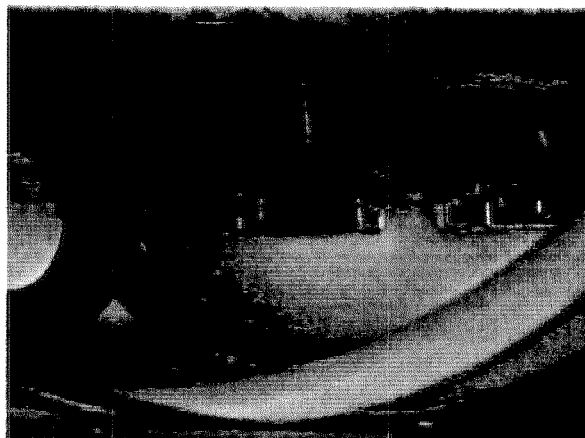
6 Verification Requirements and Test Criteria

See Herschel IST Procedure Leading Procedure HP-2-ASED-PR-0134 Issue 7

7 Step by Step Procedure

Before the Satellite is switched on, follow the steps below to configure the system from AIT to Launch configuration:

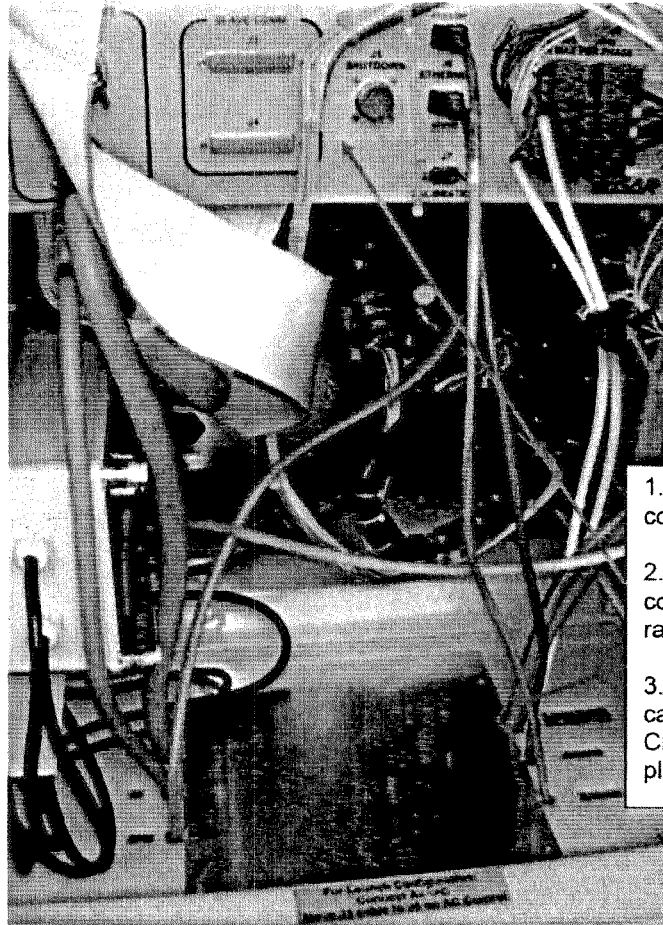
1. Shut down the SCOE completely and switch off the MITU in Rack 1
2. Disconnect the three main power cables from the back of the MITU of the rack1
3. Disconnect the two single-phase mains supply lines CN2, CN3 of LPS/SAS Rack2 = Elgar Master Rack from the Y cable previously connected to the rack1 MITU (for later connection to the Mushroom or UPS outlet)
4. Make sure that the Unit interconnect ribbon cable SubD is disconnected from the back of A110-Nom and A110-Red units in rack 1 and towed safely – this disconnection is needed for full redundancy in Launch mode



Test location: <i>ESTR</i>	Operator <i>S. Esen</i>	Product-Assurance: <i>D. Lannoy</i>	Date: <i>28/1/09 07:00</i>
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5. Open the back door of SCOE LPS/SAS Rack 2 = Elgar Master Rack.
6. Dismount the Aluminum bottom plate inside the ELGAR Master Rack.
7. Disconnect the J3, J4 and J5 connectors and remove the cables from the ELGAR Master Rack.
8. Disconnect the brown connectors marked A and B and connect A with the connector C you find inside the Elgar Master Rack. Connector C provides the redundant 12V supply.

Test location: <i>ESTEE</i>	Operator <i>S. ELSON</i>	Product-Assurance: <i>D. Lamaby</i>	Date: <i>28/1/09</i> <i>07/00</i>
--------------------------------	-----------------------------	----------------------------------------	--------------------------------------



1. Connect A with C connector, B left open
2. Remove J3, J4 connection to Slave rack and J5 Shutdown
3. Install Launch Power cables CN2, CN3, CN4, CN5 through bottom plate

Figure 1: Cabling inside Rack2 configured for Launch (now without patch panel)

Test location: <i>ESTEC</i>	Operator <i>S. Euseby</i>	Product-Assurance: <i>D. Lamanby</i>	Date: <i>28/1/09</i> <i>07/00</i>
--------------------------------	------------------------------	-----------------------------------------	--------------------------------------

9. Install the 4 Launch power supply cables in the bottom plate hole marked "J3, J4, J5 / Launch power supply" and remount the Aluminum bottom plate by use of the 4 screws.
10. Close the ELGAR back door again.
11. Connect the white Power cords equipped with sockets (marked nom. And red.) to the corresponding plugs in SCOE Rack1 for providing power to Rack1 in Launch configuration (both in AIT and Launch configuration, see Figure 2).



Figure 2: Powering Rack1 in Launch configuration

12. Finally, connect the two Launch Power cords CN2 and CN3 (blue sockets) and connect to mains.

The system will start up immediately.

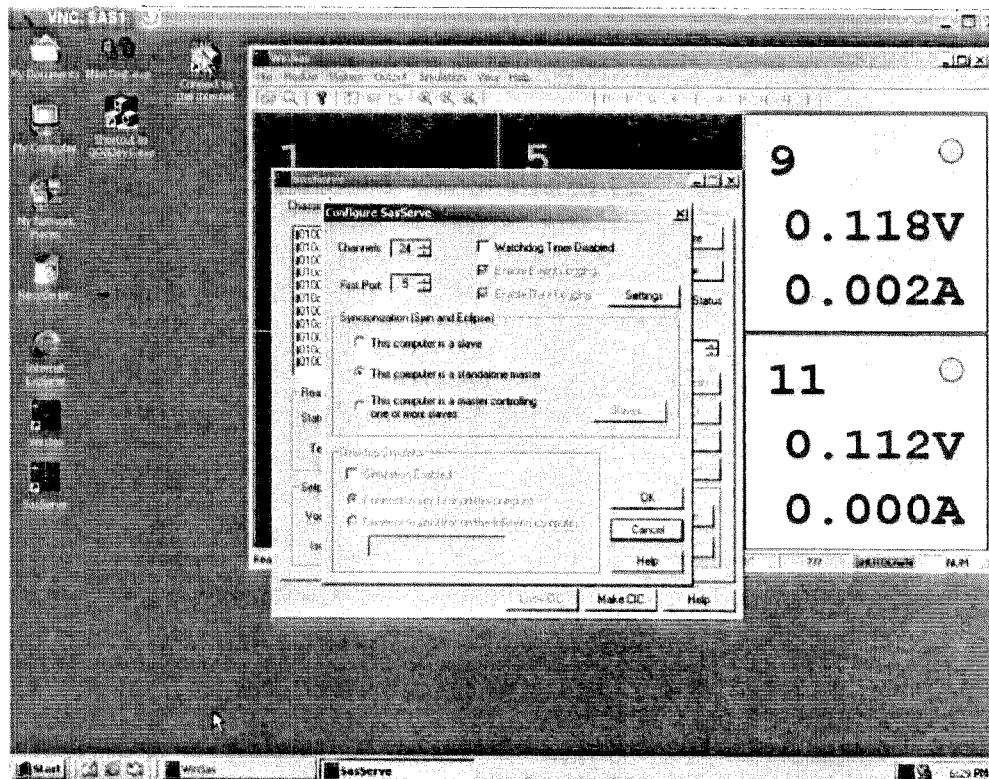
The 6 ELGAR FPCS units should all start up performing automatic self test and after that should switch on their green LEDs.

13. Switch on the two ELGAR PCs in the LPS/SAS Rack 2. Do not start the SCOE application on the remote controller yet

Test location: <i>ESTEC</i>	Operator <i>S. ELSEN</i>	Product-Assurance: <i>D. Lamoury</i>	Date: <i>22/1/09</i> <i>0701</i>
--------------------------------	-----------------------------	-----------------------------------------	-------------------------------------

14. On the remote controller, log in as user hpp and run the command `sudo /home/hpp-base/gse/bin/set-ips-routes.sh NOMINAL` for setting up the routing via Romulus1 iff
15. Connect to the master ELGAR PC by clicking on the "VNC SAS1" icon on the desktop (or issue the command `/home/hpp-base/gse/bin/vnc_sasl`)
16. Start the SASserve program from its desktop icon. Right click on its window bar to bring up its menu and select **Configure**. Change the master configuration in the following way:

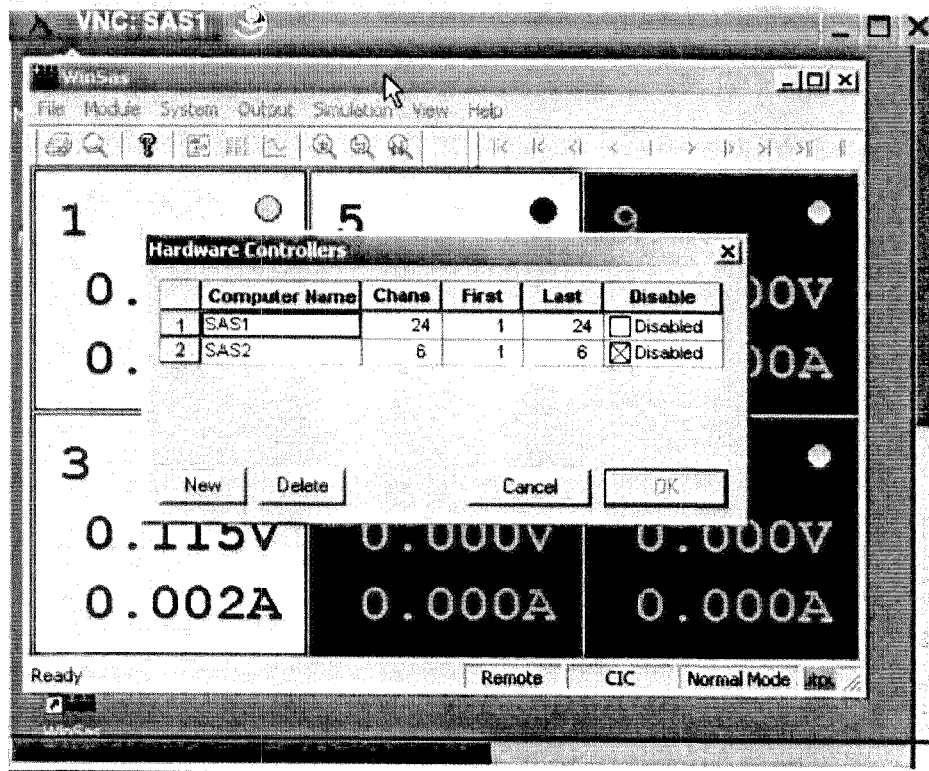
Test location: <i>ESTEC</i>	Operator <i>S. EISEN</i>	Product-Assurance: <i>D. Lamoury</i>	Date: <i>28/1/09 07:09</i>
--------------------------------	-----------------------------	-----------------------------------------	-------------------------------



Check "This computer is a standalone master " and press OK, then close the SASserve application

17. Change the master WINSAS configuration in the following way:

Test location: <i>ESTER</i>	Operator <i>S. Escobey</i>	Product-Assurance: <i>D. Lamy</i>	Date: <i>28/11/09</i> <i>07:02</i>
--------------------------------	-------------------------------	--------------------------------------	---------------------------------------



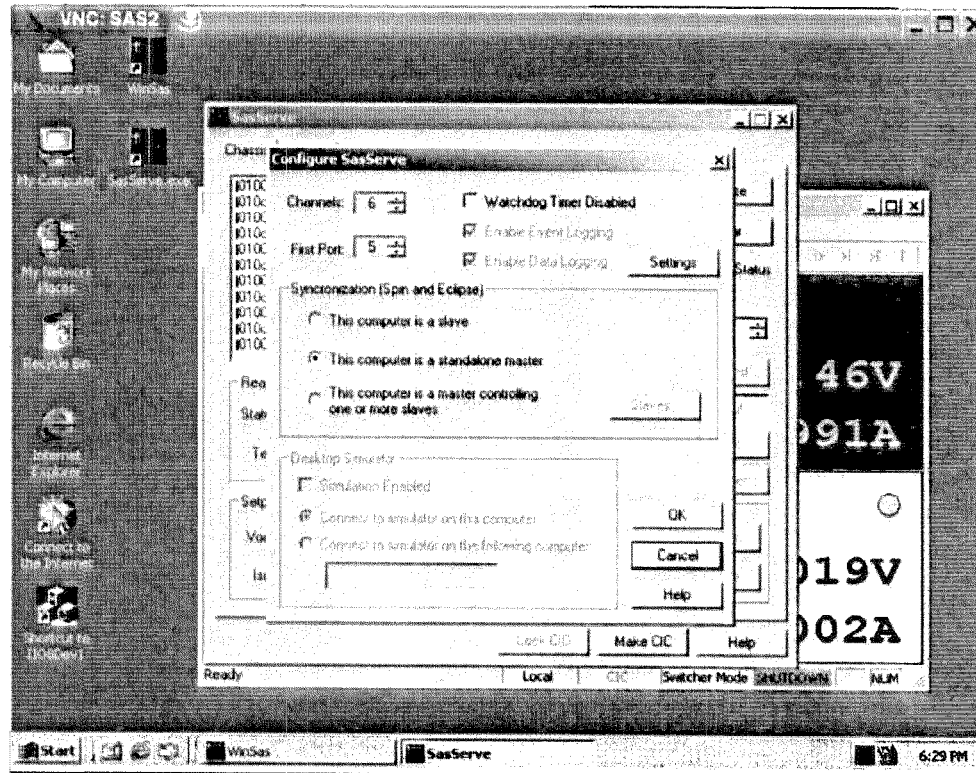
On the desktop of ELGAR PC SAS1 in the window **WinSas** select **System** -> **Configure** -> **Hardware Controllers**.

In the pop-up window, change the configuration as shown above and push **OK**.

Test location: <i>ESTR</i>	Operator <i>S. R. S. S. S.</i>	Product-Assurance: <i>D. L. L. L. L.</i>	Date: <i>28/1/09 07:02</i>
-------------------------------	-----------------------------------	---------------------------------------------	-------------------------------

18. On the desktop of ELGAR PC (LPS/SAS Rack 2) in the window **WinSas** select View -> Monitor Mode -> Select ... and in the window **Monitor Mode** select **Launch Mode** and push **OK**.
19. connect to the slave ELGAR PC by clicking on the "VNC SAS2" icon on the desktop (or issue the command /home/hpp-base/gse/bin/vnc_sas2)
20. Start the SASserve program from its desktop icon. Right click on its window bar to bring up its menu and select **Configure**. Change the SAS2 slave SASSERVE configuration in the following way:

Test location: <i>ESTER</i>	Operator <i>S. ELSAEN</i>	Product-Assurance: <i>D. Kennedy</i>	Date: <i>28/1/09 09:03</i>
--------------------------------	------------------------------	-----------------------------------------	-------------------------------



21. On the desktop of the LPS/SAS controller PC (Siemens) select the icon **H-P LPS LAUNCH** for starting the controller SW in Launch configuration.
22. On the desktop of Controller PC LPS in the window **Startup parameters** select Payload Model **HERSCHEL**, Startup method **NORMAL** and push OK.

Test location: <i>ESTA</i>	Operator <i>S. Eisen</i>	Product-Assurance: <i>D. Lamorby</i>	Date: <i>28/1/09 07:03</i>
-------------------------------	-----------------------------	-----------------------------------------	-------------------------------

23. On the desktop of Controller PC LPS into the "Operator Comment" window confirm the installed harness is the same of the S/C model selected, type in "yes" -> OK.

Test location: <i>ESTER</i>	Operator <i>S. Edwards</i>	Product-Assurance: <i>D. Kennedy</i>	Date: <i>28/1/09 07:05</i>
--------------------------------	-------------------------------	-----------------------------------------	-------------------------------

Step No.	IST_Launch_Clean_Run Test Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
1	Remove red tag Before switching on the S/C install SAS UCE on SAS 1 on +Z panel For Installation see HP-4-TPD-RP-S003	installed			SAS UCE to has be operated manually just before separation.	✓	
2	Remove red tag Before switching on the S/C, a strong light source should be placed in front of the AAD. AAD nominal is the one on the bottom (see Annex 11).	installed			Light source has to be switched on manually just before sparation. Access to Clean Room needed, ESD precautions to be followed.	✓	
3	Prepare to unplug the 2 umbilical's right after separation.					✓	
4	Start IST test case: "Launch Clean Run, section 5.8.10 Choose yes or No ⇒ Click the button "yes"			YES	13:08	✓	

Test location: ESTEC	Operator WSDAUS.	Product Assurance: K. Coassens	Date: 28-1-09	13:08
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Step No.	IST_Launch_Clean_Run Test Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
5	Z010999MCVT092_IST_LAUNCH_CLEAN_RUN At the prompt: " Preparation for CLEAN LAUNCH " ⇒ Click the button "Confirm" to proceed	Confirm		CONF	13:08	✓	
6	Z010999MCVT092_IST_LAUNCH_CLEAN_RUN At the prompt: "STATUS SPACECRAFT AND EGSE (Configuration for Launch)" ⇒ Click the button "Confirm" to proceed	Confirm		CONF	13:16	✓	
7	Z010999MCVT092_IST_LAUNCH_CLEAN_RUN At the prompt: "For checking the intensity of the light source stimulating AAD and SAS, request operator in clean room to turn ON the AAD lamp and SAS UCE" ⇒ Click the button "OK" when the light is ON		$\begin{matrix} N \\ R \end{matrix}$	7.0e-5 6.5e-5 13:37 PUSH#1	If the intensity of the light source, stimulating the AAD sensor is not sufficient, perform PVS changing the AAD ARAD threshold 13:08		PUS #1

Test location: ESTEC	Operator WSDAUS	Product-Assurance: K. Goossens	Date: 28-1-09
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Step No.	IST_Launch_Clean_Run Test Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
8	Z010999MCVT092_IST_LAUNCH_CLEAN_RUN At the prompt: "Check that current values of AAD and SAS UCE stimuli are correct and inform clean room to turn OFF the lamp" ⇒ Click the button "OK" when the light is OFF			OK	13:49	✓	
9	Z010999MCVT092_IST_LAUNCH_CLEAN_RUN At the prompt: "TT&C SCOE CONNECTION and UL SWEEP START" ⇒ Click the button "Confirm" to proceed	Confirm		CONF	13:49	✓	
10	Z010999MCVT092_IST_LAUNCH_CLEAN_RUN At the prompt: "START LAUNCH PHASE (Launch)" ⇒ Click the button "Confirm" to proceed	Confirm		CONF	Y102989ECVT018_TT C_TC_OP_METHOD ONLINE runs in parallel 13:53	✓	

Test location: ESTEC	Operator W.S. JACOBS	Product Assurance: F. Cassens	Date: 28-1-09 13:53
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Step No.	IST_Launch_Clean_Run Test Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
11	<p>Z010999MCVT120_SAT_TIME_COUNTER</p> <p>“Autonomous CRYOSTAT Valves operations” “are expected to be performed” “In He I/II condition ENSURE that” “a Cryo-Engineer is informed/present and” “Gives his go-ahead”</p> <p>⇒ Click the button depending on actual condition</p>			No	13:53		
12	<p>Y102989ECVT005_TM_DFE_IN_FROM_TTC</p> <p>Verification of TM parameter will fail YM504950 “RXCarLockState” will be “unlocked” But for this specific test the status is correct.</p> <p>⇒ Click the button “Continue” to proceed</p>						

Test location: ESTEC	Operator WSPANUS	Product-Assurance: R. GOSSEWS	Date: 28-1-09
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BEFORE LAUNCH:

STEP 10

ZD10999MVCVT153_IST_STATUS.tcl

Result File: /HPCCS/VARIABLE/RESULTS/2009_01_28_07_25_hercdmu_hpws23_REALTIME_LOH_CLEAN/TSEQ/20090128_141918_0091_ZD10999MVCVT153_IST_STATUS.log

```

2009.028.14.23.55.922030 User has chosen to continue the test
2009.028.14.23.57.954865 actual value of requestId (alias dynActFlag):
2009.028.14.23.57.989245 checkCDMS MODE launch - launch
2009.028.14.23.58.014111 checkCDMS_TM_OBT A - A
2009.028.14.23.58.038960 checkCDMS_PMSW AlN[B1N] - AlN[B1N]
2009.028.14.23.58.063967 checkCDMS_SCEP A-0 - A-0
2009.028.14.23.58.088716 checkCDMS_MTL stopped - stopped
2009.028.14.23.58.113461 checkCDMS_FDIR AFS - AFS
2009.028.14.23.58.138382 checkCDMS_SrvCBH N only - N only
2009.028.14.23.58.164750 checkCDMS_LaunchStraps not separated - not separated
2009.028.14.23.58.189266 checkHPS all N - all N
2009.028.14.23.58.213538 checkPCDU_IF A ON - IF A ON
2009.028.14.23.58.237849 checkBAT >70%SOC - >70%SOC
2009.028.14.23.58.262094 checkPowerDomain SA+BAT - BAT
2009.028.14.23.58.286480 checkSSMM 3Banks - 3Banks
2009.028.14.23.58.310767 checkTTC_Rx1Rate 4kbps - 4kbps
2009.028.14.23.58.335099 checkTTC_Rx2Rate 4kbps - 4kbps
2009.028.14.23.58.359666 checkTTC_TM_Rate 150 kbps - !=spec.150 kbps
2009.028.14.23.58.385500 checkTTC_TxChain T1 RF OFF A ON LCL ON - T1 RF OFF A ON LCL ON
2009.028.14.23.58.409870 checkTTC_Rx1_AntenneLGA1 - LGA1
2009.028.14.23.58.434138 checkTTC_Rx2_AntenneLGA2 - LGA2
2009.028.14.23.58.458741 checkCCU_STATUS A,B ON HK 8s - A,B ON HK 8s-- No check in Low Rate
2009.028.14.23.58.483125 checkSPIRE OFF - OFF
2009.028.14.23.58.507333 checkHIPI OFF - OFF
2009.028.14.23.58.531410 checkPACS OFF - OFF
2009.028.14.23.58.555385 checkACMS_Mode SBM pre sep - SBM pre sep
2009.028.14.23.58.579662 checkACMS_BUS A - A
2009.028.14.23.58.603656 checkACMS_PMSW AlN[B1S] - AlN[B1S]
2009.028.14.23.58.627961 checkACMS_CRS 1A,2S - 1A,2S
2009.028.14.23.58.651978 checkACMS_FDIR AFS - AFS

```

Satellite Status in test case 5.8.2.4.5b

CDMS

MODE	Launch
TM/OBT	A
PMSW	AlN[B1N]
SCEP/MTL	A-0 / stopped
FDIR/srvCBH	AFS / N only
Launch Straps	not separated

Power

PCDU/HPS	IF A ON / all N
Battery	>70%SOC
Power Domain	BAT

SSMM

Mass Memory	3Banks
-------------	--------

TTC

note	
RxRate	Rx1:4kbps Rx2:4kbps
IME/Tx Rate	!=spec.150 kbps
TxChain	T1 RF OFF A ON LCL O
Rx1Ant	LGA1
Rx2Ant	LGA2

Instruments

CCU	A,B ON HK 8s-- No ch
SPIRE	OFF
HIPI	OFF
PACS	OFF

ACMS

MODE	SBM pre sep
Bus/PMSW	A / AlN[B1S]
CRS/FDIR	1A,2S / AFS
GYROs	A,B,C IF 1 ON
STRs	OFF
RWLs	OFF
LV enable	!=spec.A ON B ON
RCS enable	OFF

Monitoring

SREM	OFF
VMC	OFF

GSE support

Power Source	not tested	TC Source	!=spec.LGA1	ENV simulator	!=spec.stand-by
--------------	------------	-----------	-------------	---------------	-----------------

OK!

Step No.	IST_Launch_Clean_Run Test Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
13	<p>Y102989ECVT005_TM_DFE_IN_FROM_TTC</p> <p>Verification of TM parameter will fail YM510950 "RXSuCarLockState" will be "unlocked" But for this specific test the status is correct.</p> <p>Click the button "Continue" to proceed</p>					✓	
14	<p>Script will not warn you, this step has to be done via voice link (Z010999MCVT123_SAT_TIME_COUNTER)</p> <p>1 mn before the separation, a request to turn ON the AAD lamp + SAS UCE as previously is displayed</p> <ul style="list-style-type: none"> ⇒ Inform the clean room to turn on the lamp start monitoring of the AAD temperature ⇒ Switch on SAS UCE <p>NOTE: NO LIGHT AFTER SEPARATION WILL LEAD TO AN ACMS RECONFIGURATION</p>				Script will not warn you, this has to be done via voice link !	✓	

X WHAT ABOUT UMC LIGHT.

Test location: ESTEC	Operator: WSDAUS	Product-Assurance: <i>[Signature]</i>	Date: 28-1-09
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Step No.	IST_Launch_Clean_Run Test Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
15	<p>Z010999MCVT092_IST_LAUNCH_CLEAN_RUN</p> <p>“EXPRESS ACTION in CLEAN ROOM”</p> <p>1. DISCONNECT BOTH UMBILICALS (after TC for separation relays is send)</p> <p>2. Disconnect DFE internal connection TC Output to Umbilical (J903A and J903B) In order to prepare reconnecting</p> <p>Click “ok” when the activities are performed</p>			<p>Done</p> <p>OK</p>	<p>Double check with the command history , if tc setting separation relays is send</p> <p>14:29</p> <p>14:32</p>		
16	<p>Terminate “acms_md1_fcv.tcl”</p>				<p>Due to ACMS SCOE not connected</p>		
17	<p>Z010999MCVT092_IST_LAUNCH_CLEAN_RUN</p> <p>After separation,</p> <p>⇒ Only when a signal appears on TT&C SCOE spectrum analyser, the button “OK” can be clicked to proceed</p>			<p>OK</p>	<p>14:32</p>		

Test location: ESTEC	Operator WSDAVIS	Product-Assurance: 	Date: 28-1-09
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Step No.	IST_Launch_Clean_Run Test Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
18	Z010999MCVT092_IST_LAUNCH_CLEAN_RUN At the prompt: "Start acquiring TM and sending TC via RF" ⇒ Click the button "Confirm" to proceed	Confirm		CONF	14:33		
19	Z010999MCVT092_IST_LAUNCH_CLEAN_RUN At the prompt: "Waiting for End of Test, Restore Umbilical with 150 Kbps" In case of ACDMS reconfiguration perform operator Note 10 in Annex 12 ⇒ Click the button "Confirm" to proceed	Confirm		CONF	14:42		
20	Z010999MCVT092_IST_LAUNCH_CLEAN_RUN At the prompt: "Ready to prepare for turning off the lamp(disable ACC RM- available TC uplink is requested) " ⇒ Click the button "Confirm" to proceed	Confirm OK		OK	14:42		

Test location: ESTEC	Operator C.S. JAJAJ	Product-Assurance: <i>[Signature]</i>	Date: 28-1-09 14:42
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Step No.	IST_Launch_Clean_Run Test Step-Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
21	<p>Z010999MCVT092_IST_LAUNCH_CLEAN_RUN</p> <p>ACTIONS to be performed IN CLEAN ROOM</p> <p>3. REPLUG BOTH UMBILICALS</p> <p>4. TURN OFF the AAD Lamp</p> <p>⇒ Click the button "OK" when the lamp is OFF and both umbilicals are reconnected</p>			OK	<p>If setting the LPS SCOE remotely to "online" mode fails, perform this step in local mode</p> <p>14:49</p>		
22	<p>D102159SCVT216_ASED_TM_150_KBPS_IST</p> <p>⇒ Click the button "END TS " to proceed</p>			ETS	14:52		
23	<p>Z010999MCVT092_IST_LAUNCH_CLEAN_RUN</p> <p>⇒ Click the button "END TS " to proceed</p>			ETS	<p>If setting the LPS SCOE remotely to "online" mode fails, perform this step in local mode</p> <p>14:52</p>		

at 15:36 OMC X for will be finished

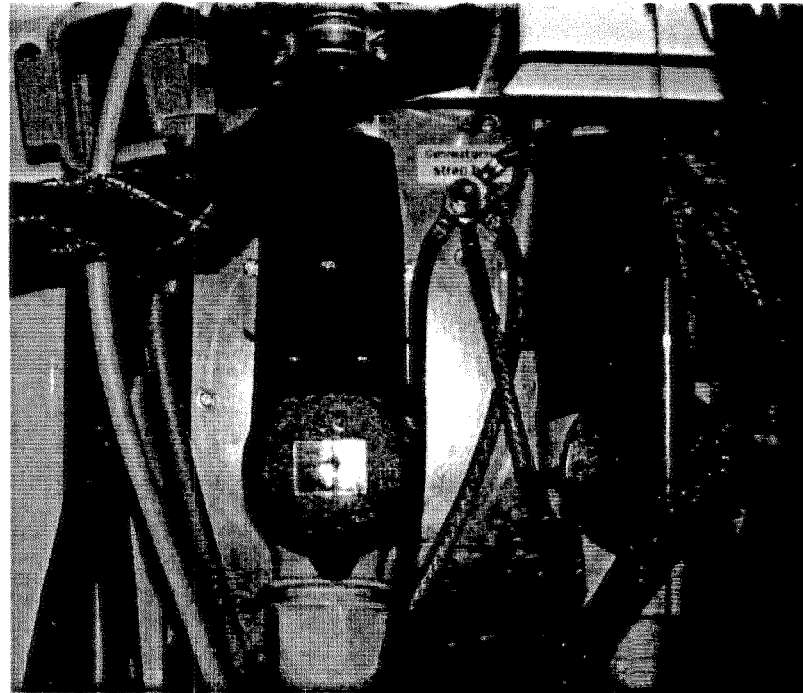
Test location: ESTE	Operator WSDAVIS	Product-Assurance: RPA	Date: 28-1-09
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15:19 IST-ENU

After the Satellite switch off, follow the steps below to configure the system from Launch to AIT configuration:

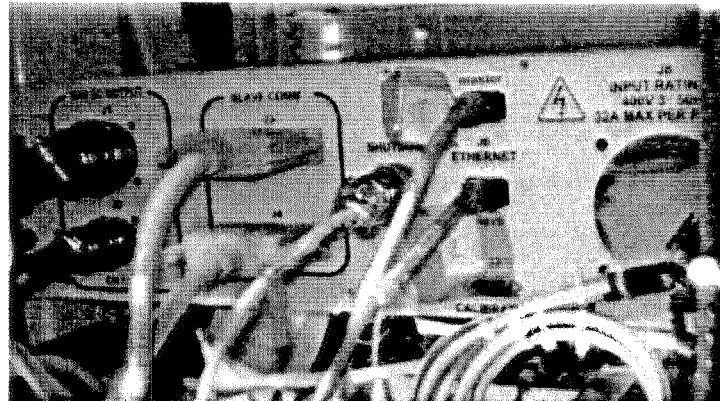
1. On the LPS/SAS application SW, open the window menu File and select Rack shutdown & Exit. ✓
2. After completion of step 2 Shut down the PC Controller Elgar Slave and Master. ✓
3. For changing the cabling from Launch to AIT configuration, remove the 4 screws holding the Aluminum plate, rearrange the cables and remount the Aluminum plate afterwards. ✓
4. Open the back door of SCOE LPS/SAS Rack 1. ✓
5. Connect the Y-Cable to output 1 of the MITU Rack 1, connect the other end of the Ycable to the rack2 CN2 and CN3 connectors. ✓
6. Connect the Elgar slave rack 3 output 2 on the MITU Rack 1. ✓
7. Check that the Rack2 and rack3 ground strap is connected to the MITU starpoint ground (marked as "Connect ground strap here", see figure below) ✓

Test location: <i>ESTEC</i>	Operator <i>check</i>	Product-Assurance <i>[Signature]</i>	Date: <i>28/1/2009.</i>
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8. Check that the facility ground is also connected to the MITU starpoint ground ✓
9. Open the back door of SCOE LPS/SAS Rack 2 ✓
10. Reconnect the three cables coming from ELGAR SLAVE rack (BLU one) to the relevant connector J3, J4 and J5 of the ELGAR Master Rack. ✓

Test location: <i>ESAC</i>	Operator <i>Chick</i>	Product-Assurance: <i>BD</i>	Date: <i>25/01/09</i>
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11. Disconnect the brown connectors marked A and C and connect A with the connector B you find inside the Elgar Master Rack. ✓

Test location: <i>ESTEC</i>	Operator: <i>[Signature]</i>	Product-Assurance: <i>[Signature]</i>	Date: <i>28/01/2007</i>
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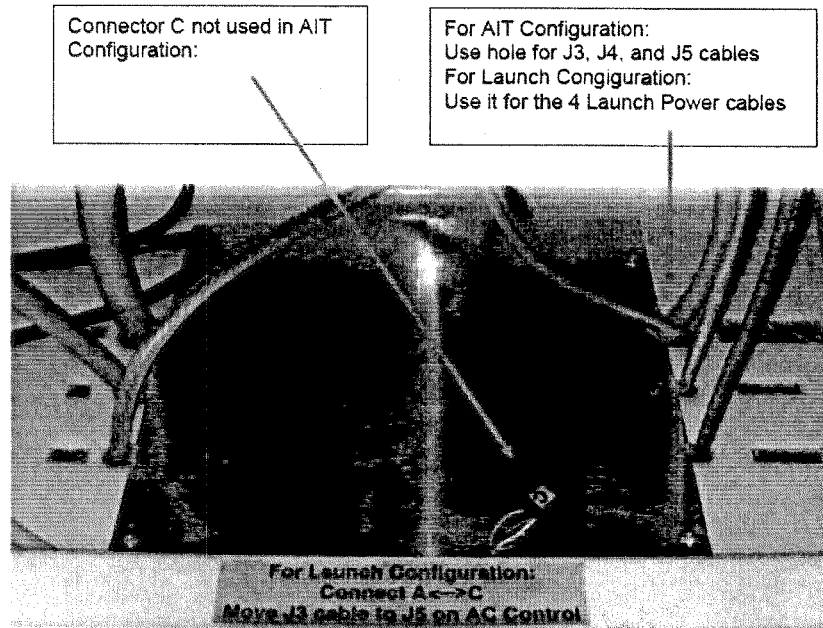
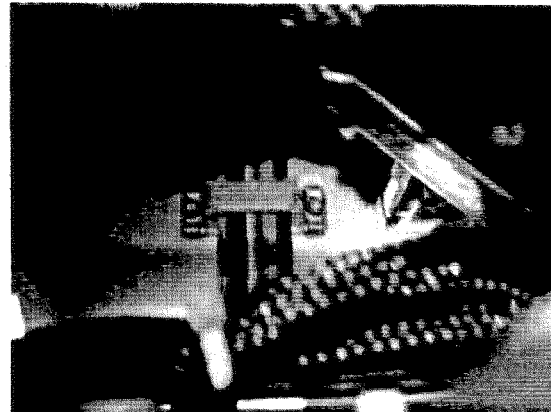
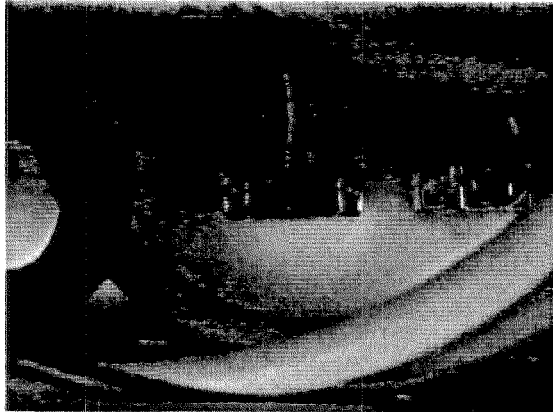


Figure 3: Guiding cables through the bottom plate

12. Close the SCOE LPS/SAS Rack 2 back door again. ✓

13. Make sure that the Unit interconnect ribbon cable SubD is connected to the back of A110-Nom and A110-Red units in rack 1 ✓

Test location: <i>ESTEC</i>	Operator <i>[Signature]</i>	Product-Assurance: <i>[Signature]</i>	Date: <i>28/01/09</i>
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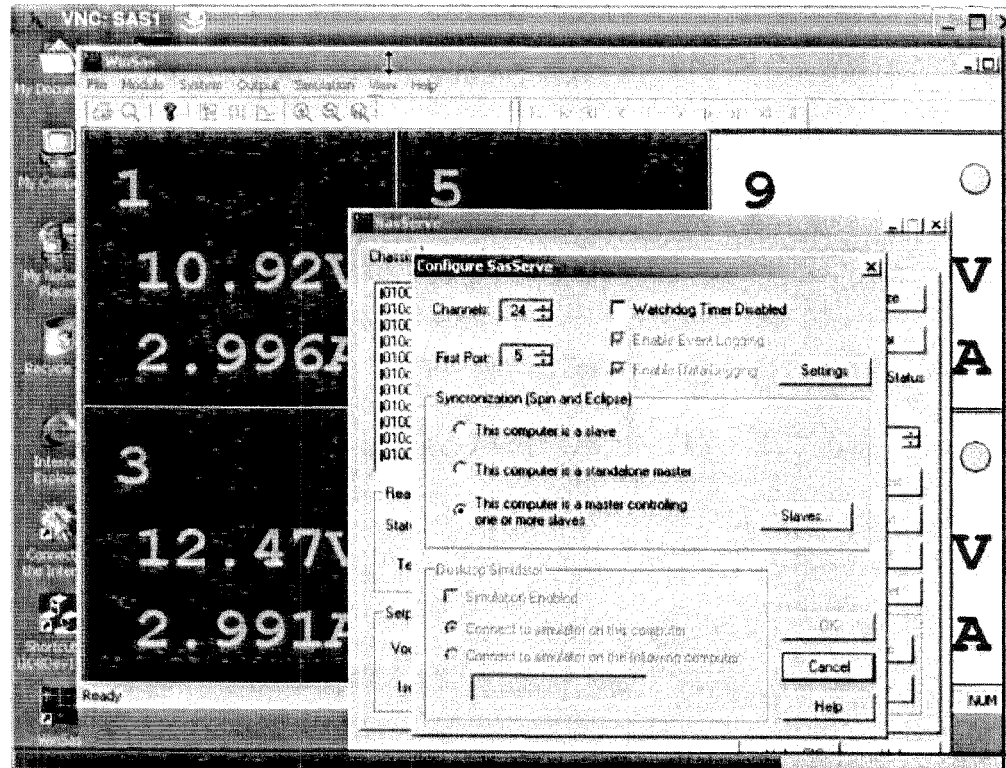


14. Close the SCOE LPS/SAS Rack 1 back door. ✓
15. Connect the facility main power of the LPS/SAS SCOE (red socket) to the back of the MITU in LPS/SAS Rack 1. ✓
16. Switch on the MITU on front panel of the rack 1 (black button, down left) ✓
17. Switch on the rack 3, pressing the green button on the front side of the rack. ✓
18. Switch on the ELGAR SAS controller Slave (bottom) and wait 15 sec. ✓
19. Switch on the ELGAR SAS controller Master (top). ✓
20. Do not start the SCOE application on the remote controller yet ✓

Test location: <i>ESTEC</i>	Operator <i>[Signature]</i>	Product-Assurance: <i>[Signature]</i>	Date: <i>28/01/09.</i>
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- 21. On the remote controller, log in as user hpp and run the command `sudo /home/hpp-base/gse/bin/set-ips-routes.sh NOMINAL` for setting up the routing via Romulus1 |/f ✓
- 22. Connect to the master ELGAR PC by clicking on the "VNC SAS1" icon on the desktop (or issue the command `/home/hpp-base/gse/bin/vnc_sasl`) ✓

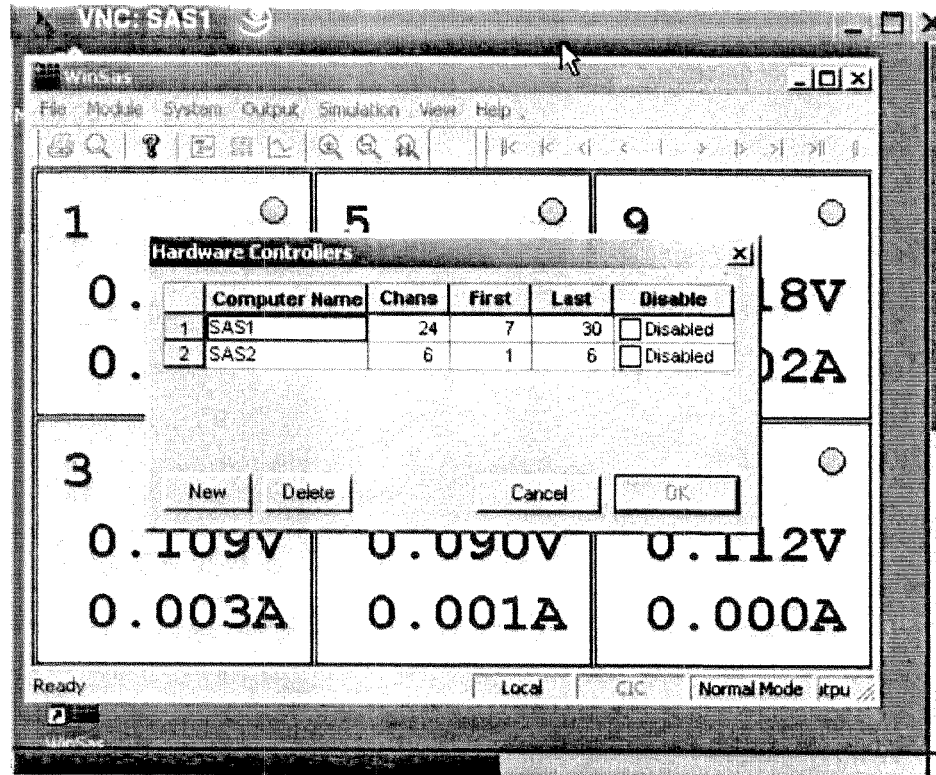
Test location: <i>ESTEC</i>	Operator <i>check</i>	Product-Assurance: <i>BA</i>	Date: <i>28/01/09</i>
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Check "This computer is a master controlling one or more slaves" and press OK, then close the SASserve application

23. Change the master WINSAS configuration in the following way:

Test location: <i>ESTEC</i>	Operator <i>e. Kuel</i>	Product-Assurance: <i>BDH</i>	Date: <i>28/09/01</i>
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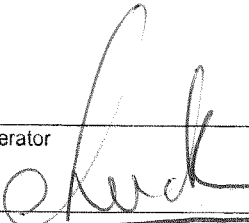


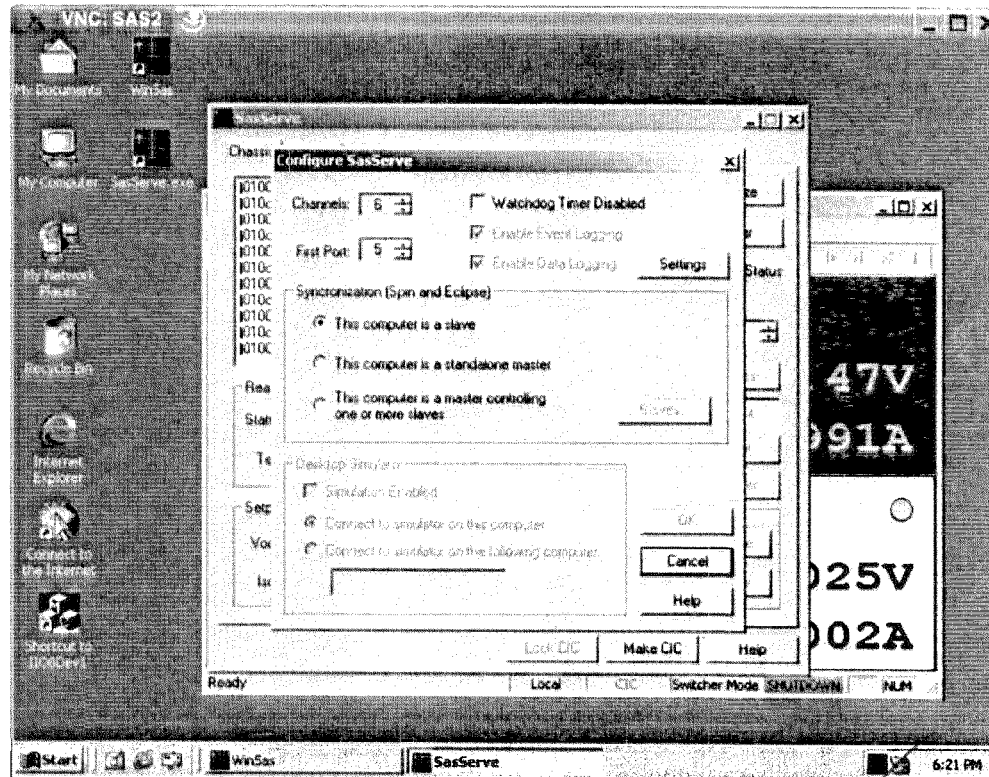
On the desktop of ELGAR PC SAS1 in the window **WinSas** select **System** -> **Configure** -> **Hardware Controllers**. In the pop-up window, change the configuration as shown above and push **OK**. ✓

24. On the desktop of ELGAR PC SAS1 in the window **WinSas** select **View** -> **Monitor Mode** -> **Select ...** and in the window **Monitor Mode** select **Default Mode** and push **OK**. ✓

Test location: <i>ESTEC</i>	Operator: <i>ehud</i>	Product-Assurance: <i>FIAH</i>	Date: <i>8/01/09</i>
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- 25. Close the VNC window to SAS1 ✓
- 26. Connect to the slave ELGAR PC by clicking on the "VNC SAS2" icon on the desktop (or issue the command /home/hpp-
base/gse/bin/vnc_sas2) ✓
- 27. Start the SASserve program from its desktop icon. Right click on its window bar to bring up ints menu and select **Configure**. ✓
Change the master configuration in the following way:

Test location: ESTEC	Operator 	Product-Assurance: 	Date: 28/01/09
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Check "This computer is a slave" and press OK, then close the SASserve application

28. Close the VNC window to SAS2

29. On the desktop of Controller PC LPS Siemens select the icon **H-P LPS**

Test location: <i>ESTEC</i>	Operator <i>[Signature]</i>	Product-Assurance: <i>[Signature]</i>	Date: <i>08/01/09</i>
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30. On the desktop of Controller PC LPS in the window **Startup parameters** select Payload Model **HERSCHEL**, Startup method **NORMAL** and push OK.
31. On the desktop of Controller PC LPS into the "Operator Comment" window confirm the installed harness is the same of the S/C model selected, type in "yes" -> OK.

Test location: ASTEC	Operator 	Product-Assurance: 	Date: 28/01/09.
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8 Summary Sheets

8.1 Procedure Variation Summary

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

Table 8.1-1: Procedure Variation Sheet

8.2 Non Conformance Report (NCR) and SPR Summary

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

Table 8.2-1: Non-Conformance/SPR Record Sheet

8.3 Sign-off Sheet

	Date	Signature
Test Manager	28/01/09	C. Mueh
Operator		
PA Responsible	28/01/09	X D. Hogg
ESA/TAS Representative		

9 Annex: Script Hierarchy

```

logm
logm ===== 5.8.10 LAUNCH CLEAN RUN =====
logm
logm |-----> Z010999MCVT153_IST_STATUS 5.8.10
logm |-----|-----> ACMS_get_RM_status RMA
logm |-----|-----> ACMS_get_RM_status RMB
logm |-----> D102159SCVT210_GET_ALARM_STATUS
logm |-----> W102584SPVT100_PCDU_TRANSITION 1
logm |-----> D102159SCVT210_GET_ALARM_STATUS
logm |-----> Y102989ETVT021_TTC_SCOE_ON
logm |-----> Y102989ECVT007_TTC_UL_PARAM_SET LGA1 -82 OFF T 1 0.5 0.26 A
logm |-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----> Y102989ECVT008_TCRG_MI_SET TTC 1.0 0.7 4000
logm |-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----> Y102989ECVT005_TM_DFE_IN_FROM_TTC LGA1 LBR2
logm |-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----|-----> Y102989ECVT001_TMTC_LINK TM TTC
logm |-----> Y102989ECVT003_TC_DFE_OUT_2_TTC 4000
logm |-----> async Y102989ECVT018_TTC_TC_OP_METHOD ONLINE
logm |-----|-----> Y102989ETVT017_TTC_CHECK_ROUTINE
logm |-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----> Z010999MCVT120_SAT_TIME_COUNTER notAbort
logm |-----|-----> W102584SPVT100_PCDU_TRANSITION 1
logm |-----|-----> W102584SPVT100_PCDU_TRANSITION 2
logm |-----|-----> Z010999MCVT153_IST_STATUS 5.8.2.4.5
logm |-----|-----|-----> ACMS_get_RM_status RMA
logm |-----|-----|-----> ACMS_get_RM_status RMB
logm |-----|-----> async A102109SPVT201_ACMS_STATUS
logm |-----|-----|-----> async D102159SCVT133_1553_BUS_SWITCH_OVER
logm |-----|-----|-----> async D102159SCVT111_MTL_LINE_SCANNING
logm |-----|-----|-----> async A102109SPVT204_ACMS_TRANSIT_SCM_OCM_SCM
logm |-----|-----|-----|-----> A102109SPVT043_TRANSITION_TO_OCM
logm |-----|-----|-----|-----> A102109SPVT203_RWL_SPINUP_IST
logm |-----|-----|-----|-----> A102109SPVT052_TRANSITION_TO_SCM
logm |-----|-----|-----> async A102109SPVT204_ACMS_IST_FDIR 12
logm |-----|-----|-----|-----> ACMS_get_RM_status RMA
logm |-----|-----|-----|-----> ACMS_get_RM_status RMB
logm |-----|-----|-----|-----> ACMS_event_buffer_dump sgma
logm |-----|-----|-----|-----> ACMS_event_buffer_dump sgmb
logm |-----|-----|-----|-----> CALIBRATION_FOR_GYRO
logm |-----|-----|-----|-----> CALIBRATION_FOR_GYRO
logm |-----> Y102989ECVT006_TTC_DL_PORT_SET LGA1
logm |-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----> Y102989ECVT001_TMTC_LINK_BOTH SCPRI
logm |-----> D102159SCVT123_TM_LINK_150_KBPS
logm |-----> Y102989ETVT020_TTC_SCOE_OFF
logm |-----|-----> Y102989ECVT018_TTC_TC_OP_METHOD OFFLINE
logm |-----|-----|-----> Y102989ETVT017_TTC_CHECK_ROUTINE
logm |-----|-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----> Z010999MMXX002UNITS_CHECK
logm |-----> K102999ECVT001_ASDGENCCU_MnDBOTH1
logm |-----> K102999ECVT001_ASDGENCCU_ABPWROFF
logm |-----> K102999ECVT001_ASDGENCCU_MnDisDLC

```

```

logm |-----|-----> K102999ECVT001_ASDGENCCUB_POWEROFF
logm |-----|-----|-----> Z010999MMXX002UNITS_CHECK
logm |-----|-----> K102999ECVT001_ASDGENCCUA_POWEROFF
logm |-----|-----|-----> Z010999MMXX002UNITS_CHECK
logm |-----> W102584SPVT100_PCDU_TRANSITION 5
logm |-----> Z010999MCVT002_POWER_OFF_CLN_LNCH
logm |-----|-----> D102159SCVT187_IST_SSMM_OFF
logm |-----|-----> Y102989EPVT002_PWR_SCOE_OFF_CLN_LNCH
logm |-----|-----|-----> Z010999MMXX003UNITS_CHECK_PWR_OFF
logm |-----|-----|-----> Z010999MMXX003UNITS_CHECK_PWR_OFF
logm |-----> Z010999MMXX003UNITS_CHECK_PWR_OFF
logm
logm |-----|-----> Y102989ECVT001_TMTC_LINK TM TTC
logm |-----> Y102989ECVT003_TC_DFE_OUT_2 TTC 4000
logm |-----> Y102989ECVT006_TTC_DL_PORT_SET MGA
logm |-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----> Y102989ECVT001_TMTC_LINK BOTH TTC
logm |-----> D102159SCVT188_IST_DUMP_PKT_STORE 2 1 0 3
logm |-----> Y102989ECVT001_TMTC_LINK TM SCPRI
logm |-----> Y102989ECVT006_TTC_DL_PORT_SET MGA
logm |-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----> Y102989ECVT005_TM_DFE_IN_FROM TTC MGA MBR
logm |-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----|-----> Y102989ECVT001_TMTC_LINK TM TTC
logm |-----> K102999ECVT001_ASDGENCCU_MnDBOTH2
logm |-----> K102999ECVT001_ASDGENCCU_MnEBOTH1
logm |-----> Z010999MCVT153_IST_STATUS 5.8.2.4.9
logm |-----|-----> ACMS_get_RM_status RMA
logm |-----|-----> ACMS_get_RM_status RMB
logm |-----> D102159SCVT191_TM_5_KBPS_IST
logm |-----> R102479SPVT117_IST_NOM 2 5k
logm |-----|-----> Y102989ECVT001_TMTC_LINK TC SCPRI
logm |-----|-----> Y102989ECVT006_TTC_DL_PORT_SET LGA1
logm |-----|-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----|-----> Y102989ECVT007_TTC_UL_PARAM_SET LGA1 -82 OFF T 1 0.5
0.06 A
logm |-----|-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----|-----> Y102989ECVT008_TCRG_MI_SET TTC 1.0 0.7 4000
logm |-----|-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----> Y102989ECVT018_TTC_TC_OP_METHOD ONLINE
logm |-----|-----|-----> Y102989ETVT017_TTC_CHECK_ROUTINE
logm |-----|-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----|-----> Y102989ECVT001_TMTC_LINK BOTH TTC
logm |-----> A102109SPVT087_ACMS_IST_FN 4
logm |-----|-----> ACMS_get_RM_status RMA
logm |-----|-----> ACMS_get_RM_status RMB
logm |-----|-----> ACMS_event_buffer_dump sgma
logm |-----|-----> ACMS_event_buffer_dump sgmb
logm |-----> Z010999MCVT153_IST_STATUS 5.8.2.4.10
logm |-----|-----> ACMS_get_RM_status RMA
logm |-----|-----> ACMS_get_RM_status RMB
logm |-----> Y102989ECVT001_TMTC_LINK BOTH SCPRI
logm |-----> D102159SCVT123_TM_LINK 150_KBPS
logm |-----> Y102989ETVT020_TTC_SCOE_OFF
logm |-----|-----> Y102989ECVT018_TTC_TC_OP_METHOD OFFLINE
logm |-----|-----|-----> Y102989ETVT017_TTC_CHECK_ROUTINE

```

```
logm |-----|-----|-----> Y102989ETVT019_TTC_SCOE_ACTIVITY
logm |-----> Z010999MMXX002UNITS_CHECK
logm |-----> K102999ECVT001_ASDGENCCU_MnDBOTH1
logm |-----> K102999ECVT001_ASDGENCCU_ABPWROFF
logm |-----|-----> K102999ECVT001_ASDGENCCU_MnDisDLC
logm |-----|-----> K102999ECVT001_ASDGENCCUB_POWEROFF
logm |-----|-----|-----> Z010999MMXX002UNITS_CHECK
logm |-----|-----> K102999ECVT001_ASDGENCCUA_POWEROFF
logm |-----|-----|-----> Z010999MMXX002UNITS_CHECK
logm |-----> Z102999SCVT002_SREM_OFF
logm
```

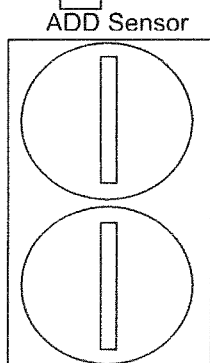
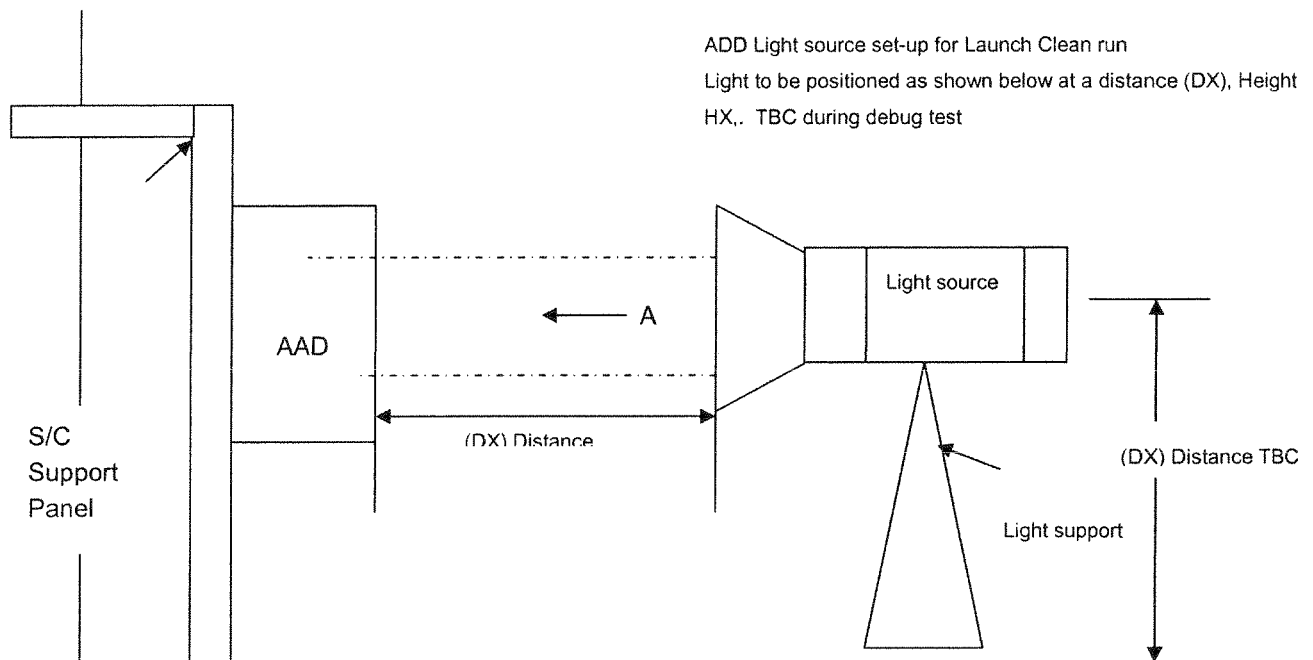
10 Annex: Session Record

Test Description	LAUNCH CLEAN RUN
Session ID	2009-01-28-07-25-HP-ASSED-TP-0194-IST-155-8-1
Start Time:	07:00
End Time	16:30
CVS Tag for Test	IST-2-TP-0194-155-8-Launch-Clean-Run-EADS-001
Applicable IST Specification	155.8
Test conductor	
QA Approval	<i>A. F. ...</i>
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	

11 Annex Set up of light source for AAD stimulation

Launch Clean run preparation before switching on the S/C

Remove red tag from AAD and position a strong light source in front of the AAD as shown below



ADD Sensor view on arrow A

ADD Illumination requirements

- illumination of both AAD apertures,
- At a level equivalent to $\sim 1400\text{W/m}^2$,
- In a visible spectrum similar to that of Sunlight (rich in Infra-red around the 845nm wavelength), such that both AAD sensors produce continuous current of $>120\mu\text{A}$, as indicated in the AAD sensor Tm, and such that, over the duration of the illumination per (assume 20minutes worst case - To Be Advised by test Conductor), the temperatures of all surface elements local to the AAD apertures do not rise above 45degC due to the illumination

Warning notes

- Light source shall be monitored to ensure that the S/C cannot be damaged from the heat generated from the test light
- Light source has to be switched on manually just before separation.
- ESD precautions shall be followed during set-up of the light sources in the Clean Room

12 Annex Operator Note 10

Launch-Clean-Run Recovering Step by Step Procedure

Step- No.	LaunchCleanRun - Test Step Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
10.	The following step-by-step procedure is meant to be performed if a CDMU SAM-to-SAM reconfiguration happens.	OK			Reconfiguration is expected to be happened if, after some minutes (5 min) after separation, TM is not received		
Recovering TM and TC via RF (TM @ 500 bps, TC @125 bps)							
20.	From Test Conductor Console, type: callasync Y102989ECVT005_TM_DFE_IN_FROM_TTC {LGA1} {LBR1}	OK			XPND configuration is expected to be @ 500 bps TM and 125 bps for TC. The script shall configure TMTC and TTCSCOE to receive TM @ 500 bps		
30.	Check for script completion without any NO-GO	OK					
40.	Check that TM is correctly coming down	OK			This may require some minutes (6-7 minutes). Check also on TMTC DFE that TM downlink is OK		

Step- No.	LaunchCleanRun - Test Step Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
50.	From Test Conductor Console, type: callasync Y102989ECVT008_TCRG_MI_SET_TTC {1.0} {0.7} {125}	OK			The script shall configure TTCSOE to send TC @ 125 bps		
60.	Check for script completion without any NO-GO	OK					
70.	From Test Conductor Console, type: callasync Y102989ECVT003_TC_DFE_OUT_2_TTC {125}	OK			The script shall configure TMTC DFE to send TC @ 125 bps		
Re-setting XPND RX to SAM mode default (4 Kbps)							
80.	From Manual Command Stack, send TC: DC94E170 To set XPND-1 RX to 4 Kbps	OK					
90.	Check on TTC synoptic that parameter is correctly updated	OK			TM is still 500 bps. This may take a while (3 minutes).		
100.	From Test Conductor Console, type: callasync Y102989ECVT008_TCRG_MI_SET_TTC {1.0} {0.7} {4000}	OK			The script shall configure TTCSOE to send TC @ 4 Kbps		
110.	Check for script completion without any NO-GO	OK					
120.	From Test Conductor Console, type: callasync Y102989ECVT003_TC_DFE_OUT_2_TTC {4000}	OK			The script shall configure TMTC DFE to send TC @ 4 Kbps		

Step- No.	LaunchCleanRun - Test Step Description	Nominal Value	Tolerance	Actual Value	Remarks	P	N
<i>Continue with Launch Clean Run Master Procedure</i>							
130.	Come-back to Launch Clean Run Master procedure (re-connect Umbilical cables, TM routed via Umbilical, TM set to Medium Rate, S/C switch-off)	OK					

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

Attachment 1 to Section 6.1.3
SPRs / NCRs raised during the test

SPR Formsheet

Nr.: 1169	Date: 28/01/09	Author: O. Nostin	Classification:
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Test: Launch Clean Run	Session ID: 2009-01-28-07:25 - LCH-CCRM	Subsystem:
------------------------	-----------------------------------------	------------

Title: Wrong TR check for ESAS.

Type (script/picture/test structure):	Name: W102583EDVT 007-IST- CATCH-PCDU	Version: 1.8
---------------------------------------	---------------------------------------	--------------

Problem description (to be filled by Test conductor (TC) / Test operator (TO)):
 Time (UTC): 9:30 Step no: 96.
 In UPS configuration unused channel was set with ISC = 0.5 and considered as active by the script.

Proposed solution (to be filled by TC / TO):
 Set up threshold to 0.6 instead of 0.2.

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): Same session

Date: 28/01/09	Participants: <i>[Signature]</i>
----------------	----------------------------------

Implemented: <input checked="" type="checkbox"/>	Code inspected: <input checked="" type="checkbox"/>
Confirmed by Test Conductor(s) / Experts to check-in: <input checked="" type="checkbox"/> 1.8	

Date: 28/01/09	Name: <i>[Signature]</i>
----------------	--------------------------

Close out (Functional team member & QA):

Verified during test case / ID: 2009-01-28-07:25 - heredimulbyDWS23 RESULTS - LCH-CLEPM

Date: 20/01/09	Version: 1.9	Func. Team Name: O. Ma. / RD
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Date: 20/01/09	QA: R. Gassen <i>[Signature]</i>
----------------	----------------------------------

SRB:

SPR Formsheet

Nr.: 1170	Date: 28.01.09	Author: O. Rostin.	Classification:
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Test: Launch Clean	Session ID:	Subsystem:
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Title: Wrong TC step OBCP Rgmt sent during LCR. Test

Type (script/picture/test structure):	Name: 2010998 PCVT082-IST-LAUNCH-CLEAN 1.14	Version: 1.14
---------------------------------------	---------------------------------------------	---------------

Problem description (to be filled by Test conductor (TC) / Test operator (TO)):
 Time (UTC): Step no:
 incurred TC DCN04170 sent before launch.

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

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: 28.01.09	Participants:
----------------	---------------

Implemented: <input checked="" type="checkbox"/>	Code inspected: <input checked="" type="checkbox"/>
Confirmed by Test Conductor(s) / Experts to check-in: <input checked="" type="checkbox"/> 1.15	

Date: 28.01.09	Name:
----------------	-------

Close out (Functional team member & QA):

Verified during test case / ID: _____

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

SRB:


SPR Formsheet

Nr.: 1172	Date: 29-01-09	Author: J. Berlin	Classification:
Test: Launch (leakdown)	Session ID:	Subsystem:	
Title: Incorrect TN rate check in 5.8.2-4.5b (leakdown run).			
Type (script/picture/test structure):	Name: 2010999 ACVT (53) - IST - STATUS.	Version:	
Problem description (to be filled by Test conductor (TC) / Test operator (TO)): Time (UTC): Step no: TN rate check (50kbp) is wrong (calculated a error from Nominal (leakdown)).			
Proposed solution (to be filled by TC / TO): Set correct TN check to 5kbp.			
Review board decision (to be filled by TC, TO, QA plus Engineering / experts if required): Implement as proposed: <input checked="" type="checkbox"/> Reject: <input type="checkbox"/> Other: _____ Proposed rerun (Date / Test case): _____			
Date: 29-01-08	Participants: <i>J. Berlin</i>		
Implemented: <input checked="" type="checkbox"/>	Code inspected: <input checked="" type="checkbox"/>		
Confirmed by Test Conductor(s) / Experts to check-in:			<input checked="" type="checkbox"/>
Date: 29-01-08	Name: <i>J. Berlin</i>		
Close out (Functional team member & QA): Verified during test case / ID: _____			
Date:	Version:	Func. Team Name:	
Date:	QA:		
SRB:			

Attachment 1 to Section 6.1.8
Test measurements devices calibration reports

Attachment

TRR Minutes H-P-TASF-MN-11220

	Launch clean run TRR		REF.: H-P-TASF-MN-11220		
			HERSCHEL FM		
			DATE : 27/01/09	PAGE : 1 of 72	
MINUTES OF MEETING			PLACE : FR Meeting Room, ESTEC		


PURPOSE : Launch clean run TRR **CLASSIFICATION :**

ATTENDEES	FIRM	SIGNATURE	ATTENDEES	FIRM	SIGNATURE
J. Hall	TASF		F. Sauvage (Tele)	TASF	
S. Mooney	TASF				
			A. Gatti	ESA	
C. Much	ASED				
O. Martin	ASED				
J. Hendrikse	ASED				
WRITTEN BY : J. Hall			Chair:	J. Hall	


CONCLUSION :
 The TRR states formally that permission is given for the execution of the test after the closure of the identified open work items and that none of the identified anomalies are blocking for the test execution.

DISTRIBUTION : ATTENDEES	FOR FURTHER ACTION :	See MoM and action item table at end of minutes
	FOR INFORMATION :	ASED : TAS-F : ESA:


APPROVED BY				
NAME	J. Hall	S. Mooney	A. Gatti	
SIGNATURE				

	Launch clean run TRR	REF.: H-P-TASF-MN-11220	
		HERSCHEL FM	
		DATE : 27/01/09	PAGE : 2 of 72
MINUTES OF MEETING		PLACE : FR Meeting Room, ESTEC	


	ACTION
<p><u>Agenda</u></p> <ol style="list-style-type: none"> 1. Introduction 2. Identification of Test Item 3. Test procedure/Timeline 4. NCR/RFD status 5. Safety Hazards and Hazardous operations 6. Test equipment/Facility and Calibration Status 7. Cleanliness 8. Test Personnel and Responsibilities 9. Problem Areas 10. AOB 11. Conclusion 	
<p style="text-align: center;">Introduction</p> <p>This Meeting is the TRR for the launch clean run test to be performed in Helium I conditions and in ambient environment (Clean Room) within the scope of the Herschel IST 2 satellite test campaign.</p>	
<p style="text-align: center;">Identification of Test Item</p> <p>As Designed</p> <ul style="list-style-type: none"> • S/C CIDL Herschel S/C CI#100000 CIDL: H-P-2-ASP-LI-0538 iss.5 <p>As Built</p> <p>H-EPLM Integration Status List</p> <p>ASED PLM ISL: HP-2-ASED-LI-0032 iss 20A Status 12.1.2009 See Annex 1</p> <p>SVM Integration Status List</p> <p>ASED SVM ISL: HP-2-ASED-LI-0033 iss 21 Status 12.1.2009 See Annex 2</p> <p>Deviations of ISL</p> <ul style="list-style-type: none"> ■ End of life in ambient on LO. 	

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<p>The above deviations do not impact the current test.</p> <p>SW Configuration</p> <ul style="list-style-type: none"> • CDMS V 3.8 • ACMS V 4.0 • HPSDB HP-2-ASP-LI-1441 v 28 <p>A full software configuration is detailed in Annex 4</p> <p>Instruments: PACS: OFF</p> <p>HIFI: OFF</p> <p>SPIRE: OFF</p> <p>During the test no instrument support is required.</p> <p>I-EGSE usage is not required.</p> <p>The TRR states that the proposed configuration is acceptable for the execution of the test.</p>	
<p>Test procedure/Timeline</p> <p>Procedure</p> <p>The test shall be performed under the control of procedure:</p> <ul style="list-style-type: none"> • HP-2-ASED-TP-0194 iss 2 dated 13/1/2009 Launch clean run Procedure <p>This procedure uses:</p> <ul style="list-style-type: none"> • HP-2-ASED-PR-0134 IST Leading procedure iss 7 <p>The Procedure is signed (HP-2-ASED-TP-0194) and shall be presented for the test.</p>	

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		HERSCHEL FM	
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<p>The following sections of the IST SPEC (iss 8) shall be performed during this test: The whole of section 5.8.10</p> <p>The scripts have been modified to fulfil the following configuration changes since IST 1</p> <ul style="list-style-type: none"> ■ LCL 25, 26 SPIRE launch lock is closed/ON ■ LCL 47, 48 RCS_LVA & RCS_LVB shall be closed/ON <p>No Gyro calibration has been performed prior to the test, despite the fact that the spacecraft has been moved. M. Ort has stated that this should not impact the test.</p> <p>All Bias value settings in the configuration file shall be set to 0.</p> <p>Open Work</p> <p>Timeline:</p> <p>The test is planned to be performed 28/01/2009 starting at approximately 08:00.</p> <p>The test is foreseen to run for a duration of approximately 11 hours broken down as follows:</p> <ul style="list-style-type: none"> • IST Start: 4 Hours • Launch Clean run 6 hours • IST End: 1 Hour 	
<p>NCR/SPR Status</p> <p>SPRs</p> <p>244 Out of limits SA_PAN_1 IST1 Due to configuration (no SP installed). TO BE VERIFIED</p> <p>249 No RF Link at Separation. Procedure updated due to mis-interpretation. Procedure updated. TO BE VERIFIED.</p> <p>309 Delay of 10 s added after XPND_1. Procedure updated. TO BE VERIFIED.</p> <p>311 VLV status check fail. Due to hybrid configuration. Should not re-occur. TO BE VERIFIED.</p> <p>314 TM checks the battery SCOE status instead of Real Battery. TO BE VERIFIED</p> <p>315 Sequence fails YC18952 (set LPS ONLINE) set SCOE online. Use as</p>	

	Launch clean run TRR	REF.: H-P-TASF-MN-11220	
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<p>is. If failure occurs manual command will be used. TO BE VERIFIED. 316 PCDU transition call after LPS "ONLINE" to be deleted (end of test). Implemented. TO BE VERIFIED 1120 Add download TC VMC picture. Script update performed. TO BE VERIFIED 1146 IST STATUS table incorrect. LVL A & B changed. No valid data available. Alarm will be expected.</p> <p>Procedure to be red marked (step 23) that alarm may occur as no valid data available. ✓ Open work</p> <p>1127 BCR 3 status not active (step 23). The status toggles due to trickle charging of the battery. This is normal behaviour. ✓ Procedure shall be updated to state that this status check may fail. Open work</p> <p>1128: Script IST_PCU is not geared for a real battery (step 23). ✓ Errors will occur. Procedure shall be updated to state that this status check may fail. Open work</p> <p>1129 Status table Mode 2 requested but SC is in mode 1 (step 23): ✓ Re-occurrence of NCR 4181. SPR can be closed</p> <p>→ 1131: IST STATUS incorrect before separation (LCR: Step 14) Script update to be performed Open Work</p> <p>1132 MOT several check failed at IST_START (step 39). ✓ Due to NCR 4813. Expected. SPR can be closed</p> <p>1133 AAD current check fails when using real light stimulation. ✓ → PVS This is due to smaller light source. Will re-occur. Acceptable for test.</p> <p>1134 Real battery not disconnected at IST_END Implemented TCs to open BDRs. Failure due to NCR 4815. ✓ PVS to be raised, prior to start of the test, for correct shutdown opening BDRs in a controlled state in case this problem is re-seen.. → PVS Open work</p> <p>NCRs</p> <p>4265: High Noise Levels on FCLs observed during First Acoustic low level run. To be verified</p> <p>4467: Noise on Fold-Back Current Limiters (07-02-2008)</p> <p>The test will provide suitable data for TASF (BH) evaluation.</p>	
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MINUTES OF MEETING		<i>PLACE : FR Meeting Room, ESTEC</i>	


<p>Data will need to be re-played for post-test evaluation.</p> <p>4490: IST Launch Clean Run debug: RCS tanks thermocouples offset HPSDB update required No impact for the test.</p> <p>CDMS 3.8 related NCRs</p> <p>HP-130000-ASED-NC-4784 TC release failures during POWER_OFF_HER_IST Relates to SPR1091 -</p> <p>HP-130000-ASED-NC-4783: HPS reconfiguration during S/C power ON in ambient with CDMS 3.8.0.1</p> <p>Workarounds NCRs 4784, 4783 are in place.</p> <p>4814: Not possible to set the AAD alarm lower threshold with light source. RM lower threshold shall be patched. Measurement and setting of thresholds shall be made with a PVS. PVS to be presented for start of test</p> <p>Open Work</p> <p>4815: Unexpected configuration following Launch Clean Run Separation NRB has agreed to run with the LCL 23 Closed/ON</p> <p>Other:</p>	
Test equipment/Facility and Calibration Status	
<p>Calibration status of equipment</p> <p>All equipment within the Herschel EGSE that requires certification has been recertified.</p> <p>A full list of calibrated equipment is contained in annex 4.</p> <p>Spacecraft shall be vertical for the test and may be located on the MPT. This does not impact the test.</p>	
Safety	
<p>The tests will be performed in Helium I in ambient conditions.</p> <p>The following Safety related issue are identified:</p>	

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<ul style="list-style-type: none"> • Temperature: None 	
Cleanliness	
Test will be performed in the class 100000 clean-room area at ESTEC.	
Test Personnel and responsibilities	
Test Director: S. Mooney Test Conductor: C. Much Engineering Support: R. Jones Cryo Engineering Support: N/A Functional Support: J. Hendrikse/A.Di Capua ESA: A. Gatti Test operator, as per shift EGSE support as per shift QA support as per shift Instrument Support: <ul style="list-style-type: none"> • N/A 	
Problem Areas	
A full regression test of CDMS 3.8 has not been performed on the AVM so there may be anomalies due to change of SW and DB.	
AOB	
Variations from the IST specification iss 8 P82 5.8.2.3 Text is red marked to state that the SPIRE launch lock shall be closed. P93 5.8.2.4.4.7 Spec states that RF OFF and LCL OFF however this shall be RF OFF and LCL ON, Script updates have been performed to these settings Red marked Sections are attached in annex to these meetings. During the last execution an inadvertent firing of RCS was performed, QA will double check that no flight plugs are attached.	

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<p>Open Work</p> <p>VMC shall be tested with cover removed</p> <p>Open Work</p> <p>Procedure (step 1 of IST END) to be red-marked to ensure the VMC data has been transferred to SSMM before switch-off</p> <p>Open Work</p>	
<p style="text-align: center;">Conclusion of meeting</p> <p>The TRR states formally that permission is given for the execution of the test after the closure of the identified open work items and that none of the identified anomalies are blocking for the test execution.</p>	


	Launch clean run TRR	REF.: H-P-TASF-MN-11220	
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OPEN WORK TO BE CHECKED OFF BY QA PRIOR TO START OF TEST

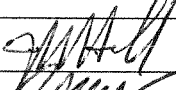


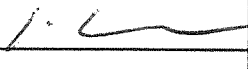
1. QA to verify that the environmental conditions (temperature/humidity) are within operational levels for the test to be performed. *+20°C 51% R.H. D.lanady*
2. Verify the skin connector sheet is signed by the floor manager. *OK D.lanady*
3. During the last execution an inadvertent firing of RCS was performed, QA will double check that no flight plugs are attached. *OK D.lanady*
4. Measurement and setting of thresholds shall be made with a PVS. PVS to be presented for start of test. *PVS#1 OK D.lanady*
5. Ensure VNC cover is removed at start of test. *OK D.lanady*
6. All Bias value settings in the configuration file shall be set to 0. *OK ✓*
7. Procedure to be red marked (step 23) that alarm may occur as no valid data available. *OK D.lanady ✓*
8. Procedure (step 23) shall be red-marked to state that BCR 3 and errors due to real battery status checks may fail. *OK D.lanady ✓*
9. IST STATUS incorrect before separation (LCR: Step 14). Script update to be performed *2 ✓ → Jeff / OK D.lanady*
10. PVS to be raised, prior to start of the test, for correct shutdown opening BDRs in a controlled state. *PVS#2 ✓ OK D.lanady (IST STATUS) v.1.70*
11. Procedure (step 1 of IST END) to be redmarked to ensure the VMC data has been transferred to SSMM before switch-off *OK D.lanady ✓*
- 12.

Attachment

PTR Minutes H-P-TASF-MN-11229

	Launch Clean Run PTR	REF.: H-P-TASF-MN-11229	
		HERSCHEL FM	
		DATE : 29/01/09	PAGE : 1 of 8
MINUTES OF MEETING		PLACE : FR Meeting Room	

PURPOSE : Launch Clean Run PTR **CLASSIFICATION :**

ATTENDEES	FIRM	SIGNATURE	ATTENDEES	FIRM	SIGNATURE
J. Hall	TASF		F. Sauvage	TASF	
S. Mooney	TASF		M. Priestley	TASF	
C. Much	ASED		J. Huesler	ESA	
O. Martin	ASED				

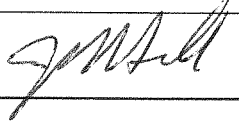
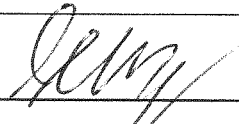
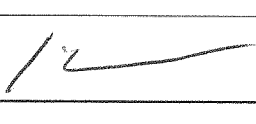
WRITTEN BY : J. Hall **Chair:** J. Hall


CONCLUSION :

The test has been run according to the IST specification.


Data can be passed to system engineering for evaluation.

DISTRIBUTION : ATTENDEES	FOR FURTHER ACTION :	See MoM and action item table at end of minutes
	FOR INFORMATION :	ASED : TAS-F : ESA:

APPROVED BY				
NAME	J. Hall	S. Mooney	J. Huesler	
SIGNATURE				

	Launch Clean Run PTR	REF.: H-P-TASF-MN-11229	
		HERSCHEL FM	
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MINUTES OF MEETING		PLACE : FR Meeting Room	

	ACTION
<p><u>Introduction</u></p> <p>This Meeting is the PTR for the launch clean Run test performed for IST 2 on 28/1/2009</p>	
<p style="text-align: center;">Identification of the test item</p> <p>The test was run in 1 session Session ID : 2009_01_28_07_25_hercdmu_hpws23_REALTIME_LCH_CLEAN</p> <p>Baseline As Built configuration including deviations to the nominal configuration are listed in: H-P-TASF-MN-11220 (TRR MOM)</p>	
<p style="text-align: center;">Status of the Procedure</p> <p>The launch Clean Run test was run under control of Test procedure</p> <ul style="list-style-type: none"> • HP-2-ASED-TP-0194 iss 2 dated 13/1/2009 Launch clean run Procedure <p>This procedure uses:</p> <ul style="list-style-type: none"> • HP-2-ASED-PR-0134 IST Leading procedure iss 7 <p>The following PVS' were raised</p> <p>See text</p>	
<p style="text-align: center;">Raised Anomalies</p> <ul style="list-style-type: none"> • SPRs from TRR/ SPRs closed: <p>244 Out of limits SA_PAN_1 IST1 Due to configuration (no SP installed). STILL PRESENT. Solar Array not connected. No impact for test evaluation.</p>	

	Launch Clean Run PTR	REF.: H-P-TASF-MN-11229	
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249 No RF Link at Separation. Procedure updated due to mis-interpretation. Procedure updated. **CAN BE CLOSED.**

309 Delay of 10 s added after XPND_1. Procedure updated. **CAN BE CLOSED.**

311 VLV status check fail. Due to hybrid configuration. Should not re-occur. **CAN BE CLOSED.**

314 TM checks the battery SCOE status instead of Real Battery. **CAN BE CLOSED**

315 Sequence fails YC18952 (set LPS ONLINE) set SCOE online. Use as is. If failure occurs manual command will be used. **CAN BE CLOSED.**

316 PCDU transition call after LPS "ONLINE" to be deleted (end of test). Implemented. **CAN BE CLOSED**

1120 Add download TC VMC picture. Script update performed. **CAN BE CLOSED**

1146 IST STATUS table incorrect. LVL A & B changed. No valid data available. Alarm will be expected. **CAN BE CLOSED**

1127 BCR 3 status not active (step 23). The status toggles due to trickle charging of the battery. This is normal behaviour.
CAN BE CLOSED


1128: Script IST_PCU is not geared for a real battery (step 23). Errors will occur. Use as is
CAN BE CLOSED

1131: IST STATUS incorrect before separation (LCR: Step 14)
Script update to be performed
CAN BE CLOSED


1132 MOT several check failed at IST_START (step 39).
Due to NCR 4813. Expected. **CAN BE CLOSED**

1133 AAD current check fails when using real light stimulation.
This is due to smaller light source. Will re-occur. Use as is. **CAN BE CLOSED.**


1134 Real battery not disconnected at IST_END
Implemented TCs to open BDRs. Failure due to NCR 4815.
CAN BE CLOSED

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<ul style="list-style-type: none"> • SPRs Re-seen: <p>See text</p> <ul style="list-style-type: none"> • NCRs from TRR: <p>4265: High Noise Levels on FCLs observed during First Acoustic low level run. Data acquired and sent to system engineering for evaluation. Expected 5/2/09</p> <p>4467: Noise on Fold-Back Current Limiters (07-02-2008) Data acquired and sent to system engineering for evaluation. Expected 5/2/09</p> <p>4490: IST Launch Clean Run debug: RCS tanks thermocouples offset HP SDB update required No impact for the test.</p> <p>HP-130000-ASED-NC-4784 TC release failures during POWER_OFF_HER_IST Relates to SPR1091 . Workaround in place. Was not reseen.</p> <p>HP-130000-ASED-NC-4783: HPS reconfiguration during S/C power ON in ambient with CDMS 3.8.0.1. Re-occurred. Workaround in place</p> <p>4814: Not possible to set the AAD alarm lower threshold with light source. RM lower threshold shall be patched. Use-as-is NCR to be closed.</p> <p>4815: Unexpected configuration following Launch Clean Run Separation NRB has agreed to run with the LCL 23 Closed/ON NCR still open</p> <ul style="list-style-type: none"> • NCRs Reseen <ul style="list-style-type: none"> • SPRs raised <p>See text</p> <ul style="list-style-type: none"> • NCRs raised <p>See text</p>	
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	Launch Clean Run PTR	REF.: H-P-TASF-MN-11229	
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		DATE : 29/01/09	PAGE : 5 of 8
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<ul style="list-style-type: none"> • Additional SPRs to be raised • See actions • Additional NCR to be raised • See actions • Other 	
<p style="text-align: center;">Deviations from the test</p> <p>None</p>	
<p style="text-align: center;">Actions from Previous meetings</p> <p>None</p>	
<p style="text-align: center;">Test Evaluation</p> <p>Generic: A new session was started</p> <p>08:55 Begin IST START</p> <p>09:25 Reoccurrence of SPR #1128. Expected errors as stated in TRR</p> <p>09:33 SPR #1169 raised. Error in CHECK_PCDU: wrong TM check for ISAS. No impact on test result.</p> <p>13:07 Reoccurrence of NCR3997 (Cryo SCOE not connected so incorrect TM value). No impact on test.</p> <p>11:39: Some MOT entries show failed status Re-occurrence of NCR #4783. No impact on test result.</p> <p>IST_START complete 11:54</p> <p>13:08 Start of Launch Clean Run</p> <p>5.8.2.4.5 Initial State</p>	

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<p>13:14.16 STOP OBCP management TC issued This does not impact the test. However this should not be issued SPR 1170 raised</p> <p>13:54:07 LPS off line. Spacecraft powered by Batteries</p> <p>14:02.14 Launch</p> <p>14:19 Opening of Fairing</p> <p>Sat time counter: The counter should be 7 minutes however as the commands to start the counter are before the switchover to battery/start of launch, there is an additional time. This is fully understood and does not impact the test evaluation</p> <p>14:20 IST Status error. Spec is 150Kbps prior to separation and 5Kbps after separation. The script sets the rate to 5Kbps at the start of Launch clean run. This is the correct.</p> <p>SPR 1172 raised</p> <p>14:20 RX carrier status shows locked but is expected unlocked. This is normal behaviour as an uplink carrier is available.</p> <p>5.8.2.4.6 Separation</p> <p>14:29:21 Separation</p> <p>5.8.2.4.7 Post - Separation</p> <p>14:33 Signal from S/c received via RF</p> <p>14:42 Reconnect umbilical and continue test with 150Kbps as expected.</p> <p>14:42: SPIRE launch Lock switch off</p> <p>14:43 Start of VMC transmission from internal memory to CDMS</p> <p>15:18 TM 8.8 VMC dump finished, 2658 packets received Expected 3940! This is related to NCR 4820 which is closed with use-as-is.</p> <p>15:19 IST END started</p> <p>15:31 SSMM dump completed.</p>	
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16:30 Spacecraft off.	
AOB	
<p style="text-align: center;">Conclusion:</p> <p>The test has been run according to the IST specification.</p> <p>Data can be passed to system engineering for evaluation.</p>	

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ACTION ITEM SUMMARY

AI No.	Description	Actionee	Due date
1			