EADS astrium

Procedure

Herschel

Title: **Herschel Instrument Power ON-OFF and Mode Switching Procedure for Functional Testing**

CI-No: 1000000

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1	07.01.2008		Initial version	
1.1	21.04.2008		Revised version covering all instruments including simulated science modes. HIFI ICU only configuration	
1.2	25.04.2008		Revised version HIFI “ICU only” plus HIFI Mode Transitions procedure	

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1 Scope

1.1 Objective

This document details the Instrument (PACS, SPIRE & HIFI) procedures provided to support primarily SVM oriented IST activities. The procedures can also be used where appropriate to support other non-specific instrument tests (e.g. EMC, shipping health check). The procedures cover the following basic activities:

- Instrument (Prime & Redundant) Switch ON/OFF to/from Standby***** mode
- Configuration of, and connection to, the Instrument EGSEs (I-EGSEs)
- Transition from "Standby" to a simulated****** Science producing mode

***** *"Standby" is an artificial mode which cannot be characterised by one particular parameter for any instrument. Each instrument also uses an alternative name to indicate "Standby" mode; for PACS this is SAFE and for SPIRE it is REDY, HIFI has two standby modes Standby1 & Standby2, the primary difference between the two is whether the lasers are switched ON (2) or OFF (1).*

****** *Simulated Science is sufficient for the needs of non-specific instrument IST activities and is representative in terms of APID allocation and bandwidth but not data content.*

This document will, where necessary, evolve during the system level AIT activities in order to reflect the configuration of the instruments (completion of integration activities) and the Herschel satellite (the latter in order to handle operation of the instruments in warm, HeI and HeII conditions)

1.2 Constraints

The instrument procedures are designed to be run without the need for Instrument specific support, and for PACS, SPIRE plus HIFI ICU only without need of connection to the I-EGSEs.

For HIFI full configuration (the so called "Mode Transitions") connection to the HIFI I-EGSE is required, as is support from SRON personnel (latter TBC).

However, it is mandatory for any PACS usage that PACS OBCPs/EATs have been loaded and are enabled for the duration of the test.

HIFI and SPIRE currently do not require OBCPs/EATs to be operational; however the test itself may require this, but is not a constraint for the instruments.

1.3 Operational Flow

Chapter 7 provides the detailed step-by-step procedures for each instrument, which are summarised below:

PACS

- I-EGSE Configuration & Connection
- PACS Prime OFF to Standby (SAFE)
- PACS Prime Standby (SAFE) to OFF
- PACS Redundant OFF to Standby (SAFE)
- PACS Redundant Standby (SAFE) to OFF
- PACS Standby (SAFE) to Nominal Spectroscopy (to Standby)
- PACS Standby (SAFE) to Burst Mode (to Standby)
- I-EGSE Disconnection

SPIRE

- I-EGSE Configuration & Connection
- SPIRE Prime OFF to Standby (REDY)
- SPIRE Prime Standby (REDY) to OFF
- SPIRE Redundant OFF to Standby (REDY)
- SPIRE Redundant Standby (REDY) to OFF
- SPIRE Standby to OPS (Simulated Photometer)
- SPIRE OPS to Standby
- I-EGSE Disconnection

HIFI Full Configuration (I-EGSE Mandatory)

- I-EGSE Nominal/Redundant Configuration & Connection
- HIFI Nominal OFF to Standby1
- HIFI Nominal Standby1 to OFF
- HIFI Nominal Standby1 to PRIME (Science)
- HIFI Nominal PRIME (Science) to Standby1
- HIFI Redundant OFF to Standby1

- HIFI Redundant Standby1 to OFF
- I-EGSE Disconnection

HIFI ICU Configuration (without I-EGSE)

- HIFI Nominal ICU ON
- HIFI Nominal ICU OFF
- HIFI Redundant ICU ON
- HIFI Redundant ICU OFF
- HIFI Start Simulated Science
- HIFI Stop Simulated Science

2 Documents/Drawings

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

2.1 Applicable Documents

AD-1	Herschel SAT Emergency Switch Off Procedure	H-P-2-ASED-PR-0071
AD-2	Procedure for setup and operation of the HIFI cooling system	HP-2-ASED-PR-0125

2.2 Reference Documents

RD-1	Herschel PCDU & CDMS nominal switch on / off procedure	HP-2-ASED-PR-0070
RD-2	HIFI Switch On Procedure, Issue 1.16	SRON-G/HIFI/PR/2007-017
RD-3	PACS Switch On/Off, ref. email Helmut Feuchtgruber	17. April 2007 11:58
RD-4	SPIRE Integration System Test Debugging Procedures, Issue 1.3	SPIRE-RAL-PRC-002880
RD-5	PACS I-EGSE User Manual, Issue 1, 19-Jul-2007	PICC-ME-MN-010
RD-6	HIFI IEGSE setup procedure	SRON-U/HIFI/PR/2007-005
RD-7	SPIRE I-EGSE Set-Up, Issue 2.2	SPIRE-RAL-DOC-002841
RD-8	FIRST/PLANCK Instrument Interface Document part A	PT-IID-A-04624
RD-9	FIRST/PLANCK Instrument Interface Document part B (HIFI)	PT-IIDB/HIFI-02125
RD-10	FIRST/PLANCK Instrument Interface Document part B (PACS)	PT-IIDB/PACS-02126
RD-11	FIRST/PLANCK Instrument Interface Document part B (SPIRE)	PT-IIDB/SPIRE-02124

RD-12	LO SFT Procedure using LO Dummy, Issue 1.01	MPIfR/HIFI/PR/2006-565
RD-13	HIFI Mode Transitions Procedure, Iss 1.16	SRON-G/HIFI/PR/2007-020

2.3 Other Documents

N/A

2.4 Acronyms

See calling procedure.

3 Requirements to be verified

N/A

4 Configuration

4.1 Herschel S/C Configuration

4.1.1 Hardware Configuration

See relevant TRR MoM

4.1.2 Software Configuration

See relevant TRR MoM

4.1.3 Test Configuration

4.1.3.1 SVM

See relevant TRR MoM

4.1.3.2 HIFI

All warm units & FPU integrated. For this issue (1.1) Hel/Hell conditions can be supported but LOU must be warm.

If LOU is cold (i.e. for TB/TV) then this procedure must be updated according to RD2 & RD13.

4.1.3.3 PACS

All warm units and FPU is integrated and connected to the warm units. Warm or Cold HeI/HeII conditions.

4.1.3.4 SPIRE

All warm units integrated. Warm or Cold HeI/Hell conditions.

4.1.4 Simulated Equipments

N/A

5 Conditions

5.1 Personnel

See relevant TRR MoM

5.2 Environmental

See relevant TRR MoM

5.3 General Precautions and Safety

5.3.1 General Safety Requirements, Precautions

- For HIFI, Handling precautions according to RD-8 and RD-9 are applicable.
- For PACS, Handling precautions according to RD-8 and RD-10 are applicable.
- For SPIRE, Handling precautions according to RD-8 and RD-11 are applicable.

5.3.2 Special condition and hazards

The following Operational restrictions shall be carefully taken into account:

- In case of any failure, the activities shall be stopped until troubleshooting plan is generated and approved.

A general constraint for all instrument DPUs (or ICU in the case of HIFI), there shall be a 5 minute wait between switching off a DPU/ICU and switching it back on again.

5.3.2.1 HIFI

None when powering on/off HIFI ICU only as per sections 7.4.1 to 7.4.4.

When operating HIFI using the full configuration, ref. sections 7.3.2 to 7.3.7 the following applies:

1) Connection/Disconnection with the HIFI I-EGSE is required as per section 7.3.1 & 7.3.8.
2) The following Cryo temperature limits shall be observed when operating HIFI:

S/C Environmental	Limits	Actual
Cryostat Connection (Valves)	N/A	
Cryostat Status (Hel/Hell)	N/A	
Cryostat Level 0 Temp (T107 - CCUB)	<20K	
Cryostat Level 1 Temp (T231-T237 - CCUB)	<20K	
Cryostat Level 2 Temp (T207 read from CryoSCOE)	<=40K	
Cryostat Level 3 Temp	N/A	

3) The following shall be observed if HIFI is commanded to “Standby1” mode or above:

If switched on the WBS laser temperature (HM023193 HWH_Laser_T and HWV_Laser_T) may rise above a red limit (30degC) in the MIB. If this occurs the test can continue, but the time of occurrence should be logged. If the temperature rises to 35degC the lasers will be automatically switched off by the instrument.

It is recommended to start active cooling of the HIFI panel see AD-2 before the WBS laser temperatures reach 30degC to avoid “HIGH HIGH” alarms being reported repeatedly and unnecessarily by the HPCCS.
NB: If temperature trend is rising during the test then Cooling on HIFI panel may need to be adjusted (ref. AD-2).

5.3.2.2 PACS

Prior to switching ON PACS, PACS specific OBCPs & EATs shall be loaded and enabled on the CDMU. Note: the PACS power on scripts (ref. sections 7.1.2 & 7.1.4) will prompt for confirmation of this before allowing the operator to continue with power on of the instrument.

CDMU must be in AFO mode for the duration of PACS operations. Note this maybe extended to all instruments in the future.

Note during power off of PACS FDIR may be triggered due to expected (5,2) events being reported from PACS DPU. To avoid this PACS specific OBCPs are disabled for the duration of the power down sequence, and then re-enabled.

Connection of the PACS I-EGSE is not mandatory, however if MPE (PACS responsible) want to monitor the test from the I-EGSE then sections 7.1.1 & 7.1.9 apply.

5.3.2.3 SPIRE

Connection of the SPIRE I-EGSE is not mandatory, however if RAL (SPIRE responsible) want to monitor the test from the I-EGSE then sections 7.2.1 & 7.2.8 apply.

5.3.3 ESD constraints

See the Lead Procedure for the test concerned and the following:

- For HIFI, ESD precautions according to RD-8 and RD-9 are applicable.
- For SPIRE according to nominal ESD protection
- For PACS according to nominal ESD protection

5.3.4 Special QA Requirements

N/A

5.4 GSE

5.4.1 MGSE

N/A

5.4.2 CVSE

N/A

5.4.3 EGSE

5.4.3.1 EGSE Hardware Configuration

See TRR MoM for test concerned.

5.4.3.2 EGSE User Software

See TRR MoM for test concerned.

5.4.3.3 Grounding Configuration

N/A

5.4.3.4 Test Equipment

N/A

5.4.3.5 Data Acquisition System

N/A

5.4.4 OGSE

N/A

5.4.5 Special Equipment

N/A

6 Verification Requirements and Test Criteria

No specific requirements are verified by this procedure, it is purely acts as a supporting procedure to the main lead test procedure where the overall test criteria and verification requirements are defined.

7 Step-by-Step Procedures

7.1 PACS Instrument Procedures

7.1.1 PACS I-EGSE Configuration/Connection

The following procedure is NOT normally required for switching PACS ON or OFF.

It is only used when it is required to use the PACS I-EGSE to support the test being performed, either for monitoring of PACS specific TM on the IEGSE.

It is also required when performing PACS FDIR OBCP IST.

This procedure is independent of PACS redundancy configuration.

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	If not already on, Switch on & configure PACS I-EGSE i.a.w. **RD-5**					
2.	From HPCCS Test Conductor console issue command to connect to PACS I-EGSE **connect HPACSEGSE**	YZS28940== CONNECTED		**AND: SYS_PARS**		
	Perform the following two steps if command parameter exchange is required between the IEGSE and HPCCS for the test concerned.					

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
3.	If not already running from the HPCCS test conductor console execute the test script: **ALL_SubscribeParams**					
4.	Verify HPCCS-IEGSE connection by sending the following test command from manual command stack (repeater value 0) and verify received OK on IEGSE: **YC00X964**	OK				
5.	**Return to calling Procedure**					

7.1.2 PACS Prime OFF to Standby (SAFE)

The following will switch ON and configure PACS Prime instrument in SAFE mode in any satellite configuration (i.e. warm, or Cold HeI/HeII). HKTM packets will be generated on APIDs 1152 dec and 1154 decimal (these can be observed using TMPH with corresponding filter – note however a limited number of TMPHs should be running at any one time).

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	On HPCCS start Packet History displays for the following APIDs: 1152, 1154	OK				
2.	From the HPCCS test conductor console start the test script to power PACS Prime to SAFE: **Z102999SCVT010_ASDGEN_PACSPWRON_P**					
3.	On HPCCS when prompted: ”FM PACS Switch ON in Warm or Cold conditions, FPU connected - Select NO to abort TS if not correct”	YES				
4.	On HPCCS when prompted: ” PACS FDIR OBCPs/EATs loaded and enabled? - If not select NO to abort TS”	YES				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					
	If **YES** is selected the test script will go on to automatically power on all PACS warm units, force boot the DPU ASW and configure the instrument to SAFE (Standby mode)					
5.	If AFO mode not already selected for CDMU the script **P102999SCVT905_ASDISTPACS_PWR_ON_N** will prompt that AFO will be commanded next. Click **OK** to continue the script if the prompt appears.	OK				

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
6.	On HPCCS when all autonomous actions have been completed by the power on script **P102999SCVT905_ASDISTPACS_PWR_ON_N** it will prompt: *"Set Bus Profile Back to Original Setting?"* Select **YES** if it is likely that other non-PACS instrument related activities are to be performed, otherwise select **NO**.	NO				
7.	If **YES** selected the original Bus Profile will be restored. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby, in which case the following prompt will appear:* "Bus Profile left unchanged, as original setting 0 (Launch)" If prompted select **OK** to continue	OK				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
8.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select **OK** to continue	OK				
9.	The script will automatically terminate	OK				
10.	Verify HK TM packets are being received on APIDs 1152 & 1154	OK				
11.	Either using the ANDs indicated verify the correct status of the following PACS specific TM parameters or if the IEGSE is connected request IEGSE Operator to confirm that PACS is in SAFE mode: **DM_BOL_REC_PAC (PM038420)** is incrementing	Incrementing		AND: PA019420		
12.	**PACS in SAFE mode.** **Return to calling Procedure**	OK				

7.1.3 PACS Prime Standby (SAFE) to OFF

The following procedure will switch PACS Prime from SAFE to OFF.

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	From the HPCCS test conductor console start the test script to power OFF PACS Prime from SAFE: **Z102999SCVT011_ASDGEN_PACSPWROFF_P**					
2.	On HPCCS when prompted: ”`FM PACS Switch OFF in Warm or Cold conditions, FPU connected - Select NO to abort TS if not correct`”	YES				
	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					
	If **YES** is selected the test script will go on to automatically power off all PACS warm units.					
3.	Note: During switch off of PACS (5,2) TM event packets are expected	(5,2) events observed				

Enter Date | Time:			**Sign Off**	**TD:**	**PA:**	**Test Location:**	

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
4.	On HPCCS when all autonomous actions have been completed by the power on script **P102999SCVT906_ASDISTPACS_PWR_OFF_N** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				
5.	Select **YES** if it is likely that other non-PACS instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "Bus Profile left unchanged, as original setting 0 (Launch)"	OK				
6.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select OK to continue	OK				
7.	On HPCCS stop Packet History displays for the following APIDs:1152,1154	OK				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
8.	**PACS OFF.** **Return to calling Procedure**	OK				

7.1.4 PACS Redundant OFF to Standby (SAFE)

The following will switch ON and configure PACS Redundant instrument in SAFE mode in any satellite configuration (i.e. warm, or Cold: HeI/HeII). HKTM packets will be generated on APIDs 1153 dec and 1155 decimal (these can be observed using TMPH with corresponding filter – note however a limited number of TMPHs should be running at any one time).

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	On HPCCS start Packet History displays for the following APIDs:1153,1155	OK				
2.	From the HPCCS test conductor console start the test script to power PACS Redundant to SAFE: **Z102999SCVT012_ASDGEN_PACSPWRON_R**					
3.	On HPCCS when prompted: ”FM PACS Switch ON in Warm or Cold conditions, FPU connected - Select NO to abort TS if not correct”	YES				
4.	On HPCCS when prompted: ” PACS FDIR OBCPs/EATs loaded and enabled? - If not select NO to abort TS”	YES				

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					
	If **YES** is selected the test script will go on to automatically power on all PACS redundant warm units, force boot the DPU ASW and configure the instrument to SAFE (Standby mode).					
5.	If AFO mode not already selected for CDMU the script **P102999SCVT907_ASDISTPACS_PWR_ON_R** will prompt that AFO will be commanded next. Click **OK** to continue the script if the prompt appears.	OK				
6.	On HPCCS when all autonomous actions have been completed by the power on script **P102999SCVT907_ASDISTPACS_PWR_ON_R** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
7.	Select **YES** if it is likely that other non-PACS instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "`Bus Profile left unchanged, as original setting 0 (Launch)`"	OK				
8.	The script will automatically terminate					
9.	If **NO** selected then at the prompt: "`Bus Profile left unchanged`" Select OK to continue	OK				
10.	Verify HK TM packets are being received on APIDs 1153 & 1155					
11.	Either using the ANDs indicated verify the correct status of the following PACS specific TM parameters or if the IEGSE is connected request IEGSE Operator to confirm that PACS is in SAFE mode: **DM_BOL_REC_PAC (PM038420)** is	Incrementing		AND: PA019420		

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
	incrementing					
12.	**PACS in SAFE mode.** **Return to calling Procedure**	OK				

7.1.5 PACS Redundant Standby (SAFE) to OFF

The following procedure will switch PACS Redundant from SAFE to OFF.

Note that during PACS switch-off, OBCPs for PACs are disabled and re-enabled at the end to avoid unwanted triggering of FDIR.

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	From the HPCCS test conductor console start the test script to power OFF PACS Redundant from SAFE: **Z102999SCVT013_ASDGEN_PACSPWROFF_R**					
2.	On HPCCS when prompted: ”`FM PACS Switch OFF in Warm or Cold conditions, FPU connected - Select NO to abort TS if not correct`”	YES				
	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					
	If **YES** is selected the test script will go on to automatically power off all PACS Redundant warm units.					

Enter Date | Time:			**Sign Off**	**TD:**	**PA:**	**Test Location:**	

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
3.	Note: During switch off of PACS (5,2) TM event packets are expected	(5,2) events observed				
4.	On HPCCS when all autonomous actions have been completed by the power on script **P102999SCVT908_ASDISTPACS_PWR_OFF_R** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				
5.	Select **YES** if it is likely that other non-PACS instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "Bus Profile left unchanged, as original setting 0 (Launch)"	OK				
6.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select OK to continue	OK				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
7.	On HPCCS stop Packet History displays for the following APIDs:1153,1155	OK				
8.	**PACS OFF.** **Return to calling Procedure**	OK				

7.1.6 PACS Standby (SAFE) to Nominal Spectroscopy (to Standby)

Running the following procedure will configure PACS from SAFE to Simulated Nominal Spectroscopy for a period of 14400 seconds. The test script will autonomously return PACS to SAFE after the allotted time.

Notes:

1) HPCCS does not acquire the science packets in SCOS but archives them into TMDUMP files instead. However, it will route the packets to the IEGSE if the link is enabled.
2) If PACS is switched off autonomously the script will remain running in the background, in which case it can be terminated manually.
3) If it is required to stop science data production before the allotted duration the script can be terminated manually and the SAFE mode procedure executed as per section 7.1.8.

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	From the HPCCS test conductor console start the test script to put PACS in simulated Nominal Spectroscopy from SAFE: **P102999SCVT904_ASDGENPACS_NomSpect**					

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
2.	PACS in Simulated Nominal Spectroscopy for 60 mins.			If it is required to return PACS to SAFE before the script completes it is possible to abort the script and then perform section 7.1.8.		
3.	**Return to or synchronise with calling Procedure**					

7.1.7 PACS Standby (SAFE) to Burst Mode (to Standby)

Running the following procedure will configure PACS from SAFE to Simulated Burst mode for a period of 60 mins. The test script will autonomously return PACS to SAFE after the allotted time.

Notes:

1) HPCCS does not acquire the science packets in SCOS but archives them into TMDUMP files instead. However, it will route the packets to the IEGSE if the link is enabled.
2) If PACS is switched off autonomously the script will remain running in the background, in which case it can be terminated manually.
3) If it is required to stop science data production before the allotted duration the script can be terminated manually and the SAFE mode procedure executed as per section 7.1.8.

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	From the HPCCS test conductor console start the test script to put PACS in simulated Nominal Spectroscopy from SAFE: **P102999SCVT913_ASDGENPACS_BurstMode**					

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
2.	PACS in Simulated Burst mode for 60 mins.			If it is required to return PACS to SAFE before the script completes it is possible to abort the script and then perform section 7.1.8.		
3.	**Return to or synchronise with calling Procedure**					

7.1.8 PACS to Standby (SAFE)

Running the following procedure will configure PACS to SAFE from Simulated Burst or Science mode.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	From the HPCCS test conductor console start the test script to put PACS into SAFE (Standby) mode from either simulated Burst or Science mode: **PACS_SAFE_Mode**			Ensure that PACS Prime Bus Profile is still selected		
2.	**Return to or synchronise with calling Procedure**					

7.1.9 PACS I-EGSE Disconnection

This procedure is only used if the complementary connection procedure has been performed previously. For most IST activities envisaged it is not required.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	From HPCCS Test Conductor console issue command to disconnect PACS I-EGSE **disconnect HPACSEGSE**	DISCONNECTED		**AND: SYS_PARS**		
2.	If no longer required for other instrument activities, from the HPCCS test conductor console terminate the test script: **ALL_SubscribeParams**					
3.	**Return to calling Procedure**					

7.2 SPIRE Instrument Procedures

7.2.1 SPIRE I-EGSE Configuration/Connection

The following procedure is NOT normally required for switching SPIRE ON or OFF.

It is only used when it is required to use the SPIRE I-EGSE to support the test being performed, either for monitoring of SPIRE specific TM on the IEGSE.

This procedure is independent of SPIRE redundancy configuration.

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	If not already on, Switch on & configure SPIRE I-EGSE i.a.w. **RD-7**					
2.	From HPCCS Test Conductor console issue command to connect to SPIRE I-EGSE **connect HSPIREEGSE**	YZS29940= CONNECTED		**AND SYS_PARS**		
	Perform the following two steps if command parameter exchange is required between the IEGSE and HPCCS for the test concerned.					

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
3.	If not already running from the HPCCS test conductor console execute the test script: **ALL_SubscribeParams**					
4.	Verify HPCCS-IEGSE connection by sending the following test command from manual command stack (repeater value 0) and verify received OK on IEGSE: **YC00X966**	OK				
5.	**Return to calling Procedure**					

7.2.2 SPIRE Prime OFF to Standby (REDY)

The following will switch ON and configure SPIRE Prime instrument in REDY (Standby) mode. HKTM packets will be generated on APIDs 1280 dec and 1282 decimal (these can be observed using TMPH with corresponding filter – note however a limited number of TMPHs should be running at one time).

During power on of SPIRE a number of soft/hard OOLs are reported due to the sequential switch on of the units. This is expected and will clear when SPIRE is in REDY mode. When in REDY mode one parameter remains OOL (soft) namely SMD2V505 this is also expected.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	On HPCCS start Packet History displays for the following APIDs:1280,1282	OK				
2.	From the HPCCS test conductor console start the test script to power SPIRE Prime to REDY: **Z102999SCVT004_ASDGEN_SPIREPWRON_P**					
3.	On HPCCS when prompted: “SPIRE Switch ON for IST activities in any conditions - Select NO to abort TS if not correct”	YES				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
4.	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					
5.	If **YES** is selected the test script will go on to automatically power on all SPIRE warm units, force boot the DPU ASW and configure the instrument to REDY (Standby mode).					
6.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT017_ASDGENSPIR_PWR_ON_P** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
7.	Select **YES** if it is likely that other non-SPIRE instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "`Bus Profile left unchanged, as original setting 0 (Launch)`"	OK				
8.	If **NO** selected then at the prompt: "`Bus Profile left unchanged`" Select OK to continue	OK				
9.	Verify HK TM packets are being received on APIDs 1280 & 1282					
10.	Either using the ANDs indicated verify the correct status of the following SPIRE specific TM parameters or if the IEGSE is connected request IEGSE Operator to confirm that: THSK (SM00T500) parameter refreshing @ 0.25 Hz	OK		**AND: SA_1_559**		

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
	TM1N and TM2N parameters are incrementing as indicated: TM1N (SMT0N500) by 2 every 4 secs TM2N (SMT1N500) by 1 every 4 secs MODE parameter is set to “REDY” mode (RAW value 0x0200)	OK SM00M500 = 0x0200 (REDY)				
11.	**SPIRE powered and in REDY mode** **Return to calling Procedure**					

7.2.3 SPIRE Prime Standby (REDY) to OFF

The following procedure will switch SPIRE Prime from REDY to OFF.

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	From the HPCCS test conductor console start the test script to power OFF SPIRE Prime from REDY: **Z102999SCVT005_ASDGEN_SPIREPWROFF_P**	OK				
2.	On HPCCS when prompted: “SPIRE Switch OFF for IST activities in any conditions - Select NO to abort TS if not correct”	YES				
3.	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					
4.	If **YES** is selected the test script will go on to automatically power off all SPIRE warm units.					

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
5.	During Switch OFF of SPIRE the following (5,1) and (5,4) event messages on APID 1280 are expected and do not indicate a problem: a) EVID 1313 No_MCU_Response_Error b) EVID 21773 ALARM_LSMCU_DEAD					
6.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT019_ASDGENSPIR_PWR_OFF_P** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				
7.	Select **YES** if it is likely that other non-SPIRE instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "Bus Profile left unchanged, as original setting 0 (Launch)"	OK				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
8.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select OK to continue	OK				
9.	On HPCCS stop Packet History displays for the following APIDs:1280,1282	OK				
10.	**SPIRE OFF.** **Return to calling Procedure**					

7.2.4 SPIRE Redundant OFF to Standby (REDY)

The following will switch ON and configure SPIRE Redundant instrument in REDY (Standby) mode. HKTM packets will be generated on APIDs 1281 dec and 1283 decimal (these can be observed using TMPH with corresponding filter – note however a limited number of TMPHs should be running at one time).

During power on of SPIRE a number of soft/hard OOLs are reported due to the sequential switch on of the units. This is expected and will clear when SPIRE is in REDY mode. When in REDY mode one parameter remains OOL (soft) namely SMD2V505 this is also expected.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value Value*	*Remarks*	*P*	*N*
1.	On HPCCS start Packet History displays for the following APIDs:1281,1283	OK				
2.	From the HPCCS test conductor console start the test script to power SPIRE Prime to REDY: **Z102999SCVT006_ASDGEN_SPIREPWRON_R**					
3.	On HPCCS when prompted: “SPIRE Switch ON for IST activities in any conditions - Select NO to abort TS if not correct”	YES				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value Value*	*Remarks*	*P*	*N*
4.	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					
5.	If **YES** is selected the test script will go on to automatically power on all SPIRE warm units, force boot the DPU ASW and configure the instrument to REDY (Standby mode).					
6.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT018_ASDGENSPIR_PWR_ON_R** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				

Step-No.	Test-Step-Description	Nominal Value	Actual Value Value	Remarks	P	N
7.	Select **YES** if it is likely that other non-SPIRE instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "Bus Profile left unchanged, as original setting 0 (Launch)"	OK				
8.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select OK to continue	OK				
9.	Verify HK TM packets are being received on APIDs 1281 & 1283					
10.	Either using the ANDs indicated verify the correct status of the following SPIRE specific TM parameters or if the IEGSE is connected request IEGSE Operator to confirm that: THSK (SM00T500) parameter refreshing @ 0.25 Hz	OK		**AND: SA_1_559**		

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value Value*	*Remarks*	*P*	*N*
	TM1N and TM2N parameters are incrementing as indicated: TM1N (SMT0N500) by 2 every 4 secs TM2N (SMT1N500) by 1 every 4 secs MODE parameter is set to “REDY” mode (RAW value 0x0200)	OK SM00M500 = 0x0200 (REDY)				
11.	**SPIRE powered and in REDY mode** **Return to calling Procedure**					

7.2.5 SPIRE Redundant Standby (REDY) to OFF

The following procedure will switch SPIRE Redundant from REDY to OFF.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	From the HPCCS test conductor console start the test script to power OFF PACS Redundant from REDY: **Z102999SCVT007_ASDGEN_SPIREPWROFF_R**	OK				
2.	On HPCCS when prompted: "SPIRE Switch OFF for IST activities in any conditions - Select NO to abort TS if not correct"	YES				
	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					
3.	If **YES** is selected the test script will go on to automatically power off all SPIRE warm units.					

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
4.	During Switch OFF of SPIRE the following (5,1) and (5,4) event messages on APID 1281 are expected and do not indicate a problem: c) EVID 1313 No_MCU_Response_Error d) EVID 21773 ALARM_LSMCU_DEAD					
5.	On HPCCS when all autonomous actions have been completed by the power on script **S102999SCVT020_ASDGENSPIR_PWR_OFF_R** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				
6.	Select **YES** if it is likely that other non-SPIRE instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "Bus Profile left unchanged, as original setting 0 (Launch)"	OK				

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
7.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select OK to continue	OK				
8.	On HPCCS stop Packet History displays for the following APIDs:1281,1283	OK				
9.	**SPIRE OFF.** **Return to calling Procedure**					

7.2.6 SPIRE Standby (REDY) to Simulated Science (OPS)

Running the following procedure will configure SPIRE from REDY to Simulated Simulated PhotometerScience (OPS) mode.

Note HPCCS does not acquire the science packets in SCOS but archives them into TMDUMP files instead. However, it will route the packets to the IEGSE if the link is enabled.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	From the HPCCS test conductor console start the test script to put SPIRE in simulated science from REDY: **Z102999SCVT008_ASDGEN_SPIRESTBY2OPS**					
2.	On HPCCS when prompted: “Command SPIRE from REDY to OPS mode in any conditions - Select NO to abort TS if not correct” Select YES	YES				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
3.	On HPCCS when prompted: "Bus profile left as SPIRE PRIME while in OPS mode - OK to continue" Select OK	OK				
4.	**Return to or synchronise with calling Procedure**	OK				

7.2.7 SPIRE Simulated Photometer Science (OPS) to Standby (REDY)

Running the following procedure will return SPIRE to REDY (Standy) from Simulated Simulated Photometer Science (Ops) mode.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	From the HPCCS test conductor console start the test script to put SPIRE in REDY from simulated Science: **Z102999SCVT009_ASDGEN_SPIREOPS2STBY**					
2.	On HPCCS when prompted: "`Command SPIRE from OPS to REDY mode in any conditions - Select NO to abort TS if not correct`" Select YES	YES				
3.	On HPCCS when prompted: "`Bus profile left as SPIRE PRIME, change manually after if required - OK to continue`" Select OK	OK				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
4.	**Return to or synchronise with calling Procedure**	OK				

7.2.8 SPIRE I-EGSE Disconnection

This procedure is only used if the complementary connection procedure has been performed previously. For most IST activities envisaged it is not required.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	From HPCCS Test Conductor console issue command to disconnect PACS I-EGSE **disconnect HSPIREEGSE**	DISCONNECTED		**AND:** **SYS_PARS**		
2.	If no longer required for other instrument activities, from the HPCCS test conductor console terminate the test script: **ALL_SubscribeParams**					
3.	**Return to calling Procedure**					

7.3 HIFI Instrument Full Configuration Procedures

7.3.1 HIFI I-EGSE Configuration/Connection

This procedure is independent of HIFI redundancy configuration apart from I-EGSE configuration in step 1.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	If not already on, Switch on & configure HIFI I-EGSE i.a.w. **RD-6**. If switching on Nominal units then confirm I-EGESE configured for nominal and FPU cold and LOU warm without attenuators If switching on Redunant units then confirm I-EGESE configured for redundant and FPU cold and LOU warm without attenuators	OK Nominal/Redundant configuration				
2.	From HPCCS Test Conductor console issue command to connect to HIFI I-EGSE **connect HHIFIEGSE**	YZS27940 = CONNECTED		**AND SYS_PARS**		
	Perform the following two steps if command parameter exchange is required between the IEGSE and HPCCS for the test concerned.					

Enter Date | Time:			**Sign Off**	**TD:**	**PA:**	**Test Location:**	

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
3.	If not already running from the HPCCS test conductor console execute the test script: **ALL_SubscribeParams**	OK				
4.	Verify HPCCS-IEGSE connection by sending the following test command from manual command stack (repeater value 0) and verify received OK on IEGSE: **YC00X962**	OK				
5.	Patch HIFI synthetic parameters for warm conditions by executing the following scripts: **HIFIST_ASED_PatchPtvChecksum** **HIFIST_ASED_PatchTempLimits** *Note these scripts replace* HIFIST_CCS_conf_ptv_checksum_warm due to NCR-3652	OK				
6.	**Return to calling Procedure**					

7.3.2 HIFI Nominal OFF to Standby1

The following will switch ON and configure HIFI Nominal instrument in Standby1 mode. HKTM packets will be generated on APIDs 1024 dec and 1026 decimal (these can be observed using TMPH with corresponding filter – note however a limited number of TMPHs should be running at one time).

During power on of HIFI a number of soft/hard OOLs are reported due to the sequential switch on of the units. Some of these are to be expected when in HeI conditions and the others are expected because the unit is typically cold at switch ON.

Parameters OOL when in HeI:

HM248191 – HF_AP_2K_IF_CT

HM243191 – HF_APR_SCCS_CT

HM244191 – HF_APR_S10K_CT

HM250191 – HF_AP_4K_END_CT

Parameters OOL expected to come back in limits when units warmed up:

HM187192 – HRV_ACS_1_T

HM188192 – HRV_AVS_2_T

HM062192 – HRH_ACS_1_T

HM063192 – HRH_AVS_2_T

Parameter OOL until HIFI powered in Standby1

HD247194 – HL_ptv_checksum

HM258194 – HL_MODE_S

HM259194 – HL_error_word_S

Some additional parameters may exhibit OOL during the test:

Parameter OOL expected during test but which should be monitored for duration of test (should be kept below 30degC to avoid HIGH-HIGHs being reported):

HM062193 – HWV_Laser_T

HM023193 – HWH_Laser_T

Parameter OOL expected during test but which need not be monitored:

HM022193 – HWH_CCD_T

HM061193 – HWV_CCD_T

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	On HPCCS start Packet History displays for the following APIDs:1024,1026	OK				
2.	From the HPCCS test conductor console start the test script: **Z102999SCVT014_ASDGEN_HIFIPWRON_P**	OK		ANDs HA000289 HA004289		
3.	On HPCCS when prompted: "FM HIFI Switch ON for IST or SFT in Hel/Hell conditions with warm LOU - Select NO to abort TS if not correct"	YES				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
	If in any doubt about the script being executed **NO** should be selected to abort the script when prompted in the next step. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					
	If **YES** is selected the test script will go on to automatically power on all HIFI warm units, force boot the DPU ASW and configure the instrument to Standby. NB: In principle the HIFI instrument support responsible shall be on hand to observe the status of HIFI. **So he should be contacted before the next test step.**					
4.	At prompt to record OBS_ID_per_hk during subsequent table readback commanding (which starts when OK is pressed); record value of HM003190 (typical reading = 9000xxxx hex), Note: at start & end value is 90000000 hex `"Select OK to continue"` Select OK	OK				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
5.	Value of OBS_ID during table read commanding: **HM003190**			AND: HA000289		
6.	Request I-EGSE operator to run the command 'verifyreadback <OBSID>' from a terminal window (opened from the terminal icon " >_ " at bottom left of HIFIEGSE workstation screen) using the <OBSID> retrieved in the previous step. If the word **PASS** does not appear on the screen at the end of the verifyreadback, this is a nogo on this test procedure. If OK respond to prompt accordingly, otherwise contact SRON to investigate and resolve before continuing.	OK				
7.	On HPCCS when all autonomous actions have been completed by the power on script **H102999SCVT015_ASDISTHIFI_PWR_ON_P** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
8.	Select **YES** if it is likely that other non-HIFI instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* *"*`Bus Profile left unchanged, as original setting 0 (Launch)"` Select OK to continue	OK				
9.	If **NO** selected then at the prompt: `"Bus Profile left unchanged"` Select OK to continue	OK				
10.	Verify HK TM packets are being received on APIDs 1024 & 1026	OK				
11.	Start Active Cooling of HIFI Panel i.a.w. AD-2	OK				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
12.	Using TM Plot application on CCS start monitoring the temperature of the WBS lasers; parameters: HM062193 (HWV_Laser_T) & HM023193 (HWH_Laser_T). See Section 5.3.2.1 for details of this activity.	OK				
13.	**HIFI Nominal powered and in Standby1 mode** **Return to calling procedure**	OK				

7.3.3 HIFI Nominal Standby1 to OFF

The following procedure will switch HIFI Nominal from Standby1 to OFF.

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	Stop Active Cooling of HIFI Panel i.a.w. AD-2	OK				
2.	From the HPCCS test conductor console start the test script: **Z102999SCVT015_ASDGEN_HIFIPWROFF_P**	OK				
3.	On HPCCS when prompted: “`FM HIFI Switch OFF for IST or SFT in Hel/Hell conditions with warm LOU - Select NO to abort TS if not correct`”	YES				
	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					
	If **YES** is selected the test script will go on to automatically power off all HIFI warm units.					

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
4.	On HPCCS when all autonomous actions have been completed by the power on script **H102999SCVT016_ASDISTHIFI_PWR_OFF_P** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				
5.	Select **YES** if it is likely that other non-HIFI instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "Bus Profile left unchanged, as original setting 0 (Launch)"	OK				
6.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select OK to continue	OK				

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
7.	On HPCCS stop Packet History displays for the following APIDs:1024,1026	OK				
8.	**HIFI OFF** **Return to calling Procedure**	OK				

7.3.4 HIFI Redundant OFF to Standby1

The following will switch ON and configure HIFI Redundant instrument in Standby1 mode (Lasers OFF). HKTM packets will be generated on APIDs 1025 dec and 1027 decimal (these can be observed using TMPH with corresponding filter – note however a limited number of TMPHs should be running at one time).

During power on of HIFI a number of soft/hard OOLs are reported due to the sequential switch on of the units. Some of these are to be expected when in Hel conditions and the others are expected because the unit is typically cold at switch ON:

Parameters OOL when in Hel:

HM248191 – HF_AP_2K_IF_CT

HM243191 – HF_APR_SCCS_CT

HM244191 – HF_APR_S10K_CT

HM250191 – HF_AP_4K_END_CT

Parameters OOL expected to come back in limits when units warmed up:

HM187192 – HRV_ACS_1_T

HM188192 – HRV_AVS_2_T

HM062192 – HRH_ACS_1_T

HM063192 – HRH_AVS_2_T

Parameters OOL until HIFI powered in Standby1

HD247194 – HL_ptv_checksum

HM258194 – HL_MODE_S

HM259194 – HL_error_word_S

Some additional parameters may exhibit OOL during the test:

Parameters OOL expected during test but which should be monitored for duration of test (should be kept below 30degC to avoid HIGH-HIGHs being reported):

HM062193 – HWV_Laser_T

HM023193 – HWH_Laser_T

Parameter OOL expected during test but which need not be monitored:

HM022193 – HWH_CCD_T

HM061193 – HWV_CCD_T

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	On HPCCS start Packet History displays for the following APIDs:1025,1027	OK				
2.	From the HPCCS test conductor console start the test script: **Z102999SCVT016_ASDGEN_HIFIPWRON_R**	OK		ANDs HA000289 HA004289		
	If in any doubt about the script being executed **NO** should be selected to abort the script when prompted in the next step. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
3.	On HPCCS when prompted: "FM HIFI Switch ON for IST or SFT in Hel/Hell conditions with warm LOU - Select NO to abort TS if not correct"	YES				
	If **YES** is selected the test script will go on to automatically power on all HIFI warm units, force boot the DPU ASW and configure the instrument to Standby. NB: In principle the HIFI instrument support responsible shall be on hand to observe the status of HIFI. **So he should be contacted before the next test step.**					
4.	At prompt to record OBS_ID_per_hk during subsequent table readback commanding (which starts when OK is pressed); record value of HM003190 (typical reading = 9000xxxx hex), Note: at start & end value is 90000000 hex "Select OK to continue" Select OK	OK				

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
5.	Value of OBS_ID during table read commanding: **HM003190**			AND: HA000289		
6.	Request I-EGSE operator to run the command 'verifyreadback <OBSID>' from a terminal window (opened from the terminal icon " >_ " at bottom left of HIFIEGSE workstation screen) using the <OBSID> retrieved in the previous step. If the word **PASS** does not appear on the screen at the end of the verifyreadback, this is a nogo on this test procedure. If OK respond to prompt accordingly, otherwise contact SRON to investigate and resolve before continuing.	OK				
7.	On HPCCS when all autonomous actions have been completed by the power on script **H102999SCVT017_ASDISTHIFI_PWR_ON_R** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
8.	Select **YES** if it is likely that other non-HIFI instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "`Bus Profile left unchanged, as original setting 0 (Launch)`" Select OK to continue	OK				
9.	If **NO** selected then at the prompt: "`Bus Profile left unchanged`" Select OK to continue	OK				
10.	Verify HK TM packets are being received on APIDs 1025 & 1027	OK				
11.	Start Active Cooling of HIFI Panel i.a.w. AD-2	OK				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
12.	Using TM Plot application on CCS start monitoring the temperature of the WBS lasers; parameters: HM062193 (HWV_Laser_T) & HM023193 (HWH_Laser_T). See Section 5.3.2.1 for details of this activity.	OK				
13.	**HIFI Redundant powered and in Standby1 mode** **Return to calling procedure**	OK				

7.3.5 HIFI Redundant Standby1 to OFF

The following procedure will switch HIFI Redundant from Standby1 to OFF.

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	Stop Active Cooling of HIFI Panel i.a.w. AD-2	OK				
2.	From the HPCCS test conductor console start the test script: **Z102999SCVT017_ASDGEN_HIFIPWROFF_R**	OK				
3.	On HPCCS when prompted: “`FM HIFI Switch OFF for IST or SFT in Hel/Hell conditions with warm LOU - Select NO to abort TS if not correct`”	YES				
	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					
	If **YES** is selected the test script will go on to automatically power off all HIFI warm units.					

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
4.	On HPCCS when all autonomous actions have been completed by the power on script **H102999SCVT018_ASDISTHIFI_PWR_OFF_R** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				
5.	Select **YES** if it is likely that other non-HIFI instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "Bus Profile left unchanged, as original setting 0 (Launch)"	OK				
6.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select OK to continue	OK				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
7.	On HPCCS stop Packet History displays for the following APIDs:1025,1027	OK				
8.	**HIFI OFF** **Return to calling Procedure**	OK				

7.3.6 HIFI Nominal Standby1 to Science (PRIME)

Running the following procedure will configure HIFI Nominal from STANDBY1 to Prime mode via Standby2 mode.

When in Prime mode, simulated science is started is started which will generate packets on APIDs 1028, 1029, 1030 & 1031. It should be noted that HPCCS does not acquire the science packets in SCOS but archives them into TMDUMP files instead. However, it will route the packets to the IEGSE if the link is enabled.

Note: Transitions above Standby1 are not considered for HIFI Redundant at present.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	From the HPCCS test conductor console start the test script to put HIFI into science from Standby1: **Z102999SCVT020_ASDGEN_HIFISTBY1_2OPS_P**	OK				
2.	On HPCCS when prompted: “Command HIFI from STANDBY1 via STANDBY2 to PRIME mode in Hel/Hell with WARM LOU - Select NO to abort TS if not correct” Select **YES**	YES				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
3.	On HPCCS when prompted: "Bus profile left as HIFI PRIME while in Science Prime mode - OK to continue" Select OK	OK				
4.	**HIFI Nominal in Science Prime** **Return to or synchronise with calling Procedure**	OK				

7.3.7 HIFI Nominal Science (PRIME) to Standby1

Running the following procedure will configure HIFI from Science (Prime) to STANDBY1 via Standby2 mode. The transition from Standby2 to Standby1 switches off the WEV & WEH lasers. The active cooling from external GSE (see section 5.3.2.1 for details) should therefore be stopped.

Note: Transitions above Standby1 are not considered for HIFI Redundant at present.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	From the HPCCS test conductor console start the test script to put HIFI in Standby1 from simulated Science: **Z102999SCVT021_ASDGEN_HIFIOPS2_STBY1_P**	OK				
2.	On HPCCS when prompted: "Command HIFI from PRIME via STANDBY2 to STANDBY1 mode in Hel/Hell with WARM LOU - Select NO to abort TS if not correct" Select **YES**	YES				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
3.	On HPCCS when prompted: "Bus profile left as HIFI PRIME, change manually after if required - OK to continue" Select **OK**	OK				
4.	**HIFI Nominal in Standby1** **Return to or synchronise with calling Procedure**	OK				

7.3.8 HIFI I-EGSE Disconnection

Step-No.	*Test-Step-Description*	*Nominal Value*	Actual Value	*Remarks*	*P*	*N*
1.	From HPCCS Test Conductor console issue command to disconnect PACS I-EGSE **disconnect HHIFIEGSE**	DISCONNECTED		**AND:** **SYS_PARS**		
2.	If no longer required for other instrument activities, from the HPCCS test conductor console terminate the test script: **ALL_SubscribeParams**					
3.	**Return to calling Procedure**					

7.4 HIFI Instrument ICU Only Configuration Procedures

7.4.1 HIFI Nominal OFF to ICU ON

The following will switch ON and configure HIFI Nominal ICU. HKTM packets will be generated on APIDs 1024 dec and 1026 decimal (these can be observed using TMPH with corresponding filter – note however a limited number of TMPHs should be running at one time).

Step-No.	***Test-Step-Description***	***Nominal Value***	***Actual Value***	***Remarks***	***P***	***N***
1.	On HPCCS start Packet History displays for the following APIDs:1024,1026	OK				
2.	From the HPCCS test conductor console start the test script: **Z102999SCVT014_ASDGEN_HIFIPWRON_P**	OK		ANDs HA000289 HA004289		
3.	On HPCCS when prompted: “FM HIFI ICU Standalone Switch ON - Select NO to abort TS if not correct”	YES				

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
4.	On HPCCS when all autonomous actions have been completed by the power on script **H102999SCVT009_ASDGENHIFI_ICU_ON_P** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				
5.	Select **YES** if it is likely that other non-HIFI instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "Bus Profile left unchanged, as original setting 0 (Launch)" Select OK to continue	OK				
6.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select OK to continue	OK				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
7.	Verify HK TM packets are being received on APIDs 1024 & 1026	OK				
8.	**HIFI Nominal ICU powered** **Return to calling procedure**	OK				

7.4.2 HIFI Nominal ICU ON to OFF

The following procedure will switch HIFI Nominal ICU OFF.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	From the HPCCS test conductor console start the test script: **Z102999SCVT015_ASDGEN_HIFIPWROFF_P**	OK				
2.	On HPCCS when prompted: "`FM HIFI ICU Standalone Switch OFF - Select NO to abort TS if not correct`"	YES				
	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					
	If **YES** is selected the test script will go on to automatically power off all HIFI warm units.					

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
3.	On HPCCS when all autonomous actions have been completed by the power on script **H102999SCVT010_ASDGENHIFI_ICU_OFF_P** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				
4.	Select **YES** if it is likely that other non-HIFI instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "Bus Profile left unchanged, as original setting 0 (Launch)"	OK				
5.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select OK to continue	OK				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
6.	On HPCCS stop Packet History displays for the following APIDs:1024,1026	OK				
7.	**HIFI OFF** **Return to calling Procedure**	OK				

7.4.3 HIFI Redundant OFF to ICU ON

The following will switch ON and configure HIFI Redundant ICU. HKTM packets will be generated on APIDs 1025 dec and 1027 decimal (these can be observed using TMPH with corresponding filter – note however a limited number of TMPHs should be running at one time).

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	On HPCCS start Packet History displays for the following APIDs:1025,1027	OK				
2.	From the HPCCS test conductor console start the test script: **Z102999SCVT014_ASDGEN_HIFIPWRON_R**	OK		ANDs HA000289 HA004289		
3.	On HPCCS when prompted: “FM HIFI ICU Standalone Switch ON - Select NO to abort TS if not correct”	YES				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
4.	On HPCCS when all autonomous actions have been completed by the power on script **H102999SCVT011_ASDGENHIFI_ICU_ON_R** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				
5.	Select **YES** if it is likely that other non-HIFI instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "Bus Profile left unchanged, as original setting 0 (Launch)" Select OK to continue	OK				
6.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select OK to continue	OK				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
7.	Verify HK TM packets are being received on APIDs 1025 & 1027	OK				
8.	**HIFI Redundant ICU powered** **Return to calling procedure**	OK				

7.4.4 HIFI Redundant ICU ON to OFF

The following procedure will switch HIFI Nominal ICU OFF.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	From the HPCCS test conductor console start the test script: **Z102999SCVT015_ASDGEN_HIFIPWROFF_P**	OK				
2.	On HPCCS when prompted: "`FM HIFI ICU Standalone Switch OFF - Select NO to abort TS if not correct`"	YES				
	If in any doubt about the script being executed **NO** should be selected to abort the script. Before restarting consult the relevant instrument support engineer to confirm the correct script to be used for the test in question.					
	If **YES** is selected the test script will go on to automatically power off all HIFI warm units.					

Step-No.	Test-Step-Description	Nominal Value	Actual Value	Remarks	P	N
3.	On HPCCS when all autonomous actions have been completed by the power on script **H102999SCVT010_ASDGENHIFI_ICU_OFF_P** it will prompt: *"Set Bus Profile Back to Original Setting?"*	NO				
4.	Select **YES** if it is likely that other non-HIFI instrument related activities are to be performed. *However note that if the original Bus Profile was 0 (launch) the script will automatically leave the Bus Profile unchanged as this profile is not compatible with instruments being powered in Standby:* "Bus Profile left unchanged, as original setting 0 (Launch)"	OK				
5.	If **NO** selected then at the prompt: "Bus Profile left unchanged" Select OK to continue	OK				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
6.	On HPCCS stop Packet History displays for the following APIDs:1025,1027	OK				
7.	**HIFI OFF** **Return to calling Procedure**	OK				

7.4.5 HIFI Nominal ICU ON to Simulated Science

Running the following procedure will configure HIFI from ICU ON to Simulated Science mode.

Note HPCCS does not acquire the science packets in SCOS but archives them into TMDUMP files instead. However, it will route the packets to the IEGSE if the link is enabled.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	From the HPCCS test conductor console start the test script to put HIFI into simulated science: **Z102999SCVT020_ASDGEN_HIFISTBY1_2OPS_P**	OK				
2.	On HPCCS when prompted: “`Command HIFI from ICU ON to Simulated Science mode in Hel/Hell conditions - Select NO to abort TS if not correct`” Select **YES**	YES				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
3.	On HPCCS when prompted: "Bus profile left as HIFI PRIME while in Science Prime mode - OK to continue" Select OK	OK				
4.	**HIFI Nominal in Simulated Science** **Return to or synchronise with calling Procedure**	OK				

7.4.6 HIFI Nominal Simulated Science (PRIME) to ICU ON

Running the following procedure will configure HIFI from Simulated Science (Prime) to ICU ON.

When in Prime mode, simulated science is started is started which will generate packets on APIDs 1028, 1029, 1030 & 1031. It should be noted that HPCCS does not acquire the science packets in SCOS but archives them into TMDUMP files instead. However, it will route the packets to the IEGSE if the link is enabled.

Note: Transitions above Standby1 are not considered for HIFI Redundant at present.

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
1.	From the HPCCS test conductor console start the test script to HIFI Stop simulated Science: **Z102999SCVT021_ASDGEN_HIFIOPS2_STBY1_P**	OK				
2.	On HPCCS when prompted: “Command HIFI from Simulated Science mode to ICU ON in Hel/Hell conditions - Select NO to abort TS if not correct” Select **YES**	YES				

Step-No.	*Test-Step-Description*	*Nominal Value*	*Actual Value*	*Remarks*	*P*	*N*
3.	On HPCCS when prompted: "Bus profile left as HIFI PRIME, change manually after if required - OK to continue" Select **OK**	OK				
4.	**HIFI Nominal in ICU ON** **Return to or synchronise with calling Procedure**	OK				

8 ANNEX - Script hierarchy

Detailed in the following sub-sections:

8.1 General

ALL_SubscribeParams

8.2 PACS

Z102999SCVT010_ASDGEN_PACSPWRON_P
-> P102999SCVT905_ASDISTPACS_PWR_ON_N
-> -> Z010999MMXX002UNITS_CHECK

Z102999SCVT011_ASDGEN_PACSPWROFF_P
-> P102999SCVT906_ASDISTPACS_PWR_OFF_N
-> -> Z010999MMXX002UNITS_CHECK

Z102999SCVT012_ASDGEN_PACSPWRON_R
P102999SCVT907_ASDISTPACS_PWR_ON_R
-> -> Z010999MMXX002UNITS_CHECK

Z102999SCVT013_ASDGEN_PACSPWROFF_R
-> P102999SCVT908_ASDISTPACS_PWR_OFF_R
-> -> Z010999MMXX002UNITS_CHECK

P102999SCVT904_ASDGENPACS_NomSpect

P102999SCVT913_ASDGENPACS_BurstMode

PACS_SAFE_Mode

8.3 SPIRE

Z102999SCVT004_ASDGEN_SPIREPWRON_P
-> S102999SCVT017_ASDGENSPIR_PWR_ON_P
-> -> SPIRE-IST-DBG-OFF2DPUON-SP
-> -> SPIRE-IST-DBG-DPUON2STBY
-> -> SPIRE-IST-DBG-LOAD-VM-TABLES
-> -> Z010999MMXX002UNITS_CHECK

Z102999SCVT005_ASDGEN_SPIREPWROFF_P
-> S102999SCVT019_ASDGENSPIR_PWR_OFF_P
-> -> SPIRE-IST-DBG-STBY2OFF
-> -> Z010999MMXX002UNITS_CHECK

Z102999SCVT006_ASDGEN_SPIREPWRON_R
-> S102999SCVT018_ASDGENSPIR_PWR_ON_R
-> -> SPIRE-IST-DBG-OFF2DPUON
-> -> SPIRE-IST-DBG-DPUON2STBY
-> -> SPIRE-IST-DBG-LOAD-VM-TABLES
-> -> Z010999MMXX002UNITS_CHECK

Z102999SCVT007_ASDGEN_SPIREPWROFF_R
-> S102999SCVT020_ASDGENSPIR_PWR_OFF_R
-> -> SPIRE-IST-DBG-STBY2OFF
-> -> Z010999MMXX002UNITS_CHECK

Z102999SCVT008_ASDGEN_SPIRESTBY2OPS

-> S102999SCVT911_ASDDBGSPIR_STBY2OPS

-> -> SPIRE-IST-DBG-STBY2OPS

Z102999SCVT009_ASDGEN_SPIREOPS2STBY

-> S102999SCVT912_ASDDBGSPIR_OPS2STBY

-> -> SPIRE-IST-DBG-OPS2STBY

8.4 HIFI Full Configuration

HIFIST_ASED_PatchPtvChecksum

HIFIST_ASED_PatchTempLimits

Note that the above 2 scripts have to be maintained in line with latest version of HIFI script(s) HIFIST_CCS_conf_ptv_checksum_<env>.tcl (where <env> = warm or cold) based on satellite environmental conditions.

Z102999SCVT014_ASDGEN_HIFIPWRON_P
-> H102999SCVT005_ASDGENHIFI_PWR_ON_P
-> -> HIFIST_nom_Startup_force_boot_warm
-> -> HIFIST_nom_Startup_OBS_SFT_warm
-> -> HIFIST_nom_Startup_FCU_on_warm
-> -> HIFIST_nom_Startup_lasertemp_override_warm
-> -> HIFIST_nom_Startup_WBSH_on_warm
-> -> HIFIST_nom_Startup_WBSV_on_warm
-> -> HIFIST_nom_Startup_HRS_on_warm
-> -> HIFIST_nom_Startup_LCU_on_warm
-> -> HIFIST_nom_Startup_LCU_table_load_warm
-> -> HIFIST_nom_Startup_LCU_table_read_warm
-> -> Z010999MMXX002UNITS_CHECK

Z102999SCVT015_ASDGEN_HIFIPWROFF_P
-> H102999SCVT006_ASDGENHIFI_PWR_OFF_P
-> -> HIFIST_nom_Startup_FPU_standby_warm
-> -> HIFIST_nom_Startup_WBS_standby_warm
-> -> HIFIST_nom_Startup_HRS_standby_warm
-> -> HIFIST_nom_Startup_all_off_warm
-> -> Z010999MMXX002UNITS_CHECK

Z102999SCVT016_ASDGEN_HIFIPWRON_R
-> H102999SCVT007_ASDGENHIFI_PWR_ON_R
-> -> HIFIST_red_Startup_force_boot_warm
-> -> HIFIST_red_Startup_OBS_SFT_warm
-> -> HIFIST_red_Startup_FCU_on_warm
-> -> HIFIST_red_Startup_lasertemp_override_warm
-> -> HIFIST_red_Startup_WBSH_on_warm
-> -> HIFIST_red_Startup_WBSV_on_warm
-> -> HIFIST_red_Startup_HRS_on_warm
-> -> HIFIST_red_Startup_LCU_on_warm
-> -> HIFIST_red_Startup_LCU_table_load_warm
-> -> HIFIST_red_Startup_LCU_table_read_warm
-> -> Z010999MMXX002UNITS_CHECK

Z102999SCVT017_ASDGEN_HIFIPWROFF_R
-> H102999SCVT008_ASDGENHIFI_PWR_OFF_R
-> -> HIFIST_red_Startup_FPU_standby_warm
-> -> HIFIST_red_Startup_WBS_standby_warm

-> -> HIFIST_red_Startup_HRS_standby_warm
-> -> HIFIST_red_Startup_all_off_warm
-> -> Z010999MMXX002UNITS_CHECK

Z102999SCVT020_ASDGEN_HIFISTBY1_2OPS_P

-> H102999SCVT028_ASDISTHIFI_STBY1_2PRIME_P

-> -> HIFIST_nom_HIFI_STBY_2_warm

-> -> HIFIST_nom_HIFI_Primary_warm

Z102999SCVT021_ASDGEN_HIFIOPS2_STBY1_P

-> H102999SCVT029_ASDISTHIFI_PRIME_2STBY1_P

-> -> HIFIST_nom_HIFI_STBY_2_warm

-> -> HIFIST_nom_HIFI_STBY_1_warm

8.5 HIFI ICU Configuration

H102999SCVT009_ASDGENHIFI_ICU_ON_P

H102999SCVT010_ASDGENHIFI_ICU_OFF_P

H102999SCVT011_ASDGENHIFI_ICU_ON_R

H102999SCVT012_ASDGENHIFI_ICU_OFF_R

H102999SCVT030_ASDISTHIFI_ICUON_2SIMSCI

H102999SCVT031_ASDISTHIFI_SIMSCI_2ICUON

8.6 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 8.6-1: Procedure Variation Sheet

8.7 Non Conformance Report (NCR) Summary

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

Table 8.7-1: Non-Conformance Record Sheet

8.8 Sign-off Sheet

	Date	Signature
Test Director		
Test Conductor		
PA Responsible		
ESA Representative		

END OF DOCUMENT

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