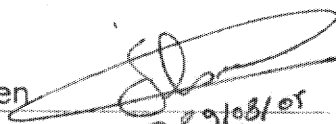






Title: SPIRE SFT PRIOR TO COOLDOWN

CI-No: 153200

|                        |   |       |            |
|------------------------|---|-------|------------|
| Prepared by:           | S. Ilsen        | Date: | 22/08/2005 |
| Checked by:            | C. Schlosser   |       | 2.9.05     |
| Product Assurance:     | R. Stritter    |       | 6/7/05     |
| Configuration Control: | W. Wietbrock   |       | 02.09.05   |
| Project Management:    | Dr. W. Fricke  |       | 7.9.05     |

Distribution: See Distribution List (last page)

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| Issue | Date     | Sheet | Description of Change | Release |
|-------|----------|-------|-----------------------|---------|
| 1/0   | 22.08.05 | All   | First issue           |         |

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## 1 Scope

This test report describes the results of the first SFT warm (EQM) performed for the Herschel SPIRE Instrument. The SPIRE instrument consists of the following configuration for this test:

- DPU
- DRCU (DCU + SCU)
- FPU + JFET's

This test is done prior to cooldown to make sure the instrument is OK for the cooldown.

The following Test Procedures are used:

- HP-2-ASED-PR-0051, issue 1.1
- HP-2-ASED-PR-0035, Issue 4 from 03.08.2005 (EGSE configuration procedure)
- SPIRE-RAL-PRC-002494, Issue 1.0 (19/08/2005)

The test will also serve as a validation of the SFT procedure, which –in principle- is executable by the CCS operator without any instrument personel present.

The test was performed at ASED in Ottobrunn on 22.08.2005

The following people were present during the test:

- Test Director: C. Schlosser/S. Idler
- CCS Operator: S. Ilsen
- SPIRE IEGSE operator: A. Aramburu
- SPIRE Engineering: S. Sidher
- PA: D. Hendry
- ESA / Alcatel representative: C. Scharmberg, A. Knight

### 1.1 Summary

Detailed results are given in the as-run-procedure in chapter 3.

Two new NCR's have been raised:

- HP-112000-ASED-NC-1375: Source Sequence Counter Errors on CCS (see Annex 6:)

- HP-112000-ASED-NC-1376: Initial Value of TM5N is wrong in procedure (see Annex 7:)

Both NCR's are minor and do not block to the cooldown.

The first SFT was successful. Some changes will be made to the procedure to clarify, because the SFT should be executable by CCS operators without the help of SPIRE personel.

## 2 Results of HP-2-ASED-PR-0035 - Chapter 3: Order of Execution (steps 1 to 10)

**Note:** The SVM has been moved to the cleanroom class 100.000 since the last test. For this the data bus and power cables have been disconnected and reconnected again. This is also valid for the grounding. No check is done prior to test to check if all cables are reconnected correctly.

| Step # | Action   | Comments  | Check |
|--------|--|---|-------|
| 1      | Note Testsession   | 2005_08_22_12_42_ilsens_hpws42_REALTIME_S_S<br>FT_W1  | OK    |
| 2      | Power on CDMU DFE platform   |   | OK    |
| 3      | Power on PLM SCOE platform   |   | OK    |
| 4      | Power on the CDMU DFE workstation and wait for the BIST to finish. | Check: BIST successful?   | OK    |
| 5      | Power on the PLM SCOE workstation and wait for the BIST to finish. | Check: BIST successful?   | OK    |
| 6      | Execute "EGSE_CONFIG_AUTO.tcl" (see Annex 1:)                      | Check: PLM SCOE HK packets arriving   | OK    |
|        |  | Check: CDMU DFE HK packets arriving   | OK    |
|        |  | Check: Check name of bus profile (PST) in CDMU DFE HK or on CDMU DFE workstation<br><br><b>Result: SPIRE_prime_inst.pst</b>   | OK    |
| 7      | Execute "SubscribeParams.tcl"                                      | Check: Wait until status of TCL file has changed to WAITING. This can take up to 10 minutes.<br><br><b>This step is not executed since the IEGSE will not be used during this test.</b> | N/A   |
| 8      | Execute "Connect HIEGSE"   | Check with IEGSE operators if IEGSE is connected.   | OK    |
| 9      | Execute "WARNING_LAMP_POWER_ON.tcl"                                | Check if lamp is ON<br><br><b>Not Applicable since the lamp is not connected at the moment</b>  | N/A   |
| 10     | Execute "INSTR_POWER_ON.tcl"                                       | <b>This step is integrated in the SFT (see below)</b>   | OK    |

### 3 Short Functional Test Results

#### 3.1 SFT-SPIRE-CCS-DPU-ON

**Purpose:** To switch on the SPIRE DPU and start generating housekeeping

**Preconditions:**

- CCS 28V Power Supply to the DPU is available
- SPIRE MIB is imported in the CCS database.
- CCS is up and running (SCOS, TOPE and the CDMU Simulator)
- DPU AND OBS PARAMETERS display is selected on the CCS

**Initial Configuration:** SPIRE Warm Electronics (DPU and DRCU) are switched off

| Step # | Action   | Comments  | Check |
|--------|--|---|-------|
| 1      | Power on the SPIRE DPU using the CCS 28V Power Supply  | <p><b>This action is performed from INST_POWER_ON.tcl (see Annex 2:)</b></p> <p><b>Result:</b></p> <ul style="list-style-type: none"> <li>• Voltage: 27.85 V</li> <li>• Current: 0.48 A</li> </ul> <p>(5,2) packet received</p> | OK    |
| extra  | Send command SDC09505 manually   | <b>This is needed because of NCR 0251 (first command send twice). The command should not have any effect.</b>   | OK    |
| 2      | Execute TCL script SFT-SPIRE-CCS-DPU-ON.tcl  |   | OK    |
| 3      | Check that THSK parameter on the DPU AND OBS PARAMETERS display on SCOS is refreshing every second   | THSK incrementing every second  | OK    |
| 4      | Check that TM2N parameter on the DPU AND OBS PARAMETERS display on SCOS is incrementing every second | TM2N incrementing every second  | OK    |

**Final Configuration:** SPIRE DPU is on but the DRCU is still off



### 3.2 SFT-SPIRE-CCS-DRCU-ON

**Purpose:** To switch on the SPIRE DRCU and start generating housekeeping

**Preconditions:**

**Initial Configuration:**

- SPIRE DPU is on and generating HK
- DRCU is switched off
- DPU and OBS PARAMETERS display is selected on the CCS

| Step # | Action  | Comments   | Check |
|--------|---|--|-------|
| 1      | Execute TCL script SFT-SPIRE-CCS-DRCU-ON-STEP1.tcl  | HK stopped as expected   | OK    |
| 2      | Check that THSK parameter is not refreshing anymore   |  | OK    |
| 3      | Check that TM2N parameter is not incrementing anymore   |  | OK    |
| 4      | Manual Switch on of the DRCU by the CCS staff step 1: <ul style="list-style-type: none"> <li>• Ensure all 5 remote DCU switches are in the off position</li> <li>• Switch on the SPIRE Power Bench (Primary &amp; Secondary)</li> </ul> | This action was performed by C. Schlosser, D. Hendry and C. Scharmberg   | OK    |
| 5      | Execute TCL script SFT-SPIRE-CCS-DRCU-ON-STEP2.tcl  | <p>During the execution of this TCL script, a SSC error was detected. This will be covered by NCR 1375 (see Annex 6:)</p> <p>The SSC error does not affect the test. All packets arrived on the CCS and IEGSE.</p> | OK    |
| 6      | Manual Switch on of the DRCU by the CCS staff step 2: <ul style="list-style-type: none"> <li>• Switch on all 5 remote DCU switches</li> </ul>   |  | OK    |
| 7      | Check that THSK   | THSK incrementing every second   | OK    |

|   |  |                                |    |
|---|--|--------------------------------|----|
|   | parameter is again refreshing every second                   |                                |    |
| 8 | Check that TM2N parameter is again incrementing every second | TM2N incrementing every second | OK |

**Final Configuration:**

- SPIRE DPU and DRCU are both on
- HK generation is on

### 3.3 SFT-SPIRE-CCS-FUNC-SCU-01

**Purpose:** SCU science packet generation check

**Preconditions:**

**Initial Configuration:**

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

| Step #                 | Action   | Comments  |                       |                  | Check      |
|------------------------|--|---|-----------------------|------------------|------------|
| 1                      | Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-01.tcl | Check if the following parameters change value: |                       |                  |            |
|                        |  | <b>Parameter</b>                                | <b>Original Value</b> | <b>End Value</b> |            |
|                        |  | SCUFRAMECNT <sup>1</sup>                        | 0                     | 31               | <b>OK</b>  |
|                        |  | <b>Observed values</b>                          | <b>0</b>              |                  | <b>NOK</b> |
|                        |  | TM5N <sup>2</sup>                               | 0                     | 1                |            |
| <b>Observed values</b> | <b>00003FFF</b>                                  | <b>1</b>  |                       |                  |            |

The initial value of parameter TM5N is not 0 as expected but 00003FFF. This problem was not yet recognised before, although this test has been run for several times. A replay of previous tests showed that also then, the initial value was 00003FFF instead of 0. An NCR is raised to cover this (NCR 1376, see Annex 7:).

The expected end value is correct. SPIRE indicates that the test was successful. SPIRE will change the procedure to have an expected initial value of 00003FFF.

**Final Configuration:** Unchanged

<sup>1</sup> AND SA\_4\_559 (SCU Parameters)

<sup>2</sup> AND SA\_1\_559 (DCU and OBS parameters)

### 3.4 SFT-SPIRE-CCS-FUNC-DCU-01

**Purpose:** DCU science packet generation check for all Photometer and Spectrometer packet types (PF, PSW, PMW, PLW, SF, SSW and SLW)

**Preconditions:**

**Initial Configuration:**

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- DCU PARAMETERS display is selected on the CCS

| Step # | Action   | Comments  |                       |                  | Check     |
|--------|--|---|-----------------------|------------------|-----------|
| 1      | Execute TCL script SFT-SPIRE-CCS-FUNC-DCU-01.tcl | Check if the following parameters change value: |                       |                  |           |
|        |  | <b>Parameter</b>                                | <b>Original Value</b> | <b>End Value</b> |           |
|        |  | DCUFRAMECNT                                     | 0                     | 700              | <b>OK</b> |

**Final Configuration:** Unchanged

### 3.5 SFT-SPIRE-CCS-FUNC-DCU-04-PS-ON

**Purpose:** Spectrometer and Photometer LIAs switch on

**Preconditions:** The Photometer and Spectrometer LIAs are switched off

**Initial Configuration:**

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

| Step # | Action  | Comments   |                       |                  | Check |
|--------|---|--|-----------------------|------------------|-------|
| 1      | Execute TCL script SFT-SPIRE-CCS-FUNC-DCU-04-PS-ON.tcl  | Check if the following parameters change value:                        |                       |                  |       |
|        |   | <b>Parameter</b>   | <b>Original Value</b> | <b>End Value</b> |       |
|        |   | SCUDCDCSTAT <sup>3</sup>   | 0                     | 1                | OK    |
| 2      | <p><b>Manual step for the CCS staff:</b><br/> <b>Check if the Over Current Limiter for the LIAs has triggered on the SPIRE Warm Electronics Power Bench.</b><br/> <b>If it has, it will have to manually reset.</b></p> | This action was performed by C. Schlosser, D. Hendry and C. Scharmberg |                       |                  | OK    |

**Final Configuration:** The Photometer and Spectrometer LIAs are on.

<sup>3</sup> AND SA\_4\_559 SCU PARAMETERS

### 3.6 SFT-SPIRE-CCS-FUNC-SCU-04

**Purpose:** SCU Photometer PCAL check

**Preconditions:** SPIRE CQM is electrically integrated with the Herschel EQM

**Initial Configuration:**

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

| Step # | Action   | Comments  |              |               | Check      |           |
|--------|--|---|--------------|---------------|------------|-----------|
| 1      | Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-04.tcl<br><br>The expected values during the test should be monitored when parameter BBFULLTYPE in the SCU PARAMETERS display is set to PCAL_Check This usually happens about 30 seconds from the start of test execution. | Check if the following parameters change value: |              |               |            |           |
|        |  | <b>Parameter</b>                                | <b>Start</b> | <b>During</b> | <b>End</b> |           |
|        |  | PCALCURR – mA                                   | 0.0          | 0.1           | 0.0        | <b>OK</b> |
|        |  | <b>Observed</b>                                 | <b>0.0</b>   | <b>0.1</b>    | <b>0.0</b> |           |
|        | PCALV – V  | 0.0   | 0.026        | 0.0           | <b>OK</b>  |           |
|        | <b>Observed</b>  | <b>0.0</b>                                      | <b>0.025</b> | <b>0.0</b>    |            |           |

**Final Configuration:** Unchanged

### 3.7 SFT-SPIRE-CCS-FUNC-SCU-05

**Purpose:** SCU Photometer SCAL4 and SCAL2 check

**Preconditions:** SPIRE CQM is electrically integrated with the Herschel EQM

**Initial Configuration:**

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

| Step # | Action  | Comments  |                   |                     |                   | Check     |
|--------|---|---|-------------------|---------------------|-------------------|-----------|
| 1      | Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-05.tcl  |   |                   |                     |                   | OK        |
| 2      | Wait for the parameter BBFULLTYPE to get set to SCAL4_Check   |   |                   |                     |                   | OK        |
| 3      | A few seconds later record the value of parameters SCAL4CURR and SCAL4V<br>These parameters are set back to 0 after ~60 seconds | Check if the following parameters change value: |                   |                     |                   |           |
|        |   | <b>Parameter</b>                                | <b>Start</b>      | <b>During</b>       | <b>End</b>        |           |
|        |   | SCAL4CURR – mA<br><b>Observed</b>               | 0.0<br><b>0.0</b> | 0.1<br><b>0.1</b>   | 0.0<br><b>0.0</b> | <b>OK</b> |
|        |   | SCAL4V – V<br><b>Observed</b>                   | 0.0<br><b>0.0</b> | 0.05<br><b>0.05</b> | 0.0<br><b>0.0</b> | <b>OK</b> |
| 4      | Wait for the parameter BBFULLTYPE to get set to SCAL2_Check   |   |                   |                     |                   | OK        |
| 5      | A few seconds later record the value of parameters SCAL4CURR and SCAL4V<br>These parameters are set back to 0 after ~60 seconds | Check if the following parameters change value: |                   |                     |                   |           |
|        |   | <b>Parameter</b>                                | <b>Start</b>      | <b>During</b>       | <b>End</b>        |           |
|        |   | SCAL2CURR – mA<br><b>Observed</b>               | 0.0<br><b>0.0</b> | 0.1<br><b>0.1</b>   | 0.0<br><b>0.0</b> | <b>OK</b> |
|        |   | SCAL2V – V<br><b>Observed</b>                   | 0.0<br><b>0.0</b> | 0.05<br><b>0.05</b> | 0.0<br><b>0.0</b> | <b>OK</b> |

**Final Configuration:** Unchanged

### 3.8 SFT-SPIRE-CCS-FUNC-SCU-07

**Purpose:** SCU cooler heaters check

**Preconditions:** SPIRE CQM is electrically integrated with the Herschel EQM

**Initial Configuration:**

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

| Step # | Action  | Comments  |               |                     |               | Check |
|--------|---|---|---------------|---------------------|---------------|-------|
| 1      | Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-07.tcl  |   |               |                     |               | OK    |
| 2      | Wait for the parameter BBFULLTYPE to get set to Cooler_Htr_Chk  |   |               |                     |               | OK    |
| 3      | A few seconds later record the value of parameter EVHSV – the Evaporator Heat Switch Voltage. This voltage stays on for ~45 seconds.  | Check if the following parameters change value: |               |                     |               |       |
|        |   | <b>Parameter</b>                                | <b>Start</b>  | <b>During</b>       | <b>End</b>    |       |
|        |   | EVHSV – mV<br><b>Observed</b>                   | 0<br><b>0</b> | ~323<br><b>323</b>  | 0<br><b>0</b> | OK    |
| 4      | A few seconds after the EVHSV parameter has been set back to 0, record the value of parameter SPHSV – the Sorption Pump Heat Switch Voltage. This voltage stays on for ~45 seconds. | Check if the following parameters change value: |               |                     |               |       |
|        |   | <b>Parameter</b>                                | <b>Start</b>  | <b>During</b>       | <b>End</b>    |       |
|        |   | SPHSV – mV<br><b>Observed</b>                   | 0<br><b>0</b> | ~323<br><b>323</b>  | 0<br><b>0</b> | OK    |
| 5      | A few seconds after the SPHSV parameter has been set back to 0, record the value of parameter SPHTRV – the Sorption Pump Heater Voltage. This voltage stays on for ~45 seconds.     | Check if the following parameters change value: |               |                     |               |       |
|        |   | <b>Parameter</b>                                | <b>Start</b>  | <b>During</b>       | <b>End</b>    |       |
|        |   | SPHTRV – V<br><b>Observed</b>                   | 0<br><b>0</b> | ~8.8<br><b>8.77</b> | 0<br><b>0</b> | OK    |



**Final Configuration:** Unchanged

**3.9 SFT-SPIRE-CCS-FUNC-SCU-03****Purpose:** SCU DC thermometry check**Preconditions:** SPIRE CQM is electrically integrated with the Herschel EQM**Initial Configuration:**

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

| Step #     | Action  | Comments  |                     |                             |                             | Check |
|------------|---|---|---------------------|-----------------------------|-----------------------------|-------|
| 1          | Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-03.tcl              |   |                     |                             |                             | OK    |
| 2          | Wait for the parameter BBFULLTYPE to get set to SCU_DC_Therm  |   |                     |                             |                             | OK    |
| 3          | A few seconds later record the value of parameter SCUTEMPSTAT | Check if the following parameters change value: |                     |                             |                             |       |
|            |   | <b>Parameter</b>                                | <b>Start</b>        | <b>During</b>               | <b>End</b>                  |       |
|            |   | SCUTEMPSTAT<br><b>Observed</b>                  | 0<br><b>0000000</b> | FFFF<br><b>0000FF</b><br>FF | FFFF<br><b>0000FF</b><br>FF | OK    |
| 4          | Record the RAW values of SCU temperatures                     | PUMPHTRTEMP                                     | //-32768            | <b>-32768</b>               | OK                          |       |
| PUMPHSTEMP | //-32768  | <b>-32768</b>                                   |                     |                             |                             |       |
| EVAPHSTEMP | //-32768  | <b>-32768</b>                                   |                     |                             |                             |       |
| SHUNTTEMP  | //-32768  | <b>-32768</b>                                   |                     |                             |                             |       |
| SOBTEMP    | //~ 20000   | <b>-20178</b>                                   |                     |                             |                             |       |
| SLOTTEMP   | //-32768  | <b>-32768</b>                                   |                     |                             |                             |       |
| PLOTEMP    | //-32768  | <b>-32768</b>                                   |                     |                             |                             |       |
| OPTTEMP    | //-32768  | <b>-32768</b>                                   |                     |                             |                             |       |
| BAFTEMP    | //-32768  | <b>-32768</b>                                   |                     |                             |                             |       |
| BSMIFTEMP  | //-32768  | <b>-32768</b>                                   |                     |                             |                             |       |
| SCAL2TEMP  | //-32768  | <b>-32768</b>                                   |                     |                             |                             |       |
| SCAL4TEMP  | //-32768  | <b>-32768</b>                                   |                     |                             |                             |       |
| SCALTEMP   | //-32768  | <b>-32768</b>                                   |                     |                             |                             |       |
| SMECIFTEMP | //~ -2325   | <b>-2330</b>                                    |                     |                             |                             |       |
| SMECTEMP   | //~ -7125   | <b>-7143</b>                                    |                     |                             |                             |       |
| BSMTEMP    | //-32768  | <b>-32768</b>                                   |                     |                             |                             |       |

**Final Configuration:** Unchanged

**3.10 SFT-SPIRE-CCS-FUNC-SCU-06****Purpose:** SCU AC thermometry check**Preconditions:** SPIRE CQM is electrically integrated with the Herschel EQM**Initial Configuration:**

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

| Step # | Action   | Comments  | Check        |               |              |    |
|--------|--|---|--------------|---------------|--------------|----|
| 1      | Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-06.tcl             |   | OK           |               |              |    |
| 2      | Wait for the parameter BBFULLTYPE to get set to SCU_AC_Therm |   | OK           |               |              |    |
| 3      | A few seconds later record the value of parameter SUBKSTAT   | Check if the following parameters change value: |              |               |              |    |
|        |  | <b>Parameter</b>                                | <b>Start</b> | <b>During</b> | <b>End</b>   |    |
|        |  | SUBKSTAT  | 0            | 1             | 1            | OK |
|        |  | <b>Observed values</b>                          | <b>0</b>     | <b>1</b>      | <b>1</b>     |    |
| 4      | Record the RAW value of SUBKTEMP                             | Check if the following parameters change value: |              |               |              |    |
|        |  | <b>Parameter</b>                                | <b>Start</b> | <b>During</b> | <b>End</b>   |    |
|        |  | SUBKTEMP  | ~31915       |               | ~31904       | OK |
|        |  | <b>Observed values</b>                          | <b>31907</b> |               | <b>31904</b> |    |

**Final Configuration:** Unchanged

### 3.11 SFT-SPIRE-CCS-FUNC-THO

**Purpose:** Switch off SCU DC and AC thermometry – if necessary

**Preconditions:** SPIRE CQM is electrically integrated with the Herschel EQM

**Initial Configuration:**

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

| Step # | Action  | Comments  |              |               |            | Check |
|--------|---|---|--------------|---------------|------------|-------|
| 1      | Execute TCL script SFT-SPIRE-CCS-FUNC-THO.tcl                 |   |              |               |            | OK    |
| 2      | A few seconds later record the value of parameter SCUTEMPSTAT | Check if the following parameters change value: |              |               |            |       |
|        |   | <b>Parameter</b>                                | <b>Start</b> | <b>During</b> | <b>End</b> |       |
|        |   | SCUTEMPSTAT                                     | FFFF         | -             | 0          | OK    |
| 3      | A few seconds later record the value of parameter SUBKSTAT    | Check if the following parameters change value: |              |               |            |       |
|        |   | <b>Parameter</b>                                | <b>Start</b> | <b>During</b> | <b>End</b> |       |
|        |   | SUBKSTAT  | 1            | -             | 0          | OK    |

**Final Configuration:** Unchanged

### 3.12 SFT-SPIRE-CCS-FUNC-DCU-04-PS-OFF

**Purpose:** Spectrometer and Photometer LIAs switch on

**Preconditions:** The Photometer and Spectrometer LIAs are switched on, i.e. Procedure SFT-CCS-FUNC-DCU-04-PS-ON has been executed.

**Initial Configuration:**

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

| Step # | Action  | Comments  |                       |                  | Check |
|--------|---|---|-----------------------|------------------|-------|
| 1      | Execute TCL script SFT-SPIRE-CCS-FUNC-DCU-04-PS-OFF.tcl | Check if the following parameters change value: |                       |                  |       |
|        |   | <b>Parameter</b>                                | <b>Original Value</b> | <b>End Value</b> |       |
|        |   | SCUDCDCSTAT <sup>4</sup>                        | 1                     | 0                | OK    |

**Final Configuration:** The Photometer and Spectrometer LIAs are on.

---

<sup>4</sup> AND SA\_4\_559 SCU PARAMETERS

### 3.13 SFT-SPIRE-CCS-DRCU-OFF

**Purpose:** Switch off the DRCU

**Preconditions:** Procedure SFT-SPIRE-CCS-FUNC-THO has been successfully executed if SPIRE CQM is electrically integrated with the Herschel EQM.

**Initial Configuration:**

- SPIRE DPU is on and generating HK
- DRCU is switched off
- DPU and OBS PARAMETERS display is selected on the CCS

| Step # | Action  | Comments   | Check |
|--------|---|--|-------|
| 1      | Execute TCL script SFT-SPIRE-CCS-DRCU-ON-STEP1.tcl  |  | OK    |
| 2      | Check that THSK parameter is not refreshing anymore   |  | OK    |
| 3      | Check that TM2N parameter is not incrementing anymore   |  | OK    |
| 4      | Manual Switch off of the DRCU by the I-EGSE staff: <ul style="list-style-type: none"> <li>• Switch off all 5 remote DCU switches</li> <li>• Switch off the SPIRE Power Bench (Primary &amp; Secondary)</li> </ul> | Clarification needed: <ul style="list-style-type: none"> <li>• Switched are on SVM and not on power bench</li> <li>• First switch off secondary power (front of power bench)</li> <li>• Then switch off primary power (back of power bench)</li> </ul> | OK    |

**Final Configuration:**

- DRCU is switched off
- SPIRE DPU is on but not generating HK

**3.14 SFT-SPIRE-CCS-DPU-OFF****Purpose:** Switch off the DPU**Preconditions:** SFT-SPIRE-CCS-DRCU-OFF has been successfully executed.**Initial Configuration:**

- SPIRE DPU is on but not generating any HK
- DRCU is switched OFF

| Step # | Action  | Comments   | Check |
|--------|---|--|-------|
| 1      | Request the CCS staff to power off the SPIRE DPU using the CCS 28V Power Supply | This action is performed from <b>INST_POWER_OFF.tcl</b> (see Annex 3:) | OK    |

**Final Configuration:** SPIRE DPU is switched off

#### 4 Results of HP-2-ASED-PR-0035 - Chapter 3: Order of Execution (steps 12 to 15)

| Step # | Action   | Comments  | Check |
|--------|--|---|-------|
| 12     | Execute<br>"INSTR_POWER_OFF"<br>or an instrument specific<br>power off sequence. | This step is already executed in chapter 3.14   | OK    |
| 13     | Execute<br>"WARNING_LAMP_POWER_OFF.tcl"  | Check if lamp is OFF<br><br><b>Not Applicable since the lamp is not connected at the moment</b> | N/A   |
| 14     | Execute<br>"EGSE_OFFLINE_AUTO.tcl" (see Annex 4:)                                | Check: PLM SCOE HK packets stopped  | OK    |
|        |  | Check: CDMU DFE HK packets stopped  | OK    |
| 15     | Shut down PLM EGSE   |   | OK    |

























2005.234.15.24.13.541167 Disconnecting from PLM SCOE  
2005.234.15.24.15.544073 Detaching from PLM SCOE  
2005.234.15.24.16.547630

**Annex 5: SPIRE Nominal Bus Profile (SPIRE\_prime\_inst.PST)**

```
;Nominal HERSCHEL/PACS Prime bus profile
;SPIRE is RT 21: 25TM, 2TC
;PACS is RT 25: 2TM, 1TC
;HIFI is RT 16: 2TM, 1TC
```

```
[Config]
```

```
NumberOfSubFrames=64
```

```
[SubFrame1]
```

```
1=RTreadSA,21,1 ;RT status from: SPIRE
```

```
[SubFrame2]
```

```
1=RTreadSA,25,1 ;RT status from: PACS
```

```
[SubFrame3]
```

```
1=RTreadSA,16,1 ;RT status from: HIFI
```

```
[SubFrame4]
```

```
;1=RTreadSA,21,1 ;RT status from: SPIRE
```

```
1=TMpoll,25 ;TM poll from: PACS
```

```
2=RTaccessSA
```

```
[SubFrame5]
```

```
1=TMpacket,25 ;TM packet from: PACS
```

```
2=TMpoll,16 ;TM poll from: HIFI
```

```
3=RTaccessSA
```

```
[SubFrame6]
```

```
1=TMpacket,16 ;TM packet from: HIFI
```

```
2=TMpoll,21 ;TM poll from: SPIRE
```

```
3=RTaccessSA
```

```
[SubFrame7]
```

```
1=TMpacket,21 ;TM packet from: SPIRE
```

```
2=TMpoll,25 ;TM poll from: PACS
```

```
3=RTaccessSA
```

```
[SubFrame8]
```

```
1=TMpacket,25 ;TM packet from: PACS
```

```
2=TMpoll,16 ;TM poll from: HIFI
```

```
3=RTaccessSA
```

```
[SubFrame9]
```

```
1=TMpacket,16 ;TM packet from: HIFI
```

```
2=TMpoll,21 ;TM poll from: SPIRE
```

```
3=RTaccessSA
```

```
[SubFrame10]
```

```
1=TMpacket,21 ;TM packet from: SPIRE
```

```
2=RTaccessSA
```

```
[SubFrame11]
```

```
1=TMpoll,21 ;TM poll from: SPIRE
```

```
2=RTaccessSA
```

```
[SubFrame12]
```

```
1=TMpacket,21 ;TM packet from: SPIRE
```

```
2=RTaccessSA
```

```
[SubFrame13]
```

```
1=TMpoll,21 ;TM poll from: SPIRE
```

```
2=RTaccessSA
```

```
[SubFrame14]
```

```
1=TMpacket,21 ;TM packet from: SPIRE
```

```
2=RTaccessSA
```

```
[SubFrame15]
```

1=TMpoll,21 ;TM poll from: SPIRE  
2=RTaccessSA

[SubFrame16]  
1=TMpacket,21 ;TM packet from: SPIRE  
2=RTaccessSA

[SubFrame17]  
1=TCpacket ;TC packet to: SPIRE  
2=RTaccessSA

[SubFrame18]  
1=TMpoll,21 ;TM poll from: SPIRE  
2=RTaccessSA

[SubFrame19]  
1=TMpacket,21 ;TM packet from: SPIRE  
2=RTaccessSA

[SubFrame20]  
1=TMpoll,21 ;TM poll from: SPIRE  
2=RTaccessSA

[SubFrame21]  
1=TMpacket,21 ;TM packet from: SPIRE  
2=RTaccessSA

[SubFrame22]  
1=TMpoll,21 ;TM poll from: SPIRE  
2=RTaccessSA

[SubFrame23]  
1=TMpacket,21 ;TM packet from: SPIRE  
2=RTaccessSA

[SubFrame24]  
1=TMpoll,21 ;TM poll from: SPIRE  
2=RTaccessSA

[SubFrame25]  
1=TMpacket,21 ;TM packet from: SPIRE  
2=RTaccessSA

[SubFrame26]  
1=TMpoll,21 ;TM poll from: SPIRE  
2=RTaccessSA

[SubFrame27]  
1=TMpacket,21 ;TM packet from: SPIRE  
2=TMpoll,25 ;TM poll from: PACS  
3=RTaccessSA

[SubFrame28]  
1=TMpacket,25 ;TM packet from: PACS  
2=TMpoll,21 ;TM poll from: SPIRE  
3=RTaccessSA

[SubFrame29]  
1=TMpacket,21 ;TM packet from: SPIRE  
2=RTaccessSA

[SubFrame30]  
1=TMpoll,21 ;TM poll from: SPIRE  
2=RTaccessSA

[SubFrame31]  
1=TMpacket,21 ;TM packet from: SPIRE  
2=TMpoll,16 ;TM poll from: HIFI  
3=RTaccessSA

[SubFrame32]

```
1=TMpacket,16 ;TM packet from: HIFI
2=RTaccessSA

[SubFrame33]
1=TimeSync ;Time distribution broadcast
2=TCpacket ;TC packet to: SPIRE
3=TMPoll,21 ;TM poll from: SPIRE
4=RTaccessSA

[SubFrame34]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame35]
1=TMPoll,21 ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame36]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame37]
1=TMPoll,21 ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame38]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame39]
1=TMPoll,21 ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame40]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame41]
1=TMPoll,21 ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame42]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame43]
1=TMPoll,21 ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame44]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame45]
1=TMPoll,21 ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame46]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame47]
1=TMPoll,21 ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame48]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame49]
1=TCpacket ;TC packet to: HIFI
```

```
2=TMpoll,21 ;TM poll from: SPIRE
3=RTaccessSA

[SubFrame50]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame51]
1=TMpoll,21 ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame52]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame53]
1=TMpoll,21 ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame54]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame55]
1=TMpoll,21 ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame56]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame57]
1=TMpoll,21 ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame58]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame59]
1=TMpoll,21 ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame60]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame61]
1=TMpoll,21 ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame62]
1=TMpacket,21 ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame63]
1=RTaccessSA
```

**Annex 6: HP-112000-ASED-NC-1375: Source Sequence Counter Errors on CCS**

Tuesday August 23 2005 8:50 AM

|  |                                       |  |             |
|--|---------------------------------------|--|-------------|
| <b>Company</b><br>ESTEC  | <b>Project Name</b><br>HERSCHEL-PANCK | NCR-No: HP-112000-ASED-NC-1375   |             |
|  |                                       | Related internal NCR-No:   |             |
|  |                                       | Critical Item: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Revision: 0 |
|  |                                       | Page 1 of 1  |             |
| <b>Nonconformance Report</b>   |                                       |  |             |
| NCR Title: Source Sequence Counter Errors on CCS   |                                       |  |             |
| NC item Identification: SPIRE  |                                       |  |             |
| Next Higher Assembly: HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)   |                                       |  |             |
| Drawing No:  |                                       | Sr No:   |             |
| Procedure No:  |                                       |  |             |
| Supplier: SPIRE  |                                       | Purchase Order:  |             |
| Subsystem:   |                                       | Model: EQM   |             |
| <b>NC Observation</b>  |                                       | NC Detected During: Test   |             |
| Date: 22-AUG-05 Location: ASEED OTN  |                                       |  |             |
| Description of Nonconformance:   |                                       | Requirements Violated  |             |
| <p>During the SFT a SSC (Source Sequence Count) error was detected. This means that packets arrive at the CCS in a different order as they were produced by the instrument.</p> <p>2005.234.14.15.49.260 Packet APID/Type/Style 1280/5/1 SSC 249: SSC check failed, last SSC was 225<br/>                 2005.234.14.15.49.026 Packet APID/Type/Style 1280/3/25 SSC 225: SSC check failed, last SSC was 214<br/>                 2005.234.14.15.48.992 Packet APID/Type/Style 1280/3/25 SSC 214: SSC check failed, last SSC was 248<br/>                 2005.234.14.15.48.243 Packet APID/Type/Style 1280/1/1 SSC 226: SSC check failed, last SSC was 224<br/>                 2005.234.14.15.47.809 Packet APID/Type/Style 1280/5/1 SSC 215: SSC check failed, last SSC was 213</p> <p>Further analysis needs to show where the problem is. On the IEGSE, the packets arrive in burst. This might be related to this.</p> |                                       |  |             |
| Initiator: Date, Name and Signature: 23-AUG-05 S. Ilse   |                                       |  |             |
| Date:<br>Name:<br>Signature:   |                                       |  |             |



**Annex 7: HP-112000-ASED-NC-1376: Initial Value of TM5N is wrong in procedure**

Tuesday August 23 2005 8:47 AM

|  |  |  |            |
|--|--|--|------------|
| <b>Company</b><br>ESTEC  | <b>Project Name</b><br>HERSCHEL-PLANCK | NCR-No: HP-112000-ASED-NC-1376   |            |
|  |  | Related Internal NCR-No:   |            |
|  |  | Critical Item: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Revision 0 |
|  |  | Page 1 of 1  |            |
| <b>Nonconformance Report</b>   |  |  |            |
| NCR Title: Initial Value of TM5N is wrong in procedure   |  |  |            |
| NC Item Identification: SPIRE  |  |  |            |
| Next Higher Assembly: HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)   |  |  |            |
| Drawing No   |  | Sr No.   |            |
| Procedure No   |  |  |            |
| Supplier: SPIRE  |  | Purchase Order   |            |
| Subsystem  |  | Model  | EQM        |
| <b>NC Observation</b><br>Date: 22-AUG-05 Location: ASED OTN  |  | NC Detected During: Test   |            |
| Description of Nonconformance  |  | Requirements Violated  |            |
| On page 6/18 of SPIRE-RAL-PRC-002494, in test SFT-SPIRE-CCS-FUNC-SCU-01. The initial value of parameter TM5N is expected to be 0. Analysis of the initial housekeeping shows however a value of 00003FFF. This seems to be a problem in the OBSW. SPIRE to change procedure. |  |  |            |
| Initiator: Date, Name and Signature: 23-AUG-05 S. Ilse   |  |  |            |
| Date:<br>Name:<br>Signature:   |  |  |            |

| Name                    | Dep./Comp.   |   | Name                             | Dep./Comp. |
|-------------------------|--------------|---|----------------------------------|------------|
| Alberti von Mathias Dr. | AOE22        |   | Sonn Nico                        | AOE51      |
| Barlage Bernhard        | AED11        |   | Steininger Eric                  | AED44      |
| Bayer Thomas            | AOA52        | X | Stritter Rene                    | AED11      |
| Brune Holger            | AOA55        |   | Thörmer Klaus-Horst Dr.          | OTN/AED65  |
| Fehringer Alexander     | AOE13        |   | Wagner Klaus                     | AOE22      |
| X Fricke Wolfgang Dr.   | AED 65       | X | Wietbrock Walter                 | AET12      |
| Geiger Hermann          | AOA52        |   | Wöhler Hans                      | AOE22      |
| Gerner Willi            | AED11        |   | Wössner Ulrich                   | ASE442     |
| Grasl Andreas           | OTN/AOA54    |   |                                  |            |
| Grasshoff Brigitte      | AET12        |   |                                  |            |
| Hauser Armin            | AOE22        |   |                                  |            |
| X Hendry David          | Terma Resid. |   |                                  |            |
| Hengstler Reinhold      | AOA 5        |   |                                  |            |
| Hinger Jürgen           | AOE22        | X | Alcatel                          | ASP        |
| Hofmann Rolf            | ASE442       | X | ESA/ESTEC                        | ESA        |
| X Hohn Rüdiger          | AED65        |   | <b>Instruments:</b>              |            |
| Huber Johann            | AOA52        |   | MPE (PACS)                       | MPE        |
| Hund Walter             | ASE442       | X | RAL (SPIRE)                      | RAL        |
| X Idler Siegmund        | AED432       |   | SRON (HIFI)                      | SRON       |
| X Ilsen Stijn           | Terma Resid. |   | <b>Subcontractors:</b>           |            |
| Ivány von András        | FAE22        |   | Air Liquide, Space Department    | AIR        |
| Jahn Gerd Dr.           | AOE22        |   | Air Liquide, Space Department    | AIRS       |
| Kalde Clemens           | APE3         |   | Air Liquide, Orbital System      | AIRT       |
| Kameter Rudolf          | OTN/AOA54    |   | Alcatel Bell Space               | ABSP       |
| Kettner Bernhard        | AET42        |   | Astrium Sub-Subsyst. & Equipment | ASSE       |
| Knoblauch August        | AET32        |   | Austrian Aerospace               | AAE        |
| Koelle Markus           | AOA53        |   | Austrian Aerospace               | AAEM       |
| X Kroeker Jürgen        | AED65        |   | APCO Technologies S. A.          | APCO       |
| Kunz Oliver Dr.         | AOE22        |   | Bieri Engineering B. V.          | BIER       |
| Lamprecht Ernst         | OTN/ASI21    |   | BOC Edwards                      | BOCE       |
| Lang Jürgen             | ASE442       |   | Dutch Space Solar Arrays         | DSSA       |
| Langenstein Rolf        | AED15        |   | EADS CASA Espacio                | CASA       |
| Langfermann Michael     | AOA51        |   | EADS CASA Espacio                | ECAS       |
| Mack Paul               | OTN/AOA54    |   | EADS Space Transportation        | ASIP       |
| Müller Jörg             | AOA52        |   | Eurocopter                       | ECD        |
| Müller Ralf             | FAE22        |   | European Test Services           | ETS        |
| Peltz Heinz-Willi       | AOE13        |   | HTS AG Zürich                    | HTSZ       |
| Pietroboni Karin        | AED65        |   | Linde                            | LIND       |
| Platzer Wilhelm         | AED22        |   | Patria New Technologies Oy       | PANT       |
| Reichle Konrad          | AOA52        |   | Phoenix, Volkmarsen              | PHOE       |
| Reuß Friedhelm          | AED62        |   | Prototech AS                     | PROT       |
| X Ruhe Wolfgang         | AED65        |   | QMC Instruments Ltd.             | QMC        |
| Runge Axel              | OTN/AOA54    |   | Rembe, Brilon                    | REMB       |
| Sachsse Bernt           | AED21        |   | Rosemount Aerospace GmbH         | ROSE       |
| Schink Dietmar          | AED44        |   | RYMSA, Radiación y Microondas    | RYM        |
| X Schlosser Christian   | OTN/AOA54    |   | SENER Ingenieria SA              | SEN        |
| Schmidt Rudolf          | FAE22        |   | Stöhr, Königsbrunn               | STOE       |
| Schweickert Gunn        | AOE22        |   | Terma A/S, Herlev                | TER        |