



SPIRE Document

CQM Functional Test Report - 1
S.D. Sidher

Ref:	SPIRE-RAL-REP-002084
Issue:	Issue 1.0
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1. INTRODUCTION

This document gives a summary of the CQM functional test results from the first campaign conducted during Jan/Feb 2004. These tests also included the warm functional tests before and after the test cryostat was pumped down and cooled to 4K, as well as the cold functional tests.

The full functionality of the Herschel Common Science System (HCSS) was not used in these tests for the following reasons:

1. All the test scripts had already been written in TCL and tested with the warm electronics and the FPU simulator.
2. The Common Uplink System (CUS) functionality needed to run all the tests from the HCSS was not available at the time.
3. The HCSS CUS command language scripts were not written at this stage.
4. Full associations between the telecommands sent and the telemetry generated could not be made with the available version of the HCSS

The entire emphasis was therefore placed on performing the tests and monitoring the progress in real time using SCOS 2000. It was ensured that all the housekeeping and science telemetry, as well as the telecommand information, was safely ingested inside the HCSS database for subsequent retrieval, playback and analysis with QLA.

1.1 Scope

This report judges the success or failure of a functional test by checking that

- the commands were correctly received and executed by the instrument subsystem
- no error or exception reports were generated
- the appropriate telemetry parameters changed in an expected manner

No detailed analyses of the test data has been performed at this stage.

1.2 Reference Documents

RD01 Functional Test Specifications, SPIRE-RAL-DOC-001652, Issue 1.0 (draft 2), 5th Dec 2003

RD02 SPIRE Data ICD (SPIRE-RAL-PRJ-001078), Issue 1.1 (Draft 3), 30th Aug 2003

RD03 SPIRE CQM Thermal Balance Test Specification, SPIRE-RAL-DOC-00????, Issue D1, 2nd Dec 2003.

RD04 SPIRE EGSE-ILT Startup Procedures, SPIRE-RAL-DOC-001630, Issue 0.7, 24th June 2003

RD05 DRCU Switch On Procedure, SPIRE-RAL-NOT-001899, Issue D1, 10th Dec 2003



1.3 Functional Test Configuration

1.3.1 SPIRE EGSE Setup

- CDMS Simulator version 2.4
- SCOS 2000 2.3e Patch Level 3 + TOPE - running on a Linux SuSE 7.3 system
- OBS v1.3G
- HCSS v0.1.4 ((Build #263 plus patches) – includes the EGSE router and gateway
- SPIRE CQM MIB: MIBDATA_SPIRE_0_6 (stored in the HCSS on 04-11-2003)
- Test Facility Control System Server v1.0
- Test Fourier Transform Spectrometer Server (TFTS v1.0)
- QLA (2.0 Release Candidate 2) – running on a Linux SuSE 7.3 system
- EGSE Test Tool PacketDisplay to display TC and TM packet contents

2. PRE-TEST PREPARATIONS

Dry runs with the functional test scripts revealed an OBS problem which had not been seen earlier (SPIRE SPR-0288). The OBS was found to reject telecommands in a random manner. The result of this serious problem was that some of the pre-defined TCL test scripts could not be run automatically, except in the simplest test cases, without the risk of leaving the instrument in an unpredictable state. As the TOPE debugger environment was not available with SCOS 2.3e P3, it was decided to conduct the tests using the SCOS 2000 Command Manual Stack. One negative consequence of this approach was that these tests lasted longer but, on the positive side, they were fairly easy to control and coordinate.

2.1 Assumptions

Before the start of functional tests the SPIRE EGSE was set up and configured using RD03 and RD04. For each set of tests the following minimum steps were also executed beforehand if they were not already activated.

Step #	Description	Status	Test Step Status/
		Parameter Values Before/After	Success/Fail
1	Start TM ingestion	TM ingestion process running	Success
2	Run Procedure PROC_OPER_DPU_ON	OBS running	Success
3	Run Procedure PROC_OPER_DRCU_ON	DCU and SCU on. Parameter MONSTAT=0/5	Success

3. SHORT WARM FUNCTIONAL TESTS – INSIDE CRYOSTAT (20/01/04)



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Test Name	Description	Key Parameter Values Before/After or ranges	Test Status/Success/Fail																																		
FUNC-SCU-03	SCU DC Thermometry Check	SCUTEMPSTAT=0/0xFFFF SCU temperature channel values changed: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>SCU Temperature</u></th> <th style="text-align: left;"><u>Raw Values</u></th> </tr> </thead> <tbody> <tr><td>PUMPHRTEMP</td><td>1203 / 32768</td></tr> <tr><td>PUMPHSTEMP</td><td>1522 / 32768</td></tr> <tr><td>EVAPHSTEMP</td><td>1620 / 32768</td></tr> <tr><td>SHUNTTEMP</td><td>60484 / 32768</td></tr> <tr><td>SOBTEMP</td><td>139 / 45451</td></tr> <tr><td>SL0TEMP</td><td>1664 / 32768</td></tr> <tr><td>PL0TEMP</td><td>62021 / 32768</td></tr> <tr><td>OPTTEMP</td><td>65400 / 32768</td></tr> <tr><td>BAFTEMP</td><td>65012 / 32768</td></tr> <tr><td>BSMIFTEMP</td><td>65007 / 32768</td></tr> <tr><td>SCAL2TEMP</td><td>65170 / 32768</td></tr> <tr><td>SCAL4TEMP</td><td>64718 / 32768</td></tr> <tr><td>SCALTEMP</td><td>65229 / 32768</td></tr> <tr><td>SMECIFTEMP</td><td>0 / 63217</td></tr> <tr><td>SMECTEMP</td><td>65437 / 58402</td></tr> <tr><td>BSMTEMP</td><td>7 / 32768</td></tr> </tbody> </table>	<u>SCU Temperature</u>	<u>Raw Values</u>	PUMPHRTEMP	1203 / 32768	PUMPHSTEMP	1522 / 32768	EVAPHSTEMP	1620 / 32768	SHUNTTEMP	60484 / 32768	SOBTEMP	139 / 45451	SL0TEMP	1664 / 32768	PL0TEMP	62021 / 32768	OPTTEMP	65400 / 32768	BAFTEMP	65012 / 32768	BSMIFTEMP	65007 / 32768	SCAL2TEMP	65170 / 32768	SCAL4TEMP	64718 / 32768	SCALTEMP	65229 / 32768	SMECIFTEMP	0 / 63217	SMECTEMP	65437 / 58402	BSMTEMP	7 / 32768	
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FUNC-SCU-06	SCU AC Thermometry Check	SUBKSTAT=0/1 The SUBKTEMP channel value remained unchanged at 31911-31924.	Success																																		
FUNC-SCU-07	Cooler Heaters Check	SPHSV = 0 / 12713 EVHSV = 2 / 12715 SPHTRV = 0 / 14391	Success																																		
FUNC-SCU-04	PCAL Check	PCALV = 0 / 11017 PCALCURR = 0 / 9061	Success																																		
FUNC-SCU-05	SCAL Check	SCAL2V = 1 / 12521 SCAL4V = / 12510 SCAL2CURR = 1 / 14076 SCAL4CURR = 0 / 14071	Success																																		



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FUNC-MCU-01	MCU Boot Procedure	<p>MCUIFSTAT = 0 / 0x0038 MCUIFCTRL = 0 / 7 MCUSSDEL = 0 / 3 MCUMACTEMP, MCUSMECTEMP and MCUBSMTEMP parameter values changed.</p> <p>MCUP15V = 0 / 0x9A8E MCUM15V = 0 / 0x6574 MCUP13V = 0 / 0x94C4 MCUM13V = 0 / 0x7FFF MCUP5V = 0 / 0x96FE</p>	<p>Partial Success.</p> <p>Sometimes the Over Current Limiter was triggered preventing the MCU from switching on.</p> <p>NCR_MCU_123 already raised by CEA. To be fixed for MCU QM1.</p>
Test Name	Description	Key Parameter Values Before/After or ranges	Test Status/ Success/Fail
FUNC-DCU-11: Photometer LW array	Put the Photometer into Standby mode and generate PLW science data. Commanded values: PHOTSAMPFREQ = 0xc PHOTBIASMODE = 0xFF PHOTBIASFREQ = 0x62 PLWBIAS = 3.92V PLWPHASE = 0xA0 PMLWJFERSTAT = 0x30 PLWJFET1V = 0x80 PLWJFET2V = 0x80	<p>PLW science data frames successfully generated.</p> <p>QLA displayed the PLW science data.</p>	Success
PROC-OPER-PDO:	Procedure to switch off Photometer detectors and JFETs		Success
PROC-OPER-LIO:	Procedure to switch Photometer LIAs off		Success



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4. WARM FUNCTIONAL TESTS – AFTER PUMP DOWN (23/01/04)

It was ensured that the vacuum chamber pressure was at $\sim 10^{-5}$ mbar before the commencement of these tests.

Test Name	Description	Key Parameter Values Before/After or ranges	Test Status/Success/Fail																																		
FUNC-SCU-03	SCU DC Thermometry Check	SCUTEMPSTAT=0/0xFFFF SCU temperature channel values changed: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">SCU Temperature</th> <th style="text-align: left; border-bottom: 1px solid black;">Raw Values</th> </tr> </thead> <tbody> <tr><td>PUMPHRTEMP</td><td>1201 / 32768</td></tr> <tr><td>PUMPHSTEMP</td><td>1524 / 32768</td></tr> <tr><td>EVAPHSTEMP</td><td>1650 / 32768</td></tr> <tr><td>SHUNTTEMP</td><td>60509 / 32768</td></tr> <tr><td>SOBTEMP</td><td>142 / 45526</td></tr> <tr><td>SL0TEMP</td><td>1602 / 32768</td></tr> <tr><td>PL0TEMP</td><td>62105 / 32768</td></tr> <tr><td>OPTTEMP</td><td>65403 / 32768</td></tr> <tr><td>BAFTEMP</td><td>65025 / 32768</td></tr> <tr><td>BSMIFTEMP</td><td>65037 / 32768</td></tr> <tr><td>SCAL2TEMP</td><td>65173 / 32768</td></tr> <tr><td>SCAL4TEMP</td><td>64718 / 32768</td></tr> <tr><td>SCALTEMP</td><td>65230 / 32768</td></tr> <tr><td>SMECIFTEMP</td><td>65534 / 63215</td></tr> <tr><td>SMECTEMP</td><td>65439 / 58411</td></tr> <tr><td>BSMTEMP</td><td>17 / 32768</td></tr> </tbody> </table>	SCU Temperature	Raw Values	PUMPHRTEMP	1201 / 32768	PUMPHSTEMP	1524 / 32768	EVAPHSTEMP	1650 / 32768	SHUNTTEMP	60509 / 32768	SOBTEMP	142 / 45526	SL0TEMP	1602 / 32768	PL0TEMP	62105 / 32768	OPTTEMP	65403 / 32768	BAFTEMP	65025 / 32768	BSMIFTEMP	65037 / 32768	SCAL2TEMP	65173 / 32768	SCAL4TEMP	64718 / 32768	SCALTEMP	65230 / 32768	SMECIFTEMP	65534 / 63215	SMECTEMP	65439 / 58411	BSMTEMP	17 / 32768	Success
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BSMIFTEMP	65037 / 32768																																				
SCAL2TEMP	65173 / 32768																																				
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FUNC-SCU-07	Cooler Heaters Check	SPHSV = 65534 / 12713 EVHSV = 65534 / 12715 SPHTRV = 1 / 14391	Success																																		
FUNC-SCU-04	PCAL Check	PCALV = 1 / 11010 PCALCURR = 0 / 9061	Success																																		
FUNC-SCU-05	SCAL Check	SCAL2V = 1 / 12518 SCAL4V = / 12512 SCAL2CURR = 1 / 14074 SCAL4CURR = 0 / 14072	Success																																		



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FUNC-MCU-01	MCU Boot Procedure	<p>MCUIFSTAT = 0 / 0x0038 MCUIFCTRL = 0 / 7 MCUSSDEL = 0 / 3 MCUMACTEMP, MCUSMECTEMP and MCUBSMTEMP parameter values changed.</p> <p>MCUP15V = 0 / 0x9A8E MCUM15V = 0 / 0x6574 MCUP13V = 0 / 0x94C4 MCUM13V = 0 / 0x7FFF MCUP5V = 0 / 0x96FE</p>	<p>Partial Success.</p> <p>Sometimes the Over Current Limiter was triggered preventing the MCU from switching on. NCR_MCU_123 already raised by CEA. To be fixed for MCU QM1.</p>
Test Name	Description	Key Parameter Values Before/After or ranges	Test Status/ Success/Fail
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PROC-OPER-PDO:	Procedure to switch off Photometer detectors and JFETs		Success
PROC-OPER-LIO:	Procedure to switch Photometer LIAs off		Success



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5. FUNCTIONAL TESTS WITH T ~ 90 K (27/01/04)

Test Name	Description	Key Parameter Values Before/After or ranges	Test Status/ Success/Fail																																		
FUNC-SCU-03	SCU DC Thermometry Check	SCUTEMPSTAT=0x0FFFF SCU temperature channel values changed to: <table border="1"> <thead> <tr> <th>SCU Temperature</th> <th>Raw Values</th> </tr> </thead> <tbody> <tr><td>PUMPHTRTEMP</td><td>37729</td></tr> <tr><td>PUMPHSTEMP</td><td>32768</td></tr> <tr><td>EVAPHSTEMP</td><td>32768</td></tr> <tr><td>SHUNTTEMP</td><td>32768</td></tr> <tr><td>SOBTEMP</td><td>57509</td></tr> <tr><td>SL0TEMP</td><td>32768</td></tr> <tr><td>PL0TEMP</td><td>32768</td></tr> <tr><td>OPTTEMP</td><td>42013</td></tr> <tr><td>BAFTEMP</td><td>40602</td></tr> <tr><td>BSMIFTEMP</td><td>32768</td></tr> <tr><td>SCAL2TEMP</td><td>53155</td></tr> <tr><td>SCAL4TEMP</td><td>52849</td></tr> <tr><td>SCALTEMP</td><td>32768</td></tr> <tr><td>SMECIFTEMP</td><td>63801</td></tr> <tr><td>SMECTEMP</td><td>60233</td></tr> <tr><td>BSMTEMP</td><td>32768</td></tr> </tbody> </table>	SCU Temperature	Raw Values	PUMPHTRTEMP	37729	PUMPHSTEMP	32768	EVAPHSTEMP	32768	SHUNTTEMP	32768	SOBTEMP	57509	SL0TEMP	32768	PL0TEMP	32768	OPTTEMP	42013	BAFTEMP	40602	BSMIFTEMP	32768	SCAL2TEMP	53155	SCAL4TEMP	52849	SCALTEMP	32768	SMECIFTEMP	63801	SMECTEMP	60233	BSMTEMP	32768	Success
SCU Temperature	Raw Values																																				
PUMPHTRTEMP	37729																																				
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SMECTEMP	60233																																				
BSMTEMP	32768																																				
FUNC-SCU-06	SCU AC Thermometry Check	SUBKSTAT=0/1 The SUBKTEMP channel value remained essentially unchanged at 31891-31917.	Success																																		
FUNC-SCU-07	Cooler Heaters Check	SPHSV = 0 / 12727 EVHSV = 65534 / 12736 SPHTRV = 1 / 14393	Success																																		
FUNC-SCU-04	PCAL Check	PCALV = 2 / 11050 PCALCURR = 65535 / 9062	Success																																		
FUNC-SCU-05	SCAL Check	SCAL2V = 0 / 12547 SCAL4V = 1 / 12541 SCAL2CURR = 1 / 14075 SCAL4CURR = 1 / 14072	Success																																		



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FUNC-MCU-01	MCU Boot Procedure	<p>MCUIFSTAT = 0 / 0x0038 MCUIFCTRL = 0 / 7 MCUSSDEL = 0 / 3 MCUMACTEMP, MCUSMECTEMP and MCUBSMTEMP parameter values changed.</p> <p>MCUP15V = 0 / 0x9A8E MCUM15V = 0 / 0x6574 MCUP13V = 0 / 0x94C4 MCUM13V = 0 / 0x7FFF MCUP5V = 0 / 0x96FE</p>	<p>Partial Success.</p> <p>Sometimes the Over Current Limiter was triggered preventing the MCU from switching on.</p> <p>NCR_MCU_123 already raised by CEA. To be fixed for MCU QM1.</p>
Test Name	Description	Key Parameter Values Before/After or ranges	Test Status/ Success/Fail
FUNC-DCU-11: Photometer LW array	<p>Put the Photometer into Standby mode and generate PLW science data.</p> <p>Commanded values: PHOTSAMPFREQ = 0xc PHOTBIASMODE = 0xFF PHOTBIASFREQ = 0x62 PLWBIAS = 3.92V PLWPHASE = 0xA0 PMLWJFETSTAT = 0x30 PLWJFET1V = 0x80 PLWJFET2V = 0x80</p>	<p>PLW science data frames successfully generated.</p> <p>QLA displayed the PLW science data.</p>	Success
PROC-OPER-PDO:	Procedure to switch off Photometer detectors and JFETs		Success
PROC-OPER-LIO:	Procedure to switch Photometer LIAs off		Success

6. COLD FUNCTIONAL TESTS WITH THE FPU < 10K (29/01/04)

Test Name /OBSID	Description	Key Parameter Values Before/After or ranges	Test Status/ Success/Fail
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FUNC-SCU-03 /	SCU DC Thermometry Check	<p>Not performed as the DC Thermometry was already on.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>SCU Temperature</u></th> <th style="text-align: left;"><u>Raw Values</u></th> </tr> </thead> <tbody> <tr><td>PUMPHTRTEMP</td><td>62286-62310</td></tr> <tr><td>PUMPHSTEMP</td><td>61707-61728</td></tr> <tr><td>EVAPHSTEMP</td><td>61331-61355</td></tr> <tr><td>SHUNTTEMP</td><td>59220-59448</td></tr> <tr><td>SOBTEMP</td><td>64065-64071</td></tr> <tr><td>SL0TEMP</td><td>55451-55545</td></tr> <tr><td>PL0TEMP</td><td>52139-52181</td></tr> <tr><td>OPTTEMP</td><td>60602-60609</td></tr> <tr><td>BAFTEMP</td><td>59842-59848</td></tr> <tr><td>BSMIFTEMP</td><td>55978-55986</td></tr> <tr><td>SCAL2TEMP</td><td>64967-64974</td></tr> <tr><td>SCAL4TEMP</td><td>64958-64964</td></tr> <tr><td>SCALTEMP</td><td>59507-59515</td></tr> <tr><td>SMECIFTEMP</td><td>64953-64958</td></tr> <tr><td>SMECTEMP</td><td>63801-63808</td></tr> <tr><td>BSMTEMP</td><td>47249-47259</td></tr> </tbody> </table>	<u>SCU Temperature</u>	<u>Raw Values</u>	PUMPHTRTEMP	62286-62310	PUMPHSTEMP	61707-61728	EVAPHSTEMP	61331-61355	SHUNTTEMP	59220-59448	SOBTEMP	64065-64071	SL0TEMP	55451-55545	PL0TEMP	52139-52181	OPTTEMP	60602-60609	BAFTEMP	59842-59848	BSMIFTEMP	55978-55986	SCAL2TEMP	64967-64974	SCAL4TEMP	64958-64964	SCALTEMP	59507-59515	SMECIFTEMP	64953-64958	SMECTEMP	63801-63808	BSMTEMP	47249-47259	Success
<u>SCU Temperature</u>	<u>Raw Values</u>																																				
PUMPHTRTEMP	62286-62310																																				
PUMPHSTEMP	61707-61728																																				
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SOBTEMP	64065-64071																																				
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BAFTEMP	59842-59848																																				
BSMIFTEMP	55978-55986																																				
SCAL2TEMP	64967-64974																																				
SCAL4TEMP	64958-64964																																				
SCALTEMP	59507-59515																																				
SMECIFTEMP	64953-64958																																				
SMECTEMP	63801-63808																																				
BSMTEMP	47249-47259																																				
FUNC-SCU-06 / 0x203	SCU AC Thermometry Check	SUBKSTAT=0/1 SUBKTEMP = 14 / 2.2 K (Raw: 31921 / 31708)	Success																																		
Test Name /OBSID	Description	Key Parameter Values Before/After or ranges	Test Status/ Success/Fail																																		
FUNC-SCU-02 / 0x204	SCU Science Data Check	31 SCU science frames generated	Success																																		
FUNC-SCU-07 / 0x205	Cooler Heaters Check	SPHSV = 65534 / 12775 EVHSV = 65533 / 12779 SPHTRV = 65535 / 14391 SUBKTEMP = 2.0 / 2.2 K (Raw value: 31693 / 31693)	Success																																		
FUNC-SCU-08 / 0x206	SCU Test Pattern Test	One SCU science packet with 10 SCU science frames.	Success																																		
FUNC-SCU-04 / 0x207	PCAL Check	PCALV = 2 / 11100 PCALCURR = 65535 / 9062	Success																																		
FUNC-PCAL-01 / 0x208	PCAL Characterisation Test	PCALV and PCALCURR values changed in response to the commands sent. QLA displayed the PCAL data.	Success																																		



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FUNC-SCU-05 / 0x209	SCAL Check	SCAL2V = 1 / 12553 SCAL4V = 65461 / 69 SCAL2CURR = 2 / 14075 SCAL4CURR = - 65534 / 4058	Partial Success (SCAL4 voltages and currents do not change in accordance to commanded values). NCR HR-SP-RAL-NCR-64 raised.
FUNC-SCAL-01 / 0x20A	SCAL Characterisation Test	SCAL2V and SCAL2CURR values changed in response to the commands sent. Voltage drop across SCAL 4% (SCAL4V) was very small and not in proportion to the applied current (SCAL4CURR) QLA displayed the SCAL data.	Partial Success (SCAL4 voltages and currents do not change in accordance to commanded values). Same NCR as above.
FUNC-MCU-01 / 0x20B	MCU Boot Procedure	MCUIFSTAT = 0 / 0x0038 MCUIFCTRL = 0 / 7 MCUSSDEL = 0 / 3 MCUMACTEMP, MCUSMECTEMP and MCUBSMTEMP parameter values changed. MCUP15V = 0 / 0x9A8E MCUM15V = 0 / 0x6574 MCUP13V = 0 / 0x94C4 MCUM13V = 0 / 0x7FFF MCUP5V = 0 / 0x96FE	Fail Sometimes the Over Current Limiter was triggered preventing the MCU from switching on. NCR_MCU_123 already raised by CEA. To be fixed for MCU QM1.
FUNC-MCU-02 / 0x20C	MCU Science Packet Generation Check	MCUFRAMECNT parameter increased as expected	Success
Test Name /OBSID	Description	Key Parameter Values Before/After or ranges	Test Status/ Success/Fail
FUNC-MCU-03 / 0x20D	MCU Science Data Check		Success
FUNC-MCU-04 / 0x20E	MCU Test Pattern Test	10 seconds of MCU Test Pattern data generated	Success
PROC-OPER-MCO /	MCU Switch Off Procedure		Success



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FUNC-DCU-11: Photometer LW array / 0x213	Put the Photometer into Standby mode and generate PLW science data. Commanded values: PHOTSAMPFREQ = 0xc PHOTBIASMODE = 0xFF PHOTBIASFREQ = 0x62 PLWBIAS = 3.92V PLWPHASE = 0xA0 PMLWJFETSTAT = 0x30 PLWJFET1V = 0x80 PLWJFET2V = 0x80	PLW science data frames successfully generated. QLA displayed the PLW science data.	Success
PROC-OPER-PDO:	Procedure to switch off Photometer detectors and JFETs		Success
PROC-OPER-LIO:	Procedure to switch Photometer LIAs off		Success



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7. WARM FUNCTIONAL TESTS – FOLLOWING FPU WARMUP (13/02/04)

Test Name /OBSID	Description	Key Parameter Values Before/After or ranges	Test Status/ Success/Fail
FUNC-SCU-01 / 0x237	SCU Science Packet Generation Check	31 frames received as expected	Success
FUNC-SCU-03 /	SCU DC Thermometry Check	Not performed as the DC Thermometry was already on.	Success
FUNC-SCU-06 / 0x238	SCU AC Thermometry Check	Not Applicable as FPU warm. Performed regardless	Success
FUNC-SCU-02 /	SCU Science Data Check	Not necessary as QLA test only	
FUNC-SCU-07 / 0x239	Cooler Heaters Check	Not necessary as FPU warm	Success
FUNC-SCU-08 / 0x23A	SCU Test Pattern Test	One SCU science packet with 10 SCU science frames.	Success
FUNC-SCU-04 / 0x23B	PCAL Check		Success
FUNC-PCAL-01 / 0x23D	PCAL Characterisation Test	PCALV and PCALCURR values changed in response to the commands sent	Success
FUNC-SCU-05 / 0x23E	SCAL Check		Success
FUNC-SCAL-01 / 0x23F	SCAL Characterisation Test	SCAL2V and SCAL2CURR values changed in response to the commands sent. SCAL4V and SCAL4CURR values changed in response to the commands sent.	Success
FUNC-MCU-01 /	MCU Boot Procedure	MCU already on	
FUNC-MCU-02 /	MCU Science Packet Generation Check	Not performed as it is the same as the next test	
FUNC-MCU-03 / 0x240	MCU Science Data Check		Success
FUNC-MCU-04 / 0x241	MCU Test Pattern Test	10 seconds of MCU Test Pattern data generated.	Success



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Test Name /OBSID	Description	Key Parameter Values Before/After or ranges	Test Status/ Success/Fail
PROC-OPER-MCO /	MCU Switch Off Procedure		Success
FUNC-DCU-01 / 0x242	DCU Science Packet Generation Check		Success
FUNC-DCU-02 / 0x244	DCU Science Data Check		Success
FUNC-DCU-03 / 0x245??	DCU Test Pattern Test		Success
PROC-OPER-LIO:	Procedure to switch Photometer LIAs off		Success
PROC-OPER-THO:	Procedure to switch off both SCU DC and AC Thermometry	SCUTEMPSTAT = 0xFFFF / 0 SUBKSTAT = 1 / 0	Success
PROC-OPER-DRO:	Procedure to switch off DRCU	MONSTAT = 5 / 0	Success
PROC-OPER-DPO:	Procedure to switch off DPU		Success



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8. CONCLUSIONS

The warm and cold functional tests conducted during the first CQM test campaign were largely successful, with the exception of cold functional test of the SCAL 4% source. The experience gained by the AIV team during the first CQM test campaign will be invaluable for the forthcoming second CQM test campaign.