SPIRE Integrated Module Test sequence for EQM testing
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Scope

Outline description of the sequence and procedures to be used during the SPIRE CQM Integrated Module Test (IMT) once integrated into the Herschel EQM Payload Module at EADS Astrium in Ottobrun. The pre-requisites for the test are briefly described followed by a table setting out the steps in the test sequence; the names of the procedures to be executed from CCS and the references to any manual procedures required for, for instance, switching on the DRCU; and the estimated duration of each part of the test.

Change notes

0.1	7 January 2005	Draft for checking – procedure names to be added/checked
1.0	5 April 2005	First issue name corrected to SPECIFIC from SHORT Specific procedure names added Manual procedures to be added after discussion with Astrium
2.0	15 April 2005	Re-titled from Specific Functional Test to Integrated Module Test. EMC tests removed to separate document.

Applicable Documents

AD1 SPIRE Functional Test Specification - SPIRE-RAL-DOC-001652
AD2 SPIRE COOLER RECYCLING SCOS PROCEDURE - SPIRE-RAL-PRC-002267

Reference Documents

Prerequisites for carry out the IMT

FPU is integrated onto HOB
WE integrated with CCE
WE integrated with harness and FPU
Warm functional test done
Cold functional test done at “4K” and “1.7K” as per AD1
FP is at nominal temperature and left in REDY mode – see transition diagram in AD1

Prerequisites for data analysis

SCOS is running and display screens are available with conversion curves loaded
QLA sequences ready for display of data and FITS output
IDL V 6.0 or later present on local machine (laptop if necessary) with access to FITS filestore via FTP or other method

Outline Test sequence:

Step	Description	Procedure Name	Estimated Duration
1	Check the noise in the PLW JFETs with shorted inputs versus Vss (detectors at ~2K)	CCS-SPT-NOISE-P	30 minutes
2	Noise versus bias using spectrometer side of instrument and STM JFETS	CCS-SPT-NOISEVBIAS-S	30 minutes
3	Analyse data – verify no excess system noise	BMS IDL code	
Thermal case 1			

Step	Description	Procedure Name	Estimated Duration
4	Switch off detectors	CCS-SPT-PDET_OFF CCS-SPT-SDET-OFF	
5	Recycle cooler	CCS-SPT-CREC	2 hours
6	Switch to Photometer Standby	CCS-SPT-PDET-ON CCS-SPT-RESET-OFFSETS-P *Requires manual procedure to set equivalent power in BSM coils*	10 minutes
7	Wait until temperature stabilises	N/A	TBD
7a	During stabilisation we can check noise versus bias level and frequency with reduced number of bias levels and frequencies or it will take all day	CCS-SPT-DNA-P	4 hours max
8	Analyse data – determine noise is o.k. and optimum frequency setting – analysis procedure exists	BMS/TLL IDL code	
Evaporator temperature must have stabilised before next test			
9	Set for clean bias frequency and nominal bias (~15 mV)	CCS-SPT-BIAS-FREQ	10 minutes
10	Phase up to maximise signal	CCS-SPT-PHASEUP-P	30 minutes (TBC)
11	Loadcurve at fixed frequency and phase	CCS-SPT-LC-P	15 minutes (TBC)
12	Loadcurve at fixed frequency and phase+90	CCS-SPT-LC-PLUS90-P	15 minutes (TBC)
13	Loadcurve at fixed frequency and phase-90	CCS-SPT-LC-MINUS90-P	15 minutes (TBC)
14	Analyse data – determine detector temperature and estimate background loading	BMS IDL code	
15	Set detector for optimum bias setting and reset offsets	CCS-SPT-BIAS-AMPL-P CCS-SPT-RESET-OFFSETS-P	10 minutes
16	Rephase detector at optimum bias setting	CCS-SPT-PHASEUP-P	10 minutes
17	Run PCAL static test to check calibration against CBB	CCS-SPT-PCAL-STATIC	15 minutes (TBC)
18	- Analyse data – determine absolute signal versus voltage calibration –	*Analysis code required*	
	Can now use SPIRE to determine ambient background for (almost) any setting of the cryo-cover	*Analysis code required*	
Now run other thermal cases			

Step	Description	Procedure Name	Estimated Duration
19	Photometer scan mode	No procedure required	
20	Photometer chop mode	*Requires procedure to manually apply power to BSM using external (GSE) supply*	
21	Switch photometer to spectrometer	CCS-SPT-PDET-OFF CCS-SPT-SDET-ON	
22	Spectrometer mode	*Requires procedure to manually power to SMEC using external (GSE) supply*	
Wait for cooler exhaustion approx 30-32 hours after recycle			
SPIRE/PACS parallel mode test			
23	Second Cooler recycle in conjunction with PACS	CCS-SPT-CREC	Start 25 minutes after PACS recycle Then 2 hours
24	Switch to SPIRE Photometer Standby	CCS-SPT-PDET-ON CCS-SPT-RESET-OFFSETS *Requires manual procedure to set equivalent power in BSM coils*	10 minutes (TBC)
25	Switch to SPIRE Parallel (scan)	CCS-SPT-PARALLEL	1 minute
Wait until temperatures have stabilised			
26	Switch to SPIRE Parallel (chop)	*Procedure will not be quite flight like – keep 10 Hz continuous sample and manually apply power to BSM coils via external (GSE) supply*	10 minutes
Other PACS modes? **Wait for cooler exhaustion**			