Scope

Outline description of the sequence and procedures to be used during the SPIRE CQM Short Performance Test (SPT) 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 SCOS and the references to any manual procedures required; 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

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 Short Performance Test

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 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)	FUNC-DCU-07P (AD1)	30 minutes
2	Noise versus bias using spectrometer side of instrument and STM JFETS	FUNC-DCU-10S (AD1)	30 minutes
3	Analyse data – verify no excess system noise	BMS IDL code	
Thermal case 1			
4	Recycle cooler	COOLER RECYCLE (AD2)	2 hours
5	Switch to Photometer Standby	*Procedure name?* *Requires manual procedure to set equivalent power in BSM coils*	10 minutes

SPIRE Technical Note

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SPIRE Short Performance Test sequence for EQM testing
B. Swinyard

Step	Description	Procedure Name	Estimated Duration
6	Wait until temperature stabilises	N/A	TBD
6a	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	DNA-P *Procedure name?*	4 hours max
7	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			
8	Set for clean bias frequency and nominal bias (~15 mV)	By Manual Command	10 minutes
9	Phase up to maximise signal	FUNC-DCU-08P_full FUNC-DCU-08P_short (AD1)	30 minutes (TBC)
10	Loadcurve at fixed frequency and phase	Mode_ILT_PERF_DAL_P_SinglePhase	15 minutes (TBC)
11	Loadcurve at fixed frequency and phase+90	Mode_ILT_PERF_DAL_P_SinglePhase	15 minutes (TBC)
12	Loadcurve at fixed frequency and phase-90	Mode_ILT_PERF_DAL_P_SinglePhase	15 minutes (TBC)
13	Analyse data – determine detector temperature and estimate background loading	BMS IDL code	
14	Set detector for optimum bias setting	By Manual Command	10 minutes
15	Rephase detector at optimum bias setting	FUNC-DCU-08P_short (AD1)	10 minutes
16	Run PCAL static test to check calibration against CBB	Mode_ILT_PERF_CPS_P	15 minutes (TBC)
17	- 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			
18	Photometer scan mode	No procedure required	
19	Photometer chop mode	*Requires procedure to manually apply power to BSM using external (GSE) supply*	
20	Switch photometer to spectrometer	*Procedure required*	

Step	Description	Procedure Name	Estimated Duration
21	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			
22	Second Cooler recycle in conjunction with PACS	COOLER RECYCLE (AD2) *See also SPIRE-RAL-NOT-002283*	Start 25 minutes after PACS recycle Then 2 hours
23	Switch to SPIRE Photometer Standby	*Procedure name?* *Requires manual procedure to set equivalent power in BSM coils*	10 minutes (TBC)
24	Switch to SPIRE Parallel (scan)	*Procedure to request full photometer data at 10 Hz*	1 minute
Wait until temperatures have stabilised			
25	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**			
Then EMC tests – see separate procedure			