

SPIRE Science Verification Review Phase 2

RAL, 26 September 2006

Status of SVR-1 Review Board Actions and Recommendations

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1. Introduction and scope

The SPIRE SVR-1 Review Board report (Herschel/HSC/REP/0745 - 31 Mar. 2006) made a number of specific actions and recommendations on SPIRE, ESA and PPARC. This note summarises these and provides a short update on relevant developments.

2. List of SVR-1 Board Actions and Recommendations

A = Action R - Recommendation

Item	Description	Status
A1	The SPIRE team is requested to provide a global ILT planning where the priority of each test has been clearly marked by 30 April.	Not done explicitly. Prioritised list was established and used to plan PFM-3. ESA through have had visibility through SJL.
A2	ESA should instruct SPIRE as to whether the FM FPU 'workmanship cryovibration' is required or not by 15 March. This should be done in such a way as to remove any possible doubt as to what will be required, so that any planning uncertainty can be removed. (Section 5.1.3)	Closed. Cold vibration is going ahead.
A3	ESA should communicate the output of the [EQM EMC] NRB discussions to SPIRE for action and to the SVR Board for information by 15 Mar 2006. (Section 5.2)	The NCR is still open pending conclusion of ongoing EMC test programme.
A4	The updated (v5) thermal model should be promptly delivered to SPIRE, ESA should provide the Board with a confirmation and a projected delivery date. (Section 5.3)	Open – not yet delivered.
A5	Existing applicable reports [on radiation effects] should be made by SPIRE available to the Board.	Not done. No SPIRE reports available. Literature papers to be compiled for SVR-2.
A6	The Board wants to learn from SPIRE what the plans are for constructing AOTs and when and how they will be tested.	Not done explicitly. AOT tests carried out in PFM-3 and additional tests planned for PFM-4. Working with HSC on all this.
A7	The applicable plans [for FPGA life-testing] should be made available by SPIRE to the Board.	Plan has not been passed to the Review Board, but ESA are aware of it. The necessary accumulated run time is being built up (and will be exceeded) in the course of normal testing at RAL. Both prime and redundant sides are being exercised and run-time is being logged.
R1	The Board recommends SPIRE to classify all desirable ILT activities into three	Prioritised list was established and used to plan PFM-3.

	main categories, and to consider them as 'ILT proposals' competing for the available ILT time.	
R2	The Board recommends SPIRE that knowledgeable consortium members be colocated at RAL to tackle analysis of test results. SPIRE should urgently identify suitably qualified individuals and seek agreements with their host institutes in order to establish a plan for how to best incorporate their expertise in the ILT programme. (Section 5.1.2)	Colocation of staff from Cardiff, Imperial College, JPL, ATC, LAM, worked well during PFM-3.
R3	The Board recommends ESA to reassess - as required - and reaffirm the necessity of the 'workmanship cryo-vibration' of the SPIRE FM FPU after FM SMEC integration. (Section 5.1.3)	Redundant with A2
R4	The Board recommends SPIRE to seek co-location of knowledgeable consortium members at RAL to boost the ILT team. In order to achieve this it could help if SPIRE would be able to help supporting such people.	Cardiff and Imperial staff support tests routinely. JPL co-location has helped with test planning and data analysis. Two additional RAL staff now trained. Other consortium members are not available for sufficiently long periods to be trained in ILT procedures and practices.
R5	The Board notes that ESA will allow SPIRE to continue its ILT programme for as long as is programmatically possible. In order to enable SPIRE to optimise its ILT planning there should be a continuing dialogue regarding need dates.	Such dialogue has been taking place and is continuing.
R6	The Board requests PPARC to enable SPIRE to continue its ILT programme for as long as is programmatically possible. In order to enable SPIRE to optimise its ILT planning there should be a continuing dialogue regarding needed resources.	PPARC understands and agrees with the need for adequate ILT. PPARC budget combined with ESA funding support for extended ILT is adequate for completion of the programme.
R7	The Board requests SPIRE to make timely preparations regarding potential ILT programme extensions. This includes a list of prioritised activities with best estimates of required times for execution. (Section 5.1.5)	Addressed in PFM-4 plan.
R8	The Board recommends SPIRE to accelerate data analysis with a goal to provide the threshold levels for H-and E- field susceptibility urgently.	Covered in EMC review. Threshold analysis has been done and may be refined in forthcoming PFM-4 and STM-2 test campaigns.
R9	The Board recommends SPIRE to assess in parallel the option of changing the filter characteristic of their internal cryo-harness to attenuate the frequencies, where susceptibility has been detected during E-field measurements, and to implement different filters for a fraction of the BDA signals/bias lines during next cold	Covered in EMC review. Extensive testing of effectiveness of filtering and other countermeasures was done in PFM-3. Results show that ferrite clamp-rings are most effective.

	test in order to assess any impact. (Section 5.2)	
R10	The Board recommends SPIRE to perform conducted susceptibility tests at instrument level during next cold test to confirm or disprove sensitivity in the relevant frequency range. (Section 5.2)	Covered in EMC review.
R11	The Board requests ESA to ensure that SPIRE receives the updated Herschel cryostat model (H5) in a timely fashion from Astrium-D. (Section 5.3)	Redundant with A4
R12	The Board recommends SPIRE to continue the thermal modelling activities with a goal to remove all uncertainties that can be removed by modelling and ILT measurements. In light of the fact that the EQM IMT programme did not reach its objective on this point, it will be prudent to revisit the IST IMT plan to ensure that it is adequate under the changed circumstances. (Section 5.3)	Updated thermal model not yet available.
R13	The Board recommends SPIRE together with ESA to reassess IMT and IST planning given that EQM IMT thermal verification risk has to be carried forward. (Section 5.3)	Redundant with A5
R14	SPIRE should provide information on expected impact on SPIRE sensitivity due to cosmic ray hits and eventual secondary radiation. Although the actual hit rate may be rather modest, it needs to be assessed how the associated cold and warm bolometer electronic chain reacts, once a radiation hit occurs. (Section 6.3)	It is confirmed that the design of the electronics chain is such that cosmic ray spikes will not lead to saturation.