

## 9 DEVELOPMENT AND VERIFICATION

### 9.1 GENERAL

These are guidelines that will be followed in constructing the instrument AIV programme:

- The instrument will be fully tested in compliance with the satellite level AIV plans as set out in the IID part A and reference documents therein.
- The AIV flow will be designed to allow the experience gained on each model to be fed into both the design and construction of the next model and into the AIV procedures to be followed for the next model.
- A cold test facility to house the instrument will be constructed that will represent as nearly as possible the conditions and interfaces within the FIRST cryostat.
- The instrument Quick Look Facility and commanding environment will be the same or accurately simulate the in-flight environment to facilitate the re-use of test command scripts and data analysis tools during in-flight operations.
- The EGSE and instrument Quick Look Facility will interface to FINDAS.
- Personnel from the ICC will be used to conduct the instrument functional checkout to allow an early experience of the instrument operations and to facilitate the transfer of expertise from the ground test team to the in-flight operations team.
- A more detailed description of the system level AIV sequence is given in reference document RD4. This document will form the basis of the *FIRST SPIRE Instrument Test Plan*, which will provide the baseline instrument test plans and detailed procedures and will be submitted for ESA approval.
- Detailed procedures for the sub-system level AIV will be produced by all sub-system responsible groups.
- Sub-systems will undergo individual qualification or acceptance programmes before integration into the instrument.
- Sub-systems will be operationally and functionally checked at the appropriate level before integration into the instrument.

### 9.2 MODEL PHILOSOPHY

The model philosophy to be adopted for the AIV of the SPIRE instrument will be in accordance with the requirements of the FIRST IID part A. The instrument models to be produced are:

- AVM – Avionics Model.
- CQM - Cryogenic Qualification Model.

- PFM - Proto Flight Model.
- FS - Flight Spare.

See section 5.16.1 for more details

### **9.3 MECHANICAL VERIFICATION**

TBD

### **9.4 THERMAL VERIFICATION**

TBD

### **9.5 VERIFICATION OF SCIENTIFIC PERFORMANCE**

TBD

### **9.6 ELECTRICAL TESTING**

TBD

### **9.7 EMC TESTING**

TBD