

SPIRE IHDR Guide to Documentation

The Instrument Hardware Design Review (IHDR) of the SPIRE instrument will be based on the documentation provided, with the opportunity to clarify any open points at the presentation meeting on the 9th and 10th July

Below are listed the documents that will be provided for the review. Section 1 contains those that are considered to be essential for the Review Board to be able to understand the current status of the project. Additional sections are provided for information or for the benefit of technical specialists participating in the review who may need to look at some aspects in more detail.

The documentation is meant to reflect the status of the project at the end of April 2003 although where available later documents have been provided.

The documents are available on the ESA Herschel/Plank Livelink system. The essential documents will be found in the folder **SPIRE/Review Documentation/IHDR, 9th and 10th July 2003**. The additional documentation is available in the normal SPIRE folders, notably the majority are in **SPIRE/Draft Documents/SPIRE-Draft** and its subfolders. In addition, board members will be able to access the documentation via the SPIRE FTP site from the due date (one month before the presentation) and will receive the complete documentation set on CD shortly thereafter.

The documentation is arranged in folders organised as follows:

IHDR

IHDR Documentation Guide (SPIRE-RAL-NOT-001678) (**this note**)

IHDR Preparation Plan and Agenda (SPIRE-UCF-MAG-001582)

1. Review Documentation

1.1 Top-level Requirements Documents

- Science Requirements Document (SPIRE-UCF-PRJ-000064)
- Instrument Requirements Document (SPIRE-RAL-PRJ-000034)
- Calibration Requirements Document (SPIRE-RAL-PRJ-001064)

1.2 Instrument Design Description and Development Plan

- SPIRE Design Description (SPIRE-RAL-PRJ-000620)
- SPIRE Sensitivity Models (SPIRE-QMW-NOT-000642)
- Instrument Development Plan, Consisting of:
 - SPIRE Instrument Development Plan (SPIRE-RAL-PRJ-000035). Note: this is the same as presented at the IBDR. It will be updated if and when the new AIV philosophy (given in the AIV Plan) has been accepted.
 - Major Milestone List (SPIRE-RAL-PRJ-000455)
 - SPIRE Instrument Schedule
 - AIV Plan (SPIRE-RAL-PRJ-00410)
- SPIRE CQM Instrument Level EMC Test Specification. (SPIRE-RAL-NOT-001681)
- SPIRE Block Diagram (SPIRE-RAL-DWG-0646)
- SPIRE Instrument Level Microphonic Susceptibility Testing (SPIRE-RAL-NOT-1672)

1.3 IID-B and related documents

- IID Part A (SPIRE-ESA-DOC-000178)
- IID Part B (SPIRE) (SPIRE-ESA-DOC-000275) – Version 2.3 draft.
- Thermal Model (SPIRE-RAL-PRJ-000728)

- FPU Mechanical Model (Structure FEA) – (SPIRE-MSS-PRJ-001141) – Note: this document will not be available on the 9th June. It will be added later.
- Harness Definition Document (SPIRE-RAL-PRJ-000608)
- SPIRE Straylight Model Reference Documents (SPIRE-RAL-NOT-001124)
- SPIRE Instrument Budgets (SPIRE-RAL-PRJ-000450)

1.4 On-Board Software

- OBS URD (SPIRE-IFS-PRJ-000444)
- OBS Software Specification Document (SPIRE-IFS-PRJ-001036) – Note: this document will not be available on the 9th June. It will be added later.
- Operating Modes for the SPIRE Instrument (SPIRE-RAL-PRJ-000320)
- Operating the SPIRE Instrument (SPIRE-RAL-DOC-000768)
- SPIRE Data ICD (SPIRE-RAL-PRJ-001078)

1.5 AIV Plan

- Warm Electronics Integration Plan (SPIRE-RAL-DOC-001132)
- SPIRE Structure Assembly, Integration and Handling plan - (SPIRE-MSS-PRJ-001650)
- SPIRE Optical Alignment Verification Plan (SPIRE-LAM-PRJ-000445)
- SPIRE Alignment Sequence (SPIRE-LAM-PRJ-000637)
- Manufacturing Flowcharts – included in the STM and CQM Instrument Test Plans
- SPIRE STM Instrument Level Test Plan (SPIRE-RAL-DOC-001048)
- SPIRE CQM Performance Test Specification (SPIRE-RAL-DOC-001123)
- SPIRE CQM Instrument level Test Plan (SPIRE-RAL-DOC-001049)
- SPIRE cryostat integration and test plan (SPIRE-RAL-DOC-001701)

1.6 GSE

- GSE Overview (SPIRE-RAL-DOC-001133)

1.7 PA

- SPIRE PA Plan (SPIRE-RAL-PRJ-000017)
- FMECA
 - Interface FMECA (SPIRE-RAL-PRJ-001260)
 - Pixel Map Description (SPIRE-RAL-NOT-001540)
 - Pixel Map Spreadsheet (SPIRE-RAL-NOT-001541)
 Subsystem FMECAS and reliability analyses are to be found in the individual subsystem folders
- Configuration management plan (SPIRE-RAL-PRJ-000626)
- Cleanliness Plan (SPIRE-RAL-PRJ-001070)
- Configured Items Data List (SPIRE-RAL-PRJ-001134)
- Critical Items List (SPIRE-UCF-PRJ-001138)
- Safety submission (SPIRE-RAL-DOC-001293)
- Worst Case Analysis - DPU Analysis is to be found in the DPU subsystem folder
- Part Stress Analysis and Derating Analysis – DPU Analysis is to be found in the DPU subsystem folder
- FDIR Philosophy (SPIRE-RAL-PRJ-001128– Note: this document will not be available on the 9th June. It will be added later.
- Combined Parts, Processes and Materials Lists
 - Combined DMPL (SPIRE-RAL-PRJ-001094)
 - Combined DML (SPIRE-RAL-PRJ-001092)
 - Combined DPL (SPIRE-RAL-PRJ-001093)
 - Combined EEE Parts (SPIRE-RAL-PRJ-001095)
 - PAD status report (SPIRE-RAL-PRJ-001670)
- Verification Matrices - see AIV Plan
- Engineering Change Requests – Status Report (SPIRE-RAL-PRJ-1080)
- Non-Conformance Reports – Status Report (SPIRE-RAL-PRJ-0001079)

- Requests for Waiver – Status Report (SPIRE-RAL-PRJ-001081)
- Configurable Documents Tree (SPIRE-RAL-PRJ-000033)

2. Other information

2.1 Subsystems

Each subsystem folder contains documentation from the subsystem DDR plus any updated documentation. This includes Interface Control Documents.

2.2 STM EIDPs

This section contains a list of the available subsystem End Item Data Packs (EIDPs), and Hardware Acceptance Review minutes.

2.3 Technical notes and papers

The following technical notes are available on Livelink and on the IHDR distribution CD and are brought to the attention of the review board to add background information on the instrument design and implementation. In particular these notes document changes to the design and issues addressed since the IBDR.

Note name/number	Contents
Design and Performance of feedhorn-couple bolometer arrays for SPIRE Rownds et al SPIE Paper SPIRE-UCF-PUB-001697	Description of testing of feedhorns at Colorado
Feed Horn Coupled Bolometer Arrays for SPIRE: Design, Simulations, and Measurements Goutam Chattopadhyay et al IEEE Paper SPIRE-UCF-PUB-001693	Description of HFSS simulations of feedhorn performance.
In-Flight Calibration Sources for Herschel-SPIRE Hargrave et al SPIE Paper SPIRE-UCF-PUB-001695	Description of design and performance of the calibrators for SPIRE
The Imaging FTS for Herschel SPIRE Swinyard et al SPIE Paper SPIRE-UCF-PUB-001696	Description of the design and simulation of the performance of the FTS
Implications of reduced SMEC scan speed range Swinyard SPIRE-RAL-NOT-001543	Simulation of the performance of the FTS to look at the implications of having a lower maximum speed.
A Ground Calibration Facility for HERSCHEL-SPIRE Collins et al SPIE Paper SPIRE-UCF-PUB-001692	Description of the SPIRE test and calibration facility
Minutes of Kevlar Meeting and presentations Swinyard SPIRE-RAL-MOM-001653	Collection of presentations and technical notes presented at the Estec Kevlar discussion meeting – see handouts: SPIRE-RAL-MHO-001699 and 001700
SPIRE - Herschel's Submillimetre Camera and Spectrometer Griffin; Swinyard; Vigroux SPIE Paper SPIRE-UCF-PUB-001694	Description of design and performance of the SPIRE instrument.
Check and update of SPIRE straylight model Ferlet SPIRE-RAL-NOT-001483	Description of RAL evaluation of the ASAP model built by ASER.
Implementation of cold stop on SM12 A and B. Kjetil Dohlen SPIRE-LAM-NOT-1682	Description of how the spectrometer mirrors SM12a and SM12b should be built.

SPIRE spectrometer field lens description Kjetil Dohlen SPIRE-LAM-NOT-001683 (LAM.LOOM.SPIRE.NOT.2002.001-2) Spectrolens04 has been added into this note	Detailed description of the design of the field lenses in the spectrometer
Cryostat aperture size requirements including the effects of SPIRE-HERSCHEL misalignments Tony Richards SPIRE-RAL-NOT-0001242	Detailed evaluation of size of holes required through the cryostat.
HERSCHEL-SPIRE: Optical cubes Marc Ferlet; Kjetil Dohlen SPIRE-RAL-NOT-001684	Detailed specification of alignment cubes size and position.
HCR#1 Test Results from Herschel PACS Cooler Lionel Duband SPIRE-SBT-NOT-001685	Brief description of the results of the cooler testing