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<b>COMPTE RENDU DE REUNION / MINUTES OF MEETING</b>				LIEU / PLACE : RAL Chilton	
OBJET / PURPOSE :				CLASSIFICATION :	
<b>SPIRE Progress &amp; Interface Meeting</b>					
PARTICIPANTS ATTENDEES	SOCIETE FIRM	SIGNATURE SIGNATURE	PARTICIPANTS ATTENDEES	SOCIETE FIRM	SIGNATURE SIGNATURE
Guy Doubrovik	ASP		John Delderfield	RAL	
Bernard Collaudin	ASP		Eric Sawyer	RAL	
Carsten Scharmberg	ESA		Doug Griffin	RAL	
Horst Faas	ASED		Bruce Swingyard	RAL	
Marco Cesa	ALS				
REDACTEUR / WRITTEN BY :					
Bernard Collaudin					
CONCLUSION :					
DISTRIBUTION : PARTICIPANTS / ATTENDEES	POUR ACTION : FOR FURTHER ACTION				
	POUR INFORMATION : FOR INFORMATION				
APPROUVE PAR / APPROVED BY					
NOM / NAME					
SIGNATURE / SIGNATURE					

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**Agenda : see Annex 1**

**Actions status (see annex 2)**

**Actions from HP-ASPI-MN-4776 SPIRE IF Telecon 28-04-04**

**AI 1 SPIRE:** SPIRE is requested to analyse all these inputs required for next IIDB issue, and to provide a corresponding delivery planning for next week in order to deliver the last IIDB input for beginning of June 04

**Closed** by mail from E.Sawyer dated 21/05

**AI 2 ASED:** ASED is also requested to analyse all these inputs required for next IIDB issue, and provide comments or answer: particularly for "Comments on SPIRE IID-B\_3-2\_RAL\_JD With GD answers "

**Closed** by mail from H.Faas HP-ASED-EM-0519-04 dated 17/06/04

**AI 3 ASED:** ASED to provide SPIRE with proposed values to fill the table 5.7-2 "Ground thermal requirements"

**Closed** by mail from H.Faas HP-ASED-EM-0528-04 dated 17/06/04, but for IIDA

**AI 4 ASED:** ASED to check these new FCU & DCU QM ICD's (pack issue 11) and include corresponding agreement and/or comments in the foreseen proposal (fax) concerning SPIRE QM harness

**Closed**

**AI 5 ALS:** ALS to check this new FCU & DCU QM ICD's (pack issue 11) and send corresponding agreement and/or comments

**Closed** by mail from M.Cesa dated 20/05 with 5 files

**AI 6 ASED:** ASED to check this new MGSE ICD (pack issue 11) and send corresponding agreement and/or comment

**Closed** by mail from H.Faas HP-ASED-FX-0316-04 dated 10/05/04

**AI 7 ASP/ALS:** ASP and ALS to answer to mail from JD dated 27/04/04 " Re: WIH manufacturing » concerning mechanical harness interfaces

**Closed** by mail from B.Marchand H-P-ASP-LT-4846 dated 03/05

**AI 8 ASED:** ASED to check and answer to this L1 IF proposal SPIRE-RAL-NOT-001933

**AI 9 SPIRE:** SPIRE to provided for IIDB § 5.6 the new Thermal Strap IF configuration and isolation (new drawings/text/values )

**Closed** in the discussion below

**AI 10 SPIRE:** SPIRE to deliver detailed list of all necessary equipment to perform EQM tests

Should include the interfaces to electrical test equipments (weight, size (DRCU power supply for instance)

To be added in IID-B section 5.16

**Still open** New due date: 30/7/04

ACTION

**Closed**

**Closed**

**Closed**

**Closed**

**Closed**

**Closed**

**Closed**

**Closed**

**Closed**

**SPIRE**  
**30/7/04**

**Actions from H-P-ASP-MN-4307 SPIRE IF Meeting 10-02-04**

**AI 3 ESA:** ESA to sort out the problem of availability of DRCU CQM 1 between HPLM EQM test & SPIRE FM test (summer/Autumn 2004)

Discussed during this meeting. **Action obsolete**

**Closed**  
**Obsolete**

**Actions from SCI-PT-27717 - SPIRE IF Telecon # 8 \_ 26-05-04**

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**AI 1 ASED:** ASED to provide real need date for DRCU during EQM campaign (Due date: next SPIRE I/F Meeting - 30.06.04).

**Obsolete**

**Closed  
Obsolete**

**AI 2 SPIRE:** SPIRE to answer for FPU ICD, preferably by email or fax, to ASED with ASP & ESA in copy on the ASED comments (Due date: 2nd June 2004).

**Closed** by mail E.Sawyer dated 27/05, but to be completed by mail from H.Faas HP-ASED-EM-0483-04 dated 27/06

**Closed**

**AI 3 SPIRE:** SPIRE to answer for MGSE ICD, preferably by email or fax, to ASED with ASP & ESA in copy on the ASED comments (Due date: 2nd June 2004).

**Closed** idem AI 2

**Closed**

### **Actions from SCI-PT-24408 SPIRE Progress Telecon #6\_ 03-03-04**

**AI 2 SPIRE:** SPIRE to provide a technical note with all relevant details of the termination connectors not included in the HDD

**Closed** by "Making SPIRE ESD Safe 0-2.pdf" mail from D.Griffin 18/06

**Closed**

### **Actions from SCI-PT-21435 SPIRE Progress Telecon #2\_ 29-10-03**

**AI 3 SPIRE:** SPIRE to issue the Harness Definition Document version 1.2, which will reflect HDD1.1 plus update according annex 5 of SPIRE IID-B version 3.0 "SPIRE HDD 1.1 Deltas"

**Still open** new due date 31/08/04

**SPIRE  
31/8/04**

For IID-B 3.3, SPIRE to complete the front page annex 5 (HDD deltas) with update of differences between current agreed configuration and HDD 1.1

**AI 7 SPIRE  
07/7/04**

### **Actions from HP-2-ASED-MN-0387. AIV meeting.**

**AI 8 SPIRE:** SPIRE to identify most sensitive noises mode in test sheet.

**Closed** by SPIRE EQM test plan 001905 issued in February (available on Livelink) contains these details and replace TN 982

[SPIRE EQM test plan 001905 to be checked by ASED](#)

**Closed**

**AI 11 SPIRE:** SPIRE to define power lines to be tested

For EQM, due to External power supplies, no CS test can be performed on power lines. Action Closed for EQM

[Still to be defined later for FM.](#)

**Closed**

### **SPIRE CR's status (see Annex 3)**

Last CR is CR68 about drawing pack 11, which will be included in IID-B 3.3

### **IID-B 3.3 Syst CDR issue inputs status (see Annex 4)**

See in annex 4 table from file " SPIRE IIDB 3.3 inputs\_GD\_23-06-04.xls", With included SPIRE comments (from file sent 30/06 by JD), discussed during meeting

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Focus on changes or inputs:

- To be fixed and/or agreed between SPIRE and ASP (see ASP proposals & comments)
- To be fixed and/or agreed between SPIRE and ASED (see ASED proposals & comments)
- SPIRE last received inputs to be completed (like 5.16, 6, 7, 9)
- Full sections still to be updated by SPIRE (like 4.8, 5.6.12, 5.14, Annexes)

*RD List:* Some documents will be updated very soon.

§4.8: Performance specification: (measurable scientific requirements)

This part cannot be updated now (issue 3.3) because of lack of manpower.

Action transferred to the Herschel Science team.

*Fig 5.2-1:* New Block diagram to be sent within 1 week to be implemented. Change between JFET & FPU. Hopefully without impact on interfaces (TBC).

§5.5 *mass:* CQM indicated compliance with mass table. Not relevant to update now.

§5.6.1.2: Thermal Straps:

ASED ask about(overall) verification of electrical insulation at low Temperature. (between ground lines & structure). Voltage should not be above 10V.

Replace all text & figure below SPIRE level 1 electrical insulation by:

"SPIRE L1 Electrical insulation is done internal to the FPU. See FPU ICD in Annex 1"

(done)

In L3 electrical insulation, remove "and Kapton on the JFET rack I/F. The impact of the Kapton tape at the JFET I/F belongs to the SPIRE thermal budget"

Replace figure 5.6-1 by figure in mail from J.Delderfield from 9/3/04

(done)

*Table 5.7-1*(In Orbit FPU temperatures & heat flows): keep as it is.

*Table 5.7-2*(On ground temperatures & heat flows): remove the table, keep only the 2 last column "non operating temperatures" as table moved in §5.7.1.4

*Table of § 5.7.3* (SVM temperatures): remove 4<sup>th</sup> bullet

(done)

It is stated here that thermal behaviour of SPIRE warm units is compliant

SVM thermal analysis document has been added to FTP

. RD77 - H-P-RP-AI-0040\_2\_0 - SVM TCS thermal Analysis report.pdf

§5.7.5.3: Temperature monitoring

It is agreed to replace  $\pm < 0.001K$  by  $\pm < 0.008K$

It is agreed to remove the notes below the table (except note (1))

(done)

*Table of §5.9.1:* note below table

" Note: these table values are for information only, refer to SPIRE RTMM in Annex 2 of present IIDB"

(done)

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SPIRE anticipates a non conformance on the dissipation of the JFET in operation: (conductance of the Silicon nitride membrane + tracks).

The dissipation might increase from (42mW in model) or 50mW (for lifetime calculation) to 58mW (TBC).

This will affect the interface temperature & the lifetime.

SPIRE will try to solve the problem at the instrument level before issuing a RFW at higher level.

Table of §5.9.3: SVM dissipation:

***It should be stated that tables have precedence on the ICD's. (also for mass)***

Remove " When operating in spectrometry mode, the reduction in HSDCU power requirements and the associated reduction in conditioning losses in the HSFCU are TBD.": (done)

§5.9.6.1 : Long peak TBD's to be replaced.

SPIRE will propose update for long peaks (+ loan of LCL) in §5.9.6.1

§5.11.1:

SPIRE should re-express the following requirement:

In §5.11.1.2

*Reference HP-SPIRE-REQ-0160*

*For the purpose of possible (up to 5 minutes) higher instrument data-rates, the bus interconnecting the instrument and the HCDMU shall have the capability of handling a telemetry rate of > 200 kbps TBC.*

SPIRE confirm that they are compliant with the offered bandwidth (27 sub-frames/s in normal mode & 40 sub-frames/s in burst modes. The requirement

In §5.11.1.1 and §5.11.1.2 all values in Kbps (tables and requirements) should be replaced by values in sub-frames/s

IIDB Sections 5.11.1.1 & 5.11.1.2 to be re-edited (replaced by values in sub-frames/s) to reflect this agreement.

§5.10.4.3: Launch Latch confirmation: To be re-edited

§5.12.2: 1.5 arcsec r.m.s. (TBC) TBC can be removed (done)

§5.12.3 : Still to be discussed. TBC kept.

§5.15.1.2: New relaxed cooling requirement agreed. However, currently PACS is the driver

§5.16.2: EGSE : keep "test environment"

Quick Look Facility to enable testing of the instrument at system level. This will interface to the S/C test environment.

(done)

§5.16.4: Alignment cube is included on ICD and is a red tagged Item (to be removed after alignment)

**AI 1 SPIRE**  
**15/7/04**

**AI 2 SPIRE**  
**15/7/04**

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Section 7:

It is proposed to include in each instruments IID-B the list of TRS (test requirement sheets) in section 7

The test plan will be Applicable document in IID-A (move from RD to AD)

Currently:

RD30 - HP-2-ASED-PL-0021\_2\_0 - Instrument testing at HPLM EQM level.pdf

RD31 - HP-2-ASED-PL-0031\_1\_0 - Instrument testing at HPLM FM level.pdf

CQM integration:

It should be clarified what is the Status of the DRCU External Power supply unit (for QM1 only, as the QM2 has a Power supply).

ASED indicates that the baseline is to have the Power supply in a rack nearby the SVM assuming max 3 or 5 meters cable between power supply & DRCU on SVM simulator.

ASED to verify and freeze the DRCU Power supply configuration (and compatibility with tilting of the cryostat).

**AI 3 ASED**  
**15/7/04**

SVM integration: refers to new proposed RD28. SPIRE Warm electronic integration plan, SPIRERAL-DOC-001132, Issue 0.1, 10/01/02

SPIRE will check the relevance of this document & update if necessary

**AI 4 SPIRE**  
**15/7/04**

Section 9: Reference to RD25 for further details in each subsection.

Verification matrix gives the list of all tests.

Annex 1 includes drawing pack 11.

ASED will supply the FPU bolts

ASED will send the definition of FPU fixation bolts to SPIRE for approval.

**AI 5 ASED**  
**15/7/04**

Annex 2: Model 2.5 is the latest now. Agreed

Annex 3: Harness: Current version of HDD is kept. Version 1.2 still expected.

Document on safing plugs has been delivered by SPIRE. ("Making SPIRE ESD Safe 0-2.pdf" mail from D.Griffin 18/06).

To be added in a new annex 6 of IIDB

**SPIRE status** : See SPIRE status report in **annex 7**.

**SPIRE Technical status**

CQM: Full inspection performed after cryo-vibration tests → no damage

2<sup>nd</sup> ILT in August 04



2K interbox straps poor due to copper/ Aluminium contact → use AL-CU welded joints.

Level 0 Straps: concern with flexible copper part (conductance lower than expected). Alternative suppliers are under evaluation.

Strap support inside cooler not used by SPIRE.

CRFP feet: FPU model broke during vibration unit test (on top of cone): under redesign

Warm electronics: released for QM2 manufacture (similar design to flight). Few weeks delay.

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FM: Structure manufacture except CRFP legs

Cooler on critical path

SMEC QM in assembly & test. No vibration yet on this delicate unit....

Will be first integrated on FM for testing.

BSM: Magnets became soft (magnetically) after baking → new material

Mirrors integrated. Alignment on progress.

AIV: QM Cold verification 2 starts in July.

### **SPIRE schedule**

CQM will be ready for delivery 15/11 with DRCU QM1 (FPU could be ready before). QM1 to be returned to SPIRE until arrival of QM2

MCI tests to be performed after

QM1 usage sequence to be optimised.

FM Schedule FM FPU ready Oct 05 with QM2 DRCU

FM DRCU Nov 05

Problem with JFETs: all wire bond (to the JFET on membrane) broke on the FM units. Mitigation plan initiated → might become a critical for FM schedule

### **Optimisation of SPIRE delivery Schedule.**

Incoming complete verification of SPIRE can be done only when the instrument is integrated with the cryo-harness (Instrument integration test (warm & open cryostat)). DRCU is needed only for this test, not before).

Then the next time is when the cryostat is closed (SFT1), few months after

Then for cold conditions (SFT2 & 3)

~~SPIRE needs the DRCU QM1 up to end of 2004 (with the exception of the time needed to check the instrument at ASED if cryo-harness could be used between DRCU & FPU)~~

SPIRE DRCU QM1 is existing at RAL. SPIRE will fully support industrial need dates for the DRCU during EQM campaign.

SPIRE will not perform a bench FPU checkout after delivery to ASED, because no dedicated SPIRE test harness between FPU and WU's is available.

SPIRE DRCU will be made available at ASED for SPIRE FPU checkout, once the SPIRE FPU is integrated together with the relevant EQM cryoharness.

During phases, when DRCU QM1 is not needed at ASED until end of 2004, SPIRE will use DRCU QM1 at RAL in order to support their PFM program.

### **Mechanical IF Issues:**

**Update of ICD pack 11 (for FPU + Lx IF, MGSE, real drawings of QM1) status**

Ref CR status

**SPIRE Level-0 thermal strap IF: Status of manufacturing and testing**

Discussed here above, and Ref SPIRE presentation in annex 7

**Status of FPU Support re-design: Status of new design, manufacturing and testing**

Ref SPIRE presentation in annex 7

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**MGSE: Safing plugs present, impact to be checked**

FPU safing plugs are about 20 to 30mm long

ASED concern is the depth of this safing plug on JFETs: not enough space is available between SPIRE & the vent line. ASED ask for the possibility to remove them for the last 40cm during SPIRE FPU integration on OBA.

SPIRE answer is that they are not so much in favour of removing the safing plugs (for ESD reasons). There is some flexibility between FPU & JFETs (supported by cables).

FM safing plugs will be designed thinner.

**SPIRE WU IF (if needed)**

No updates for warm units.

SVM harness & WIH flexibility is 10mm (if all harness fixation are used)

***Thermal IF Issues:***

**Provision of updated Herschel EPLM TMM (Thermal Report, Issue 4.0):**

**Feedback from SPIRE ?**

H-PLM thermal analysis document issue 4 is available at SPIRE.

Astrum proposes that there is a chance to integrate an update of the SPIRE model in the cryostat model (up to October 2004)

Table in **annex 5** gives the ASED proposed ground thermal environment.

**On-ground thermal IF FPU temperatures proposal from ASED**

It is proposed to include this ground environment for SPIRE (& other instruments) FPU in IID-A rather than IID-B, & keep the requirement that instruments should be testable on ground.

In 7.2.2: add "PFM cryostat will provide environment allowing to test the instruments."

Remove all section 7.2.3

Keep "non operating temperatures" table only in IID-B (in §5.7.1.4 as said here above)

***Electrical IF Issues::***

**SPIRE Cryo-Harness Clarifications : shielding implementation** (exchange of

email between J.Lang and Doug Griffin), ref. HP-ASED-EM-0524-04

Update agreed & implemented.



**SPIRE WIH and SVM harness**

SVM harness & WIH flexibility is 10mm (if all harness fixation are used)

***AIT Issues:***

**Initial ASED comments on updated AIT documents**



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ASED propose a list of relevant AIT documents (in **annex 6** of these minutes) to be reviewed by SPIRE

SPIRE will review this list of AIT documents and provide comments and update of documents if needed

**AI 6 SPIRE  
15/7/04**

AIT meeting expected in end August/beg Sept to prepare for the SPIRE test specification & procedures.

**CQM delivery, / DRB**

ESA (JR) is writing a DRB procedure, to be checked by all parties before formal issue.

**Other Issues:**

Verification of the ASED Harness database against SPIRE test harness.

ASED would come with the test equipment (IDAS)

2 days are needed.

Access to both sides of the harness on the test equipment.

Possible dates are mid Sept 04 to mid Oct 04.

H-EPLM EMC test Plan HP-2-ASED-PL-0037 has been handed over to SPIRE (and ESA/ASP).

SPIRE to review and comment this document, and to propose data for the TBD.

**AI 8 SPIRE  
15/7/04**

Rem SPIRE EQM test plan 001905 issued in February (available on livelink) may contain most of the answers.

It is proposed to organise Technical meetings (ASED/ASP + SPIRE) in order to prepare the EMC test specification / Procedures.

**AI 9  
ASP/ASED  
15/7/04**

**JFET L3 Pressure Plate and bolts (2 or 3 sets, i.e. STM/PFM, EQM und Tests at Sener )**


2 pressure plates have been delivered to ASED during the meeting

16 L1 bushes will be sent to ASED by mail.

**Next SPIRE IF Meeting :**

**Progress Telecon #9: 23<sup>rd</sup> July 04**

**IF Meeting : 29 September 04**

	<b>ACTION ITEM LIST</b>	REF. : H-P-ASP-MN-5081_iss 2
	MEETING TITLE: SPIRE Progress & Interface Meeting	DATE : 30/06/04
	<b>HERSCHEL/PLANCK</b>	PAGE : 10/34

<b>ACTION</b>			<b>DATE</b>
<b>N°</b>	<b>DESCRIPTION</b>	<b>ACTION Firm / person</b>	<b>DUE</b>
<b>1</b>	IID-B 5.9.6.1 Long peak TBD's to be replaced. SPIRE will propose update for long peaks (+ loan of LCL)	SPIRE	15/7/04
<b>2</b>	IIDB Sections 5.11.1.1 & 5.11.1.2 to be re-edited (replaced by values in sub-frames/s) to reflect this agreement. (27 sub-frames/s in normal mode & 40 sub-frames/s in burst modes).	SPIRE	15/7/04
<b>3</b>	ASED to verify and freeze the DRCU Power supply configuration (and compatibility with tilting of the cryostat)	ASED	15/7/04
<b>4</b>	SVM integration: refer to new proposed RD28. SPIRE Warm electronic integration plan, SPIRERAL-DOC-001132, Issue 0.1, 10/01/02 SPIRE will check the relevance of this document & update if necessary	SPIRE	15/7/04
<b>5</b>	ASED will send the definition of FPU fixation bolts to SPIRE for approval.	ASED	15/7/04
<b>6</b>	SPIRE will review this ASED list of relevant AIT documents (in annex 6 of these minutes) and provide comments and update if needed	SPIRE	15/7/04
<b>7</b>	For IID-B 3.3, SPIRE to complete the front page annex 5 (HDD deltas) with update of differences between current agreed configuration and HDD 1.1	SPIRE	7/7/04
<b>8</b>	SPIRE to review and comment the document "H-EPLM EMC test Plan HP-2-ASED-PL-0037", and to propose data for the TBD	SPIRE	15/7/04
<b>9</b>	Organise Technical meetings (ASED/ASP + SPIRE) in order to prepare the EMC test specification / Procedures.	ASED/ASP	15/7/04

## **ANNEXES OF THE MINUTES**

**Annex 1: Agenda**

**Annex 2: SPIRE Actions Status**

**Annex 3: SPIRE CR status**

**Annex 4: SPIRE IIDB 3.3 inputs\_GD\_23-06-04.xls, with included SPIRE comments (from file sent 30/06 by JD)**

**Annex 5: Proposed Ground temperatures for SPIRE FPU (ASP + ASED).**

**Annex 6: List of SPIRE AIT documents relevant for system AIT. (SPIRE\_AIT Document List\_290604.doc).**

**Annex 7: SPIRE status Report**

## **Annex 1: SPIRE IF Meeting Agenda, 30 June 2004 RAL, from 09:00 to 17:30**

### **Actions status:**

See attached tables

### **IID-B 3.3 Syst CDR issue inputs status**

See and use attached table from file " SPIRE IIDB 3.3 inputs\_GD\_23-06-04.xls"

Focus on changes or inputs:

- To be fixed and/or agreed between SPIRE and ASP (see ASP proposals & comments)
- To be fixed and/or agreed between SPIRE and ASED (see ASED proposals & comments)
- SPIRE last received inputs to be completed (like 5.16, 6, 7, 9)
- Full sections still to be updated by SPIRE (like 4.8, 5.6.12, 5.14, Annexes)

### **SPIRE CR's status :**

See attached tables

- Last received CR's: 68v1 (ICD Pack 11), 73v1 (L1 IF) and 71v1, 72v2, 74v1 (IIDB editorial)- CR's 69 & 70 not applicable (false numbers)

### **SPIRE general** (or particular) technical status (TBD by SPIRE) :

- SPIRE schedule (if new inputs)
- Technical status (if new inputs)

### **Mechanical IF Issues:**

- Update of ICD pack 11 (for FPU + Lx IF, MGSE, real drawings of QM1) status
- SPIRE Level-0 thermal strap IF: Status of manufacturing and testing
- Status of FPU Support re-design: Status of new design, manufacturing and testing
- MGSE: Safeing plugs present, impact to be checked
- SPIRE WU IF (if needed)

### **Thermal IF Issues:**

- On-ground thermal IF temperatures proposal from ASED
- Provision of updated Herschel EPLM TMM (Thermal Report, Issue 4.0): Feedback from SPIRE ?

### **Electrical IF Issues:**

- SPIRE Cryo-Harness Clarifications : shielding implementation (exchange of email between J.Lang and Doug Griffin), ref. HP-ASED-EM-0524-04
- TN: Making SPIRE ESD safe, SPIRE-RAL-NOT-002028, Issue 0.2
- SPIRE WIH and SVM harness (if needed)

### **AIT Issues:**

- Initial ASED comments on updated AIT documents (may not be available for I/F Mtg.)
- CQM delivery, date for DRB in September ?

### **Other:**

- JFET L3 Pressure Plate and bolts (2 or 3 sets, i.e. STM/PFM, EQM und Tests at Sener )
- TBD

### **Minutes and actions, End of IF Meeting**

## Annex 2: SPIRE Actions Status \_ (Changes versus SPIRE Telecon#8 status)

ii/mm/yy : in late still open action

### From last H-P-ASP-MN-4776 SPIRE IF Telecon 28-04-04

N°	ACTION DESCRIPTION H-P-ASP-MN-4776 SPIRE IF Telecon 28-04-04	Firm / person	DUE DATE	ACTION STATUS
1	SPIRE is requested to analyse all these inputs required for next IIDB issue, and to/provide a corresponding delivery planning for next week in order to deliver the last IIDB input for beginning of June 04	SPIRE	05/05/04	<b>Closed</b> by mail from E.Sawyer dated 21/05 with file " Updates to IID-B 3_2.doc", but IIDB list is incomplete See mail GD 24/05 with " SPIRE IIDB 3.3 inputs_GD_24-05-04.xls"
2	ASED is also requested to analyse all these inputs required for next IIDB issue, and provide comments or answer: particularly for "Comments on SPIRE IID-B_3-2_RAL_JD With GD answers "	ASED	07/05/04	<b>Closed</b> by mail from H.Faas HP-ASED-EM-0519-04 dated 17/06/04: comments to E.S. SPIRE IID-B input 04/06 §5.16, §6, §7 & §9, and attached commented input table SPIRE IIDB 3.3 inputs_GD
3	ASED to provide SPIRE with proposed values to fill the table 5.7-2 "Ground thermal requirements"	ASED	14/05/04	<b>Closed</b> by mail from H.Faas HP-ASED-EM-0528-04 dated 17/06/04, but for IIDA
4	ASED to check these new FCU & DCU QM ICD's (pack issue 11) and include corresponding agreement and/or comments in the foreseen proposal (fax) concerning SPIRE QM harness	ASED	14/05/04	<b>Closed</b> : concerning QM ICD's (pack 11) by fax from H.Fass HP-ASED-FX-0316-04 dated 10/05/04, see also mail from J.Coker MSSSL dated 18/05: 5mm L0 holes agreed Concerning QM harness proposal: FX-0316 refers to FX-0292 (see ASP answer H-P-ASP-LT-4927)
5	ALS to check this new FCU & DCU QM ICD's (pack issue 11) and send corresponding agreement and/or comments	ALS	14/05/04	<b>Closed</b> by mail from M.Cesa dated 20/05 with 5 files
6	ASED to check this new MGSE ICD (pack issue 11) and send corresponding agreement and/or comment	ASED	14/05/04	<b>Closed</b> by fax from H.Fass HP-ASED-FX-0316-04 dated 10/05/04: comments/changes to be applied to MGSE ICD'. Waiting SPIRE/MSSSL agreement
7	ASP and ALS to answer to mail from JD dated 27/04/04 " Re: WIH manufacturing » concerning mechanical harness interfaces	ASP/ALS	07/05/04	<b>Closed</b> by mail from B.Marchand H-P-ASP-LT-4846 dated 03/05
8	ASED to check and answer to this L1 IF proposal SPIRE-RAL-NOT-001933	ASED	07/05/04	<b>Closed</b> by mail from H.Fass HP-ASED-EM-0460-04 dated 18/05/04 « Assessment of proposed L1 »
9	SPIRE to provided for IIDB § 5.6 the new Thermal Strap IF configuration and isolation (new drawings/text/values )	SPIRE	14/05/04	<b>Open</b> New due date: 04/06/04
10	SPIRE to deliver detailed list of all necessary equipment to perform EQM tests	SPIRE	30/06/04	<b>Open</b> to be delivered as far as possible with and for IIDB inputs 04/06/04

**SPIRE Open AI (\*) From Previous SPIRE Meetings & Telecons\_ (Changes versus SPIRE Telecon#8 status)**

(\*): and just closed      **ii/mm/yy** : in late still open action

N°	ACTION DESCRIPTION Meeting	Firm / person	DUE DATE	ACTION STATUS
<b>H-P-ASP-MN-4307 SPIRE IF Meeting 10-02-04</b>				
<b>3</b>	ESA to sort out the problem of availability of DRCU CQM 1 between HPLM EQM test & SPIRE FM test (summer/Autumn 2004)	ESA	03/03/04	<b>Open</b> New due date: <del>29/04/04</del> <del>14/05/04</del> <b>30/06/04</b> To be discussed during next IF meeting
<b>SCI-PT-27717 - SPIRE IF Telecon # 8 _ 26-05-04</b>				
<b>1</b>	ASED to provide real need date for DRCU during EQM campaign (Due date: next SPIRE I/F Meeting - 30.06.04).	ASED	<b>30/06/04</b>	<b>Open</b>
<b>2</b>	SPIRE to answer for FPU ICD, preferably by email or fax, to ASED with ASP & ESA in copy on the ASED comments (Due date: 2nd June 2004).	SPIRE	02/06/04	<b>Closed</b> by mail E.Sawyer dated 27/05, but to be completed by mail from H.Faas HP-ASED-EM-0483-04 dated 27/06
<b>3</b>	SPIRE to answer for MGSE ICD, preferably by email or fax, to ASED with ASP & ESA in copy on the ASED comments (Due date: 2nd June 2004).	SPIRE	02/06/04	<b>Closed</b> by mail E.Sawyer dated 27/05, but to be completed by mail from H.Faas HP-ASED-EM-0483-04 dated 27/06
<b>SCI-PT-24408 SPIRE Progress Telecon #6_ 03-03-04</b>				
<b>2</b>	SPIRE to provide a technical note with all relevant details of the termination connectors not included in the HDD	SPIRE	19/03/04	<b>Still Open</b> New due date <del>16/04/04</del> <del>28/05/04</del> <b>04/06/04</b> Partially closed ? by "Making SPIRE ESD Safe 0-2.pdf" mail from D.Griffin 18/06
<b>SCI-PT-21435 SPIRE Progress Telecon #2_ 29-10-03</b>				
<b>3</b>	SPIRE to issue the Harness Definition Document version 1.2, which will reflect HDD1.1 plus update according annex 5 of SPIRE IID-B version 3.0 "SPIRE HDD 1.1 Deltas"	SPIRE	<b>30/11/03</b>	<b>Open</b> Problem of availability. Patches in IID-B are equivalent (HDD 1.1 + patch v.3 (tech not v3.0 should be replaced in IID-B). Keep open. New due date: <del>01/06/04</del> <b>01/07/04</b> SPIRE shall issue this HDD with corresponding CR to IIDB 3.2
<b>From HP-2-ASED-MN-0387. AIV meeting.</b>				
<b>8</b>	most sensitive noises mode. Will be Identified in test sheet.	SPIRE	15/12/03	<b>Closed</b> by SPIRE EQM test plan 001905 issued in February contains these details and replace TN 982 <b>To be checked by ASED: OK ?</b>
<b>11</b>	Define power lines to be tested	SPIRE	15/12/03	<b>Still Open</b> -New due date <del>31/03/04</del> <del>16/04/04</del> <del>28/05/04</del> <b>18/06/04</b> More investigation is required on how to do this test with no representative PSU

### Annex 3: Last SPIRE CR's Status (versus IIDB 3.2 only)

SPIRE CR	Status (*)	Resp.	ASPI CR Ref.	ESA/ASP Fast Loop	FAX ASP ref & date	Subject of CR (s)	Industry Response /Comments
<b>IIDB 3.2</b>	<b>E</b>	ASED	H-P-ASP-CR-0629	<b>NA</b>	H-P-ASP-LT-4806 22/04/04	SPIRE IIDB 3.2 applicable	<b>Transmitted to ASED</b> - ASED answer HP-ASED-FX-0367-04 dated 28/05/04: comments
<b>IIDB 3.2</b>	<b>E</b>	ALS	H-P-ASP-CR-0630	<b>NA</b>	H-P-ASP-LT-4805 22/04/04	SPIRE IIDB 3.2 applicable	<b>Transmitted to ALS</b>
<b>HR-SP-RAL-ECR-0064_v1</b>	<b>E</b>	ALS	H-P-ASP-CR-0601	<b>NA</b>	H-P-ASP-LT-4531 01/03/04	FCU Change connectors and bonding stud position - drawing SPIR-MX-5200 000 J - IIDB Annex 1	Received by mail JD 28/01/04 - To be re-issued for QM - CR 64 v1 transmitted to ALS for FM only (FCU drawing SPIR-MX-5200 000 J, in pack issue 9) - <b>Transmitted to ALS for FM only</b>
<b>HR-SP-RAL-ECR-0065 v1-v2</b>	<b>N</b>	ASED	NA	<b>NA</b>		FCU & DCU FM & QM1 new ICD's in pack issue 9 and then 10 - IIDB Annex 1	V1 by mail JD 28/01/04 and v2 04/03/04 - Include FPU ICD issue 19 - To be re-issued for QM - Superseded by CR 68v1 - Not transmitted to ASED
<b>HR-SP-RAL-ECR-0065_v1</b>	<b>E</b>	ALS	H-P-ASP-CR-0601	<b>NA</b>	H-P-ASP-LT-4531 01/03/04	FCU & DCU FM & QM1 new ICD's in pack issue 9 - IIDB Annex 1	V1 received by mail JD 28/01/04 - To be re-issued for QM - CR 65 v1 <b>transmitted to ALS for FM only</b> : FCU (see CR 64) & DCU drawing SPIR-MX-5100 000 E , in pack issue 9) - Superseded by CR 68v1 for final QM issue
<b>HR-SP-RAL-ECR-0068_v1</b>	<b>I</b>	ASED	Reserved H-P-ASP-CR-0625	<b>TBD</b>		Annex 1 of IIDB:ICD Pack issue 11	CR 68 v1 received by mail E.Clark 28/04/04 Annex 1 of IIDB:ICD Pack issue 11- Particularly ICD update of FCU & DCU QM1; FPU; JFET; MGSE - Fast loop HP-ASED-FX-0316-04 dated 10/05/04: comments to be applied to ICD's (L0 IF, MGSE) - <b>To be transmitted to ASED after update -</b>
<b>HR-SP-RAL-ECR-0068_v1</b>	<b>E</b>	ALS	H-P-ASP-CR-0640	<b>OK 03/06/04</b>	H-P-ASP-LT-5024 08/06/04	Annex 1 of IIDB:ICD Pack issue 11	CR 68 v1 received by mail E.Clark 28/04/04 Annex 1 of IIDB:ICD Pack issue 11- Particularly ICD update of FCU & DCU QM1 - <b>Transmitted to ALS</b>
<b>HR-SP-RAL-ECR-0069_v1</b>	<b>NA</b>	ASP	NA	<b>NA</b>	NA	L0 and 2K interfaces	CR 69 v1 received by mail EC 19/05/04 - <b>NA for IIDB: CR 69 is an internal SPIRE CR</b>
<b>HR-SP-RAL-ECR-0070_v1 (72_v1)</b>	<b>NA</b>	ASP	NA	<b>NA</b>	NA	Updating Synchro Clock change_§5-11-3	CR 70 v1 received by mail JD 13/05/04 – False number <b>Superseded by CR 72 v2</b>
<b>HR-SP-RAL-ECR-0071_v1</b>	<b>A</b>	ASP	NA	<b>NA</b>	NA	Instrument Manager_§3-1	CR 71v1 (previous 69 v1) received by mail JD 13/05/04 - <b>Accepted and will be applied to IIDB next issue</b>

<b>SPIRE CR</b>	<b>Status (*)</b>	<b>Resp.</b>	<b>ASPI CR Ref.</b>	<b>ESA/ASP Fast Loop</b>	<b>FAX ASP ref &amp; date</b>	<b>Subject of CR (s)</b>	<b>Industry Response /Comments</b>
<b>HR-SP-RAL-ECR-0072_v2</b>	<b>A</b>	ASP	NA	<b>NA</b>	NA	Updating Synchro Clock change_§ 5.10.4.2and 5-11-3	CR 72 v2 (update of CR 70v1) received by mail JD 25/05/04 - <b>Accepted and will be applied to IIDB next issue</b>
<b>HR-SP-RAL-ECR-0073_v1</b>	<b>E</b>	ASED	H-P-ASP-CR-0648	<b>OK 03/06/04</b>	H-P-ASP-LT-5023 08/06/04	L1 IF change	CR 73v1 received by mail ES 20/05/04 - Should be agreed - <b>Transmitted to ASED</b>
<b>HR-SP-RAL-ECR-0074_v1</b>	<b>A</b>	ASP	NA	<b>NA</b>	NA	§5.9.6.4.2_HSFCU Power Input IF (text and figure)	CR 74v1 received by mail JD 07/06/04 - <b>Should be accepted and applied to IIDB next issue</b>

<b>CR Status Legend</b>		<b>ESA/ASP CR Fast Loop (since 03/06/04) legend :</b>	
<b>(*) : I</b>	Created by Instrument, received by ASP	<b>NA</b>	CR prior to 03/06/04, already fixed
<b>(*) : E</b>	Corresponding ASP CR sent to Sub-Contractor	<b>C</b>	CR (internal ASP, editorial and/or no impact) after 03/06/04, without Fast Loop
<b>(*) : S</b>	Waiting for inputs, suspended	<b>OK date</b>	Fast Loop Decision & date: CR to be sent to ASED/ALS
<b>(*) : A</b>	Accepted by Sub-Contractor	<b>R date</b>	Fast Loop Decision & date: CR rejected, not to be sent to ASED/ALS
<b>(*) : C</b>	Closed, Accepted, Applied	<b>TBD</b>	Fast Loop not done (and/or instr CR or new issue CR not yet received)
<b>(*) : R</b>	Rejected by Sub-Contractor		
<b>(*) : N</b>	Obsolete, Suppressed		
<b>(*) : W</b>	Waiting for ECR or new issue (not yet received by ASP)		



## Annex 4: SPIRE IIDB 3.3 inputs\_GD\_23-06-04.xls

With included SPIRE comments (from file sent 30/06 by JD), and discussed during meeting

§ #	§ Title	page #	Type	Subject	OK	Comments	App lied	ASED/RAL Comments on inputs
0	DISTRIBUTION LIST	0-7	<b>N</b>					
0	DOCUMENT CHANGE RECORD	0-8	<b>U</b>	Changes of IIDB 3.3 versus 3.2	0	ASP final change	<b>0</b>	
<b>1.</b>	INTRODUCTION	1-1	<b>N</b>					
<b>2.</b>	APPLICABLE/REFERENCE DOCUMENTS	2-1	<b>N</b>					
2.1	APPLICABLE DOCUMENTS	2-1	<b>N</b>					
2.2	REFERENCE DOCUMENTS	2-1	<b>N</b>	RD 22 to 27 added	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied Add ? RD 28 SPIRE Warm electronic integration plan, SPIRERAL-DOC-001132, Issue 0.1, 10/01/02 <b>OK</b>	<b>1</b>	RD 23: SPIRE FPU Handling and Integration Procedure, SPIRE-RAL-PRC-001923, issue: 1_dated 20/05/04
2.3	LIST OF ACRONYMS	2-2	<b>N</b>					
<b>3.</b>	KEY PERSONNEL AND RESPONSIBILITIES	3-1	<b>N</b>					
3.1	KEY PERSONNEL	3-1	<b>N</b>					
3.1.1	Principal Investigator	3-1	<b>N</b>					
3.1.2	Co-Principal Investigator	3-1	<b>N</b>					
3.1.3	Instrument Manager	3-1	<b>U</b>	CR 071-v1_Instrument & Project Manager	1	CR 71v1 received and to be applied	<b>1</b>	
3.2	RESPONSIBILITIES	3-2	<b>U</b>		0	SPIRE Input	<b>0</b>	
3.2		3-4	<b>TBD</b>	RESPONSIBILITIES table, Paola Andreani, Tel. +39-49-829-TBD	0	SPIRE Input	<b>0</b>	
<b>4.</b>	INSTRUMENT DESCRIPTION	4-1	<b>U</b>	In all §4, SPIRE to Include measurable scientific requirement (ESA IIDB CCB)	0	SPIRE Input	<b>0</b>	Subject too globally worded. Just keep for 4.8 and delete this
4.1	INTRODUCTION	4-1	<b>U</b>		0	SPIRE Input ?	<b>0</b>	
4.2	SCIENTIFIC RATIONALE	4-1	<b>U</b>		0	SPIRE Input ?	<b>0</b>	
4.3	INSTRUMENT OVERVIEW	4-2	<b>U</b>		0	SPIRE Input ?	<b>0</b>	
4.4	HARDWARE DESCRIPTION	4-3	<b>U</b>		0	SPIRE Input ?	<b>0</b>	
4.5	SOFTWARE DESCRIPTION	4-4	<b>U</b>		0	SPIRE Input ?	<b>0</b>	
4.6	OPERATING MODES	4-4	<b>U</b>		0	SPIRE Input ?	<b>0</b>	
4.6.1	OFF Mode	4-4	<b>U</b>		0	SPIRE Input ?	<b>0</b>	
4.6.2	Initialise (INIT) Mode	4-4	<b>U</b>		0	SPIRE Input ?	<b>0</b>	
4.6.3	ON Mode	4-5	<b>U</b>		0	SPIRE Input ?	<b>0</b>	
4.6.4	Ready (REDY) Mode	4-5	<b>U</b>		0	SPIRE Input ?	<b>0</b>	
4.6.5	Standby (STBY) Mode	4-5	<b>U</b>		0	SPIRE Input ?	<b>0</b>	

§ #	§ Title	page #	Type	Subject	OK	Comments	App lied	ASED/RAL Comments on inputs
4.6.6	Observe Mode (OBSV) Mode	4-5	<b>U</b>		0	SPiRE Input ?	<b>0</b>	
4.6.7	Cooler Recycle (CREC) Mode	4-5	<b>TBC</b>	...requires recycling every 46 hours (TBC). ... switched off except for vital housekeeping and cooler functions (TBC).	0	SPiRE Input Keep " switched off except for vital housekeeping and cooler functions (TBC)."	<b>0</b>	replace ".requires recycling every 46 hours" with "will be recycled every 48 hours"
4.6.8	SAFE Mode	4-5	<b>U</b>		0	SPiRE Input ?	<b>0</b>	
4.7	OBSERVING MODES	4-5	<b>TBC</b>	also be done in the observe mode (TBC).	0	SPiRE Input	<b>0</b>	
4.7.1	Photometer Observing Modes	4-6	<b>TBC</b>	kinds of observation are implemented as 6 (TBC) observing modes	0	SPiRE Input	<b>0</b>	
4.7.1.1	Observation: Point Source Photometry	4-6	<b>U</b>		0	SPiRE Input ?	<b>0</b>	
4.7.1.2	Observation: Jiggle Map	4-6	<b>U</b>		0	SPiRE Input ?	<b>0</b>	
4.7.1.3	Observation: Scan Map	4-6	<b>U</b>		0	SPiRE Input ?	<b>0</b>	
4.7.1.4	Others	4-6 4-7	<b>TBD</b>	POF7 Photometer peak-up (TBD) POF9 Special engineering/commissioning modes (TBD)	0	SPiRE Input	<b>0</b>	
4.7.2	Spectrometer Observing Modes	4-7	<b>U</b>		0	SPiRE Input ?	<b>0</b>	
4.7.3	Other Modes	4-7	<b>U</b>		0	SPiRE Input ?	<b>0</b>	
4.7.3.1	Photometer Serendipity	4-7	<b>U</b>		0	SPiRE Input ?	<b>0</b>	
4.7.3.2	Photometer Parallel	4-7	<b>TBD</b>	feasibility and scientific desirability of this mode is TBD	0	SPiRE Input	<b>0</b>	
4.7.4	Real-Time Commanding	4-7	<b>U</b>		0	SPiRE Input ?	<b>0</b>	
4.7.5	Commissioning/calibration Mode	4-8	<b>U</b>		0	SPiRE Input ?	<b>0</b>	
4.7.6	FPU operations at Ambient Temperature	4-8	<b>TBD</b>	TBD. It is anticipated that	0	SPiRE Input	<b>0</b>	
4.7.7	FPU Orientation	4-8	<b>U</b>		0	SPiRE Input ?	<b>0</b>	
4.8	INSTRUMENT REQUIREMENTS AND PERFORMANCE SPECIFICATION	4-8	<b>U</b>	All Section 4.8 and sub-sections to be updated by SPiRE, with verifiable Instrument requirements during instrument-level tests. This will be co-ordinated by GLP with instrument teams and is a generic action for all Herschel instruments (ESA IIDB CCB)	0	SPiRE Input	<b>0</b>	Most stated requirements are already verifiable. What is omitted is a lucid description of how each is verified, and particularly in flight not at instrument standalone level.
4.8.1	Scientific Requirements	4-8	<b>U</b>		0	SPiRE Input	<b>0</b>	
4.8.2	Instrument Performance Estimates	4-11	<b>U</b>		0	SPiRE Input	<b>0</b>	
4.8.2.1	Assumptions	4-11	<b>U</b>		0	SPiRE Input	<b>0</b>	
<b>5.</b>	INTERFACE WITH SATELLITE	5-1	<b>N</b>					
5.1	IDENTIFICATION AND LABELLING	5-1	<b>U</b>					
5.1		5-2	<b>TBD</b>	safing plugs needed (TBD, SPiRE to provide a TN) for the cryoharness	0	SPiRE Input, see AI2 of telecon#6 SCI-PT-24408: SPiRE to provide a TN, to be new annex 5	<b>0</b>	

§ #	§ Title	page #	Type	Subject	OK	Comments	App lied	ASED/RAL Comments on inputs
5.2	INTERFACE LOCATIONS	5-2	<b>N</b>					
5.2.1	MECHANICAL COORDINATE SYSTEM	5-2	<b>N</b>					
5.2.1		5-3	<b>U</b>	SPIRE_Block_Diagram_5.8_fig 5.2-1	1	received and to be applied	1	Depending on JPL, may be a 5.9 still to come..
5.3	LOCATION AND ALIGNMENT	5-4	<b>N</b>					
5.3.1	Instrument Location	5-5	<b>N</b>					
5.3.1.1	Location of units on the SVM	5-5	<b>N</b>					
5.3.2	Instrument Alignment on the HOB	5-5	<b>N</b>					
5.4	EXTERNAL CONFIGURATION DRAWINGS	5-6	<b>N</b>					
5.4.1	HSFPU	5-6	<b>U</b>	New figure 5.4-1 FPU (and note), if available	0	SPIRE Input	0	Alcatel has it...extract from ICD
5.4.2	HSJFS	5-7	<b>U</b>	New figure 5.4-3 JFET-S (and note), if available - Renamed 5.4-2	0	SPIRE Input New figure to be sent by SPIRE 01/7	0	We will show longer feet.
5.4.3	HSJFP	5-8	<b>U</b>	New figures 5.4-4 JFET-P (and note), if available - Renamed 5.4-3 & 5.4-4	0	SPIRE Input New figure to be sent by SPIRE 01/7	0	We will show longer feet.
5.4.4	SVM Mounted Units.	5-9	<b>N</b>					
5.4.4.1	HSDPU	5-9	<b>U</b>	New figure 5.4-6 DPU (and note), if available	0	SPIRE Input	0	No update
5.4.4.2	HSDCU	5-10	<b>U</b>	New figure 5.4-7 DCU (and note), if available	0	SPIRE Input	0	Alcatel has it...extract from ICD
5.4.4.3	HSFCU	5-11	<b>U</b>	New figure 5.4-8 FCU (and note), if available Remove note "figure ,,, by SPIRE"	0	SPIRE Input	0	Alcatel has it...extract from ICD
5.5	SIZES AND MASS PROPERTIES	5-12	<b>U</b>	New mass table (and note), if available, according last ICD's Remove column Dimensions, only refer to ICD's (or update according last ICD's)	0	SPIRE Input Remove issue # in ref of ICD No table update	0	Do we have assembled FPU as weighed + build standard upgrades to FM?
5.6	MECHANICAL INTERFACES	5-13	<b>N</b>					
5.6.1	Inside cryostat	5-13	<b>N</b>					
5.6.1.1	Microvibrations	5-13	<b>N</b>					

§ #	§ Title	page #	Type	Subject	OK	Comments	App lied	ASED/RAL Comments on inputs
5.6.1.2	Thermal Straps	5-13	<b>U</b>	All new §5.6.1.2 to be provided, including last L0/L1/L2 agreement with ASED	0	wait for SPIRE Input but agreed by ASED, should be in line with CR 73 (L1 IF) <b>See minutes to be applied</b>	<b>0</b>	L1 Thermal Straps: See ASED response to ASP CR-0629, i.e. HP-ASED-FX-0367-04 and ASED initial assessment in HP-ASED-EM-0483-04. L3 thermal Straps: see ASED response to ASP-CR-0629, i.e. HP-ASED-FX-0367-04 and ASED-FX-0676-03: update in IID-B does not fully reflect original ECR-057v2. Cold verification of L3 thermal insulation is not covered.
5.6.2	Outside Cryostat	5-15	<b>N</b>					
5.6.3	On SVM	5-16	<b>TBD</b>	harness will be attached to the SVM via TBD devices provided by Industry.	1	ASP proposal: Replace "TBD devices" by "Tie bases and rapp as defined in IIDA annex 10"	<b>1</b>	"wrap" not "rapp", but yes, apply.
5.6.4	On Planck Payload Module	5-16	<b>N</b>					
5.6.5	Cooler valves and piping	5-16	<b>N</b>					
5.7	THERMAL INTERFACES	5-17	<b>U</b>	remove issue 2.3 from reference to reduced TMM	1	to be applied	<b>1</b>	yes
5.7.1	Inside the cryostat	5-18	<b>U</b>	Note to be deleted (no more useful according agreed thermal spec)	1	to be applied	<b>1</b>	yes
5.7.1.1	Description of the thermal interfaces	5-18	<b>N</b>					
5.7.1.2	Description of Operation and Interfaces for the 3He Cooler	5-18	<b>N</b>					
5.7.1.3	Thermal requirements	5-18	<b>U</b>					
5.7.1.3		5-19	<b>U</b>	heat load to L2 is defined as .no load.. This leads to non-representative L2 temperatures. L2 heat load shall be correctly specified	1	ASED Input is 14 mW - To be applied <b>Not agreed by SPIRE, will not be applied</b>	<b>1</b>	Note: value is -(minus) 14mW. Applied
5.7.1.3		5-20	<b>TBD</b>	Table 5.7-2: On ground thermal requirements All values TBD	1	wait for ASED Input but to be agreed by SPIRE (AI3 of IF Telecon MN 4776) ASP proposal: include ASED values in new table, with note: for information only, refer to IIDA- To be applied. <b>NO: see minutes</b>	<b>1</b>	ASED proposal: remove spec from IIDB and refer to table (ref mail HP-ASED-EM-0528-04 dated 17/06/04) to be included in IIDA § 5.7

§ #	§ Title	page #	Type	Subject	OK	Comments	App lied	ASED/RAL Comments on inputs
5.7.1.4	Worst case temperatures	5-21	<b>U</b>	to be stated more precisely by: The units must withstand a baking of 80°C for 72 h plus the ramp-up and ramp down operations. Taking into account the ramp-up and ramp down operations between room temperature and 80°C, the complete bake-out duration will be about 2 weeks (IID-A, § 5.15.2.5).	1	ASED Input - To be applied	1	
5.7.2	Outside the Cryostat	5-21	<b>N</b>					
5.7.3	On the SVM	5-21	<b>TBC</b>	In note under table: "If it is found ... Spire will build in minimal necessary mounting arrangements for such systems, TBC Remove the sentence	1	Remove the sentence - To be applied Remove all 4th bullet	1	Remove sentence, yes, but it starts "If details". Do NOT delete two sentences.
5.7.4	On the Planck Payload Module	5-21	<b>N</b>					
5.7.5	Temperature channels	5-21	<b>N</b>					
5.7.5.1	Instrument Temperature Sensors	5-21	<b>N</b>					
5.7.5.2	Shutter Temperature Sensors	5-22	<b>N</b>					
5.7.5.3	Satellite Temperature sensors	5-23	<b>TBC</b>	Note under table: ...to 2% of its absolute value in Kelvin, TBC	1	ASED Input ? to be agreed by SPIRE ASP proposal: remove TBC (2% fixed) New proposal: all notes under table after : "... information only" are removed-To be applied <b>OK</b>	1	ASED proposes to delete complete list of notes below table. Value of 2% not considered as reqt. and is not verified. Number and location of sensor is now fixed (see Annex 6 of IID-A). Partially applied
5.7.5.3		5-23	<b>U</b>	Accuracy requirement of T225, Range 1.6K - 2.0K is currently $\pm < 0.001K$ . The accuracy requirement has been included by ASED in the IIDB, but cannot be achieved by the ASED subcontractor. It is proposed to update the accuracy reqt. to $\pm < 0.008K$	1	ASED Input - To be applied <b>OK</b>	1	Does this invalidate required confirmation of cold conductances?...press for a tighter relative error spec. as well as this absolute one.
5.7.5.3		5-23	<b>U</b>	Remove reference to SPIRE reduced TMM	1	to be applied	1	
5.8	OPTICAL INTERFACES	5-24	<b>N</b>					
5.8.1	Straylight	5-24	<b>N</b>					
5.9	POWER	5-25	<b>N</b>					

§ #	§ Title	page #	Type	Subject	OK	Comments	App lied	ASED/RAL Comments on inputs
5.9.1	Power inside the cryostat	5-25	<b>U</b>	Table to be updated ? Deleted ? Note under table to be changed	1	The table of dissipation inside the FPU is superseded by the use of the FPU thermal mathematical model. This table is in agreement (TBC) with latest thermal model version 2.5  Note under table changed by: " for information only, refer to SPIRE RTMM in Annex 2" - To be applied <b>OK</b>	<b>1</b>	Reference to SPIRE thermal mathematical model, Issue 2.5 is ok. Delete completetable with dissipation values. Partially applied: Note created & applied
5.9.2	Power outside the Cryostat	5-25	<b>N</b>					
5.9.3	Power on the SVM	5-25	<b>U</b>	table to be checked (updated) and completed by SPIRE with the (lower) dissipation in spectrometer case to refine the thermal analysis (cold case)	0	SPIRE input <b>No update</b>	<b>0</b>	Yes, we need to have as per latest thermal info.
5.9.3		5-26	<b>TBD</b>	,,, losses in the HSFCU are TBD "TBD" is to be clarified by SPIRE (from ESA CCB)	0	SPIRE input ASP: there should be no effect for the SVM design in the reduction in losses for the HSFCU <b>No, remove all sentence</b>	<b>0</b>	Sounds like King Canute
5.9.4	Power on Planck Payload Module	5-26	<b>N</b>					
5.9.5	Power versus Instrument Operating Modes	5-26	<b>N</b>					
5.9.6	Supply Voltages	5-26	<b>N</b>					
5.9.6.1	Load on main-bus	5-26	<b>U</b>		0	SPIRE input	<b>0</b>	
5.9.6.1		5-27	<b>U</b>	SPIRE to update the tables Long peak should be included in the second table (per LCL) and not in the first one	0	SPIRE input	<b>0</b>	We will do after testing with LCLs, long requested, never delivered. (FCU delivery timings?)
5.9.6.2	Power Nominal Turn-on.	5-27	<b>U</b>	Switch on procedure and text update to be provided by SPIRE an OBCP is needed to define switch on procedure: Not enough information is supplied in IID-B	1	Received by mail Esawyer input §5.9.6.2 & 5.13.3to5_11-06-04 - To be applied	<b>1</b>	
5.9.6.3	Interface circuits	5-28	<b>N</b>					
5.9.6.4	LCL fault conditions	5-28	<b>N</b>					
5.9.6.4.1	HSDPU Power Input Circuit Configuration	5-29	<b>N</b>					
5.9.6.4.2	HSFCU Power Input Circuit Configuration	5-29	<b>TBW</b>	Empty section, Text and/or figure to be provided by SPIRE	1	SPIRE CR 74v1 received and to be applied	<b>1</b>	
5.9.7	Keep Alive Line (KAL)	5-29	<b>N</b>					

§ #	§ Title	page #	Type	Subject	OK	Comments	App lied	ASED/RAL Comments on inputs
5.10	CONNECTORS, HARNESS, GROUNDING, BONDING	5-30	U	Text to be changed with no reference to: issue of HDD, HDD delta doc	0	SPIRE HDD issue 1.2 shall include all last changes and according: <ul style="list-style-type: none"> <li>• ASED HP-ASED-FX-0096-04, 13.02.2004 and email response by RAL/DG</li> <li>• Clarification of SPIRE double overshield and cable shield interconnection design and implementation (ASED baseline as in HP-ASED-EM-0194-04, 17/02/04)</li> <li>• Add duty cycles in IID-B harness tables to confirm baseline for lifetime calculations.</li> </ul> SPIRE to provide a technical note with all relevant details of the termination connectors not included in the HDD, This TN will be new annex 5	0	1) See ASED response to ASP-CR-0629, i.e. HP-ASED-FX-0367-04: Implementation of SPIRE Shielding and grounding concept subject of ECP HP-2-ASED-CP-0054 2) SPIRE-RAL-NOT-002028, Issue 0.1 Draft for comments delivered on 14/06/04 to ASED. Currently reviewed by ASED.
5.10.1	Harness and Connectors	5-30	U	SPIRE to deliver HDD issue 1.2 : new annex 3, Annex 5 SPIRE HDD 1.1 delta to be suppressed Text to be changed with no reference to: issue of HDD, HDD delta	0	Waiting SPIRE HDD 1.2 and TN about "termination connectors and savers" Document on safing plugs in Annex 6	0	see above
5.10.2	Grounding	5-32	U	Update ?	0	SPIRE input ?	0	No Update, figure 5.6.1 is up to date.
5.10.3	Bonding	5-34	N					
5.10.4	Electrical Signal Interfaces	5-34	N					
5.10.4.1	1553 Data Buses	5-34	N					
5.10.4.2	Master Clock	5-35	U	Delete the whole section 5.10.4.2 (no more synchro clock)	1	CR 72 v2 received and to be applied	1	
5.10.4.3	Launch Latch confirmation	5-36	U	This section should be described more accurately	0	SPIRE input	0	Needed from LAM via Doug
5.11	DATA HANDLING	5-37	U					
5.11.1	Telemetry	5-37	N					
5.11.1.1	Telemetry rate	5-37	U			To be updated by SPIRE replace kbps by values in sub-frames/s		

§ #	§ Title	page #	Type	Subject	OK	Comments	Applied	ASED/RAL Comments on inputs
5.11.1.2	Data-bus rate	5-37	TBC	Spec 160: ,, ,telemetry rate of > 200 kbps TBC	0	SPIRE input Spec 160 is not compatible with the implementation of the burst mode. Check with SPIRE if this requirement is still up to date or compliant with the normal data transmission  To be updated by SPIRE replace kbps by values in sub-frames/s	0	Long, long standing requirement. ASP have ignored warnings going back to Dave Parker on this. Leave as requirement if actually needed.
5.11.1.3	Data Packets	5-37	TBC	once per second (TBC)	0	SPIRE input	0	
5.11.2	S/C housekeeping	5-38	N					
5.11.3	Timing and synchronisation signals	5-38	U	CR 72 v2 to be applied	1	CR 72 v2 received and to be applied	1	
5.11.4	Telecommand	5-40	N					
5.12	ATTITUDE AND ORBIT CONTROL/POINTING	5-41	N					
5.12.1	Attitude and orbit control	5-41	N					
5.12.2	Pointing	5-41	TBC	pointing error of better than 1.5 arcsec r.m.s. (TBC)	0	SPIRE input Remove TBC, 1.5 is a goal	0	
5.12.3	On-Target Flag (OTF)	5-41	TBC	acquisition time to a precision of better than 0.1 second (TBC)	0	SPIRE input KeepTBC (to be relaxed)	0	
5.13	ON-BOARD HARDWARE/SOFTWARE AND AUTONOMY FUNCTIONS	5-42	U	5.13.3, 4, 5 should be substantiated, taking into account SPIRE FDIR	0	SPIRE input	0	
5.13.1	On-board hardware	5-42	N					
5.13.2	On-board software	5-42	TBD	some additional software may be required (TBD)	0	SPIRE input	0	
5.13.3	Autonomy functions	5-42	U	should be substantiated Specs 240 to 260 will need some OBCP's to be processed. Not enough information is given to define them	1	Received by mail Esawyer input §5.9.6.2 & 5.13.3to5_11-06-04 - To be applied	1	Eric deserves a medal for the following sections.
5.13.3		5-42	U	Spec 240 (automatic monitoring) to be deleted	1	Spec 240 to be deleted see mail E.Sawyer 21/05 with "Updates to IID-B 3_2.doc"	1	
5.13.4	Instrument Autonomy Housekeeping Packet Definition	5-42	N	NA	0	NA	0	
5.13.5	Instrument Event Packet Definition	5-42	TBD	Empty section TBW	1	Received by mail Esawyer input §5.9.6.2 & 5.13.3to5_11-06-04 - To be applied	1	
5.14	EMC	5-43	U	All EMC section to be completed & updated by SPIRE	0	SPIRE input	0	



§ #	§ Title	page #	Type	Subject	OK	Comments	App lied	ASED/RAL Comments on inputs
5.14.1	Conducted Emission/Susceptibility	5-43	<b>U</b>	Update by NA or explicit requirements, if any	0	SPIRE input	<b>0</b>	
5.14.2	Radiated Emission/Susceptibility	5-43	<b>U</b>	Update by NA or explicit requirements, if any	0	SPIRE input	<b>0</b>	
5.14.3	Frequency Plan	5-43	<b>TBC</b>	Table frequency plan: PSU DC/DC switching frequency 131 KHz (and note)	0	SPIRE input	<b>0</b>	
5.15	TRANSPORT AND HANDLING PROVISIONS	5-44	<b>N</b>					
5.15.1	Focal Plane Unit	5-44	<b>U</b>	Update	1	Received by mail Esawyer input §5.15_11-06-04 - To be applied	<b>1</b>	
5.15.1.1	Transport Container	5-44	<b>TBC TBD</b>	opened only in class 100 clean conditions (TBC) with less than 50% humidity (TBC) shock the HSFPU can sustain in any direction is (TBD) transport container is shown in figure TBD	1	Received by mail Esawyer input §5.15_11-06-04 - To be applied	<b>1</b>	
5.15.1.2	Cooling and Pumping restrictions	5-44	<b>TBC</b>	dT/dt shall not exceed 20 K/hour (TBC) dP/dt shall not exceed 50 mBar/hour (TBC)	1	Received by mail Esawyer input §5.15_11-06-04 - To be applied spec max 50 mBar/h becomes 50 mBar/mn: OK Below 100K dT/dt max 50 K/hour to be agreed by ASED <b>OK</b>	<b>1</b>	
5.15.1.3	Mechanism positions	5-44	<b>TBD</b>	shall be placed in the TBD position. This position is shown in table TBD	1	Received by mail Esawyer input §5.15_11-06-04 - To be applied	<b>1</b>	
5.15.1.4	Unpacking Procedure	5-44	<b>TBW</b>	The procedure for removing and installing the HSFPU ... is given in document TBW	1	Received by mail Esawyer input §5.15_11-06-04 - To be applied	<b>1</b>	
5.15.2	JFET/Filter Boxes	5-44	<b>N</b>					
5.15.2.1	Transport Container	5-44	<b>TBC TBD</b>	in class 100 clean conditions (TBC) with less than 50% humidity (TBC) shock the HSFTP/S can sustain in any direction is (TBD) transport container is shown in figure TBD	1	Received by mail E.Sawyer input §5.15_11-06-04 - To be applied	<b>1</b>	
5.15.2.2	Unpacking Procedure	5-44	<b>TBW</b>	The procedure for removing and installing the HSFTP/S ... is given in document TBW	1	Received by mail Esawyer input §5.15_11-06-04 - To be applied	<b>1</b>	
5.15.3	Electronics Units	5-45	<b>N</b>					

§ #	§ Title	page #	Type	Subject	OK	Comments	App lied	ASED/RAL Comments on inputs
5.15.3.1	Transport Container	5-45	TBC TBD	in class 100000 clean conditions (TBC) with less than 75% humidity (TBC) shock the WU can sustain in any direction is (TBD) transport container is shown in figure TBD	1	Received by mail Esawyer input §5.15_11-06-04 - To be applied	1	
5.15.3.2	Unpacking Procedure	5-45	TBW	The procedure for removing and installing the WU... is given in document TBW	1	Received by mail Esawyer input §5.15_11-06-04 - To be applied	1	
5.16	DELIVERABLE ITEMS	5-46	U	all section 5,16 to be updated/clarified and hardware deliverable matrix to be added by SPIRE	1	Notes 1 &/or 2 to be removed But some descriptions still missing in sub-§ Note for PFM delivery added - To be applied	1	The late delivery of SPIRE FCU and DCU is not the baseline for ASED and therefore not acceptable. The ASED baseline is the information provided by ESA, i.e. the complete set of SPIRE instrument units (cold and warm) is delivered together. For instance, the CQM delivery is scheduled and agreed to be 15 September 2004. It is proposed to use the formal instrument delivery dates in the IID-B. Note created & applied
5.16.1	Instrument Models.	5-46	TBD	PFM – Proto-Flight Model ... qualification levels for acceptance times (TBD)	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied	1	for CQM and PFM, not 8 but 16 M4 non-isolating bushes are required per model for the ventline end of the strap: Applied
5.16.1		5-46	TBC	FS – Flight Spare. The flight spare cold FPU will be made from the refurbished CQM (TBC)	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied	1	Typo: Connector savers (PFM), should be PFM and not CQM: Applied
5.16.2	Electrical Ground Support Equipment (EGSE)	5-46	TBD	TBD EGSE for integration of the HSFPU	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied See minutes	1	HSFTP/S? it is JFET/Filter Boxes
5.16.2					0	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04	0	Quick Look Facility interface to S/C: SPIRE to clarify and update Note applied

§ #	§ Title	page #	Type	Subject	OK	Comments	App lied	ASED/RAL Comments on inputs
5.16.3	Mechanical Ground Support Equipment (MGSE)	5-47	TBD	Deliverables: ... Plus TBD	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied But some descriptions still missing	1	
5.16.4	Optical Ground Support Equipment (OGSE)	5-47	TBD	Deliverables: ... Plus TBD	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied But some descriptions still missing See minutes	1	
5.16.5	System Test Software	5-47	N					
5.16.6	Hardware for the Observatory Ground Segment	5-47	TBD	will consist of TBD workstations etc....	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied	1	
5.16.7	Software for the Observatory Ground Segment	5-47	TBD	... Plus TBD	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied	1	
5.16.8	Instrument Software Simulator	5-47	TBD	TBD Empty section TBW	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied But some descriptions still missing	1	
5.16.9	Test Reference Data	5-48	TBD	... will be delivered in the TBD form ...	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied	1	
5.16.10	Instrument Characterisation Data	5-48	TBD	... will be delivered in the TBD form ...	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied	1	
5.16.11	Technical Documentation	5-48	TBD	... will be delivered in the TBD form ... ... Acceptance Data Package consisting of TBD ...	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied	1	
<b>6.</b>	<b>GROUND SUPPORT EQUIPMENT</b>	6-1	<b>U</b>	All section 6 to be completed & updated, and hardware deliverable matrix to be added by SPIRE	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 But some descriptions still missing in sub-§	<b>0</b>	
6.1	MECHANICAL GROUND SUPPORT EQUIPMENT	6-1	TBD	TBD MGSE: Empty section TBW	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied But some descriptions still missing	1	
6.2	ELECTRICAL GROUND SUPPORT EQUIPMENT	6-1	TBD	... SCOS2000 telemetry ICD (ref: TBD) ... SCOS2000 database interface mechanism (ref: TBD)	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied But some descriptions still missing	1	

§ #	§ Title	page #	Type	Subject	OK	Comments	Applied	ASED/RAL Comments on inputs
6.3	COMMONALITY	6-2	<b>N</b>					
6.3.1	EGSE	6-2	<b>U</b>		1	No change	0	
6.3.2	Instrument Control and Data Handling	6-2	<b>U</b>		1	No change	0	
6.3.3	Other areas	6-3	<b>N</b>					
<b>7.</b>	<b>INTEGRATION, TESTING AND OPERATIONS</b>	7-1	<b>U</b>	All section 7 to be completed & updated by SPIRE, with a suitable verification matrix (with ref to SPIRE AIV plan), in order to reflect the current situation/planning	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 But some descriptions still missing in sub-§	0	
7.1	INTEGRATION	7-1	<b>U</b>	Update text	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied But some descriptions still missing	0	
7.1.1	HPLM Integration	7-1	<b>U</b>	Integration sequence to be clarified by SPIRE (2 notes)	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied But some descriptions still missing	1	
7.1.2	PPLM Integration	7-1	<b>N</b>					
7.1.3	SVM Integration	7-1	<b>U</b>	Note: to be clarified by SPIRE	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied But some descriptions still missing See minutes (RD 28)	1	SPIRE Warm electronic integration plan, SPIRERAL-DOC-001132, Issue 0.1, 10/01/02) Note applied
7.1.4	Herschel/Planck Integration	7-1	<b>TBD</b>	TBD H/P Integration: Empty section TBW	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied But some descriptions still missing	1	
7.2	TESTING	7-2	<b>U</b>	Update text	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied But some descriptions still missing in sub-§ See minutes	0	
7.2.1	CQM Testing	7-2	<b>TBW</b>	... detailed system level test procedures for the SPIRE CQM are TBW	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied But some descriptions still missing	1	

§ #	§ Title	page #	Type	Subject	OK	Comments	App lied	ASED/RAL Comments on inputs
7.2.1	CQM Testing	7-3	<b>U</b>	The note: " ... minimum goal tilt angle required by the cooler is 30° (against 20°) and maximum tilt is 25° in TV Test" Is not relevant for CQM, as EQM will not perform TV test. Maximum possible tilt during PFM TV test to be clarified.	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04- All previous text, notes and tables are deleted But some descriptions still missing	1	
7.2.1		7-4	<b>TBD</b>	Table 7.2-1: Outline test sequence for the SPIRE CQM integrated in the CQM PLM. Details TBD in Rows: SPIRE AOT Test/1; SPIRE/PACS parallel Operation /1	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04- All previous text, notes and tables are deleted But some descriptions still missing	1	
7.2.2	PFM Testing	7-5	<b>TBW TBC</b>	PFM system level test procedures for SPIRE are TBW ... very similar (TBC), as for the CQM testing	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied But some descriptions still missing	1	
7.2.3	Thermal on ground Test	7-5	<b>U</b>	Update text	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied But some descriptions still missing	1	
7.3	OPERATIONS	7-6	<b>N</b>					
7.4	COMMONALITY	7-6	<b>N</b>					
<b>8.</b>	PRODUCT ASSURANCE	8-1	<b>N</b>					
<b>9.</b>	DEVELOPMENT AND VERIFICATION	9-1	<b>U</b>	All section 9 to be completed & updated by SPIRE, with a suitable verification matrix (with ref to SPIRE AIV plan), in order to reflect the current situation/planning	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 But some descriptions still missing in sub-§	<b>0</b>	
9.1	GENERAL	9-1	<b>U</b>	Update	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied	1	
9.2	MODEL PHILOSOPHY	9-1	<b>U</b>	Note: to be updated by SPIRE	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied	1	
9.3	MECHANICAL VERIFICATION	9-1	<b>TBD</b>	TBD Empty section TBW	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied	1	
9.4	THERMAL VERIFICATION	9-2	<b>TBD</b>	TBD Empty section TBW	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 But some descriptions still missing	1	

§ #	§ Title	page #	Type	Subject	OK	Comments	App lied	ASED/RAL Comments on inputs
9.5	VERIFICATION OF SCIENTIFIC PERFORMANCE	9-2	TBD	TBD Empty section TBW	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 But some descriptions still missing	1	
9.6	ELECTRICAL TESTING	9-2	TBD	TBD Empty section TBW	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 But some descriptions still missing	1	
9.7	EMC TESTING	9-2	TBD	TBD Empty section TBW	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 But some descriptions still missing	1	
9.8	Verification matrix	9-2	U	New § for Verification matrix added	1	see IID-B input-ES 4/6/04-GD Answer & Comments 9/6/04 - To be applied	1	
10.	MANAGEMENT, PROGRAMME, SCHEDULE	10-1	N					
Annex 1	SPIRE ICD/drawings	A1-1	U	to be updated according last pack & agreement	0	ASP front page If no CR 68v1 (Pack 11) update: include list of mandatory changes as per HP-ASED-FX-0316-04 and mail E.Sawyer 27/05/04 (AI#2 from progress telecon 26/5/04)	0	1) Position of JFET connectors:see ASED response to ASP-CR-0629, i.e. HP-ASED-FX-0367-04 and response to earlier ASP CR, i.e. HP-ASED-FX-0677-03 2) MGSE and FPU/JFET integration: See FX-0367-04 and ASED-EM-0231-04: ASED baseline is still separate FPU / JFET integration, subject of clarification of some minor issues (e.g. safe connectors fitted during integration, see HP-ASED-EM-0514-04)
		A1-2	U	to be replaced by last SPIRE ICD pack (To be updated according HP-ASED-FX-0316-04 and last L1 agreement)	1	last received: pack 11 with CR 68v1 (but last L0/L1 updates missing, MGSE not agreed), To be updated according HP-ASED-FX-0316-04 and last L1 agreement,	0	
Annex 2	SPIRE Reduced TMM	A2-1	U	to be replaced by SPIRE TMM 2.5	1	Received, to be applied		

§ #	§ Title	page #	Type	Subject	OK	Comments	App lied	ASED/RAL Comments on inputs
Annex 3	Summary of SPIRE cryoharness wiring functions	A3-1	<b>TBW</b>	to be replaced by SPIRE HDD 1.2	0	SPIRE input See minutes <b>No input: Annex 3 is kept</b>	<b>0</b>	See ASED response to ASP-CR-0629, i.e. HP-ASED-FX-0367-04: Implementation of SPIRE Shielding and grounding concept subject of ECP HP-2-ASED-CP-0054
Annex 4	Description of the Operation of the 3He Sorption Cooler	A4-1	<b>N</b>					
Annex 5	SPIRE HDD 1.1 Deltas	A5-1	<b>TBW</b>	Deleted, to be replaced by TN about "termination connectors and savers"	0	SPIRE input See minutes <b>No input: Annex 5 is kept, with added front page</b>	<b>0</b>	

Annex 6 Document on safing plugs

**New Annex 6 added**

See minutes

Document on safing plugs: Making SPIRE ESD Safe 0-2.pdf

**Legend:** the whole § (and all sub-§) is

to be completed & updated by SPIRE

**TBC / TBD** (to be completed and fixed)

**TBW** (complete input missing)

**U** update to be done

**N** nothing to update

**1**: input received

**0**: input not received

**1**: input or proposal applied to IIDB draft

**0**: not applied to IIDB draft

## Annex 5: Proposed Ground temperatures for SPIRE FPU (ASP + ASED)

### IIDB 3.3: Proposed ASP Modified table 5.7-2 and new note

SPIRE FPU Thermal I/F		Ground				
		Operations FM (IMT/IST)	Operations EQM	Cooler recycling (FM IMT/IST)	non operating	
		Max I/F Temp (*)	Max I/F Temp (*)	Max I/F Temp (*)	Max continuous Temp	Bake out Temp (72h max)
<b>L0</b>	SPIRE SM Detector enclosure (814)	2 K	-	-	60.0 °C	80 °C
	SPIRE Cooler Pump strap (node 815)	2 K	-	25 K (peak)	60.0 °C	80 °C
	SPIRE Cooler Evaporator strap (node 816)		-	2 K	60.0 °C	80 °C
<b>L1</b>	SPIRE L1- FPU structure (two straps) (node 800)	6.2 K	-	-	60.0 °C	80 °C
<b>L2</b>	SPIRE L2 (Optical bench / FPU legs)	12 K	-	-		80 °C
<b>L3</b>	SPIRE L3 HSJFP, HSJFS	16 K	-	-		80 °C

(\*) : the on-ground thermal IF temperatures (for SPIRE instrument testing) are provided here for information only, and are valid only for the H-EPLM IMT. There are based on ASED thermal analysis, and more details could be found in IIDA section 5.7.

**Table 5.7-2: On ground thermal requirements**

### ASED proposal HP-ASED-EM-0528-04 dated 17/06/04 :

#### On-ground thermal Interface temperatures for instrument testing

The Herschel EPLM will provide the thermal environment to allow the testing of the Herschel instruments on-ground.

In Table x.x-n the on-ground I/F temperatures for SPIRE instrument testing are provided for information and are valid for the H-EPLM IMT.

#### Important Notes:

- The temperatures are based on analysis results (see RD-01, Issue 4.0) and do not include uncertainties. The predicted IMT I/F temperatures will be verified during STM testing and may require to be updated.
- SPIRE specific note: The I/F temperatures are calculated for Spectrometer mode. The L1 Node 803 has a temperature of 7.3K based on the analysis results. The L1 temperature is directly related to the absorptivity of the FPU instrument surface, which is outside the responsibility of ASED. The basis for SPIRE is the ITMM, Issue 2.5 and the associated geometry model.



<b>On-ground thermal I/F temperature analysis results for instrument testing (based on thermal analysis, RD-01)</b>				
	<b>SPIRE FPU thermal I/F</b>	<b>I/F node</b>	<b>I/F Temp @ Heat Load</b>	<b>Cooler State</b>
<b>L0</b>	Detector Box	814	2 K	Operating
	Cooler Pump	815	2 K	Operating
				25 K (peak)
	Cooler Evaporator	816	2 K	Recycling
<b>L1</b>	FPU structure	800	6.2 K	Operating
<b>L2</b>	Optical bench / FPU legs		12 K	Operating
<b>L3</b>	HSJFP (JFET Photometer)	831	15 K	-
	HSJFS (JFET Spectrometer)	832	15 K	-
-	Instrument shield (equivalent Radiative temperature)		16 K	-

**Table x.x-n: On-ground thermal IF temperatures for instrument testing - SPIRE**

Notes and Assumptions applicable to Table x.x-n:

- Special operations of the Herschel cryostat are foreseen to achieve the above values for instrument testing. The radiative environment may still vary, since the temperatures will not be in stable conditions (e.g. heat shields, harness).
- Level 0 I/F's to the He-II tank are dipped into the fluid. During recycling of the SPIRE cooler it is assumed the cryostat is tilted in such a way that the top of the open pod is in contact with He.
- Assumed is a He-II tank temperature of 1.7 K, it will increase with a small gradient, because the tank will be in closed condition.
- The helium flow for optical bench cooling comes out of the HOT. Variation of the He flow could be possible. Current assumption is 100mg/sec for about 10 h maximum. Then a refill is necessary.
- Cryo Cover in front of Spire's entrance is cooled to approx. 80 K.
- Sorption Cooler Recycling phase is composed of 2 phases in sequence, as described in the SPIRE IID-B
- Heat flows are dominated by radiation due to ambient temperature of the cryostat vacuum vessel (approx. 295K).

RD-01: HEPLM Thermal Analysis Report, HP-2-ASED-RP-0011, Issue 4

## Annex 6: List of SPIRE AIT documents relevant for system AIT

From **ASED SPIRE\_AIT Document List\_290604.doc**  
**Herschel SPIRE - Available AIT Documents (Draft for comments) Status: 29/06/04**

No	Title	Reference No.	Issue	Date	Comments
<b>Plans</b>					
1.	SPIRE Warm Electronics Integration Plan	SPIRE-RAL-DOC-001132	0.1	10/01/02	Provided at SPIRE IHDR, July 2003
2.	SPIRE CQM Instrument Level Test Plan	SPIRE-RAL-DOC-001049	1.0	15/05/02	Provided at SPIRE IHDR, July 2003
3.	SPIRE Cryostat Integration and Test Plan	SPIRE-RAL-DOC-001701	1.1	6/06/03	Provided at SPIRE IHDR, July 2003, partly relevant
4.	SPIRE EQM Test Plan	SPIRE-RAL-DOC-001905	1.0	19/12/03	
<b>Procedures</b>					
5.	SPIRE FPU Handling and Integration Procedure	SPIRE-RAL-PRC-001923	1	20/05/04	
6.	SPIRE - Structure Assembly, Integration and Handling	SPIRE-MSS-PRJ-001650	3.0	May 2003	Provided at SPIRE IHDR, July 2003, obsolete as covered by SPIRE-RAL-PRC-001923?; (MSSL ref. MSSL/SPIRE/SP006.01 or SP011.03)
7.	Operating the SPIRE Instrument	SPIRE-RAL-DOC-00768	0.5 Draft	31/05/03	
<b>Test Specifications</b>					
8.	SPIRE Functional Test Specification	SPIRE-RAL-DOC-001652	1.0 Draft 2	5/12/03	
9.	SPIRE EQM Test Program Definition Test Case Forms	SPIRE-RAL-NOT-000982	0.2	19/02/02	This note contains the test sheets defined by Astrium for the EQM testing for Herschel/SPIRE (see HP-2-ASED-TN-0004).
10.	Definition of the SPIRE CQM Delivered for system level testing	SPIRE-RAL-NOT-000983	3.0	19/12/03	
11.	SPIRE CQM Performance Test Specification	SPIRE-RAL-DOC-001123	Draft 0.4	29/05/02	Provided at SPIRE IHDR, July 2003
12.	SPIRE DRCU Integration Test Specification	SPIRE-RAL-DOC-001799	1.0 Draft 1	5/09/03	
<b>ASED Instrument AIT Documents</b>					
	Instrument Testing on PLM EQM Level	HP-2-ASED-PL-0021	2.0	06/06/03	
	Instrument Testing on PLM PFM and Satellite Level	HP-2-ASED-PL-0031	1.0	10/06/02	

# **Annex 7**

## **Progress/Status**

**Eric Sawyer**

**SPIRE**

progress/status report

SPIRE

1

**AVM**

- No update from last telecon

progress/status report

SPIRE

2

## CQM

### Cold Qualification model

- Following cold vibration Test campaign at CSL
- Full post test visual inspection shows no damage
- Cooler has been returned to CEA for checkout, no loss of performance. A test report is available.
- Modifications to internal thermal interfaces on the detector boxes has been initiated, design complete, parts manufactured, currently being annealed, then gold plating, then assembly.
- This delays start of next cold test until end of July
- November delivery to Spacecraft is ok.

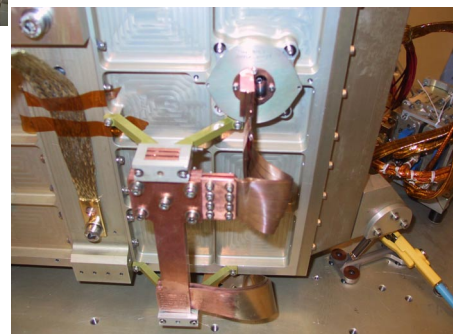
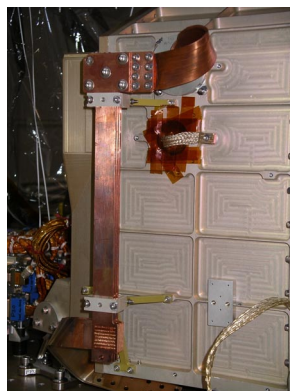
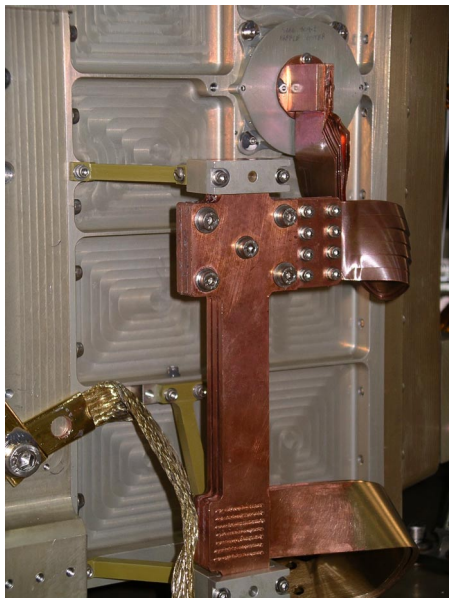
## 2K inter-box strap

- High Delta T recorded during cold test
- Strap redesigned to improve performance
- Large area bonded copper to aluminium joints
- This doubles up as electrical isolation joints as well
- Bolted copper to copper joints
- Design complete, parts manufactured, currently being annealed, then gold plating, then assembly.

## L0 straps

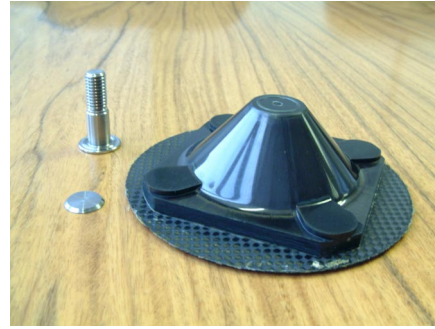
- Prototypes made and qualified mechanically during CSL cold vibration test
- Tests on copper samples show poor performance of thin sections
- Annealing improved results but not enough
- Other sources being explored, (Advent, Schlenk ) and samples obtained.
- Annealing today, then conductance testing.

## L0 straps



## CFRP feet

- Detector box and FPU test units manufactured and tested
- All cold strength tested
- All passed except FPU cone
- Broke below estimated load at bolt cone interface
- Some redesign required.
- All other released for manufacture.



## Warm electronics

- Release for FM manufacture
- No outstanding technical issues.
- CEA delay in QM2 delivery (4-6 weeks)

## PFM

- Structure manufactured, except CFRP legs and L0 straps
- Cooler –In manufacture, delivery September which will delay PFM
- DRCU FM manufacture initiated some delays
- SMEC – CQM in assembly and test, delivery in July
- Mirrors –delivered
- BDA - SSW delivered, SLW ready to send
- Photometer BDAs late may cause delay in PFM2 build
- DPU – Status uncertain
- Calibrators, filters – SCAL and filters ready, PCAL in test,.
- BSM – Built, some problems with range, FM will be delivered as is, FS will be fitted with new magnets and swapped out later.
- PFM FPU Mirror mounts integrated, metrology done.
- Alignment started 7<sup>th</sup> June, finished this week.

## AIV

- CQM tests phase 1 complete
- Test facility being readied for next phase
- New He level sensor and ‘manostat’ fitted
- Phase 2 to start end July

## schedule

### Milestones.

- CQM build complete 5/12/03 Complete
- CQM cold verification 1 start 31/01/04 Complete
- Cold vibration end 28/4/04 completed 8/5/04
- CQM Ready for delivery November with DRCU QM1 (temp)
- DRCU (QM1) required for FM programme.
- FM delivery October 05 with QM2 electronics, delay of 6 weeks
- FM DRCU delivery to spacecraft Nov 05

## BDA deliveries

- Technical problems at JPL
- Vibration failures on JFETs, traced to workmanship issues.
- New procedures implemented
- Spectrometer JFETs (PFM1) Sept 04
- Photometer JFETs (PFM2) Nov 04
- Photometer BDAs (PFM2) Dec 04



