



DCR / ECR Number:

HR-SP-RAL-ECR-002

Spacecraft / Project	Herschel-Planck	Originator(s)	Matt Griffin, Gary Parks, Jerry Lilienthal
System / Experiment / Model	SPIRE CQM, PFM, FS	Signature	
Sub-System	Detectors	Date	4 February 2003
Assembly		Classification	Routine
Sub-Assembly		Ref. Doc. / Drwg No.	SPIRE-UCF-PRJ-000822 Issue 2.0, 6 September 2001
Item		Reference	

ECR Title	Herschel-SIRE Business Agreement Revision
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ECR Description	
Update Herschel-SIRE Business Agreement (SPIRE-UCF-PRJ-000822 Issue 2.0, 6 September 2001) according to attached sheets.	
Need /Justification For Change	
<ul style="list-style-type: none"> • Modifications to some of the deliverables and delivery dates agreed between JPL and the SPIRE Project Team at the meeting in Saclay on December 13 2002 and in subsequent discussions. • Various minor changes 	
Affected Items / Work package (Title, Number, Issue, Para)	
SPIRE Major Milestones list	

Related Factors			
Spacecraft	Performance	Power	Others (Specify)
Ground Segment	Elect. Interfaces	Weight	I/F.
Launch Vehicle	Mech. Interfaces	Schedule	
Payload	Test/Verification	Cost	

Attachments	Distribution
None	Gary Parks, Jamie Bock, JPL Eric Sawyer, Bruce Swinyard, RAL Matt Griffin, Cardiff

Change Approved	Signature and Date	
	Matt Griffin	
	Eric Sawyer	



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List of proposed amendments

Section 3: Table of Reference Documents

- Author of RD 11 is Tim Larson
- RD 11 document number is D-19164

Section 9: JPL Receivables and Deliverables

- Update Table 1a as follows:
 - Change: 15 JFET STM modules to 8 JFET STM modules
 - Change 5 (TBC) RF modules for FPU to 12 RF modules for FPU
 - Delete: 3rd line from the bottom (15 Harness between JFET modules and BDAs)
- Replace Table 1b with the following:

Table 1b: Hardware deliverables required for CQM instrument

Item	Del. by	Rec. by
P/LW CQM BDA ⁶	JPL	RAL
S/LW CQM BDA ⁶	JPL	RAL
S/SW CQM BDA ⁷	JPL	RAL
3 JFET modules ⁸	JPL	RAL
P/LW BDA far-infrared filter	CARDIFF	JPL
S/LW BDA far-infrared filter	CARDIFF	JPL
S/SW BDA far-infrared filter	CARDIFF	JPL

- Replace note 7 to Table 1b with the following:
"BDA is fully functional, but without connector savers. This unit will have been subjected to environmental testing prior to delivery, but will not have been subjected to performance testing in the BODAC array test facility. While the UK SPIRE Project accepts this de-scope as essential for schedule and cost reasons, it notes that this BDA's performance will not have been verified or characterised at unit level prior to installation into the Flight Spare instrument. JPL is asked to assess the possibility of carrying out BODAC testing on this unit should any future schedule revision permit this."
- Replace note 8 to Table 1b with the following:
"JFET modules include savers and are fully functional. If the CQM JFET modules provide reasonable functional equivalents to the flight units, in the judgement of the SPIRE instrument team, the minimum performance values listed in section 3 do not have to be met. Modules to be re-used for FS instrument."
- Delete note 9 to Table 1b
- Replace Table 1c with the following:

Table 1c: Hardware deliverables required for PFM instrument

Item	Del. by	Rec. by
P/LW PFM BDA ⁹	JPL	RAL
P/MW PFM BDA ⁹	JPL	RAL
P/SW PFM BDA ⁹	JPL	RAL
S/LW PFM BDA ⁹	JPL	RAL
S/SW PFM BDA ⁹	JPL	RAL
8 JFET modules ¹⁰	JPL	RAL
12 RF modules for FPU ¹⁰	JPL	RAL
15 Harness between JFET modules and BDAs	JPL	RAL
Back harnesses for JFET racks	JPL	RAL
T/C thermometers, heaters, fixtures, and cable (TBC) ⁹	JPL	RAL
P/LW BDA far-infrared filter	CARDIFF	JPL
P/MW BDA far-infrared filter	CARDIFF	JPL
P/SW BDA far-infrared filter	CARDIFF	JPL
S/LW BDA far-infrared filter	CARDIFF	JPL
S/SW BDA far-infrared filter	CARDIFF	JPL

- Note numbers 10 and 11 to Table 1c: change to note numbers 9 and 10, respectively
- Table 1d: Change note numbers 10 and 11 to 9 and 10 respectively



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Update Annex A as follows:

Annex A

Table A1: Need dates for hardware deliverables for STM instrument

Item	Del. by	Rec. by	Need Date
P/LW STM suspended BDA	JPL	RAL	20 Jan. 2003
P/MW STM BDA	JPL	RAL	20 Jan. 2003
P/SW STM BDA	JPL	RAL	20 Jan. 2003
S/SW STM BDA	JPL	RAL	20 Jan. 2003
S/LW STM BDA	JPL	RAL	20 Jan. 2003
8 JFET STM modules	JPL	RAL	15 Mar. 2003
12 RF modules for FPU	JPL	RAL	28 Feb. 2003
15 Harness between JFET modules and BDAs	JPL	RAL	1 Apr. 2003
Back harnesses for JFET racks	JPL	RAL	15 Mar. 2003

Table A2: Need dates for hardware deliverables required for CQM instrument

Item	Del. by	Rec. by	Need Date
P/LW CQM BDA	JPL	RAL	30 May 2003
S/LW CQM BDA	JPL	RAL	30 May 2003
S/SW CQM BDA (untested delivery)	JPL	RAL	30 May 2003
3 JFET modules (a)	JPL	RAL	30 May 2003
P/LW BDA far-infrared filter	CARDIFF	JPL	1 Dec. 2002
S/LW BDA far-infrared filter	CARDIFF	JPL	15 Jan. 2003
S/SW BDA far-infrared filter	CARDIFF	JPL	15 Jan. 2003
P/LW CQM BDA (b)	RAL	JPL	1 Jun. 2004
S/LW CQM BDA (b)	RAL	JPL	24 Jul. 2004
S/SW CQM BDA (b)	RAL	JPL	6 Jan. 2004

Notes to Table A2:

- (a) An earlier delivery (beginning of April) would allow cold harness check-out
- (b) These need dates are dictated by the requirement to refurbish QCMs in order to deliver FS BDAs

Table A3: Need dates for hardware deliverables required for PFM instrument

Item	Del. by	Rec. by	Need Date
P/LW PFM BDA (a)	JPL	RAL	1 Jan 04
P/MW PFM BDA (a)	JPL	RAL	1 Jan 04
P/SW PFM BDA (a)	JPL	RAL	1 Jan 04
S/LW PFM BDA (a)	JPL	RAL	1 Jan 04
S/SW PFM BDA (a)	JPL	RAL	1 Jan 04
8 JFET modules	JPL	RAL	1 Jan 04
12 RF modules for FPU	JPL	RAL	1 Jan 04
15 Harness between JFET modules and BDAs	JPL	RAL	1 Jan 04
Back harnesses for JFET racks	JPL	RAL	1 Jan 04
T/C thermometers, heaters, fixtures, and cable (TBC)	JPL	RAL	1 Jan 04
P/LW BDA far-infrared filter (b)	CARDIFF	JPL	3 Feb 2003
P/MW BDA far-infrared filter (b)	CARDIFF	JPL	3 Feb 2003
P/SW BDA far-infrared filter (b)	CARDIFF	JPL	3 Feb 2003
S/LW BDA far-infrared filter (b)	CARDIFF	JPL	3 Feb 2003
S/SW BDA far-infrared filter (b)	CARDIFF	JPL	3 Feb 2003

Notes to Table A3:

- (a) Need dates for the PFM BDAs are determined by the PFM instrument AIV schedule. This is not currently



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compatible with JPL schedule. Options for work-around around are:

- (i) Project accepts lower level of testing on the final BDA
- (ii) JPL request waiver on delivery of final BDA

The Project recommends that one of the spectrometer BDAs be delivered last.

- (b) Phased delivery to be defined that matches JPL test schedule.

Table A4: Need dates for hardware deliverables required for FS instrument

Item	Del. by	Rec. by	Need Date
P/MW FS BDA	JPL	RAL	10 Jan. 2005
P/SW FS BDA	JPL	RAL	10 Jan. 2005
S/SW FS BDA (a)	JPL	RAL	10 Jan. 2005
5 JFET modules	JPL	RAL	10 Jan. 2005
T/C thermometers, heaters, fixtures, and cable (TBC)	JPL	RAL	10 Jan. 2005
P/MW BDA far-infrared filter	CARDIFF	JPL	1 Sept. 2003
P/SW BDA far-infrared filter	CARDIFF	JPL	1 Sept. 2003
S/SW BDA far-infrared filter	CARDIFF	JPL	1 Sept. 2003
P/LW CQM BDA	JPL	RAL	10 Jan. 2005
P/SW CQM BDA	JPL	RAL	10 Jan. 2005

Note to Table A4:

- (a) The baseline plan is that this BDA is shipped, without BODAC tests, for use in the CQM and subsequently the FS without return to the US for testing in BODAC. The above delivery only applies to the alternative option of returning the unit after the CQM programme for testing and return to the UK for use in the FS.

Table A5: Need dates for test equipment required for testing at RAL

Item	Del. by	Rec. by	Need Date
24-channel JFET cross-talk card	JPL	RAL	1 May 2003
24-channel JFET termination card	JPL	RAL	1 May 2003
24-channel bolometer cross-talk card	JPL	RAL	1 May 2003
24-channel warm bolometer simulator card	JPL	RAL	1 May 2003
24-channel DC amplifier card	JPL	RAL	Delivered
AC/DC bias generator	RAL	RAL	1 May 2003
JFET power supply	RAL	RAL	1 May 2003
Data acquisition system for DC testing	RAL	RAL	1 May 2003
QM1 DRCU electronics	CEA	RAL	1 May 2003
RF characterisation equipment	RAL	RAL	1 May 2003

Table A6: Need dates for equipment required for testing at JPL and CU

Item	Del. by	Rec. by	Need Date
Filter specifications for JPL test dewar	JPL	CARDIFF	Delivered
Filters for JPL test dewar	CARDIFF	JPL	Delivered
Filter specifications for CU feedhorn testing	CU	CARDIFF	Delivered
Filters for CU feedhorn testing	CARDIFF	CU	Delivered