

Herschel/SPIRE

MULLARD SPACE SCIENCE LABORATORY

UNIVERSITY COLLEGE LONDON Author: C BROCKLEY-BLATT

SPIRE – STRUCTURE HARDWARE TREE

Document Number: MSSL/SPIRE/SP013.01 12 July 2004

Distribution:

Spire Project Office	B Winter	<input type="checkbox"/>
ESA PX	A Heske	<input type="checkbox"/>
	J Bruston	<input type="checkbox"/>
	J Rautakoski	<input type="checkbox"/>
RAL	B Swinyard	<input type="checkbox"/>
	E Sawyer	<input type="checkbox"/>
	J Delderfield	<input type="checkbox"/>
	J Long (Project Office)	<input type="checkbox"/>
Mullard Space Science Laboratory	A Smith	<input type="checkbox"/>
	J Coker	<input type="checkbox"/>
	C Brockley-Blatt	<input type="checkbox"/>
	A Dibbens	<input type="checkbox"/>
ATC	C Cunningham	<input type="checkbox"/>
	I Pain	<input type="checkbox"/>
	T Paul	<input type="checkbox"/>
Cardiff	P Hargrave	<input type="checkbox"/>
	D Peterson	<input type="checkbox"/>
	J Hackett	<input type="checkbox"/>
	J Bock	<input type="checkbox"/>
CSA	J Lilienthal	<input type="checkbox"/>
	J Taylor	<input type="checkbox"/>
COMDEV	L Duband	<input type="checkbox"/>
JPL	Herschel.Planck@esa.int	<input type="checkbox"/>

Author: C Brockley-Blatt **Date:**

Checked: B Winter **Date:**

Approved: Tony Dibbens **Date:**

	SPIRE	Project Document	Ref: MSSL/SPIRE/SP013.01
		Hardware Tree	Issue: 1.0
			Date: July 2004
			Page: Page 2 of 15

Change Record

ISSUE	Date	Brief description of change
1.0	July 2004	New Document

	SPIRE	Project Document	Ref: MSSL/SPIRE/SP013.01
		Hardware Tree	Issue: 1.0
			Date: July 2004
			Page: Page 3 of 15

Table of Contents

1. Scope of Document
2. Documents
3. Hardware Tree and Drawing List

Table of Figures

- Figure 3-1 Structure Hardware Tree
Figure 3-2 Structure Drawing List

	SPIRE	Project Document	Ref: MSSL/SPIRE/SP013.01
		Hardware Tree	Issue: 1.0
			Date: July 2004
			Page: Page 4 of 15

Glossary

All terms are listed in the CIDL.

1. Scope of Document

This document presents the Hardware Tree for the Spire Structure (breakdown of the product into sub-assemblies) of the PFM and a list of associated drawings.

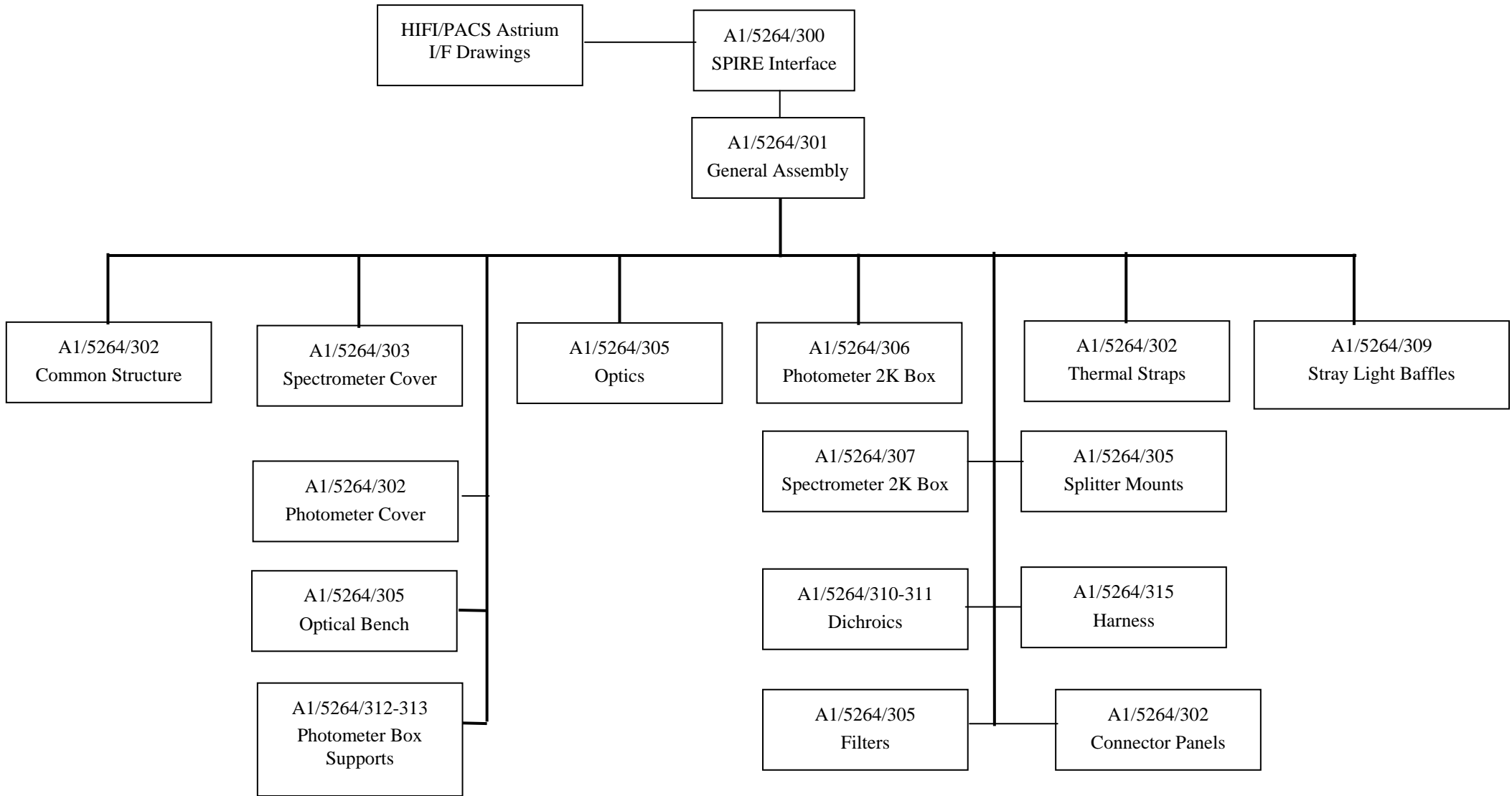
2. Documents


All documents are listed in Figure 3.2 of the CIDL.

3. Hardware Tree and Drawing List

The Structure Hardware Tree and associated Drawings are presented in the figures below.

	<h1>SPIRE</h1>	Project Document	Ref: MSSL/SPIRE/SP013.01
		Hardware Tree	Issue: 1.0
			Date: July 2004
			Page: Page 5 of 15



	<h1>SPIRE</h1>	Project Document		Ref:	MSSL/SPIRE/SP013.01
		Hardware Tree		Issue:	1.0
				Date:	July 2004
				Page:	Page 7 of 15


Dwg Level		Drawing Number	Issue	Sheets	System	Title	Material
	X	A1/5264/301-2	N/A	1	General Assembly	Strap Level '0' Pump	OFHC Copper
	X	A1/5264/301-3	N/A	1	General Assembly	Strap Level '0' Detector Boxes	OFHC Copper
	X	A1/5264/301-4	3	1	General Assembly	Cold Strap Support Leg	Torlon
	X	A1/5264/301-5	N/A	1	General Assembly	Backing Plate	OFHC Copper
	X	A1/5264/301-6	N/A	1	General Assembly	Backing Plate Thick	OFHC Copper
	X	A1/5264/301-7	N/A	1	General Assembly	Insulator	Vespel
	X	A1/5264/301-8	N/A	1	General Assembly	Isolator Plate	Vespel
	X	A1/5264/301-9	N/A	1	General Assembly	Clamp Plate	OFHC Copper
	X	A1/5264/301-10	5	1	General Assembly	Cold Strap Support	Torlon
	X	A1/5264/301-10A	5	1	General Assembly	Cold Strap Support	Torlon
	X	A1/5264/301-11	5	1	General Assembly	Cold Strap Support Clamp	Alum Alloy BS1414 6082
	X	A1/5264/301-12	2	1	General Assembly	Insulating Bush	Torlon
	X	A1/5264/301-13	N/A	1	General Assembly	Insulator 2	Vespel
	X	A1/5264/301-14	1	1	General Assembly	Cold Strap Support Diagonal	Torlon
X		A1/5264/302	2	2	Common Structure	Photometer Cover Assembly	-
	X	A2/5264/302-1	5	1	Common Structure	FPU Blade Mount Unit	Stainless Steel BS970 303/S31
	X	A3/5264/302-2	2	1	Common Structure	Insulating Bush	Vespel
	X	A3/5264/302-3	1	1	Common Structure	Special Washer	Stainless Steel BS970 303/S31
	X	A1/5264/302-4	5	5	Common Structure	Optical Bench	Alum Alloy BS1414 6082
	X	A1/5264/302-5	4	1	Common Structure	Fixed Mount	Stainless Steel
	X	A1/5264/302-6	9	3	Common Structure	One Piece Photometer Cover	Alum Alloy BS1414 6082
	X	A1/5264/302-7	2	1	Common Structure	Photometer Cover Bottom Seal	Alum Alloy BS1414 6082
	X	A1/5264/302-8	2	1	Common Structure	Photometer Cover Top Seal	Alum Alloy BS1414 6082
	X	A1/5264/302-9	2	1	Common Structure	Photometer Cover Insert	Alum Alloy BS1414 6082
	X	A1/5264/302-10	7	2	Common Structure	Photometer Top Cover	Alum Alloy BS1414 6082
	X	A1/5264/302-12	2	1	Common Structure	Pfil 2 Backplate	Alum Alloy BS1414 6082

	<h1>SPIRE</h1>	Project Document		Ref: MSSL/SPIRE/SP013.01
		Hardware Tree		Issue: 1.0
				Date: July 2004
				Page: Page 8 of 15

Dwg Level	Drawing Number	Issue	Sheets	System	Title	Material
X	A1/5264/302-13	1	1	Common Structure	PFIL 2 H Seal	Alum Alloy BS1414 6082
X	A1/5264/302-14	4	1	Common Structure	A Frame Bracket	Alum Alloy BS1414 6082
X	A1/5264/302-15	2	1	Common Structure	A Frame Support Plate	Alum Alloy BS1414 6082
X	A1/5264/302-16	1	1	Common Structure	CFIL 1 H Section	Alum Alloy BS1414 6082
X	A1/5264/302-17	1	1	Common Structure	PFIL2 Clamp Ring	Alum Alloy BS1414 6082
X	A1/5264/302-18	1	1	Common Structure	Tubular Dowel	Stainless Steel BS970 303/S31
X	A1/5264/302-19	1	1	Common Structure	Tubular Dowel	Stainless Steel BS970 303/S31
X	A3/5264/302-20A	1	1	Common Structure	2K Interconnecting Strap	99.999% Pure Copper
X	A2/5264/302-22	3	1	Common Structure	BDA Connector flange – Photo.	Alum Alloy BS1414 6082
X	A1/5264/302-23	4	1	Common Structure	BDA connector flange – Spectro.	Alum Alloy BS1414 6082
X	A1/5264/302-24	2	1	Common Structure	Plug, BDA Connector Flange	Alum Alloy BS1414 6082
X	A1/5264/302-25	3	1	Common Structure	Harness support BDA connector Flange	Alum Alloy BS1414 6082
X	A1/5264/302-26	1	1	Common Structure	A Frame Bracket (Spec)	Alum Alloy BS1414 6082
X	A1/5264/302-27	1	1	Common Structure	RFI Filter Frame Corner Bracket	Alum Alloy BS1414 6082
X	A1/5264/302-28	2	1	Common Structure	Temporary RF Bracket	Alum Alloy BS1414 6082
X	A1/5264/302-29	2	1	Common Structure	FRI Filter frame Edge Bracket	Alum Alloy BS1414 6082
X	A1/5264/302-30	4	1	Common Structure	Cooler to Photo Detector Box Strap	OFHC Copper
X	A1/5264/302-31	3	1	Common Structure	Cooler to Spec Detector Box Strap	OFHC Copper
X	A1/5264/302-32	5	1	Common Structure	Cooler Strap Isolation Plate	Vespel
X	A1/5264/302-33	2	1	Common Structure	Clamp Plate Photometer Strap	Alum Alloy BS1414 6082
X	A1/5264/302-34	1	1	Common Structure	Stainless Steel Bolts Cut Down (No dwg.)	
X	A1/5264/302-39	1	1	Common Structure	Dowel retaining Plate	Alum Alloy BS1414 6082
X	A1/5264/302-40	1	1	Common Structure	Tubular Dowels (8mm)	Stainless Steel BS970 303/S31
X	A1/5264/302-41	1	1	Common Structure	Dowel – ‘A’ Frame Support	Stainless Steel BS970 303/S31
X	A1/5264/302-42	1	1	Common Structure	Dowel – ‘A’ Frame Top	Stainless Steel BS970 303/S31
X	A1/5264/302-43	1	1	Common Structure	Special Washer – A Frame Bracket	Stainless Steel BS970 303/S31
X	A1/5264/302-44	1	1	Common Structure	Blanking Plug	Alum Alloy BS1414 6082 T6
X	A3/5264/302-45	2	1	Common Structure	Diagonal length of spectrometer cold strap	Torlon

	<h1>SPIRE</h1>	Project Document	Ref:	MSSL/SPIRE/SP013.01
		Hardware Tree	Issue:	1.0
			Date:	July 2004
			Page:	Page 9 of 15

Dwg Level	Drawing Number	Issue	Sheets	System	Title	Material
X	A3/5264/302-46	3	1	Common Structure	Spectrometer MK2 Level 0 Strap	99.999% Pure Copper
X	A3/5264/302-47	3	1	Common Structure	Pump MK2 Level 0 Strap	99.999% Pure Copper
X	A3/5264/302-48	5	1	Common Structure	Evaporator MK2 Level 0 Strap Inner	99.999% Pure Copper
X	A3/5264/302-49	5	1	Common Structure	Joining Plate Evaporator Outer	99.999% Pure Copper
X	A3/5264/302-50	3	1	Common Structure	Upper Flex Pump	99.999% Pure Copper
X	A3/5264/302-51	3	1	Common Structure	Upper Flex Evaporator	99.999% Pure Copper
X	A3/5264/302-52	6	1	Common Structure	Lower Flex Spec Outer	99.999% Pure Copper
X	A3/5264/302-53	5	1	Common Structure	Lower Flex Pump Outer	99.999% Pure Copper
X	A3/5264/302-54	4	1	Common Structure	Lower Flex Evaporator Outer	99.999% Pure Copper
X	A3/5264/302-56	2	1	Common Structure	Level 0 Coldstrap Evaporator Outer	99.999% Pure Copper
X	A3/5264/302-57	3	1	Common Structure	Joining Plate Evaporator Inner	99.999% Pure Copper
X	A3/5264/302-58	2	1	Common Structure	Joining Plate Pump/Spec	99.999% Pure Copper
X	A3/5264/302-59	3	1	Common Structure	Upper Flex Spec	99.999% Pure Copper
X	A3/5264/302-60	1	1	Common Structure	Dowel 18L x Dia 5	Stainless Steel BS970 303/S31
X	A1/5264/303	2	2	Spectrometer Cover	Spectrometer Cover Assembly	-
X	A1/5264/303-1	3	2	Spectrometer Cover	Spectrometer Cover Wall	Alum Alloy BS1414 6082
X	A1/5264/303-1A	1	1	Spectrometer Cover	Adapter Block	Alum Alloy BS1414 6082
X	A1/5264/303-2	3	3	Spectrometer Cover	Spectrometer Cover Lid	Alum Alloy BS1414 6082
X	A1/5264/303-3	2	3	Spectrometer Cover	Spectrometer Cover Baffle	Alum Alloy BS1414 6082
X	A1/5264/303-4	2	1	Spectrometer Cover	Spectrometer Cover Bottom Seal	Alum Alloy BS1414 6082
X	A1/5264/303-5	2	1	Spectrometer Cover	Spectrometer Cover Top Seal	Alum Alloy BS1414 6082
X	A1/5264/303-6	2	1	Spectrometer Cover	Spectrometer Baffle SM12	Alum Alloy BS1414 6082 T6
X	A1/5264/303-6A	1	1	Spectrometer Cover	Spectrometer Baffle SM1 Development	-
X	A1/5264/304-6	6	1	Photometer Cover	CFIL 1 Baffle Mount	Alum Alloy BS1414 6082 T6
X	A2/5264/304-7	3	1	Photometer Cover	CFIL 1 Clamp Ring	Alum Alloy BS1414 6082 T6
X	A1/5264/305	2	5	Optical Bench	Optical Bench Assembly	-
X	A1/5264/305-1	1	1	Optical Bench	Optical Bench Harness Tie Positions	-
X	A1/5264/305-2	2	1	Optical Bench	SM06 Mirror Mount	Alum Alloy BS1470 6082 T6

	<h1>SPIRE</h1>	Project Document	Ref: MSSL/SPIRE/SP013.01
		Hardware Tree	Issue: 1.0
			Date: July 2004
			Page: Page 10 of 15

Dwg Level	Drawing Number	Issue	Sheets	System	Title	Material
X	A1/5264/305-3	3	1	Optical Bench	SM07 Mirror Mount	Alum Alloy BS1470 6082 T6
X	A1/5264/305-4	3	1	Optical Bench	SM08A Mirror Mount	Alum Alloy BS1470 6082 T6
X	A1/5264/305-6	2	1	Optical Bench	SM09A & SM10A Mirror Mount	Alum Alloy BS1470 6082 T6
X	A1/5264/305-7	2	1	Optical Bench	SM09B & SM10B Mirror Mount	Alum Alloy BS1470 6082 T6
X	A1/5264/305-8	3	1	Optical Bench	SM11A Mirror Mount	Alum Alloy BS1470 6082 T6
X	A1/5264/305-9	2	1	Optical Bench	SM11B Mirror Mount	Alum Alloy BS1470 6082 T6
X	A1/5264/305-10	1	1	Optical Bench	SM12A Mirror Mount	Alum Alloy BS1470 6082 T6
X	A1/5264/305-11	1	1	Optical Bench	SM12B Mirror Mount	Alum Alloy BS1470 6082 T6
X	A1/5264/305-12	2	1	Optical Bench	Secondary Optical Bench (CM3/SPMOT)	Alum Alloy BS1470 6082 T6
X	A1/5264/305-13	2	1	Optical Bench	PM06 Mirror Mount	Alum Alloy BS1470 6082 T6
X	A1/5264/305-14	1	1	Optical Bench	PM08 Mirror Mount	Alum Alloy BS1470 6082 T6
X	A1/5264/305-15	1	1	Optical Bench	SM06 & SM07 Bulkhead	Alum Alloy BS1470 6082 T6
X	A3/5264/305-16	8	1	Optical Bench	Optical Reference Cube	Alum Alloy BS1470 6082 T6
X	A2/5264/305-17	1	1	Optical Bench	PM10 Mirror mount	Alum Alloy BS1470 6082 T6
X	A1/5264/305-18	1	1	Optical Bench	SM06 Mirror mount - Spare	Alum Alloy BS1470 6082 T6
X	A1/5264/305-19	1	1	Optical Bench	PM06 Mirror mount - Spare	Alum Alloy BS1470 6082 T6
X	A2/5264/305-20	5	1	Optical Bench	SFIL 2 Mount	Alum Alloy BS1470 6082 T6
X	A3/5264/305-21	4	1	Optical Bench	SFIL 2 Clamp	Alum Alloy BS1470 6082 T6
X	A3/5264/305-22	3	1	Optical Bench	SFIL 2 Cold Stop	Alum Alloy BS1470 6082 T6
X	A1/5264/305-23	4	1	Optical Bench	SBS 1 and SBS 2 Filter Mount	Alum Alloy BS1470 6082 T6
X	A2/5264/305-24	1	1	Optical Bench	SBS 1 and SBS 2 Filter Clamp	Alum Alloy BS1470 6082 T6
X	A2/5264/305-25	1	1	Optical Bench	Special Washer Sub Optical Bench	Stainless Steel BS970 303/S31
X	A2/5264/305-26	3	1	Optical Bench	Mirror Anti Rotation Dowel	Stainless Steel BS970 303/S31
X	A2/5264/305-27	2	1	Optical Bench	Optical Reference Cube Dowels	Stainless Steel BS970 303/S31
X	A2/5264/305-28	2	1	Optical Bench	SFIL2 - Dowel	Stainless Steel BS970 303/S31
X	A2/5264/305-29	1	1	Optical Bench	SM9B/SBS1 Baffle	Alum Alloy BS1470 6082 T6
X	A2/5264/305-30	1	2	Optical Bench	SM9A/SBS1 Baffle	Alum Alloy BS1470 6082 T6

	<h1>SPIRE</h1>	<h2>Project Document</h2>		Ref: MSSL/SPIRE/SP013.01
		<h2>Hardware Tree</h2>		Issue: 1.0
				Date: July 2004
				Page: Page 11 of 15

Dwg Level	Drawing Number	Issue	Sheets	System	Title	Material
X	A1/5264/306	4	2	Photometer 2K Box	Photometer 2K Box Assembly	-
X	A1/5264/306A	2	1	Photometer 2K Box	Photometer BDA Cable Routes	-
X	A1/5264/306B	4	1	Photometer 2K Box	Photometer Bus Bar Assembly	-
X	A1/5264/306-1	5	3	Photometer 2K Box	Back Cover	Alum Alloy BS1470 6082 T6
X	A1/5264/306-2	7	4	Photometer 2K Box	Spine	Alum Alloy BS1470 6082 T6
X	A1/5264/306-3	5	3	Photometer 2K Box	Front Cover	Alum Alloy BS1470 6082 T6
X	A1/5264/306-4	1	1	Photometer 2K Box	Photometer Cold Stop Clamp	Alum Alloy BS1470 6082 T6
X	A1/5264/306-5	2	1	Photometer 2K Box	Photometer Cold Stop	Phosper bronze
X	A3/5264/306-7	3	1	Photometer 2K Box	Bus Bar Upper	99.999% Pure Copper
X	A3/5264/306-8	4	1	Photometer 2K Box	Busbar Lower	99.999% Pure Copper
X	A3/5264/306-9	3	1	Photometer 2K Box	BDA-Busbar Flange	99.999% Pure Copper
X	A3/5264/306-10	3	1	Photometer 2K Box	Bus Connector PLW	99.999% Pure Copper
X	A3/5264/306-11	2	1	Photometer 2K Box	Bus Junction ans PMW Connector	99.999% Pure Copper
X	A3/5264/306-12	3	1	Photometer 2K Box	Bus Junction Clamp Plate	99.999% Pure Copper
X	A3/5264/306-13	3	1	Photometer 2K Box	Light Trap to Bus Junction	99.999% Pure Copper
X	A3/5264/306-14	3	1	Photometer 2K Box	Bus Connector PSW	99.999% Pure Copper
X	A3/5264/306-15	2	1	Photometer 2K Box	BDA-Busbar Flange	99.999% Pure Copper
X	A3/5264/306-16	1	1	Photometer 2K Box	PLW Bus Strap	99.999% Pure Copper
X	A3/5264/306-17	1	1	Photometer 2K Box	PMW Bus Strap	99.999% Pure Copper
X	A3/5264/306-18	1	1	Photometer 2K Box	PSW Bus Strap	99.999% Pure Copper
X	A3/5264/306-19	3	1	Photometer 2K Box	End Stop Photometer Light Trap	99.999% Pure Copper
X	A3/5264/306-20	1	1	Photometer 2K Box	Light Trap Feedthrough Photometer	99.999% Pure Copper
X	A3/5264/306-21	1	1	Photometer 2K Box	Stop Bush – Bus Bar Mountings	Stainless Steel
X	A3/5264/306-22	1	1	Photometer 2K Box	Load Spreader Photometer	Alum Alloy BS1470 6082 T6
X	A3/5264/306-23	1	1	Photometer 2K Box	Thermal Pad	99.999% Pure Copper
X	A3/5264/306-25	1	1	Photometer 2K Box	Strap Stud	Stainless Steel BS970 303/S31
X	A3/5264/306-26	1	1	Photometer 2K Box	Stud Plate - inner	Stainless Steel BS970 303/S31
X	A3/5264/306-27			Photometer 2K Box	Stud Plate Outer - Photometer	Stainless Steel BS970 303/S31

	<h1>SPIRE</h1>	Project Document	Ref: MSSL/SPIRE/SP013.01
		Hardware Tree	Issue: 1.0
			Date: July 2004
			Page: Page 12 of 15

Dwg Level	Drawing Number	Issue	Sheets	System	Title	Material
X	A3/5264/306-28	1	1	Photometer 2K Box	Insulating Bush	Torlon
X	A3/5264/306-29	1	1	Photometer 2K Box	Strap Spacer - Photometer	Stainless Steel
X	A1/5264/307	1	1	Spectrometer 2K Box	Spectrometer 2K Box Assembly	Various
X	A1/5264/307A	2	1	Spectrometer 2K Box	Spectrometer BDA Cable Routes	-
X	A1/5264/307B	1	1	Spectrometer 2K Box	Bus Bar Assy. Spectrometer	-
X	A1/5264/307-1	5	3	Spectrometer 2K Box	Spectrometer 2K Box Assembly	Alum Alloy BS1470 6082 T6
X	A1/5264/307-2	4	2	Spectrometer 2K Box	Filter Mounting plate Spec. 2K Box	Alum Alloy BS1470 6082 T6
X	A1/5264/307-3	1	1	Spectrometer 2K Box	Clamp plate SFIL-3	Stainless Steel BS970 303/S31
X	A1/5264/307-4	2	1	Spectrometer 2K Box	Blade Mount 2K Spectrometer Box	Stainless Steel BS970 303/S31
X	A1/5264/307-5	1	1	Spectrometer 2K Box	Blade Top Bush	Stainless Steel BS970 303/S31
X	A1/5264/307-6	2	1	Spectrometer 2K Box	Light Trap Feedthrough spect.	99.999% Pure Copper
X	A1/5264/307-7	1	1	Spectrometer 2K Box	Light Baffle Junction	99.999% Pure Copper
X	A1/5264/307-8	1	1	Spectrometer 2K Box	SSW Spect. BDA to light trap strap	99.999% Pure Copper
X	A1/5264/307-9	1	1	Spectrometer 2K Box	SLW Spect. BDA to Light Trap Strap	99.999% Pure Copper
X	A1/5264/307-10	3	1	Spectrometer 2K Box	BDA Cold Interface Spectrometer	99.999% Pure Copper
X	A1/5264/307-11	1	1	Spectrometer 2K Box	Bush, Inner spect. Light Trap	99.999% Pure Copper
X	A1/5264/307-12	1	1	Spectrometer 2K Box	Bush, Outer spect. Light Trap	99.999% Pure Copper
X	A1/5264/307-13	1	1	Spectrometer 2K Box	Cold Strap Support	99.999% Pure Copper
X	A1/5264/307-14	1	1	Spectrometer 2K Box	Load Spreader Spectrometer	Alum Alloy BS1470 6082 T6
X	A1/5264/307-15	1	1	Spectrometer 2K Box	Thermal Pad	OFHC Copper
X	A1/5264/307-16	1	1	Spectrometer 2K Box	Strap Spacer	Alum Alloy BS1470 6082 T6
X	A1/5264/307-17	1	1	Spectrometer 2K Box	Strap Stud	Stainless Steel BS970 303/S31
X	A1/5264/307-18	1	1	Spectrometer 2K Box	Stud Plate	Alum Alloy BS1470 6082 T6
X	A1/5264/307-19	1	1	Spectrometer 2K Box	Stud Plate Outer	Alum Alloy BS1470 6082 T6
X	A3/5264/309	3	1	Level 0 Feed Thorough	Strap/Light Baffle Assembly	-
X	A3/5264/309A	2	1	Level 0 Feed	Level O Cold Straps Assembly	-
X	A3/5264/309B	1	1	Level 0 Feed	Spectrometer Cold strap FM Assembly	-

	<h1>SPIRE</h1>	Project Document	Ref: MSSL/SPIRE/SP013.01
		Hardware Tree	Issue: 1.0
			Date: July 2004
			Page: Page 13 of 15

Dwg	Level	Drawing Number	Issue	Sheets	System	Title	Material
	X	A3/5264/309C	1	1	Level 0 Feed	Pump Cold strap FM Assembly	-
	X	A3/5264/309D	1	1	Level 0 Feed	Evaporator Cold strap FM Assembly	-
	X	A3/5264/309-1	2	1	Level 0 Feed Thorough	Baffle Inner	99.999% Pure Copper
	X	A3/5264/309-2	3	1	Level 0 Feed Thorough	Baffle Outer	99.999% Pure Copper
	X	A3/5264/309-2A	6	1	Level 0 Feed	Baffle Outer Core	99.999% Pure Copper
	X	A3/5264/309-2B	1	1	Level 0 Feed	Baffle Outer Core	99.999% Pure Copper
	X	A3/5264/309-2C	1	1	Level 0 Feed	Baffle Centre	Alum Alloy BS1470 6082 T6
	X	A3/5264/309-5	2	1	Level 0 Feed Thorough	Anti Torque Plate	Alum Alloy BS1470 6082 T6
	X	A3/5264/309-6	1	1	Level 0 Feed Thorough	Special Washer	Stainless Steel BS970 303/S31
	X	A3/5264/309-7	1	1	Level 0 Feed Thorough	Stop Screw	Stainless Steel BS970 303/S31
X		A2/5264/310	1	1	Dichroics	PDIC-1 Assy	-
	X	A2/5264/310-1	2	1	Dichroics	PDIC-1 Mount	Alum Alloy BS1470 6082 T6
	X	A2/5264/310-2	1	1	Dichroics	PDIC-1 Clamp Ring	Alum Alloy BS1470 6082 T6
	X	A2/5264/310-3	2	1	Dichroics	Dowel Bolt 6-32 UNC	Stainless Steel BS970 303/S31
	X	A2/5264/311	1	1	Dichroics	PDIC-2 Assy	-
	X	A2/5264/311-1	2	1	Dichroics	PDIC-2 Mount	Alum Alloy BS1470 6082 T6
	X	A2/5264/311-2	1	1	Dichroics	PDIC-2 Clamp Ring	Alum Alloy BS1470 6082 T6
X		A2/5264/312	1	1	Photometer 2K Box	Cone Mount – 2K Photometer Box	Stainless Steel BS970 321/S31
X		A2/5264/313	2	1	Photometer 2K Box	A Frame Mount 2K Photometer Box	Stainless Steel BS970 321/S31
	X	A2/5264/313-1	2	1	Photometer 2K Box	Blade Washer 2K	Stainless Steel BS970 303/S31
	X	A2/5264/313-2	2	1	Photometer 2K Box	Blade Top Bush 2K Photometer Box	Stainless Steel BS970 303/S31
	X	A2/5264/313-3		1	Photometer 2K Box	Insulation dowel	Torlon
	X	A2/5264/313-4		1	Photometer 2K Box	Insulating top hat	Torlon
	X	A3/5264/313-1	1	1	Photometer 2K Box	Blade Washer 2K	Stainless Steel BS970 321/S31
	X	A3/5264/313-2	1	1	Photometer 2K Box	Blade top bush	Stainless Steel BS970 321/S31
X		A3/5264/314	1	2	SCAL Box	SCAL Box Assembly	Alum Alloy BS1470 6082 T6
	X	A3/5264/314-1	8	2	SCAL Box	SCAL Baffle Box Main Body	Alum Alloy BS1470 6082 T6

	<h1>SPIRE</h1>	Project Document	Ref:	MSSL/SPIRE/SP013.01
		Hardware Tree	Issue:	1.0
			Date:	July 2004
			Page:	Page 14 of 15

Dwg Level	Drawing Number	Issue	Sheets	System	Title	Material
X	A3/5264/314-2	1	1	SCAL Box	SCAL Cover	Alum Alloy BS1470 6082 T6
X	A3/5264/314-3	1	1	SCAL Box	SCAL Baffle Riing	Alum Alloy BS1470 6082 T6
X	A3/5264/314-4	1	1	SCAL Box	SCAL Baffle Mask	Phosphor Bronze
X	A1/5264/318	1	1	Red Flag Items	Aperture Cover Assembly	-
X	A3/5264/319	1	1	Jigs	Thermal Straps Welding Fixture	Alum Alloy BS1470 6082 T6
X	A3/5264/319-1	1	1	Jigs	Base Fixture	Alum Alloy BS1470 6082 T6
X	A3/5264/319-2	1	1	Jigs	Clamp	Alum Alloy BS1470 6082 T6
X	A1/5264/315	1	7	Harness	Harness Assembly	-
X	A1/5264/315-1	3	1	Harness	BSM Harness Primary	-
X	A1/5264/315-2	3	1	Harness	BSM Harness Redundant	-
X	A1/5264/315-3	2	1	Harness	Cooler Harness Primary	-
X	A1/5264/315-4	2	1	Harness	Cooler Harness Redundant	-
X	A1/5264/315-5	2	1	Harness	SCAL Harness Primary	-
X	A1/5264/315-6	2	1	Harness	SCAL Harness Redundant	-
X	A1/5264/315-7	2	1	Harness	Thermometry Harness Primary	-
X	A1/5264/315-8	2	1	Harness	Thermometry Harness STM	-
X	A1/5264/315-10	2	1	Harness	Thermometry Harness Redundant	-
X	A1/5264/315-11	1	1	Harness	SMEC Proposed Harnes Primary	-
X	A1/5264/315-15	3	1	Harness	BSM Harness Ferrule	-
X	A1/5264/315-16	3	1	Harness	Thermometry Harness Ferrule	-
X	A1/5264/315-17	3	1	Harness	BSM Ferrule Locknut	-
X	A1/5264/315-18	3	1	Harness	Thermometry Ferrule Locknut	-
X	A1/5264/315-19	3	1	Harness	Thermometry Harness Bench hole cover	-
X	A1/5264/315-20	4	1	Harness	BSM Harness Bench hole cover	-
X	A1/5264/315-21	2	1	Harness	Guide pin MDM connectors	-
X	A1/5264/315-22	1	1	Harness	Bracket 15 Way MDM plug	-
X	A1/5264/315-23	1	1	Harness	Bracket 15 Way MDM receptacle	-
X	A1/5264/315-24			Harness	Cable anchor various	-

	SPIRE	Project Document		Ref:	MSSL/SPIRE/SP013.01
		Hardware Tree		Issue:	1.0
				Date:	July 2004
				Page:	Page 15 of 15

Dwg Level		Drawing Number	Issue	Sheets	System	Title	Material
	X	A1/5264/315-25	2	1	Harness	Connector jig	-
	X	A1/5264/315-26	1	1	Harness	Connector Jig Filler Block	-
	X	A1/5264/315-27	2	1	Harness	Plug Mod	-
	X	A1/5264/315-28	2	1	Harness	Recepticle Mod	-
	X	A1/5264/315-29 sheet 1	2	1	Harness	Harness Jig mod layout	-
	X	A1/5264/315-29 sheet 2	1	1	Harness	Harness Jig mod layout	-
	X	A1/5264/315-30	2	1	Harness	Temperature sensor mount	-
	X	A1/5264/315-31	1	1	Harness	Thermometry Prime Extension (Input	-
	X	A1/5264/315-32	1	1	Harness	Thermometry Redundant Extension	-
X		A1/5264/318	2	1	Aperature Cover	Aperature Cover Assembly	-
X		A1/5264/320	1	1	SFIL 2	SFIL2 Mount Assembly	-
X		A1/5264/321	1	2	SBS 1 and 2	SBS 1 and 2 interface and Assembly	-
X		A1/5264/404	1	5	MGSE	MGSE General Assembly	-