EADS Astrium HERSCHEL H-EPLM	ACTIVITY CONTROL	SHEET	HP-2-ASED-SD-0162 Iss: Draft	Page 1 of 11

Location : FN	Title: INVESTIGATION OF SPIRE GROUNDING CONFIGURATION AFTER STM2 STRAYLIGHT AND EMC TEST		
Facility : Class 100	Model: PFM	Subsystem: CVV int SPIRE SIH	Date: 05.04.2007
CI No 151432-01	Test Conductor:	A. Grasl, J. Lang	NCR Ref:
	Prepared By:	RAL / Eric Sawyer	CIL No:

Scope: This Procedure covers the second round of investigations (prior to de-integration of the SPIRE CQM FPU) of the violation of the SPIRE grounding configuration discovered during the de-integration of the SPIRE WE after the STM2 stray-light and EMC tests	**Procedures and reference documents:-** NA

Facilities required:	– Clean-room 100 at FN	**Documents, Drawings& Routing Design** Ref.1: Ref.2: HP-2-ASED-ID-0085-xx-0C CVV internal SIH Ref.3: HP-2-ASED-ID-0094-01-0C, SPIRE EQM Interconnection Diagram Ref.4: SPIRE-RAL-NOT-002028 Draft 0.2, Making SPIRE ESD Safe Ref.5: HP-2-ASED-IC-0016 Issue: 2.1 PFM SPIRE SIH EICD Ref.6: SPIRE-RAL-NOT-002770: STM2 Grounding Violation Investigation, Issue 1.0 Ref.7: HR-SP-RAL-NCR-163 (Shorted contacts measured on SVM-CB (312100 J04)
Personnel required:	2 Harness -; 2 AIT- and 1 PA – engineer 2 Instrument Engineer (SPIRE/RAL)	**MASS:**
Safety and Hazards:	SPIRE ESD requirements to be followed	
Constraints:	Class 100 clean room	

No:	Activity	Proc/Drwg	Remarks/Results	sign off
1.	Verify the integrity of the personal ESD wrist strap for the personnel involved in the activities.			
2.	Prepare convenient locations around the work area where the operators can connect their wrist straps			

Release AIT:	Release SE:	Release PA/Safety:	Sign off (PA/QC/Team Leader)
16.4.07		10.4.07	

Location : FN	Title: INVESTIGATION OF SPIRE GROUNDING CONFIGURATION AFTER STM2 STRAYLIGHT AND EMC TEST		
Facility : Class 100.000	Model: PFM	Subsystem: CVV including SPIRE SIH	Date: 05.04.07
CI No 151432-01	Test Conductor:	A. Grasl, J. Lang	NCR Ref:
	Prepared By:	RAL / Doug Griffin/Eric Sawyer	CIL No:

Scope: This Procedure covers the second round of investigations (prior to de-integration of the SPIRE CQM FPU) of the violation of the SPIRE grounding configuration discovered during the de-integration of the SPIRE WE after the STM2 stray-light and EMC tests	**Procedures and reference documents:-** NA

Facilities required:	– Clean-room 100 at FN	**Documents, Drawings& Routing Design** Ref.1: Ref.2: HP-2-ASED-ID-0083-04-0B SVM internal SIH & CCH Ref.3: HP-2-ASED-ID-0094-01-0C, SPIRE EQM Interconnection Diagram Ref45: SPIRE-RAL-NOT-002028 Draft 0.2, Making SPIRE ESD Safe Ref.5: HP-2-ASED-IC-0016 Issue: 2.1 PFM SPIRE SIH EICD Ref.6: SPIRE-RAL-NOT-002770: STM2 Grounding Violation Investigation, Issue 1.0 Ref.7: HR-SP-RAL-NCR-163 (Shorted contacts measured on SVM-CB (312100 J04) Ref.8: Ref.9: Ref.10:
Personnel required:	3 Harness -; 2 AIT- and 1 PA – engineer 1 Instrument Engineer (SPIRE)	**MASS:**
Safety and Hazards:	SPIRE ESD requirements to be followed	
Constraints:	Class 100.000 clean room	

No:	Activity	Proc/Drwg	Remarks/Results	sign off
1.	Verify the integrity of the personal ESD wrist strap for the personnel involved in the activities.			
2.	Prepare convenient locations around the work area where the operators can connect their wrist straps			

Release AIT: A. Grasl	Release SE: J. Lang	Release PA/Safety: B. Barlage	Sign off (PA/QC/Team Leader)
10.04.2007	10.04.07	10.04.07	SPIRE/RAL: E. Sawyer 10.04.07

No:	Activity	Proc/Drwg	Remarks/Results	sign off
3.	Record the type of safeing plugs mated to each of the CVV-CB connectors. (Expect the following) • SIH-IS-01: 211121 J32: Type-VI • SIH-IS-02: 211121 J31: Type-VII • SIH-IS-03: 211121 J26: Type-V • SIH-IS-04: 211121: J22: Type-VII • SIH-IS-05: 211121: J23: Type-VII • SIH-IS-06: 211121: J24: Type-VII • SIH-IS-07: 211121: J25 : Type-VII • SIH-IS-08: 211121: J27: Type-VII • SIH-IS-09: 211121: J28: Type-VII • SIH-IS-10: 211121: J34: Type-VII • SIH-IS-11: 211121: J30: Type-VIII • SIH-IS-12: 211121: J33: Type-VII • SIH-IS-13: 211121: J29: Type-VIII		All ok	
4.	Remove Safeing plug from 211121 J32 (Spect. Bias)		Ok	
5.	Remove Safeing plug from 211121 J30 (Prime Mechanism harness)		Ok	
6.	Remove Safeing plug from 211121 J29 (Red. Mechanisms harness)		Ok	
7.	Set ESD ionizer fan to neutralise the area around 211121 J26 (Phot. Bias) for at least 120 seconds		Ok	
8.	Connect the contacts of a 128-way BOB to S/C chassis via a shorting plug to ensure that there is no residual charge on the unit		Ok	
9.	Remove the safeing plug from 211121 J26		Ok	
10.	Mate the 128-way BOB to 211121 J26		Ok	
11.	Remove the shorting plug from the BOB		Ok	

No:	Activity	Proc/Drwg	Remarks/Results	sign off
12.	Measure the isolation between 211121 J026 Contact-128 (Analogue ground) and chassis. • Was 7.81 Ohm during initial phase of NCR investigations		23.04	
13.	Measure the isolation between 211121 J026 Contact-2 (FCR) and chassis. • Was 3.48 Ohm during initial phase of NCR investigations		17.18	
14.	Remove the 128-way BOB from 211121 J026		Ok	
15.	Cover the exposed 211121 J026 connector with a non-shorting ESD/dust cap		Ok	
16.	Set ESD ionizer fan to neutralise the area around 211121 J24 (PLW Detector harness) for at least 120 seconds		Ok	
17.	Connect the contacts of a 128-way BOB to S/C chassis via a shorting plug to ensure that there is no residual charge on the unit		Ok	
18.	Remove the ESD cap from 211121 J024		Ok	
19.	Mate 128-way BOB to 211121 J024		Ok	
20.	Remove the shorting plug from the BOB		Ok	
21.	Measure isolation between 211121 J024 Pin 036 (PLW Analogue Ground) and chassis • Was 6.27 Ohm during initial phase of NCR investigations		21.4	
22.	Measure isolated between 211121 J024 Pin 127 (FCR) and Chassis • Was 4.26 Ohm during initial phase of NCR investigations		18	
	End of preliminary investigations			
23.	Demate FPU P19 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 21.4 Pin 127: 18.7	

No:	Activity	Proc/Drwg	Remarks/Results	sign off
24.	Demate FPU P20 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 21.4 Pin 127: 18.7	
25.	Demate FPU P21 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 21.4 Pin 127: 18.6	
26.	Demate FPU P22 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: : 21.4 Pin 127: 18.6	
27.	Demate FPU P23 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 21.4 Pin 127: 18.6	
28.	Demate FPU P24 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 21.4 Pin 127: 18.6	
29.	Demate FPU P25 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 21.4 Pin 127: 18.6	
30.	Demate FPU P26 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 21.4 Pin 127: 18.6	
31.	Demate FPU P27 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 21.4 Pin 127: 18.5	
32.	Demate FPU P28 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 21.4 Pin 127: 18.5	
33.	Demate FPU P29 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 21.4 Pin 127: 18.5	

No:	Activity	Proc/Drwg	Remarks/Results	sign off
34.	Demate FPU P30 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 21.4 Pin 127: 18.6	
35.	Demate JFS P01 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Changed to 1.6K during removal of lacing cord. Further investigations showed that the MLI over the temperature sensors on L3 and L1 interfaces were causing a short. Removed MLI from these locations now steady at1.95K Wiggle the phot L3 strap goes to open circuit. Pin 036: Pin 127:	
36.	Demate JFS P02 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc 65 Pin 127:oc 66	
37.	Demate JFS P03 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: OC Pin 127: oc	
38.	Demate JFS P04 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127: oc	
39.	Demate JFS P05 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127: oc	
40.	Demate JFS P06 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 41.6 Pin 127: 42.7	
41.	Demate JFS P07 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 37.7 Pin 127: 40.19	
42.	Demate JFS P09 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127: oc	

No:	Activity	Proc/Drwg	Remarks/Results	sign off
43.	Demate JFS P10 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis Note: This is the photoconductor		Pin 036: oc Pin 127: oc	
44.	Demate JFP P01 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127:oc	
45.	Demate JFP P02 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127: oc	
46.	Demate JFP P03 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036:oc Pin 127: oc	
47.	Demate JFP P04 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: 29.4 Pin 127: 29.5	
48.	Demate JFP P05 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127:oc	
49.	Demate JFP P06 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127:oc	
50.	Demate JFP P07 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127:oc	
51.	Demate JFP P08 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127:oc	
52.	Demate JFP P09 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127: oc	

No:	Activity	Proc/Drwg	Remarks/Results	sign off
53.	Demate JFP P10 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036:oc Pin 127:oc	
54.	Demate JFP P11 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127:oc	
55.	Demate JFP P12 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127:oc	
56.	Note: the next connector is not in numerical order Demate JFP P17 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127: oc	
57.	Demate JFP P18 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127: oc	
58.	Demate JFP P19 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127:oc	
59.	Demate JFP P20 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036:oc Pin 127:oc	
60.	Demate JFP P21 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127: oc	
61.	Demate JFP P22 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127: oc	
62.	Demate JFP P23 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127: oc	

No:	Activity	Proc/Drwg	Remarks/Results	sign off
63.	Demate JFP P24 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036:oc Pin 127:oc	
64.	Note: Phot. Bias harness Demate JFP P25 and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036:oc Pin 127:oc	
65.	Demate JFP P26 and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127:oc	
66.	Demate JFP P27 and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036:oc Pin 127:oc	
67.	Demate JFP P28 and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036:oc Pin 127:oc	
68.	Note: PLW Detector harness Demate JFP P13 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127: oc	
69.	Demate JFP P14 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127: oc	
70.	Demate JFP P15 install the ESD dust cover and measure: 211121 J024 Pin 036 to chassis 211121 J024 Pin 127 to chassis		Pin 036: oc Pin 127: oc	
71.	Demate JFP P16 install the ESD dust cover			
72.	Measure the isolation of the FPU from the OBA		Satellite rotated to vertical position. Photometer L3 strap removed . 200 ohms to 500 ohms	

No:	Activity	Proc/Drwg	Remarks/Results	sign off
73.	Mate a 37-way MDM BOB to JFP J27 and measure isolation between: • Pin 1 and FPU • Pin 1 and OBA		Pin 1 to FPU Pin 1 to OBA BOB not available	
74.	Carry out the mechanical de-integration activities listed in §7.5 of SPIRE-RAL-PRC-001923 up to and including the removal of the L0 spacecraft interface screws. After the screws have been removed, place electrical insulation material (ESD compatible) between the straps and the L0 spacecraft thermal interface		Remove Spec L3 strap now 230 ohms (no change) Remove stray light detector, now 10 ohms. Remove thermal blanket from detector L0 strap interface. Now oc (false alarm) still 10 ohms. Slacken photometer JFET screw, now oc. Putting force on the JFET shows a few M ohms, can't replicate a short of 10 ohms. It appears to be without doubt associated with the photometer JFET and its isolating standoff feet.	
75.	Measure the isolation of the FPU from the OBA			
76.	Mate a 37-way MDM BOB to JFP J27 and measure isolation between: • Pin 1 and FPU • Pin 1 and OBA		Pin 1 to FPU Pin 1 to OBA	
77.	After the L1 interface has been de-integrated (according to §7.5 of SPIRE-RAL-PRC-001923) measure the isolation of the FPU from the OBA		Open circuit	
78.	Mate a 37-way MDM BOB to JFP J27 and measure isolation between: • Pin 1 and FPU • Pin 1 and OBA		Pin 1 to FPU Pin 1 to OBA	
79.	After the L3 interfaces has been de-integrated (according to §7.5 of SPIRE-RAL-PRC-001923) measure the isolation of the FPU from the OBA		This activity done in step 74	

No:	Activity	Proc/Drwg	Remarks/Results	sign off
80.	Mate a 37-way MDM BOB to JFP J27 and measure isolation between: • Pin 1 and FPU • Pin 1 and OBA		Pin 1 to FPU Pin 1 to OBA	
81.	Mate the safeing plugs to JFP J25, J26, J27 and J28			
82.	Mate the safeing plugs to JFS J09 and J10			
83.	Complete the mechanical de-integration of the FPU from the spacecraft.			
84.	Remove the BOB from 211121 J26			
85.	Mate the Type-V safeing plug to 211121 J26			
86.	End			

	Name	Dep./Comp.		Name	Dep./Comp.
	Alberti von Mathias Dr.	ASG22		Schweickert Gunn	ASG22
	Barlage Bernhard	AED13		Steininger Eric	AED32
	Bayer Thomas	ASA42	X	Stritter Rene	AED11
	Brune Holger	ASA45		Suess Rudi	OTN/ASA44
	Edelhoff Dirk	AED2		Thörmer Klaus-Horst Dr.	OTN/AED65
	Fehringer Alexander	ASG13		Wagner Klaus	ASG22
X	Fricke Wolfgang Dr.	AED 65	X	Wietbrock Walter	AET12
	Geiger Hermann	ASA42		Wöhler Hans	ASG22
X	Grasl Andreas	OTN/ASA44			
X	Grasshoff Brigitte	AET12			
	Hartmann Hans	AED32	X	Alcatel Alenia Space Cannes	ASP
	Hauser Armin	ASG22	X	ESA/ESTEC	ESA
X	Hendry David	Terma			
	Hengstler Reinhold	ASA42		**Instruments:**	
	Hinger Jürgen	ASG22		MPE (PACS)	MPE
X	Hohn Rüdiger	AED65	X	RAL (SPIRE)	RAL
	Hölzle Edgar Dr.	AED32		SRON (HIFI)	SRON
	Huber Johann	ASA42		**Subcontractors:**	
X	Hund Walter	ASE252		Air Liquide, Space Department	AIR
X	Idler Siegmund	AED312		Air Liquide, Space Department	AIRS
	Ilsen Stijn	Terma		Air Liquide, Orbital System	AIRT
	Ivády von András	FAE12		Alcatel Alenia Space Antwerp	ABSP
	Jahn Gerd Dr.	ASG22		Austrian Aerospace	AAE
X	Kalde Clemens	ASM2		Austrian Aerospace	AAEM
	Kameter Rudolf	OTN/ASA42		APCO Technologies S. A.	APCO
	Kettner Bernhard	AET42		Bieri Engineering B. V.	BIER
X	Knoblauch August	AET32		BOC Edwards	BOCE
X	Koelle Markus	ASA43		Dutch Space Solar Arrays	DSSA
	Koppe Axel	AED312		EADS Astrium Sub-Subsyst. & Equipment	ASSE
	Kroeker Jürgen	AED65		EADS CASA Espacio	CASA
	La Gioia Valentina	Terma		EADS CASA Espacio	ECAS
	Lamprecht Ernst	OTN/ASQ22		EADS Space Transportation	ASIP
X	Lang Jürgen	ASE252		Eurocopter	ECD
X	Langenstein Rolf	AED15		European Test Services	ETS
X	Langfermann Michael	ASA41		HTS AG Zürich	HTSZ
	Much Christoph	ASA43		Linde	LIND
	Müller Jörg	ASA42		Patria New Technologies Oy	PANT
X	Müller Martin	ASA43		Phoenix, Volkmarsen	PHOE
	Peltz Heinz-Willi	ASG13		Prototech AS	PROT
	Pietroboni Karin	AED65		QMC Instruments Ltd.	QMC
	Platzer Wilhelm	AED2		Rembe, Brilon	REMB
	Reichle Konrad	ASA42		Rosemount Aerospace GmbH	ROSE
	Runge Axel	OTN/ASA44		RYMSA, Radiación y Microondas S.A.	RYM
	Schink Dietmar	AED32		SENER Ingenieria SA	SEN
X	Schlosser Christian	OTN/ASA44		Stöhr, Königsbrunn	STOE
	Schmidt Rudolf	FAE12		Terma A/S, Herlev	TER