

HS_DRCU (HS_DCU & HS_FCU)FM CIDL / ABCL DSM - DAPNIA SAp SAp-SPIRE-QA-0417-06 Issue: 1.0 Date : 31/07/06 Page : 1/10

HERSCHEL/SPIRE

HS_DRCU (HS_DCU & HS_FCU) FM Configuration Item Data List / As Built Configuration List

Reference: Issue: Date: Sap-SPIRE-QA-0417-06 1.0 31/07/06

	Function	Name	Date	Visa
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Authorized by	Project manager	AUGUERES Jean- Louis	218/01	2A=



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2 Document status and change record

Date	Issue	Affected pages
11/07/06	1.0	Creation

3 Scope of the document

The **CIDL** "Configuration Items Data List" identifies the applicable issue/revision of requirement documents, specifications, drawings and engineering lists that represent the "**as designed**" configuration of HS_DCU and HS_FCU.

Thus the two equipments are constituted of separate boxes, they can not be operated separatly, so a single CIDL / ABCL has been elaborated.

The **ABCL** "As Built Configuration List" identifies for each unit, the applied issues and revisions of the above documents plus any major NCR and major RFW.

4 CIDL status

4.1 Documents

4.1.1 Upper level Specifications

Document name	Reference	Issue
Herschel/Planck Instrument Interface document partA	SCI-PT-IIDA-04624	3.3
Herschel/Planck Instrument Interface document partB	SCI-T-IIDB / SPIRE	4.0
BDA-SSD	SPIRE-JPL-PRJ-000456	3.1
Changes to DCU specs in BDA-SSD	HR-SP-RAL-ECR-067	22 March 2004

4.1.2 CEA's Specification documents

Document name	Reference	lssue
DRCU subsystem specification document	SApSPIRE-CCa-25-00	1.2

4.1.3 CEA's Interface Control Drawings & Documents

Document name	Reference	Issue
DRCU/DPU interface control document	SAp-SPIRE-CCa-0076-02	1.3
DRCU interface control document	SAp-SPIRE-CCa-0075-02	1.1
HS_DCU MICD	SPIR-MX-5100 000	Ι
HS_FCU MICD	SPIR-MX-5200 000	L



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4.1.4 PMP lists

Document name	Reference	lssue
HS_RDCU DML	SAp-SPIRE-NC-0060-02	3.0
HS_DRCU DPL	SAp-SPIRE-NC-0061-02	3.0
HS_DRCU DMPL	SAp-SPIRE-ILM-0382-06	1.0
HS_DRCU DCL	SAp-SPIRE-VM-164-04	Issue 17
4.1.5 Subsystems PMP lists (refer to su	ıbsystem eidps)	
HSPSU DML	HSPIR.PSU.LI.003.V.ASTR	Issue 00 rev 03
HSPSU DPL	HSPIR.PSU.LI.002.V.ASTR	Issue 03 rev 00
HSPSU DCL	HSPIR.PSU.LI.00201.V.ASTR	Issue 00 Rev 00
HSFCU internal harness DML	DML-635/03/CAM/ST	Issue 03
HSFCU internal harness DPL	DPL-636/03/CAM/ST	Issue 02
HSECI Linternal barness DCI	HSPIR.PSU-DCL_DA0018637-V-	
	ASTR	
MCU DML & DMPL	SE-SPIRE-MCU-Q-LIMAT	Issue 1a
MCU DPL	SE-SPIRE-MCU-Q-LIPRO	Issue 1a
MCU DCL	LAM.ELEC.SPI.LIS 050211_01	Issue 1 Rev 1

4.1.6 Others applicable documents for HS_DRCU FM:

Document name	Reference	Issue
HS_DRCU packing/unpacking/handling procedure	SAp-SPIRE-HT-416-06	1.0
User's manual	SAp-SPIRE-CCa-411-06	1.0
HS_PSU safety operations, failure detection and recovery	HSPIR.PSU.MA.00110.V.ASTR	Issue 00 Rev 00

4.1.7 CEA's documents: procedures of manufacturing and assembly of "as designed" DRCU

Assembly procedure & general manufacturing specifications

Document name	Reference	Issue
Procédure de montage HS_DCU	SAp-SPIRE-TT-263-05	3.0
Procédure de montage HS_FCU	SAp-SPIRE-TT-229-05	3.0
Spécification de mise en œuvre des vernis	SAp-FIRST-TT-0434-04	1/0
Specification de mise en œuvre des colles	SAp-FIRST-TT-435-04	1/0
Specification de cambrage des composants « flat pack »	SAp-FIRST-JF-438-04	1.1
Note technique test des régulateurs	SAp-FIRST-CCa-558-04	1
Spécification d'assemblage des cartes filles	SAp-FISRT-TT-437-04	2



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Electronic board sub-assemblies / DCU:

Subsystem	Reference of CIDL	lssue
DAQ+IF Board	FR-SPIRE-FM 15000	0
BIAS Board	FR SPIRE-FM 14000	0
LIAP Board	FR-SPIRE-FM 13100	0
LIATC Board	FR-SPIRE-FM 13100	0
LIAS Board	FR-SPIRE-FM 13200	0
DCU-BP board	FR-SPIRE-FM 12000	0
DCU Electronic box	Sap-SPIRE-ILM-413-06	1.0

Electronic board sub-assemblies / FCU:

Subsystem	Reference of CIDL	Issue
CCHK Board	FR-SPIRE-FM 34000	0
TEMP Board	FR-SPIRE-FM 33000	0
SCU-BP Board	FR-SPIRE-FM 22000	0
FCU Electronic box	Sap-SPIRE-ILM-414-06	1.0

Subsystems CIDLs

HS PSU

Document name	Reference	lssue
HSPSU CIDL	HSPIRPSU-DI-DA0017834-V- ASTR	lssue 04 rev 00

HS_FCU internal harness

Document name	Reference	Issue
PSU SPIRE FM HARNESS CIDL	CIDL-686/04/CAM/ST	Issue 00

MCU subassembly

Document name	Reference	lssue
??	TBD (LAM)	

4.1.8 CEA's documents: procedures for test & acceptance

Document name	Reference	Issue
Procédure de test fontionnel HS_DCU	SAp-SPIRE-HT-387-06	Issue 1.0
Procédure de test fonctionel HS_FCU	SAp-SPIRE-HT-388-06	Issue 1.0
Procédure vibrations HSDCU FM	SAp-SPIRE-TT-400-06	Issue 1.0
Procédure vibrations HSFCU FM	SAp-SPIRE-TT-401-06	Issue 1.0
Procédure VTC HS_DCU	SAp-SPIRE-HT-389-06	Issue 1.0
Procédure VTC HS_FCU	SAp-SPIRE-HT-390-06	Issue 1.0
Procédure pour les essais de continuité	SAp-FIRST-JF- 689-06	Issue 1.1



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4.2 Drawing family tree

4.2.1 HS_DCU familly tree



4.2.2 HS_FCU familly tree





HS_DRCU (HS_DCU & HS_FCU)FM CIDL / ABCL

5 ABCL

HS DCU and HS FCU FM has been built in accordance with the assembly procedures (cf. paragraph 4.1.6).

As Built Hardware Tree for DCU electronics 5.1

Slot /	Board	As built drawing	Changes As designed / As built		
description	s/n	list			
DAQ+IF Main	4001	FR SPIRE-FM	CR414 : change on FPGA reset buffer ¹		
DAQ+IF Red.	4002	1500-В	CR418 : TO257 case (voltage regulator) tied to 0V		
			CR444: added resistors to bring powerdrain on		
			secondary lines of dc/dc converter closer to specs		
LIAP1	4001	FR SPIRE-FM-	No change As designed = As Built		
LIAP2	4010	13100			
LIAP3	4003				
LIAP4	4004				
LIAP5	4005				
LIAP6	4006				
LIAP7	4007				
LIAP8	4008				
LIATC	4009				
BIASM	4001	FR SPIRE-FM	CR416 : TO257 case (voltage regulator) tied to 0V		
BIASR	4002	1400A			
LIAS1	4001	FR SPIR-FM	CR415 concerns ambiguous drawing, does not affect		
LIAS2	4002	1320A	board manufacturing. As far as h/w is concerned, As		
LIAS3	4003		designed=As built		
Backplane	4001	FR-SPIR-FM	CR386 : DIP16 regulator height on pcb reduced		
_		1200-0			
Box	$QM2^2$		As designed= As built		

5.2 As Built Hardware Tree for FCU electronics (SCU subset)

Slot /	Board	As built drawing	Changes As designed / As built
description	s/n	list	
CCHK+IF Main	4001	FR-SPIRE-FM	CR417 : TO257 case (voltage regulator) tied to 0V
CCHK+IF Red	4002	3400A	CR427 : subshield pin tied to 0V
TEMP Main	4001	FR-SPIRE-FM	CR443 : change of resistors (adjustment of SCAL
TEMP Red.	4003	3300В	temp channel range as per HSO-CDF-ECR-114)
			CR428 : subshield pin tied to 0V
SCU-BP	4002	FR-SPIRE-FM	No change As designed = As Built
		3200-0	

Nota for FCU/MCU subset, for PSU and for FCU internal harnesses, refer to subsystem eidps.

FCU box : as designed= as built, refurbished QM2 box.

¹ (ref qualification NCR n° 396), ² FM box is refurbished QM2 box



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6 RFD/RFW status list

RFD/RFW ref.	Description	Status
CEA's ref RFD_SPIRE_FCU_n9	Request for deviation FCU baseplate	Supposed approved (FCU MICD published in IID-B)
CEA's ref RFD_SPIRE_FCU_n10	Request for deviation fixation points	Supposed approved (FCU MICD published in IID-B)
CEA's ref RFW_FCU_FM_n12 RAL's ref HR-SP-CEA- RFW-003	HSPSU FM board : few solder joints not compliant with ECSS-Q-70-08	Issue 2 approved
CEA's ref RFW_FCU_n13 RAL's ref HR-SP-CEA- RFW-004	Conducted emissions on primary power lines	Pending
RFW_DCU_n15 RAL's ref TBD	Radiated susceptibility E Field	Pending
RFW_DCU_N16 RAL's ref TBD	Susceptibility to ESD	Pending
RFW_DRCU_N17 RAL's ref TBD	No radiated emission test performed	Pending

7 NCR status list

7.1 <u>Major NCRs</u>

7.1.1 DCU major NCRs

NCR n°	Description of problem	Corrective action	Status
456	Susceptibility to E-Field	None	Waiver raised
453	Susceptibility to ESD	None	Waiver raised

7.1.2 FCU major NCR's

NCR n°	Description of problem	Corrective action	Status
445 446	Excessive power drain (OP400 soldered rotated 180°) on CCHK+IF n°4002,	OP400 replaced	To be closed
	TEMP 4003		
439	Short-circuit between MCU secondary power lines and structure (root cause : pin pending of capacitors)	Stress analysis performed, potentially damaged components have been replaced	To be closed





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7.2 <u>Minor NCRs</u>

7.2.1 DCU minor NCR's

NCR n°	Description of problem	Corrective action	Status
422	Nheater channel not functionall on BIAS n°4002 (test at board level) ->Defect on solder on a SMD resistor	Fixed : solder rectification	Closed
426	Channel 13 not functional on LIAP n°4006 (test at board level) ->Defect on solder on a SMD resistor	Fixed : solder rectification	Closed
430	Channel 10 not functional on LIAP n°4008 (test at board level) ->Defect on solder on a SMD resistor	Fixed : solder rectification	Closed
447	DCU mounting surface lightly scratched	Local application of alodine surface treatment	Closed
451	LIAS n°4001 pin 23 not tied to 0V ->Defect on solder on a SMD resistor (before acceptance tests)	Fixed : solder rectification	Closed

7.2.2 FCU minor NCR's

NCR n°	Description of problem	Corrective action	Status
455	Excessive temperature reached during "OFF" plateau (about 80°C instead of 60°C)	None – FCU was not powered in such conditions, corresponds to storage conditions	Closed
459	Light instability of current drained on when powering on MCU redundant	None – current remains in specifications	Closed



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8 Annexe : copies of major NCR's and RFW

2) PRO IEC			REPORTI CHANGE REQUEST	(englis	sh)
EQUIPMEN	T : SPIRE NT : HS_FCU	MODEL : FM SUB-ASSEMBLY : MC	FILLED OUT BY : J.Font U BOARD(S) :	ignie DAT N°O	TE: 12/05/20
OCCURENCE I CONTROL MANUFACTUR DESIGN/VALID	PHASE	EGRATION DESTOCKAGE	INTEGRATION LEVEL PART SUB-ASSEMBLY SUB-ASSEMBLY EQUIPEMENT OTHER	T UIBRATION	TAL CONDITION
TITLE : Sh	ort circuit on F	Redundant side of MCU,	between +15V secondary line	and chassis	
DESCRIPT After integr disruption of	TION : ation of MCU bo of the powerben	pards in FCU box, first tes ch.	ts (facing powerbench and not P	SU FM) have s	hown a
3) <u>TECHNIC</u> Investigatic short circui is same investigatio daughter b in contact v See FA – EIDP for investigatio	CAL INVESTIGA ons with ohm-mo t between +15V potential as on after disinte oards have sho with chassis (C1 -MCU-024a in r complete on.	ATION : eter have shown a motor and 0V (0V chassis). Visual egration of MCU wn a capacitor pin 5, See photo left). MCU subsystem description of		RESF	PONSIBLE(S
4) CORREC		S (model concerned by I	NCR/CR) RESPO	DNSIBLE(S) :	FINALE DECISION(
Involved ca Stress anal CEA's proc checking or	pacitors replace ysis performed edure for integra	and potentially damaged a and potentially damaged a ation enhanced (now inclu wer inputs for MCU & SCL	e capacitors, components replaced ides impedance		USE AS IS WAIVER (FM
Involved ca Stress anal CEA's proc checking or See FA –M repair.	pacitors replace ysis performed edure for integra n secondary pow CU-024a in MC	and potentially damaged of ation enhanced (now inclu wer inputs for MCU & SCU U subsystem EIDP for con	e capacitors, components replaced ides impedance J) mplete description of		USE AS IS WAIVER (FM DOCUMENTA CHANGE REPAIR
Involved ca Stress anal CEA's proc checking or See FA –M repair. PREVENTI None	pacitors replace ysis performed edure for integra n secondary pow CU-024a in MC <u>VE ACTIONS (1</u>	and potentially damaged of ation enhanced (now inclu- wer inputs for MCU & SCU U subsystem EIDP for con further models)	e capacitors, components replaced udes impedance J) mplete description of <u>RESPC</u>	DNSIBLE(S) :	USE AS IS WAIVER (FM DOCUMENTA CHANGE REPAIR SCRAP MODIFICATIO ACTION ON OTHER PRODUC
Involved ca Stress anal CEA's proc checking or See FA –M repair. PREVENTI None	CLEARANC ACTIONS	and potentially damaged of ation enhanced (now inclu- wer inputs for MCU & SCU U subsystem EIDP for con further models)	e capacitors, components replaced ides impedance J) mplete description of <u>RESPO</u> MANAGER PRODUCT ASSURANC	DNSIBLE(S) :	USE AS IS WAIVER (FM DOCUMENTA CHANGE REPAIR SCRAP MODIFICATIO ACTION ON OTHER PRODUC
Involved ca Stress anal CEA's proc checking or See FA –M repair. PREVENTI None CLASS	CLEARANC ACTIONS (1 CLEARANC ACTIONS (1 CLEARA	and potentially damaged of ation enhanced (now inclu- wer inputs for MCU & SCU U subsystem EIDP for con further models) .	e capacitors, components replaced udes impedance J) mplete description of <u>RESPO</u> NAGER PRODUCT ASSURANC MANAGER FONTIONE DZ/08/00	DNSIBLE(S) : E PROJ	USE AS IS UNAIVER (FM DOCUMENTA CHANGE REPAIR SCRAP MODIFICATION OTHER PRODUCT JECT MANAGER
Involved ca Stress anal CEA's proc checking or See FA –M repair. PREVENTI None CLASS MINOR	CLEARANC ACTIONS (1 Unit responsible involved product	g of involved through hol and potentially damaged o ation enhanced (now inclu- wer inputs for MCU & SCU U subsystem EIDP for con further models) .	e capacitors, components replaced ides impedance J) mplete description of <u>RESPO</u> MAGER PRODUCT ASSURANC MANAGER D2/08/06	DNSIBLE(S) : E PROJ	USE AS IS UNAIVER (FM DOCUMENTA CHANGE REPAIR SCRAP MODIFICATIO ACTION ON OTHER PRODUC
Involved ca Stress anal CEA's proc checking or See FA –M repair. PREVENTI None CLASS MINOR MAJOR 5)CLOSING	CLEARANC ACTIONS (1 Upper level mana CU-024a in MC VE ACTIONS (1 CLEARANC ACTIONS Unit responsible involved product Upper level mana CDATE:	g of involved through hol and potentially damaged of ation enhanced (now inclu- wer inputs for MCU & SCU U subsystem EIDP for con further models) .	e capacitors, components replaced udes impedance J) mplete description of <u>RESPO</u> NAGER PRODUCT ASSURANC MANAGER DOL/08/04	DNSIBLE(S) : PROJ Liblo6 TISA:	USE AS IS UNAIVER (FM DOCUMENTA CHANGE REPAIR SCRAP MODIFICATIO ACTION ON OTHER PRODUC
Involved ca Stress anal CEA's proc checking or See FA –M repair. PREVENTI None CLASS MINOR MAJOR MAJOR 6)INVOLVED P/ INTERFACES PERFORMANC RELIABILITY SAFETY OTHER:	CLEARANC ACTIONS (1 CLEARANC ACTIONS (1 CLEARANC CLEARANC ACTIONS (1 Unit responsible involved product Upper level mana DATE: ARAMETERS	BY: DIRECT CAUSES MATERIAL BY: DIRECT CAUSES BY:	e capacitors, components replaced ides impedance J) mplete description of <u>RESPO</u> NAGER PRODUCT ASSURANC MANAGER DZ/08/00 V S TEST MEANS DZ/08/00 V S TEST MEANS DZ/08/00 V S TEST MEANS DZ/08/00 V S TEST MEANS DZ/08/00 V S TEST MEANS DZ/08/00 V S TEST MEANS DZ/08/00 V S TEST S UNKNOWN	DNSIBLE(S) : PROJ S. J.	USE AS IS UVAIVER (FM DOCUMENTA CHANGE UREPAIR SCRAP MODIFICATIO ACTION ON OTHER PRODUC JECT MANAGER SES PROCEDURI CONFIG. DESIGN UNKNOWN

CEA DAPNIA/SAP	1) NON C	ONFORMANCE RE	PORT/CHANGE REQ	UEST	N°445 (english	Page: 1/2
2)PROJECT : SPIR EQUIPMENT : HS_I N° :	E MODE FCU SUB-A N° :	L : FM SSEMBLY : SCU	FILLED OUT BY : BOARD(S) : TEMP N° :4003	J.Fontignie	DATE N°OT COMF	: 12/05/200 : PAGNY :
OCCURENCE PHASE CONTROL MANUFACTURING DESIGN/VALIDATION	INTEGRATION QUALIFICATION OTHERS	DESTOCKAGE RECETTE	INTEGRATION LEVEL PART SU SUB-ASSEMBLY INS EQUIPEMENT OT	B SYSTEM	ENVIRONMENT AMBIANT VIBRATION THERMAL VACCI	AL CONDITIONS THERM. EMI/EMC JM. OTHER
DESCRIPTION : Test at board level b 270mA instead of 10 REFERENCE DOCL	efore board co 0mA expected IMENT(S) :	ating have shown an	excessive power drair	n on +/-9V se	econdary po	ower lines :
3) TECHNICAL INVE Investigations perform resistors R289/R290 Further visual inspect package. The pin 1 m ceramic body of the placement has be done 180°, this has the com- clamping diodes. The 18V, consistent with all	STIGATION: and capacitors ion have shown eference point of component (See according to the sequence of per- only limitation pout 170mA of e	mera have shown OP- C181/C182 as suspic n that OP400 U42 has n the cover is inconse photo on next page) pin 1 reference of the muting +9V/-9V suppl is the series resistor o excessive power drain)	400 amplifier (refdes U cious (high temperature ave been wrongly enca sistent with the reference . During board manufac cover, so the amplifier h ies, this implies a short n the OP400 +/-9V pins	42) as well as in this are psulated in if $e mark$ on the turing, OP40 as been rotated circuit throug $(2*47.5\Omega)$, for $f = 1000$ m s $f = 1$	RESPC as a) ts he b0 ed gh or	ONSIBLE(S)
Stress analysis perfor (OP400) and R289/F components from att	rmed, only pot 290 + C181/C rition stock.Boa	entially damaged cor 182. Components re ard tested OK after re	nponents are U42 placed with new eplacement.			USE AS IS WAIVER (FM) DOCUMENTATIO CHANGE
PREVENTIVE ACTION All OP400 amplifiers CEA has the action to the OP400 and define	DNS (further n used for Hersc come back to e preventive ac	nodels) thel have now been e the company who h tions for next project	encapsulated. as encapsulated ts.	RESPONSIE	BLE(S) :	SCRAP MODIFICATION
CLASS	ARANCE FOR ACTIONS	TECHNICAL MANAG	ER PRODUCT AS	SURANCE	PROJEC	T MANAGER
MINOR Unit response involved	onsible of product :		D-FONTIGN TO	Ast	2/8/06 M	neiker
MAJOR Upper lev	ei manager :			_	-#	~
5)CLOSING DATE:		BY:		VISA:		
6)INVOLVED PARAMETERS INTERFACES PERFORMANCES RELIABILITY SAFETY OTHER:	DIRECT C MATERI STRUCT MECANI EEE PAI DOCUM	CAUSES AL HARNESS THERM ELECTRONICS ISMS SOFTWARE RT OPTICS ENTATION CLEANLINESS	TEST MEANS TORAGE/TRANSPORT HANDLING/OPERATIONS TESTS UNKNOWN		DOT CAUS MENTATION ACTURING COL TION (schedule)	ES PROCEDURE CONFIG DESIGN UNKNOWN
SCHEDULE IMPACT: <1 w 7)1 st DISTRIBUTION Date 2 nd DISTRIBUTION	to:	> 1 month	COST IMPACT: < 100KF	< 1MF	> 1MF	

SAp-GERES-Flo-434-99 Edition 8_english-20/02/01



DAPNIA/SA	AP	NON CON	FORMANCE REF	ORT/CHANGE	REQUEST	N°44 (eng	6 Page: 1/1 lish)	
2)PROJEC	T : SPIRE	MODEL :	FM	FILLED OUT	BY : J.Fontian	ie DA	TE: 12/05/2006	
EQUIPMEI	MENT : HS_FCU SUB-ASSEMBLY : SCU BOARD(S) : CCHK N°C N° : N° : N° : 4002 CO					I°OT : COMPAGNY :		
CONTROL MANUFACTUR DESIGN/VALIE	PHASE	EGRATION ALIFICATION IERS	DESTOCKAGE RECETTE	INTEGRATION LE	SUB SYSTEM	ENVIRONM	ENTAL CONDITIONS THERM. EMI/EMC ACCUM. OTHER	
DESCRIPT Test at boa about 170n REFEREN	TION : Ind level before I nA. CE DOCUMEN	board coatir T(S) :	ng have shown an	excessive powe	er drain on +/-9V	'secondary	y power lines : of	
) TECHNIC /isual inspe ackage. Th eramic bod)P400 place otated 180° hrough clar 2*47.5Ω, fc	CAL INVESTIGA ection have show he pin 1 reference by of the compon ement has be done of this has the co- mping diodes. The pr 18V, consistent	ATION : n that OP40 te point on the ent (See NC e according to nsequence of the only limit t with about	0 refdes "OP3070" the cover is inconsi CR445 for another et o the pin 1 reference f permuting +9V/-9 nitation is the serie 170mA of excessive	have been wrong istent with the re xample). During of the cover, so V supplies, this s resistor on th power drain)	gly encapsulated i eference mark or board manufactu the amplifier has implies a short ci e OP400 +/-9V	RES n its n the ring, been rcuit pins	SPONSIBLE(S) :	
P3070 (O Paplaced wi placemer	ysis performed, P400) and R30 ith new compon nt.	ents from a	taily damaged con V + C30P9VC30N ttrition stock.Board	ponents are 9V. Componen tested OK afte	ts r		USE AS IS WAIVER (FM) DOCUMENTATION CHANGE	
REVENTI Il OP400 a EA has th he OP400	VE ACTIONS (f amplifiers used t e action to come and define prev	further mod for Hersche e back to th entive actio	dels) I have now been e e company who ha ns for next projects	ncapsulated. as encapsulated s.	RESPONS	SIBLE(S) :	SCRAP MODIFICATION ACTION ON OTHER PRODUCT	
CLASS	CLEARANC	E FOR	TECHNICAL MANAGE	ER PROD	UCT ASSURANCE MANAGER	PRO	DJECT MANAGER	
MINOR	Unit responsible involved product Upper level mana	of t: ager:		J.Fou	Tication 02/08/	06 J.L. 0 218/00	Alt -	
MAJOR		-						
CLOSING	DATE:		BY:		VISA	\:		
INVOLVED PA INTERFACES PERFORMANC RELIABILITY SAFETY OTHER:	ARAMETERS ES	DIRECT CAU MATERIAL STRUCT.THI MECANISMS EEE PART DOCUMENT. OTHER	SES HARNESS ERM. ELECTRONICS S SOFTWARE OPTICS ATION CLEANLINESS	TEST MEANS STORAGE/TRANS HANDLING/OPER/ TESTS UNKNOWN	PORT DO ATIONS CO OP OT	ROOT CA CUMENTATION NUFACTURING NTROL ERATION HER (schedule)	USES PROCEDURE CONFIG. DESIGN UNKNOWN	
1 st DISTRIB ate 2 nd DISTRIB	UTION to: UTION	<1 month >	1 month	COST IMPACT:	< 100KF < 1MF	> 1MF		

VIVICIO

SAp-GERES-Flo-434-99 Edition 8_english-20/02/01

2)PROJEC	CT : SPIRE	MODEL :	QM2	FILLED OUT BY : J.Fonti	gnie	DATE :	: 13/06/200
EQUIPME	NT : HS_DCU	SUB-ASS	EMBLY :	BOARD(S) : N° :		N°OT COMP/	: AGNY :
CONTROL MANUFACTU		EGRATION	DESTOCKAGE RECETTE	INTEGRATION LEVEL		RONMENTA BIANT RATION	CONDITIONS THERM. EMVEMC
DESIGN/VAL		ed bias lev	el under ESD con	ductive test	U THE	RMAL VACCU	M. CLOTHER
ESD susci ESD susci 6.4). Such Affected re [AD1], § 5. individual : electrostat [AD2], rec guarantee REFEREN [AD1] : Re [AD2] : DF [RD1] : EN 3)TECHNI	peptility tests per tests will not be equirements : .14.3.13 "no mail specification sha ic arc discharge quirement n° DR that DRCU-REC ICE DOCUMENT of SCI-PT-IIDA-0 RCU subsystem IC Test report of CAL INVESTIG	formed on I reconducte function, de Il occur whe CU-REQ 34 Q 35 (jfet Vs GU-REQ 34 Q 35 (jfet Vs (jfet Vs (jfet Vs (jfet Vs (jfet Vs) (jfet Vs) (j	DCU QM2 shows s d on FM, so FM is gradation of perfor en the subsystem e (BDA bias) have t s/Vdd bias) , DRC 3.3 n Ref Sap-SPIRE-C Ref Sap-SPIRE-C	usceptibility under ESD cond supposed to have the same mance or deviation beyond to equipment and its interface lin been found to be affected du U-REQ-37 (jfet heater bias) a CCa-25-00 DS-010-06	ductive te behaviou he tolera nes are e ring tests are not al	ests (refer ur. exposed t s, but we ffected. RESPO	r to [RD1] § ated in its o a repetitive can not
	do of a Service M	adule nanel	Effect is a sten in the	bolometer bias amplitude as s	hown in		
4) CORRE	de of a Service Mo s remains within it CTIVE ACTION	odule panel. ts specified ra S (model compared to the specified of the spe	Effect is a step in the ange since the dischar oncerned by NCR subsystem level.	bolometer bias amplitude as s arge affect the content of DAC in (CR) - RESPO	hown in registers DNSIBLE	E(S) :	FINALE DECISION(S) USE AS IS WAIVER (FM)
4) CORRE	de of a Service Mo s remains within it CTIVE ACTION	odule panel. ts specified ra S (model comen at DCU	Effect is a step in the ange since the discha oncerned by NCR subsystem level.	bolometer bias amplitude as s arge affect the content of DAC in /CR) - RESPO	hown in registers	E(S) :	FINALE DECISION(S) USE AS IS WAIVER (FM) DOCUMENTATION HANGE REPAIR
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PREVENT To be disc model CLASS	CTIVE ACTION CTIVE ACTION CTIVE ACTION tive action forese tive action forese CLEARANC ACTIO Unit responsible involved product Upper level man	odule panel. ts specified radius S (model calculation) S (model c	Effect is a step in the ange since the dischar oncerned by NCR subsystem level. dels) . ts to raise a waive TECHNICAL MANAG C · CARA-	e bolometer bias amplitude as s arge affect the content of DAC a /CR) - RESPO r on HS_DCU FM ER PRODUCT ASSURANC 2. FONT CMANAGER IG/06/2'006	DNSIBLE	E(S) :	FINALE DECISION(S) USE AS IS WAIVER (FM) DOCUMENTATION CHANGE REPAIR SCRAP MODIFICATION ACTION ON DTHER PRODUCT
A) CORRE (RD1]. Bia 4) CORRE No correct No correct PREVENT To be disc model CLASS I MINOR MAJOR 5)CLOSIN	de of a Service Me s remains within it CTIVE ACTION tive action forese tive action forese action tive action for action tive action ti	odule panel. Is specified ra- S (model con- been at DCU further moon CEA sugges CE FOR NS of t: hager :	Effect is a step in the ange since the dischar oncerned by NCR subsystem level. dels) . ts to raise a waiver TECHNICAL MANAG C · CARA- C · CARA- C · CARA- C · CARA- C · CARA-	ER PRODUCT ASSURANCE IS/OG/2006	DNSIBLE	E(S) :	FINALE DECISION(S) USE AS IS WAIVER (FM) DOCUMENTATION DOCUMENTATION REPAIR D SCRAP MODIFICATION D ACTION ON DTHER PRODUCT T MANAGER
ALLASS AMINOR AMALOR AMALOR AMINOR AMALOR AMINOR AMALOR AM	de of a Service Misservice Misservice Misservice Misservice Misservice Misservice Misservice Misservice Misservice Action foreservice action fores	DIRECT CAL DIRECT	Effect is a step in the ange since the dischar oncerned by NCR subsystem level. dels) . ts to raise a waived TECHNICAL MANAG C · CALA TECHNICAL MANAG C · CALA	ER PRODUCT ASSURANCE IG/OG/2006 IG/OG/20	DNSIBLE	E(S) :	ES PROCEDURE



6.4 Electro-Static Discharges

6.4.1 Test Equipment and measured typical current shape



Measured on ESD strap grounding contact using FCC-F16 current probe

6.4.2 Conducted ESD, DCU photometer redundant mode

Test Scheduled on: 23/12/2005 12:29:26



6.4.2.1 Test specification and settings

Requirement:

The device under test must recover nominal performances when exposed to a minimum of 10 direct contact discharges of 15mJ/15kV with a rise time lower than 10ns.

Effective settings and method:

Arc discharge distance from DUT boundaries	direct contact
Discharge rate/Voltage setting	20 discharges at 2Hz/15kV

The DUT is in ON condition.

The ESD strap grounding point is moved all around the DUT in order to insure that the current circulation is mainly into the DUT structure.

6.4.2.2 Test set-up description

Experimental Set-up Concept:





EMC Test report on DCU QM2

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 :SAp-SPIRE-DS-010-06

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Views of the Experimental Set-up and Discharge locations:



Additional positions:

- 1. Table-top both directions
- 2. Upper edges and corners
- 3. Harness bundles
- 4. Connector backshells

6.4.2.3 Results

Analysis :

- 1. NO SUSCEPTIBILITY
- 2. NO SUSCEPTIBILITY
- 3. NO SUSCEPTIBILITY
- 4. Susceptibilities found on BIAS-P and DAQ-IF connector backshells. All bias levels are affected as shown on figures below.

Nominal bias levels are recovered using relevant setting commands. No material damage.

Compliance:

Failure detection and manual operator actions are required to recover nominal performances. This situation does not fully cope with the basic requirement, the DUT is then considered as not compliant.

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Nominal Performances



Bias level changes on every channel, example 1





Bias level changes on every channel, example 2



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6.4.3 Conducted ESD, DCU spectrometer redundant mode

Test Scheduled on: 23/12/2005 12:29:26

6.4.3.1 Test specification and settings

Requirement:

The device under test must recover nominal performances when exposed to a minimum of 10 direct contact discharges of 15mJ/15kV with a rise time lower than 10ns.

Effective settings and method:

Arc discharge distance from DUT boundaries	direct contact
Discharge rate/Voltage setting	20 discharges at 2Hz/15kV

The DUT is in ON condition.

The ESD strap grounding point is moved all around the DUT in order to insure that the current circulation is mainly into the DUT structure.

6.4.3.2 Test set-up description

Experimental Set-up Concept:





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DCU QM2

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Views of the Experimental Set-up and Discharge locations:

Similar to previous set-up

Additional positions:

- 1. Table-top both directions
- 2. Upper edges and corners
- 3. Harness bundles
- 4. Connector backshells

6.4.3.3 Results

Analysis :

- 1. NO SUSCEPTIBILITY
- 2. Susceptibility found on left rear corner box close to the BIAS connectors. Most of the bias levels are affected as shown on figure below.
- 3. NO SUSCEPTIBILITY
- 4. Susceptibilities found on BIAS-R connector backshell. All bias levels are affected as shown on figures below.

Nominal bias levels are recovered using relevant setting commands. No material damage.

Compliance:

Failure detection and manual operator actions are required to recover nominal performances. This situation does not fully cope with the basic requirement, the DUT is then considered as <u>not compliant</u>.



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Nominal Performances

25200 25000 24000	2000	21000	22000	23000	2000	2000	21000	2200
pectrometer SW + LIA_S1	/CH1/J23 - 24947 Moyers	ne sur 20+24957,950 Ecart (ype=26.352 Min=24911 Ma	e-25011-Difference-100	Spectrometer LW - LIA_S3	VEH13/027 - 24957 Moyenn	e sur 20+24988.250 Ecart	ype=31.082 Min=
25300								
25000	ميتجمدي وملينا أمنوه	and the second se	And and the first state	een a				
24800-	20000	21000	22000	23000				
pectrometer SW - LIA_S1	CH13/J23 - 24896 Hayer	ne su 20+24938.450-Ecat I	ype=16.488-Min=24823-Ma	e=24981-Difference=58				
25000 1		Indeed on	and the second					
24900	he must done, he defend	A MILLION OF A DISCOUTE	a state of the second se	**				
24800	- hold - officiation	Lablad 1						
	2000	21000	22000	2300				
ectionistic SW - LM_S.	architelates - 246/19 Moyen	ne sur 20+24327 50042 carl (Aben 10.420 440454605 448	e-26367-0/flavence+65				
25200+								
25000	and the second		Likeling of a strength and					
24800	Appropriate the second second	A COLORADO AND A COLORADO		÷				
	20000	21000	22000	23000				
pectrometer SW - LM_S	2/CH13/J25 - 24919 Mayeri	ne sur 20+24906.150-Ec.ed I	ype=20.735-Min=24009-Mis	e-24965-Difference-76				
30000				-				
20000								
1000-	20000	21000	22000	23000				
pectrometer LW - LIA_SC	UCH1/027 - 24975 Moyers	ne su 20+24900.000-Ecat H	ype=14.571.Htm-24962.Hts	e-25015-Difference-53				

Bias level changes, discharges on the left rear corner box



40000 20000 0		3000	4000	5000	40000 20000 0		3000	4000	5000
Spectrometer SW - LIA_S1	CH1/J23 - 24947 Mayerine to	a 20+31218.000 Ecat ly	pe=17.900 Min=31182 Max	=31255 Oifference=73	Spectrometer UW - LL	A_\$3/CH13/027+24957_1	Moyenne sur 20+24364	SSO Ecar type=15.9	823 Min=24340 Miss=2
40000 20000 0	200	3000	4000	5000					
spectrometer SW - EAC 51	num sinza - 24000 Hoyenne b	a 20+31133.20+2.581 ly	pe-20.314448-311564484	#31233-0/fiterence#//					
2000									
	2000	3000	4000	5000					
Spectrometer SW - LM_S2	5/CH1/J25+24079 Hayenne a	# 20×31201.450-Ecart ly	pe=17.997-Min=31161-Max	=31241-Difference=00					
40000									
0	2000	3000	4000	5000					
Spectrometer SW - LUL_S2	2/CH13/J25 - 24919 Mayenne a	# 20+31213.050-Ecat ly	pe=19.083-Min=31185-Max	=31255-Difference=70					
20000									
	2000	3000	4000	5000					
Spectrometer UW - UA_\$3	VCH1/027 - 24975 Mayenne a	a 20+24351.350-Ecat ly	pe=16.378-Min=24325-Max	+24306-Difference+61					

Bias level changes on every channel, discharges on BIAS-R front connector backshell

00000 00000	34000	35000	10000	32000	23000	34000	35000
S1/0H1/023+2494/ Moyenne ou 20+16451.000-E	cat type=18.034 Mm=15.333 f	(aer16481 Otherence+82	spectrometer UW (UACS	3/CH13/92/+2495/ Moyen	re sur 20+16445, 150 E carl ly	/pe=18.227 Min=16418 Ma	x=164/304terence=55
32000 33000	34000	35000					
\$1/CH13/J23 - 24896 Mayerine put 20+16426.450-E	cart type=21.921-Min=163774	4.por16468-Difference=91					
32000 33000	34000	35000					
\$2/CH1/U25+24079 Moyenne our 20+16302.300-E	cart type=10.04544in=163614	4se+16441-Difference+80					
	• •						
32000 33000 S2/OH13/J25 - 24919 Moyenne sur 20+16417.150-E-	34000 cat type=14,231-Min=16306-8	35000 4av=16430-Difference=52					
32000 33000	34000						
\$3/CH1/027-24375 Moyenne ou 20+16453.400-E-	cat type=14.14744in=164254	4ax+16475-Difference+50					

Bias level changes on every channel, discharges on BIAS-R rear connector backshell



EMC Test report on

DCU QM2

6.4.4 Radiated ESD, DCU photometer redundant mode

Test Scheduled on: 23/12/2005 12:29:26

6.4.4.1 Test specification and settings

Requirement:

The device under test must recover nominal performances when exposed to a minimum of 10 discharges of 15 mJ/15kV at 30cm distance from the device under test boundaries.

Effective settings and method:

Arc discharge distance from DUT boundaries	30 cm
Discharge rate/Voltage setting	40 repetitive/15kV

6.4.4.2 Test set-up description

Experimental Set-up Concept:



6.4.4.3 Results

Analysis :

NO SUSCEPTIBILITY



EMC Test report on

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6.4.5 Radiated ESD, DCU spectrometer redundant mode

Test Scheduled on: 23/12/2005 12:29:26

6.4.5.1 Test specification and settings

Requirement:

The device under test must recover nominal performances when exposed to a minimum of 10 discharges of 15 mJ/15kV at 30cm distance from the device under test boundaries.

Effective settings and method:

Arc discharge distance from DUT boundaries	30 cm
Discharge rate/Voltage setting	40 repetitive/15kV

6.4.5.2 Test set-up description

Experimental Set-up Concept:



6.4.5.3 Results

Analysis :

NO SUSCEPTIBILITY



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DAPNIA/SAP	1) N	ION CONFOR	MANCE REP	JKI/ GHANGE	KEQUESI	N	-456	Page:
2)PROJECT : EQUIPMENT : N° :	SPIRE I HS_DCU	MODEL : QM2 SUB-ASSEMB N° :	LY :	FILLED OUT BOARD(S) : N° :	BY : J.Fontig	nie	DATE : N°OT COMPA	07/07/ : GNY :
OCCURENCE PHAS CONTROL MANUFACTURING DESIGN/VALIDATIO	© INTEGR ■ QUALIF N □ OTHER CU, susceptik	ATION DES ICATION DES S Dility to E Field	TOCKAGE ETTE d at 215MHz a	INTEGRATION LE PART SUB-ASSEMBLY EQUIPEMENT IND 185MHz (H	■ SUB SYSTEM ■ INSTRUMENT ■ OTHER Orizontal pola	ENVIRO AMBIA VIBRA THERM	DNMENTAL INT TION MAL VACCUM	CONDITIO THERM EMI/EM OTHER
DESCRIPTION Emi-Emc tests margin) and 18 Nota : margins	1 : performed on 35MHz (5dB no are establishe	DCU QM2 have egative margin ed considering	ve shown a su). equal contribu	sceptibility on I utions of enviro	DCU (ref RD1	§ 6.3) at and sen	215MHz sitivity (≡	(0dB 0 dB)
REFERENCE [AD1] : Ref SC [AD2] : DRCU [RD1] : EMC T 3)TECHNICAL	DOCUMENT(S I-PT-IIDA-046 subsystem spo est report on D	<u>5)</u> : 24 Issue 3.3 ecification Ref DCU QM2 Ref ION :	Sap-SPIRE-C Sap-SPIRE-D	Ca-25-00 S-010-06			RESPON	ISIBLE
4.5								
4) CORRECTI	action foreseer	n at DCU subsy	ystem level.	<u>UR</u>).	<u>RESPO</u>	NOIDLE	<u>∍</u> . ∎ ₽	DECISION USE AS IS WAIVER (FI DOCUMENT IANGE REPAIR
PREVENTIVE	ACTIONS (fu	rther models)			RESPO	SIBLE(<u>s):</u>	SCRAP
To be discusse FM is suppose CEA proposes	ed in NRB, suc d to have the s to raise a wai	h tests will not same behaviou ver.	be performed Ir.	on DCU FM, s	0		ם ס	MODIFICAT ACTION ON HER PRODI
CLASS	CLEARANCE I ACTIONS	FOR TEO	CHNICAL MANAGE	R PROD	MANAGER		PROJECT	MANAGE
	nit responsible of volved product :	or -		J.For	NTIGNIE	8 ·	2 Aug	uèlle T
MAJOR	per lever manag					-	AI	
5)CLOSING D	ATE:		BY:		VIS	SA:		
6)INVOLVED PARA INTERFACES PERFORMANCES RELIABILITY DESEETY	METERS	DIRECT CAUSES MATERIAL STRUCT.THERM. MECANISMS EEE PART DOCUMENTATION	 HARNESS ELECTRONICS SOFTWARE OPTICS CLEANLINESS 	TEST MEANS STORAGE/TRANS HANDLING/OPER TESTS UNKNOWN	PORT	ROOT DOCUMENTA MANUFACTUR CONTROL OPERATION	CAUSE	S PROCEDU CONFIG. DESIGN UNKNOW
	c 1 waak	OTHER		COST INDACT	< 100//5	OTHER (sched	fule) c	
SCHEDULE IMPACT : SCHEDULE IMPACT : 7)1 st DISTRIBUTI Date 2 nd DISTRIBUTI	<1 week <1 ON to : ON	OTHER Month > 1 month	1	COST IMPACT:	< 100KF < 1M	OTHER (sched	fule)	

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Request for deviation / waiver / Repair

PROJECT/INSTRUMENT : HEI	RCSHEL / SPIRE	SEGMENT GROUND ON BOARD	Date :01/09/2003
S-SYSTEME : FCU	EQUIPMENT :	SUB-ASSY :	WBS n°
MODEL : FM	MODEL :	MODEL :	
			Company :
Drawing ref : FCU MICD ref. SP	IR-MX-5200 000 F	Serial or lot ref : All	Destination :
			Spire system team
Affected Document ref: SCI-PT-	IIDA-04624 3/0	Quantity 1	

TITLE : FCU flat base plate DESCRIPTION :

SCI-PT-IIDA-04624 Issue 3/0 requires a flat base plate for warm units if dissipative flux exceeds $50W/m^2$. (IIDA § 5.7.3 "All units operating in the 270-350K range shall have a flat base-plate contact: these are all the dissipating units i.e. those where the skin dissipated power of faces not in contact with support structure is more than $50W/m^2$).

The total dissipated power through the HSFCU is 48.12 W and the estimated radiative area is about $0.42m^2$: the dissipative flux is > 50 W/m².

However, ASTRIUM (PSU supplier) propose a design without flat base plate. (Original RFW raised by ASTRIUM, ref HSPIR.PSU.RFD.00014.V.ASTR) Réf. NCR : None Date close-out by CRM:

REASON FOR CHANGE / JUSTIFICATION:

A preliminary thermal analysis taking into account hypothesis coming from of AD1 (Trad=45°C, Tmean base plate = 45 °C), shows that the main requirement coming from AD3 ($\Delta T < 6$ °C between the bottom and the top of the bottom part of the unit : the HS_PSU) is satisfied with the proposed design.

Furthermore, the implementation of a flat base plate would dramatically impact the mass budget.

Compared to the original design, ASTRIUM propose to increase the contact area with the SVM plate by filling the gaps between the attachment feet as shown on the joined drawing. The added area value is $0,017m^2$, which makes a total contact area with NIDA of $0,050 m^2$.

ASTRIUM provided a reduced thermal model of this configuration (RD1) to ALCATEL who checked the acceptability of this design (see e-mail sent from Bernard COLLAUDIN (ALCATEL-SPACE) to Mr TOURRETTE (CEA) the 25 July 2003)

Ref. of justification. documents :

AD1 = SCI-PT-IIDA-04624 3/0 Part A

AD3 = SAP-SPIRE-DS-012-02 SPIRE PSU cahier des charges techniques Version 1 Rev 1

RD1= HSPSU Modèle thermique réduit HSPIR.PSU.MN.019.V.ASTR Edition :01 Rév. : 01)

AFFECTED CRITERIA													
Function		Interface	Interchangeability		Reliability		Safety		Other :				
USING LIMITATIONS OR COMMENTS :													
SUBMITTED	SUBMITTED BY Name : J. Fontignie Date : 01/09/2003 Visa :												
L													
			AUTORIS	SATION	VISAS (nai	ne, d	ate, signatur	e)					
Deviation		AUTHORITY	TECHNI	CAL	PRODU	ICT A	SSURANCE	PF					
Waiver		CEA	T. TOURRETTE		J. FONTIGNIE	C	at to	J.L. AI	UQUERES				
Repair			· ·			Ţ		2	*				
Minor		SPIRE System tean											
Major			•										
Critical													



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N°010

Page: 1/2

PROJECT/INSTRUMENT : HEF	RCSHEL / SPIRE	SEGMENT GROUND ON BOARD	Date :19/08/2003
S-SYSTEME : FCU MODEL : FM	EQUIPMENT : MODEL :	SUB-ASSY : MODEL :	WBS n° Company :
Drawing ref : FCU MICD ref. SP	IR-MX-5200 000 F	Serial or lot ref : All	Destination : Spire system team
Affected Document ref: SCI-PT-	IIDA-04624 3/0	Quantity 1	

TITLE : Number of interface fixation points for FCU DESCRIPTION :

SCI-PT-IIDA-04624 Issue 3/0 states "The preferred way for fixation of boxes is using M4 screws. Deviations shall be negociated with Alcatel on case by case analysis"

A preliminary mechanical analysis (performed by ASTRIUM, PSU supplier for SPIRE's DRCU) shows that, given the the number FCU box feet, M4 screws do not insure a good enough mechanical behaviour on satellite wall according to AD1.

It is proposed that the FCU 12 attachment feet will be drilled to receive M5 screws.

(Original RFW raised by ASTRIUM, ref HSPIR.PSU.RFD.00012.V.ASTR)

Réf. NCR : None

Date close-out by CRM:

REASON FOR CHANGE / JUSTIFICATION:

After performing preliminary mechanical analysis taking into the mechanical environment required in AD1, it is shown that it is impossible to obtain satisfactory criteria for inserts and screws computation using the AD1 method : the insert criteria can reach values >> 1 required.

Calculations considering only static limit loads (combined) as required by ALCATEL-SPACE and performed with new insert mechanical characteristics provided by ALCATEL-SPACE (Pm=2500N, Qm=3620N) show that with M4 screws only sliding occurred on 3 feet whrereas with M5 ones all the criteria of specified in AD1 are fulfilled.

Note : AD1 = SCI-PT-IIDA-04624 3/0

Ref. of justification. documents :

SPIR-PSU-HSFCU Interface screws checking (by ALSPACE Technologies, 29/07/2003)

AFFECTED CRITERIA									
Function		Interface 🔳	Interchangeability	כ	Reliability		Safety		Other :
USING LIMITATIONS OR COMMENTS :									
	BY I	Name : J. Fo	ntignie		Date :	19/	/08/2003	Visa	: 85
			AUTORISAT	ION	VISAS (nar	ne, da	ate, signatur	e)	
Deviation		AUTHORITY	TECHNICAL		PRODU	CT AS	SURANCE	PF	ROJECT MANAGER
Waiver		CEA	T. TOURRETOR		J. FONTIGNIE	$\widehat{\mathcal{A}}$	t.	J.L. AI	JGUARES
Repair			A MUSS			Ð		-	H'
Minor		SPIRE System team	A						
Major									
Critical									

Edition 2-07/05/1998



PRODUCT ASSURANCE Space Science and Technology Department

RFW/RFD Number: HR-

HR-SP-CEA-RFW-003 Issue 2

Spacecraft / Project	Herschel/SPIRE	Originator's Name	J. Fontignie	
System / Experiment / Model	PFM	Signature / Date	St. 20	/09/2005
Sub-System	DRCU	Request Type (Highlight applicable request)	Waiver (RFW)	Deviation (RFD)
Assembly	FCU	Organisation	CEA Saclay (France)	
Sub-Assembly	PSU	Ref. Doc. / Drwg No.		
Item			CEA's RFW ref : RFW n°12	
Serial No.		References		

RFW/RFD Title

HSFCU PSU electronic assembly not fully compliant with ECSS-Q-70-08 A

End Items(s) Affected (Hardware, Software)								
Name	CI-Nu	mber		Model(s)				
Requirement / Interface Documents Affected								
Specification/Drawing Title	Number	Issue Date		App. Paragraph				
The manual soldering of high	ECSS-Q-70-08	А	06 Aug	10.3.3				
reliability electrical connections			1999					
Descript	ion of Deviation / Discrepan	cy / Non-Conf	ormance					
According to ECSS-Q-70-08 A § 10.3 solder fillet should be used around the the periphery", componant side. Technological inspection performed PSU boards are not fully compliant we PCB copper layers and/or large track Refer to attached original RFW raised ASTRIUM considers that those solde - Such solder joints have been qualified +100°C, vibrations and microsection) - HSPSU has passed with success and - ESA has already approved similar R Also attached to this RFW : Inspection reports ref. Sap-SPIRE-JF CNES approval for EADS ASTRIUM P Status of qualification of operators we	.3, "Soldering of componen ne entire periphery of the ho by the manufacturer (EADS <i>i</i> th this requirement (no fille is. d by EADS ASTRIUM (HSPIR r joints are acceptable : ied on a technological proof ceptance test (vibrations ar RFW's on ATV program. -0173-04 , Sap-SPIRE-JF-01 PID (July 2003 and October 2 tho performed soldering	ts lead to plate le; the minimu ASTRIUM) sh t visible comp PSU.RFW.00 by EADS AST d thermal cyc 74-04 2004)	ed through um solder ows that s ponent sid 143.V.AST IRIUM (50 sling),	h holes", "a complete fillet shall occupy 25% of some solder joints of the le). This is due to internal IR Issue 01), EADS 0VRT between –55°C and				
Othe	er Items or Requirements (Pe	otentially) Affe	cted					
Nee		le for Accepta	nce					



PRODUCT ASSURANCE Space Science and Technology Department

RFW/RFD Number:

HR-SP-CEA-RFW-003 Issue 2

	Approved	Rejected	Name	Sign
Engineering:			Eric Sawyer	
Product Assurance:			Eric Clark	
CCB-Chairman:				
Principle Investigator				
Co-Investigator				
Prime Contractor				
ESA Project Office				



PRODUCT ASSURANCE Space Science and Technology Department

RFW/RFD Number:

HR-SP-CEA-RFW-004

Spacecraft / Project	Herschel/SPIRE	Originator's Name	J. Fontignie / CE	EA
System / Experiment / Model	PFM	Signature / Date	8th	17/08/2004
Sub-System	DRCU	Request Type (Highlight applicable request)	Waiver (RFW)	Deviation (RFD)
Assembly	FCU	Organisation	CEA Sacla	y (France)
Sub-Assembly	PSU	Ref. Doc. / Drwg No.		
Item			CEA's REW ref : REW nº13	
Serial No.		References		

RFW/RFD Title

HSFCU : conducted emissions on primary powerlines exceeds IIDA limits



ISO9: Form PA 016 Request for Waiver/deviation (RFW/RFD)



PRODUCT ASSURANCE Space Science and Technology Department

RFW/RFD Number:

HR-SP-CEA-RFW-004

Other Items or Requirements (Potentially) Affected

Need for RFW/RFD and Rationale for Acceptance

	Approved	Rejected	Name	Sign
Engineering:			Eric Sawyer	
Product Assurance:			Eric Clark	
CCB-Chairman:				
Principle Investigator				
Co-Investigator				
Prime Contractor				
ESA Project Office				



Serial No.

Rutherford Appleton Laboratory

REQUEST FOR WAIVER / DEVIATION (RFW/RFD)

PRODUCT ASSURANCE Space Science and Technology Department

		RFW/RFD Number:	IR-SP-CEA-R	(FW-???
Spacecraft / Project	Herschel/SPIRE	Originator's Name	J. Fontignie	
System / Experiment / Model	PFM	Signature / Date	25/0 AA	07/06
Sub-System	DRCU	Request Type (Highlight applicable request)	Waiver (RFW)	Deviation (RFD)
Assembly	DCU	Organisation	CEA Saclay	(France)
Sub-Assembly		Ref. Doc. / Drwg No.	· · ·	· /
Item Serial No		References	CEA's RFW ref : RFV	N n°15

RFW/RFD Title HSDCU : Susceptibility to E Field

End Items(s) Affected (Hardware, Software)						
Name	CI-Number			Model(s)		
Requirement / Interface Documents Affected						
Specification/Drawing Title		Number	Issue	Date	App. Paragraph	
IID-A	SCI-PT	-IIDA-04624 Issue	3.3	30/06/	5.14.3.10	
	3.3			2004		
Description of Deviation (Discourses (New Oranformerses						
Description of Deviation / Discrepancy / Non-Conformance						

Ref CEA NCR n°456, Susceptibility to E Field has been found during EMI-EMC tests performed on DCU QM2 model. Tests reconducted by similarity on FM.

Refer EMC test report Ref Sap-SPIRE-010-06 § 6.3, susceptibility found at 215MHz (0dB Margin) and 185MHz (5dB negative margin).

Other Items or Requirements (Potentially) Affected

Need for RFW/RFD and Rationale for Acceptance

Sharp resonances are relevant to the geometrical size of the experimental setup. Recommended I/O R/F filtering could not be implemented (too high components density on LIA board)



PRODUCT ASSURANCE Space Science and Technology Department

RFW/RFD Number: HI

	Approved	Rejected	Name	Sign
Engineering:			Eric Sawyer	
Product Assurance:			Eric Clark	
CCB-Chairman:				
Principle Investigator				
Co-Investigator				
Prime Contractor				
ESA Project Office				



PRODUCT ASSURANCE Space Science and Technology Department

RFW/RFD Number:	HR-SP-CEA-RFW-???
Originator's Name	L Fontignio

Spacecraft / Project	Herschel/SPIRE	Originator's Name	J. Fontignie	
			25	/07/06
System / Experiment / Model	PFM	Signature / Date	A	
Sub-System	DRCU	Request Type (Highlight applicable request)	Waiver (RFW)	Deviation (RFD)
Assembly	DCU	Organisation	CEA Saclay	/ (France)
Sub-Assembly		Ref. Doc. / Drwg No.		
Item			CEA's REW rof · R	NV n°16
Serial No.		References		

RFW/RFD Title	HSDCU : Susceptibility to ESD
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End Items(s) Affected (Hardware, Software)							
Name CI-Number Model(s)							
R	equirement / Interface Docu	ments Affecte	d				
Specification/Drawing Title	wing Title Number Issue Date App. Paragraph						
IID-A	SCI-PT-IIDA-04624 Issue	3.3	30/06/	5.14.3.13			
	3.3		2004				
Descript	ion of Deviation / Discrepan	cy / Non-Cont	ormance)			
 ESD suscpeptility tests performed on DCU QM2 shows susceptibility under ESD conductive tests (refer to [RD1] § 6.4). Reconducted by similarity on FM. Affected requirements : [AD1], § 5.14.3.13 "no malfunction, degradation of performance or deviation beyond the tolerance indicated in its individual specification shall occur when the subsystem equipment and its interface lines are exposed to a repetitive electrostatic arc discharge. All bias potentially affected [AD2], (requirement n° DRCU-REQ 34 (BDA bias), DRCU-REQ 35 (jfet Vss/Vdd bias), DRCU-REQ-37 (jfet heater bias)). [AD1] : Ref SCI-PT-IIDA-04624 Issue 3.3 [AD2] : DRCU subsystem specification Ref Sap-SPIRE-CCa-25-00 [RD1] : EMC Test report on DCU QM2 Ref Sap-SPIRE-DS-010-06 							
Other Items or Requirements (Potentially) Affected							
Nee No material damages were found. No	ed for RFW/RFD and Rationa	le for Accepta	ince relevant o	commands to the DRCU.			



PRODUCT ASSURANCE Space Science and Technology Department

RFW/RFD Number: HI

	Approved	Rejected	Name	Sign
Engineering:			Eric Sawyer	
Product Assurance:			Eric Clark	
CCB-Chairman:				
Principle Investigator				
Co-Investigator				
Prime Contractor				
ESA Project Office				



Rutherford Appleton Laboratory

REQUEST FOR WAIVER / DEVIATION (RFW/RFD)

Spacecraft / Project	Herschel/SPIRE	Originator's Name	J. Fontignie	
System / Experiment / Model	PFM	Signature / Date	25 AA	/07/06
Sub-System	DRCU	Request Type (Highlight applicable request)	Waiver (RFW)	Deviation (RFD)
Assembly	DCU	Organisation	CEA Saclay	(France)
Sub-Assembly		Ref. Doc. / Drwg No.		
Item Serial No.		References	CEA's RFW ref : RF	W n°17

RFW/RFD Title	HSDCU & HS_FCU : no radiated emission tests performed

End Items(s) Affected (Hardware, Software)						
Name CI-Number Model(s)						
R	equirem	ent / Interface Docu	ments Affecte	d		
Specification/Drawing Title		Number	Issue	Dat	te	App. Paragraph
IID-A	SCI-PT	-IIDA-04624 Issue	3.3	30/06/		5.14.3.9 & 5.14.3.11
	3.3			2004	1	
Descript	ion of Dr	viation / Discropan	w / Non Conf	orman	200	
Descript		eviation / Discrepand	sy / Non-Com	orman	ice	
Schedule considerations has not permitted to perform Radiated E field and Radiated H field measurements on HS_DCU FM & HS_FCU FM (IIDA requirements). Agreed with SPIRE in teleconference.						
Other Items or Requirements (Potentially) Affected						
Other items of Requirements (Fotentially) Anecteu						
Need for RFW/RFD and Rationale for Acceptance						
Schedule considerations						



PRODUCT ASSURANCE Space Science and Technology Department

RFW/RFD Number: HI

	Approved	Rejected	Name	Sign
Engineering:			Eric Sawyer	
Product Assurance:			Eric Clark	
CCB-Chairman:				
Principle Investigator				
Co-Investigator				
Prime Contractor				
ESA Project Office				