



Combined EEE Parts List

Spacecraft/Project:	HERSCHAL	Document No:	SPIRE RAL_PRJ 0001095		
Instrument/Model:	SPIRE	Issue No:	1	REV:	0
Subsystem:		Date:	25 Jan 2002		

SUBJECT: Combined List of EEE Parts for the Spire instrument

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DOCUMENT No: SPIRE-RAL-PRJ-0001095

ISSUE: Issue 1 **Date:** 25 January 2002

APPROVED BY: Name **Date:** Signature

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CHANGE RECORD

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DOCUMENT LIST

Note

Where a Sub-Systems / Institutes has combined some or all of their Declared lists and / or EEE parts etc into one document, that documents details are recorded below. However only the applicable pages are included in this document.

Sub-System	Document	
Institute	Title	Number
ATC	<i>SPIRE BSM Electronics Parts Lists V1.1</i>	SPIRE-ATC-PRJ-000714
CDF (QMW)		
CEA/SAp	Declared Components List Ed11	SAP-SPIRE-VM-0051-01
CEA/SBT		
CSA/USK		
IFS (IFS1)	DPU Declared components list + DML, DPL	SPIRE-IFS-Doc-001031 Issue 1
JPL		
LAM (LAS)	EEE Pert List	LAM/ELE/SPI/QUA/000201
MSSL		



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INTRODUCTION

The EEE Parts used by RAL Space Science Technical Departments (SSTD co-producers / sub-system suppliers are listed on spreadsheets or tables,

The parts fall into two categories:

- a.) Parts procured from CPPA (Tecnologica), therefore "Approved".
- b.) Self procured parts.

The self-procured parts also fall into two categories.

- b.1) Approved parts. Previously approved on other "space" instruments etc.
- b.2) Parts that will require ESA approval before use on flight hardware.

CPPA parts can be checked on the Tecnologica web site.

SCOPE

This document lists the "EEE parts" used in the provision of the supplied parts of the **Spire** Instrument from the following sub system suppliers. See Table 1.

Table 1

Sub-System / Institute		List Supplied
Acronym	Name	Yes / No / NA
ATC	Astronomy Technology Centre	Yes
CDF (QMW)	Department of Physics and Astronomy, University of Wales, Cardiff,	No
CEA/SAp	CEA, Service d'Astrophysique Saclay	Yes
CEA/SBT	(CEA) Service du Basse Temperatures Grenoble	No
CSA/USK	Canadian Space Agency (CSA) University of Saskatchewan Canada	No
IFS (IFSI)	Istituto di Fisica dello spazio Interplanetario, Rome	Yes
JPL	JPL/Caltech, Pasadena	No
LAM (LAS)	Laboratoire d'Astonomie Spatiale, Marseille	Yes
MSSL	Mullard Space Science Lab Surrey	NA



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APPENDIX A

Electronics Parts Lists

1 Warm Electronics

Parts Lists for electronic components will be issued by LAM when the detailed design is finalised.

2 Beam Steering Mechanism

2.1 SPIRE Beam Steering Mirror Assembly Standard Parts List

This list defines the space-qualified parts used in the BSM mechanism that are covered in the ESA/SCC EEE Components Specifications.

NOTES:

The 37-way MDM connector types specified below are selected from the ESA/SCC EEE Components Specifications Lists. However, this is a compromise, as the desired solder-bucket type is not included in the lists, so a solid-wire termination type has been selected. This will require multiple solder joints and heat-shrink coverings before potting. If a space-qualified solder-bucket MDM connector is used by anyone else, it would be better to use the appropriate part number for that type, but for a 37-way pin connector.

Quantity count is total for BSM project (all models) not per model.

Part number	Description	Quantity	Notes
3401029 02 B 37P FR116	Micro-miniature rectangular connector (MDM type) with uninsulated solid wire terminations	10	For 3 models plus spares SOLDER BUCKET TYPE PREFERRED – BUT NOT LISTED IN 3401/029
3401029 02 B 37S FR116	Micro-miniature rectangular connector (MDM type) with uninsulated solid wire terminations	10	For 3 models plus spares SOLDER BUCKET TYPE PREFERRED – BUT NOT LISTED IN 3401/029
TBD (by RAL)	EMI Back-shells for above connectors	8	
3401 041 06 B 37 PS	Connector saver, 37-way MDM type	10	
3401 032 05 B	Srew lock assembly for connector saver	20	
3401 032 01 B	Screw lock assembly for connector	20	
3901 013 41 B 050m	PTFE insulated Screened Twisted Pair wire, 28 AWG	1	
3901 013 46 B 050m	PTFE insulated Screened Twisted Triple wire, 28 AWG	1	
			(MICROSWITCH DELETED)
CX-1030-CU	Cernox Thermometers (CX1030)	10	

2.2 SPIRE Beam Steering Mirror Assembly Non-Standard Parts List

The following are also provided by the UK ATC

Part number	Description	Quantity	Notes
TBC	Motor coils, common to PACS. Supplier is Zeiss.	40	Parts will be supplied with QA documents per Zeiss/PACS
FP212	Infineon sensors	20	Same sensor as used on ISOPhot. ATC to supply PAD sheet. ATC incorporate in mounting (BSM-020-007) and qualify along with BSM
SPI-STM-81-DO-01-1 (draft)	Launch Latch	3	Parts will be supplied with QA documents per LAM/SMEC
TBD	Chop sensor flexible harness (Jiggle frame to BSM structure) Flexitape, manufactured by TAYCO.	10	Exact spec TBD. Type will be space proven and cryogenically suitable. ATC to supply PAD sheet.
RayChem RNF 100	Heat Shrink 2.4mm bore. (motor harness terminals, etc)	1	MIL-DTL-25053/5 class 2 (clear) or space rated equivalent.

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Herschel

DPU Declared Components List

~~**Materials List**~~

~~**Processes List**~~

Document Ref.: SPIRE-IFS-DOC-001031

Issue: 1.0

Prepared by: R. Orfei

Date: 21 November 2001

SPIRE_DPU_DCL-ML-PL_Issue1.doc



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1 INTRODUCTION

1.1 Scope of the document

This document is the preliminary Declared Components List, Materials List and Processes List in terms of selection and approval for the SPIRE-DPU subsystem. It has to be noted that all DPU electronic components will be purchased through the Coordinated Parts Procurement Agency set up by ESA and contracted to Tecnologica (Sevilla, Spain) and TOP-REL (Rome, Italy).

Acronyms and Abbreviations

1.1.1 Acronyms

AD	Architectural Design
ATP	Acceptance Test Plan
AVM	Avionic Model
CIDL	Configuration Identification Document List
CSL	Configuration Status List
CNR	Consiglio Nazionale delle Ricerche
CPP	Coordinated Parts Procurement
CPP	Coordinated Parts Procurement Board
CPU	Control Processing Unit
CDMS	Central Data Management System
CDMU	Central Data Management Unit
CQM	Cryogenic Qualification Model
DCU	Detector Control Unit
DDD	Detailed Design Document
DPU	Digital Processing Unit
EEPROM	Electrically Erasable Programmable Read Only Memory
EMC	Electro Magnetic Compatibility
EMI	Electro Magnetic Interference
ESA	European Space Agency
FIRST	Far InfraRed and Submillimeter Telescope
HK	HouseKeeping
HW	HardWare
IBDR	Instrument Baseline Design Review
ICD	Interface Control Document
ICDR	Instrument Critical Design Review
ICU	Instrument Control Unit
IHDR	Instrument Hardware Design Review
IFSI	Istituto di Fisica dello Spazio Interplanetario
ISVR	Instrument Science Verification Review

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MCU	Mechanism Control Unit
NA	Not Applicable
OBS	On-Board Software
PA	Product Assurance
PDU	Power Distribution Unit
PROM	Programmable Read Only Memory
S/C	SpaceCraft
SCC	SpaceCraft Components
SCU	S..... Control Unit
SEU	Single Event Upset
SPIRE	Spectral and Photometric Imaging Receiver
S/S	SubSystem
SVM	Service Module
SW	Software
TBC	To Be Confirmed
TBD	To Be Defined
TBW	To Be Written
TV	Thermal Vacuum
WBS	Work Breakdown Structure

1.2 References

1.2.1 Applicable Documents

Document Reference	Name
AD1	SPIRE Instrument Specification
AD2	FIRST/Planck Instrument Interface Document Part A
AD3	FIRST/Planck Instrument Interface Document Part B Instrument "SPIRE"
AD4	Product Assurance Plan for the FIRST-SPIRE Instrument
AD5	SPIRE Product Tree
AD6	FIRST SPIRE DPU Subsystem Specification Document
AD7	ESA Preferred Parts List. ESA PSS-01-603

1.2.2 Reference Documents

Document Reference	Name
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Reference	
RD1	SPIRE Design Description
RD2	SPIRE Preliminary EEE Parts List
RD3	Carlo Gavazzi Space: DPU Preliminary Declared Components List

2 Status of the lists

This is the first issue of the DPU Declared Components List, Materials List and Processes List prepared for the DDR.

The electronic components list presented (taken from RD3) has already been subjected to scrutiny by the Coordinated Parts Procurement Boards (CPPB) and it is still subject to be updated in just a few items, mainly for standardisation of packages and types.

2.1 Overview of the DPU

The DPU is the only subsystem that interfaces electrically with the spacecraft for telemetry and telecommand. It takes care of the command execution and synchronisation, it controls all the subsystems, packages the telemetry and takes care of the health-autonomous mode.

The DPU electronics will consist of a single box, positioned in the warm part of the S/C and as close as possible to the DCU, the MCU and SCU sub-systems.

3 Notes on Components Criticality

With the present EEE lists there are no criticalities implied.

4 Introduction to the Components and Materials Lists

It has to be stressed the point that IFSI is involved in the design and manufacturing of the DPU/ICU of the three Herschel instruments, so the lists will be nearly the same for the three instruments. In the following pages the components and Bill of Materials are reported. The components are corresponding to the ones actually shown in the electrical schematics and soldered in the related printed boards and are reported for each printed board:

- CPU,
- CPU PIGGY-BACK;
- PL-IF,
- DC/DC Converter and Motherboard.



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5 PRELIMINARY DECLARED COMPONENTS LIST

DRAWING TITLE <p align="center">HSO/FIRST-DPU: CPU BOARD Electrical Part List (SPIRE)</p>	CARLO GAVAZZI SPACE S.p.A.
HIGHER ASSEMBLY DPU-EM-110.00-0	DRAWING NUMBER DPU-EM-110.01-3
REV. /	DATE

ITEM	DESCRIPTION	PROC.SPEC	SUPPLIER	P/N-ID.CODE	QTY	EM NOTE
For the parts relevant to the F.M. All the columns shall be filled up and are applicable to the procurement. For the parts relevant to the E.M. the filling up of all the columns is encouraged (mandatory if required by the contract), so as to allow procurement flexibility in front of cost & time saving reasons.						
C1	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C2	Tantalum Capacitor 15uF 30V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0545	1	
C3	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C4	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C5	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C6	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C7	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C8	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	



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C36	NOT MOUNTED					
C37	NOT MOUNTED					
C38	NOT MOUNTED					
D1	Switching diode	MIL-PRF-19500/578	CDI	JANS1N6642US	1	
JP1	NOT MOUNTED					
JP2	NOT MOUNTED					
JP3	NOT MOUNTED					
JP4	NOT MOUNTED					
P1	60-pin Micro Strip Connector Female	AMP-spec. 108-1272	AMP	536279-2	1	
P2	60-pin Micro Strip Connector Female	AMP-spec. 108-1272	AMP	536279-2	1	
R1	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1	
R2	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1	
R3	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1	
R4	NOT MOUNTED					
R5	NOT MOUNTED					
R6	NOT MOUNTED					
R7	NOT MOUNTED					
R8	NOT MOUNTED					
R9	NOT MOUNTED					
U1	256K x 32 bit EEPROM	79C0832RP0125.99	SEI	79C0832RT2FX-20	1	79C0832RPQE-20
U2	16-bit Transceiver 54ACTQ16245WRQV	5962-95620	NATIONAL	5962R9562001VXA	1	FAIRCHILD 74ACTQ16245SSC
U3	16-bit Transceiver 54ACTQ16245WRQV	5962-95620	NATIONAL	5962R9562001VXA	1	FAIRCHILD 74ACTQ16245SSC
U4	NOT MOUNTED					
U5	NOT MOUNTED					
U6	NOT MOUNTED					
U7	NOT MOUNTED					



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C9	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C10	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C11	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C12	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C13	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C14	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C15	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C16	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C17	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C18	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C19	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C20	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C21	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C22	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C23	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C24	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C25	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C26	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C27	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C28	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C29	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C30	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C31	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C32	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C33	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	



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C34	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C35	NOT MOUNTED					
C36	NOT MOUNTED					
C37	NOT MOUNTED					
C38	NOT MOUNTED					
C39	NOT MOUNTED					
C40	NOT MOUNTED					
C41	NOT MOUNTED					
C42	NOT MOUNTED					
C43	NOT MOUNTED					
C44	NOT MOUNTED					
C45	NOT MOUNTED					
C46	NOT MOUNTED					
C47	NOT MOUNTED					
C48	NOT MOUNTED					
C49	NOT MOUNTED					
C50	NOT MOUNTED					
C51	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C52	NOT MOUNTED					
C53	NOT MOUNTED					
C54	NOT MOUNTED					
C55	NOT MOUNTED					
C56	NOT MOUNTED					
C57	NOT MOUNTED					
C58	Chip Ceramic Capacitor 100pF 100V 5%	MIL-PRF-55681/8	KEMET	CDR32BP101BJWR	1	
C59	Tantalum Capacitor 15uF 30V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0545	1	
C60	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	



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C61	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C62	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C63	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C64	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C65	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C66	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C67	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C68	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C69	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C70	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C71	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C72	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C73	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C74	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C75	Tantalum Capacitor 8,2uF 60V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0585	1
C76	NOT MOUNTED				
C77	NOT MOUNTED				
C78	NOT MOUNTED				
C79	NOT MOUNTED				
C80	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C81	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C82	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C83	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C84	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1
C85	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1



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C86	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C87	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C88	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C89	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C90	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
D1	NOT MOUNTED					GREEN LED HP HSMG-C670
D2	Switching diode	MIL-PRF-19500/578	CDI	JANS1N6642US	1	
D3	NOT MOUNTED					RED LED HP HSMG-C670
D4	NOT MOUNTED					YELLOW LED HP HSMG-C670
JP1	JUMPER				1	HEADER 2 pins
JP2	JUMPER Position 3-4				1	HEADER 2X2 pins
JP3	NOT MOUNTED					HEADER 2 pins
JP4	NOT MOUNTED					HEADER 2 pins
JP5	JUMPER Positions 1-3 and 2-4				2	HEADER 3X2 pins
JP6	JUMPER Positions 2-4 and 3-5				2	HEADER 3X2 pins
JP7	JUMPER Position 3-4				1	HEADER 2X2 pins
JP8	NOT MOUNTED					HEADER 3X2 pins
JP9	NOT MOUNTED					HEADER 2 pins
JP10	NOT MOUNTED					HEADER 8X2 pins
JP11	NOT MOUNTED					HEADER 8X2 pins
JP12	NOT MOUNTED					HEADER 6X2 pins
JP13	NOT MOUNTED					HEADER 8X2 pins
JP14	NOT MOUNTED					AMP MICTOR 38 pin 2-767004-2
JP15	NOT MOUNTED					AMP MICTOR 38 pin 2-767004-2
O1	20MHz, TTL CLOCK OSCILLATOR	MIL-PRF-55310/16	VECTRON	M55310/16-S31A20M00000	1	
P1	96-pin Male Solder Connector 90°	RFA	FRB	KDC 096 1310	1	HARTING 09 03 196 6921
P2	96-pin Male Solder Connector 90°	RFA	FRB	KDC 096 1310	1	HARTING 09 03 196 6921
P3	60-pin Micro Strip Connector Male	AMP-spec. 108-1272	AMP	536280-2	1	



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P4	60-pin Micro Strip Connector Male	AMP-spec. 108-1272	AMP	536280-2	1	
P5	NOT MOUNTED					
P6	NOT MOUNTED					
R1	NOT MOUNTED					SMD (0805) 470R 5% RS 137-168
R2	Chip Resistor 100R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100DR	1	
R3	Chip Resistor 1MR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B1F00R	1	
R4	NOT MOUNTED					SMD (0805) 470R 5% RS 137-168
R5	NOT MOUNTED					SMD (0805) 470R 5% RS 137-168
R6	NOT MOUNTED					
R7	Network Resistor 13+1 pin 10KO 0,325W 5%	MIL-PRF-83401/3	DALE	M8340103M1002JB	1	
R8	Network Resistor 13+1 pin 10KO 0,325W 5%	MIL-PRF-83401/3	DALE	M8340103M1002JB	1	
R9	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1	
R10	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R11	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R12	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R13	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R14	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R15	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R16	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R17	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R18	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R19	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R20	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R21	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R22	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R23	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R24	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R25	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	



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R26	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R27	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R28	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R29	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R30	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R31	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R32	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R33	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R34	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R35	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R36	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R37	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R38	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R39	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R40	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R41	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R42	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R43	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R44	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R45	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R46	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R47	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R48	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R49	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R50	JUMPER					
R51	JUMPER					
R52	NOT MOUNTED					
R53	JUMPER				1	SMD (0805) 0R0 5% RS 136-957



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R54	JUMPER				1	SMD (0805) 0R0 5% RS 136-957
R55	JUMPER				1	SMD (0805) 0R0 5% RS 136-957
R56	JUMPER				1	SMD (0805) 0R0 5% RS 136-957
R57	JUMPER				1	SMD (0805) 0R0 5% RS 136-957
R58	JUMPER				1	SMD (0805) 0R0 5% RS 136-957
R59	JUMPER				1	SMD (0805) 0R0 5% RS 136-957
R60	NOT MOUNTED					
R61	JUMPER				1	SMD (0805) 0R0 5% RS 136-957
R62	JUMPER				1	SMD (0805) 0R0 5% RS 136-957
R63	JUMPER				1	SMD (0805) 0R0 5% RS 136-957
R64	JUMPER				1	SMD (0805) 0R0 5% RS 136-957
R65	JUMPER				1	SMD (0805) 0R0 5% RS 136-957
R66	NOT MOUNTED					
R67	NOT MOUNTED					
R68	NOT MOUNTED					
R69	NOT MOUNTED					
R70	NOT MOUNTED					
R71	NOT MOUNTED					
R72	NOT MOUNTED					
R73	NOT MOUNTED					
R74	NOT MOUNTED					
R75	NOT MOUNTED					
R76	NOT MOUNTED					
R77	NOT MOUNTED					
R78	NOT MOUNTED					
R79	NOT MOUNTED					
R80	NOT MOUNTED					
R81	NOT MOUNTED					



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R82	NOT MOUNTED					
R83	NOT MOUNTED					
R84	NOT MOUNTED					
R85	NOT MOUNTED					
R86	NOT MOUNTED					
R87	NOT MOUNTED					
R88	NOT MOUNTED					
R89	NOT MOUNTED					
R90	NOT MOUNTED					
R91	NOT MOUNTED					
R92	NOT MOUNTED					
R93	NOT MOUNTED					
R94	NOT MOUNTED					
R95	NOT MOUNTED					
R96	NOT MOUNTED					
R97	NOT MOUNTED					
R98	NOT MOUNTED					
R99	NOT MOUNTED					
R100	NOT MOUNTED					
R101	NOT MOUNTED					
R102	NOT MOUNTED					
R103	NOT MOUNTED					
R104	NOT MOUNTED					
R105	NOT MOUNTED					
R106	NOT MOUNTED					
R107	NOT MOUNTED					
R108	NOT MOUNTED					
R109	NOT MOUNTED					



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R110	NOT MOUNTED					
R111	NOT MOUNTED					
R112	NOT MOUNTED					
R113	NOT MOUNTED					
R114	NOT MOUNTED					
R115	NOT MOUNTED					
R116	NOT MOUNTED					
R117	NOT MOUNTED					
R118	NOT MOUNTED					
R119	NOT MOUNTED					
R120	NOT MOUNTED					
R121	NOT MOUNTED					
R122	NOT MOUNTED					
R123	NOT MOUNTED					
R124	NOT MOUNTED					
R125	NOT MOUNTED					
R126	NOT MOUNTED					
R127	NOT MOUNTED					
R128	NOT MOUNTED					
R129	NOT MOUNTED					
R130	NOT MOUNTED					
R131	NOT MOUNTED					
R132	NOT MOUNTED					
R133	NOT MOUNTED					
R134	NOT MOUNTED					
R135	NOT MOUNTED					
R136	NOT MOUNTED					
R137	NOT MOUNTED					



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R138	NOT MOUNTED					
R139	Network Resistor 13+1 pin 10KO 0,325W 5%	MIL-PRF-83401/3	DALE	M8340103M1002JB	1	
R140	Network Resistor 13+1 pin 10KO 0,325W 5%	MIL-PRF-83401/3	DALE	M8340103M1002JB	1	
R141	Network Resistor 13+1 pin 10KO 0,325W 5%	MIL-PRF-83401/3	DALE	M8340103M1002JB	1	
R142	Network Resistor 13+1 pin 10KO 0,325W 5%	MIL-PRF-83401/3	DALE	M8340103M1002JB	1	
R143	Network Resistor 13+1 pin 10KO 0,325W 5%	MIL-PRF-83401/3	DALE	M8340103M1002JB	1	
R144	Network Resistor 13+1 pin 10KO 0,325W 5%	MIL-PRF-83401/3	DALE	M8340103M1002JB	1	
R145	Chip Resistor 1.82K 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B1E82R	1	
R146	NOT MOUNTED					
R147	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R148	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R149	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R150	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R151	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R152	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R153	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R154	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R155	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R156	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R157	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R158	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R159	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R160	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R161	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R162	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R163	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R164	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R165	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	



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R166	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R167	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R168	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R169	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R170	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R171	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R172	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R173	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R174	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R175	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R176	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R177	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R178	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R179	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R180	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R181	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R182	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R183	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R184	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R185	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R186	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R187	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R188	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R189	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R190	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R191	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R192	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R193	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	



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R194	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R195	JUMPER					
R196	JUMPER					
S1	NOT MOUNTED					SMT Switch RS 228-4575
U1	16-bit Latch 54ACTQ16374W-QV	5962-94528	NATIONAL	5962-9452801VXA	1	FAIRCHILD 74ACTQ16374SSC
U2	8-bit Buffer 54ACTQ244W-RQMLV	5962-92186	NATIONAL	5962R9218601VSA	1	FAIRCHILD 74ACTQ244SC
U3	16-bit Latch 54ACTQ16374W-QV	5962-94528	NATIONAL	5962-9452801VXA	1	FAIRCHILD 74ACTQ16374SSC
U4	32K x 8 bit Radation Hardened PROM UT28F256-45PCCH	5962-96891	UTMC	5962H9689103VYC	1	EEPROM ST M27C256B-45 B1
U5	Hex Inverter Schmitt Trigger 54HC14K	ESA/SCC 9409/007	STM	940900702BF	1	FAIRCHILD 74AC14SC
U6	16-bit Latch 54ACTQ16374W-QV	5962-94528	NATIONAL	5962-9452801VXA	1	FAIRCHILD 74ACTQ16374SSC
U7	16-bit Transceiver 54ACTQ16245WRQV	5962-95620	NATIONAL	5962R9562001VXA	1	FAIRCHILD 74ACTQ16245SSC
U8	16 eq gates Actel Rad Tolerant FPGA RT54SX32S-CQ208E		ACTEL	To be defined by CPP	1	A54SX32A-PQ208
U9	16-bit Transceiver 54ACTQ16245WRQV	5962-95620	NATIONAL	5962R9562001VXA	1	FAIRCHILD 74ACTQ16245SSC
U10	16-bit Buffer 54ACTQ16244W-RQV	5962-95619	NATIONAL	5962R9561901VXA	1	FAIRCHILD 74ACTQ16244SSC
U11	16-bit Buffer 54ACTQ16244W-RQV	5962-95619	NATIONAL	5962R9561901VXA	1	FAIRCHILD 74ACTQ16244SSC
U12	16-bit Buffer 54ACTQ16244W-RQV	5962-95619	NATIONAL	5962R9561901VXA	1	FAIRCHILD 74ACTQ16244SSC
U13	NOT MOUNTED					
U14	NOT MOUNTED					
U15	512K x 8 bit Static RAM 25ns UT9Q512-UCC	5962-00536	UTMC	5962D0053601TUC	1	AEROFLEX ACT-S512K8N-025F3C
U16	512K x 8 bit Static RAM 25ns UT9Q512-UCC	5962-00536	UTMC	5962D0053601TUC	1	AEROFLEX ACT-S512K8N-025F3C
U17	512K x 8 bit Static RAM 25ns UT9Q512-UCC	5962-00536	UTMC	5962D0053601TUC	1	AEROFLEX ACT-S512K8N-025F3C
U18	512K x 8 bit Static RAM 25ns UT9Q512-UCC	5962-00536	UTMC	5962D0053601TUC	1	AEROFLEX ACT-S512K8N-025F3C
U19	NOT MOUNTED					
U20	NOT MOUNTED					
U21	NOT MOUNTED					
U22	NOT MOUNTED					
U23	NOT MOUNTED					
U24	NOT MOUNTED					



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U25	NOT MOUNTED					
U26	32/40-bit floating point DSP microprocessor TSC21020F-20SBSV	5962-99539	ATMEL	5962-9953901VXC	1	ANALOG D. ADSP-21020-KG80
U27	NOT MOUNTED					
U28	512K x 8 bit Static RAM 25ns UT9Q512-UCC	5962-00536	UTMC	5962D0053601TUC	1	AEROFLEX ACT-S512K8N-025F3C
U29	512K x 8 bit Static RAM 25ns UT9Q512-UCC	5962-00536	UTMC	5962D0053601TUC	1	AEROFLEX ACT-S512K8N-025F3C
U30	512K x 8 bit Static RAM 25ns UT9Q512-UCC	5962-00536	UTMC	5962D0053601TUC	1	AEROFLEX ACT-S512K8N-025F3C
U31	512K x 8 bit Static RAM 25ns UT9Q512-UCC	5962-00536	UTMC	5962D0053601TUC	1	AEROFLEX ACT-S512K8N-025F3C
U32	512K x 8 bit Static RAM 25ns UT9Q512-UCC	5962-00536	UTMC	5962D0053601TUC	1	AEROFLEX ACT-S512K8N-025F3C
U33	512K x 8 bit Static RAM 25ns UT9Q512-UCC	5962-00536	UTMC	5962D0053601TUC	1	AEROFLEX ACT-S512K8N-025F3C
U34	NOT MOUNTED					
1	Printed Circuit Board	CNES/QFT/SP-0117	PRINTCA/VIASYSTEMSCSI	DPU-FM-110.03-0 REV /	1	DPU-EM-110.03-0 REV /

Bill Of Material				
DESCRIPTION	PROC.SPEC	SUPPLIER	P/N-ID.CODE	Totale
Printed Circuit Board	CNES/QFT/SP-0117	PRINTCA/VIASYSTEMSCSI	DPU-FM-110.03-0 REV /	1
Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	60
Tantalum Capacitor 15uF 30V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0545	2
JUMPER				17
Chip Ceramic Capacitor 100pF 100V 5%	MIL-PRF-55681/8	KEMET	CDR32BP101BJWR	1
Tantalum Capacitor 8,2uF 60V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0585	1
Switching diode	MIL-PRF-19500/578	CDI	JANS1N6642US	1
JUMPER Position 3-4				2
JUMPER Positions 1-3 and 2-4				1
JUMPER Positions 2-4 and 3-5				1
20MHz, TTL CLOCK OSCILLATOR	MIL-PRF-55310/16	VECTRON	M55310/16-S31A20M00000	1
96-pin Male Solder Connector 90°	RFA	FRB	KDC 096 1310	2
60-pin Micro Strip Connector Male	AMP-spec. 108-1272	AMP	536280-2	2
Chip Resistor 100R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100DR	1



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Chip Resistor 1MR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B1F00R	1
Network Resistor 13+1 pin 10KO 0,325W 5%	MIL-PRF-83401/3	DALE	M8340103M1002JB	8
Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1
Chip Resistor 1.82K 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B1E82R	1
16-bit Latch 54ACTQ16374W-QV	5962-94528	NATIONAL	5962-9452801VXA	3
8-bit Buffer 54ACTQ244W-RQMLV	5962-92186	NATIONAL	5962R9218601VSA	1
32K x 8 bit Radation Hardened PROM UT28F256-45PCCH	5962-96891	UTMC	5962H9689103VYC	1
Hex Inverter Schmitt Trigger 54HC14K	ESA/SCC 9409/007	STM	940900702BF	1
16-bit Transceiver 54ACTQ16245WRQV	5962-95620	NATIONAL	5962R9562001VXA	2
16 eq gates Actel Rad Tolerant FPGA RT54SX32S-CQ208E		ACTEL	To be defined by CPP	1
16-bit Buffer 54ACTQ16244W-RQV	5962-95619	NATIONAL	5962R9561901VXA	3
512K x 8 bit Static RAM 25ns UT9Q512-UCC	5962-00536	UTMC	5962D0053601TUC	10
32/40-bit floating point DSP microprocessor TSC21020F-20SBSV	5962-99539	ATMEL	5962-9953901VXC	1
Chip Resistor 10R 0,1W 1%2	MIL-R-55342/6	DALE	M55342K06B10D0R	88
Total				215



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DRAWING TITLE

HSO/FIRST-DPU: CPU PIGGY BACK
Electrical Part List (SPIRE)

CARLO GAVAZZI SPACE S.p.A.



HIGHER ASSEMBLY	DRAWING NUMBER	REV.	DATE
DPU-EM-120.00-0	DPU-EM-120.01-3	/	

ITEM	DESCRIPTION	PROC.SPEC	SUPPLIER	P/N-ID.CODE	QTY	EM NOTE
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For the parts relevant to the F.M. All the columns shall be filled up and are applicable to the procurement
For the parts relevant to the E.M. the filling up of all the columns is encouraged (mandatory if required by the contract), so as to allow procurement flexibility in front of cost & time saving reasons.

C1	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C2	Tantalum Capacitor 15uF 30V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0545	1	
C3	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C4	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C5	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C6	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C7	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C8	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C9	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C10	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	



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C11	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C12	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C13	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C14	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C15	Chip Ceramic Capacitor. 1nF 100V 10%	MIL-PRF-55681/8	KEMET	CDR32BP102BKWR	1	
C16	NOT MOUNTED					
C17	NOT MOUNTED					
C18	NOT MOUNTED					
C19	NOT MOUNTED					
C20	NOT MOUNTED					
C21	NOT MOUNTED					
C22	NOT MOUNTED					
C23	NOT MOUNTED					
C24	NOT MOUNTED					
C25	NOT MOUNTED					
C26	NOT MOUNTED					
C27	NOT MOUNTED					
C28	NOT MOUNTED					
C29	NOT MOUNTED					
C30	NOT MOUNTED					
C31	NOT MOUNTED					
C32	NOT MOUNTED					
C33	NOT MOUNTED					
C34	NOT MOUNTED					
C35	NOT MOUNTED					



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1	Printed Circuit Board	CNES/QFT/SP-0117	PRINTCA/VIASYSTEMSCSI	DPU-FM-120.03-0 REV /	1	DPU-EM-120.03-0 REV /
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Bill Of Material				
DESCRIPTION	PROC.SPEC	SUPPLIER	P/N-ID.CODE	Totale
Printed Circuit Board	CNES/QFT/SP-0117	PRINTCA/VIASYSTEMSCSI	DPU-FM-120.03-0 REV /	1
Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	13
Tantalum Capacitor 15uF 30V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0545	1
Switching diode	MIL-PRF-19500/578	CDI	JANS1N6642US	1
Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	3
16-bit Transceiver 54ACTQ16245WRQV	5962-95620	NATIONAL	5962R9562001VXA	2
Chip Ceramic Capacitor. 1nF 100V 10%	MIL-PRF-55681/8	KEMET	CDR32BP102BKWR	1
60-pin Micro Strip Connector Female	AMP-spec. 108-1272	AMP	536279-2	2
256K x 32 bit EEPROM	79C0832RP0125.99	SEI	79C0832RT2FX-20	1
Total				25



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DRAWING TITLE

**HSO/FIRST-DPU: PL IF Board
Electrical Part List (SPIRE)**

CARLO GAVAZZI SPACE S.p.A.



HIGHER ASSEMBLY

DRAWING NUMBER

REV.

DATE

DPU-EM-210.00-0

DPU-EM-210.01-3

/

ITEM	DESCRIPTION	PROC.SPEC	SUPPLIER	P/N-ID.CODE	QTY	EM NOTE
For the parts relevant to the F.M. All the columns shall be filled up and are applicable to the procurement. For the parts relevant to the E.M. the filling up of all the columns is encouraged (mandatory if required by the contract), so as to allow procurement flexibility in front of cost & time saving reasons.						
C1	Chip Ceramic Capacitor 10nF 100V 10%	MIL-PRF-55681/8	KEMET	CDR32BX103BKWR	1	
C2	Tantalum Capacitor 10uF 50V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0565	1	
C3	Tantalum Capacitor 10uF 50V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0565	1	
C4	Chip Ceramic Capacitor 10nF 100V 10%	MIL-PRF-55681/8	KEMET	CDR32BX103BKWR	1	
C5	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C6	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C7	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C8	Chip Ceramic Capacitor 100pF 100V 5%	MIL-PRF-55681/8	KEMET	CDR32BP101BJWR	1	
C9	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C10	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	



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C11	Chip Ceramic Capacitor 100pF 100V 5%	MIL-PRF-55681/8	KEMET	CDR32BP101BJWR	1	
C12	Chip Ceramic Capacitor 100pF 100V 5%	MIL-PRF-55681/8	KEMET	CDR32BP101BJWR	1	
C13	Chip Ceramic Capacitor 100pF 100V 5%	MIL-PRF-55681/8	KEMET	CDR32BP101BJWR	1	
C14	Chip Ceramic Capacitor 100pF 100V 5%	MIL-PRF-55681/8	KEMET	CDR32BP101BJWR	1	
C15	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C16	Chip Ceramic Capacitor 100pF 100V 5%	MIL-PRF-55681/8	KEMET	CDR32BP101BJWR	1	
C17	Chip Ceramic Capacitor 100pF 100V 5%	MIL-PRF-55681/8	KEMET	CDR32BP101BJWR	1	
C18	Chip Ceramic Capacitor 100pF 100V 5%	MIL-PRF-55681/8	KEMET	CDR32BP101BJWR	1	
C19	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C20	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C21	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C22	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C23	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C24	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C25	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C26	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C27	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C28	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C29	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C30	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C31	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C32	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C33	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C34	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C35	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	



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C36	Chip Ceramic Capacitor ADJ 10%					
C37	Chip Ceramic Capacitor ADJ 10%				1	
C38	Chip Ceramic Capacitor ADJ 10%				1	
C39	Chip Ceramic Capacitor ADJ 10%					
C40	Chip Ceramic Capacitor ADJ 10%					
C41	Chip Ceramic Capacitor ADJ 10%				1	
C42	Chip Ceramic Capacitor ADJ 10%				1	
C43	Chip Ceramic Capacitor ADJ 10%				1	
C44	Chip Ceramic Capacitor ADJ 10%				1	
C45	Chip Ceramic Capacitor ADJ 10%				1	
C46	Chip Ceramic Capacitor ADJ 10%				1	
C47	Chip Ceramic Capacitor ADJ 10%				1	
C48	Chip Ceramic Capacitor ADJ 10%				1	
C49	Chip Ceramic Capacitor ADJ 10%				1	
C50	Chip Ceramic Capacitor ADJ 10%				1	
C51	Chip Ceramic Capacitor ADJ 10%				1	
C52	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C53	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C54	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C55	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C56	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C57	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C58	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C59	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C60	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C61	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	



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C62	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C63	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C64	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C65	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C66	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C67	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C68	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C69	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C70	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C71	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C72	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C73	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C74	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C75	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
CN1	Connector		AMP	2-767004-2	1	
D1	Ultra Fast Rectifier Diode	MIL-PRF-195500/477	MICROSEMI	JANS1N5811US	1	
JP1	2 Jumper pin				1	
JP2	3 Jumper pin				1	
JP3	3 Jumper pin				1	
JP4	3 Jumper pin				1	
JP5	2 Jumper pin				1	
JP6	8x2 Jumper pin				1	
JP7	2 Jumper pin				1	
JP8	2 Jumper pin				1	
JP9	2 Jumper pin				1	
JP10	2 Jumper pin				1	
JP11	2 Jumper pin				1	



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L1	Inductor 220uH				
P1	96-pin Male Solder Connector 90°	N.A.	FRB	KDC 096 1310	1
P2	96-pin Male Solder Connector 90°	N.A.	FRB	KDC 096 1310	1
R1	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1
R2	Resistor 56,2R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N56R2FR	1
R3	Resistor 56,2R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N56R2FR	1
R4	Resistor 56,2R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N56R2FR	1
R5	Resistor 56,2R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N56R2FR	1
R6	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1
R7	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1
R8	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1
R9	Metal film 3.74K 0.1% 5ppm	MIL-PRF-55182/9	DALE	RNC90Y3K7400BR	1
R10	Metal film 1.24K 0.1% 5ppm	MIL-PRF-55182/9	DALE	RNC90Y1K2400BR	1
R11	Metal film 1K 0.1% 5ppm	MIL-PRF-55182/9	DALE	RNC90Y1K0000BR	1
R12	Metal film 1K 0.1% 5ppm	MIL-PRF-55182/9	DALE	RNC90Y1K0000BR	1
R13	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1
R14	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1
R15	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1
R16	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1
R17	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1
R18	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1
R19	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1
R20	Metal film ADJ 0.1% 5ppm				1
R21	Metal film ADJ 0.1% 5ppm				1
R22	Metal film ADJ 0.1% 5ppm				1
R23	Metal film ADJ 0.1% 5ppm				1
R24	Chip Resistor 3,01KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B3E01R	1



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R25	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R26	Chip Resistor ADJ 0,1W 1%				1	
R27	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R28	Chip Resistor 3,01KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B3E01R	1	
R29	Chip Resistor 3,01KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B3E01R	1	
R30	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R31	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R32	Chip Resistor ADJ 0,1W 1%				1	
R33	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R34	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R35	Chip Resistor ADJ 0,1W 1%				1	
R36	Chip Resistor 3,01KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B3E01R	1	
R37	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R38	Chip Resistor 3,01KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B3E01R	1	
R39	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R40	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R41	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R42	Chip Resistor ADJ 0,1W 1%				1	
R43	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R44	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R45	Chip Resistor ADJ 0,1W 1%				1	
R46	Chip Resistor 3,01KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B3E01R	1	
R47	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R48	Chip Resistor 3,01KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B3E01R	1	
R49	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R50	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R51	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R52	Chip Resistor ADJ 0,1W 1%				1	



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R53	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R54	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R55	Chip Resistor ADJ 0,1W 1%				1	
R56	Chip Resistor 3,01KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B3E01R	1	
R57	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R58	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R59	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R60	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R61	Chip Resistor ADJ 0,1W 1%				1	
R62	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R63	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R64	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R65	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R66	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R67	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R68	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R69	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R70	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R71	Chip Resistor ADJ 0,1W 1%				1	
R72	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R73	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R74	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R75	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R76	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R77	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R78	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R79	Chip Resistor ADJ 0,1W 1%				1	
R80	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	



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R81	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R82	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R83	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R84	Chip Resistor ADJ 0,1W 1%				1	
R85	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R86	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R87	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R88	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R89	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R90	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R91	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R92	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R93	Chip Resistor ADJ 0,1W 1%				1	
R94	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R95	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R96	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R97	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R98	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R99	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R100	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R101	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R102	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R103	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R104	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R105	Chip Resistor ADJ 0,1W 1%				1	
R106	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R107	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R108	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	



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R109	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R110	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R111	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R112	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R113	Chip Resistor ADJ 0,1W 1%				1	
R114	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R115	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R116	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R117	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R118	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R119	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R120	Chip Resistor ADJ 0,1W 1%				1	
R121	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R122	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R123	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R124	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R125	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R126	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R127	Chip Resistor ADJ 0,1W 1%				1	
R128	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	
R129	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R130	Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	1	
R131	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R132	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R133	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R134	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R135	Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
R136	Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	1	



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R137	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1	
R138	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1	
R139	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1	
R140	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1	
R141	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1	
R142	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1	
R143	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1	
R144	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1	
R145	Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	1	
T1	MIL-STD-1553 Long Stub Transformer, Turns Ratio 2:1	MIL-T-21038, MIL-STD-202	BETA TRANSFORMER	HLP6002	1	
T2	MIL-STD-1553 Long Stub Transformer, Turns Ratio 2:1	MIL-T-21038, MIL-STD-202	BETA TRANSFORMER	HLP6002	1	
U1	Hex Inverter Schmitt Trigger 54HC14K	ESA/SCC 9409/007	STM	940900702BF	1	
U2	MIL-STD-1553 Advanced Communication Engine BU-61582F1	SEE REMARKS	DDC	SEE REMARKS	1	
U3	16MHz, TTL CLOCK OSCILLATOR	MIL-PRF-55310/16	VECTRON	M55310/16-S31A16M00000	1	
U4	Voltage reference AD584TH/QMLVR	5962-38128	AD	5962R3812802VGA	1	
U5	12-bit A/D Converter AD574ATD/QMLV	5962-85127	AD	5962-8512702VXA	1	
U6	Operational Amplifier OP27SA J5	MIL-M-38510/135	AD	M38510/13503SGA	1	
U7	8 Channel Analog Multiplexer HS1-508BRH-Q	5962-96742	INTERSIL	5962F9674202VEC	1	
U8	Quad RS422 Receiver HS9-26C32RH-Q	5962-95689	INTERSIL	5962H9583402VXC	1	
U9	Quad RS422 Receiver HS9-26C32RH-Q	5962-95689	INTERSIL	5962H9583402VXC	1	
U10	Quad RS422 Driver HS9-26C31RH-Q	5962-96663	INTERSIL	5962F9666301VXC	1	
U11	Quad RS422 Receiver HS9-26C32RH-Q	5962-95689	INTERSIL	5962H9583402VXC	1	
U12	Quad RS422 Driver HS9-26C31RH-Q	5962-96663	INTERSIL	5962F9666301VXC	1	
U13	Quad RS422 Driver HS9-26C31RH-Q	5962-96663	INTERSIL	5962F9666301VXC	1	
U14	Quad RS422 Receiver HS9-26C32RH-Q	5962-95689	INTERSIL	5962H9583402VXC	1	
U15	Quad RS422 Driver HS9-26C31RH-Q	5962-96663	INTERSIL	5962F9666301VXC	1	
U16	16K x 9 bit FIFO Memory SMDP67206FV-15SV	5962-93177	ATMEL	5962-9317704VZC	1	
U17	16K x 9 bit FIFO Memory SMDP67206FV-15SV	5962-93177	ATMEL	5962-9317704VZC	1	



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U18	16K x 9 bit FIFO Memory SMDP67206FV-15SV	5962-93177	ATMEL	5962-9317704VZC	1
U19	16K x 9 bit FIFO Memory SMDP67206FV-15SV	5962-93177	ATMEL	5962-9317704VZC	1
U22	8-bit Buffer 54ACTQ244W-RQMLV	5962-92186	NATIONAL	5962R9218601VSA	1
U23	16K x 9 bit FIFO Memory SMDP67206FV-15SV	5962-93177	ATMEL	5962-9317704VZC	1
U24	16K x 9 bit FIFO Memory SMDP67206FV-15SV	5962-93177	ATMEL	5962-9317704VZC	1
U25	16K x 9 bit FIFO Memory SMDP67206FV-15SV	5962-93177	ATMEL	5962-9317704VZC	1
U26	16K x 9 bit FIFO Memory SMDP67206FV-15SV	5962-93177	ATMEL	5962-9317704VZC	1
U29	8-bit Buffer 54ACTQ244W-RQMLV	5962-92186	NATIONAL	5962R9218601VSA	1
U30	16 eq gates Actel Rad Tolerant FPGA RT54SX32S-CQ208E		ACTEL	To be defined by CPP	1

Bill Of Material

DESCRIPTION	PROC.SPEC	SUPPLIER	P/N-ID.CODE	Totale
Chip Ceramic Capacitor 10nF 100V 10%	MIL-PRF-55681/8	KEMET	CDR32BX103BKWR	2
Tantalum Capacitor 10uF 50V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0565	2
Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	47
Chip Ceramic Capacitor 100pF 100V 5%	MIL-PRF-55681/8	KEMET	CDR32BP101BJWR	8
Chip Ceramic Capacitor ADJ 10%			(vuote)	
Connector		AMP	2-767004-2	
Ultra Fast Rectifier Diode	MIL-PRF-195500/477	MICROSEMI	JANS1N5811US	1
2 Jumper pin			(vuote)	
3 Jumper pin			(vuote)	
3 Jumper pin			(vuote)	
Inductor 220uH		(vuote)	(vuote)	
96-pin Male Solder Connector 90°	N.A.	FRB	KDC 096 1310	2
Chip Resistor 10KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10E0R	20
Resistor 56,2R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N56R2FR	4
Metal film 3.74K 0.1% 5ppm	MIL-PRF-55182/9	DALE	RNC90Y3K7400BR	1



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Metal film 1.24K 0.1% 5ppm	MIL-PRF-55182/9	DALE	RNC90Y1K2400BR	1
Metal film 1K 0.1% 5ppm	MIL-PRF-55182/9	DALE	RNC90Y1K0000BR	2
Metal film ADJ 0.1% 5ppm		(vuote)	(vuote)	
Chip Resistor 3,01KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B3E01R	8
Chip Resistor 100KR 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B100ER	33
Chip Resistor ADJ 0,1W 1%		(vuote)	(vuote)	
Chip Resistor 332R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B332DR	24
8x2 Jumper pin			(vuote)	
Resistor 22,1R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	32
MIL-STD-1553 Long Stub Transformer, Turns Ratio 2:1	MIL-T-21038, MIL-STD-202	BETA TRANSFORMER	HLP6002	1
		BETA TRANSFORMER	HLP6002	1
Hex Inverter Schmitt Trigger 54HC14K	ESA/SCC 9409/007	STM	940900702BF	1
MIL-STD-1553 Advanced Communication Engine BU-61582F1	SEE REMARKS	DDC	SEE REMARKS	1
16MHz, TTL CLOCK OSCILLATOR	MIL-PRF-55310/16	VECTRON	M55310/16-S31A16M00000	1
Voltage reference AD584TH/QMLVR	5962-38128	AD	5962R3812802VGA	1
12-bit A/D Converter AD574ATD/QMLV	5962-85127	AD	5962-8512702VXA	1
Operational Amplifier OP27SA J5	MIL-M-38510/135	AD	M38510/13503SGA	1
8 Channel Analog Multiplexer HS1-508BRH-Q	5962-96742	INTERSIL	5962F9674202VEC	1
Quad RS422 Receiver HS9-26C32RH-Q	5962-95689	INTERSIL	5962H9583402VXC	3
Quad RS422 Driver HS9-26C31RH-Q	5962-96663	INTERSIL	5962F9666301VXC	4
Quad RS422 Receiver HS9-26C32RH-Q	5962-95689	INTERSIL	5962H9583402VXC	1
16K x 9 bit FIFO Memory SMDP67206FV-15SV	5962-93177	ATMEL	5962-9317704VZC	8
8-bit Buffer 54ACTQ244W-RQMLV	5962-92186	NATIONAL	5962R9218601VSA	2
16 eq gates Actel Rad Tolerant FPGA RT54SX32S-CQ208E		ACTEL	To be defined by CPP	
Total				264



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DRAWING TITLE

**HSO/FIRST-DPU: DC/DC BOARD
Electrical Part List (SPIRE)**

CARLO GAVAZZI SPACE S.p.A.



HIGHER ASSEMBLY

DRAWING NUMBER

REV. DATE

DPU-EM-310.00-0

DPU-EM-310.01-3

/

ITEM	DESCRIPTION	PROC.SPEC	SUPPLIER	P/N-ID.CODE	QTY	EM NOTE
For the parts relevant to the F.M. All the columns shall be filled up and are applicable to the procurement For the parts relevant to the E.M. the filling up of all the columns is encouraged (mandatory if required by the contract), so as to allow procurement flexibility in front of cost & time saving reasons.						
C1	NOT MOUNTED					
C2	Tantalum Capacitor ADJ 10% (CLR79)				1	
C3	NOT MOUNTED					
C4	Chip Ceramic Capacitor 0,47uF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BX474AKWR	1	
C5	Chip Ceramic Capacitor 0,47uF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BX474AKWR	1	
C6	Chip Ceramic Capacitor 3,3nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BP332AKWR	1	
C7	Ceramic Capacitor 1uF 50V 10%	MIL-C-39014/2	AVX-KEMET	CKR06BX105KR	1	
C8	Ceramic Capacitor 1uF 50V 10%	MIL-C-39014/2	AVX-KEMET	CKR06BX105KR	1	
C9	Chip Ceramic Capacitor 0.1uF 50V 5%	MIL-PRF-55681/9	KEMET	CDR33BX104AJWR	1	
C10	Tantalum Capacitor 8,2uF 60V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0585	1	



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C11	Tantalum Capacitor 8,2uF 60V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0585	1	
C12	Tantalum Capacitor 8,2uF 60V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0585	1	
C13	Tantalum Capacitor 8,2uF 60V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0585	1	
C14	Chip Ceramic Capacitor 100nF 100V 10%	MIL-PRF-55681/11	KEMET	CDR35BX104BKWR	1	
C15	Chip Ceramic Capacitor 100nF 100V 10%	MIL-PRF-55681/11	KEMET	CDR35BX104BKWR	1	
C16	Chip Ceramic Capacitor 3,3nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BP332AKWR	1	
C17	Chip Ceramic Capacitor 0,47uF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BX474AKWR	1	
C18	Chip Ceramic Capacitor 0,47uF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BX474AKWR	1	
C19	Chip Ceramic Capacitor 3,3nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BP332AKWR	1	
C20	Ceramic Capacitor 1uF 50V 10%	MIL-C-39014/2	AVX-KEMET	CKR06BX105KR	1	
C21	Chip Ceramic Capacitor 3,3nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BP332AKWR	1	
C22	Ceramic Capacitor 1uF 50V 10%	MIL-C-39014/2	AVX-KEMET	CKR06BX105KR	1	
C23	Ceramic Capacitor 1uF 50V 10%	MIL-C-39014/2	AVX-KEMET	CKR06BX105KR	1	
C24	NOT MOUNTED					
C25	NOT MOUNTED					
C26	NOT MOUNTED					
C27	NOT MOUNTED					
C28	NOT MOUNTED					
C29	NOT MOUNTED					
C30	NOT MOUNTED					
C31	NOT MOUNTED					
C32	NOT MOUNTED					
C33	NOT MOUNTED					
C34	NOT MOUNTED					
C35	NOT MOUNTED					



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C36	NOT MOUNTED				
C37	NOT MOUNTED				
C38	NOT MOUNTED				
C39	NOT MOUNTED				
C40	NOT MOUNTED				
C41	NOT MOUNTED				
C42	NOT MOUNTED				
C43	NOT MOUNTED				
C44	NOT MOUNTED				
C45	NOT MOUNTED				
C46	NOT MOUNTED				
C47	NOT MOUNTED				
C48	NOT MOUNTED				
C49	NOT MOUNTED				
C50	NOT MOUNTED				
C51	NOT MOUNTED				
C52	NOT MOUNTED				
C53	NOT MOUNTED				
C54	NOT MOUNTED				
C55	NOT MOUNTED				
C56	NOT MOUNTED				
C57	NOT MOUNTED				
C58	NOT MOUNTED				
C59	NOT MOUNTED				
C60	NOT MOUNTED				
C61	NOT MOUNTED				



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C62	NOT MOUNTED					
C63	NOT MOUNTED					
C64	NOT MOUNTED					
C65	NOT MOUNTED					
C66	NOT MOUNTED					
C67	NOT MOUNTED					
C68	NOT MOUNTED					
C69	NOT MOUNTED					
C70	NOT MOUNTED					
C71	NOT MOUNTED					
C72	NOT MOUNTED					
C73	NOT MOUNTED					
C74	NOT MOUNTED					
C75	NOT MOUNTED					
C76	NOT MOUNTED					
C77	NOT MOUNTED					
C78	NOT MOUNTED					
C79	NOT MOUNTED					
C80	NOT MOUNTED					
C81	NOT MOUNTED					
C82	NOT MOUNTED					
C83	NOT MOUNTED					
C84	NOT MOUNTED					
C85	NOT MOUNTED					
C86	NOT MOUNTED					
C87	NOT MOUNTED					
C88	NOT MOUNTED					



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C89	NOT MOUNTED					
C90	NOT MOUNTED					
C91	NOT MOUNTED					
C92	NOT MOUNTED					
C93	NOT MOUNTED					
C94	NOT MOUNTED					
C95	NOT MOUNTED					
C96	NOT MOUNTED					
C97	NOT MOUNTED					
C98	NOT MOUNTED					
C99	NOT MOUNTED					
C100	NOT MOUNTED					
C101	NOT MOUNTED					
C102	NOT MOUNTED					
C103	NOT MOUNTED					
C104	NOT MOUNTED					
C105	NOT MOUNTED					
C106	NOT MOUNTED					
C107	NOT MOUNTED					
C108	NOT MOUNTED					
C109	NOT MOUNTED					
C110	NOT MOUNTED					
C111	NOT MOUNTED					
C112	NOT MOUNTED					
C113	NOT MOUNTED					
C114	NOT MOUNTED					
C115	NOT MOUNTED					
C116	NOT MOUNTED					



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C117	NOT MOUNTED					
C118	NOT MOUNTED					
C119	NOT MOUNTED					
C120	Ceramic Capacitor 1uF 50V 10%	MIL-C-39014/2	AVX-KEMET	CKR06BX105KR	1	
C121	Chip Ceramic Capacitor 3.3nF 100V 10%	MIL-PRF-55681/10	KEMET	CDR34BP332BKWR	1	
C122	Chip Ceramic Capacitor 10nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX103AKWR	1	
C123	Tantalum Capacitor 100uF 25V 10% CLR79	MIL-C-39006/22	MALLORY	M39006/22-0531	1	
C124	NOT MOUNTED				1	
C125	Chip Ceramic Capacitor 0.47uF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BX474AKWR	1	
C126	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C127	Tantalum Capacitor 47uF 10V 10% CLR79	MIL-C-39006/22	MALLORY	M39006/22-0485	1	
C128	Tantalum Capacitor 47uF 10V 10% CLR79	MIL-C-39006/22	MALLORY	M39006/22-0485	1	
C129	Chip Ceramic Capacitor 0.1uF 100V 10%	MIL-PRF-55681/11	KEMET	CDR35BX104AKWR	1	
C130	Chip Ceramic Capacitor 0.47uF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BX474AKWR	1	
C131	Chip Ceramic Capacitor 0.47uF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BX474AKWR	1	
C132	Chip Ceramic Capacitor 0.47uF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BX474AKWR	1	
C133	Chip Ceramic Capacitor 0.47uF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BX474AKWR	1	
C134	Tantalum Capacitor 8.2uF 60V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0585	1	
C135	Ceramic Capacitor 1uF 50V 10%	MIL-C-39014/2	AVX-KEMET	CKR06BX105KR	1	
C136	Tantalum Capacitor 8.2uF 60V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0585	1	
C137	Tantalum Capacitor 8.2uF 60V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0585	1	
C138	Chip Ceramic Capacitor 10nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX103AKWR	1	
C139	Chip Ceramic Capacitor ADJ 10% 50V (CDR35)				1	
C140	Chip Ceramic Capacitor 4.7nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX472BKWR	1	
C141	Chip Ceramic Capacitor ADJ 10% 50V (CDR35)				1	
C142	NOT MOUNTED					
C143	Chip Ceramic Capacitor ADJ 10% 50V (CDR35)				1	
C144	Tantalum Capacitor 8.2uF 60V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0585	1	



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C145	Chip Ceramic Capacitor 100pF 100V 5%	MIL-PRF-55681/8	KEMET	CDR32BP101BJWR	1	
C146	Chip Ceramic Capacitor 220pF 100V 10%	MIL-PRF-55681/8	KEMET	CDR32BP2211BKWR	1	
C147	Chip Ceramic Capacitor 0.1uF 100V 10%	MIL-PRF-55681/11	KEMET	CDR35BX104AKWR	1	
C148	Chip Ceramic Capacitor 3,3nF 100V 10%	MIL-PRF-55681/10	KEMET	CDR34BP332BKWR	1	
C149	Ceramic Capacitor 1uF 50V 10%	MIL-C-39014/2	AVX-KEMET	CKR06BX105KR	1	
C150	Ceramic Capacitor 1uF 50V 10%	MIL-C-39014/2	AVX-KEMET	CKR06BX105KR	1	
C151	NOT MOUNTED					
C152	NOT MOUNTED					
C153	Chip Ceramic Capacitor 10nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX103AKWR	1	
C154	Chip Ceramic Capacitor ADJ 10% 50V (CDR35)				1	
C155	Chip Ceramic Capacitor ADJ 10% 50V (CDR35)				1	
C156	Chip Ceramic Capacitor 10nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX103AKWR	1	
C157	Ceramic Capacitor 1uF 50V 10%	MIL-C-39014/2	AVX-KEMET	CKR06BX105KR	1	
C158	Tantalum Capacitor 20uF 10V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0481	1	
C159	Chip Ceramic Capacitor 0,47uF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BX474AKWR	1	
C160	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C161	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C162	Tantalum Capacitor 15uF 30V 10% CLR79	MIL-C-39006/22	MALLORY	M39006/22-0545	1	
C163	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C164	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C165	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C166	Tantalum Capacitor 15uF 30V 10% CLR79	MIL-C-39006/22	MALLORY	M39006/22-0545	1	
C167	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C168	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C169	Chip Ceramic Capacitor 10nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX103AKWR	1	
C170	NOT MOUNTED					
C171	Chip Ceramic Capacitor 0,47uF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BX474AKWR	1	
C172	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	



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C173	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C174	Ceramic Capacitor 1uF 50V 10%	MIL-C-39014/2	AVX-KEMET	CKR06BX105KR	1	
C175	Chip Ceramic Capacitor 22nF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BP223AKWR	1	
C176	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C177	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C178	Chip Ceramic Capacitor 10nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX103AKWR	1	
C179	Chip Ceramic Capacitor 10nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX103AKWR	1	
C180	Chip Ceramic Capacitor 10nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX103AKWR	1	
C181	Chip Ceramic Capacitor 10nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX103AKWR	1	
C182	Chip Ceramic Capacitor 10nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX103AKWR	1	
C183	Chip Ceramic Capacitor 10nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX103AKWR	1	
C184	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C185	Tantalum Capacitor 15uF 30V 10% CLR79	MIL-C-39006/22	MALLORY	M39006/22-0545	1	
C186	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C187	Chip Ceramic Capacitor ADJ 10% 50V (CDR35)				1	
C188	Chip Ceramic Capacitor ADJ 10% 50V (CDR35)				1	
C189	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C190	Chip Ceramic Capacitor ADJ 10% 50V (CDR35)				1	
C191	Tantalum Capacitor 15uF 30V 10% CLR79	MIL-C-39006/22	MALLORY	M39006/22-0545	1	
C192	Chip Ceramic Capacitor ADJ 10% 50V (CDR35)				1	
C193	NOT MOUNTED					
C194	NOT MOUNTED					
C195	NOT MOUNTED					
C196	NOT MOUNTED					
C197	NOT MOUNTED					
C198	NOT MOUNTED					
C199	NOT MOUNTED					
C200	NOT MOUNTED					



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C201	NOT MOUNTED					
C202	NOT MOUNTED					
C203	NOT MOUNTED					
C204	NOT MOUNTED					
D1	NOT MOUNTED					
D2	Diode Zener 12V 1,5W 5%	MIL-PRF-19500/406	MICROSEMI	JANS1N4467US	1	
D3	Ultra Fast Rectifier Diode	MIL-PRF-195500/477	MICROSEMI	JANS1N5811US	1	
D4	NOT MOUNTED					
D5	NOT MOUNTED					
D6	Diode Zener 10V 1,5W 5%	MIL-PRF-19500/406	MICROSEMI	JANS1N4465US	1	
D7	Ultra Fast Rectifier Diode	MIL-PRF-195500/477	MICROSEMI	JANS1N5811US	1	
D8	NOT MOUNTED				1	
D9	NOT MOUNTED				1	
D10	NOT MOUNTED				1	
D11	NOT MOUNTED				1	
D12	NOT MOUNTED				1	
D13	NOT MOUNTED				1	
D14	NOT MOUNTED				1	
D15	NOT MOUNTED				1	
D16	NOT MOUNTED				1	
D17	NOT MOUNTED				1	
D18	NOT MOUNTED				1	
D19	NOT MOUNTED				1	
D20	NOT MOUNTED				1	
D21	NOT MOUNTED				1	
D22	NOT MOUNTED				1	
D23	NOT MOUNTED				1	
D24	NOT MOUNTED				1	



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D25	NOT MOUNTED				1	
D26	NOT MOUNTED				1	
D27	NOT MOUNTED				1	
D28	Ultra Fast Rectifier Diode	MIL-PRF-195500/477	MICROSEMI	JANS1N5811US	1	
D29	Ultra Fast Rectifier Diode	MIL-PRF-195500/477	MICROSEMI	JANS1N5811US	1	
D30	Ultra Fast Rectifier Diode	MIL-PRF-195500/477	MICROSEMI	JANS1N5811US	1	
D31	Ultra Fast Rectifier Diode	MIL-PRF-195500/477	MICROSEMI	JANS1N5811US	1	
D32	Switching diode	ESA/SCC5101/026	MICROSEMI	JANS1N6642US	1	
D33	Switching diode	ESA/SCC5101/026	MICROSEMI	JANS1N6642US	1	
D34	Switching diode	ESA/SCC5101/026	MICROSEMI	JANS1N6642US	1	
D35	Switching diode	ESA/SCC5101/026	MICROSEMI	JANS1N6642US	1	
D36	Switching diode	ESA/SCC5101/026	MICROSEMI	JANS1N6642US	1	
D37	Switching diode	ESA/SCC5101/026	MICROSEMI	JANS1N6642US	1	
D38	Switching diode	ESA/SCC5101/026	MICROSEMI	JANS1N6642US	1	
D39	Switching diode	ESA/SCC5101/026	MICROSEMI	JANS1N6642US	1	
D40	Ultra Fast Rectifier Diode	MIL-PRF-195500/477	MICROSEMI	JANS1N5811US	1	
D41	Switching diode	ESA/SCC5101/026	MICROSEMI	JANS1N6642US	1	
D42	Ultra Fast Rectifier Diode	MIL-PRF-195500/477	MICROSEMI	JANS1N5811US	1	
D43	Switching diode	ESA/SCC5101/026	MICROSEMI	JANS1N6642US	1	
D44	Ultra Fast Rectifier Diode	MIL-PRF-195500/477	MICROSEMI	JANS1N5811US	1	
D45	NOT MOUNTED					
D46	NOT MOUNTED					
D47	Ultra Fast Rectifier Diode	MIL-PRF-195500/477	MICROSEMI	JANS1N5811US	1	
D48	Switching diode	ESA/SCC5101/026	MICROSEMI	JANS1N6642US	1	
D49	Switching diode	ESA/SCC5101/026	MICROSEMI	JANS1N6642US	1	
D50	Diode Zener 5,1V 0,5W 5%	MIL-PRF-19500/533	MICROSEMI	JANS1N6317US	1	
D51	Diode Zener 5,1V 0,5W 5%	MIL-PRF-19500/533	MICROSEMI	JANS1N6317US	1	
D52	Diode Zener 5,1V 0,5W 5%	MIL-PRF-19500/533	MICROSEMI	JANS1N6317US	1	



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D53	Dual power diode	MIL-PRF-19500/608A	MICROSEMI	1N6660JANS	1	
D54	Diode Zener 10V 1,5W 5%	MIL-PRF-19500/406	MICROSEMI	JANS1N4465US	1	
JP1	2 Jumper pin				1	
JP2	2 Jumper pin				1	
JP3	2 Jumper pin				1	
JP4	2 Jumper pin				1	
JP5	2 Jumper pin				1	
JP6	2 Jumper pin				1	
JP7	2 Jumper pin				1	
JP8	2 Jumper pin				1	
L1	Inductor 3mH		CGS		1	
L2	Inductor 50uH		CGS		1	
L3	Inductor ADJ		CGS		1	
L4	NOT MOUNTED				1	
L5	NOT MOUNTED					
L6	Inductor 200uH		CGS		1	
L7	NOT MOUNTED					
L8	NOT MOUNTED					
L9	NOT MOUNTED					
L10	NOT MOUNTED					
L11	NOT MOUNTED					
L12	NOT MOUNTED					
P1	96-pin Male Solder Connector 90°	N.A.	FRB	KDC 096 1310	1	
P2	96-pin Male Solder Connector 90°	N.A.	FRB	KDC 096 1310	1	
R1	JUMPER (RWR81)				1	
R2	NOT MOUNTED					
R3	JUMPER (RWR81)				1	



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R4	NOT MOUNTED					
R5	NOT MOUNTED					
R6	Chip Resistor 10R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B10D0R	1	
R7	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R8	NOT MOUNTED					
R9	Chip Resistor 10K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B10E0R	1	
R10	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R11	NOT MOUNTED					
R12	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R13	JUMPER (RM1206)				1	
R14	NOT MOUNTED					
R15	NOT MOUNTED					
R16	Chip Resistor 100K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B100ER	1	
R17	Chip Resistor 20K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B20E0R	1	
R18	Chip Resistor 10K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B10E0R	1	
R19	NOT MOUNTED					
R20	Chip Resistor 100K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B100ER	1	
R21	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R22	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R23	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R24	NOT MOUNTED					
R25	NOT MOUNTED					
R26	NOT MOUNTED					
R27	NOT MOUNTED					
R28	NOT MOUNTED					
R29	NOT MOUNTED					
R30	NOT MOUNTED					
R31	NOT MOUNTED					



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R32	NOT MOUNTED					
R33	NOT MOUNTED					
R34	NOT MOUNTED					
R35	NOT MOUNTED					
R36	NOT MOUNTED					
R37	NOT MOUNTED					
R38	NOT MOUNTED					
R39	NOT MOUNTED					
R40	NOT MOUNTED					
R41	NOT MOUNTED					
R42	NOT MOUNTED					
R43	NOT MOUNTED					
R44	NOT MOUNTED					
R45	NOT MOUNTED					
R46	NOT MOUNTED					
R47	NOT MOUNTED					
R48	NOT MOUNTED					
R49	NOT MOUNTED					
R50	NOT MOUNTED					
R51	NOT MOUNTED					
R52	NOT MOUNTED					
R53	NOT MOUNTED					
R54	NOT MOUNTED					
R55	NOT MOUNTED					
R56	NOT MOUNTED					
R57	NOT MOUNTED					
R58	NOT MOUNTED					
R59	NOT MOUNTED					



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R60	NOT MOUNTED					
R61	NOT MOUNTED					
R62	NOT MOUNTED					
R63	NOT MOUNTED					
R64	NOT MOUNTED					
R65	NOT MOUNTED					
R66	NOT MOUNTED					
R67	NOT MOUNTED					
R68	NOT MOUNTED					
R69	NOT MOUNTED					
R70	NOT MOUNTED					
R71	NOT MOUNTED					
R72	NOT MOUNTED					
R73	NOT MOUNTED					
R74	NOT MOUNTED					
R75	NOT MOUNTED					
R76	NOT MOUNTED					
R77	NOT MOUNTED					
R78	NOT MOUNTED					
R79	NOT MOUNTED					
R80	NOT MOUNTED					
R81	NOT MOUNTED					
R82	NOT MOUNTED					
R83	NOT MOUNTED					
R84	NOT MOUNTED					
R85	NOT MOUNTED					
R86	NOT MOUNTED					
R87	NOT MOUNTED					



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R88	NOT MOUNTED					
R89	NOT MOUNTED					
R90	NOT MOUNTED					
R91	NOT MOUNTED					
R92	NOT MOUNTED					
R93	NOT MOUNTED					
R94	NOT MOUNTED					
R95	NOT MOUNTED					
R96	NOT MOUNTED					
R97	NOT MOUNTED					
R98	NOT MOUNTED					
R99	NOT MOUNTED					
R100	NOT MOUNTED					
R101	NOT MOUNTED					
R102	NOT MOUNTED					
R103	Resistor 0,1R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81NR100FR	1	
R104	Resistor 50R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N50R0FR	1	
R105	Resistor 50R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N50R0FR	1	
R106	Resistor 10R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N10R0FR	1	
R107	Resistor 75R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N75R0FR	1	
R108	Resistor 75R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N75R0FR	1	
R109	Resistor 0,1R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81NR100FR	1	
R110	Resistor ADJ 1W 1% (RWR81)				1	
R111	Resistor 0,1R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81NR100FR	1	
R112	Resistor ADJ 1W 1% (RWR81)				1	
R113	Resistor ADJ 1W 1% (RWR81)				1	
R114	Resistor ADJ 1W 1% (RWR81)				1	
R115	Resistor 10R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N10R0FR	1	



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R116	Chip Resistor 2,49K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E49R	1	
R117	Chip Resistor 1,5K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E50R	1	
R118	JUMPER (RWR81)				1	
R119	Resistor 15R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N15R0FR	1	
R120	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R121	Chip Resistor 2,49K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E49R	1	
R122	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R123	Chip Resistor 20K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B20E0R	1	
R124	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R125	Resistor 50R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N50R0FR	1	
R126	Resistor ADJ 1W 1% (RWR81)				1	
R127	Chip Resistor 3,6K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B3E60R	1	
R128	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R129	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R130	Resistor 50R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N50R0FR	1	
R131	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R132	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R133	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R134	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R135	Chip Resistor 7,5R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B7D50R	1	
R136	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R137	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R138	Chip Resistor 1,5K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E50R	1	
R139	Resistor 15R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N15R0FR	1	
R140	Chip Resistor 5,11R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B5D11R	1	
R141	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R142	Chip Resistor 5,11K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B5E11R	1	
R143	Chip Resistor 2,49K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E49R	1	



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R144	Chip Resistor 2K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E00R	1	
R145	Chip Resistor 1,5K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E50R	1	
R146	Chip Resistor 6,2K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B6E20R	1	
R147	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R148	Resistor 75R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N75R0FR	1	
R149	Resistor 75R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N75R0FR	1	
R150	Chip Resistor 1,8K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E80R	1	
R151	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R152	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R153	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R154	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R155	Resistor ADJ 1W 1% (RWR81)				1	
R156	Resistor ADJ 1W 1% (RWR81)				1	
R157	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R158	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R159	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R160	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R161	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R162	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R163	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R164	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R165	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R166	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R167	Chip Resistor 3,32K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B3E32R	1	
R168	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R169	Chip Resistor 2,75K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E75R	1	
R170	Chip Resistor 330R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B330DR	1	
R171	JUMPER (RM1206)				1	



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R172	Chip Resistor 33R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B33D0R	1	
R173	Chip Resistor 5,11K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B5E11R	1	
R174	Chip Resistor 5,11K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B5E11R	1	
R175	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R176	Chip Resistor 475K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B475ER	1	
R177	Chip Resistor 3,32K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B3E32R	1	
R178	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R179	Chip Resistor 2,75K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E75R	1	
R180	Chip Resistor 10K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B10E0R	1	
R181	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R182	Chip Resistor 10K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B10E0R	1	
R183	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R184	Chip Resistor 10K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B10E0R	1	
R185	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R186	JUMPER (RM1206)				1	
R187	JUMPER (RM1206)				1	
R188	JUMPER (RM1206)				1	
R189	Metal film 5K 0.1% 5ppm	MIL-R-55182/9	DALE	RNC90Y5K0000BR	1	
R190	Chip Resistor 2,21K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E21R	1	
R191	Chip Resistor 2,21K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E21R	1	
R192	Chip Resistor 2,21K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E21R	1	
R193	Chip Resistor 10K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B10E0R	1	
R194	JUMPER				1	
R195	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R196	JUMPER				1	
R197	JUMPER				1	
R198	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R199	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	



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R200	Metal film 10K 0.1% 5ppm	MIL-R-55182/9	DALE	RNC90Y10K000BR	1	
R201	Metal film 15K 0.1% 5ppm	MIL-R-55182/9	DALE	RNC90Y15K000BR	1	
R202	Metal film 1K 0.1% 5ppm	MIL-R-55182/9	DALE	RNC90Y1K0000BR	1	
R203	Metal film 1,5K 0.1% 5ppm	MIL-R-55182/9	DALE	RNC90Y1K5000BR	1	
R204	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R205	Chip Resistor 5,11K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B5E11R	1	
R206	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R207	NOT MOUNTED					
R208	Chip Resistor 10R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B10D0R	1	
R209	Chip Resistor 10R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B10D0R	1	
R210	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R211	Chip Resistor 10R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B10D0R	1	
R212	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R213	Chip Resistor 2,49K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E49R	1	
R214	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R215	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R216	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R217	Metal film ADJ 0.1% 5ppm (RNC90Y)				1	
R218	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R219	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R220	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R221	Chip Resistor 2,49K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E49R	1	
R222	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R223	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R224	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R225	Metal film ADJ 0.1% 5ppm (RNC90Y)				1	
R226	Metal film ADJ 0.1% 5ppm (RNC90Y)				1	
R227	Metal film ADJ 0.1% 5ppm (RNC90Y)				1	



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R228	Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	1	
R229	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R230	Chip Resistor 5,6R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B5D60R	1	
R231	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R232	Chip Resistor 5,6R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B5D60R	1	
R233	Chip Resistor 5,6R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B5D60R	1	
R234	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R235	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R236	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
R237	Chip Resistor ADJ 0,25W 1% (RM1206)				1	
TRF1	TRANSFORMER1		CGS		1	
TRF2	TRANSFORMER2		CGS		1	
TRF3	TRANSFORMER3		CGS		1	
TRF4	NOT MOUNTED					
TRF5	NOT MOUNTED					
Q1	HEXFET Transistor P-channel	MIL-PRF-19500/595	IR	JANS2N7236	1	
Q2	NOT MOUNTED					
Q3	NOT MOUNTED					
Q4	NOT MOUNTED					
Q5	NOT MOUNTED					
Q6	NOT MOUNTED					
Q7	Transistor Power MOSFET N channel	MIL-PRF-19500/592	IR	JANS2N7224	1	
Q8	Transistor Power MOSFET N channel	MIL-PRF-19500/592	IR	JANS2N7224	1	
Q9	Transistor Power MOSFET N channel	MIL-PRF-19500/592	IR	JANS2N7224	1	
Q10	Transistor Power MOSFET N channel	MIL-PRF-19500/592	IR	JANS2N7224	1	
Q11	Transistor NPN (SMD)	MIL-PRF-19500/255	SEMICOA	JANS2N2222AUB	1	
Q12	Transistor NPN (SMD)	MIL-PRF-19500/255	SEMICOA	JANS2N2222AUB	1	
Q13	Transistor NPN (SMD)	MIL-PRF-19500/255	SEMICOA	JANS2N2222AUB	1	



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Q14	PNP Power Transistor High Speed Switching	MIL-PRF-19500/545	SEMICOA	JANS2N5151	1	
Q15	NPN Power Transistor High Speed Switching	MIL-PRF-19500/544	SEMICOA	JANS2N5152	1	
U1	Voltage Comparator/Buffer LM111HPQMLV	5962-00524	NATIONAL	5962P0052401VGA	1	
U2	Positive Voltage Regulator LM117HRQMLV	5962-99517	NATIONAL	5962R9951703VXA	1	
U3	NOT MOUNTED					
U4	NOT MOUNTED					
U5	NOT MOUNTED					
U6	Pulse Width Modulator Controller Current Mode UC1846JQMLV	5962-86806	TI	5962-8680601VEA	1	
U7	NOT MOUNTED					
U8	NOT MOUNTED					
U9	NOT MOUNTED					
U10	Precision Quad.Voltage Comparator LM139AWRQMLV	5962-96738	NATIONAL	5962R9673801VDA	1	
U11	Pulse Width Modulator Controller Current Mode UC1846JQMLV	5962-86806	TI	5962-8680601VEA	1	
U12	Positive Voltage Regulator LM117HRQMLV	5962-99517	NATIONAL	5962R9951703VXA	1	
U13	Voltage reference AD584TH/QMLVR	5962-38128	AD	5962R3812802VGA	1	
U14	Precision Quad Op. Amp. OP400AY/QML	5962-87771	AD	5962-8777101VCA	1	
U15	Precision Quad Op. Amp. OP400AY/QML	5962-87771	AD	5962-8777101VCA	1	
U16	Positive Voltage Regulator LM117HRQMLV	5962-99517	NATIONAL	5962R9951703VXA	1	
U17	Temperature Transducer AD590MF	5962-87571	AD	5962-8757104VXA	1	
U18	Negative Voltage Regulator LM137HPQMLV	5962-99517	NATIONAL	5962P9951701VXA	1	
1	Printed Circuit Board	CNES/QFT/SP-0117	PRINTCA/VIASYSTEMSCSI	DPU-FM-310.03-0 REV /	1	DPU-EM-310.03-0 REV /

Bill Of Material				
DESCRIPTION	PROC.SPEC	SUPPLIER	P/N-ID.CODE	Totale
Printed Circuit Board	CNES/QFT/SP-0117	PRINTCA/VIASYSTEMSCSI	DPU-FM-310.03-0 REV /	1
Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	15
Chip Ceramic Capacitor 100pF 100V 5%	MIL-PRF-55681/8	KEMET	CDR32BP101BJWR	1
Ultra Fast Rectifier Diode	MIL-PRF-195500/477	MICROSEMI	JANS1N5811US	10



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2 Jumper pin					7
96-pin Male Solder Connector 90°	N.A.	FRB	KDC 096 1310		2
Voltage reference AD584TH/QMLVR	5962-38128	AD	5962R3812802VGA		1
Chip Ceramic Capacitor 0,47uF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BX474AKWR		11
Chip Ceramic Capacitor 3,3nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BP332AKWR		4
Chip Ceramic Capacitor 0.1uF 50V 5%	MIL-PRF-55681/9	KEMET	CDR33BX104AJWR		1
Chip Ceramic Capacitor 100nF 100V 10%	MIL-PRF-55681/11	KEMET	CDR35BX104BKWR		2
Chip Ceramic Capacitor 10nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX103AKWR		11
Chip Ceramic Capacitor 3,3nF 100V 10%	MIL-PRF-55681/10	KEMET	CDR34BP332BKWR		2
Chip Ceramic Capacitor 0.1uF 100V 10%	MIL-PRF-55681/11	KEMET	CDR35BX104AKWR		2
Chip Ceramic Capacitor 22nF 50V 10%	MIL-PRF-55681/11	KEMET	CDR35BP223AKWR		1
Chip Ceramic Capacitor 4,7nF 50V 10%	MIL-C-55861/8	KEMET	CDR31BX472BKWR		1
Chip Ceramic Capacitor 220pF 100V 10%	MIL-PRF-55681/8	KEMET	CDR32BP2211BKWR		1
Diode Zener 12V 1,5W 5%	MIL-PRF-19500/406	MICROSEMI	JANS1N4467US		1
Diode Zener 10V 1,5W 5%	MIL-PRF-19500/406	MICROSEMI	JANS1N4465US		2
Switching diode	ESA/SCC5101/026	MICROSEMI	JANS1N6642US		12
Diode Zener 5,1V 0,5W 5%	MIL-PRF-19500/533	MICROSEMI	JANS1N6317US		3
Dual power diode	MIL-PRF-19500/608A	MICROSEMI	1N6660JANS		1
Inductor 3mH		CGS			
Inductor 50uH		CGS			
Inductor ADJ		CGS			
Inductor 200uH		CGS			
Resistor 0,1R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81NR100FR		3
Resistor 10R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N10R0FR		2
Resistor 15R 1W 1%	MIL-PRF-39007/9	DALE-IRC	RWR81N15R0FR		2
Resistor 50R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N50R0FR		4
Metal film 5K 0.1% 5ppm	MIL-R-55182/9	DALE	RNC90Y5K0000BR		1



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Metal film 1K 0.1% 5ppm	MIL-R-55182/9	DALE	RNC90Y1K0000BR	1
Metal film 10K 0.1% 5ppm	MIL-R-55182/9	DALE	RNC90Y10K0000BR	1
Metal film 15K 0.1% 5ppm	MIL-R-55182/9	DALE	RNC90Y15K0000BR	1
Metal film 1,5K 0.1% 5ppm	MIL-R-55182/9	DALE	RNC90Y1K5000BR	1
TRANSFORMER1		CGS		
TRANSFORMER2		CGS		
TRANSFORMER3		CGS		
HEXFET Transistor P-channel	MIL-PRF-19500/595	IR	JANS2N7236	1
PNP Power Transistor High Speed Switching	MIL-PRF-19500/545	SEMICOA	JANS2N5151	1
Positive Voltage Regulator LM117HRQMLV	5962-99517	NATIONAL	5962R9951703VXA	3
Pulse Width Modulator Controller Current Mode UC1846JQMLV	5962-86806	TI	5962-8680601VEA	2
Negative Voltage Regulator LM137HPQMLV	5962-99517	NATIONAL	5962P9951701VXA	1
Precision Quad.Voltage Comparator LM139AWRQMLV	5962-96738	NATIONAL	5962R9673801VDA	1
Precision Quad Op. Amp. OP400AY/QML	5962-87771	AD	5962-8777101VCA	2
Temperature Trasducer AD590MF	5962-87571	AD	5962-8757104VXA	1
Ceramic Capacitor 1uF 50V 10%	MIL-C-39014/2	AVX-KEMET	CKR06BX105KR	11
Chip Ceramic Capacitor ADJ 10% 50V (CDR35)				
JUMPER (RWR81)				
Chip Resistor 10R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B10D0R	1
Chip Resistor 1K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E00R	21
Chip Resistor 10K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B10E0R	6
Chip Resistor ADJ 0,25W 1% (RM1206)				
JUMPER (RM1206)				
Chip Resistor 100K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B100ER	2
Chip Resistor 20K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B20E0R	1
Resistor ADJ 1W 1% (RWR81)				
Chip Resistor 3,32K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B3E32R	2
Chip Resistor 5,11K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B5E11R	4



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Resistor 75R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N75R0FR	4
Chip Resistor 7,5R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B7D50R	1
Chip Resistor 2,49K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E49R	5
Chip Resistor 5,11R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B5D11R	1
Chip Resistor 475K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B475ER	1
Chip Resistor 2,75K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E75R	2
Chip Resistor 2K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E00R	1
Chip Resistor 1,8K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E80R	1
Chip Resistor 1,5K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B1E50R	3
JUMPER (RWR81)				
Chip Resistor 20K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B20E0R	1
Chip Resistor 3,6K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B3E60R	1
Chip Resistor 6,2K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B6E20R	1
Chip Resistor 330R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B330DR	1
JUMPER (RM1206)				
Chip Resistor 33R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B33D0R	1
Chip Resistor 2,21K 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B2E21R	3
JUMPER				
Chip Resistor 10R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B10D0R	3
Metal film ADJ 0.1% 5ppm (RNC90Y)				
Chip Resistor 5,6R 0,25W 1%	MIL-R-55342/7	DALE	M55342K07B5D60R	3
Transistor Power MOSFET N channel	MIL-PRF-19500/592	IR	JANS2N7224	4
Transistor NPN (SMD)	MIL-PRF-19500/255	SEMICOA	JANS2N2222AUB	3
NPN Power Transistor Hight Speed Switching	MIL-PRF-19500/544	SEMICOA	JANS2N5152	1
Voltage Comparator/Buffer LM111HPQMLV2	5962-00524	NATIONAL	5962P0052401VGA2	1
Tantalum Capacitor ADJ 10% (CLR79)				
Tantalum Capacitor 8,2uF 60V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0585	8
Tantalum Capacitor 100uF 25V 10% CLR79	MIL-C-39006/22	MALLORY	M39006/22-0531	1



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Tantalum Capacitor 47uF 10V 10% CLR79	MIL-C-39006/22	MALLORY	M39006/22-0485	2
Tantalum Capacitor 20uF 10V 10% CLR79	MIL-PRF-39006/22	MALLORY	M39006/22-0481	1
Tantalum Capacitor 15uF 30V 10% CLR79	MIL-C-39006/22	MALLORY	M39006/22-0545	4
Total				307



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CUSTOMER ID		EFFECTIVITY	
DRAWING TITLE		CARLO GAVAZZI SPACE S.p.A. 	
HSO/FIRST-DPU: MOTHERBOARD Electrical Part List			
HIGHER ASSEMBLY	DRAWING NUMBER	REV.	DATE
DPU-EM-410.00-0	DPU-EM-410.01-0	/	

ITEM	DESCRIPTION	PROC.SPEC	SUPPLIER	P/N-ID.CODE	QTY	EM NOTE
JP1	Jumper				1	HEADER 2 pin MALE
JP2	Jumper				1	HEADER 2 pin MALE
JP3	Jumper				1	HEADER 2 pin MALE
JP4	Jumper				1	HEADER 2 pin MALE
P1	96 pin Female Solder Connector		FRB	KDC 096 2232	1	HARTING, 09 03 196 6825
P2	96 pin Female Solder Connector		FRB	KDC 096 2232	1	HARTING, 09 03 196 6825
P3	96 pin Female Solder Connector		FRB	KDC 096 2232	1	HARTING, 09 03 196 6825
P4	96 pin Female Solder Connector		FRB	KDC 096 2232	1	HARTING, 09 03 196 6825
P5	96 pin Female Solder Connector		FRB	KDC 096 2232	1	HARTING, 09 03 196 6825
P6	96 pin Female Solder Connector		FRB	KDC 096 2232	1	HARTING, 09 03 196 6825



IFSI
CNR

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P7	96 pin Female Solder Connector		FRB	KDC 096 2232	1	HARTING, 09 03 196 6825
P8	96 pin Female Solder Connector		FRB	KDC 096 2232	1	HARTING, 09 03 196 6825
P9	96 pin Female Solder Connector		FRB	KDC 096 2232	1	HARTING, 09 03 196 6825
P10	96 pin Female Solder Connector		FRB	KDC 096 2232	1	HARTING, 09 03 196 6825
P11	96 pin Female Solder Connector		FRB	KDC 096 2232	1	HARTING, 09 03 196 6825
P12	96 pin Female Solder Connector		FRB	KDC 096 2232	1	HARTING, 09 03 196 6825

Bill Of Material

DESCRIPTION	PROC.SPEC	SUPPLIER	P/N-ID.CODE	Total
Jumper				4
96 pin Female Solder Connector		FRB	KDC 096 2232	12
Total				16

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FIRST / SPIRE / FTS / MCU

EEE PART LIST

User code : FSFTSL

DCL code L 058

Prepared by :	Date :
P. Levacher	26-09-2001
Approved by :	Date :
D. Pouliquen	

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Document change record

Révision			
Issue - rev.	Date	Approved by	Modifications
01 - 00	29-03-00	D. P.	All : first issue
02 - 00	27-04-00	D. P.	<ul style="list-style-type: none"> • document reference has changed, LAM/ELE/FTS/QUA/000201 is obsolete. • scope paragraph is updated. • acronyms added. • connectors list added to this document in specific paragraphs. • SRAM (65656) reference completed. • EEPROM (28C010) reference completed. • FIFO (67204) reference completed. • qty of 26C31 increased. • reference and package of FPGA changed. • qty of DAC (7846) increased. • qty of decoder (54HC138) increased. • qty of transceiver (54HC245) increased. • qty of HS-508 increased. • reference of analog switch HS-302RH changed to HS-303RH. • transistors 2N2222 & 2N2907 suppressed. • LED for position encoder added • photodiodes for position encoder added • connector backshells added
03 - 00	12-12-00	D. P.	<ul style="list-style-type: none"> • lot of parts changed according to First PPL dated 07-06-2000 • Actel A1280 FPGA changed to RT14100, • ADC AD574A changed to SEI 9220LPRP (speed and power consumption), • voltage regulator diodes added, • instrumentation amplifier AMP01 added, • Jfet transistor (encoder preamplifier) changed by

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			<ul style="list-style-type: none"> TIA hybrid module, • relays added, • crystal added, • voltage regulator added.
04 - 00	01-02-01	D.P.	<ul style="list-style-type: none"> • new component / previous issue are noted "N" in the family column • cryo connector list added in § 6 • LLI components are also listed in § 7
04 - 01	08-02-01	D.P.	<ul style="list-style-type: none"> • correction of an error in the quantities in the LLI components list. • Mosfet added : 3N 163 • Type of Jfet transistor added : 2N 4341
05 - 00	09-02-01	D.P.	<ul style="list-style-type: none"> • line driver and receiver changed to Intersil types (HS9-26C31RH & C32RH) to be conform with the DPU interface • type of transistor added for launch latch drivers: 2N 5153
06 - 00	20-04-01	D.P.	<ul style="list-style-type: none"> • definitive choice of RAM : HX 6228 (SMDP65656 & UT9Q512 suppressed) • qty of 54HC386 increased to 30 • HS1-303RH confirmed (qty = 10), • qty of 1N5712 increased, • diode 1N4148 added • qty of 1N3595 increased, • 54HC04 changed to 54AC04 • precision on zener diode : 1N6312 & 1N6317
07 - 00	23-07-01	D.P.	<ul style="list-style-type: none"> • changes and adds in cryo canon list, • 2N2222A, 2N5154 added, 1N4569 added, • ATP on components identified, • some change in quantities for analog parts,
07 - 01	26-07-01	D.P.	<ul style="list-style-type: none"> • components in cryogenic temperature identified, • self procurement components identified, • correction of some writing errors.
08 - 00	26-09-01	D.P.	<ul style="list-style-type: none"> • Quantities of analog components updated, • Type of Jfet transistor changed to : 2N 4392 • Connector FRB 65 pins added, male, female, saver, • Types and quantities of connectors modified, • Precision added for the type of relay, • ATP for component identified,

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Acronyms

AD	Applicable Document
AIV	Acceptance, Integration and Validation
AVM	Avionics Model
BOL	Beginning Of Life
BSM	Beam Steering Mirror
CEA	Commissariat à l'Energie Atomique
CQM	Cryogenic Qualification Model
EGSE	Electrical Ground Support Equipment
EOL	End of Life
ESA	European Space Agency
FIRST	Far InfraRed ans Submillimetre Telescope
FM	Flight Model
FPU	Focal Plane Unit
FTS	Fourrier Transform Spectrometer
FTSE	FTS warm Electronics
FTSP	FTS Preamplifier for the position encoder signals
H/K	HouseKeeping
H/W	Hardware
ICD	Interface Control Document
I/F	Interface
LAM	Laboratoire d'Astrophysique de Marseille
MAC	Multi Axes Controller
MCE	Mechanism Control Electronics
N/A	Not Applicable
RAL	Rutherford Appleton Laboratory
RD	Reference Document
ROE	Royal Observatory of Edinburgh
SAP	Service d'Astrophysique
S/C	Spacecraft
SM	Spare Model
SMEC	Spectrograph MEChanism
S/W	Software
TBC	To Be Confirmed
TBD	To Be Define
TBW	To Be Written
TC	Tele-Command
TM	TeleMetry
WE	Warm Electronics
...	

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1. SCOPE

This document provide a preliminary list of EEE components which would be used in the flight model of the MCU system (warm electronics + SMEC encoder preamplifier + SMEC position encoders).

The cryo harness connectors are included in this list, with savers and accessories.

2. REFERENCE DOCUMENTS

- [RD1] ESA/SCC QUALIFIED PARTS LIST (15-01-00)
- [RD2] EUROPEAN PREFERRED PARTS LIST (15-02-00)
- [RD3] CNES / QFT / IN0500 Liste préférentielle des composants
- [RD4] FIRST/Planck Preferred Part List ref. : FP-TLG-LI-0001 (07-06-2000)

3. ABBREVIATIONS

EPPL	European Preferred Parts List
QPL	Qualified Parts List
TD	Total Dose effects
SEL	Single Event Latch up
SEU	Single Event Upset

4. LEGENDE OF LIST COLUMNS

F	ESA component family
GENERIC NAME	part number
MAN.	manufacturer
PACKAGE	mechanical package or housing
FUNCTION	features of the component
QTY	total quantity needed, including attrition
PROC-SPEC	QPL or PPL, procurement specification
LEVEL	Quality level
Q	space qualified
L	LLI component

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5. MANUFACTURERS

Code	Manufacturer	Country	Remarks
AND	Analog Devices	USA	
ACT	Actel Corporation	USA	
ATM	ATMEL	USA / F	
BBR	Burr Brown	USA	
CAN	ITT Cannon	USA	
CDI	Compensted Devices Inc.	USA	
DAL	Dale	USA	
DEU	Compagnie Deutsch	F	
ELT	Eltec	USA	
FCI	Framatome Connectors Int.	F	
FRB	FRB Connectron	USA	
GLN	Glenair	USA	
HAM	Hamamatsu	J	
HAR	Harris	USA	Intersil
HON	Honeywell	USA	
INT	Intersil	USA	
ITF	Interfet	USA	
IRL	Infrared Laboratories Inc.	USA	
TEK	Tekelec	F	
LTC	Linear Technology Corp.	USA	
MAX	Maxim	USA	
MSC	Microsemi Corporation	USA	
NSC	National Semiconductor	USA	
OPD	Opto Diode	USA	
SEI	Space Electronic Inc.	USA	
SEM	Semicoa	USA	
SFR	Vishay Sfernice	F	
SIL	Siliconix	USA	
SPR	Sprague	F	
STM	STMicro	F	
TEM	Temec (Atmel)	F	
VIT	Vitramon	D	

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6. LIST OF CRYO CONNECTORS AND CABLES

F	Generic Name	FLT Part Type	Pack.	Man / C	Function	Proc-Spec	Level	Qty	Q	LLI	Remarks
02 N	MDM-37P FR123	3401 029 01B 37PFR123		CAN/ F	37 cts MDM type connector, pin, + 4000mm AWG26 wires	SCC 3401/029	SCC B	8	Y	N	cryo @ 4K
02 N	MDM-37S FR114	3401 029 01B 37P FR114		CAN/ F	37 cts MDM type connector, socket, with 508 mm AWG28 wires	SCC 3401/029	SCC B	13	Y	N	cryo @ 4K
02 N	MDM-37S FR***	3401 029 01B 37PFR***		CAN/ F	37 cts MDM type connector, socket, with 500mm length of cable supplied by LAM	SCC 3401/029	SCC B	13	Y	N	cable type is TBD , cryo @ 4K
02	MDM-25S FR116	3401 029 01B 25SFR116		CAN/ F	25 cts MDM type connector, socket, uninsulated wire	SCC 3401/029	SCC B	5	Y	N	cryo @ 4K
02	MDM- 25P FR136 (MDM-25PCBR)	3401 029 01B 25PFR136		CAN/ F	25 cts MDM type connector, pin, 90° PCB	SCC 3401/029	SCC B	5	Y	N	cryo @ 4K
2	MDM-37 PS (SAVER)	3401 041 06B 37PS		CAN/ F	MDM connector saver, 37 cts	SCC 3401/041	SCC B	35	Y	N	cryo @ 4K
2	MDM-25 PS (SAVER)	3401 041 04B 25PS		CAN/ F	MDM type connector saver, 25 cts	SCC 3401/041	SCC B	7	Y	N	cryo @ 4K

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2	MDM male & female screwlock (set of 2)	3401 032 01		CAN/ F	set of 2 MDM male & female screwlock for front panel mounting	SCC 3401/032	SCC B	28	Y	N	cryo @ 4K
2	MDM male & female screwlock (set of 2)	3401 032 02		CAN/ F	set of 2 MDM male & female screwlock for rear panel mounting	SCC 3401/032	SCC B	28	Y	N	cryo @ 4K
2	MDM 90° angle mounting braket	3401 032 03		CAN/ F	set of 2 MDM 90° angle mounting braket	SCC 3401/032	SCC B	5	Y	N	cryo @ 4K
2	MDM male screwlock for savers (set of 2)	3401 032 05		CAN/ F	set of 2 MDM male screwlock assembly for saver	SCC 3401/032	SCC B	22 (tbc)	Y	N	cryo @ 4K
2	MDM female screwlock for PCB connectors	3401 032 06		CAN/ F	set of 2 MDM female screwlock for PCB connectors	SCC 3401/032	SCC B	5	Y	N	cryo @ 4K
2	MDM-accessories			GLN/ US	backshell for 37 cts MDM connector	TBD	TBD	TBD			cryo @ 4K

	CABLES										
	cable with 11 shielded twisted pairs + general shield			TBD	AWG 30 (TBC)	TBD	TBD	100m			cryo @ 4K self procurement

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7. LIST OF IDENTIFIED LLI COMPONENTS

F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LLI	Remarks
08	7805ALPRP	7805ALPRPFK	28-FP	SEI/ US	16 bits analog digital converter, 10 µs	7805ALPRP 0319.99	E	10	N	Y	prefered type / ATP 09-04
08	7846RP	7846RPFS	28-FP	SEI/ US	16 bits Digital Analog converter, 10 µs	7846RP0728 .99	S	15	N	Y	prefered type / ATP 09-04
08	27C1512RP	27C1512RPDK	40-DIL	SEI/ US	32k x 16 PROM, 200ns	TL-DS-007	K	18	N	Y	prefered type / ATP 09-04
08	AD630SE/883	5962-89807012A	20-LCC	AND/ US	modulator/ demodulator	5962-89807	B	10	N	Y	obsolete type, ATP 09-04

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8. LIST OF EEE PARTS

New component / previous issue are noted "N" in the Family column.

F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LLI	Remarks
CAPACITORS											
01	805 TI $47 \text{ p} \leq C \leq 1.5 \text{ n}$		chip 0805	VIT/D	ceramic chip capacitor, type I, 50 V	SCC 3009/003	SCC C	TBD	Y	N	
01	805 TII $1 \text{ n} \leq C \leq 27 \text{ n}$		chip 0805	VIT/D	ceramic chip capacitor, type II, 50 V	SCC 3009/008	SCC C	TBD	Y	N	
01	1812 TI $3.3 \text{ n} \leq C \leq 18 \text{ n}$		chip 1812	VIT/D	ceramic chip capacitor, type I, 50 V	SCC 3009/005	SCC C	TBD	Y	N	
01	1812 TII $22 \text{ n} \leq C \leq 270 \text{ n}$		chip 1812	VIT/D	ceramic chip capacitor, type II, 50 V	SCC 3009/010	SCC C	TBD	Y	N	
01	CLR 79 $15 \mu \leq C \leq 1200 \mu$ $8 \mu \leq C \leq 560 \mu$			SPR/ F	tantalum capacitor 15V 30V	SCC 3003/005	SCC C	TBD	Y	N	
CONNECTORS											
02	DEMA 9S NMB FO	3401 002 01 B DEMA9SNMBFO		CAN/ F	9 socket, subm. connector w/o cts	SCC 3401/001	SCC B	7	Y	N	
02	DBMA 25S NMB FO	3401 002 01 B DBMA25SNMBFO		CAN/ F	25 socket, subm. connector w/o cts	SCC 3401/001	SCC B	7	Y	N	
02 N	DBMA 25P NMB FO	3401 002 01 B DBMA25PNMBFO		CAN/ F	25 pin, subm. connector w/o cts	SCC 3401/001	SCC B	7	Y	N	
02	DCMA 37S NMB FO	3401 002 01 B DCMA37SNMBFO		CAN/ F	37 socket, subm. connector w/o cts	SCC 3401/001	SCC B	17	Y	N	

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
02 N	Contacts male (crimp #20/24)	3401 005 01 B		CAN/ F	socket contacts for D*MA connector	SCC 3401/005	SCC B	1000	Y	N	
02	Contacts female (crimp #20/24)	3401 005 02 B		CAN/ F	socket contacts for D*MA connector	SCC 3401/005	SCC B	1100	Y	N	
02 N	Contacts male (crimp #26/28)	3401 005 03 B		CAN/ F	socket contacts for D*MA connector	SCC 3401/005	SCC B	1000	Y	N	
02 N	Contacts female (crimp #26/28)	3401 005 04 B		CAN/ F	socket contacts for D*MA connector	SCC 3401/005	SCC B	1000	Y	N	
02	DEBMA 9 PS NMB FO (saver)	3401 020 01 B BDEBMA 9 PS NMB FO		CAN/ F	subm. 9 p connector saver w/o contacts	SCC 3401/020	SCC B	14	Y	N	
02	DBBMA 25 PS NMB FO (saver)	3401 020 01 B DBBM 25 PS NMB FO		CAN/ F	subm. 25 p connector saver w/o contacts	SCC 3401/020	SCC B	24	Y	N	
02	DCBMA 37 PS NMB FO (saver)	3401 020 01 B DCBM 37 PS NMB FO		CAN/ F	subm. 37 p connector saver w/o contacts	SCC 3401/020	SCC B	34	Y	N	
02	Saver contacts	3401 021 01 B		CAN/ F	contacts for D*MA saver connector	SCC 3401/021	SCC B	2000	Y	N	
02	DE-60-20	3401 022 07 B		CAN/ F	dust cap for DEBMA 9S (red)	SCC 3401/022	SCC B	7	Y	N	
02	DB-60-20	3401 022 11 B		CAN/ F	dust cap for DBBMA 25S (red)	SCC 3401/022	SCC B	17	Y	N	
02 N	DB-59-20	3401 022 12 B		CAN/ F	dust cap for DBBMA 25P (red)	SCC 3401/022	SCC B	7	Y	N	

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
02	DC-60-20	3401 022 13 B		CAN/ F	dust cap for DCBMA 37S (red)	SCC 3401/022	SCC B	17	Y	N	
02	screw-lock assembly (female)	3401 022 01 B NMB variant 01		CAN/ F	screw-lock assembly (female) for D*MA connectors	SCC 3401/022	SCC B	27	Y	N	
02	screw-lock assembly (female)	3401 022 01 B NMB variant 06		CAN/ F	screw-lock assembly (female) for D*MA connectors saver	SCC 3401/022	SCC B	72	Y	N	
02 N	KNB 065 13 10 110	3401 016 01B 05 MC 33 33 33		FRB/ F	KNB type, right angle PCB 65 contacts pins connector	SCC 3401/016	SCC B	7	Y	N	
02	KNB 084 13 10 110	3401 016 01B 07 MC 33 33 33		FRB/ F	KNB type, right angle PCB 84 contacts pins connector	SCC 3401/016	SCC B	7	Y	N	
02	KNB 120 13 10 111	3401 016 01B 10 MC 35 35 35		FRB/ F	KNB type, right angle PCB 120 contacts pins connector	SCC 3401/016	SCC B	7	Y	N	
02 N	KNB 065 26 30 121	3401 016 01B 17 FD 36 36 36		FRB/ F	KNB type, PCB, 65 contacts recept. connector	SCC 3401/016	SCC B	7	Y	N	

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	L	Remarks
02	KNB 084 26 30 121	3401 016 01B 19 FD 36 36 36		FRB/ F	KNB type, PCB, 84 contacts recept. connector	SCC 3401/016	SCC B	7	Y	N	
02	KNB 120 26 30 121	3401 016 01B 22 FD 36 36 36		FRB/ F	KNB type, PCB, 120 contacts recept. connector	SCC 3401/016	SCC B	7	Y	N	
02 N	KNB 065 SAVER	3401 016 01B 17 FM 00 00 00		FRB/ F	KNB type, 65 contacts saver	SCC 3401/016	SCC B	13	Y	N	
02	KNB 084 SAVER	3401 016 01B 19 FM 00 00 00		FRB/ F	KNB type, 84 contacts saver	SCC 3401/016	SCC B	13	Y	N	
02	KNB 120 SAVER	3401 016 01B 22 FM 00 00 00		FRB/ F	KNB type, 120 contacts saver	SCC 3401/016	SCC B	13	Y	N	

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
	CRYSTAL										
03	T807	3501011XXB	TO-5	CMA/ F	crystal 40 MHz	SCC-3501- 011	SCC B	6	Y	N	PPL / ATP11-07
	DIODES										
04	1N3595US-1	JAN S 1N3595US- 1 Hrd Glass	SMD	MSC/ US	switching diode, 225mA, 125V	MIL-PRF- 19500/241	JAN S	196	Y	N	PPL / ATP 24-09
04	1N4148-1	510102302B	DO-35	MSC/ US	switching diode,	SCC 5101/023	JAN S	12	Y	N	PPL / ATP 24-09
04	1N6312/US	JAN S 1N6312/US	B-SQ- Melf	MSC/ US	voltage regulator diode, 0.5W, 3.3V	MIL-PRF- 19500/533	JAN S	6	Y	N	PPL / ATP 08-10
04	1N6317/US	JAN S 1N6317/US	B-SQ- Melf	MSC/ US	voltage regulator diode, 0.5W, 5.1V	MIL-PRF- 19500/533	JAN S	6	Y	N	PPL / ATP 08-10
04	1N4569A-1	JANS1N4569AUR- 1	DO- 213AA	CDI/ US	voltage regulator, temp comp., 0.4W, 6.4V	MIL-PRF- 19500/452	JAN S	7	Y	N	PPL / ATP 08-10
04	1N5712-1	CDS5712-1	DO-35	CDI/ US	Schottky diode, 20V, 35mA	MIL-PRF- 19500/445	Class S	91	N	N	PPL / ATP 24-09
04	OD-880W		die	OPD/ US	LED (position encoder)	TBD	TBD	7	N		only for comments, self procurement (in mechanism @ 4K)
04	S2386-18K		die	HAM/ J	photodiode (pos. encoder)	TBD	TBD	17	N		only for comments, self procurement (in mechanism @ 4K)

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
	CONVERTERS										
08	7805ALPRP	7805ALPRPFE	28-FP	SEI/ US	16 bits analog digital converter, 10 μ s	7805ALPR P0319.99	E	10	N	Y	preferred type / ATP 09-04
08	7846RP	7846RPFS	28-FP	SEI/ US	16 bits Digital Analog converter, 10 μ s	7846RP07 28.99	S	15	N	Y	preferred type / ATP 09-04
	INSTR; AMPLIFIER										
08	AD524SD	5962-8853901VEA	16-DIL	AND/ US	instrumentation amplifier	5962- 88539	QML-V	44	Y	N	preferred type / ATP 24-09
	OPERATIONAL AMPLIFIER										
08	OP27AJ	M38510/13503 SGA	TO-99	AND/ US	operational amplifier	MIL-M- 38510/135	Class S	17	Y	N	preferred type / ATP 24-09
08	OP400ATC	5962-8777101V3A	28-LCC	AND/ US	operational amplifier (quad)	5962- 87771	Class V	54	Y	N	preferred type / ATP 24-09
08	OP467AY	5982-9325801VCA	14-DIL	AND/ US	operational amplifier (quad)	5962- 93258	Class S	44	Y	N	preferred type / ATP 24-09
	VOLTAGE REGULATOR										
08	LM117H	5962- R9951703VXA	TO-39	AGI/ US	voltage regulator	SMD-5962- 99517 B	Class S	17	Y	N	PPL / ATP 24-09 + ATP 08-10

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
	VOLTAGE COMPARATOR										
08	HS9-139HR	5962F9861301VXC	14-FP	NSC/US	voltage comparator (quad)	SMD-5962-986301	V	58	Y	N	
	LINE DRIVER RECEIVER										
08	HS9-26C31RH-QS9000	5962F9666301VEC	16-FP	SIL/US	line driver, 3 state output	5962-96663	QML-V	7	Y	N	PPL /ATP 11-07
08	HS9-26C32RH-QS9000	5962F9568901VEC	16-FP	SIL/US	line receiver	5962-95689	QML-V	7	Y	N	PPL /ATP 11-07
	MEMORY										
08	HX 6228/TVHC	6962H9853701VXC	32-FP	HON/US	128k x 8 SRAM, 25 ns	5962-98537	QML-V	54		N	ATP 11-07
08	27C1512RP	27C1512RPDK	40-DIL	SEI/US	32k x 16 PROM, 200ns	TL-DS-007	K	18	N	Y	ATP 09-04

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
	DSP										
08	TSC21020F	5962-9953901VXC	MFP-256	ATM- F	32/40 bit Floating Point DSP	5962- 99539	SCC B	6	N	N	PPL / ATP 11-07
	MODEM & SWITCHES										
08	AD630SE/883	5962-89807012A	20-LCC	AND/ US	modulator/ demodulator	5962- 89807	B	10	N	Y	obsolete, ATP 09-04
08	HS9-508BRH- QS9000	5962F9674202 VEC	16-FP	INT/ US	8 channel analog multiplexer	5962- 96742	QML V	27	Y	N	prefered type / ATP 24-09
08	HS9-303RH	5962R9581301 VCC	14-FP	INT/ US	analog switch	5962- 95813	QML V	38	Y	N	ATP 24-09
	VOLTAGE REFERENCE										
08	AD584TH	5962-3812802 VGA	TO-99 (H8)	AND/ US	programmable voltage reference	5962- 38128	QML-V	17		N	prefered type / ATP 24-09
	FPGA & GATES										
08	RT54SX32S	SA/032003EYC	208- CQFP	ACT/ US	16k gates Antifuse FPGA	SMD-5962- 01508	Class S	12	N	N	prefered type / ATP 11-07
08	54AC04	5962-8760901VXA	FP	STM/ F	inverter gate	SMD-5962- 87609	SCC B	7	Y	N	PPL / ATP 11-07
08	54HC386	920112102BF	FP	STM/ F	exclusive or gate	SCC-9201- 121	SCC B	0 (TBC)	Y	N	PPL / ATP 11-07

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
	RELAYS										
09	ETD2G 26 (TBC)	3601 012 ...		LEA/ US	relay, 2 PDT, 26 V	SCC-3601- 012	SCC B	0 TBC	Y	N	PPL
09	DFIC 26	3602 019 02 B 26V		LEA/ US	latching relay, 2PDT, 26 V	SCC-3602- 019	SCC B	16	Y	N	PPL
	RESISTORS										
10	model 104, 5% 10 Mohms			ELT/ US	tubular resistor with leads, 5 %			40		N	T = 4K
10	model 104, 5% 20 Mohms			ELT/ US	tubular resistor with leads, 5 %			60		N	T = 4K
10	PHR 1206	PHR 1206 ...	1206 SMD	DAL/ US	chip resistor, 0.1 %, 25 ppm/°C, 250 mW	MIL-R- 55342/7	FRL R	TBD	Y	N	
10	RM1206 5.6 < R < 1M		1206 SMD	DAL/ US	chip resistor, 1 %, 50 ppm/°C, 250 mW	MIL-R- 55342/7	FRL R	TBD	Y	N	
10	RNC 50 1 < R < 1M (TBC)			SFR/ F	film resistor, 0.5%, 50 ppm/°C	SCC 4001/009	SCC C	TBD	Y	N	
10	SIL 47 < R < 1M (TBC)		SIL- ?	SFR/ F	film resistor, 2%, E48	SCC 4005/003	SCC C	TBD	Y	N	
	TRANSISTORS										
12	2N2219A		TO-39	STM/ F	NPN transistor, 800 mW	SCC-5201- 003	SCC B	7	Y	N	PPL / ATP 24-09
12	2N2905A (TBC)		TO-39	STM/ F	PNP transistor, 600 mW	SCC-5202- 002	SCC B	0	Y	N	PPL, qty =TBC

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
12	2N2222A	520100204B	TO-18	STM/ F	NPN transistor, 400 mW	SCC-5201- 002	SCC B	34	Y	N	PPL / ATP 24-09
12	2N2907A	520200102B	TO-18	STM/ F	PNP transistor, 400 mW	SCC-5202- 001	SCC B	34	Y	N	PPL / ATP 24-09
12	2N5153	520400202B	TO-39	STM/ F	PNP transistor, 1000 mW	SCC-5204- 002	SCC B	71	Y	N	PPL / ATP 24-09
12	2N5154	520301002B	TO-39	STM/ F	NPN transistor, 1000 mW	SCC-5203- 010	SCC B	71	Y	N	PPL / ATP 24-09
12	3N163		TO-72	SIL/U S	Mosfet transistor			30			in cryo mechanism @ 4K
12	2N4392		TO-18	SIL/U S	FET transistor		class S	14			
12	TIA front end (TBC)		TO-5	IRL/ US	preamplifier hybrid module		TBD	0 TBC	N		only for comments, self procurement if used in mechanism @ 4K
12	MB-1 bracket (TBC)			IRL/ US	bracket for TIA preamplifier		TBD	0 TBC	N		only for comments, self procurement if used in mechanism @ 4K



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SPIRE ***Declared Components List***

User Code: FSDRCC

06 December 2001

Edition: 11

Revision: 0

SAp-SPIRE-VM-0051-01

Prepared by :	Date :
V. Mauguen	
Checked by :	Date :
C. Cara	



SPIRE/DRCU Instrument Herschel Mission



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Document change record

Révision			Modifications
Issue - rev.	Date	Approved by	
0	23/08/00		Preliminary List, including capacitors, connectors, crystals, diodes, integrated circuits, resistors, wires & cables, and miscellaneous. No quantities.
1	18/09/00		<ul style="list-style-type: none">Quantities for parts types: OP400, PM139, HS303, HS508BRH, HS1840, ADC7809, DAC 7545, HS-26C31, HS-26C32, FPGA, resistors and MAT02.components eliminated: HS-508ARH (new version: B), wires & cables, and miscellaneous.
2	9/10/00		Parts type to be eliminated: resistors CMS type SMC3 (obsolete)
3	27/10/00		<ul style="list-style-type: none">Obsolete parts for space: OP27, OP297, OP497, OP482, AD580, AD7545GStandardisation proposals: LM124 (instead of OP400) , AD565ATD (instead of 7545ARP, AD584TH (instead of AD580 & REF-02), SEI7809LPRP (instead of ADS7809).
4	29/11/00		Components definitely eliminated: OP27, OP297, OP497, OP482, HS1840 (obsolete) and AD584TE-LCC20 (to be replaced by AD584TH-TO99), and ADS7809 (replaced by 7809LPRP.
5	16/01/01		<ul style="list-style-type: none">new quantities (<u>more actual</u>), and for all parts we are sure to use, <u>including attritions</u>.Components definitely eliminated: OP400AY-DIP14 & LM124 (no accepted by CEA), AD580TH (no need)New components: UT54LVDS031 (item 18), UT54LVDS032 (item 19)Type reduction accepted: RT54SX32S-1 CQ208E (instead of all FPGA types).



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6	02/01/01	<ul style="list-style-type: none"> • Components definitely eliminated: HS1840; AD584TH (replaced by REF02AL) ; AD565 (standardisation refused) & 1N5617 (replaced by 1N4148) • New components: 1N4148 (item 1), 54HC137 (item 20), 54HC164 (item 21), HS117RH (item 22). For these new parts types, the package is to be confirmed.
7	14/03/01	<ul style="list-style-type: none"> • a new colon “WIH” to identify cables/connectors for Warm Interbox Hardness (no crio harness). Today only connectors because cables not identified yet. • PM139: any need more (quantity: 0) • New connector type: HE801 144P • New colons for costing • Attrition for STM parts • Quantity identified for connectors accessories • Components eliminated of the list: ADS7809, OP400AY, AD584, AD589, old version of FPGAs.
8	14/06/01	<ul style="list-style-type: none"> • New components: capacitor KM-94 220nF(item 19), 54HC595 (item 23), OP215 (item 24) • Quantities have changed for: UT54LVDS032, HS-508RH, MAT-02, HS-033RH, SEI7809, 26C31, 26C32, AMP02, 1N4148, 2N2222A, 2N2907A, 7545ARP • Components eliminated of the list:PM139 • Components self-procured: OP400, DAC8800, REF02AL (only for QM) and OP15AL (only for QM) because don't exist in FP & QM quality level
9	23/07/01	<ul style="list-style-type: none"> • new components: CMS1206 100nF (item 21) to replace CMS1210, CHPHR0505 10R (item 62), 1R (item 70), diode 1N6642, PHR0603 143K (item 72), 17K (item 73), 29K (item 74), 475R (item 75), 51.1K & 6.65K, CHPHR0805 1K (item 77), PHR0603 4K (item 78), fifo 16K*9 FP28 ref: 672061EV-15 • Quantities have changed for: CHPP0603 200R (item 24), CHP0805 470pF, 47pF, CEC 47nF (item 10), KM94-1 220nF, OP400, TAJC 10µF 16V, HS508BRH, SEI7809LPRP, CMS1210 100nF, UT54LVDS031, OP215, TAJC 10µF 16v, REF02AL, CHPHR0805 100R & 10K, PHR0603 4.99K, CHPHR0805 200R



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9	04/09/01	1	<ul style="list-style-type: none"> new components: OP15AL & AMP01 (parts types existing in PACS's list FPBOLC) quantities have changed for SEI 7545
10	23/10/01		<ul style="list-style-type: none"> new components: 54HC14 , MMDP-65656GV-40sB quantities have changed for AD590 parts eliminated: T1507 16MHz & 20MHz to replace by T807 20MHz correction of Part Number for SMDP-67206 modification for attrition rules (only for CHIP capacitors and resistors)
11	06/12/01		<ul style="list-style-type: none"> new components: <ul style="list-style-type: none"> Capacitor CMS 0805 T1 1,5nF (item 5) HE801 connectors: KNB0965510110 (item 10), KNB0964430121 (item 11), KNC1605510110 (item 14) & KNC1604430121 (item 15) - savers: KNB096 44 91 944 (item 24) & KNC160 44 91 944 (item 26) quartz 10 MHz T807 resistors: RLR07/2H4 1R (item 37) Chip CMS P0603 type P(0,01%) 9K76 (item 38), 13K3 (item 39), 17K4 (item 40), 18K2 (item 41), 27K4 (item 42), 61K (item 43), 90K9 (item 44), 95K3 (item 45), 97K6 (item 46) , 102K (item 47) & 267R (item 48). relays: type TL, GP2 & EL210 parts to be eliminated: <ul style="list-style-type: none"> quartz T1507 @ 11,0592 MHz (STC 3665) 3549_350100933B Chip CMS P0603 type P(0,01%): 200R (item 20), 475R (item 21), 6.65K (item 24), 8K (item 25), 16K9 (item 28), 28K7 (item 30), 65K (item 32), 143K (item 35) & 147K (item 36). CHPHR 0505: 10R2 (item 2), 10K (item 6). Capacitor CMS 0805 T1 470pF quantities have changed for: 2N2222, 2N5154, 1N5618, AD589, OP215, OP15, AD590 & HS508
			<ul style="list-style-type: none">



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I. Acronyms

ABCL	As Built Configuration List	MOC	Mission Operations Centre
AD	Applicable Document	MOS	Margin Of Safety
AO	Announcement of Opportunity	MRB	Material Review Board
API	Application Programming Interface	N/A	Not Applicable
AIT	Assembly Integration & Test after delivery	NCR	Non Conformance Report
AIV	Assembly Integration & Verification before delivery	OAT	Osservatorio Astronomico di Trieste
AVM	Avionics Model	OBDH	On Board Data Handling
BOL	Begin Of Life	OGS	Operational Ground Segment
CC	Configuration Control	PA	Product Assurance
CCS	Central Checkout System	PDF	Portable Document Format (Adobe Acrobat)
CIDL	Configuration Item Data List	PFM	Proto-Flight Model
CEA	Commissariat à l'Énergie Atomique	PGSE	Pneumatic Ground Support Equipment
CMB	Cosmic Microwave background	PI	Principal Investigator
Co-I	Co-Investigator	PLM	Payload Module
COTS	Commercial Off The Shelf Software	PM	Project Manager
CQM	Cryogenic Qualification Model	PO	Parts Order
DMS	Document Management System	PR	Public Relations
DPC	Data Processing Centres	PS	Project Scientist
DPCM	Data Processing Centres Manager	PSF	Point-Spread-Function
EGSE	Electric Ground Support Equipment	QA	Quality Assurance
EOL	End Of Life	QLA	Quick Look Analysis
EP	Entrance Pupil	RAL	Rutherford Appleton Laboratory
ESA	European Space Agency	RD	Reference Document
ESOC	European Space Operations Centre	RFW	Request For Waiver
ESTEC	European Space Technology and Research Centre	RH	Relative Humidity
FINDAS	FIRST Integrated Network And Data Archive System	RMS	Root Mean Square
FIRST	Far InfraRed and Sub-millimetre Telescope	RTA	Real Time Analysis
FOV	Field-Of-View	S/C	Spacecraft
FPA	Focal Plane Assembly	SAMBA	Satellite for Measurement of Background Anisotropies
FPU	Focal Plane Unit	SAp	Service d'Astrophysique
FS	Flight Spares	SCMP	Software Configuration Management Plan
HK	House-Keeping	SE	System Engineer
HTML	Hyper Text Mark-up Language	SIP	Science Implementation Plan
HTTP	Hyper Text Transport Protocol	SPIRE	S
H/W	Hardware	SPMP	Software Project Management Plan
ICD	Interface Control Document	SQAP	Software Quality Assurance Plan
IDIS	Integrated Data and Information System	SRR	Software Requirements Review
IDIS-DT	IDIS Development Team	SS	Survey Scientist
IDIS-MT	IDIS Management Team	SSD	Space Science Department (ESTEC)
IID-A	Instrument Interface Document, Part A	S/W	Software
IID-B	Instrument Interface Document, Part B	TBC	To Be Confirmed
IS	Instrument Scientist	TBD	To Be Determined
LAM	Laboratoire d'Astrophysique de Marseille	TBN	To Be Nominated
LAN	Local Area Network	TBW	To Be Written
LEOP	Launch & Early Orbit Phase	TC	Tele-Command
LM	Local Manager	TM	TeleMetry
LOS	Line Of Sight	TRB	Test Review Board
MGSE	Mechanic Ground Support Equipment	URD	User Requirements Document
		WFE	Wave Front Error
		WWW	World Wide Web



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Ref : SAp-SPIRE-VM-0051-01
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Revision : 0

1. INTRODUCTION

1.1 Purpose and scope

This document provides a list of the electrical components which would be used in the flight model of the DRCU system (DCU & SCU).

The harness connectors are not included in this list, only savers on warm electronics and cryogenics connectors are included.

1.2 Documents

1.2.1 Applicable Documents

1.2.2 Reference Documents

- [RD1] ESA/SCC QUALIFIED PARTS LIST (15-01-00)
- [RD2] EUROPEAN PREFERRED PARTS LIST (15-02-00)
- [RD3] CNES / QFT / IN0500 Liste préférentielle des composants
- [RD4] FIRST/Planck Preferred Part List ref. : FP-TLG-LI-0001 (07-06-2000)



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2. LEGEND OF LIST COLUMNES

Generic Name : Part Name

Manuf : Manufacturer

Pkg. : Preferred Package / Housing

Part Description : Details / Features of the component

Radiation Harness : Radiation marker

FLT Part Type: Flight Part Type

Preferred Proc-Spec : Preferred Procurement Specification

Level : Required Quality Level

LAT: Lot Acceptance Tests

FM parts : Quantity for Flight Model

FS parts : Quantity for Flight Spare

Needs CEA : Total quantity (PFM + FS)

Attr parts : Attrition quantity

PO : Total quantity for order (Needs CEA + Attr)

3. RADIATION CONSTRAINTS

3.1 Abbreviations

TD : Total Dose effects

SEE : Single Event Effect

SEU : Single Event Upset

SEL : Single Event Latch up (Soft error due to heavy ions)



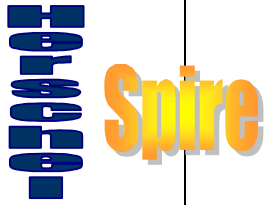
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4. LIST OF COMPONENT MANUFACTURERS

Code	Country	Manufacturer	Address / Seller
TBD		To Be Defined	
ACTEL	USA	Actel Corporation	
AD	USA	Analog Devices	1500 Space Park Drive CA 95052 Santa Clara USA Tel /Fax: 1(0)408 5627408/526 www.analog.com
ATMEL	USA	Atmel	
BB	USA	Burr Brown	
CAN	F	ITT Cannon	BP 359 Av; du Mal deLattre de Tassigny F-39105 DOLE Cedex Tel/Fax: 33(1)84729469/9593 www.ittcannon.com
CEPE	F	CEPE	C-MAC France 44, avenue de la Glacière BP165 F-95100 ARGENTEUIL Tel/Fax : 33(0)139983633/50 Cepe.com@hol.fr
EFD	F	Eurofarad	23, rue Jeanne d' Arc F-77400 LAGNY Te/Fax : 33(0)160317000/64305063 www.eurofarad.com
FCI	France	Framatome Connector International	3, rue de Vallon Hameau d'activités n°2 F-91550 Marolles-en-brie Tel/Fax: 33(0)145107844/40 www.fciconnect.com
FRB		Hypertac S.A.	31, rue Isidore Maille F-76410 St Aubin Les Elboeufs Tel/Fax: 33(0)232969176/70 www.frb-connectron.com Frb.connectron.ama@wanadoo.fr
HARRIS	USA	HARRIS	INTERSIL 2401 Palm Bay Road, N.E. FL 32905 Palm Bay USA Tel/Fax: 1(0)407 7279207/95361 www.semi.harris.com



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HON	USA	Honeywell	12001 State Highway 55 MN 55441 PLYMOUTH USA Tel/Fax: 1(0)6129542888/257 www.honeywell.com
LCC	GB	LCC/AVX LTD	Long Road 7Q4 7ER Paignton Devon England Tel/fax : 44(0)1803528046/6223 www.avxcorp.com
LM	USA	Lockheed Martin	
LT	USA	Linear Technology	Mac Carthy Boulevard CA 95035 MILPITAS USA Tel/Fax: 1(0)4084321900/40507 www.linear-tech.com
MAXIM	USA	Maxim	
	USA	Microsemi	2830 S. Fairview Street PO Box 26890 CA 92704 Santa Anna Tel/Fax: 1(0)7149798220/5575989 www.microsemi.com
NS	USA	National Semiconductor	2900 Semiconductor Drive PO Box 58090 CA 95052 Santa Clara Tel/Fax: 1(0)4087215000/399803 www.national.com
SEI	USA	Space Electronic Inc.	REP' FRANCE
SFR	F	Sfernice	
TEMIC	F	Temec, Matra Harris	NANTES
TI	USA	Texas Instruments - Unitrode	7 Continental Boulevard NH 03054 MERRIMACK USA Tel/Fax: 1(0)034242410/3460 www.unitrode.com
VIS	F	Vishay S.A. division Sfernice	199, Bld de la Madeleine BP 1159 F-06003 NICE Cedex 1 Tel/fax: 33(0)493372727/26
VIT	F	Vitramon	



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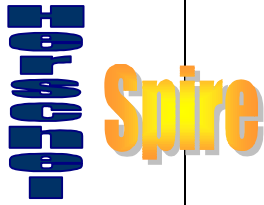
5. GENERAL ATTRITION RULES FOR FLIGHT AND SPARE MODELS

The following table shows the attrition quantities to be applied for parts families. For high cost semiconductor parts, the attrition quantities will be done case by case in the next chapter.

Net Quantity	Chip Capacitors and resistors	Other resistors, capacitors and filters	Semiconductors, relays and connectors with fixed contacts	Connectors bodies, saver bodies and crystals
1 - 5	+10	+4	+3	+2
6 - 8	+10	+5	+4	+2
9 - 15	+10	+6	+5	+3
16 - 25	+15	+7	+6	+4
26 - 40	+20	+10	+8	+5
41 - 60	+20	+13	+10	+6
61 - 100	+25	+17	+15	+10%
101 - 150	+25	+25	+20	+10%
151 - 250	+35	+37	+28	+10%
>= 251	+15%	+15%	+11%	+10%

6. SPECIAL ATTRITION RULES FOR HIGH COST SEMICONDUCTOR PARTS

High cost parts	Net Quantity : 1 - 5	Net Quantity : >5
PROM	+100%	+100%
FPGA RT54SX32S	+2	+4



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7. LIST OF PARTS

7.1 Family Codes

Family Code	Group Code	Family	
01	01	Capacitors	Ceramic
	02	Capacitors	Ceramic Chip
	03	Capacitors	Tantalum Solid
02	01	Connectors	Circular
	02		Rectangular
	03		Printed Circuit Board
	07		Microminiature
03	01	Piezo-Electric Devices	Crystal Resonator
	99		Miscellaneous
04	01	Diodes	Switching
	02		Rectifier
	03		Voltage Regulator
	04		Voltage Reference
07	01	Inductors	RF Coils
	02		Cores
	03		Chip
08	10	Microcircuits	Microprocess/Microcontrol/
	20		Memory SRAM
	21		Memory DRAM
	22		Memory PROM
	23		Memory EPROM
	24		Memory EEPROM
	29		Memory Others
	30		Programmable Logic
	40		ASIC Technologies Digital
			ASIC Technologies Linear
			ASIC Technologies Mixed
		Linear Sample & Hold Amplifier	
	99		Miscellaneous

* obsolete part for space, proposal (x) new components/last list																										
<i>in italic: type proposal by Technologica, but not acceptable by CEA</i>																										
Item N°	Family Code	Group Code	GENERIC NAME	comments	FLT Part Type	FLT Generic Spec	FLT Detail Spec	Level	evaluation	upscreening	Lat	Rad	FLT Description	Status	Manuf	Pkg	Attr.	Needs CEA	LLI	Total Need	PO	Self procure d	FM parts	FS parts		
												Tol											9 LIA-P	2 LIA-P		
																							3LIA-S	LIA-S		
																							2 BIAS	BIAS		
																							2 DAC	DAC-F		
																							1 BP	BP		
																							TEMP	TEMP		
																							2 CK-UF	CK-UF		
																							BP	BP		
																							distrib	distrib		
Capacitors																										
CMS 0805 T1 (NPO) 1% 30ppm																										
1	1-		33 pF, 25 V		A612CC 0330F NC 300900306C33C0FA	ESA/SCC 3009	ESA/SCC 3009/003	C					Capacitors, Ceramic, Fixed, Chip, Type I (dielectric:COG-NPO)	EPPL	TPC	805	25	93	N	118			62	31		
2	1-		47 pF, 25 V		A612CC 0470F NC 300900306C47C0FA	ESA/SCC 3009	ESA/SCC 3009/003	C					Capacitors, Ceramic, Fixed, Chip, Type I (dielectric:COG-NPO)	EPPL	TPC	805	67.2	448	N	515			360	88		
4	1-		470 pF, 25 V		A612CC 0471F NC 300900306C4700FA	ESA/SCC 3009	ESA/SCC 3009/003	e					Capacitors, Ceramic, Fixed, Chip, Type I (dielectric:COG-NPO)	EPPL	TPC	805	134.4	896	N	4030			720	176		
*	5	1-	1,5nF		A612CC 0152F NC 300900306C15C2FA	ESA/SCC 3009	ESA/SCC 3009/003	C					Capacitors, Ceramic, Fixed, Chip, Type I (dielectric:COG-NPO)	EPPL	TPC	805	134.4	896	N	1030			720	176		
CMS 1206 T2 10% ou 20%																										
21	1-		100nF, 50v,10%		A620ZD0104K NC 300900306C104KC	according to ESA/SCC 3009	ESA/SCC 3009/023	C					Capacitors, Ceramic, Fixed, Chip, Type II, terminaisons Ni barrier	EPPL	TPC	1206	575.4	3836	N	4411			2973	863		
CMS 1210 T2 (BX) 10%																										
20	1-		10 nF, 50 100 V		A613GE 0103K NC 3009 009 06 C 103KE	ESA/SCC 3009	ESA/SCC 3009/009	C					Capacitors, Ceramic, Fixed, Chip, Type II (dielectric BX/2C1), terminaisons Ni barrier	EPPL/ QPL ESA	TPC	1210	25	90	N	115			60	30		
CMS 2220 T1 (NPO) 1% 30ppm																										
9	1-		15 nF, 25 V		A615CC 0153F NC 300900606C153FA	ESA/SCC 3009	ESA/SCC 3009/011	C					Capacitors, Ceramic, Fixed, Chip, Type I (dielectric:COG-NPO)	EPPL	TPC	2220	10	12	N	22			8	4		
CEC class1 30ppm 1% 25V																										
10	1-		47 nF, 25 V		CEC W PS 47nF 1% 25V		ESA/SCC C + LAT 2						Low voltage ceramic chip capacitors, class I (dielectric:COG-NPO)	?	Eurofarad	2528	67.2	448	N	515			360	88		
KM94-1 1%																										

* <i>obsolete part for space, proposal (x)</i> new components/last lis																								
<i>in italic: type proposal by Technologica, but not acceptable by CEA</i>																								
Item N°	Family Code	Group Code	GENERIC NAME	comments	FLT Part Type	FLT Generic Spec	FLT Detail Spec	Level	evaluation	upscreening	Lat.	Rad	FLT Description	Status	Manuf	Pkg	Attr.	Needs CEA	LLI	Total Need	PO	Self procure d	FM parts	FS parts
												Tol											9 LIA-P	2 LIA-P
																							3LIA-S	LIA-S
																							2 BIAS	BIAS
																							2 DAC	DAC-F
																							1 BP	BP
																							TEMP	TEMP
																							2 CK-UF	CK-UF
																							BP	BP
																							distrib	distrib
19	1-		220 nF, 40 V		KM94 S1 220nF 1% 40V								Metallized Polycarbonate Capacitors		Eurofarad	3218	297.6	1984	N	2282			1584	400
			TAJ 10%																					
13	1-		2,2uF 6,3V		TAJ A 225K 006	ESA/SCC 3012	ESA/SCC 3012/001-011C						Capacitors, leadless surface mounted, tantalum, solid electrolyte, enclosed anode connection	EPPL	TPC	SMD size A	20	42	N	62			28	14
15	1-		10uF, 16V		TAJ C 106K 016	ESA/SCC 3012	ESA/SCC 3012/001-013C						Capacitors, leadless surface mounted, tantalum, solid electrolyte, enclosed anode connection	EPPL	TPC	SMD size C	25	129	N	154			97	32
Connectors																								
1	2-		DBMA 25P		3401 002 B DBMA 25P NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-01	B					D Subminiature Rectangular Connector without contacts	QPL ESA	CAN/F		5	28	P	33			14	14
2	2-		DBMA 25S		3401 002 B DBMA 25S NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-01	B					D Subminiature Rectangular Connector without contacts	QPL ESA	CAN/F		5	33	P	38			18	15
3	2-		DCMA 37S		3401 002 B DCMA 37S NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-01	B					D Subminiature Rectangular Connector without contacts	QPL ESA	CAN/F		2	6	P	8			4	2
4	2-		DBMA 44 S		3401 002 B DBMA 44S NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-02	B					D Subminiature Rectangular High Density Crimp Contact CableConnector	QPL ESA	CAN/F		2	3	P	5			2	1
5	2-		DDMA50P		3401 002 B DDMA 50P NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-01	B					D Subminiature Rectangular Connector without contacts	QPL ESA	CAN/F		5	30	P	35			24	6
6	2-		DCMA 62S		3401 002 B DCMA 62S NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-02	B					D Subminiature Rectangular High density Crimp Contact CableConnector	QPL ESA	CAN/F		2	6	P	8			4	2
7	2-		DDMA 78 S		3401 002 B DDMA 78S NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-02	B					D Subminiature Rectangular High density Crimp Contact CableConnector	QPL ESA	CAN/F		2	3	P	5			2	1
8	2-		HE 801 65 P/MC		3401 016 01 B 05 MC 343 00 343 KNB 065 13 55 110	ESA/SCC 3401	ESA/SCC 3401/016	B					HE 801 PCB Connector, Plug 2 rows equipped with 65 solder 90° male contacts	QPL ESA	HYP/G		4	18	N	22			14	4
9	2-		HE 801 65 E/FD		3401 016 01 B 17 FD 36 00 36 KNB 065 44 30 121	ESA/SCC 3401	ESA/SCC 3401/016	B					HE 801 PCB Connector, Receptacle 2 rows equipped with 65 solder straight-through female contacts	QPL ESA	HYP/G		5	28	N	33			14	14
*	10	2-	HE 801 96 P/MC		3401 016 01B 08 MC 33 00 33 KNB 096 55 10 110	ESA/SCC 3401	ESA/SCC 3401/016	B					HE 801 PCB Connector, Plug 2 rows equipped with 96 solder 90° male contacts	QPL ESA	HYP/G		5	3	N	8			2	1

SPIRE Declared Components List Ed11

Flight Models

SPIRE / Herschel CEA Saclay, User Code: FSDRCC

* <i>obsolete part for space, proposal (x)</i> new components/last lis																									
<i>in italic: type proposal by Technologica, but not acceptable by CEA</i>																									
Item N°	Family Code	Group Code	GENERIC NAME	comments	FLT Part Type	FLT Generic Spec	FLT Detail Spec	Level	evaluation	upscreening	Lat	Rad	FLT Description	Status	Manuf	Pkg	Attr.	Needs CEA	LLI	Total Need	PO	Self procure d	FM parts	FS parts	
												Tol												9 LIA_P	2 LIA-P
																								3LIA-S	LIA-S
																								2 BIAS	BIAS
																								2 DAC	DAC-F
																								1 BP	BP
																								TEMP	TEMP
																								2 CK-UF	CK-UF
																								BP	BP
																								distrib	distrib
*	11	2-	HE 801 96 E/FD		3401 016 01B 17 FD 36 00 36 KNB 096 44 30 121	ESA/SCC 3401	ESA/SCC 3401/016	B					HE 801 PCB Connector, Receptacle 2 rows equipped with 96 solder straight-through female contacts	QPL ESA	HYP/G		5	4	N	9				2	2
	12	2-	HE808 144 P/MC		3401 039 01B 144 55 10 110 KMC 144 55 10 110	ESA/SCC 3401	ESA/SCC 3401/039	B					HE 808 High Density PCB Connector, Plug 3 rows equipped with 144 solder 90° male contacts	QPL ESA	HYP/G		2	3	N	5				2	1
	13	2-	HE808 144 E/FD		3401 39 01B 144 44 30 121 KMC 144 44 30 121	ESA/SCC 3401	ESA/SCC 3401/039	B					HE 808 High Density PCB Connector, Receptacle 3 rows equipped with 144 solder straight-through female contacts	QPL ESA	HYP/G		2	4	N	6				2	2
*	14	2-	HE 801 160 P/MC		3401 016 01B 12 MC 34 00 34 KNC 160 55 10 110	ESA/SCC 3401	ESA/SCC 3401/016	B					HE 801 PCB Connector, Plug 2 rows equipped with 96 solder 90° male contacts	QPL ESA	HYP/G		3	5	N	8				3	2
*	15	2-	HE 801 160 E/FD		3401 016 01B 24 MC 36 00 36 KNC 160 44 30 121	ESA/SCC 3401	ESA/SCC 3401/016	B					HE 801 PCB Connector, Receptacle 2 rows equipped with 96 solder straight-through female contacts	QPL ESA	HYP/G		4	8	N	12				4	4
			Contact																						
		2-	2020 Pin		PIN 3401-005-01B	ESA/SCC 3401	ESA/SCC 3401/005 01B	B					Male Contact crimp for D*MA connectors, AWG 20,22 &24	QPL ESA	CAN/F		375	2200	P	2575				1550	650
		2-	2020 Socket		SOCK 3401-005-02B	ESA/SCC 3401	ESA/SCC 3401/005 02B	B					Female Contact crimp for D*MA connectors, AWG 20,22 &24	QPL ESA	CAN/F		199	1047	P	1246				598	449
		2-	2020 Pin/Socket		PIN SOCKET 3401-021-01B	ESA/SCC 3401	ESA/SCC 3401/021 01B	B					Male/Female Contact crimp for D*MA connectors savers	QPL ESA	CAN/F		792	3985	P	4777				2640	1345
		2-	2026 Pin		PIN 3401-005-03B	ESA/SCC 3401	ESA/SCC 3401/005 03B	B					Male Contact crimp for D*MA connectors, AWG 26&28	QPL ESA	CAN/F		375	2200	P	2575				1550	650
		2-	2026 socket		SOCK 3401-005-04B	ESA/SCC 3401	ESA/SCC 3401/005 04B	B					Female Contact crimp for D*MA connectors, AWG 26 & 28	QPL ESA	CAN/F		199	1047	P	1246				598	449
		2-	2222 socket		SOCK 3401-005-08B	ESA/SCC 3401	ESA/SCC 3401/005 08B	B					Female Contact crimp for D*MA connectors, AWG 22, 24 & 26	QPL ESA	CAN/F		280	606	P	886				404	202
			Screw-lock																						
		2-	Male DB, DC		D 20419-48 NMB	ESA/SCC 3401	ESA/SCC 3401/022 03B	B					Screw-lock male	QPL ESA	CAN/F		10	56	P	66				28	28
		2-	female		3401 022 01 B NMB	ESA/SCC 3401	ESA/SCC 3401/022 01B	B					Screw-lock female	QPL ESA	CAN/F		26	102	P	128				60	42
		2-	Screw-lock saver DMA		3401 022 06 B NMB D20418-7	ESA/SCC 3401	ESA/SCC 3401/022 06B	B					Srew-lock for DMA savers	QPL ESA	CAN/F		34	218	P	252				136	82

* obsolete part for space, proposal (x)		new components/last lis		<i>In italic: type proposal by Technologica, but not acceptable by CEA</i>												Total Need	PO	Self procure d	FM parts	FS parts						
Item N°	Family Code	Group Code	GENERIC NAME	comments	FLT Part Type	FLT Generic Spec	FLT Detail Spec	Level	evaluation	upscreening	Lat.	Rad	FLT Description	Status	Manuf	Pkg	Attr.	Needs CEA	LLI			9 LIA_P	2 LIA-P			
																							20		16	
																							14		14	
																							8		4	
																							2		1	
																							24		6	
																							12		9	
																							4		2	
																							2		1	
																							28		18	
																							4		3	
																							7		3	
																							6		13	
																							4		3	
																							7		9	
																							6		19	
																							4		6	
Dust Caps																										
2-			DB 59-20 (socket)	var 11	3401 022 11B	ESA/SCC 3401	ESA/SCC 3401/022 11B	B					Dust Cap for female connector, size B	CAN/F			7	36	P							
2-			DB 60-20 (pin)	var 12	3401 022 12B	ESA/SCC 3401	ESA/SCC 3401/022 12B	B					Dust Cap for male connector, size B	CAN/F			5	28	P							
2-			DC 59-20 (socket)	var 13	3401 022 13B	ESA/SCC 3401	ESA/SCC 3401/022 13B	B					Dust Cap for female connector, size C	CAN/F			4	12	P							
2-			DD 59-20 (socket)	var 15	3401 022 15B	ESA/SCC 3401	ESA/SCC 3401/022 15B	B					Dust Cap for female connector, size D	CAN/F			2	3	P							
2-			DD 60-20 (pin)	var 16	3401 022 16B	ESA/SCC 3401	ESA/SCC 3401/022 16B	B					Dust Cap for male connector, size D	CAN/F			5	30	P							
Savers																										
17	2-		DBBMA 25 PS FO		3401 020 01 B DBBMA 25 PS NMB F	ESA/SCC 3401	ESA/SCC 3401/020	B					D*MA Saver 25 PS With contacts	QPL ESA	CAN/F		4	21	P							
18	2-		DCBMA 37 PS FO		3401 020 01 B DCBMA 37 PS NMB F	ESA/SCC 3401	ESA/SCC 3401/020	B					D*MA Saver 37 PS With contacts	QPL ESA	CAN/F		2	6	P							
19	2-		DBBMA 44 PS FO		3401 020 01 B DBBMA 44 PS NMB F	ESA/SCC 3401	ESA/SCC 3401/020	B					D*MA Saver 37 PS With contacts	QPL ESA	CAN/F		2	3	P							
20	2-		DDBMA 50 PS FO		3401 020 01 B DDBMA 50 PS NMB F	ESA/SCC 3401	ESA/SCC 3401/020	B					D*MA Saver 50 PS With contacts	QPL ESA	CAN/F		5	30	P							
21	2-		DCBMA 62 PS FO		3401 020 01 B DCBMA 62 PS NMB F	ESA/SCC 3401	ESA/SCC 3401/020	B					D*MA Saver 50 PS With contacts	QPL ESA	CAN/F		2	6	P							
22	2-		DDBMA 78 PS FO		3401 020 01 B DDBMA 78 PS NMB F	ESA/SCC 3401	ESA/SCC 3401/020	B					D*MA Saver 50 PS With contacts	QPL ESA	CAN/F		2	3	P							
23	2-		HE801 65 saver		3401 016 01 B 17 FM 00 00 00 KNB065 44 91 944	ESA/SCC 3401	ESA/SCC 3401/016	B					HE801 Saver equipped with 65 female-male contacts	QPL ESA	FRB/F		6	46	N							
* 24	2-		HE801 96 saver		3401 016 01 B 20 FM 00 00 00 KNB096 44 91 944	ESA/SCC 3401	ESA/SCC 3401/016	B					HE801 Saver equipped with 96 female-male contacts	QPL ESA	FRB/F		6	7	N							
25	2-		HE808 144 saver		3401 039 01B 144 44 91 744 KMC 144 44 91 703	ESA/SCC 3401	ESA/SCC 3401/039	B					HE 808 High Density Saver equipped with 144 solder male/female contacts	QPL ESA	HYP/G		2	7	N							
* 26	2-		HE801 160 saver		3401 016 01 B 24 FM 00 00 00 KNC160 44 91 944	ESA/SCC 3401	ESA/SCC 3401/016	B					HE801 Saver equipped with 160 female-male contacts	QPL ESA	FRB/F		6	13	N							
Crystals																										

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Item N°	Family Code	Group Code	GENERIC NAME	comments	FLT Part Type	FLT Generic Spec	FLT Detail Spec	Level	evaluation	upstreaming	Lat	Rad	FLT Description	Status	Manuf	Pkg	Attr.	Needs CEA	LLI	Total Need	PO	Self procure d	FM parts	FS parts		
												Tol											9 LIA_P	2 LIA-P		
																							3LIA-S	LIA-S		
																							2 BIAS	BIAS		
																							2 DAC	DAC-F		
																							1 BP	BP		
																							TEMP	TEMP		
																							2 CK-UF	CK-UF		
																							BP	BP		
																							distrib	distrib		
	3-		T807 20 MHz STC 3342		STC 3342 variante 42	ESA/SCC 3501	ESA/SCC 3501/008	B					Cristal units in metal holder based on type 807	QPL ESA EPPL	CEP/F	TO 807		3	3	N	6			2	1	
*	3-		T807 10 MHz STC 3342			ESA/SCC 3501	ESA/SCC 3501/008	B					Cristal units in metal holder based on type 807	QPL ESA EPPL	CEP/F	TO 807		3	6	N	9			4	2	
	3-		T1507 11,0592 MHz		T1507 @ 11.0592 MHz (STC 3665) 3549_350100933B	ESA/SCC 3501	ESA/SCC 3501/009	B					Cristal units in metal holder based on type 1507	QPL ESA EPPL	CEP/F	TO 8		0	0	N	0			0	0	
Diodes																										
3			1N5617		JANS 1N5617	MIL-PRF-19500	MIL-PRF-19500/429	S					Silicon, Power Rectifier, Fast Recovery	QPL ESA EPPL	MSC/U	MelfA		29.92	272	NC	302			136	136	
1			1N4148		1N4148-1	ESA/SCC 5101	ESA/SCC 5101/023-02B	B					High Speed Silicon Diode	QPL ESA	MSC/U	DO35		15	90	N	105			60	30	
2			1N6642		JANS1N6642U									QPL ESA	MSC/U	MELF		99	900	N	999			722	178	
Inductors																										
Integrated circuits monolithic																										
Amplifiers																										
1	8-		OP 400 A	Type reduction (1c)	OP400 ATC/QML V	MIL-I-38535	5962-87771 01V3A	V					Quad Low-Offset, Low-Power Operational Amplifier	QML3853 5	AND/U	LCC28		93.06	846	N	939	Y		660	186	
24	8-		OP 215		OP215AZ/QML V	MIL-PRF-38535	5962-88538 01VPA	V			100K rad		DUAL Precision JFET INPUT Operational Amplifier	QML3853 5	AND/U	CerDIP 8		6	21	N	27			14	7	
26	8-		OP15		OP15AL/QMLR	MIL-PRF-38535	5962R8954203VHA	V					OP AMP, JFET-INPUT, RAD-HARD	QML3853 5	AND/U	FP		5	15	N	20			10	5	

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												Tol											9 LIA_P	2 LIA-P
																							3LIA-S	LIA-S
																							2 BIAS	BIAS
																							2 DAC	DAC-F
																							1 BP	BP
																							TEMP	TEMP
																							2 CK-UF	CK-UF
																							BP	BP
																							distrib	distrib
Instrumentation Amplifier																								
25	8-		AMP02AZ		AMP02-903Z	ADS0011177	Built on a QML line but not covered on an SMD						High Accuracy Instrumentation Amplifier		AND/U	CerDIP8	15	72		87			48	24
27	8-		AMP01		AMP01N/QMLV	MIL-PRF-38535	5962-8863003VKA	v					Instrumentation Amplifier, low noise, precision	QML38535	AND/U	FP14	3	3		6			2	1
Mux																								
3	8-		HS 303 RH		HS9-303RH-QS 9000	MIL-PRF-38535	5962R9581301VXC	v			0,1M		Analog Switch, Dual, SPDT, Radiation Hardened CMOS	EPPL QML-38535	HAR/U	FP-14	28.93	263	N	292			206	57
4	8-		HS 508 BRH		HS9-508BRH-QS9000	MIL-PRF-38535	5962F9674202VXC	v			0,3M		single 8-Channel MUX, with Overvoltage Protection, Radiation Hardened DI CMOS	QML-38535	HAR/U	FP-16	28	153	N	181			110	43
S/Hold																								
HCMOS																								
32	8-		54HC14		54HC14	ESA/SCC 9409	ESA/SCC 9409/007	B					HCMOS Hex Schmitt Trigger Inverters	QPL ESA	STM/F	FP14	3	3		6			2	1
20	8-		54 HC 137	no more required	54HC137 K	ESA/SCC 9205	ESA/SCC 9205/13-02B	B			50k		HCMOS 3 to 8 line decoders/demultiplexers with address latches & inverted outputs	QPL ESA	STM/F	FP16	0	0		0			0	0
21	8-		54 HC 164		54 HC 164 K01(2)V	ESA/SCC 9306 MIL-PRF-38535	ESA/SCC 9306/041 5962-8416201VXA(C)	B V			50k		HCMOS 8 bit sipo shift regiser	EPPL QML	STM/F	FP14	4	6		10			4	2
23	8-		54 HC 595		54 HC 595K	ESA/SCC 9306	ESA/SCC 9306/051	B V			50k		HCMOS 8 bit shift regiser	QPL ESA	STM/F	FP10	8	40		48			30	10
Temp Sensor																								
28			AD590M		AD590MF/883B	883B	5962-87571 04MXA	v			tol to 50k		Microcircuit,linear, radiation hardened, Temperature Transducer, Two Terminals, monolithic silicon	EPPL QML-38535	AND/U	FP2A	10	44	N	54			33	11
Voltage Ref																								

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											Tol												9 LIA-P	2 LIA-P							
																							3LIA-S	LIA-S							
																							2 BIAS	BIAS							
																							2 DAC	DAC-F							
																							1 BP	BP							
																							TEMP	TEMP							
																							2 CK-UF	CK-UF							
																							BP	BP							
																							distrib	distrib							
29	8-		AD 589 TH		AD 589 TH/QMLV	MIL-PRF-38535	5962-8992901VXA	V				?	Two-Terminal IC 1.2V Reference	QML-38535	AND/U	CAN2	3	4	N	7			2	2							
6	8-		REF-02A	Type reduction (15a)	REF02AL	MIL-PRF-38535	5962-8551401VHA	V					Volt Reference +5V adjustable output, precision	QML-38535	AND/U	FP10	10	42	N	52			32	10							
			Regulator																												
22a	8-		HS-117RH	TBC	HS9S-117RH-Q	MIL-PRF-35535	5962F9954701VXC	V				300K	Radiation Hardened Adjustable Positive Voltage Regulator	QML-35535	HAR/U	TO-257	4	9	N	13			6	3							
			RAM/SRAM																												
30	8-		67206		SMDP-67206FV-15SV	MIL-PRF-38535	5962-9317704VZC	V					FIFO MEMORY, 16K X 9 PARALLEL, LOW POWER, 15 NS	QML 38535	MHS/F	FP28	4	6		10			4	2							
31	8-		65656G		SMDP-65656GV-40SV	MIL-PRF-38535	QML-V	V					32K*8 Very Low Power CMOS SRAM Rad Tolerant (45nS)	QML 38535	MHS/F	FP28	3	3		6			2	1							
			ADC																												
7b	8-	4	SEI 7809LPRP				7809LPRP0901,99	K	Y			RE	A/D convertor, 16 bit serial, latch-protected	QML-38535	SEI	FP24	6	27	Y	33	30		18	9							
			DAC																												
8c	8-	4	7545A		7545ARP		7545ARP0610,99	S					CMOS 12-Bit Buffered Multiplying DAC	QML-38535	SEI/U	FP20	15	96	Y	111		Y	64	32							
8c	8-	4	7545A		7545ARP		7545ARP0610,99	S				RE	CMOS 12-Bit Buffered Multiplying DAC	QML-38535	SEI/U	FP20	10	45	Y	55	58	N	30	15							
			DAC8800		DAC880BR/883C	MIL-STD-883C							It was tested by JPL up to an LET of 80MeV*cm2/mg: no effects was seen. DUT lcc did not change, and	883B	AND/U	DIL20	5	9		14		Y	6	3							
			E/R diff																												
9	8-		HS-26C31RH		HS9-26C31RH-QS9000	MIL-PRF-38535	5962F9666301VXC	V				100K	Quad EIA RS422, Radiation Hardened CMOS, Differential Driver, with 3-State Output	QML-38535	HAR/U	FP16	5	10	N	15			6	4							

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																							3LIA-S	LIA-S		
																							2 BIAS	BIAS		
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																							1 BP	BP		
																							TEMP	TEMP		
																							2 CK-UF	CK-UF		
																							BP	BP		
																							distrib	distrib		
10	8-		HS-26C32RH		HS9-26C32RH -QS9000	MIL-PRF-38535	5962F9568901VXC	v				100K	Quad EIA RS422, Radiation Hardened CMOS, Differential Receiver, with 3-State Output	EPPL QML-38535	HAR/U	FP16		5	10	N	15			6	4	
18	8-		UT54LVDS031		UT54LVDS031	MIL-PRF-38535	5962R9583302VXC	v				1M	Quad CMOS Differential Line Driver, LVDS, Rad-Hard	QML-38535	NS	FP16		6	21	N	27			14	7	
19	8-		UT54LVDS032		UT54LVDS032	MIL-PRF-38535	5962R9583402VXC	v				300K	Quad CMOS Differential Line Receiver, LVDS	QML-38535	UTMC	FP16		15	66	N	81			52	14	
			FPGA																							
11c	8-		RT 54SX32S		RT54SX32S CQ208E	SA-0320-EYC	SMD + Mfr Amend					rt 75-100k	32000 Gates, SX-A Family, FPGA, RadTolerant and Hired	QML-38535	ACT/U	CQFP-208		4	12	N	16			10	2	
																						total without				
Resistors																										
RLR07/2H4 1% 100ppm 1/8W 200V																										
*	37		1R		2H4/RLR 07 1R	ESA/SCC 4001	ESA/SCC 4001/006-01	C					High Reliability, Resistor, Fixed, Film, non hermetically sealed based on type RLR07	EPPL	SFER			10	54		64			42	12	
CHP HR 0505 1/8W 2% 50V +/- 200 ppm																										
4	10-		1R		CHPHR 0505 1R00 F6 BE	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL	SFER	505		0	0	P	0			0	0	
CHP HR 0505 1/8W 1% 50V +/- 100 ppm																										
2	10-		10R2		CHPHR 0505 10R2 F4 BE	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL	SFER	505		25	112	P	137			90	22	
3	10-		100R	0505 TBD	CHPHR 0505 100R0 F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL	SFER	505		479.1	3194	P	3673			2562	632	
4	10-		1K		CHPHR 0505 1K F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505		71.7	478	N	550			384	94	
5	10-		5K	4.99K	CHPHR 0505 5K F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505		67.2	448	N	515			360	88	

SPIRE Declared Components List Ed11

Flight Models

SPIRE / Herschel CEA Saclay, User Code: FSDRCC

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												Tol												
6	10-		10K		CHPHR 0505 10K F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505	206.4	1374	N	1580			1104	270
7	10-		15K		CHPHR 0505 15K F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505	206.1	1374	N	1580			1104	270
8	10-		30K	30k1	CHPHR 0505 30K F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505	134.4	896	N	1030			720	176
9	10-		100K		CHPHR 0505 100K F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505	201.6	1344	N	1546			1080	264
10	10-		1Mo		CHPHR 0505 1Mo F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505	134.4	896	N	1030			720	176
CHP CMS 0805 1/5W 1% 75V +/-200 ppm																								
11	10-		10R		CHPHR 0805 K 1% R 10U	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	25	96	N	121			64	32
CHP CMS 0805 1/5W 1% 75V +/-100 ppm																								
12	10-		68R	68R1	CHPHR 0805 K 1% R 100U	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	25	75	N	100			50	25
13	10-		100R		CHPHR 0805 K 1% R 100U	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	92.7	618	N	711			412	206
14	10-		200R		CHPHR 0805 K 1% R 200U	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	25	96	N	121			64	32
15	10-		1K		CHPHR 0805 K 1% R 1K	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	20	36	N	56			24	12
16	10-		10K		CHPHR 0805 K 1% R 10K	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	25	144	N	169			96	48
17	10-		15K		CHPHR 0805 K 1% R 15K	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	10	6	N	16	20		4	2
18	10-		33,2K		CHPHR 0805 K 1% R 33K2	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	15	21	N	36			14	7
19	10-		100K		CHPHR 0805 K 1% R 100K	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	25	90	N	115			60	30
Chip CMS 0603 type P 0,01% +/-10 ppm 1/10W																								
20	10-		200R	251R	PHR 0603 Y2000LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistor, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	52.8	352	NC	405			288	64
48	10-		267R		PHR 0603 Y2670LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	121			72	24
24	10-		475R		PHR 0603 Y4750LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistor, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	424			72	24
22	10-		4K		PHR 0603 Y4001LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	15	18	NC	33			12	6

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Flight Models

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												Tol																										
23	10-		5K 4,99K		PHR 0603 Y4991LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	81	NC	106			54	27														
24	10-		6,65K		PHR 0603 Y6651LB	ESA/SCC 4001	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	424			72	24														
25	10-		8K		PHR 0603 Y8001LB	ESA/SCC 4001	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	52.8	352	NC	405			288	64														
*	38	10-	9K76		PHR 0603 Y9762LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	128	NC	153			96	32														
	26	10-	10K		PHR 0603 Y1002LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	301.4	2009	NC	2310			1607	402														
*	39	10-	13K3		PHR 0603 Y1332LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	52.8	352	NC	405			288	64														
	27	10-	15K		PHR 0603 Y1502LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	163.2	1088	NC	1251			864	224														
	28	10-	16K9		PHR 0603 Y1692LB	ESA/SCC 4001	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	424			72	24														
*	40	10-	17K4		PHR 0603 Y1742LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	35	192	NC	227			144	48														
*	41	10-	18K2		PHR 0603 Y1822LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	35	192	NC	227			144	48														
	29	10-	20K		PHR 0603 Y2002LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	10	12	NC	22			8	4														
	30	10-	28K7		PHR 0603 Y2872LB	ESA/SCC 4001	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	86.4	576	NC	662			432	144														
*	42	10-	27K4		PHR 0603 Y2742LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	121			72	24														
	31	10-	54K 51,1K		PHR 0603 Y5112LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	54.9	366	NC	421			252	114														
*	43	10-	61K		PHR 0603 Y6102LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	15	18	NC	33			12	6														
	32	10-	65K		PHR 0603 Y6502LB	ESA/SCC 4001	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	52.8	352	NC	405			288	64														
*	44	10-	90K9		PHR 0603 Y9532LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	105.6	704	NC	810			576	128														
*	45	10-	95K3		PHR 0603 Y9532LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	121			72	24														
*	46	10-	97K6		PHR 0603 Y9762LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	52.8	352	NC	405			288	64														

* <i>obsolete part for space, proposal (x)</i>																																		
* new components/last lis																																		
<i>in italic: type proposal by Technologica, but not acceptable by CEA</i>																																		
Item N°	Family Code	Group Code	GENERIC NAME	comments	FLT Part Type	FLT Generic Spec	FLT Detail Spec	Level	evaluation	upscreening	Lat	Rad	FLT Description	Status	Manuf	Pkg	Attr.	Needs CEA	LLI	Total Need	PO	Self procure d	FM parts	FS parts										
												Tol												9 LIA-P	2 LIA-P									
																								3LIA-S	LIA-S									
																								2 BIAS	BIAS									
																								2 DAC	DAC-F									
																								1 BP	BP									
																								TEMP	TEMP									
																								2 CK-UF	CK-UF									
																								BP	BP									
																								distrib	distrib									
* 47	10-		102K		PHR 0603 Y1023LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	105.6	704	NC	810				576	128									
35	10-		143K		PHR 0603 Y1433LB	ESA/SCC 4004	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	211.2	1408	NC	1619				1152	256									
36	10-		147K		PHR 0603 Y1473LB	ESA/SCC 4004	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	424				72	24									
Transistors																																		
1	12-	16	MAT02		MAT02-903H		in accordance with the "AND Standard Space Level products program" as QML-V equivalent part (MAT02-903H)	ADS0011413	S			RT 200K	Low Noise, Matched Dual Monolithic Transistor		AND	TO78	49.28	448	N	497				360	88									
	12-		2N2907A		2N2907A AHR 520200103B	ESA/SCC 5202	ESA/SCC 5202/001-02	B					Transistors, Low power, PNP	QPL ESA EPPL	STM/F	TO18	6	18		24				10	8									
	12-		2N5154		2N5154	ESA/SCC 5203	ESA/SCC 5203/010						Transistors, low & hight power, NPN	QPL ESA EPPL	STM/F	TO39 ou TO257	15	102		117				68	34									
	12-		2N2222A		2N2222A	ESA/SCC 5201	ESA/SCC 5201/002-02	B					Transistors, low power, NPN, switching	QPL ESA EPPL	STM/F	TO18	6	20		26				12	8									
Relays																																		

<i>obsolete part for space, proposal (x)</i>																								
<i>* new components/last list</i>																								
<i>in italic: type proposal by Tecnologica, but not acceptable by CEA</i>																								
Item N°	Family Code	Group Code	GENERIC NAME	comments	FLT Part Type	FLT Generic Spec	FLT Detail Spec	Level	evaluation	upstreaming	Lat	Rad	FLT Description	Status	Manuf	Pkg	Attr.	Needs CEA	LLI	Total Need	PO	Self-procured	FM parts	FS parts
												Tol												
																							9 LIA-P	2 LIA-P
																							3LIA-S	LIA-S
																							2 BIAS	BIAS
																							2 DAC	DAC-F
																							1 BP	BP
																							TEMP	TEMP
																							2 CK-LF	CK-LF
																							BP	BP
																							distrib	distrib
	9-	17	TL		TL 2PDT 1A 12V 500R 2ms	ESA/SCC 3602	ESA/SCC 3602/002						Relays, Electromagnetic, latching 28Vdc, 1A, 2PDT, TO5 CAN	OPL ESA EPPL	Deutsch	TO5		40		40			20	20
	9-	17	GP2		GP2 2PDT 2A 12V 180R 4ms	ESA/SCC 3602	ESA/SCC 3602/003-02	B					Relays, Electromagnetic, latching 28Vdc, 2A, 2PDT, half size crystal can	OPL ESA EPPL	Leach	Inter self-crystal		14		14			7	7
	9-	17	EL210		EL210 2PDT 10A 12V 60R 15ms	ESA/SCC 3602	ESA/SCC 3602/009-06	B					Relays, Electromagnetic, latching 28Vdc, 15A, 2PDT	OPL ESA EPPL	Deutsch	pure-ind		12		12			6	6
	9-	16	EL210			ESA/SCC 3601	ESA/SCC 3601/017						Relays, Electromagnetic, non latching 28Vdc, 15A, 2PDT	OPL ESA EPPL	Deutsch			12		12			6	6