







Spacecraft/Project:	HERSCHAL	Document No:	SPIRE RAL_PRJ 0001095		
Instrument/Model:	SPIRE	Issue No:	2	REV:	0
Subsystem:		Date:	15 <sup>th</sup> May 2003		

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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	DECLARED COMPONENTS LIST BSM	SPIRE-ATC-PRJ-000704 Iss1.2
CDF (QMW)		
CEA/SAp	DECLARED COMPONENTS LIST DRCU. SAp-SPIRE-VM-0098-14	SPIRE-SAP-DOC-001075 Iss 14
CEA/SBT		
CSA/USK	<b>Not Applicable</b>	
IFS (IFSI)	DECLARED COMPONENTS LIST DPU:- DCL + DML+ DPL	SPIRE-IFS-Doc-001031 Iss 1
JPL		
LAM (LAS)	DECLARED COMPONENTS LIST SMEC	SPIRE-LAM-DOC-000932 Iss 1.1
	DECLARED COMPONENTS LIST FTS	SPIRE-LAM-DOC-000920 Iss 08
MSSL	<b>Not Applicable</b>	



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<b>Subsystem:</b>		<b>Date:</b>	<b>15<sup>th</sup> May 2003</b>		

## 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**

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



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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	14	For 3 models plus spares <b>SOLDER BUCKET TYPE PREFERRED – BUT NOT LISTED IN 3401/029</b>
3401029 02 B 37S FR116	Micro-miniature rectangular connector (MDM type) with uninsulated solid wire terminations	14	For 3 models plus spares <b>SOLDER BUCKET TYPE PREFERRED – BUT NOT LISTED IN 3401/029</b>
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.





**SPIRE/DRCU Instrument  
Herschel Mission**



Ref: SAp-SPIRE-VM-0098-03  
Date : 10/02/2003  
Edition : 14  
Revision : 0

# ***SPIRE Declared Components List***

***User Code: FSDRCC***

***10 February 2003***

***Edition: 14***

***Revision: 0***

***SAp-SPIRE-VM-0098-03***

<b>Prepared by :</b>	<b>Date :</b>
<b>V. Mauguen</b>	
<b>Checked by :</b>	<b>Date :</b>
<b>C. Cara</b>	



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## Document change record

Révision			
Issue - rev.	Date	Approved by	Modifications
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"> <li>Quantities for parts types: OP400, PM139, HS303, HS508BRH, HS1840, ADC7809, DAC 7545, HS-26C31, HS-26C32, FPGA, resistors and MAT02.</li> <li>components eliminated: HS-508ARH (new version: B), wires &amp; cables, and miscellaneous.</li> </ul>
2	9/10/00		Parts type to be eliminated: resistors CMS type SMC3 (obsolete)
3	27/10/00		<ul style="list-style-type: none"> <li>Obsolete parts for space: OP27, OP297, OP497, OP482, AD580, AD7545G</li> <li>Standardisation proposals: LM124 (instead of OP400) , AD565ATD (instead of 7545ARP, AD584TH (instead of AD580 &amp; REF-02), SEI7809LPRP (instead of ADS7809).</li> </ul>
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"> <li>new quantities (<u>more actual</u>), and for all parts we are sure to use, <u>including attritions</u>.</li> <li>Components definitely eliminated: OP400AY-DIP14 &amp; LM124 (no accepted by CEA), AD580TH (no need)</li> <li>New components: UT54LVDS031 (item 18), UT54LVDS032 (item 19)</li> <li>Type reduction accepted: RT54SX32S-1 CQ208E (instead of all FPGA types).</li> </ul>



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



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9	04/09/01	1	<ul style="list-style-type: none"><li>• New components: <b>OP15AL &amp; AMP01</b> (parts types existing in PACS's list FPBOLC)</li><li>• Quantities have changed for <b>SEI 7545</b></li></ul>
10	23/10/01		<ul style="list-style-type: none"><li>• New components: <b>54HC14 , MMDP-65656GV-40sB</b></li><li>• Quantities have changed for <b>AD590</b></li><li>• Parts eliminated: <b>T1507 16MHz &amp; 20MHz</b> to replace by <b>T807 20MHz</b></li><li>• Correction of Part Number for SMDP-67206</li><li>• Modification for attrition rules (only for CHIP capacitors and resistors)</li></ul>
11	06/12/01		<ul style="list-style-type: none"><li>• New components:<ul style="list-style-type: none"><li>- Capacitor CMS 0805 T1 <b>1,5nF</b> (item 5)</li><li>- HE801connectors: <b>KNB0965510110</b> (item 10), <b>KNB0964430121</b> (item 11), <b>KNC1605510110</b> (item 14) &amp; <b>KNC1604430121</b> (item 15) - savers: <b>KNB096 44 91 944</b> (item 24) &amp; <b>KNC160 44 91 944</b> (item 26)</li><li>- <b>quartz 10 MHz T807</b></li><li>- resistors: <b>RLR07/2H4 1R</b> (item 37) Chip <b>CMS P0603</b> type P(0,01%) <b>9K76</b> (item 38), <b>13K3</b> (item 39), <b>17K4</b> (item 40), <b>18K2</b> (item 41), <b>27K4</b> (item 42), <b>61K</b> (item 43), <b>90K9</b> (item 44), <b>95K3</b> (item 45), <b>97K6</b> (item 46) , <b>102K</b> (item 47) &amp; <b>267R</b> (item 48).</li><li>- Relays: type <b>TL, GP2 &amp; EL210</b></li></ul></li><li>• Parts to be eliminated:<ul style="list-style-type: none"><li>- quartz T1507 @ 11,0592 MHz (STC 3665) 3549_350100933B</li><li>- 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) &amp; 147K (item 36).</li><li>- CHPHR 0505: 10R2 (item 2), 10K (item 6).</li><li>- Capacitor CMS 0805 T1 470pF</li></ul></li><li>• Quantities have changed for: 2N2222, 2N5154, 1N5618, AD589, OP215, OP15, AD590 &amp; HS508</li></ul>



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12	01/03/2002	<ul style="list-style-type: none"><li>• New components:<ul style="list-style-type: none"><li>- Resistor PHR0603 115R 0.02% (variant 01)</li><li>- Connectors DEMA9S, DAMA15S, DAMA15P, DDMA50S, DEBMA9PS, DABMA15PS &amp; DCDMA50PS</li><li>- OP484AM (item 33)</li></ul></li><li>• Quantities have changed for:<ul style="list-style-type: none"><li>- 1N4148, 1N6642, AD590MF, 2N2907A, 2N2222A, OP15, AMP01, REF02, HS303RH, SMDP67206.</li><li>- Capacitors CMS1206 100nF&amp;10nF, TAJ 16v 10% 10<math>\mu</math>F</li><li>- Resistors CHP0805 1% 10R,10K&amp;100K; PHR0603 0.01% 10K</li><li>- Connectors DBMA25S,DEBMA9PS-QM,DCBMA25PS, &amp; DDBMA50PS screw-lock, dust-caps..., HE801 160P, HE801 160S</li></ul></li><li>• Parts to be eliminated:<ul style="list-style-type: none"><li>- Connectors DBMA44S, DCMA62S (+ savers..)</li><li>- AD589, 1N5617</li></ul></li></ul>
13	23/05/02	<ul style="list-style-type: none"><li>• New components:<ul style="list-style-type: none"><li>- Transistors <b>2N2905A</b> (item 5)</li><li>- Resistor PHR0603 15K2 (instead of 15K17 not existing)</li><li>- IC <b>UC1834</b> (item 34)</li></ul></li><li>• Quantities have been changed for:<ul style="list-style-type: none"><li>- Transistors 2N2222A &amp; 2N2907A</li></ul></li></ul>



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14	10/02/2003	<ul style="list-style-type: none"><li>• <b>New components:</b><ul style="list-style-type: none"><li>- Capacitors 0805 NPO 33pF (item 21), 100pF (item 22), &amp; 220pF (item 23)</li><li>- Capacitors 1210 NPO 2.2nF (item 24) &amp; 4.7nF (item 25)</li><li>- Capacitors 1210 BX 1nF (item 26) &amp; 22nF (item 27)</li><li>- Capacitor 1812 BX 330nF (item 28)</li><li>- Capacitor 2220 BX 1<math>\mu</math>F (item 29)</li><li>- Capacitor TAJ 4.7<math>\mu</math>F (item 30)</li><li>- Diode 1N5615 (item 4)</li><li>- Inductance MSC1 series 20K 680<math>\mu</math>H (item 1)</li><li>- IC OP27A (item 35)</li><li>- IC 54AC14 (item 36)</li><li>- Resistors RLR07/2H4 10R (item 49)</li><li>- Resistors CHP0805 1% 22R1 (item 51), 47R5 (item 52) &amp; 1MR (item 53)</li><li>- Resistors PHR0603 0.01% 15K2 (item 56),</li><li>- Resistors PHR0805 0.01% (item 58 to 88)</li><li>- Resistor MS1 1% 5.11MR (item 90)</li><li>- Resistors RM2010 3M32 (item 91) &amp; 10M (item 92)</li><li>- Transistors 2N2219A (item 6), BUX77 (item 7) &amp; BUX78 (item 8)</li></ul></li><li>• <b>Parts to be eliminated:</b><ul style="list-style-type: none"><li>- IC AMP02AZ (item 25)</li><li>- IC 54HC14 (item 32) &amp; 54HC137 (item 20)</li></ul></li></ul>
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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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## 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 COLUMNS

**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)



**Spire**

# SPIRE/DRCU Instrument Herschel Mission

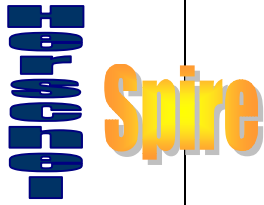


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## 4. LIST OF COMPONENT MANUFACTURERS

## 5. LIST OF COMPONENT MANUFACTURERS

Code	Country	Manufacturer	Address / Seller
TBD		To Be Defined	
ACTEL	USA	Actel Corporation	
AND	USA	Analog Devices	1500 Space Park Drive CA 95052 Santa Clara USA Tel /Fax: 1(0)408 5627408/526 <a href="http://www.analog.com">www.analog.com</a>
ATMEL W.M. (ex MHS)	France	Atmel	La Chantrerie/Route de Gachet, B.P. 70602 44306 Nantes Cedex 03 France Telephone No. +33 (0)2 40181818 Fax No. 33 (0)2 40181920 <a href="http://www.atmel.com">www.atmel.com</a>
AVX	UK	AVX	AVX Limited Ballylorne Industrial Estate 1 Ballyhampton Road BT 40 1ST arne, Northern Ireland United Kingdom Telephone No. +44 (0)1574 260777 Fax No. +44 (0)1574 260464 <a href="http://www.avxcorp.com">www.avxcorp.com</a>
BB	USA	Burr Brown	
CAN	F	ITT Cannon	ITT Cannon BP 359 Av; du Mal deLattre de Tassigny F-39105 DOLE Cedex Tel/Fax: 33(1)84729469/9593 <a href="http://www.ittcannon.com">www.ittcannon.com</a>
CEPE	F	CEPE	C-MAC France 44, avenue de la Glacière BP165 F-95100 ARGENTEUIL Tel/Fax : 33(0)139983633/50 <a href="mailto:Cepe.com@hol.fr">Cepe.com@hol.fr</a>
DEU	F	DEUTSCH	Compagnie Deutsch 17, rue Lavoisier 27006 EVREUX France <a href="http://www.compagnie-deutsch.com">www.compagnie-deutsch.com</a>
EFD	F	Eurofarad	23, rue Jeanne d'Arc F-77400 LAGNY Te/Fax : 33(0)160317000/64305063 <a href="http://www.eurofarad.com">www.eurofarad.com</a>

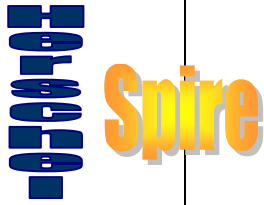


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FCI	France	Framatome Connector International	3, rue de Vallon Hameau d'activités n°2 F-91550 Marolles-en-brie Tel/Fax: 33(0)145107844/40 <a href="http://www.fciconnect.com">www.fciconnect.com</a>
FRB		Hypertac S.A.	31, rue Isidore Maille F-76410 St Aubin Les Elboeufs Tel/Fax: 33(0)232969176/70 <a href="http://www.frb-connectron.com">www.frb-connectron.com</a> Frb.connectron.ama@wanadoo.fr
HAR	USA	INTERSIL (ex HARRIS)	INTERSIL 2401 Palm Bay Road, N.E. FL 32905 Palm Bay USA Tel/Fax: 1(0)407 7279207/95361 <a href="http://www.semi.harris.com">www.semi.harris.com</a>
HON	USA	Honeywell	12001 State Highway 55 MN 55441 PLYMOUTH USA Tel/Fax: 1(0)6129542888/257 <a href="http://www.honeywell.com">www.honeywell.com</a>
KEM	USA	KEMET	KEMET ELECTRONICS Corp. P.O. Box 5928, SC 29606 Greenville USA Telephone No. +1 (0)803 9636300 Fax No. +1 (0)803 9636521 <a href="http://www.kemet.com">www.kemet.com</a>
LCC	UK	LCC/AVX LTD	Long Road 7Q4 7ER Paignton Dvon England Tel/fax : 44(0)1803528046/6223 <a href="http://www.avxcorp.com">www.avxcorp.com</a>
LEA	France	LEACH	LEACH INTERNATIONAL Europe Zone Industrielle de Saint Liguair, Rue Sainte Claire de Ville 79000 Niort France Telephone No. +33 (0)549 790844 Fax No. +33 (0)549 799191 <a href="http://www.leachintl.com">www.leachintl.com</a>
LM	USA	Lockheed Martin	
LT	USA	Linear Technology	Mac Carthy Boulevard



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			CA 95035 MILPITAS USA Tel/Fax: 1(0)4084321900/40507 <a href="http://www.linear-tech.com">www.linear-tech.com</a>
MAXIM	USA	Maxim	
	USA	Microsemi	2830 S. Fairview Street PO Box 26890 CA 92704 Santa Anna Tel/Fax: 1(0)7149798220/5575989 <a href="http://www.microsemi.com">www.microsemi.com</a>
NS	USA	National Semiconductor	2900 Semiconductor Drive PO Box 58090 CA 95052 Santa Clara Tel/Fax: 1(0)4087215000/399803 <a href="http://www.national.com">www.national.com</a>
SEI	USA	Space Electronic Inc.	REP' France
STM	F	STMicroelectronics	3, Rue de Suisse, B.P. 4199 F-35041 Rennes Cedex 2 Telephone No. +33 (0)2 99264800 Fax No. +33 (0)2 99515053 <a href="http://www.st.com">www.st.com</a>
TI	USA	Texas Instruments - Unitrode	7 Continental Boulevard NH 03054 MERRIMACK USA Tel/Fax: 1(0)034242410/3460 <a href="http://www.unitrode.com">www.unitrode.com</a>
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
YSP	USA	YELLOWSPRINGS	1725 Brannum Lane 45387, Ohio Yellow Springs Telephone No. +1 (0)513 7677241 Fax No. +1 (0)513 7679353



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## 6. 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	<b>+20</b>	+10	+8	+5
41 - 60	<b>+20</b>	+13	+10	+6
61 - 100	<b>+25</b>	+17	+15	+10%
101 - 150	<b>+25</b>	+25	+20	+10%
151 - 250	<b>+35</b>	+37	+28	+10%
>= 251	<b>+15%</b>	+15%	+11%	+10%

## 7. 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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## 8. LIST OF PARTS

### 8.1 Family Codes

Family Code	Group Code	Family	
01	01	Capacitors	Ceramic
	02	Capacitors	Ceramic Chip
	03	Capacitors	Tantalum Solid
02	01	Connectors	Circular
	02	Connectors	Rectangular
	03	Connectors	Printed Circuit Board
	07	Connectors	Microminiature
03	01	Piezo-Electric Devices	Crystal Resonator
	99	Piezo-Electric Devices	Miscellaneous
04	01	Diodes	Switching
	02	Diodes	Rectifier
	03	Diodes	Voltage Regulator
	04	Diodes	Voltage Reference
	05	Diodes	R/F microwave schottky-si
07	01	Inductors	RF Coils
	02	Inductors	Cores
	03	Inductors	Chip
08	10	Microcircuits	Microprocess / Micro control/
	20	Microcircuits	Memory SRAM
	21	Microcircuits	Memory DRAM
	22	Microcircuits	Memory PROM
	23	Microcircuits	Memory EPROM
	24	Microcircuits	Memory EEPROM
	30	Microcircuits	Programmable Logic
	40	Microcircuits	ASIC Technologies Digital
	41	Microcircuits	ASIC Technologies Linear
	42	Microcircuits	ASIC Technologies Mixed
	50	Microcircuits	Linear Sample & Hold Amplifier
	51	Microcircuits	Linear sample and hold amplifier
	52	Microcircuits	Linear Voltage regulator
53	Microcircuits	Linear voltage comparator	
54	Microcircuits	Linear switching regulator	
99	Microcircuits	Miscellaneous	
09	01	Relays	Non latching
	02	Relays	Latching
10	01	Resistors	Metal oxide
	02	Resistors	Wire wound precision-including surface mount
	08	Resistors	Metal film
	09	Resistors	Chip all
	10	Resistors	Network all
	11	Resistors	Heaters, flexible
	11	01	Thermistors
02	Thermistors	Temperature measuring	
03	Thermistors	Temperature sensor	
12	01	Transistors	Low power, NPN, < 2 watts





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02	Transistors	Low power, PNP, < 2 watts
03	Transistors	High power, NPN, < 2 watts
04	Transistors	High power, PNP, < 2 watts
05	Transistors	FET N channel
06	Transistors	FET P channel
07	Transistors	Multiple
08	Transistors	Switching

## 8.2 D.C.L.

12 pages





SPiRE Declared Components List Ed14

NEW	* new components list list										L1J	L1K	L1L	L1M	L1N	L1O	L1P	L1Q	L1R	L1S	L1T	L1U	L1V	L1W	L1X	L1Y	L1Z	L2A	L2B	L2C	L2D	L2E	L2F	L2G	L2H	L2I	L2J	L2K	L2L	L2M	L2N	L2O	L2P	L2Q	L2R	L2S	L2T	L2U	L2V	L2W	L2X	L2Y	L2Z	L3A	L3B	L3C	L3D	L3E	L3F	L3G	L3H	L3I	L3J	L3K	L3L	L3M	L3N	L3O	L3P	L3Q	L3R	L3S	L3T	L3U	L3V	L3W	L3X	L3Y	L3Z	L4A	L4B	L4C	L4D	L4E	L4F	L4G	L4H	L4I	L4J	L4K	L4L	L4M	L4N	L4O	L4P	L4Q	L4R	L4S	L4T	L4U	L4V	L4W	L4X	L4Y	L4Z	L5A	L5B	L5C	L5D	L5E	L5F	L5G	L5H	L5I	L5J	L5K	L5L	L5M	L5N	L5O	L5P	L5Q	L5R	L5S	L5T	L5U	L5V	L5W	L5X	L5Y	L5Z	L6A	L6B	L6C	L6D	L6E	L6F	L6G	L6H	L6I	L6J	L6K	L6L	L6M	L6N	L6O	L6P	L6Q	L6R	L6S	L6T	L6U	L6V	L6W	L6X	L6Y	L6Z	L7A	L7B	L7C	L7D	L7E	L7F	L7G	L7H	L7I	L7J	L7K	L7L	L7M	L7N	L7O	L7P	L7Q	L7R	L7S	L7T	L7U	L7V	L7W	L7X	L7Y	L7Z	L8A	L8B	L8C	L8D	L8E	L8F	L8G	L8H	L8I	L8J	L8K	L8L	L8M	L8N	L8O	L8P	L8Q	L8R	L8S	L8T	L8U	L8V	L8W	L8X	L8Y	L8Z	L9A	L9B	L9C	L9D	L9E	L9F	L9G	L9H	L9I	L9J	L9K	L9L	L9M	L9N	L9O	L9P	L9Q	L9R	L9S	L9T	L9U	L9V	L9W	L9X	L9Y	L9Z	L10A	L10B	L10C	L10D	L10E	L10F	L10G	L10H	L10I	L10J	L10K	L10L	L10M	L10N	L10O	L10P	L10Q	L10R	L10S	L10T	L10U	L10V	L10W	L10X	L10Y	L10Z	L11A	L11B	L11C	L11D	L11E	L11F	L11G	L11H	L11I	L11J	L11K	L11L	L11M	L11N	L11O	L11P	L11Q	L11R	L11S	L11T	L11U	L11V	L11W	L11X	L11Y	L11Z	L12A	L12B	L12C	L12D	L12E	L12F	L12G	L12H	L12I	L12J	L12K	L12L	L12M	L12N	L12O	L12P	L12Q	L12R	L12S	L12T	L12U	L12V	L12W	L12X	L12Y	L12Z	L13A	L13B	L13C	L13D	L13E	L13F	L13G	L13H	L13I	L13J	L13K	L13L	L13M	L13N	L13O	L13P	L13Q	L13R	L13S	L13T	L13U	L13V	L13W	L13X	L13Y	L13Z	L14A	L14B	L14C	L14D	L14E	L14F	L14G	L14H	L14I	L14J	L14K	L14L	L14M	L14N	L14O	L14P	L14Q	L14R	L14S	L14T	L14U	L14V	L14W	L14X	L14Y	L14Z	L15A	L15B	L15C	L15D	L15E	L15F	L15G	L15H	L15I	L15J	L15K	L15L	L15M	L15N	L15O	L15P	L15Q	L15R	L15S	L15T	L15U	L15V	L15W	L15X	L15Y	L15Z	L16A	L16B	L16C	L16D	L16E	L16F	L16G	L16H	L16I	L16J	L16K	L16L	L16M	L16N	L16O	L16P	L16Q	L16R	L16S	L16T	L16U	L16V	L16W	L16X	L16Y	L16Z	L17A	L17B	L17C	L17D	L17E	L17F	L17G	L17H	L17I	L17J	L17K	L17L	L17M	L17N	L17O	L17P	L17Q	L17R	L17S	L17T	L17U	L17V	L17W	L17X	L17Y	L17Z	L18A	L18B	L18C	L18D	L18E	L18F	L18G	L18H	L18I	L18J	L18K	L18L	L18M	L18N	L18O	L18P	L18Q	L18R	L18S	L18T	L18U	L18V	L18W	L18X	L18Y	L18Z	L19A	L19B	L19C	L19D	L19E	L19F	L19G	L19H	L19I	L19J	L19K	L19L	L19M	L19N	L19O	L19P	L19Q	L19R	L19S	L19T	L19U	L19V	L19W	L19X	L19Y	L19Z	L20A	L20B	L20C	L20D	L20E	L20F	L20G	L20H	L20I	L20J	L20K	L20L	L20M	L20N	L20O	L20P	L20Q	L20R	L20S	L20T	L20U	L20V	L20W	L20X	L20Y	L20Z	L21A	L21B	L21C	L21D	L21E	L21F	L21G	L21H	L21I	L21J	L21K	L21L	L21M	L21N	L21O	L21P	L21Q	L21R	L21S	L21T	L21U	L21V	L21W	L21X	L21Y	L21Z	L22A	L22B	L22C	L22D	L22E	L22F	L22G	L22H	L22I	L22J	L22K	L22L	L22M	L22N	L22O	L22P	L22Q	L22R	L22S	L22T	L22U	L22V	L22W	L22X	L22Y	L22Z	L23A	L23B	L23C	L23D	L23E	L23F	L23G	L23H	L23I	L23J	L23K	L23L	L23M	L23N	L23O	L23P	L23Q	L23R	L23S	L23T	L23U	L23V	L23W	L23X	L23Y	L23Z	L24A	L24B	L24C	L24D	L24E	L24F	L24G	L24H	L24I	L24J	L24K	L24L	L24M	L24N	L24O	L24P	L24Q	L24R	L24S	L24T	L24U	L24V	L24W	L24X	L24Y	L24Z	L25A	L25B	L25C	L25D	L25E	L25F	L25G	L25H	L25I	L25J	L25K	L25L	L25M	L25N	L25O	L25P	L25Q	L25R	L25S	L25T	L25U	L25V	L25W	L25X	L25Y	L25Z	L26A	L26B	L26C	L26D	L26E	L26F	L26G	L26H	L26I	L26J	L26K	L26L	L26M	L26N	L26O	L26P	L26Q	L26R	L26S	L26T	L26U	L26V	L26W	L26X	L26Y	L26Z	L27A	L27B	L27C	L27D	L27E	L27F	L27G	L27H	L27I	L27J	L27K	L27L	L27M	L27N	L27O	L27P	L27Q	L27R	L27S	L27T	L27U	L27V	L27W	L27X	L27Y	L27Z	L28A	L28B	L28C	L28D	L28E	L28F	L28G	L28H	L28I	L28J	L28K	L28L	L28M	L28N	L28O	L28P	L28Q	L28R	L28S	L28T	L28U	L28V	L28W	L28X	L28Y	L28Z	L29A	L29B	L29C	L29D	L29E	L29F	L29G	L29H	L29I	L29J	L29K	L29L	L29M	L29N	L29O	L29P	L29Q	L29R	L29S	L29T	L29U	L29V	L29W	L29X	L29Y	L29Z	L30A	L30B	L30C	L30D	L30E	L30F	L30G	L30H	L30I	L30J	L30K	L30L	L30M	L30N	L30O	L30P	L30Q	L30R	L30S	L30T	L30U	L30V	L30W	L30X	L30Y	L30Z	L31A	L31B	L31C	L31D	L31E	L31F	L31G	L31H	L31I	L31J	L31K	L31L	L31M	L31N	L31O	L31P	L31Q	L31R	L31S	L31T	L31U	L31V	L31W	L31X	L31Y	L31Z	L32A	L32B	L32C	L32D	L32E	L32F	L32G	L32H	L32I	L32J	L32K	L32L	L32M	L32N	L32O	L32P	L32Q	L32R	L32S	L32T	L32U	L32V	L32W	L32X	L32Y	L32Z	L33A	L33B	L33C	L33D	L33E	L33F	L33G	L33H	L33I	L33J	L33K	L33L	L33M	L33N	L33O	L33P	L33Q	L33R	L33S	L33T	L33U	L33V	L33W	L33X	L33Y	L33Z	L34A	L34B	L34C	L34D	L34E	L34F	L34G	L34H	L34I	L34J	L34K	L34L	L34M	L34N	L34O	L34P	L34Q	L34R	L34S	L34T	L34U	L34V	L34W	L34X	L34Y	L34Z	L35A	L35B	L35C	L35D	L35E	L35F	L35G	L35H	L35I	L35J	L35K	L35L	L35M	L35N	L35O	L35P	L35Q	L35R	L35S	L35T	L35U	L35V	L35W	L35X	L35Y	L35Z	L36A	L36B	L36C	L36D	L36E	L36F	L36G	L36H	L36I	L36J	L36K	L36L	L36M	L36N	L36O	L36P	L36Q	L36R	L36S	L36T	L36U	L36V	L36W	L36X	L36Y	L36Z	L37A	L37B	L37C	L37D	L37E	L37F	L37G	L37H	L37I	L37J	L37K	L37L	L37M	L37N	L37O	L37P	L37Q	L37R	L37S	L37T	L37U	L37V	L37W	L37X	L37Y	L37Z	L38A	L38B	L38C	L38D
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SPiRE Declared Components List Ed14

NEW	Item N°	Family Code	Group Code	GENERIC NAME	commute	FLT Part Type	FLT Generic Spec	FLT Detail Spec	Level	enrichment	approving	Lot	Ref	FLT Description	Status	Manuf	Pkg	LL1	Self	Amr	Neck C/A	LL2	Total Need	FO	Self procured	F3M parts	F3S parts	Back Panel DCU	cont. LIA-P	cont. LIA-S	cont. DAC-EP	cont. BIAS	Back Panel DCU	OCTK-EP	Temp	Dash	S.C.U. (of F.C.U.)	WH1	
																																							32K9 Very Low Power CMOS SEAM Rad tolerant (eSis)
	31	8-		65656G		SMDP-65656GV-40SV	MIL-PRF-38535	QML-V	V														6	4	2	1													
				<b>ADC</b>																																			
	7b	8-	4	SEI 7809LPRP				7809LPRP0901.99	K	Y			RE	A/D converter, 16 bit serial, tech protected	QML-3833	SEI	FP24					Y	33	20	18	9				7			1	1					
				<b>DAC</b>																																			
	8c	8-	4	7545A		7545ARP		7545ARP0610.99	S				RE	CMOS 12 bit Rad-tolerant Multiplying DAC	QML-3033	SEI-U	FP20					Y	114	98	66	33						26	7						
				<b>E/R diff</b>																																			
	9	8-		HS-26C31RH		HS9-26C31RH-QS9000	MIL-PRF-38535	5962P9666301VXC	V				100K	Quad EIA 8542: Radiation Hardened CMOS, Differential Receiver, with 3-State Output	QML-3833	HAR-U	FP16					N	10	4*	4	2				1	0	1							
	10	8-		HS-26C32RH		HS9-26C32RH-QS9000	MIL-PRF-38535	5962P9568901VXC	V				100K	Quad EIA 8542: Radiation Hardened CMOS, Differential Receiver, with 3-State Output	EPPL-QML-3833	HAR-U	FP16					N	10	4*	4	2				1	0	1							
	18	8-		UT54LVDS031		UT54LVDS031UCC	MIL-PRF-38535	5962R9583302VXC	V				1M	Quad CMOS Differential Line Driver: LVDS, Rail-to-Rail	QML-3833	UTMC-U	FP16					N	27	27	14	7				7									
	19	8-		UT54LVDS032		UT54LVDS032 UCC	MIL-PRF-38535	5962R9583402VXC	V				100K	Quad CMOS Differential Line Receiver: LVDS	QML-3833	UTMC-U	FP16					N	81	81	52	14				4	4		2						
				<b>FPGA</b>																																			
	11c	8-		RT 54SX32S		RT54SX32S CQ208E	SA-0320-03C	SMD + Mfr Amend					e-75 100K	32000-Gauss-X-A Family, FPGA, Rad-Tolerant and Hot	QML-3833	ACTU	CQFP-208					N	16	16	10	2				0	1	0		1					
Total Self-procured																																							
<b>Resistors</b>																																							
				<b>RLR07/2H4 1% 100ppm 1/8W 200V</b>																																			
	37	10-	8-	1R		400100601C1R00F4	ESA/SCC-4001	ESA/SCC 4001.006-01	C					High Reliability, Resistor, Flood, Film,com technically sealed based on type ELR07	EPPL	SFER						25	72	97	76	54	18		3	3	3	4		2					
	49	10-	8-	10R		400100601C10R0F4	ESA/SCC-4001	ESA/SCC 4001.006-01	C					High Reliability, Resistor, Flood, Film,com technically sealed based on type ELR07	EPPL	SFER						10	3	13	0	2	1							1					
				<b>CHP HR 0505 1/8W 1% 50V +/-100 ppm</b>																																			
	3	10-	9-	387J 0	100R	0505 TRD 400101601C1000F4	ESA/SCC-4001	ESA/SCC 4001.016-01	C					High reliability Resistor, Flood, Chip termination: <b>with solder coating</b>	EPPL	SFER	305					4791	3194	P	3673	3071	2562	632		222	188		0						
	4	10-	9-	0	1K	400101601C1001F4	ESA/SCC-4001	ESA/SCC 4001.016-01	C					High reliability Resistor, Flood, Chip termination: <b>with solder coating</b>	EPPL	SFER	305					717	478	N	550	550	384	94		34	26								
	5	10-	9-	0	4K99	400101601C5001F4	ESA/SCC-4001	ESA/SCC 4001.016-01	C					High reliability Resistor, Flood, Chip termination: <b>with solder coating</b>	EPPL	SFER	305					672	448	N	515	515	360	88		32	24								
	6	10-	9-	0	10K	400101601C1002F4	ESA/SCC-4001	ESA/SCC 4001.016-01	C					High reliability Resistor, Flood, Chip termination: <b>with solder coating</b>	EPPL	SFER	305					1629	1086	N	1249	1249	888	198		58	2								
	7	10-	9-	0	15K	400101601C1502F4	ESA/SCC-4001	ESA/SCC 4001.016-01	C					High reliability Resistor, Flood, Chip termination: <b>with solder coating</b>	EPPL	SFER	305					2849	1366	N	1571	1571	1098	268		98	72								
	8	10-	9-	0	30K1	400101601C3012F4	ESA/SCC-4001	ESA/SCC 4001.016-01	C					High reliability Resistor, Flood, Chip termination: <b>with solder coating</b>	EPPL	SFER	305					1544	896	N	1030	1030	720	176		64	48								
	9	10-	9-	0	100K	400101601C1003F4	ESA/SCC-4001	ESA/SCC 4001.016-01	C					High reliability Resistor, Flood, Chip termination: <b>with solder coating</b>	EPPL	SFER	305					2014	1344	N	1546	1546	1080	264		96	72								
	10	10-	9-	0	1Mg	400101601C1004F4	ESA/SCC-4001	ESA/SCC 4001.016-01	C					High reliability Resistor, Flood, Chip termination: <b>with solder coating</b>	EPPL	SFER	305					1344	896	N	1030	1030	720	176		64	48								
				<b>CHP CMS 0805 1/5W 1% 75V +/-200 ppm (1-10R)</b>																																			
	50	10-	9-	0	1R	400101801C1R00F6	ESA/SCC-4001	ESA/SCC 4001.018-03	C					Resistor, Flood, Chip termination: <b>with solder coating</b>	EPPL	SFER	305					10	30	N	40		20	10						10					
	11	10-	9-	178	10R	400101801C10R0F6	ESA/SCC-4001	ESA/SCC 4001.018-03	C					Resistor, Flood, Chip termination: <b>with solder coating</b>	EPPL	SFER	305					35	141	N	176	148	94	47			0	41		4	2				
				<b>CHP CMS 0805 1/5W 1% 75V +/-100 ppm</b>																																			
	51	10-	9-		22R1	400101801C22R1F4	ESA/SCC-4001	ESA/SCC 4001.018-01	C					Resistor, Flood, Chip termination: <b>with solder coating</b>	EPPL	SFER	305					15	24	N	39	0	16	8					8						
	52	10-	9-	404	47R5	400101801C47R5F4	ESA/SCC-4001	ESA/SCC 4001.018-01	C					Resistor, Flood, Chip termination: <b>with solder coating</b>	EPPL	SFER	305					52.65	351	N	404	0	234	117					43	74					
	53	9-	2		1M	400101801C1004F4	ESA/SCC-4001	ESA/SCC 4001.018-01	C					Resistor, Flood, Chip termination: <b>with solder coating</b>	EPPL	SFER	305					10	12	N	22		8	4					4						









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**Processes List**

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**Issue: 1.1**

Note DML & DPL parts have been deleted from this document to leave the DCL  (EEE Parts List)


Prepared by: R. Orfei

Date: 21 February 2002




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## Document Status Sheet:

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<b>Issue</b>	<b>Revision</b>	<b>Date</b>	<b>Reason for Change</b>
Issue 1		21 November 2001	First Issue
	1	21 February 2002	Reference completed And empty listed lines erased

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## Document Change Record:

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	Issue 1.1
All Lists	"NOT Mounted" lines erased from the lists

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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

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IFSI            Istituto di Fisica dello Spazio Interplanetario

ISVR            Instrument Science Verification Review  
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



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AD6	FIRST SPIRE DPU Subsystem Specification Document
AD7	ESA Preferred Parts List. <span style="float: right;">ESA PSS-01-603</span>

### 1.2.2 Reference Documents

Document Reference	Name
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.

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

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 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 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	
C34	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
C51	Chip Ceramic Capacitor 100nF 50V 10%	MIL-PRF-55681/9	KEMET	CDR33BX104AKSR	1	
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	



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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	
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	
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	
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	



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D2	Switching diode	MIL-PRF-19500/578	CDI	JANS1N6642US	1	
JP1	JUMPER				1	HEADER 2 pins
JP2	JUMPER Position 3-4				1	HEADER 2X2 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
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	
P4	60-pin Micro Strip Connector Male	AMP-spec. 108-1272	AMP	536280-2	1	
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	
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	



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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	
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					
R53	JUMPER				1	SMD (0805) 0R0 5% RS 136-957
R54	JUMPER				1	SMD (0805) 0R0 5% RS 136-957



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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
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
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	
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	





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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	
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	



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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	
R194	Chip Resistor 10R 0,1W 1%	MIL-R-55342/6	DALE	M55342K06B10D0R	1	
R195	JUMPER					
R196	JUMPER					
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 Radiation 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
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
U26	32/40-bit floating point DSP microprocessor TSC21020F-20SBSV	5962-99539	ATMEL	5962-9953901VXC	1	ANALOG D. ADSP-21020-KG80
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



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1	Printed Circuit Board	CNES/QFT/SP-0117	PRINTCA/VIASYSTEMSCSI	DPU-FM-110.03-0 REV /	1	DPU-EM-110.03-0 REV /
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<b>Bill Of Material</b>				
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
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



**IFSI  
CNR**

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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	
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	



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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	
D1	Switching diode	MIL-PRF-19500/578	CDI	JANS1N6642US	1	
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	
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
1	Printed Circuit Board	CNES/QFT/SP-0117	PRINTCA/VIASYSTEMSCSI	DPU-FM-120.03-0 REV /	1	DPU-EM-120.03-0 REV /

<b>Bill Of Material</b>				
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
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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 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	
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	



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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	
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%					





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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	
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	



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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	
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	



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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	
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	



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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
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

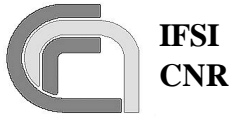


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R65	Resistor 22,1R 1W 1%
R66	Resistor 22,1R 1W 1%
R67	Resistor 22,1R 1W 1%
R68	Chip Resistor 332R 0,1W 1%
R69	Chip Resistor 100KR 0,1W 1%
R70	Resistor 22,1R 1W 1%
R71	Chip Resistor ADJ 0,1W 1%
R72	Resistor 22,1R 1W 1%
R73	Chip Resistor 100KR 0,1W 1%
R74	Chip Resistor 332R 0,1W 1%
R75	Resistor 22,1R 1W 1%
R76	Chip Resistor 332R 0,1W 1%
R77	Resistor 22,1R 1W 1%
R78	Chip Resistor 100KR 0,1W 1%
R79	Chip Resistor ADJ 0,1W 1%
R80	Chip Resistor 100KR 0,1W 1%
R81	Chip Resistor 332R 0,1W 1%
R82	Chip Resistor 332R 0,1W 1%
R83	Chip Resistor 100KR 0,1W 1%
R84	Chip Resistor ADJ 0,1W 1%
R85	Resistor 22,1R 1W 1%
R86	Chip Resistor 100KR 0,1W 1%
R87	Resistor 22,1R 1W 1%
R88	Chip Resistor 332R 0,1W 1%
R89	Chip Resistor 332R 0,1W 1%
R90	Resistor 22,1R 1W 1%
R91	Chip Resistor 100KR 0,1W 1%
R92	Resistor 22,1R 1W 1%
R93	Chip Resistor ADJ 0,1W 1%
R94	Chip Resistor 100KR 0,1W 1%

MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
MIL-R-55342/6	DALE	M55342K06B332DR	1	
MIL-R-55342/6	DALE	M55342K06B100ER	1	
MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
			1	
MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
MIL-R-55342/6	DALE	M55342K06B100ER	1	
MIL-R-55342/6	DALE	M55342K06B332DR	1	
MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
MIL-R-55342/6	DALE	M55342K06B332DR	1	
MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
MIL-R-55342/6	DALE	M55342K06B100ER	1	
			1	
MIL-R-55342/6	DALE	M55342K06B100ER	1	
MIL-R-55342/6	DALE	M55342K06B332DR	1	
MIL-R-55342/6	DALE	M55342K06B332DR	1	
MIL-R-55342/6	DALE	M55342K06B100ER	1	
			1	
MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
MIL-R-55342/6	DALE	M55342K06B100ER	1	
MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
MIL-R-55342/6	DALE	M55342K06B332DR	1	
MIL-R-55342/6	DALE	M55342K06B332DR	1	
MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
MIL-R-55342/6	DALE	M55342K06B100ER	1	
MIL-PRF-39007/9	DALE-IRC	RWR81N22R1FR	1	
			1	
MIL-R-55342/6	DALE	M55342K06B100ER	1	



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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	
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	



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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	
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	M38510/13503SSGA	1	
U7	8 Channel Analog Multiplexer HS1-508BRH-Q	5962-96742	INTERSIL	5962F9674202VEC	1	



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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	
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





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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
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



**IFSI  
CNR**

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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.						
C2	Tantalum Capacitor ADJ 10% (CLR79)				1	
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	
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	



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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
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
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



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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	
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	
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	
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	
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	
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	
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	
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	



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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	
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	
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	



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L6	Inductor 200uH		CGS		1
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
R3	JUMPER (RWR81)				1
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
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
R12	Chip Resistor ADJ 0,25W 1% (RM1206)				1
R13	JUMPER (RM1206)				1
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
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
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





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R114	Resistor ADJ 1W 1% (RWR81)				1	
R115	Resistor 10R 1W 1%	MIL-R-39007/9	DALE-IRC	RWR81N10R0FR	1	
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	
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	



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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	
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	



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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	
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	



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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	
Q1	HEXFET Transistor P-channel	MIL-PRF-19500/595	IR	JANS2N7236	1	
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	
Q14	PNP Power Transistor Hight Speed Switching	MIL-PRF-19500/545	SEMICOA	JANS2N5151	1	
Q15	NPN Power Transistor Hight 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	
U6	Pulse Width Modulator Controller Current Mode UC1846JQMLV	5962-86806	TI	5962-8680601VEA	1	
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 Trasducer 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/VIASYSTEMS/CSI	DPU-FM-310.03-0 REV /	1	DPU-EM-310.03-0 REV /



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<b>Bill Of Material</b>				
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
2 Jumper pin				
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



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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
Metal film 1K 0.1% 5ppm	MIL-R-55182/9	DALE	RNC90Y1K0000BR	1
Metal film 10K 0.1% 5ppm	MIL-R-55182/9	DALE	RNC90Y10K000BR	1
Metal film 15K 0.1% 5ppm	MIL-R-55182/9	DALE	RNC90Y15K000BR	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)				



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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
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	JANS2N222AUB	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





**IFSI  
CNR**

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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



**IFSI  
CNR**

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CUSTOMER ID		EFFECTIVITY	
DRAWING TITLE		CARLO GAVAZZI SPACE S.p.A. 	
<b>HSO/FIRST-DPU: MOTHERBOARD Electrical Part List</b>			
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
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



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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
<b>Total</b>				<b>16</b>

LAM □  
DECLARED COMPONENT LISTS

SMEC □  
SPIRE-LAM-DOC-000932

FTS □  
SPIRE-LAM-DOC-000920

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# FIRST / SPIRE / SMEC / MCU

## QM EEE component list

<b>Prepared by :</b>	<b>Date :</b>
P. L.	02-02-2001
<b>Verified by :</b>	<b>Date :</b>
D. P.	

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## Acronyms

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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. Introduction

### 1.1 Purpose and scope

This document provides a primarily list of the active components for the QM model of Herschel / Spire / FTS / MCU units (FSFTSL).

### 1.2 Need Date

Due to the general schedule of Herschel / Spire instrument, we need the QM components for the end of september 2001.

### 1.3 Quality Level requirement

For the QM model, we foresee to use at least commercial components and extended temperature (-40°C to +85°C).

Component must have :

same manufacturer as flight type,  
same package as flight type.

### 1.4 Configuration of MCU Cryogenic Model (CQM)

- 2 MAC (multi axes controller),
- 2 SMEC (FTS mechanism I/F),
- 1 BSM (BSM mechanism I/F),
- 1 FDP (back pannel board).

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## 2. MANUFACTURERS

Code	Manufacturer	Country	Remarks
AND	Analog Devices	USA	
ACT	Actel Corporation	USA	
BBR	Burr Brown	USA	
CAN	ITT Cannon	USA	
CDI	Compensted Devices Inc.	USA	
DAL	Dale	USA	
DEU	Compagnie Deutsch	F	
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	
INF	Infineon	D	
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	Temic (Atmel)	F	
VIT	Vitramon	D	

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Generic Name	Package	Man	Function	Level	QM qty
<b>CONNECTORS CRYO</b>					
MDM-37PSB A172		CAN/F	MDM , 37 pins, gold plated, <b>cryo</b> type		29
MDM-37SSB A172		CAN/F	MDM , 37 sockets, gold plated, <b>cryo</b> type		26
MDM-37SBR A172		CAN/F	MDM , 37 sockets, 90° PCB, gold plated, <b>cryo</b> type		5
MDM-25PSB A172		CAN/F	MDM , 25 pins, gold plated, cryo type		11
MDM-25SSB A172		CAN/F	MDM , 25 sockets, gold plated, <b>cryo</b> type		5
MDM-25SBR A172		CAN/F	MDM , 25 sockets, 90° PCB, gold plated, <b>cryo</b> type		11
MDM male & female screw lock (set of 2)		CAN/F	set of 2 MDM male & female screw lock for rear panel mounting		50
MDM 90° angle mounting braket (set of 2)		CAN/F	set of 2 MDM 90° angle mounting braket		16
MDM female screw lock for PCB connectors (set of 2)		CAN/F	set of 2 MDM female screw lock for PCB connectors		16
MDM-37S dust caps		CAN/F			30
MDM-25S dust caps		CAN/F			16
MDM-37P dust caps		CAN/F			29
MDM-25P dust caps		CAN/F			11
<b>CRYSTAL</b>					
T807-40MHz	TO-5	CEPE/F	cristal		3

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<b>DIODES</b>					
1N3595US	SMD	MSC/US	switching diode		45
1N5712	DO-35	CDI/US	schotky diode		30
<b>MICROCIRCUITS</b>					
7805ALPRP	28-FP	SEi/US	16 bits ADC, 10 $\mu$ s		6
7846RP	28-FP	SEi/US	16 bits DAC, 10 $\mu$ s		9
AD524SD	16-DIL	AND/US	instrumentation amplifier		33
OP27AJ	TO-99	AND/US	operational amplifier		14
OP400ATC	28-LCC	AND/US	operational amplifier		10
OP467AY	14-DIL	AND/US	operational amplifier		36
LM117H	TO-39	NSC/US	voltage regulator		9
PM139AY	14-DIL	AND/US	voltage comparator		45
UT54LVDS031	16-FP	UMT/IUS	line driver (V <sub>cc</sub> =5V)		3
UT54LVDS032	16-FP	UMT/US	line receiver (V <sub>cc</sub> =5V)		3
HX6228	32-FP	HON/US	sram , 25 ns, 128k		22
27C1512RP	40-DIL	SEi/US	PROM 32k x 16, 200 ns		9
TSC21020F	MFP-256	ATM/F	32/40 bit floating DSP		3
AD630SE	20-LCC	AND/US	modulator- demodulator		6
HS9-508B	16-FP	INT/US	analog multiplexer		6
AD584TH	TO-99	AND/US	voltage reference		10
A54SX32S	208-CQFP	ACT/US	16k gates antifuse FPGA		6
54HC04	14-FP	STM/F	inverters		6
54HC386	14-FP	STM/F	exclusive or gate		10

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