

HERSCHEL / SPIRE / FTS	LABORATOIRE D'ASTROPHYSIQUE DE MARSEILLE EEE PART LIST Doc. Ref. : LAM/ELE/SPI/QUA/000201	Date : 26-09-2001 Issue : 08 Rev. : 00 Page : 1/21
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FIRST / SPIRE / FTS / MCU

EEE PART LIST

User code : FSFTSL

DCL code L 058

Prepared by :	Date :
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Document change record

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 • document reference has changed, LAM/ELE/FTS/QUA/000201 is obsolete.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

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

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Acronyms

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

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

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

2. REFERENCE DOCUMENTS

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

3. ABBREVIATIONS

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

4. LEGENDE OF LIST COLUMNS

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

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5. MANUFACTURERS

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

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6. LIST OF CRYO CONNECTORS AND CABLES

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

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

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

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7. LIST OF IDENTIFIED LLI COMPONENTS

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

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8. LIST OF EEE PARTS

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

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

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

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

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02	KNB 084 26 30 121	3401 016 01B 19 FD 36 36 36		FRB/ F	KNB type, PCB, 84 contacts recept. connector	SCC 3401/016	SCC B	7	Y	N	
02	KNB 120 26 30 121	3401 016 01B 22 FD 36 36 36		FRB/ F	KNB type, PCB, 120 contacts recept. connector	SCC 3401/016	SCC B	7	Y	N	
02 N	KNB 065 SAVER	3401 016 01B 17 FM 00 00 00		FRB/ F	KNB type, 65 contacts saver	SCC 3401/016	SCC B	13	Y	N	
02	KNB 084 SAVER	3401 016 01B 19 FM 00 00 00		FRB/ F	KNB type, 84 contacts saver	SCC 3401/016	SCC B	13	Y	N	
02	KNB 120 SAVER	3401 016 01B 22 FM 00 00 00		FRB/ F	KNB type, 120 contacts saver	SCC 3401/016	SCC B	13	Y	N	

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

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

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

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

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

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