COVER SHEET

DRD: N.A.

ACCEPTANCE DATA PACKAGE

ECAL THERMAL CONTROL SYSTEM ASSY

This is a controlled document. Changes and revisions will be issued, as they are approved, to holders of this document.

ITEM DESCRIPTION: ECAL TCS ASSY

PART N°/C.I. N°: ECAL-TCS FM01

SERIAL N°: 01

MODEL: FM

SPECIFICATION N°: Allegato tecnico - manageriale al contratto I/ 020/ 03/ 0

CUSTOMER: ASI

CONTRACTOR: Carlo Gavazzi Space S.p.A.

CONTRACT N°: ASI/ CGSI/ 020/ 03/ 0

	NAME	DATE	SIGNATURE
PREPARED BY:	S. PAGNONI	24/5/07	
PA APPROVAL:	L. CREMONESI	24.05.07	L. Cremonesi
PM APPROVAL:	M. OLIVIER	24.05.07	M. Olivier
CC APPROVAL:	C CINQUEPALMI	24.05.07	C. Cinquepalmi
CUSTOMER APPROVAL:			

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PA / QA INSPECTION

NAME	DATE	SIGNATURE	STAMP
L. CREMONESI	24.05.2007	Cremonesi	CQ 5 C.G.S.

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PA / QA INSPECTION

NAME	DATE	SIGNATURE	STAMP
L. CREMONESI	24.05.2007	L. Cremonesi	CQ 5 C.G.S.

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35	WORK ITEM SUMMARY LIST (SHOP TRAVELLER LIST)	☐	
36	DESIGN REPORT	☒	1

PA / QA INSPECTION

NAME	DATE	SIGNATURE	STAMP
L CREMONESI	24.05.2007	L. Cremonesi	CQ 5 C.G.S.

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CHANGE RECORD OF THE ADP

ISSUE	DATE	CHANGE AUTHORITY	SECTIONS/PAGES AFFECTED	REMARKS
1	May 2007			

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DISTRIBUTION LIST OF THE ADP

INTERNAL DISTRIBUTION:

NAME	DEPT.	N° OF COPIES
M. OLIVIER	DT/ MT	1

EXTERNAL DISTRIBUTION:

NAME	COMPANY	N° OF COPIES
E. RUSSO	ASI	1

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LIST OF DELIVERED ITEMS

CONTRACTOR: Carlo Gavazzi Space S.p.A.	ITEM DESCRIPTION: ECAL TCS ASSY	
MODEL: FM	PART N°/C.I. N°: ECAL-TCS FM01	SERIAL N°: 01

ITEM DESCRIPTION	CONTAINER N°	PART N°/C.I. N°	SERIAL N°	Q.TY
THERMOSTAT	N.A.	701S-01A0011/3/3/7	201	1
THERMOSTAT	N.A	701S-01A0011/3/3/7	202	1
THERMOSTAT	N.A.	701S-01A0011/3/3/7	203	1
THERMOSTAT	N.A.	701S-01A0011/3/3/7	206	1
THERMOSTAT	N.A.	701S-01A0011/3/3/7	207	1
THERMOSTAT	N A	701S-01A0011/3/3/7	208	1
THERMOSTAT	N.A.	701S-01A0011/3/3/7	209	1
THERMOSTAT	N A	701S-01A0011/3/3/7	210	1
THERMOSTAT	N.A.	701S-01A0011/3/3/7	211	1
THERMOSTAT	N.A.	701S-01A0011/3/3/7	214	1
THERMOSTAT	N A.	701S-01A0011/3/3/7	215	1
THERMOSTAT	N.A.	701S-01A0011/3/3/7	217	1
HEATERS	N A	R0632	1 TO 20	20
THERMAL FILLER	N.A.	62-10-0909-A274	N A.	N.A.
RADIATOR TAPE - EMBOSSED TEFLON	N A.	167149-001	N A.	N.A.

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SHIPPING DOCUMENTS

LIST OF SHIPPING DOCUMENTS INCLUDED IN THIS SECTION:

DESCRIPTION / DOCUMENT NUMBER	DATE
SHIPPING NOTE N° 288	23/09/04
SHIPPING NOTE N° 144	03/04/06
SHIPPING NOTE N° 402	29/09/06

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CERTIFICATES

LIST OF CERTIFICATES INCLUDED IN THIS SECTION:

DOCUMENT NUMBER	DATE	DESCRIPTION
001041	17/09/04	THERMAL FILLER CERTIFICATE OF CONFORMANCE
--	08/11/05	HEATERS R0632 CERTIFICATE OF CONFORMITY
--	26/07/06	THERMOSTATS (P/N: 701S-01A0011/3/3/7) CERTIFICATION OF CONFORMANCE
--	24/08/06	THERMOSTATS (P/N: 701S-01A0011/3/3/7) CERTIFICATION OF CONFORMANCE

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C.I.D.L. / AS BUILT CONFIGURATION LIST

LIST OF DOCUMENTS INCLUDED IN THIS SECTION:

DOCUMENT NUMBER	ISSUE	TITLE
RICSYS-LI-CGS-002	1	ECAL TCS CIDL/ ABCL

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NOTES AND COMMENTS

CONTRACTOR: Carlo Gavazzi Space S.p.A. **ITEM DESCRIPTION:** ECAL TCS ASSY	**MODEL:** FM **PART N°/C.I. N°:** ECAL-TCS FM01	**SERIAL N°:** 01

Seq. N°	DESCRIPTION
1	MLI TO BE PROVIDED
2	THERMOSTATS TO BE DELIVERED

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HISTORICAL RECORD

CONTRACTOR: Carlo Gavazzi Space S.p.A.
ITEM DESCRIPTION: ECAL TCS ASSY
MODEL: FM
PART N°/C.I. N°: ECAL-TCS FM01
SERIAL N°: 01

Seq. N°	ACTIVITIES DESCRIPTION	PROCEDURE REFERENCE	REPORT REFERENCE	OPERATOR	INSPECTOR	DATE	REMARKS
1	RICH SYSTEM PDR	N.A.	RICSYS-MI-CGS-002	ASI- CGS- INFN PERSONNEL	N.A.	25/07/03	
2	RICH SYSTEM CDR	N.A.	RICSYS-MI-CGS-003	ASI- CGS- INFN PERSONNEL	N.A.	03/11/03	
3	THERMAL FILLER DELIVERY TO CGS AND INCOMING INSPECTION	N.A.	N.A.	N.A.	L. DE BERNARDI	23/09/04	
4	THERMAL FILLER DELIVERY TO ASI (C/O INFN PISA)	N.A.	N.A.	G. SARDO	N.A.	23/09/04	SEE SHIPPING NOTE NR. 288
5	HEATERS DELIVERY TO CGS AND INCOMING INSPECTION	N.A.	N.A.	N.A.	L. DE BERNARDI	14/11/05	
6	ECAL RADIATORS VISUAL INSPECTION	N.A.	RICSYS-MI-CGS-010	N.A.	D. PACIOTTI	16/11/05	
8	THERMAL HARDWARE FOR ECAL FM + SPARE HEATERS DELIVERY TO ASI (C/O LAPP, FRANCE)	N.A.	N.A.	G. SARDO	N.A.	03/04/06	SEE SHIPPING NOTE NR. 144

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HISTORICAL RECORD

CONTRACTOR: Carlo Gavazzi Space S.p.A.
ITEM DESCRIPTION: ECAL TCS ASSY
MODEL: FM
PART N°/C.I. N°: ECAL-TCS FM01
SERIAL N°: 01

Seq. N°	ACTIVITIES DESCRIPTION	PROCEDURE REFERENCE	REPORT REFERENCE	OPERATOR	INSPECTOR	DATE	REMARKS
9	ECAL RADIATORS AND THERMAL HARDWARE INTEGRATION	N.A.	N.A.	D. PACIOTTI	N.A.	FEBRUARY-APRIL 2006	
10	ECAL RADIATORS AND THERMAL HARDWARE ACCEPTANCE	N.A.	RICSYS-MI-CGS-011	LAPP- CGS PERSONNEL	N.A.	04/04/06	
11	RICH SYSTEM TRR	N.A.	RICSYS-MI-CGS-012	ASI- CGS- INFN-SERMS PERSONNEL	N.A.	25/05/06	
12	INSTALLATION OF THERMOSTATS ON ECAL QM	N.A.	N.A.	A. FRANZOSO	N.A.	20-27/08/06	
13	THERMOSTATS (Q.TY 9) DELIVERY TO CGS AND INCOMING INSPECTION	N.A.	N.A.	N.A.	L. DE BERNARDI	24/08/06	
14	THERMOSTATS (Q.TY 3) DELIVERY TO CGS AND INCOMING INSPECTION	N.A.	N.A.	N.A.	L. DE BERNARDI	01/09/06	
15	ECAL SUBSYSTEM TRR BEFORE TV/TB TEST	N.A.	RICSYS-MI-CGS-017	ASI- CGS-PERSONNEL	N.A.	12/09/06	

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HISTORICAL RECORD

CONTRACTOR: Carlo Gavazzi Space S.p.A.
ITEM DESCRIPTION: ECAL TCS ASSY
MODEL: FM
PART N°/C.I. N°: ECAL-TCS FM01
SERIAL N°: 01

Seq. N°	ACTIVITIES DESCRIPTION	PROCEDURE REFERENCE	REPORT REFERENCE	OPERATOR	INSPECTOR	DATE	REMARKS
16	ECAL THERMAL TEST IN TERNI, ITALY	RICSYS-PR-CGS-008 Is. 3	RICSYS-RP-CGS-019 Is. 1	A. FRANZOSO I. CORRADINO M. MOLINA	A. FRANZOSO I. CORRADINO M. MOLINA	11-25/09/06	
17	DELIVERY OF FULLY EQUIPPED RADIATORS TO LAPP, FRANCE	N.A.	N.A.	G. SARDO	N.A.	29/09/06	SEE SHIPPING NOTE NR. 402
18	ECAL SUBSYSTEM TRB AFTER TV/TB TEST	N.A.	RICSYS-MI-CGS-018	ASI- CGS- INFN PERSONNEL	N.A.	19/10/06	
19	THERMOSTATS TO BE DELIVERED						

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LIMITED LIFE ITEMS LIST

CONTRACTOR: Carlo Gavazzi Space S.p.A.
ITEM DESCRIPTION: ECAL TCS ASSY
MODEL: FM
PART N°/C.I. N°: ECAL-TCS FM01
SERIAL N°: 01

ITEM DESCRIPTION	PART NUMBER	SERIAL NUMBER	Max. operating time/cycles or life duration for which proper function is safeguarded	START DATE	END DATE	REMARKS
NONE						

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LIMITED LIFE RECORD

CONTRACTOR: Carlo Gavazzi Space S.p.A. **ITEM DESCRIPTION:** ECAL TCS ASSY	**MODEL:** FM **PART N°/C.I. N°:** ECAL-TCS FM01	**SERIAL N°:** 01

IDENTIFICATION:

MOT (h)	AOT (h)	ROT (h)	MCY (n°)	ACY (n°)	RCY (n°)

MOT/MCY= MAX. OPERATING TIME/CYCLES
AOT/ACY= ACTUAL OPERATING TIME/CYCLES
ROT/RCY= RESIDUAL OPERATING TIME/CYCLES

h= HOURS
n°= NUMBER OF CYCLES

SEQ. N°	DATE	OPERATION		TOTAL		TEST PROCEDURE, OPERATION TYPE	REMARKS	OPER. COND.	OPER. SIGN.	Q.A. SIGN.	Q.A. STAMP
		TIME	CYCLES	TIME	CYCLES						
NONE											

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AGE SENSITIVE ITEMS RECORD

CONTRACTOR: Carlo Gavazzi Space S.p.A.
ITEM DESCRIPTION: ECAL TCS ASSY
MODEL: FM
PART N°/C.I. N°: ECAL-TCS FM01
SERIAL N°: 01

ITEM DESCRIPTION	PART NUMBER	SERIAL NUMBER	SPC	BDT	LDA	EXP DATE	SERVICING DATE	SERVICING SIGN.RE	SERVICING DUE DATE	REMARKS
NONE										

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LOOSE DELIVERED ITEMS LIST

CONTRACTOR: Carlo Gavazzi Space S.p.A.
ITEM DESCRIPTION: ECAL TCS ASSY
MODEL: FM
PART N°/C.I. N°: ECAL-TCS FM01
SERIAL N°: 01

Seq. N°	DESCRIPTION
1	THERMOSTATS, P/N: 7015-01A0011/3/3/7, Q.TY 12
2	HEATERS, P/N: R0632, Q.TY 20
3	THERMAL FILLER, P/N: 62-10-0909-A274
4	RADIATOR TAPE - EMBOSSED TEFLON, P/N: 167149-001

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PROCEDURES

LIST OF DOCUMENTS INCLUDED IN THIS SECTION:

DOCUMENT NUMBER	ISSUE	TITLE
RICSYS-PR-CGS-008	3	ECAL THERMAL TEST PROCEDURE
RICSYS-TN-CGS-004	1	ECAL HEATERS AND THERMOSTATS INTEGRATION DESCRIPTION

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TEST REPORTS

LIST OF DOCUMENTS INCLUDED IN THIS SECTION:

DOCUMENT NUMBER	ISSUE	TITLE
RICSYS-RP-CGS-019	1	ECAL THERMAL VACUUM TEST REPORT

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INSPECTION REPORTS

LIST OF DOCUMENTS INCLUDED IN THIS SECTION:

DOCUMENT NUMBER	ISSUE	TITLE

SEE RICSYS-MI-CGS-010 AND RICSYS-MI-CGS-011 IN SECTION 32

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MASS BUDGET RECORD SHEET

CONTRACTOR: Carlo Gavazzi Space S.p.A.
ITEM DESCRIPTION: ECAL TCS ASSY
MODEL: FM
PART N°/C.I. N°: ECAL-TCS FM01
SERIAL N°: 01

ITEM DESCRIPTION	PART NUMBER	SERIAL NUMBER	MASS (Kg)	COG (mm) X	Y	Z	REMARKS
THERMOSTATS	7015-01A0011/3/3/7	N.A.	0.096	N.A.	N.A.	N.A.	SINGLE ITEM MASS = 8 g 8 INSTALLED + 4 SPARE ITEMS
HEATERS	R0632	N.A.	0.214	N.A.	N.A.	N.A.	HARNESS INCLUDED SINGLE HEATER MASS = 13 g 16 INSTALLED + 4 SPARE ITEMS
RADIATOR TAPE - EMBOSSED TEFLON	167149-001	N.A.	0.611	N.A.	N.A.	N.A.	
THERMAL FILLER	62-10-0909-A274	N.A.	0.079	N.A.	N.A.	N.A.	
		TOTAL:	1.044*				

* TOTAL MASS INCLUDES INSTALLED AND SPARE ITEMS

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ELECTRICAL CONSUMPTION BUDGET RECORD SHEET

CONTRACTOR: Carlo Gavazzi Space S.p.A.
ITEM DESCRIPTION: ECAL TCS ASSY

MODEL: FM
PART N°/C.I. N°: ECAL-TCS FM01

SERIAL N°: 01

ITEM DESCRIPTION	PART NUMBER	SERIAL NUMBER	ELECTRICAL CONSUMPTION (W) NOMINAL	STAND BY	REMARKS
HEATERS	R0632	N.A.	80.7W	N.A.	PASSIVE ELEMENTS; CONSUMPTION WHEN FED AT 120V, AND THERMOSTATS ARE CLOSED; TOTAL CUMULATIVE VALUE IS GIVEN (CONSUMPTION OF 16 PATCHES), AS MEASURED DURING TVTEST
		TOTAL:	80.7W	N.A.	

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OPERATION AND MAINTENANCE MANUAL

LIST OF DOCUMENTS INCLUDED IN THIS SECTION:

DOCUMENT NUMBER	ISSUE	TITLE
RICSYS-MA-CGS-003	1	ECAL TCS HANDLING, STORAGE, OPERATION AND MAINTENANCE MANUAL

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TOP ASSEMBLY DRAWINGS, INTERFACE DRAWINGS

LIST OF DRAWINGS INCLUDED IN THIS SECTION:

DRAWING NUMBER	REV.	TITLE
RICSYS-IC-CGS-001	1	ECAL THERMAL CONTROL SYSTEM INTERFACE CONTROL DOCUMENT

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PHOTOS

LIST OF PHOTOS INCLUDED IN THIS SECTION:

IDENTIFICATION NUMBER	DESCRIPTION
ECAL1	HEATER ASSEMBLY ON RADIATOR
ECAL2	RADIATOR COVERED WITH SILVER FEP
ECAL3	ECAL POSITIONING IN THE TV CHAMBER

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PACKING, UNPACKING, HANDLING, STORAGE AND TRANSPORTATION PROCEDURES

LIST OF DOCUMENTS INCLUDED IN THIS SECTION:

DOCUMENT NUMBER	ISSUE	TITLE
SEE THE RELEVANT SECTIONS IN RICSYS-MA-CGS-003, "ECAL OPERATION AND MAINTENANCE USER MANUAL", IN SECTION 26		

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TRR / QR / AR / DR MINUTES

LIST OF MINUTES INCLUDED IN THIS SECTION:

DOCUMENT NUMBER	DATE	DESCRIPTION
RICSYS-MI-CGS-002	25/07/03	AMS 02 - RICH SYSTEM PDR
RICSYS-MI-CGS-003	03/11/03	AMS 02 - RICH SYSTEM
RICSYS-MI-CGS-005	17/06/04	AMS 02 - RICH SYSTEM PROGRESS MEETING
RICSYS-MI-CGS-010	16/11/05	ECAL RADIATORS AND THERMAL HARDWARE INTEGRATION
RICSYS-MI-CGS-011	04/04/06	ECAL RADIATORS AND THERMAL HARDWARE ACCEPTANCE
RICSYS-MI-CGS-012	25/05/06	RICH SYSTEM TRR
RICSYS-MI-CGS-017	12/09/06	TELECONFERENZA DI COORDINAMENTO PRE-ECAL TV/TB TEST E REVISIONE DELLA PROCEDURA DI TEST (TRR PER IL TEST TERMICO DEL SOTTOSISTEMA ECAL)
RICSYS-MI-CGS-018	19/10/06	TELECONFERENZA DI COORDINAMENTO PRE TRB ECAL TVTB TEST
RICSYS-MI-CGS-019	06/11/06	TELECONFERENZA STATO PROROGA CONTRATTO ASI E RESPONSABILITÀ HARDWARE PRODOTTO

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DESIGN REPORT

LIST OF DOCUMENTS INCLUDED IN THIS SECTION:

DOCUMENT NUMBER	ISSUE	DESCRIPTION
RICSYS-RP-CGS-020	1	ECAL THERMAL CONTROL SYSTEM DESIGN REPORT

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