

SERMS

Laboratorio per lo Studio degli
Effetti delle Radiazioni sui Materiali
per lo Spazio
Via Pentima Bassa, 21 Terni
05100 TR
phone/fax: +39.0744.49.29.13

ENVIRONMENTAL TEST REPORT



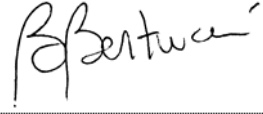
doc: UG crate QM - ESS
date: 29/02/08
rev: A01
pag: 1 /11
file: ENVRPT26_S3013R-
UG crate QM_ESS-
29FEB2K8.doc

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ENVIRONMENTAL TEST REPORT - UG crate QM - ESS

ENVRPT26_S3013R-UG crate QM_ESS-29FEB2K8.doc
date: February 29, 2008
Prot: 217-08

signature

test report prepared by:	29/02/08	Ing. S. Borsini	
		<i>Test Engineer and Responsible</i>	
test report controlled by:	29/02/08	Ing. S. Lucidi	
		<i>QA Manager</i>	
approved by:	29/02/08	Prof.ssa B. Bertucci	
		<i>Laboratory Responsible</i>	

change record

date	change description	revision
29/02/2008	first issue	A01

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TEST REPORT DESCRIPTION

This document is generated by the S.E.R.M.S. Laboratory and reports on the setup, the operation and the results of the test performed on the customer Device Under Test (D.U.T.); several sections compose this report: all of them have been integrated and adapted to the specific tests performed on the D.U.T.

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GENERAL INFORMATION

Job Number:

S3013R

Test performed on:

UG crate QM

Contractor:

INFN - Roma

Contractor responsible:

B.Borgia

Test responsible:

Two subjects - INFN Roma and S.E.R.M.S. - have participated to this test. The applicable procedure has been written by INFN Roma (B.Borgia) **UGcrate_QM2tests_v12.doc**.

Roles and responsibilities of the participating subjects are defined as follow:

- Test conduction has been responsibility of INFN Roma. The test procedure as well as its modifications have been issued by INFN Roma. INFN Roma personnel unit at SERMS has contributed to the setup.
- All the recorded data from the electronics functional test, switch-on/switch-off operations and monitoring are under responsibility of INFN Roma. Personnel units from INFN Roma have contributed to the disassembly phases.
- SERMS has been responsible for the test facility and the measurement hardware (thermal chamber, thermal sensors, data acquisition chain) and has insured a continuous monitoring of the test execution.
- SERMS has been responsible of the environmental parameters along the whole test. Recorded data have been handled only by SERMS qualified personnel.

The SERMS project manager responsible for the test has been Ing. Serena Borsini.

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APPLICABLE LAWS AND RULES

CUSTOMER TEST PROCEDURE

UGcrate_QM2tests_v12.doc
<http://ams.cern.ch/AMS/Electronics/SubD/qa/>

D.L. 19 settembre 1994, n.626

Attuazione delle direttive 89/391/CEE, 89/654/CEE, 89/655/CEE, 89/656/CEE, 90/269/CEE, 90/270/CEE, 90/394/CEE e 90/679/CEE riguardanti il miglioramento della sicurezza e della salute dei lavoratori sul luogo di lavoro, e successive modifiche;

MIL-HDBK-831 23 Aprii 1999

Preparation of Test Reports (guidance only);

UNI -10653 – November 1997

Quality product technical documentation (guidance only) ;

UNI CEI EN45001

general criterion for test laboratory operation;

UNI CEI 70001

norm certificate test laboratory terms and definitions;

UNI CEI 70011

guide for test result presentation;

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TEST SUMMARY

The thermal profile of the test is schematically presented in Figure 1.

It derives from the approved reference profile on the AMS procedure:

- UGcrate_QM2tests_v12.doc
 - <http://ams.cern.ch/AMS/Electronics/SubD/qa/>
- and the related modifications issued by B.Borgia & G.Ambrosi.

The thermal test consists in:

- 10 thermal cycles according to figure 1
- 5 thermal cycles according to figure 1 that have to be performed after the vibration test.

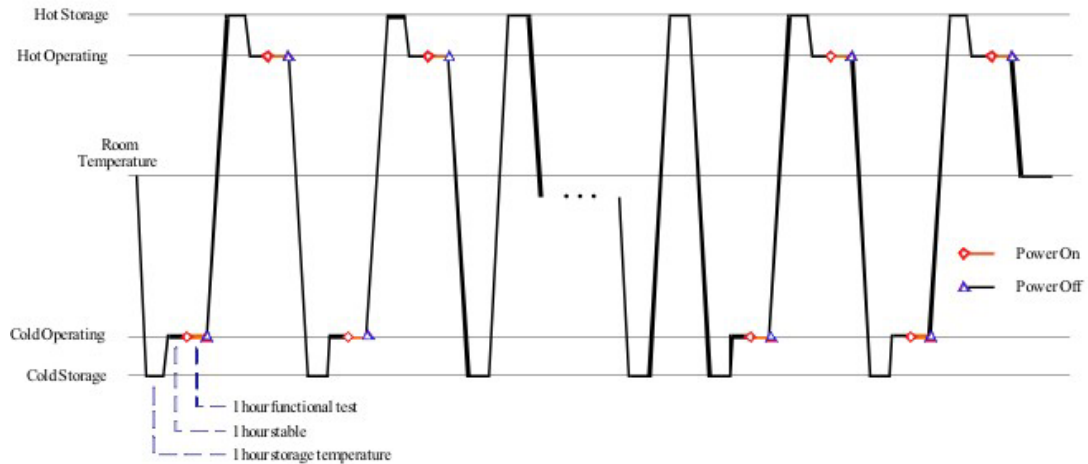


FIGURE 1 – TEST TEMPERATURE PROFILE

The cycle temperature values are listed in the following table.

	HOT	COLD
Non-operating phase	85°C	-45°C
Operating phase	55°C	-25°C

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TEST RESULTS

The UG crate qualification model has been tested at S.E.R.M.S. in the ESS thermal chamber during the period February 14th – February 21th 2008. The environmental parameters in the thermal chamber matched the customer requests and were continuously recorded.

The test has been performed according to the test profile shown in the previous section of this report. INFN experts have attended the test and operated the electronics during the switch-on/switch-off and functional test phases.

No thermal sensors have been installed on the UG crate. Only the temperature inside the thermal chamber has been continuously monitored and recorded using the PT100 sensor of the chamber.

All the commitments of S.E.R.M.S. with the customer have been fulfilled and the test can be declared successfully completed for what concerns the items under S.E.R.M.S. responsibility.

REMARKS

REMARK #1

During the second part of the test (the 5 thermal cycles performed after the vibration test) due to a malfunctioning of the compressor of the thermal chamber the test has been interrupted.

As a consequence, the temperature of the chamber decreased without control. During the 29 hours needed to restore the full thermal chamber functionality, the temperature inside the chamber decreased from 55°C to 20°C.

During this period the chamber temperature has been continuously monitored.

TEST DIARY

DUT incoming:	february 13, 2008;
First test Set-Up:	february 13, 2008;
First thermal test (before vibration):	february 14, 2008 – february 16, 2008.
Disassembly:	february 16, 2008.
Second test Set-Up:	february 19, 2008;
Second thermal test (after vibration):	february 19, 2008 – february 21, 2008.
Disassembly:	february 22, 2008.

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TEST SET-UP

The UG crate has been tested in the thermal chamber placed on the plate without any fixture.

During the set up phase the main activities performed have been:

- unpackage and cleaning of the crate (both internally and externally)
- positioning of the hardware needed to test UG crate functionality
- cabling of the crate

The hardware needed to test crate functionality have been placed outside the thermal chamber.

TEST GRAPHS

The temperature of the chamber has been continuously monitored and recorded during the test. The UG crate temperature has not been monitored.

In this section, the graph summarizing the temporal evolution of the chamber temperature during the whole test period is reported.

Hereby the S.E.R.M.S. guarantees that:

- the handling of the test data has been done only by qualified members of the S.E.R.M.S staff.
- the graph presented in this report is a truthful representation of the recorded data and has been solely produced by the S.E.R.M.S. engineer in charge of the test.

The complete set of recorded data and more detailed graphs relative to specific measurements can be provided on request.

ENVIRONMENTAL TEST REPORT

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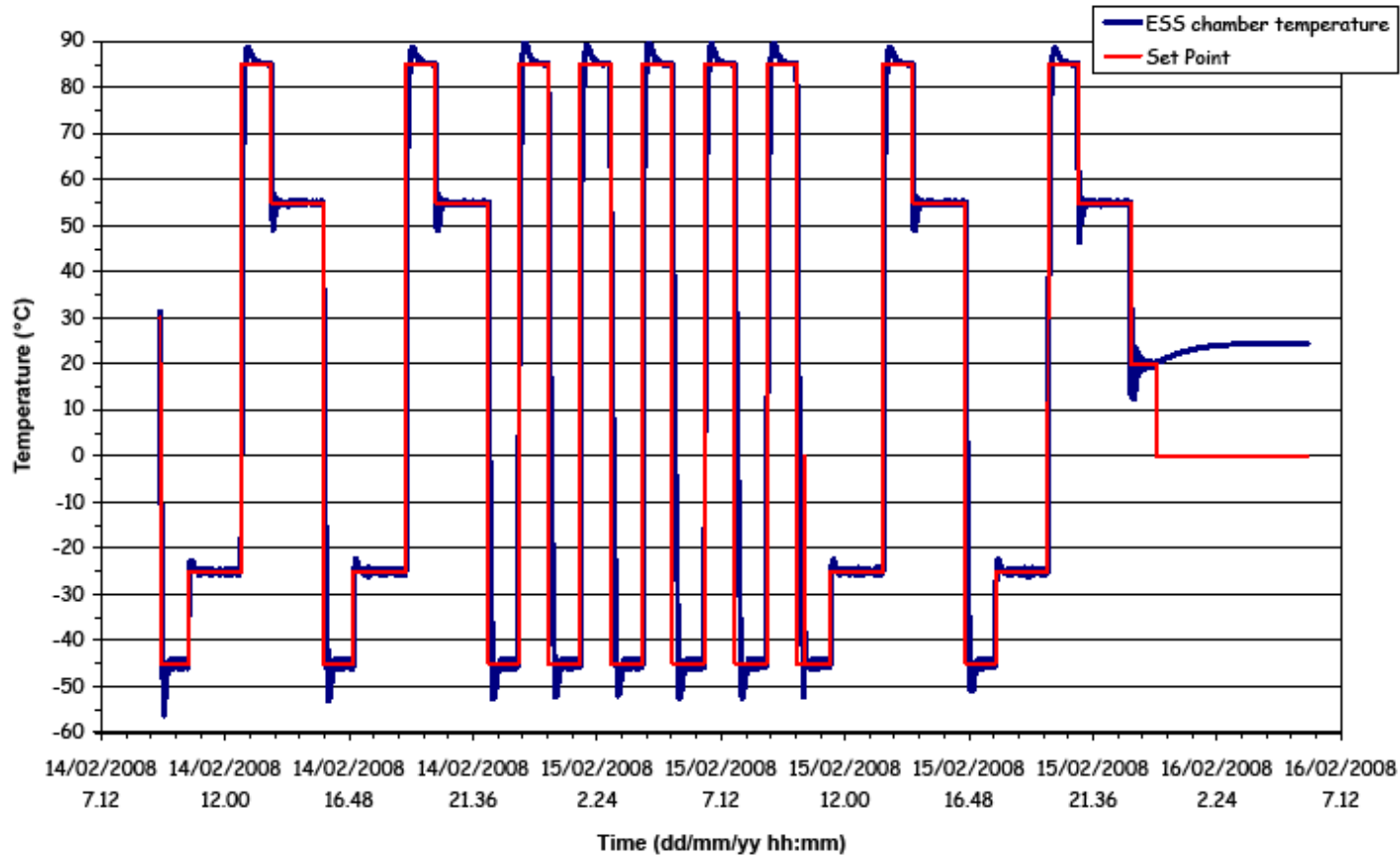


FIGURE 2 – THERMAL TEST BEFORE VIBRATIONS. TEMPERATURE PROFILE OF THE CHAMBER.

ENVIRONMENTAL TEST REPORT

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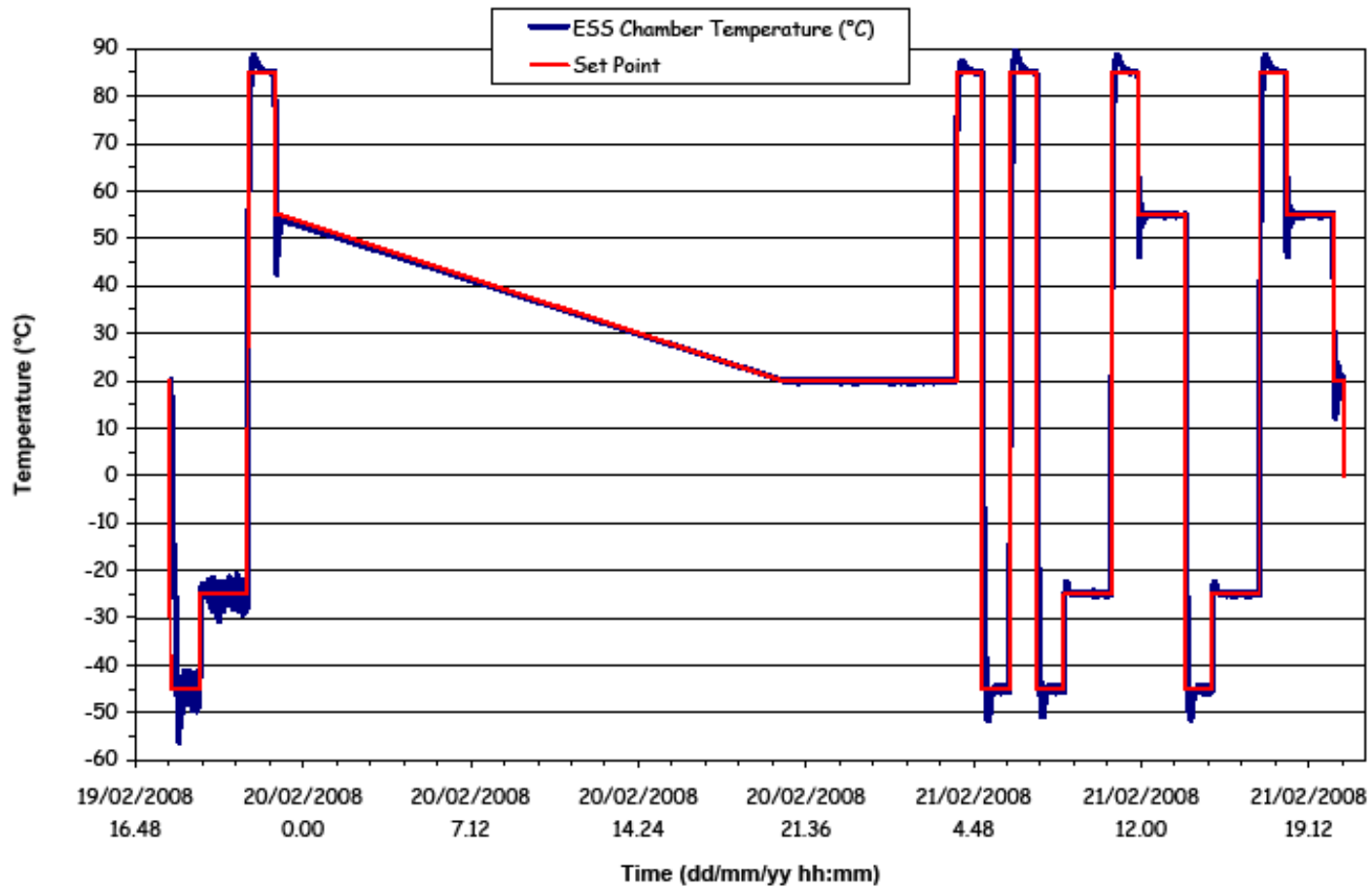


FIGURE 3 – THERMAL TEST AFTER VIBRATIONS. TEMPERATURE PROFILE OF THE CHAMBER.

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END OF DOCUMENT