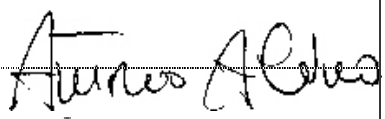
TEST REPORT
VIBRATION TEST
UG-CRATE QM

VIBRPT51-S1104C-A01-26FEB2K8.doc
date: February 26th, 2008
Prot.: 775-08/serms srl

signature

test report prepared by:	26/02/08 *data*	Ing. Stefano Lucidi *QA manager*	
test report controlled by:	26/02/08 *data*	Ing. A. Alvino *Test Responsible*	
approved by:	26/02/08 *Data*	Dott.ssa L. Di Masso *Lab. Responsible*	

change record

date	change description	revision
26/02/08	first issue	A01

NOTICE

REPRODUCTION OF THIS REPORT

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.

CONTENTS

GENERAL INFORMATION

Job Number: **S1104C**
Universal test number: ..**VIBTEST51**
Test performed on: .....UG CRATE QM

contractor: .....**G&A ENGINEERING**
contractor responsible: ..**ING. RENATO BELLAROSA**
subcontractor: .....**INFN-ROMA**
test engineer:.....**ANTONIO ALVINO**
quality assurance: .....**STEFANO LUCIDI**

APPLICABLE LAWS AND RULES

UGcrate_QM2tests-v12 (13/02/08)

S.E.R.M.S Lab. - INTERNAL TEST PROCEDURE

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 April 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;

UNI 9513
vibration and shocks : vocabulary.

SERMS FACILITY - QUALITY ASSURANCE INFORMATION

item	*manufacturer*	code	model	serial	Sense mV/g	*calibration due date*
Control System	Spectral Dynamics	**NA**	2770	1268	**NA**	April 2008
Accelerometer Sensor	Metra-Mess	**56**	KS 94-100	5007	**103,07**	28/06/2008

TEST LEVEL SUMMMARY

The subtests performed are:

All Axes	20 Hz	0.01 g^2/Hz
	20-80 Hz	+3 dB/Octave
	80-500 Hz	0.04 g^2/Hz
	500-2000 Hz	-3 dB/Octave
	2000 Hz	0.01 g^2/Hz
	Overall = 6.8 Grms	

TEST DIARY

test begun: .....**February 18th 2008**
test completed: .....**February 19th, 2008**

The following table shown the subtests performed for the UG-CRATE equipment:

NOME FILE	DATA	START	END	CHANNELS	NOTE
UG_MWL_X	Feb, 18 - 2008	16.30	16.40	CTRL:CH 56;	1. the fixture has been modified, because it doesn't matched the vibration slip table pattern. 2. The vibration test axis is Y.
UG_MWL_Y	Feb, 18 - 2008	16.50	17.10	CTRL:CH 56;	3. the vibration test axis is X.
UG_MWL_Z	Feb, 19 - 2008	13.00	13.15	CTRL:CH 56;	

General note: the test sequence has been changed; the file name X has been used for Y-axis test and the file name Y has been used for X-axis test.

TEST RESULTS

The device under test has been tested with random vibration along its three orthogonal axes in February 2008 at S.E.R.M.S. Lab. in Terni.

The planned tests have been executed according to the test procedure and the required input levels have been verified.

Visual inspections of the D.U.T. have been performed after each sub-test.

FOR ALL SUBTEST (EACH SINGLE AXIS) PERFORMED, NO DAMAGE HAS BEEN REPORTED, AND ALL SUB-TEST HAS BEEN NORMALLY COMPLETED.

The complete set of test data recorded will be provided on customer request; in this report only the most significant test data will be summarized.

REMARKS

All the functional test on the equipment are reported on the following customer document:

R1.

none

Y-AXIS

Details on the performed sub-tests are shown in this section. Note that for each sub-test all the information on the collected data will be reported in "SUB-TEST PARAMETERS AND SUB-TEST GRAPHS" section of this document.

Sub-test description

The general view of the test setup for the Y-axis is shown in figure 1. For the Y-axis sub-test the **DUT** has been mounted on a fixture matching the Y-axis of the DUT with the slip table axis, as shown below. Many sensors (channels or CH) have been used during this sub-test. They were fixed on the DUT by cyanoacrilic glue.

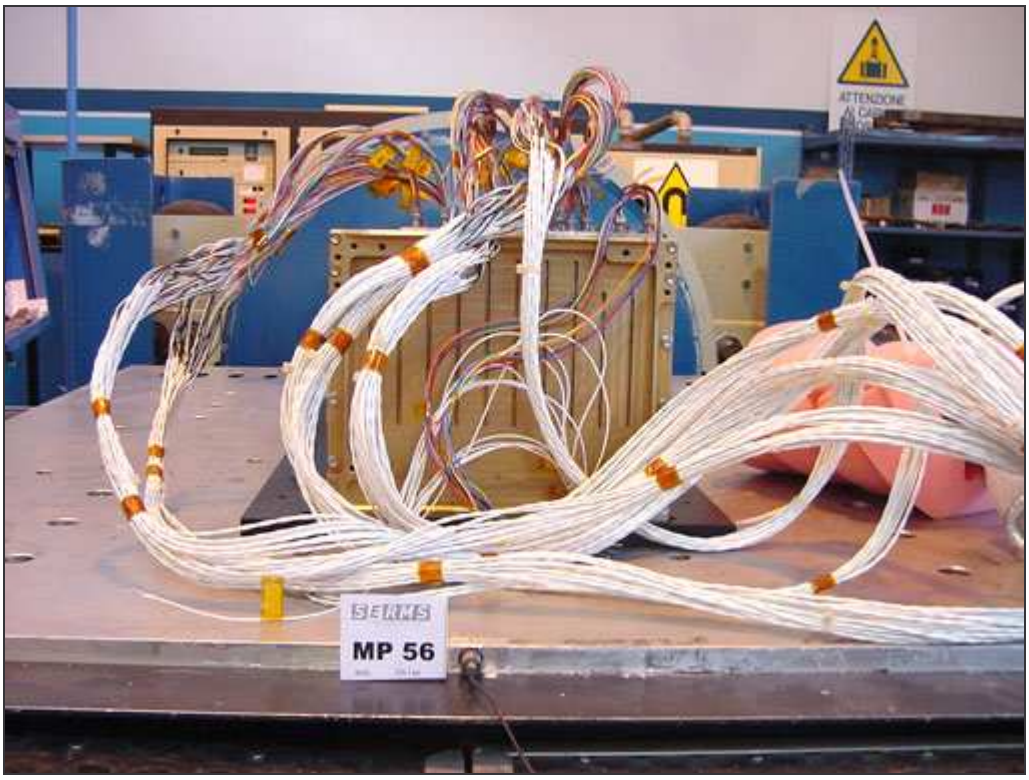


FIGURE 1: Y-Axis: test set-up.

X-AXIS

Details on the performed sub-tests are shown in this section. Note that for each sub-test all the information on the collected data will be reported in "SUB-TEST PARAMETERS AND SUB-TEST GRAPHS" section of this document.

sub-test description

The general view of the test setup for the X-axis is shown in figure 2. For the X-axis sub-test the **DUT** has been mounted over the fixture matching the X-axis of the DUT with the slip table axis, as shown below. Many sensors (channels or CH) have been used during this sub-test. They were fixed on the DUT by cyanoacrilic glue.

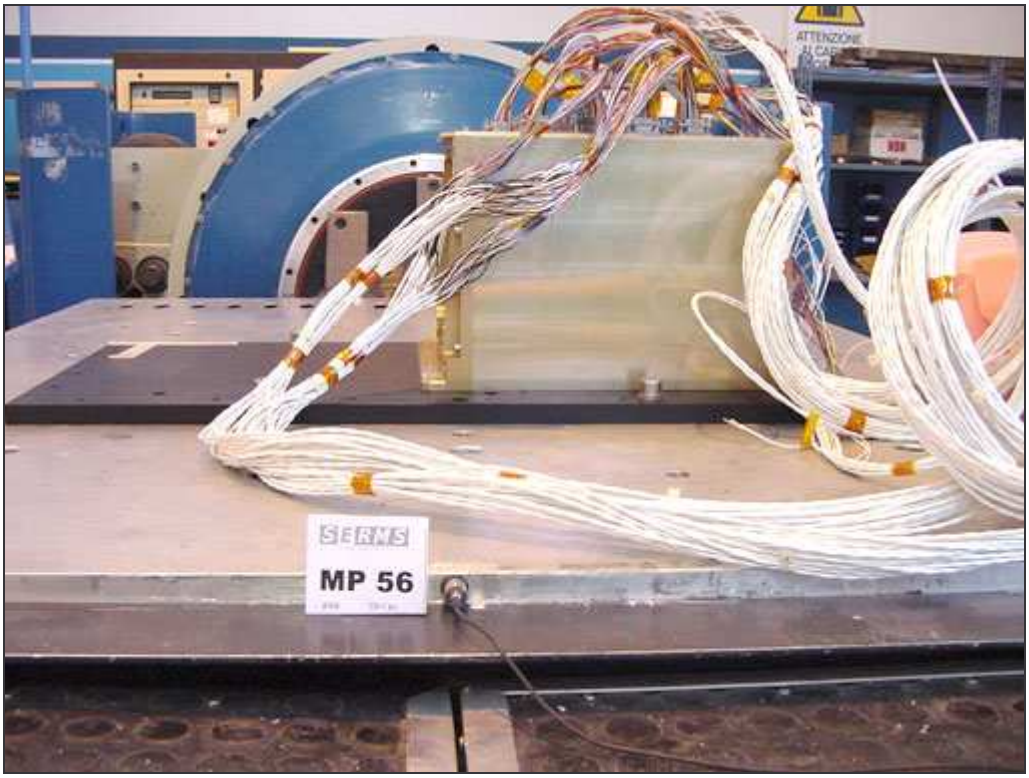


FIGURE 2: X-axis test se-up up.

Z-AXIS

Details on the performed sub-tests are shown in this section. Note that for each sub-test all the information on the collected data will be reported in "SUB-TEST PARAMETERS AND SUB-TEST GRAPHS" section of this document.

Sub-test description

The general view of the test setup for the Z-axis is shown in figure 3. For the Z-axis sub-test the **DUT** has been mounted on a fixture matching the Z-axis of the DUT with the slip table axis, as shown below. Many sensors (channels or CH) have been used during this sub-test. They were fixed on the DUT by cyanoacrilic glue.

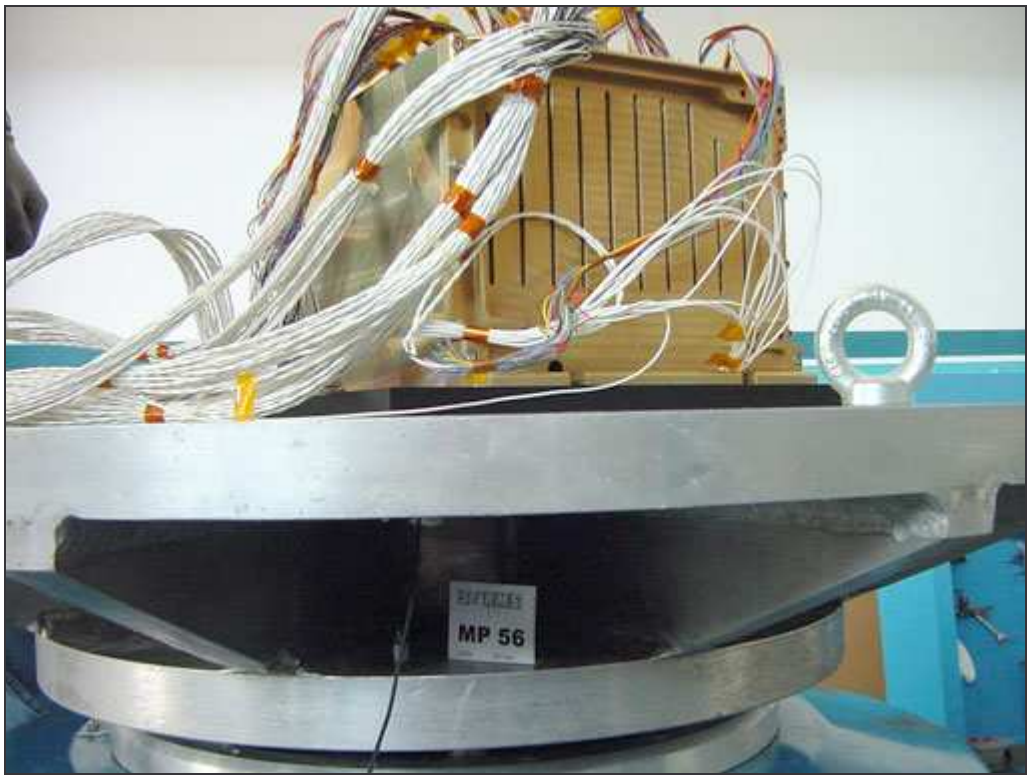


FIGURE 3: Z-Axis test set-up.

SUB-TEST GRAPHS

The S.E.R.M.S. Lab. guarantees that the test set-up and management is done only by authorized and qualified members of the S.E.R.M.S staff according to the customer specifications.
After the input of the test engineer, the control system records the parameters for all the different sub-tests and automatically generates the corresponding printable output files.
The graphs are automatically generated during the test by the control system and directly inserted into this report;

Y-AXIS

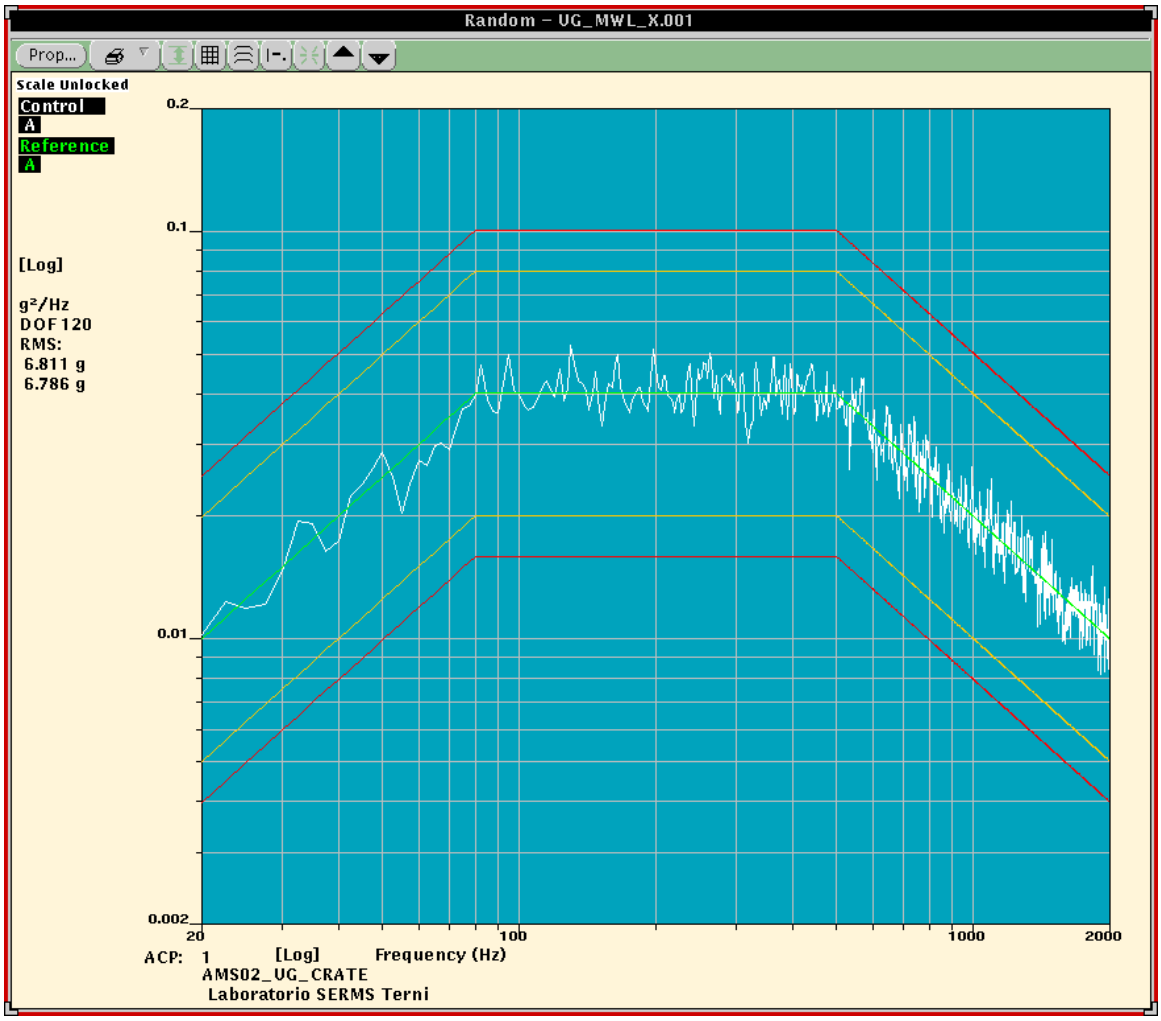


FIGURE 4: Y-AXIS random.

General note: the test sequence has been changed; the file name X has been used for Y-axis test and the file name Y has been used for X-axis test.

X-AXIS

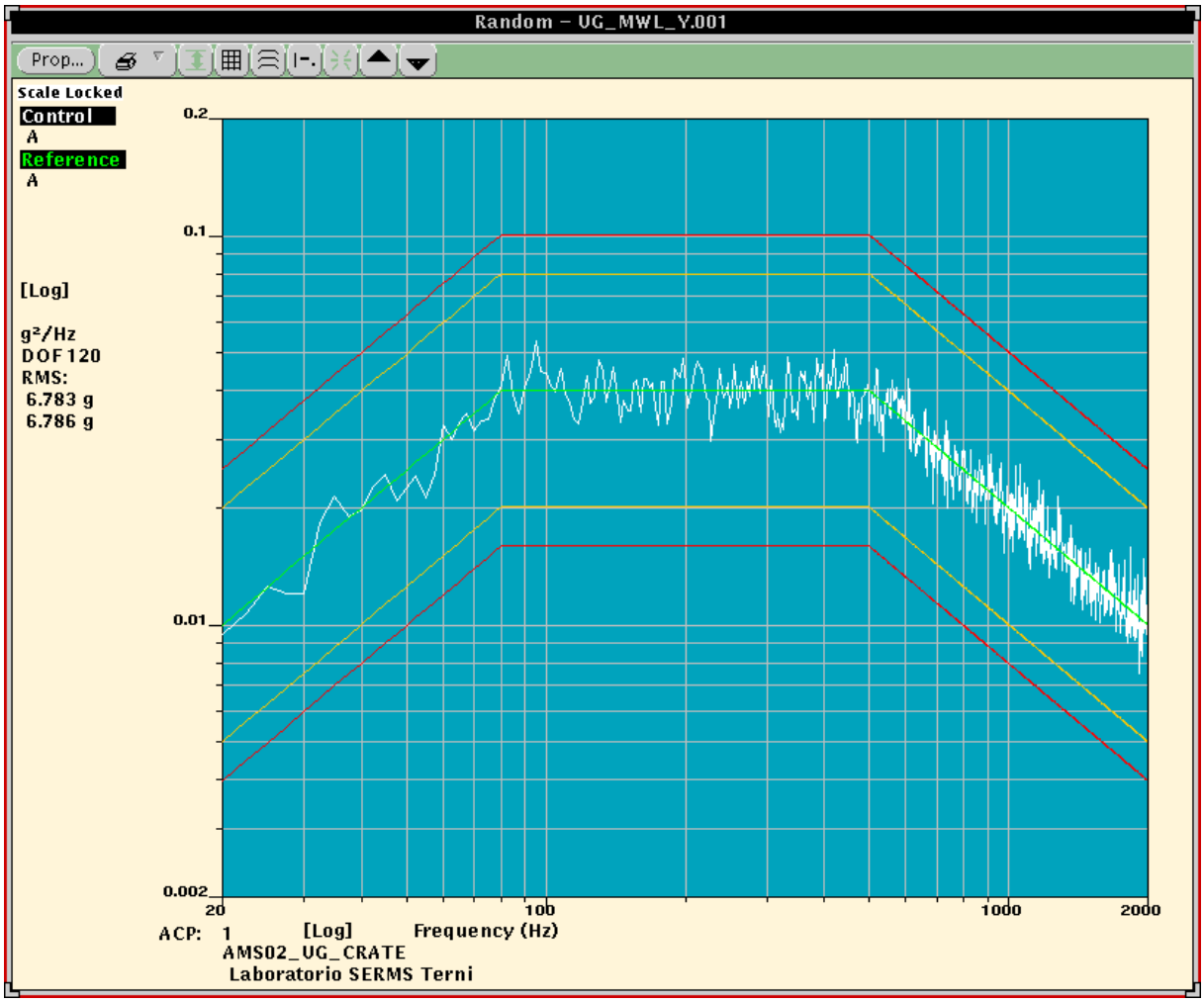


FIGURE 5: X-AXIS random.

General note: the test sequence has been changed; the file name X has been used for Y-axis test and the file name Y has been used for X-axis test.

Z-AXIS

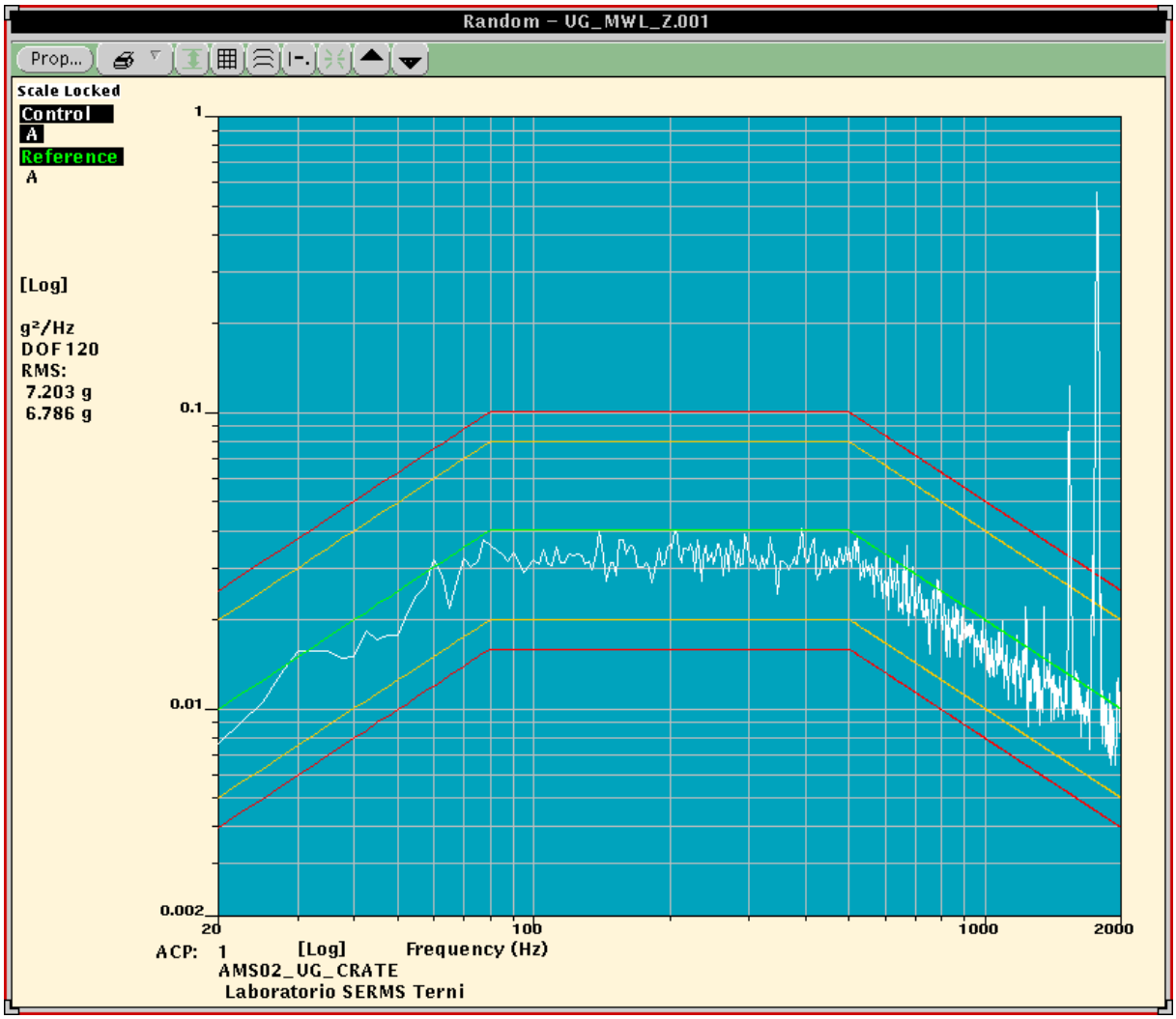


FIGURE 6: Z-AXIS random.

SUB-TEST PARAMETERS

UG_MWL_X.001

Current Date: Mon Mar 10 2008 14:11:49

DOCUMENTATION:
Title 1: AMS02_UG_CRATE
Title 2: Laboratorio SERMS Terni
Title 3:

TEST RESULTS:
Time at Shutdown: 16:03:05
Date at Shutdown: 18-Feb-2008
Reason for Shutdown: Test Completed Normally
Initial Test Level: -9.0 dB
Elapsed Time at Initial Level 000:00:05
Elapsed Time at Full Level 000:10:00
Remaining Time at Full Level 000:00:00
Maximum Control Error: -20.0 dB @ 1912.5 Hz
Table of Alarms Occurrences Maximum Value
Control PSD Tolerance Band: 0
Control RMS Alarm: 0
Maximum Drive: 0
Input Overload: 0

CONTROL STRATEGY:
Degrees of Freedom: 120
Control Spectrum: Maximum
Output Window: Kaiser-Bessel
Drive Clipping: 3.0 Sigma

REFERENCE PARAMETERS:
TEST BANDWIDTH
Minimum Frequency: 20.00 Hz
Maximum Frequency: 2000.00 Hz
Frequency Lines: 800.00 Lines
Frequency Resolution: 2.50 Hz
SPECTRUM DYNAMIC LIMITS
Overall RMS: 6.79 g RMS
Maximum Acceleration (0-pk): 20.36 g
Maximum Velocity (0-pk): 0.16 m/s
Maximum Displacement (0-pk): 0.62 mm
IMPORT REFERENCE
Import: Off

PROFILE PARAMETERS:
DOF Variance (dB): 1.2
PROFILE #1
Label: Duplicate of Reference
Minimum Frequency: 40.00 Hz
Maximum Frequency: 800.00 Hz
Overall RMS: 0.00 g
PROFILE #2
Label: Duplicate of Reference
Minimum Frequency: 5.00 Hz
Maximum Frequency: 2000.00 Hz
Overall RMS: 0.00 g

CHANNEL TABLE ACP 1:

Channel Number	Channel Type	Loop Check	Sensitivity (mV/Units)	Input Coupling	Transducer Type	Control Units	Profile Weight	RMS Abort Number	Avg (Units)	Rem
56	Control	Yes	103.07	ICP	Accel	g	0.00		NO	

99 Utility
100 Drive
(Continued for Labels...)
Channel Channel Channel Documentation
Number Type Label 1 Label 2
56 Control
99 Utility
100 Drive
(97 Inactive Channels)

End of Test Summary

UG_MWL_Y.001

Current Date: Mon Mar 10 2008 14:13:25

DOCUMENTATION:
Title 1: AMS02_UG_CRATE
Title 2: Laboratorio SERMS Terni
Title 3:

TEST RESULTS:
Time at Shutdown: 16:24:57
Date at Shutdown: 18-Feb-2008
Reason for Shutdown: Test Completed Normally
Initial Test Level: -9.0 dB
Elapsed Time at Initial Level 000:00:05
Elapsed Time at Full Level 000:10:00
Remaining Time at Full Level 000:00:00
Maximum Control Error: -19.4 dB @ 1912.5 Hz
Table of Alarms Occurrences Maximum Value
Control PSD Tolerance Band: 0
Control RMS Alarm: 0
Maximum Drive: 0
Input Overload: 0

CONTROL STRATEGY:
Degrees of Freedom: 120
Control Spectrum: Maximum
Output Window: Kaiser-Bessel
Drive Clipping: 3.0 Sigma

REFERENCE PARAMETERS:
TEST BANDWIDTH
Minimum Frequency: 20.00 Hz
Maximum Frequency: 2000.00 Hz
Frequency Lines: 800.00 Lines
Frequency Resolution: 2.50 Hz
SPECTRUM DYNAMIC LIMITS
Overall RMS: 6.79 g RMS
Maximum Acceleration (0-pk): 20.36 g
Maximum Velocity (0-pk): 0.16 m/s
Maximum Displacement (0-pk): 0.62 mm
IMPORT REFERENCE
Import: Off

PROFILE PARAMETERS:
DOF Variance (dB): 1.2
PROFILE #1
Label: Duplicate of Reference
Minimum Frequency: 40.00 Hz
Maximum Frequency: 800.00 Hz
Overall RMS: 0.00 g

PROFILE #2
Label: Duplicate of Reference
Minimum Frequency: 5.00 Hz
Maximum Frequency: 2000.00 Hz
Overall RMS: 0.00 g

CHANNEL TABLE ACP 1:

Channel Number	Channel Type	Loop Check	Sensitivity (mV/Units)	Input Coupling	Transducer Type	Control Units	Profile Weight	RMS Abort Number	Avg (Units)	Rem
56	Control	Yes	103.07	ICP	Accel g	0.00		NO		
99	Utility									
100	Drive									

(Continued for Labels...)

Channel Number	Channel Type	Channel Documentation Label 1	Label 2
56	Control		
99	Utility		
100	Drive		

(97 Inactive Channels)

End of Test Summary

UG_MWL_Z.001

Current Date: Mon Mar 10 2008 14:14:06

DOCUMENTATION:
Title 1: AMS02_UG_CRATE
Title 2: Laboratorio SERMS Terni
Title 3:

TEST RESULTS:
Time at Shutdown: 12:26:51
Date at Shutdown: 19-Feb-2008
Reason for Shutdown: Test Completed Normally
Initial Test Level: -9.0 dB
Elapsed Time at Initial Level 000:00:05
Elapsed Time at Full Level 000:10:00
Remaining Time at Full Level 000:00:00
Maximum Control Error: -18.7 dB @ 1780.0 Hz
Table of Alarms Occurrences Maximum Value
Control PSD Tolerance Band: 0
Control RMS Alarm: 0
Maximum Drive: 0
Input Overload: 0

CONTROL STRATEGY:
Degrees of Freedom: 120
Control Spectrum: Maximum
Output Window: Kaiser-Bessel
Drive Clipping: 3.0 Sigma

REFERENCE PARAMETERS:
TEST BANDWIDTH
Minimum Frequency: 20.00 Hz
Maximum Frequency: 2000.00 Hz
Frequency Lines: 800.00 Lines
Frequency Resolution: 2.50 Hz
SPECTRUM DYNAMIC LIMITS
Overall RMS: 6.79 g RMS
Maximum Acceleration (0-pk): 20.36 g
Maximum Velocity (0-pk): 0.16 m/s

Maximum Displacement (0-pk): 0.62 mm
IMPORT REFERENCE
Import: Off

PROFILE PARAMETERS:
DOF Variance (dB): 1.2
PROFILE #1
Label: Duplicate of Reference
Minimum Frequency: 40.00 Hz
Maximum Frequency: 800.00 Hz
Overall RMS: 0.00 g
PROFILE #2
Label: Duplicate of Reference
Minimum Frequency: 5.00 Hz
Maximum Frequency: 2000.00 Hz
Overall RMS: 0.00 g

CHANNEL TABLE ACP 1:

Channel Number	Channel Type	Loop Check	Sensitivity (mV/Units)	Input Coupling	Transducer Type	Control Units	Profile Weight	RMS Number	Abort (Units)	Avg Rem
56	Control	Yes	103.07	ICP	Accel	g	0.00		NO	
99	Utility									
100	Drive									

(Continued for Labels...)

Channel Number	Channel Type	Channel Documentation Label 1	Label 2
56	Control		
99	Utility		
100	Drive		

(97 Inactive Channels)

End of Test Summary