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 Libro 82, Folio 133, Hoja MA3729

TEST REPORT
REFERENCE STANDARD:

- Germanischer Lloyd. Rules for Classification and Construction. Additional Rules and Guidelines (2003) (partial)
- IEC 60068-2-1:2007 Environmental testing – Part 2: Tests. Test A: Cold.
- IEC 60068-2-2:2007 Environmental testing – Part 2: Tests. Test B: Dry Heat.
- IEC 60068-2-6: 1995 Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal).
- IEC 60068-2-30:2006 Environmental testing – Part 2: Tests. Test Db: Damp Heat Cyclic.
- IEC 60068-2-52:1996 Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic.

NIE..... : 28608REA.001

 Approved by
 (name / position & signature) : Juan Carlos Soler / Consultant

Elaboration date : 2010-10-07

Identification of item tested..... : SELF POWERED TELEPHONE SYSTEM (BATTERYLESS) AU-MAG

Trademark : SCM SISTEMAS, S.L.

Model and/or type reference : AU-MAG

Serial number : See paragraph “Usage of samples” for details

Features : Not indicated

Description : Self powered telephone (batteryless) AU-MAG-A

Self powered telephone (batteryless) AU-MAG

Self powered telephone (batteryless) in waterproof case AU-CJ-MAG

Heatset with microphone and amplifier AU-ACM-A

Applicant : SCM SISTEMAS, S.L.

Address..... : C/ Benjamin Franklin, nº351, nave 6.

33211 Gijón (Spain)

CIF/NIF/Passport : B33826058

Contact person: Guillermo Florez

Telephone / Fax..... : 985356263 / 985348083

e-mail: : guillermo@scmsistemas.com

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test samples supplier | : SCM SISTEMAS, S.L. |
| Address | : C/ Benjamin Franklin, nº351, nave 6. 33211 Gijón (Spain) |
| CIF/NIF/Passport | : B33826058 |
| Contact person: | : Guillermo Florez |
| Telephone / Fax..... | : 985356263 / 985348083 |
| e-mail: | : guillermo@scmsistemas.com |
| Manufacturer | : SCM SISTEMAS, S.L. |
| Address | : C/ Benjamin Franklin, nº351, nave 6. 33211 Gijón (Spain) |
| CIF/NIF/Passport | : B33826058 |
| Telephone / Fax..... | : 985356263 / 985348083 |
| Test method requested | : Cold |
| (See appendix A. for details) | Dry Heat |
| | Damp Heat |
| | Salt mist |
| | Vibrations |
| Standard | : |
| | - Germanischer Lloyd. Rules for Classification and Construction. Additional Rules and Guidelines (2003) (partial) |
| | - IEC 60068-2-1:2007 Environmental testing – Part 2: Tests. Test A: Cold. |
| | - IEC 60068-2-2:2007 Environmental testing – Part 2: Tests. Test B: Dry Heat. |
| | - IEC 60068-2-6: 1995 Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal). |
| | - IEC 60068-2-30:2006 Environmental testing – Part 2: Tests. Test Db: Damp Heat Cyclic. |
| | - IEC 60068-2-52:1996 Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic. |
| Non-standardized test method | : N/A |
| Report template No. | : FDT08_12 |
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Competences and guarantees

AT4 wireless is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, AT4 wireless has a calibration and maintenance programme for its measurement equipment.

AT4 wireless guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at AT4 wireless at the time of performance of the test.

AT4 wireless is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of AT4 wireless.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of AT4 wireless and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the AT4 wireless internal document PODT000.

Usage of samples

Samples undergoing test have been selected by: the client.

Sample M/01 is composed of the following elements:

| <u>Control N°</u> | <u>Description</u> | <u>Model</u> | <u>Serial N°</u> | <u>Date of reception</u> |
|-------------------|---------------------------------------------------------|--------------|------------------|--------------------------|
| 28859C/06 | Self powered telephone (batteryless) in waterproof case | AU-CJ-MAG | 456.006 scm | 2009-01-27 |
| 28859C/07 | Headset with microphone and amplifier | AU-ACM-A | 456.023 scm | 2009-01-27 |
| 28859C/24 | Self powered telephone (batteryless) | AU-MAG-A | -- | 2009-01-27 |
| 28859C/25 | Self powered telephone (batteryless) | AU-MAG | -- | 2009-01-27 |

1. Sample M/01 has undergone the following test(s):
Cold test, Dry heat test and Damp heat test.

Sample M/02 is composed of the following elements:

| <u>Control N°</u> | <u>Description</u> | <u>Model</u> | <u>Serial N°</u> | <u>Date of reception</u> |
|-------------------|---------------------------------------------------------|--------------|------------------|--------------------------|
| 28859C/52 | Self powered telephone (batteryless) in waterproof case | AU-CJ-MAG | 456.006 scm | 2010-07-27 |
| 28859C/07 | Headset with microphone and amplifier | AU-ACM-A | 456.023 scm | 2009-01-27 |
| 28859C/24 | Self powered telephone (batteryless) | AU-MAG-A | -- | 2009-01-27 |
| 28859C/25 | Self powered telephone (batteryless) | AU-MAG | -- | 2009-01-27 |

1. Sample M/02 has undergone the following test(s):
Vibrations test.

Sample M/03 is composed of the following elements:

| <u>Control N°</u> | <u>Description</u> | <u>Model</u> | <u>Serial N°</u> | <u>Date of reception</u> |
|-------------------|---------------------------------------------------------|--------------|------------------|--------------------------|
| 28608C/52 | Self powered telephone (batteryless) in waterproof case | AU-CJ-MAG | 456.006 scm | 2010-07-27 |

1. Sample M/03 has undergone the following test(s):
Salt mist test.

Testing period

The performed test started on 2010-05-11 and finished on 2010-09-15.

The tests have been performed at AT4 wireless.

Environmental conditions

The following limits were not exceeded during the test:

| | |
|-------------------|------------------------------|
| Temperature | Min. = 15 °C Max. = 35 °C |
| Relative humidity | Min. = 25 % Max. = 75 % |

Summary

Considering the results of the performed test, the item/s under test is/are **IN COMPLIANCE** with the requested specifications specified in the standard.

NOTE: The results presented in this Test Report apply only to the particular item under test established in page 1 of this document, as presented for test on the date(s) shown in section, "USAGE OF SAMPLES, TESTING PERIOD AND ENVIRONMENTAL CONDITIONS".

Remarks and comments

See Appendix A. Test results.

Testing verdicts

Not applicable: NA
 Pass: P
 Fail: F
 Not measured: NM

| TESTS | VERDICT | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------|---|---|----|
| | NA | P | F | NM |
| Germanischer Lloyd. Rules for Classification and Construction. Additional Rules and Guidelines (2003). Section 3B. Paragraph 5 Cold. Test B. | | P | | |
| Germanischer Lloyd. Rules for Classification and Construction. Additional Rules and Guidelines (2003). Section 3B. Paragraph 6 Dry heat. Test B. | | P | | |
| Germanischer Lloyd. Rules for Classification and Construction. Additional Rules and Guidelines (2003). Section 3B. Paragraph 7 Damp heat. | | P | | |
| Germanischer Lloyd. Rules for Classification and Construction. Additional Rules and Guidelines (2003). Section 3B. Paragraph 8 Salt mist. | | P | | |
| Germanischer Lloyd. Rules for Classification and Construction. Additional Rules and Guidelines (2003). Section 3B. Paragraph 9 Vibrations. Curve 1. | | P | | |

APPENDIX A: Test result

TEST METHOD REQUESTED

| TEST | BASIC STANDARD | REGISTER SOCIETY AND CLAUSE | TEST SEVERITY |
|-----------|----------------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dry Heat | IEC 60068-2-2 | GERMANISCHER LLOYD: Part 7- Ch.2-section 3B- Test 6. | Test Temperature: +70°C Duration: 2 h. <ul style="list-style-type: none"> • The equipment under test is placed in the test chamber at room temperature and remains connected and switched on throughout the test. During the final 60 minutes of the test functional test shall be performed. • Functional test after test at room temperature. |
| Cold | IEC 60068-2-1 | GERMANISCHER LLOYD: Part 7- Ch.2-section 3B- Test 5. | Test Temperature: -25°C Duration: 2 h. <ul style="list-style-type: none"> • The EUT is placed in the test chamber at room temperature and remains connected but not switched on, during the cooling phase and throughout the test. During the final 60 minutes of the test functional test shall be performed at test temp. • Functional test after test at room temperature and an insulation test. |
| Damp Heat | IEC 60068-2-30 | GERMANISCHER LLOYD: Part 7- Ch.2-section 3B- Test 7. | -Test Temperature: +55°C -Relative humidity: 95% -Duration: 2 cycles of 24 h each. -Insulation resistance measurement shall be performed before and after Damp Heat test. <ul style="list-style-type: none"> • The EUT is placed in the test chamber at room temperature and remains connected and switched on throughout the first test cycle. During the second test cycle the EUT is switched off except for the functional test. • Functional test shall be performed at test temperature within the first 2 hours of the first and the last 2 hours of the second test cycle. |

| TEST | BASIC STANDARD | REGISTER SOCIETY AND CLAUSE | TEST SEVERITY |
|------------|----------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Salt mist | IEC 60068-2-52 | GERMANISCHER LLOYD: Part 7- Ch.2-section 3B- Test 8. | <p>- Severity level: 1</p> <p>- Number of sprayings: 4</p> <p>- Storage period in damp chamber: 7days, after each spraying.</p> <p>- Spray duration: 2 h</p> <p>- Temperature: +25°C±10°C.</p> <p>- Saline solution: 5% NaCl</p> <p>- PH value : 6,5 to 7,2 at 20°C.</p> <p>- Storage temperature: +40°C.</p> <p>- Storage Humidity: 93%RH.</p> <p>Before commencing the test an insulation resistance measurement shall be taken and a functional test shall be performed.</p> <p>During the test the equipment under test is connected but is not switched on. The test consists of 4 sprayings and 7 days storage period functional tests shall be performed.</p> <p>On completion of the test a functional test is performed and a insulation resistance measurement and the condition of the equipment under test is evaluated (visual inspection)</p> |
| Vibrations | IEC 60068-2-6 | GERMANISCHER LLOYD: Part 7- Ch.2-section 3B- Test 9. | <p>Vibration</p> <p>-Frequencies: 5 – 100 Hz</p> <p>5 Hz – 13,2 Hz: 1,0 mm constant displacement.</p> <p>-13,2 Hz – 100 Hz: 0,7 g constant acceleration.</p> <p>-Sweep rate: 1 oct/min.</p> <p>-Axis: 3 (X,Y,Z)</p> <p>-1st Test: Determination of resonance points.</p> <p>-2nd Test: If points of resonance are determined on the equipment under test with an amplification factor $Q > 2$ the test duration is 90 min per resonance frequency, if no at 30 Hz.</p> <p>-Device under test shall be at the rated operational voltage during test.</p> |

RESULTS OF DRY HEAT TEST:

Test Severity: 70°C / 2 h:

Functional test at 70°C: PASS.

Functional test after test: PASS.

Visual inspection: No defects have appeared: PASS.

RESULTS OF DAMP HEAT CYCLIC TEST:

Functional tests during test : PASS.

Functional test after test: PASS.

Visual inspection: No defects have appeared: PASS.

Insulation resistance test before test: PASS

Insulation resistance test after test: PASS

RESULTS OF COLD TEST:

Test Severity: -25°C / 2 h:

Functional test at -25°C: PASS.

Functional test after test: PASS.

Visual inspection: No defects have appeared: PASS.

Insulation resistance test before test: PASS

Insulation resistance test after test: PASS

RESULTS OF SALT MIST TEST:

Functional tests after each cycle: PASS.

Functional test after test: PASS.

Visual inspection: No defects have appeared: PASS.

Insulation resistance test before test: PASS

Insulation resistance test after test: PASS

RESULTS OF VIBRATION TEST:

The vibration tests on every axis is composed for two vibration, one vibration is to perform a sweep to search resonance points with $Q > 2$. The second test consist in to vibrate the sample during 90 minutes at resonance frequency, if no resonance frequency has founded, perform the test at 30 Hz. The equipment shall be in operating mode during the test.

Results of Vibration test:

Severity of the test:

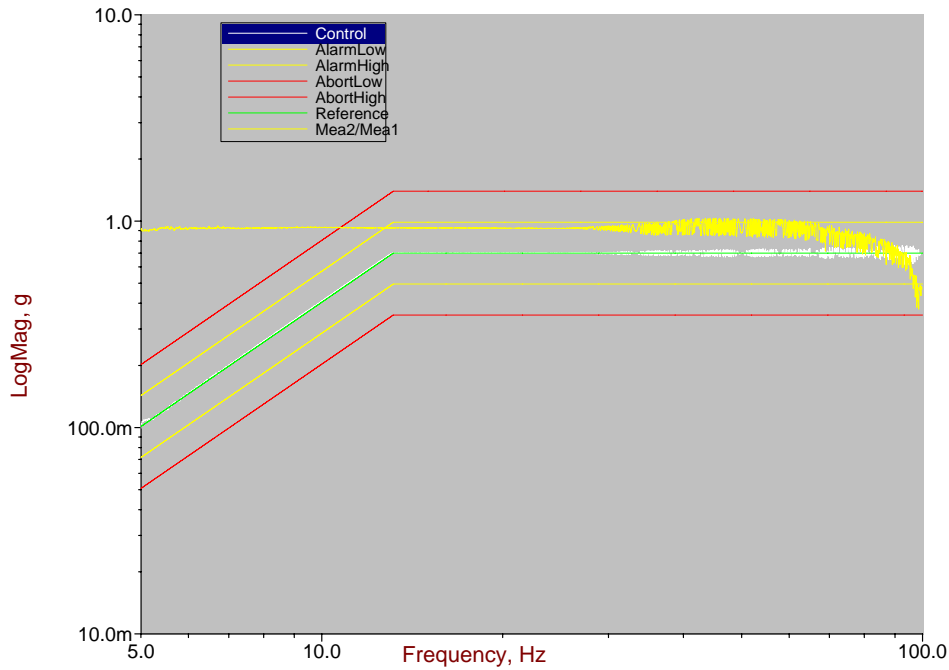
- Frequencies: 5 – 100 Hz
- 5 Hz – 13,2 Hz: 1,0 mm constant displacement.
- 13,2 Hz – 100 Hz: 0,7 g constant acceleration.
- Sweep rate: 1 oct/min.

Axis X:

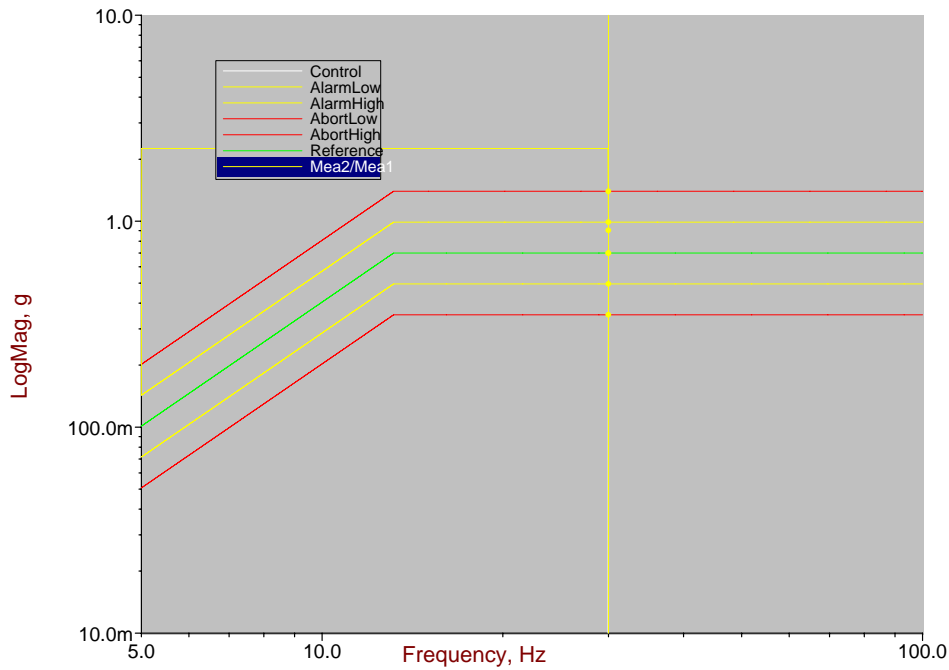
Resonance searching: No resonance points with $Q > 2$ has appeared during this test.

Sine vibration: No fails have appeared during this test (90 min at 30 Hz). After test the equipment continues working properly.

Next is the vibration graph where resonance points with $Q > 2$ are not observed during the test



Vibration graph 90 min at 30 Hz (Axis X)

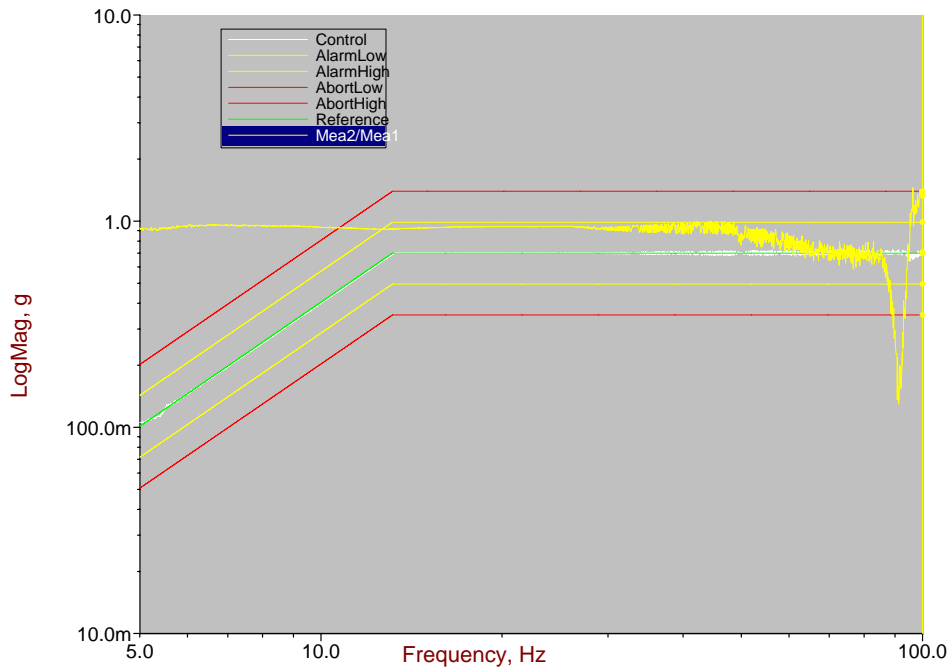


Axis Y:

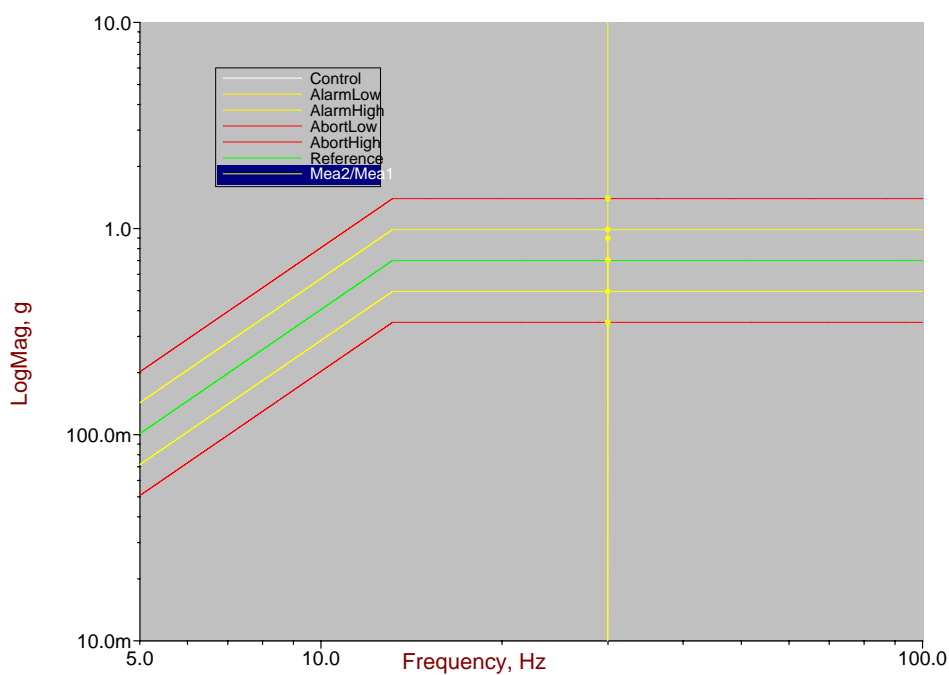
Resonance searching: No resonance points with $Q > 2$ has appeared during this test.

Sine vibration: No fails have appeared during this test (90 min at 30 Hz). After test the equipment continues working properly.

Next is the vibration graph where resonance points with $Q > 2$ are not observed during the test



Vibration graph 90 min at 30 Hz (Axis Y)

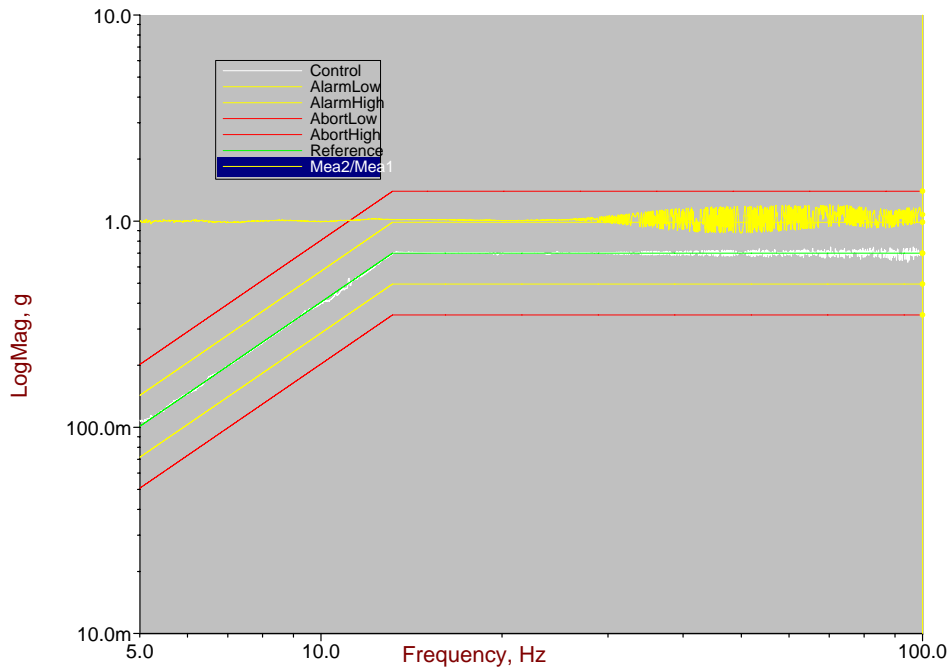


Axis Z:

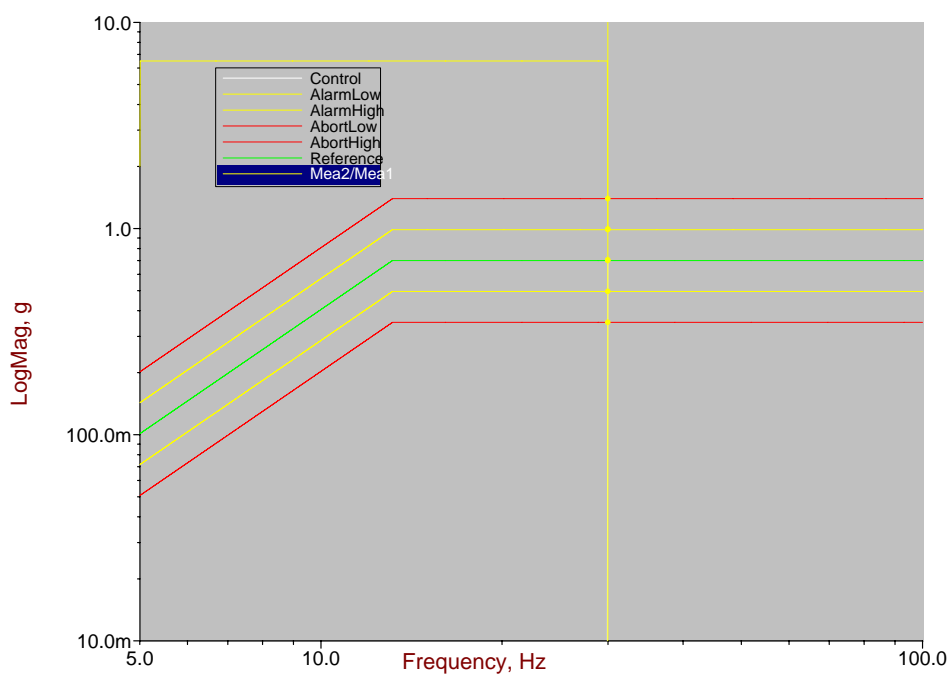
Resonance searching: No resonance points with $Q > 2$ has appeared during this test.

Sine vibration: No fails have appeared during this test (90 min at 30 Hz). After test the equipment continues working properly.

Next is the vibration graph where resonance points with $Q > 2$ are not observed during the test



Vibration graph 90 min at 30 Hz (Axis Z)



APPENDIX B: Photographs

Climatic test:
Dry heat, cold,
damp heat



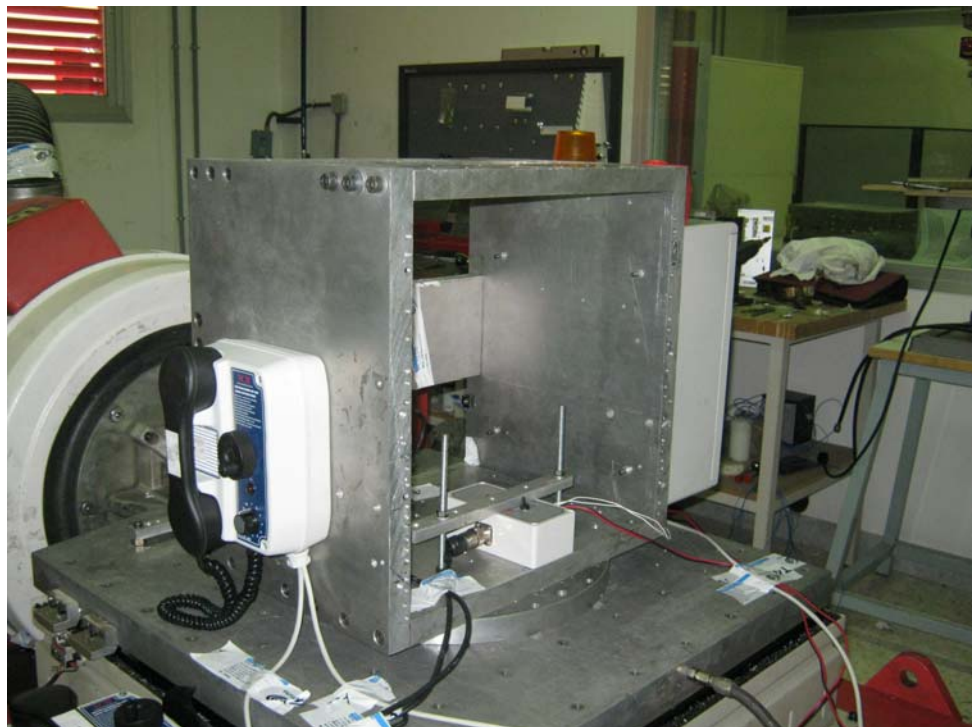
Climatic test:
Dry heat, cold,
damp heat



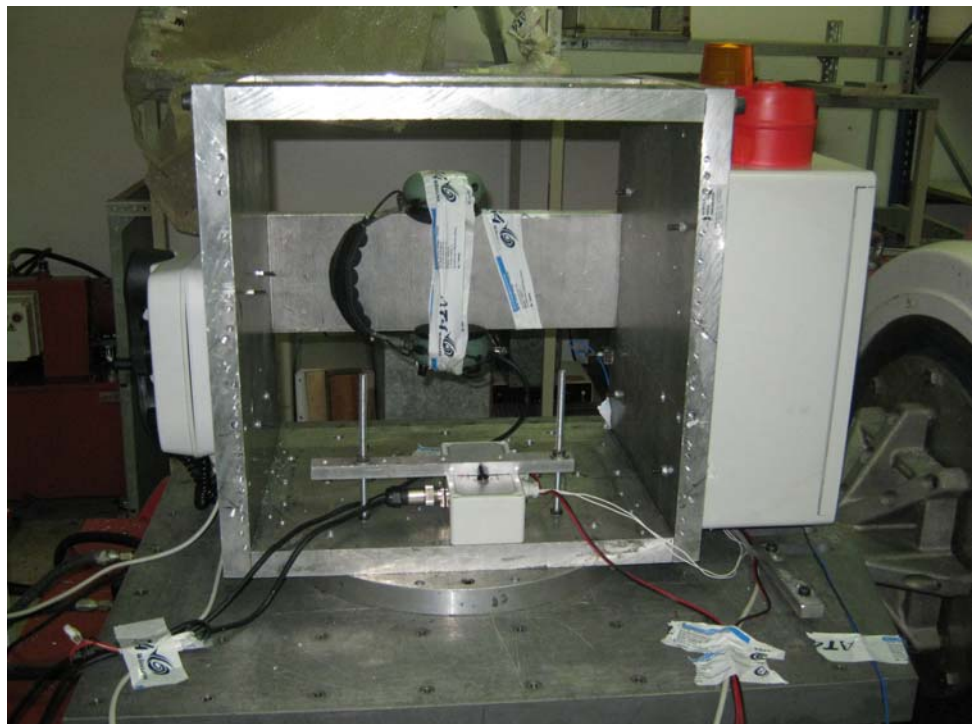
Interior view
of the sample
after salt mist
test



Vibration test
Axis X



Vibration test
Axis Y



Vibration test
Axis Z

