

Environmental Tests (ENV) SECTOR

| | | | |
|--------------------------------|--|--------------------------------------|--|
| Product description: | Empty enclosure | | |
| Model: | GEMINI Size 2 (box code: 1SL0222A00 - door code: 1SL0242A00) GEMINI Size 5 (box code: 1SL0225A00 - door code: 1SL0245A00) | | |
| HW revision: | N/A | SW/FW revision: | N/A |
| Test specification: | EN 62208:2003-12 EN 62262: 2002-02 | | |
| Performed tests: | On customer request only the tests listed in § 5 | | |
| Result: | <input type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input checked="" type="checkbox"/> See § 5 |
| Manufacturer: | ABB SACE S.p.A. Via Vicenza, 61 - 36063 Marostica (VI) - Italy Tel. +39.0424.478200 Fax +39.0424.478315 | | |
| Factory plant: | Same as Manufacturer | | |
| Applicant: | Same as Manufacturer | | |
| Customer: | Same as Manufacturer | | |
| Purchase Order: | 4500663575/LMA | dated: | 2011-08-02 |
| Order Confirmation: | CO 2011-0249-00 | dated: | 2011-08-02 |
| Samples receiving date: | 2011-08-02 | | |
| Tests date: | from: | 2011-08-03 | to: 2011-08-03 |

| | |
|--|--|
| Test Laboratory: INTEK S.p.A. - Test and Measurement Division Via Mazzini, 75 25086 Rezzato (BS) - Italy Tel. +39.030.2591 857 Fax +39.030.2594 351 url: http://www.intek.it e-mail: info@intek.it | Test site: Same as Test Laboratory |
|--|--|

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Test and Measurement Division Manager

| | | |
|-------------|-------------|--------------------|
| 00 | 2011-08-04 | Formal issue |
| Rev. | Date | Description |

Results of tests and controls reported in this document refer only to samples as tested and described.

It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

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INDEX

| | | |
|-----|---|----|
| 1. | PURPOSE | 3 |
| 2. | APPLICABLE DOCUMENTS..... | 3 |
| 2.1 | OTHERS DOCUMENTS..... | 3 |
| 3. | TEST SAMPLE IDENTIFICATION..... | 4 |
| 3.1 | DESCRIPTION..... | 4 |
| 3.2 | SAMPLES ORIGIN..... | 5 |
| 4. | TEST INFORMATIONS..... | 6 |
| 4.1 | CONDITIONS DURING THE TESTS..... | 6 |
| 4.2 | CONFIGURATION | 6 |
| 4.3 | CRITERIA ADOPTED FOR COMPLIANCE EVALUATION | 7 |
| 5. | TESTS RESULT..... | 8 |
| 5.1 | SAMPLES CORRELATION / TEST SEQUENCE..... | 8 |
| 5.2 | TEST METHOD DEVIATIONS..... | 8 |
| 6. | TESTS PERFORMED | 9 |
| 6.1 | VERIFICATION OF DEGREE OF PROTECTION AGAINST EXTERNAL MECHANICAL IMPACT (IK 09 CODE) AT LOW TEMPERATURE -30°C § 9.6 - EN 62208..... | 9 |
| 7. | TEST INSTRUMENTATION | 10 |
| 7.1 | INSTRUMENTATION ACCURACY..... | 10 |
| 8. | EUT DOCUMENTATION..... | 10 |
| 9. | ANNEXES LIST..... | 10 |

1. PURPOSE

Purpose of this document is to contain results of the tests performed to verify correspondence of test samples, as identified and described in paragraph 3, to requirements of standards listed in paragraph 2.

2. APPLICABLE DOCUMENTS

On customer request, the tests have been performed in compliance with the standards listed below:

| Standard | Date | Ed. | Title |
|---------------|---------|-----|---|
| EN 62208 | 2003-12 | / | Empty enclosures for low-voltage switchgear and controlgear assemblies - General requirements |
| IEC 62262 | 2002-02 | / | Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK Code) |
| EN 60068-2-75 | 1997-10 | / | Environmental testing Part 2: Tests - Test Eh: Hammer tests |

Following the “applicable documents” will be indicated without date and/or edition number and/or amendments.

2.1 OTHERS DOCUMENTS

| Document | Date | Rev. | Title |
|----------|------|------|-------|
| / | / | / | / |

3. TEST SAMPLE IDENTIFICATION

3.1 DESCRIPTION

Identification data of test samples are reported in the first page of this document.



Sample identification (Size 2)



Sample identification (Size 5)

3.1.1 TECHNICAL DATA

| | |
|-------------------------------|--|
| Power supply nominal voltage: | / |
| Rated frequency: | / |
| Rated power / current: | / |
| Extreme environmental ranges: | / |
| Dimensions: | 550x460x260 (Size 2) 855x590x360 (Size 5) |
| Other: | / |

3.1.2 CLASSIFICATION

| | |
|---------------------------------|------|
| Degree of enclosure protection: | IK08 |
| Other: | / |

3.1.3 ADDITIONAL INFORMATION

None

3.2 SAMPLES ORIGIN

| | | | |
|---|---|---|--|
| The test samples were furnished by: | | | |
| <input checked="" type="checkbox"/> Manufacturer | <input type="checkbox"/> Customer | <input type="checkbox"/> Applicant | <input type="checkbox"/> Other |
| The beginning sampling was carried out by: | | | |
| <input checked="" type="checkbox"/> Manufacturer | <input type="checkbox"/> Customer | <input type="checkbox"/> Applicant | <input type="checkbox"/> Other |
| Received samples: | 2 | Tested samples: | 2 |
| Selection method: | <input type="checkbox"/> Random taking | | <input checked="" type="checkbox"/> N/A |

4. TEST INFORMATIONS**4.1 CONDITIONS DURING THE TESTS****4.1.1 PERSONNEL PRESENT TO THE TESTS**

| | |
|-----------------------|--------------------------------------|
| Test performed by: | <i>Marco Zanfabro (Intek S.p.A.)</i> |
| Other people present: | / |

4.1.2 MODIFICATIONS TO SAMPLES

Test samples were not modified during the tests.

4.1.3 ENVIRONMENTAL CONDITIONS

Test site environmental conditions are recorded during tests and they are shown on relevant paragraphs.
The measurement uncertainties are given with expanded uncertainty with a level of confidence of 95 % ($k = 2$).

4.1.4 CONVENTIONS

If applicable, on the right of each chapter or paragraph is written the number of the chapter or paragraph of reference Standard in the form: § number.

4.1.5 ABBREVIATIONS

Not Applicable = N/A

Not Declared = N/D

Not Required by the customer = N/R

Fail = F

Pass = P

Test Report = TR

Equipment Under Test = EUT

4.2 CONFIGURATION

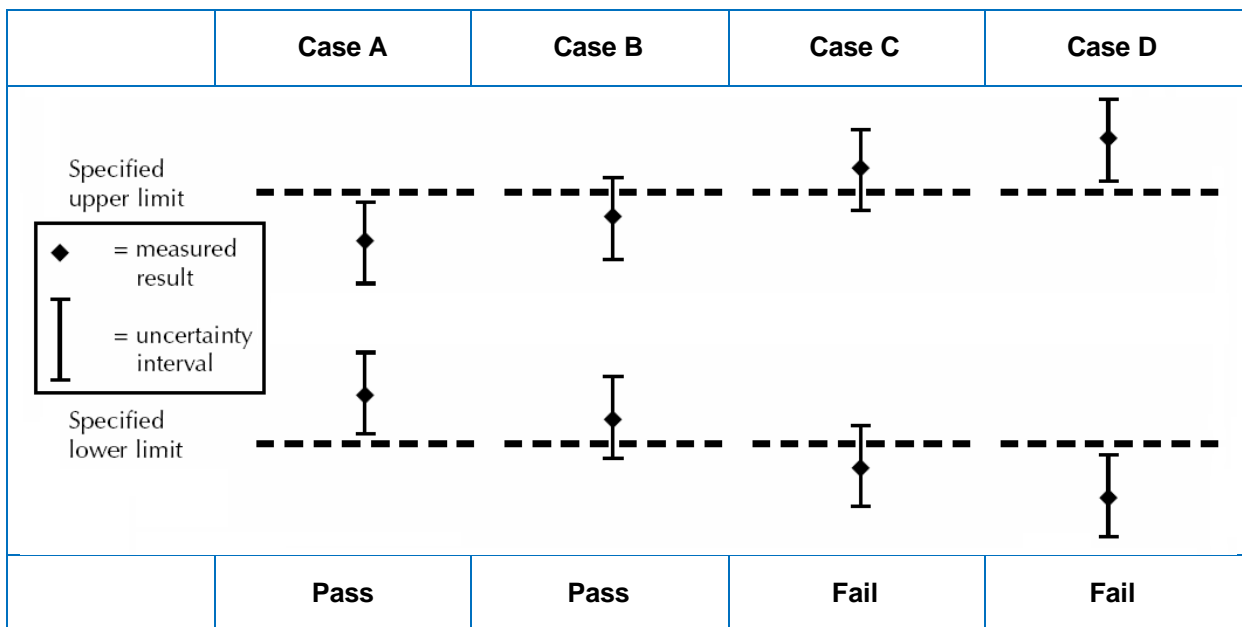
The test samples are individually verified following the methods and the procedures specified in the reference documents.

4.3 CRITERIA ADOPTED FOR COMPLIANCE EVALUATION

If applicable for compliance evaluation of test results, the Laboratory adopts the following criteria:

- Reference standard specifies uncertainty for measurements:
 - measurements uncertainty permitted;
 - instruments accuracy;
 - application of measurements uncertainty to the measured values;
 in this case the measurement complies with the requirement if the measured value is within the limits, or with the correction due to the Laboratory uncertainty.
- Reference standard doesn't specify uncertainty for measurements:

Calculate uncertainty for measurement and compare the measured result with uncertainty band to defined acceptable limit. The measurement complies with the requirement if the probability it being within the limit is at least 50 % (see following figure):



5. TESTS RESULT

| Ref. § TR | Test / Verification | § Standard EN 62208 | Result (ref. § 4.3) | Annex N. | Notes |
|--------------|---|------------------------|------------------------|-------------|-------|
| 6.1 | Verification of degree of protection against external mechanical impact (IK 08 code) at low temperature - 40 °C | § 9.6 | Pass | 1 | / |

Notes: /

5.1 SAMPLES CORRELATION / TEST SEQUENCE

The samples were sequentially subjected to the tests described in the following paragraphs.

5.2 TEST METHOD DEVIATIONS

Test methods described in the reference document were adopted without any deviation.

6. TESTS PERFORMED**6.1 VERIFICATION OF DEGREE OF PROTECTION AGAINST EXTERNAL MECHANICAL IMPACT (IK 08 CODE) AT LOW TEMPERATURE -30°C § 9.6 - EN 62208****6.1.1 DESCRIPTION**

The test was performed in conformity to § 9.6 of the EN 62208 standard reference.

Verification of the degree of protection against mechanical impacts shall be carried out in accordance with IEC 62262 by means of a test hammer as described in IEC 60068-2-75 suitable for the dimensions of the enclosure. The enclosure shall be fixed on a rigid support as for normal use.

Before performing the impact test sample was conditioned for at least 16 hours at a temperature of -40 °C.

Immediately after removing the sample from the climatic chamber, this was subjected to the impacts.

The impacts were applied with energy of 5 J in accordance with Table 3 of the EN 62208.

The impacts were applied three times to each exposed surface in normal use.

The test shall not be applied to the enclosure components (locks, hinges, etc.).

The impacts shall be applied with even distribution over the faces of the enclosure.

Acceptance criteria:

After the test, the enclosure shall continue to provide the IP code and dielectric strength. Removable covers can be removed and reinstalled, doors opened and closed.

6.1.2 ENVIRONMENTAL CONDITIONS OF THE TEST SITE

Temperature: 23 °C ± 2 °C

Relative Humidity: 50 % ± 5 %

Atm. pressure.: 1010 mbar ± 20 mbar

6.1.3 SUMMARY OF RESULTS

| Annex N. | Fig. N. | Sample N. | Description | Result | Notes |
|----------|---------|-----------|---|-------------|-----------|
| 01 | 1, 2 | 1 - 2 | After the test the sample doesn't show any damage and it's possible to open and close the door. | Pass | #1 |

Notes: **#1** - On customer request wasn't performed the IP code verification after the impacts.

7. TEST INSTRUMENTATION

| Ref. § TR | Description | Manufacturer | Model | Intek ID | Last Calibration | Calibration due |
|-----------|--|------------------|------------------|--------------|------------------|-----------------|
| 6.1 | Climatic chamber | Perani | UCS 600/70 | 0696 P UL | 2011-02-22 | 2012-02-22 |
| 6.1 | Test apparatus with vertical hammer | ATS di Galbusera | 02.26 | 0873 N UL | 2011-07-29 | 2012-07-29 |
| 6.1 | 1700 g striking element with guideway pipe | ATS di Galbusera | 1700 g | 0875 P UL | 2011-07-29 | 2012-07-29 |
| 6.1 | Tape meter | Fisher Darex | Protec Magnet 5m | 0740 P UL | 2010-09-11 | 2014-09-11 |
| 6.1 | Thermo/hygrometer | Deltaohm | HD 206-1 | 0688 P UL | 2011-02-16 | 2012-02-16 |
| 6.1 | Barometer | Fischer | / | 0054 | 2010-11-09 | 2014-11-09 |

7.1 INSTRUMENTATION ACCURACY

If reference standard doesn't specify otherwise, accuracy of used instrumentation for the tests is in accordance to the limits indicated in the document

- CTL Decision Sheet DSH251B 2009 Developed by WG4-WG1 "Measurements accuracy"

8. EUT DOCUMENTATION

| Description | Code | Date - revision |
|----------------|---------------|-----------------|
| User manual | Not available | / |
| Component list | Not available | / |
| Wiring diagram | Not available | / |

9. ANNEXES LIST

| Annex N. | Description |
|----------|--------------|
| 01 | Photographs. |

End of test report.



Fig. 1. - Test result of IK08 (Size 2)



Fig. 2. - Test result of IK08 (Size 5)