

TEST REPORT
IEC 60598-2-1 and/or EN 60598-2-1
Luminaires
Part 2: Particular requirements:
Section One – Fixed general purpose luminaires

Test Report number: SAFEAIRFA140203.00

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Technical Director
(Document signed by means of electronic signature)

Date of issue.....: 28-01-2015

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Applicant's name.....: AIRFAL INTERNATIONAL, S.L.

address.....: Polígono Industrial San Miguel, C/ Rio Esera, 4
Villanueva de Gállego 50830 (Zaragoza – Spain)

Testing laboratory: TECNOCREA, S.L.

Address: C/ Colón, 41
46210 Picaña (Valencia – Spain)

Test specifications:

Standard: IEC 60598-2-1:1979 + A1:1987 used in conjunction with IEC 60598-1:2008

EN 60598-2-1:1989 used in conjunction with EN 60598-1:2008 + A11:2009

* The tests marked are not enshrined by ENAC accreditation.

Test procedure: CE SAFE

Non-standard test method.....: N/A

Test Report Form No......: 03IECEN60598_2_1_04

Test Report Form(s) Originator: Tecnocert

Master Test Report Form: Dated 03-2014

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Testing laboratory accepts no responsibility for damages resulting for use or improper interpretation of the information contained in this document.

Test item description: Fixed luminaire

Trade mark: AIRFAL

Manufacturer: AIRFAL INTERNATIONAL, S.L.

Model/Type reference: OVEN

Ratings: 230V ~ 50Hz. Class I. IP68 2m. G9. 2x40W.

Summary of testing: The luminaire AIRFAL reference OVEN is **accordant** with the sections analysed in this test report.

Test performed (name of test and clause):

- EN 60598-1:2008 + A11:2009, EN 60598-2-1:1989
- 1.12 (12.3) Endurance test

Testing location:

TECNOCREA, S.L.
C/ Colón, 41
46210 Picaña (Valencia – Spain)

Summary of compliance with National Differences:

Copy of marking plate



| | |
|--|--|
| Test item particulars: | |
| Classification of installation and use | Suitable for direct mounting on combustible surface and exterior use |
| Supply connection | Terminal block |
| | Type Y |
| | N/A |
| Possible test verdicts: | |
| - test case does not apply to the test object..... | N/A |
| - test object does meet the requirement..... | P (Pass) |
| - test object does not meet the requirement..... | F (Fail) |
| Testing: | |
| Date of receipt of test item | 09-01-2015 |
| Date (s) of performance of test..... | 15-01-2015 / 27-01-2015 |
| Environmental conditions: | |
| Temperature (min. / max.)..... | 20°C / 23°C |
| Relative humidity (min. / max)..... | 41% / 49% |

| |
|---|
| General remarks: |
| ENAC is signature of EA (European co-operation for Accreditation) Multilateral Agreement on test matters. The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory. Uncertainties of measurements are calculated and available to the customer. "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. |
| Note: EN group differences together with national differences and special national conditions, if any, are in the Appendix to the main body of this Test Report Form. Throughout this report a comma is used as the decimal separator. Clause numbers between brackets refer to clauses in IEC 60598-1. |
| General product information: |
| |

| IEC/EN 60598-2-1 | | | |
|------------------|---|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.2 (0) | GENERAL TEST REQUIREMENTS | | — |
| 1.2 (0.1) | Information for luminaire design considered | Standard Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | — |
| 1.2 (0.3) | More sections applicable..... : | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |
| 1.4 (2) | CLASSIFICATION | | — |
| 1.4 (2.2) | Type of protection..... : | Class I | — |
| 1.4 (2.3) | Degree of protection (Requirement: Ordinary)..... : | IP68 2m | — |
| 1.4 (2.4) | Luminaire suitable for direct mounting on normally flammable surfaces | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | — |
| | Luminaire not suitable for direct mounting on normally flammable surfaces..... : | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |
| 1.4 (2.5) | Luminaire for normal use | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | — |
| | Luminaire for rough service | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |
| 1.12 (12) | ENDURANCE TEST AND THERMAL TEST | | — |
| 1.12 (-) | If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 1.13 | | — |
| 1.12 (12.3) | Endurance test: | | P |
| | - mounting-position | Normal use | — |
| | - test temperature (°C)..... : | 200°C + 10°C = 210°C | — |
| | - total duration (h) | 240 h | — |
| | - supply voltage: Un factor; calculated voltage (V): | 230 V x 1,05 = 241,5 V | — |
| | - lamp used | OSRAM HALOPIN. 230V. 40W. | — |
| 1.12 (12.3.2) | After endurance test: | | P |
| | - no part unserviceable | | P |
| | - luminaire not unsafe | | P |
| | - no damage to track system | | N/A |
| | - marking legible | | N/A |
| | - no cracks, deformation etc. | | P |
| 1.12 (12.4) | Thermal test (normal operation) | (see Annex 1) | — |
| 1.12 (12.5) | Thermal test (abnormal operation) | (see Annex 1) | N/A |
| 1.12 (12.6) | Thermal test (failed lamp control gear condition): | | N/A |

| IEC/EN 60598-2-1 | | | |
|------------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.12 (12.6.1) | Through wiring or looping-in wiring loaded by a current of (A) | | — |
| | - case of abnormal conditions..... | | — |
| | - electronic lamp control gear | | N/A |
| | - measured winding temperature (°C): at 1,1 Un .. | | — |
| | - measured mounting surface temperature (°C) at 1,1 Un | | N/A |
| | - calculated mounting surface temperature (°C) .. | | N/A |
| | - track-mounted luminaires | | N/A |
| 1.12 (12.6.2) | Temperature sensing control | | N/A |
| | - case of abnormal conditions..... | | — |
| | - thermal link | | N/A |
| | - manual reset cut-out | | N/A |
| | - auto reset cut-out | | N/A |
| | - measured mounting surface temperature (°C)... | | N/A |
| | - track-mounted luminaires | | N/A |
| 1.12 (12.7) | Thermal test (failed lamp control gear in plastic luminaires): | | N/A |
| 1.12 (12.7.1) | Luminaire without temperature sensing control | | N/A |
| 1.12 (12.7.1.1) | Luminaire with fluorescent lamp ≤ 70W | | N/A |
| | Test method 12.7.1.1 or Annex W | | — |
| | Test according to 12.7.1.1: | | N/A |
| | - case of abnormal conditions | | — |
| | - Ballast failure at supply voltage (V) | | — |
| | - Components retained in place after the test | | N/A |
| | - Test with standard test finger after the test | | N/A |
| | Test according to Annex V: | | N/A |
| | - case of abnormal conditions | | — |
| | - measured winding temperature (°C): at 1,1 Un.. | | — |
| | - measured temperature of fixing point/exposed part (°C): at 1,1 Un..... | | — |
| | - calculated temperature of fixing point/exposed part (°C) | | — |
| | Ball-pressure test: | | N/A |
| | - part tested; temperature (°C)..... | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | - part tested; temperature (°C)..... : | | N/A |
| 1.12 (12.7.1.2) | Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA | | N/A |
| | - case of abnormal conditions | | — |
| | - measured winding temperature (°C): at 1,1 Un.. : | | — |
| | - measured temperature of fixing point/exposed part (°C): at 1,1 Un..... : | | — |
| | - calculated temperature of fixing point/exposed part (°C) | | — |
| | Ball-pressure test: | | N/A |
| | - part tested; temperature (°C)..... : | | N/A |
| | - part tested; temperature (°C)..... : | | N/A |
| 1.12 (12.7.1.3) | Luminaire with short circuit proof transformers ≤ 10 VA | | N/A |
| | - case of abnormal conditions | | — |
| | - Components retained in place after the test | | N/A |
| | - Test with standard test finger after the test | | N/A |
| 1.12 (12.7.2) | Luminaire with temperature sensing control | | N/A |
| | - thermal link | Yes <input type="checkbox"/> No <input type="checkbox"/> | — |
| | - manual reset cut-out | Yes <input type="checkbox"/> No <input type="checkbox"/> | — |
| | - auto reset cut-out | Yes <input type="checkbox"/> No <input type="checkbox"/> | — |
| | - case of abnormal conditions | | — |
| | - highest measured temperature of fixing point/exposed part (°C):..... : | | — |
| | Ball-pressure test: | | N/A |
| | - part tested; temperature (°C)..... : | | N/A |
| | - part tested; temperature (°C)..... : | | N/A |

| IEC/EN 60598-2-1 | | | |
|------------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|--|---|--|---|
| | ANNEX 1: temperature measurements, thermal tests of section 12 | | — |
|--|---|--|---|

| | | | |
|--|---|------|---|
| | Type reference | OVEN | — |
| | Lamp used..... | - | — |
| | Lamp control gear used | - | — |
| | Mounting position of luminaire | - | — |
| | Supply wattage (W)..... | - | — |
| | Supply current (A) | - | — |
| | Calculated power factor | - | — |
| | Table: measured temperatures corrected for ta = 25 °C: | | |
| | - abnormal operating mode | - | — |
| | - test 1: rated voltage | - | — |
| | - test 2: 1,06 times rated voltage or 1,05 times rated wattage..... | - | — |
| | - test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage | - | — |
| | - test 4: 1,1 times rated voltage or 1,05 times rated wattage..... | - | — |
| | Through wiring or looping-in wiring loaded by a current of A during the test | - | — |

| temperature (°C) of part | Clause 12.4 – normal | | | | Clause 12.5 – abnormal | |
|--------------------------|----------------------|--------|--------|-------|------------------------|-------|
| | test 1 | test 2 | test 3 | limit | test 4 | limit |
| Lampholder | - | - | - | - | - | - |
| Wire lampholder | - | - | - | - | - | - |
| Wire supply connection | - | - | - | - | - | - |
| Terminal block | - | - | - | - | - | - |
| Screw gland | - | - | - | - | - | - |
| Sleeve | - | - | - | - | - | - |
| Mounting surface | - | - | - | - | - | - |

| IEC/EN 60598-2-1 | | | |
|------------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

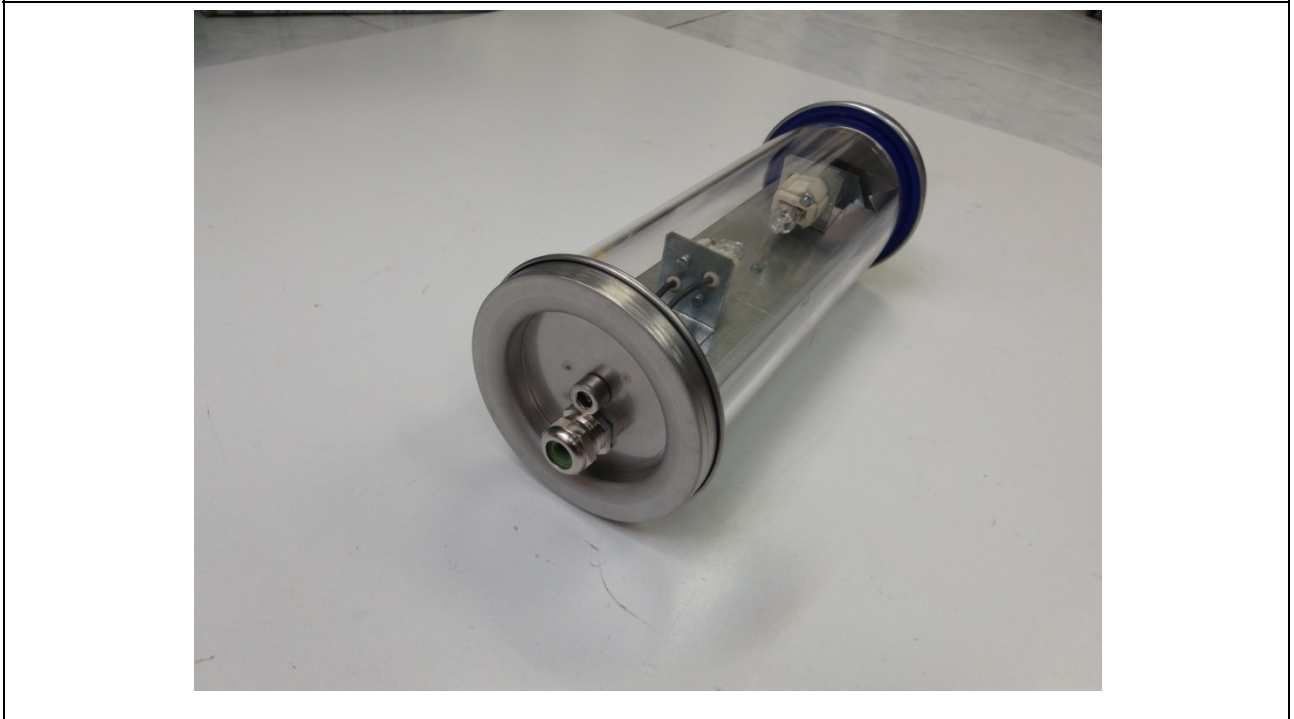
| | | | |
|--|--|--|---|
| | ANNEX 2: national differences for (country name) or group differences | | — |
|--|--|--|---|

| | CENELEC COMMON MODIFICATIONS (EN) | N/A |
|-----------------|--|------------|
| 1.5 (3) | MARKING | N/A |
| 1.5 (3.3.101) | Adequate warning on the package | N/A |
| 1.10 (5) | EXTERNAL AND INTERNAL WIRING | N/A |
| 1.10 (5.2.1) | Connecting leads | N/A |
| | - without a means for connection to the supply | N/A |
| | - terminal block specified | N/A |
| | - relevant information provided | N/A |
| | - compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1 | N/A |
| 1.10 (5.2.2) | Cables equal to HD21 S2 or HD22 S2 | N/A |

| ZB | ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN) | N/A |
|-----------|---|------------|
| (3.3) | DK: power supply cord with label | N/A |
| | IT: warning label on Class 0 luminaire | N/A |
| (4.5.1) | DK: socket-outlets | N/A |
| (5.2.1) | CY, DK, FI, SE, GB: type of plug | N/A |

| ZC | ANNEX ZC, NATIONAL DEVIATIONS (EN) | N/A |
|-----------|---|------------|
| (4 & 5) | FR: Shuttered socket-outlets 10/16A | N/A |
| (13.3) | GB: Requirements according to United Kingdom Building Regulation | N/A |
| (13.3.2) | FR: Glow-wire test 850 °C alt. 750 °C for luminaires in premises open to public or 960 °C for luminaires in emergency exits | N/A |

| IEC/EN 60598-2-1 | | | |
|------------------|-----------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | ANNEX 3 photos | | — |



| IEC/EN 60598-2-1 | | | |
|------------------|------------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | ANNEX 3: photos | | — |

