# TEST REPORT

| | | |
|---|---|---|
| **Reference No.** | : | WTF15F0122430S |
| **Applicant** | : | Foshan Nanhai Vorld Lighting Co., Ltd. |
| **Address** | : | 18th west Taoyuan Road, Shishan Town, Nanhai District, Foshan City, Guangdong Province |
| **Manufacturer** | : | The same as above |
| **Address** | : | The same as above |
| **Product Name** | : | LED Lamp |
| **Model No.** | : | See model list on page 3 |
| **Standards** | : | Luminaires<br>Part 2-1: Fixed general purpose luminaries<br>EN 60598-2-1:1989<br>EN 60598-1:2008+A11:2009 |
| **Date of Receipt sample** | : | 2015-02-18 |
| **Date of Test** | : | 2015-02-19 to 2015-03-03 |
| **Date of Issue** | : | 2015-03-04 |
| **Test Report Form No.** | : | WSL-6059821A-02A |
| **Test Result** | : | **Pass** |

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.


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Approved by:

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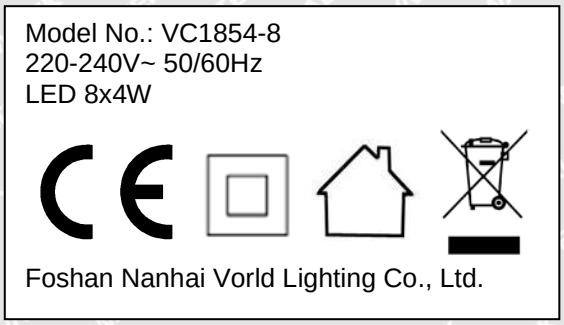
| | | |
|---|---|---|
| **Test item description** | : | Fixed Luminaires |
| Trade Mark | : | -- |
| Model/Type reference | : | See model list on page 3 |
| Ratings | : | See model list on page 3 |

Copy of marking plate:




On the luminaries surface

Note: the marking label for the other model is identical as above except the model name and rated power.

**Summary of testing**:

1. Unless other specified, all tests were carried out on the model VC1854-8, the tests results complied with the requirements of the standards mentioned on page one. Construction had checked on all models.

2. Integral LED module was assessed according to EN 62031:2008+A1:2013 and found to comply with the requirement.

3. Photobiological safety was assessed according to EN 62471:2008, classification group: exempt☒ risk 1☐ risk 2☐ risk 3☐.

4. Assessment of lighting equipment related to human exposure to electromagnetic fields was evaluated and fulfilled the requirements of EN 62493:2010 and found to comply with the requirement.

5. Only the most unfavorable results are recorded in this report.

**Test items particulars**:

Classification of installation and use..... : Fixed

Supply Connection ..... : Terminal block

**Possible test case verdicts**:

- test case does not apply to the test object..... : N (Not applicable)
- test object does meet the requirement..... : P (Pass)
- test object does not meet the requirement..... : F (Fail)

**General remarks**:

"(see remark #)" refers to a remark appended to the report.
"(see appended table)" refers to a table appended to the report.
Throughout this report a point is used as the decimal separator.

**General product information**:

1. Fixed general purpose luminaries, for indoor use only.
2. Both models have the same construction except the appearance, LED driver and rated power.
3. The LED drivers have been approved, for more details see model list below:

Model list

| Item | Model | Rated voltage (VAC) | Rated frequency (Hz) | Rated power (W) | Protection against electric shock | IP degree |
|---|---|---|---|---|---|---|
| 1 | 37650008/01(VC1854-6) | 220-240 | 50/60 | LED 6x4W | Class II | IP20 |
| 2 | VC1854-8 | 220-240 | 50/60 | LED 8x4W | Class II | IP20 |

| EN 60598-2-1 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **1.2 (0)** | **GENERAL TEST REQUIREMENTS** | | **P** |
| 1.2 (0.1) | Information for luminaire design considered | Standard<br>Yes ☒ No ☐ | — |
| 1.2 (0.3) | More sections applicable .....: | Yes ☐ No ☒ | — |
| **1.4 (2)** | **CLASSIFICATION** | | **P** |
| 1.4 (2.2) | Type of protection (Class 0 excluded)..... : | Class II | — |
| 1.4 (2.3) | Degree of protection (Requirement: Ordinary)..... : | IP 20 | — |
| 1.4 (2.4) | Luminaire suitable for direct mounting on normally flammable surfaces ..... : | Yes ☒ No ☐ | — |
| | Luminaire not suitable for direct mounting on normally flammable surfaces..... : | Yes ☐ No ☒ | — |
| 1.4 (2.5) | Luminaire for normal use ..... : | Yes ☒ No ☐ | — |
| | Luminaire for rough service ..... : | Yes ☐ No ☒ | — |
| **1.5 (3)** | **MARKING** | | **P** |
| 1.5 (3.2) | Mandatory markings | See “Copy of marking plate” | P |
| | Position of the marking | | P |
| | Format of symbols/text | | P |
| 1.5 (3.3) | Additional information | | P |
| | Language of instructions | In English | P |
| 1.5 (3.3.1) | Combination luminaires | | N |
| 1.5 (3.3.2) | Nominal frequency in Hz | 50/60 Hz | P |
| 1.5 (3.3.3) | Operating temperature | | N |
| 1.5 (3.3.4) | Symbol or warning notice | | N |
| 1.5 (3.3.5) | Wiring diagram | | N |
| 1.5 (3.3.6) | Special conditions | | N |
| 1.5 (3.3.7) | Metal halide lamp luminaire – warning | | N |
| 1.5 (3.3.8) | Limitation for semi-luminaires | | N |
| 1.5 (3.3.9) | Power factor and supply current | | N |
| 1.5 (3.3.10) | Suitability for use indoors | | N |
| 1.5 (3.3.11) | Luminaires with remote control | | N |
| 1.5 (3.3.12) | Clip-mounted luminaire – warning | | N |
| 1.5 (3.3.13) | Specifications of protective shields | | N |
| 1.5 (3.3.14) | Symbol for nature of supply | ~ | P |
| 1.5 (3.3.15) | Rated current of socket outlet | | N |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.5 (3.3.16) | Rough service luminaire | | N |
| 1.5 (3.3.17) | Mounting instruction for type Y, type Z and some type X attachments | | N |
| 1.5 (3.3.18) | Non-ordinary luminaires with PVC cable | | N |
| 1.5 (3.3.19) | Protective conductor current in instruction if applicable | | N |
| 1.5 (3.3.20) | Provided with information if not intended to be mounted within arms reach | | N |
| 1.5 (3.4) | Test with water | | P |
| | Test with hexane | | P |
| | Legible after test | | P |
| | Label attached | | P |
| **1.6 (4)** | **CONSTRUCTION** | | **P** |
| 1.6 (4.2) | Components replaceable without difficulty | | N |
| 1.6 (4.3) | Wireways smooth and free from sharp edges | | P |
| 1.6 (4.4) | Lampholders | | N |
| 1.6 (4.4.1) | Integral lampholder | | N |
| 1.6 (4.4.2) | Wiring connection | | N |
| 1.6 (4.4.3) | Lampholder for end-to-end mounting | | N |
| 1.6 (4.4.4) | Positioning | | N |
| | - pressure test (N) ..... : | -- | N |
| | After test the lampholder comply with relevant standard sheets and show no damage | | N |
| | After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation | | N |
| | - bending test (Nm) ..... : | -- | N |
| | After test the lampholder have not moved from its position and show no permanent deformation | | N |
| 1.6 (4.4.5) | Peak pulse voltage | | N |
| 1.6 (4.4.6) | Centre contact | | N |
| 1.6 (4.4.7) | Parts in rough service luminaires resistant to tracking | | N |
| 1.6 (4.4.8) | Lamp connectors | | N |
| 1.6 (4.4.9) | Caps and bases correctly used | | N |
| 1.6 (4.5) | Starter holders | | N |
| | Starter holder in luminaires other than class II | No starter holder used | N |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Starter holder class II construction | | N |
| 1.6 (4.6) | Terminal blocks | | N |
| | Tails | | N |
| | Unsecured blocks | | N |
| 1.6 (4.7) | Terminals and supply connections | | P |
| 1.6 (4.7.1) | Contact to metal parts | | N |
| 1.6 (4.7.2) | Test 8 mm live conductor | | P |
| | Test 8 mm earth conductor | | N |
| 1.6 (4.7.3) | Terminals for supply conductors | | P |
| 1.6 (4.7.3.1) | Welded connections: | | N |
| | - stranded or solid conductor | | N |
| | - spot welding | | N |
| | - welding between wires | | N |
| | - Type Z attachment | | N |
| | - mechanical test according to 15.8.2 | | N |
| | - electrical test according to 15.9 | | N |
| | - heat test according to 15.9.2.3 and 15.9.2.4 | | N |
| 1.6 (4.7.4) | Terminals other than supply connection | | N |
| 1.6 (4.7.5) | Heat-resistant wiring/sleeves | | N |
| 1.6 (4.7.6) | Multi-pole plug | | N |
| | - test at 30 N | | N |
| 1.6 (4.8) | Switches: | | N |
| | - adequate rating | | N |
| | - adequate fixing | | N |
| | - polarized supply | | N |
| | - compliance with 61058-1 for electronic switches | | N |
| 1.6 (4.9) | Insulating lining and sleeves | | P |
| 1.6 (4.9.1) | Retainement | | P |
| | Method of fixing ..... : | Heat-shrinkable | P |
| 1.6 (4.9.2) | Insulated linings and sleeves | | P |
| | Resistant to a temperature > 20 °C to the wire temperature or | | P |
| | a) & c) Insulation resistance and electric strength | | N |
| | b) Ageing test. Temperature (°C) ..... : | -- | N |
| 1.6 (4.10) | Insulation of Class II luminaires | | P |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.6 (4.10.1) | No contact, mounting surface – accessible metal parts – wiring of basic insulation | | P |
| | Safe installation fixed luminaires | | P |
| | Capacitors and switches | | N |
| | Interference suppression capacitors according to IEC 60384-14 | | N |
| 1.6 (4.10.2) | Assembly gaps: | | N |
| | - not coincidental | | N |
| | - no straight access with test probe | | N |
| 1.6 (4.10.3) | Retainment of insulation: | | P |
| | - fixed | | P |
| | - unable to be replaced; luminaire inoperative | | P |
| | - sleeves retained in position | | P |
| | - lining in lampholder | | N |
| 1.6 (4.11) | Electrical connections | | P |
| 1.6 (4.11.1) | Contact pressure | | P |
| 1.6 (4.11.2) | Screws: | | N |
| | - self-tapping screws | | N |
| | - thread-cutting screws | | N |
| 1.6 (4.11.3) | Screw locking: | | N |
| | - spring washer | | N |
| | - rivets | | N |
| 1.6 (4.11.4) | Material of current-carrying parts | | P |
| 1.6 (4.11.5) | No contact to wood or mounting surface | | P |
| 1.6 (4.11.6) | Electro-mechanical contact systems | | N |
| 1.6 (4.12) | Mechanical connections and glands | | P |
| 1.6 (4.12.1) | Screws not made of soft metal | | P |
| | Screws of insulating material | | P |
| | Torque test: torque (Nm); part ..... : | Screw used for fixing mounting bracket: 1.2Nm | P |
| 1.6 (4.12.2) | Screws with diameter < 3 mm screwed into metal | | N |
| 1.6 (4.12.4) | Locked connections: | | N |
| | - fixed arms; torque (Nm)..... : | -- | N |
| | - lampholder; torque (Nm)..... : | -- | N |
| | - push-button switches; torque 0,8 Nm..... : | -- | N |
| 1.6 (4.12.5) | Screwed glands; force (Nm) ..... : | -- | N |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.6 (4.13) | Mechanical strength | | P |
| 1.6 (4.13.1) | Impact tests: | | P |
| | - fragile parts; energy (Nm) ..... : | -- | N |
| | - other parts; energy (Nm) ..... : | Enclosure: 0.35 Nm | P |
| | 1) live parts | | P |
| | 2) linings | | N |
| | 3) protection | | P |
| | 4) covers | | P |
| 1.6 (4.13.3) | Straight test finger | Enclosure: 30 N | P |
| 1.6 (4.13.4) | Rough service luminaires | | N |
| | - IP54 or higher | | N |
| | a) fixed | | N |
| | b) hand-held | | N |
| | c) delivered with a stand | | N |
| | d) for temporary installations and suitable for mounting on a stand | | N |
| 1.6 (4.13.6) | Tumbling barrel | | N |
| 1.6 (4.14) | Suspensions and adjusting devices | | P |
| 1.6 (4.14.1) | Mechanical load: | | P |
| | A) four times the weight | Max. 4 x 2.65kg | P |
| | B) torque 2,5 Nm | | N |
| | C) bracket arm; bending moment (Nm) ..... : | -- | N |
| | D) load track-mounted luminaires | -- | N |
| | E) clip-mounted luminaires, glass-shelve. Thickness (mm) ..... : | -- | N |
| | Metal rod. diameter (mm) ..... : | -- | N |
| | Fixed luminaire or independent control gear without fixing devices | | N |
| 1.6 (4.14.2) | Load to flexible cables | | N |
| | Mass (kg) ..... : | -- | N |
| | Stress in conductors (N/mm²) ..... : | -- | N |
| | Mass (kg) of semi-luminaire ..... : | -- | N |
| | Bending moment (Nm) of semi-luminaire ..... : | -- | N |
| 1.6 (4.14.3) | Adjusting devices: | | P |
| | - flexing test; number of cycles ..... : | 150 cycles | P |
| | - strands broken | | P |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - electric strength test afterwards | | P |
| 1.6 (4.14.4) | Telescopic tubes: cords not fixed to tube; no strain on conductors | | N |
| 1.6 (4.14.5) | Guide pulleys | | N |
| 1.6 (4.14.6) | Strain on socket-outlets | | N |
| 1.6 (4.15) | Flammable materials: | | N |
| | - glow-wire test 650 °C | | N |
| | - spacing ≥ 30 mm | | N |
| | - screen withstanding test of 13.3.1 | | N |
| | - screen dimensions | | N |
| | - no fiercely burning material | | N |
| | - thermal protection | | N |
| | - electronic circuits exempted | | N |
| 1.6 (4.15.2) | Luminaires made of thermoplastic material with lamp control gear | | N |
| | a) construction | | N |
| | b) temperature sensing control | | N |
| | c) surface temperature | | N |
| 1.6 (4.16) | Luminaires for mounting on normally flammable surfaces | | P |
| | No lamp control gear | Electronic control gear | N |
| 1.6 (4.16.1) | Lamp control gear spacing: | | N |
| | - spacing 35 mm | | N |
| | - spacing 10 mm | | N |
| 1.6 (4.16.2) | Thermal protection: | | N |
| | - in lamp control gear | | N |
| | - external | | N |
| | - fixed position | | N |
| | - temperature marked lamp control gear | | N |
| 1.6 (4.16.3) | Design to satisfy the test of 12.6 | (see 12.6) | N |
| 1.6 (4.17) | Drain holes | | N |
| | Clearance at least 5 mm | | N |
| 1.6 (4.18) | Resistance to corrosion: | | N |
| 1.6 (4.18.1) | - rust-resistance | | N |
| 1.6 (4.18.2) | - season cracking in copper | | N |
| 1.6 (4.18.3) | - corrosion of aluminium | | N |
| 1.6 (4.19) | Ignitors compatible with ballast | | N |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.6 (4.20) | Rough service vibration | | N |
| 1.6 (4.21) | Protective shield: | | N |
| 1.6 (4.21.1) | Shield fitted | | N |
| | Shield of glass if tungsten halogen lamps | | N |
| 1.6 (4.21.2) | Particles from a shattering lamp not impair safety | | N |
| 1.6 (4.21.3) | No direct path | | N |
| 1.6 (4.21.4) | Impact test on shield | | N |
| | Glow-wire test on lamp compartment | | N |
| 1.6 (4.22) | Attachments to lamps | | N |
| 1.6 (4.23) | Semi-luminaires comply Class II | | N |
| 1.6 (4.24) | UV radiation for tungsten halogen lamps and metal halide lamps (Annex P) | | N |
| 1.6 (4.25) | No sharp point or edges | | P |
| 1.6 (4.26) | Short-circuit protection: | | N |
| 1.6 (4.26.1) | Uninsulated accessible SELV parts | | N |
| 1.6 (4.26.2) | Short-circuit test | | N |
| 1.6 (4.26.3) | Test chain according to Figure 29 | | N |
| **1.7 (11)** | **CREEPAGE DISTANCES AND CLEARANCES** | | **P** |
| | Working voltage (V) ..... : | Max.240 V~ (input)<br>Max. DC 85V (output of LED driver) | — |
| | Voltage form | Sinusoidal ☒<br>Non-sinusoidal ☒ | — |
| | PTI | < 600 ☒ ≥ 600 ☐ | — |
| | Impulse withstand category (Normal category II) (Category III Annex U) | Category II☒ Category III☐ | — |
| | Rated pulse voltage (kV) ..... : | -- | — |
| | (1) Current-carrying parts of different polarity: cr (mm); cl (mm) ..... : | Approved independent SELV LED driver and terminal block | P |
| | (2) Current-carrying parts and accessible parts: cr (mm); cl (mm) ..... : | For class II construction:<br>cr=5.1mm(required: 5.0mm)<br>cl=5.1mm(required: 3.0mm)<br>For LED module:<br>cr=1.5mm(required: 1.3mm)<br>cl=1.5mm(required: 0.4mm) | P |
| | (3) Parts becoming live due to breakdown of basic insulation and metal parts:<br>cr (mm); cl (mm) ..... : | cr=3.1mm(required: 2.5mm)<br>cl=3.1mm(required: 1.5mm) | P |
| | (4) Outer surface of cable where it is clamped and metal parts: cr (mm); cl (mm)..... : | | N |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | (5) Not used | | N |
| | (6) Current-carrying parts and supporting surface: cr (mm); cl (mm) ..... : | cr=5.1mm(required: 5.0mm) cl=5.1mm(required: 3.0mm) | P |
| **1.8 (7)** | **PROVISION FOR EARTHING** | | **N** |
| 1.8 (7.2.1 + 7.2.3) | Accessible metal parts | | N |
| | Metal parts in contact with supporting surface | | N |
| | Resistance < 0,5 Ω | | N |
| | Self-tapping screws used | | N |
| | Thread-forming screws | | N |
| | Thread-forming screw used in a grove | | N |
| | Earth makes contact first | | N |
| 1.8 (7.2.2 + 7.2.3) | Earth continuity in joints etc. | | N |
| 1.8 (7.2.4) | Locking of clamping means | | N |
| | Compliance with 4.7.3 | | N |
| | Terminal blocks with integrated screwless earthing contacts tested according Annex V | | N |
| 1.8 (7.2.5) | Earth terminal integral part of connector socket | | N |
| 1.8 (7.2.6) | Earth terminal adjacent to mains terminals | | N |
| 1.8 (7.2.7) | Electrolytic corrosion of the earth terminal | | N |
| 1.8 (7.2.8) | Material of earth terminal | | N |
| | Contact surface bare metal | | N |
| 1.8 (7.2.10) | Class II luminaire for looping-in | | N |
| | Double or reinforced insulation to functional earth | | N |
| 1.8 (7.2.11) | Earthing core coloured green-yellow | | N |
| | Length of earth conductor | | N |
| **1.9 (14)** | **SCREW TERMINALS** | | **P** |
| | Separately approved; component list | (see Annex 1) | P |
| | Part of the luminaire | (see Annex 3) | N |
| **1.9 (15)** | **SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS** | | **N** |
| | Separately approved; component list | (see Annex 1) | N |
| | Part of the luminaire | (see Annex 4) | N |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **1.10 (5)** | **EXTERNAL AND INTERNAL WIRING** | | **P** |
| 1.10 (5.2) | Supply connection and external wiring | | P |
| 1.10 (5.2.1) | Means of connection..... : | Terminal block | P |
| 1.10 (5.2.2) | Type of cable ..... : | -- | N |
| | Nominal cross-sectional area (mm²)..... : | -- | N |
| | Cables equal to HD21 or HD22 | | N |
| 1.10 (5.2.3) | Type of attachment, X, Y or Z | | N |
| 1.10 (5.2.5) | Type Z not connected to screws | | N |
| 1.10 (5.2.6) | Cable entries: | | N |
| | - suitable for introduction | | N |
| | - adequate degree of protection | | N |
| 1.10 (5.2.7) | Cable entries through rigid material have rounded edges | | N |
| 1.10 (5.2.8) | Insulating bushings: | | N |
| | - suitably fixed | | N |
| | - material in bushings | | N |
| | - material not likely to deteriorate | | N |
| | - tubes or guards made of insulating material | | N |
| 1.10 (5.2.9) | Locking of screwed bushings | | N |
| 1.10 (5.2.10) | Cord anchorage: | | N |
| | - covering protected from abrasion | | N |
| | - clear how to be effective | | N |
| | - no mechanical or thermal stress | | N |
| | - no tying of cables into knots etc. | | N |
| | - insulating material or lining | | N |
| 1.10 (5.2.10.1) | Cord anchorage for type X attachment: | | N |
| | a) at least one part fixed | | N |
| | b) types of cable | | N |
| | c) no damaging of the cable | | N |
| | d) whole cable can be mounted | | N |
| | e) no touching of clamping screws | | N |
| | f) metal screw not directly on cable | | N |
| | g) replacement without special tool | | N |
| | Glands not used as anchorage | | N |
| | Labyrinth type anchorages | | N |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.10 (5.2.10.2) | Adequate cord anchorage for type Y and type Z attachment | | N |
| 1.10 (5.2.10.3) | Tests: | | N |
| | - impossible to push cable; unsafe | | N |
| | - pull test: 25 times; pull (N) ..... : | -- | N |
| | - torque test: torque (Nm) ..... : | -- | N |
| | - displacement ≤ 2 mm | | N |
| | - no movement of conductors | | N |
| | - no damage of cable or cord | | N |
| 1.10 (5.2.11) | External wiring passing into luminaire | | N |
| 1.10 (5.2.12) | Looping-in terminals | | N |
| 1.10 (5.2.13) | Wire ends not tinned | | N |
| | Wire ends tinned: no cold flow | | N |
| 1.10 (5.2.14) | Mains plug same protection | | N |
| | Class III luminaire plug | | N |
| 1.10 (5.2.16) | Appliance inlets (IEC 60320) | | N |
| | Appliance couplers of class II type | | N |
| 1.10 (5.2.17) | No standardized interconnecting cables properly assembled | | N |
| 1.10 (5.2.18) | Used plug in accordance with | | N |
| | - IEC 60083 | | N |
| | - other standard | | N |
| 1.10 (5.3) | Internal wiring | | P |
| 1.10 (5.3.1) | Internal wiring of suitable size and type | (see Annex 1) | P |
| | Through wiring | | N |
| | - not delivered/ mounting instruction | | N |
| | - factory assembled | | N |
| | - socket outlet loaded (A) ..... : | -- | N |
| | - temperatures ..... : | -- | N |
| | Green-yellow for earth only | | N |
| 1.10 (5.3.1.1) | Internal wiring connected directly to fixed wiring | | P |
| | Cross-sectional area (mm²) ..... : | (see Annex 1) | P |
| | Insulation thickness | | P |
| | Extra insulation added where necessary | | N |
| 1.10 (5.3.1.2) | Internal wiring connected to fixed wiring via internal current-limiting device | | P |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Adequate cross-sectional area and insulation thickness | | P |
| 1.10 (5.3.1.3) | Double or reinforced insulation for class II | | P |
| 1.10 (5.3.1.4) | Conductors without insulation | | N |
| 1.10 (5.3.1.5) | SELV current-carrying parts | | P |
| 1.10 (5.3.1.6) | Insulation thickness other than PVC or rubber | PVC | N |
| 1.10 (5.3.2) | Sharp edges etc. | | P |
| | No moving parts of switches etc. | | N |
| | Joints, raising/lowering devices | | N |
| | Telescopic tubes etc. | | N |
| | No twisting over 360° | | P |
| 1.10 (5.3.3) | Insulating bushings: | | N |
| | - suitable fixed | | N |
| | - material in bushings | | N |
| | - material not likely to deteriorate | | N |
| | - cables with protective sheath | | N |
| 1.10 (5.3.4) | Joints and junctions effectively insulated | | N |
| 1.10 (5.3.5) | Strain on internal wiring | | N |
| 1.10 (5.3.6) | Wire carriers | | N |
| 1.10 (5.3.7) | Wire ends not tinned | | N |
| | Wire ends tinned: no cold flow | | P |
| **1.11 (8)** | **PROTECTION AGAINST ELECTRIC SHOCK** | | **P** |
| 1.11 (8.2.1) | Live parts not accessible with standard test finger | | P |
| | Basic insulated parts not used on the outer surface without appropriate protection | | P |
| | Basic insulated parts not accessible with standard test finger on portable and adjustable luminaires | | P |
| | Basic insulated parts not accessible with Ø 50 mm probe from outside, within arms reach, on wall-mounted luminaires | | N |
| | Lampholder and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements | | N |
| | Basic insulation only accessible under lamp or starter replacement | | N |
| | Protection in any position | | P |
| | Double-ended tungsten filament lamp | | N |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Insulation lacquer not reliable | | N |
| | Double-ended high pressure discharge lamp | | N |
| | Relevant warning according to 3.2.18 fitted to the luminaire | | N |
| 1.11 (8.2.2) | Portable luminaire adjusted in most unfavourable position | | N |
| 1.11 (8.2.3.a) | Class II luminaire: | | P |
| | - basic insulated metal parts not accessible during starter or lamp replacement | | N |
| | - basic insulation not accessible other than during starter or lamp replacement | | P |
| | - glass protective shields not used as supplementary insulation | | N |
| 1.11 (8.2.3.b) | BC lampholder of metal in class I luminaires shall be earthed | | N |
| 1.11 (8.2.3.c) | Class III luminaires with exposed SELV parts: | | N |
| | Ordinary luminaire: | | N |
| | - touch current ..... : | -- | N |
| | - no-load voltage ..... : | -- | N |
| | Other than ordinary luminaire: | | N |
| | - nominal voltage ..... : | -- | N |
| 1.11 (8.2.4) | Portable luminaire: | | N |
| | - protection independent of supporting surface | | N |
| | - terminal block completely covered | | N |
| 1.11 (8.2.5) | Compliance with the standard test finger or relevant probe | | P |
| 1.11 (8.2.6) | Covers reliably secured | | P |
| 1.11 (8.2.7) | Discharging of capacitors ≥ 0,5 μF | | P |
| | Portable plug connected luminaire with capacitor | | N |
| | Other plug connected luminaire with capacitor | | N |
| | Discharge device on or within capacitor | | N |
| | Discharge device mounted separately | | P |
| **1.12 (12)** | **ENDURANCE TEST AND THERMAL TEST** | | **P** |
| 1.12 (12.3) | Endurance test: | | P |
| | - mounting-position ..... : | Acc. to user manual | — |
| | - test temperature (°C) ..... : | 35 °C | — |
| | - total duration (h) ..... : | 240 h | — |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - supply voltage: Un factor; calculated voltage (V): | 264V | — |
| | - lamp used ..... : | LED | — |
| 1.12 (12.3.2) | After endurance test: | | P |
| | - no part unserviceable | | P |
| | - luminaire not unsafe | | P |
| | - no damage to track system | | N |
| | - marking legible | | P |
| | - no cracks, deformation etc. | | P |
| 1.12 (12.4) | Thermal test (normal operation) | (see Annex 2) | P |
| 1.12 (12.5) | Thermal test (abnormal operation) | | N |
| 1.12 (12.6) | Thermal test (failed lamp control gear condition): | | N |
| 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 |
| | - measured winding temperature (°C): at 1,1 Un . : | -- | — |
| | - measured mounting surface temperature (°C) at 1,1 Un ..... : | -- | N |
| | - calculated mounting surface temperature (°C) .. : | - | N |
| | - track-mounted luminaires | | N |
| 1.12 (12.6.2) | Temperature sensing control | | N |
| | - case of abnormal conditions..... : | -- | — |
| | - thermal link | | N |
| | - manual reset cut-out | | N |
| | - auto reset cut-out | | N |
| | - measured mounting surface temperature (°C)... : | -- | N |
| | - track-mounted luminaires | | N |
| 1.12 (12.7) | Thermal test (failed lamp control gear in plastic luminaires): | | N |
| 1.12 (12.7.1) | Luminaire without temperature sensing control | | N |
| 1.12 (12.7.1.1) | Luminaire with fluorescent lamp ≤ 70W | | N |
| | Test method 12.7.1.1 or Annex V..... : | -- | — |
| | Test according to 12.7.1.1: | | N |
| | - case of abnormal conditions | | — |
| | - Ballast failure at supply voltage (V) ..... : | -- | — |
| | - Components retained in place after the test | | N |

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

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---|---|---|
| **1.13 (9)** | **RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE** | | **P** |
| 1.13 (9.2) | Tests for ingress of dust, solid objects and moisture: | | P |
| | - classification according to IP ..... : | IP20 | — |
| | - mounting position during test ..... : | Acc. to user manual | — |
| | - fixing screws tightened; torque (Nm) ..... : | -- | — |
| | - tests according to clauses ..... : | -- | — |
| | - electric strength test afterwards | | N |
| | a) no deposit in dust-proof luminaire | | N |
| | b) no talcum in dust-tight luminaire | | N |
| | c) no trace of water on current-carrying parts or SELV parts or where it could become a hazard | | N |
| | d) i) For luminaires without drain holes – no water entry | | N |
| | d) ii) For luminaires with drain holes – no hazardous water entry | | N |
| | e) no water in watertight luminaire | | N |
| | f) no contact with live parts (IP 2X) | IP20 | P |
| | f) no entry into enclosure (IP 3X and IP 4X) | | N |
| | f) no contact with live parts (IP3X and IP4X) | | N |
| | g) no trace of water on part of lamp requiring protection from splashing water | | N |
| | h) no damage of protective shield or glass envelope | | N |
| 1.13 (9.3) | Humidity test 48 h | 25 °C, 93%RH | P |

| | | | |
|---|---|---|---|
| **1.14 (10)** | **INSULATION RESISTANCE AND ELECTRIC STRENGTH** | | **P** |
| 1.14 (10.2.1) | Insulation resistance test | | P |
| | Cable or cord covered by metal foil or replaced by a metal rod of mm Ø ..... : | -- | — |
| | Insulation resistance (MΩ) | | — |
| | SELV: | | P |
| | - between current-carrying parts of different polarity ..... : | -- | N |
| | - between current-carrying parts and mounting surface ..... : | 100 MΩ | P |
| | - between current-carrying parts and metal parts of the luminaire ..... : | 100 MΩ | P |
| | - between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts ..... : | -- | N |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - Insulation bushings as described in Section 5 ..: | -- | N |
| | Other than SELV: | | P |
| | - between live parts of different polarity.....: | 200 MΩ | P |
| | - between live parts and mounting surface.....: | 200 MΩ | P |
| | - between live parts and metal parts.....: | 200 MΩ | P |
| | - between live parts of different polarity through action of a switch .....: | -- | N |
| | - between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....: | -- | N |
| | - Insulation bushings as described in Section 5 ..: | | N |
| 1.14 (10.2.2) | Electric strength test | | P |
| | Dummy lamp | | N |
| | Luminaires with ignitors after 24 h test | | N |
| | Luminaires with manual ignitors | | N |
| | Test voltage (V): | | P |
| | SELV: | | P |
| | - between current-carrying parts of different polarity .....: | -- | N |
| | - between current-carrying parts and mounting surface .....: | 500 V | P |
| | - between current-carrying parts and metal parts of the luminaire .....: | 500 V | P |
| | - between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....: | -- | N |
| | - Insulation bushings as described in Section 5 ..: | -- | N |
| | Other than SELV: | | P |
| | - between live parts of different polarity.....: | 1480 V | P |
| | - between live parts and mounting surface.....: | 2960 V | P |
| | - between live parts and metal parts.....: | 2960 V | P |
| | - between live parts of different polarity through action of a switch .....: | -- | N |
| | - between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....: | -- | N |
| | - Insulation bushings as described in Section 5 ..: | -- | N |
| 1.14 (10.3) | Touch current (mA).....: | Max. 0.014 mA | P |
| | Protective conductor current (mA).....: | | N |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---|---|---|
| **1.15 (13)** | **RESISTANCE TO HEAT, FIRE AND TRACKING** | | **P** |
| 1.15 (13.2.1) | Ball-pressure test: | | N |
| | - part tested; temperature (°C)..... : | -- | N |
| 1.15 (13.3.1) | Needle flame test (10 s): | | P |
| | - part tested..... : | Terminal block | P |
| 1.15 (13.3.2) | Glow-wire test (650°C): | | P |
| | - part tested..... : | Plastic cover of terminal block, closed-end connector, LED lens | P |
| 1.15 (13.4.1) | Tracking test: | | N |
| | - part tested..... : | -- | N |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | **ANNEX 1 components** | | | | | **P** |
|---|---|---|---|---|---|---|
| object/part No. | code | manufacturer/ trademark | type/model | technical data | standard | mark(s) of conformity |
| Terminal block | B | MPM Moulages Plastiques du Midi | BMA 2215 | 250 V; 0.75-1.5mm$^2$; 100°C | EN 60998-1 EN 60998-2-1 | VDE 40035410 |
| Alternative | D | Zhongshan Lianjin Metal & Electrical Appliances Co., Ltd. | EJE-2215 | 250VAC; 0.75-1.5mm²; 100°C | EN 60998-1 EN 60998-2-1 | VDE 40030009 |
| Alternative | D | SHENZHEN GREENWAY ELECTRONIC CO., LTD | MK1282 | 250VAC; Max.1.5 mm² ;100°C | EN 60998-1 EN 60998-2-1 | TUV SUD N8A 14 12 90250 006 |
| Input wire for LED driver | B | Yang Tai Wire & Cable Co., Ltd. | FEP/FEP | 300/500 V;0.75mm$^2$; T180; double-insulated | DIN VD E0250 | VDE 40016729 |
| Alternative | D | Zhongshan Yiying Wire & Cable Co., Ltd. | FEP YY-201 | 300/500 V; 0.75 mm²; 180°C; double-insulated | DIN VDE 0250 | VDE 40024745 |
| Alternative | D | Yu Jia Wire Electronics Co., Ltd. | H03VVH2-F | 2 x 0.75 mm² | EN 50525-2-11 | VDE 40022346 |
| Alternative | D | 3F Electronics Industry Corp. | N2GFAF | 0.75 mm², with heat-shrinkable tube | DIN VDE 0250 | VDE 134824 |
| Alternative | D | Shenzhen Mysun Insulation Materials Co., Ltd. | H05S-K | 0.75 mm², with heat-shrinkable tube | EN 50525-2-41 | VDE 40016705 |
| Output wire for LED driver, wire to LED board | B | Zhongshan Yiying Wire & Cable Co., Ltd. | FEP YY-101 | 300/500 V; 0.3/0.5/0.75mm$^2$; 180°C | DIN VDE 0250 | VDE 40022722 |
| Alternative | D | Yang Tai Wire & Cable Co., Ltd | (6)YAF | 450/750V; 0.3/0.5/0.75 mm²; 180°C | DIN VDE 0250 | VDE 40002489 |
| Alternative | D | Feiyang Lighting Electric Factory | FEP | 300/500 V; 0.3 /0.5/0.75mm²; 180°C | DIN VDE 0250 | VDE 40023163 |
| Alternative | D | ZHONGSHAN JINZHONG ELECTRONIC CO LTD | 1007 | 300VAC; 22/20/18AWG; 80°C | -- | UL E337898 |
| Alternative | D | DONGGUAN CHENG XING ELECTRONIC CO LTD | 1007 | 300VAC; 22/20/18AWG AWG; 80°C | -- | UL E249743 |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | | | |
|---|---|---|---|---|---|---|
| LED driver 1 | B | KEGU POWER ELECTRONICS CO.,LTD. | KEDH030S0600NR07 | Input:220-240VAC,50/60Hz; Output: DC 24-42V, max.60V, 0.6A, ta:45°C; tc:85°C; SELV; Independent; Class II; IP20 | EN 61347-1 EN 61347-2-13 EN 62493 | TUV SUD Z1 14 04 76089 029 |
| LED driver 2 | B | KEGU POWER ELECTRONICS CO.,LTD. | KEDH036S0550NR08 | Input:220-240VAC,50/60Hz; Output: DC 42-63V, max.85V, 0.55A, ta:45°C; tc:85°C; SELV; Independent; Class II; IP20 | EN 61347-1 EN 61347-2-13 EN 62493 | TUV SUD Z1 14 04 76089 029 |
| LED | B | Shenzhen Hongya Opto Electronic Co., Ltd | 3014W64-M | $I_F$=30mA; 3000K | EN 62471 | Tested with appliance |
| LED board | B | HESHAN DONGLI ELECTRONIC TECHNOLOGIES CO LTD | EPA-M1 | V-0 | -- | Tested with appliance |
| Closed-end connector | B | Heavy Power Co., Ltd | CE1 CE2 CE5 | 600V; 150°C | -- | UL E113650 |
| Heat-shrinkable tube | B | SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD | RSFR-H | 600V; 125°C; VW-1 | -- | UL E203950 |

The codes above have the following meaning:
A - The component is replaceable with another one, also certified, with equivalent characteristics
B - The component is replaceable if authorised by the test house
C - Integrated component tested together with the appliance
D - Alternative component

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | |
|---|---|---|
| **ANNEX 2** | **Temperature measurements, thermal tests of Section 12** | **P** |

| | | | |
|---|---|---|---|
| Annex 2-1 | Type reference ..... : | VC1854-8 | — |
| | Lamp used ..... : | LED | — |
| | Lamp control gear used ..... : | KEDH036S0550NR08 | — |
| | Mounting position of luminaire ..... : | Acc. to user manual | — |
| | Supply wattage (W) ..... : | -- | — |
| | Supply current (A) ..... : | -- | — |
| | Calculated power factor ..... : | -- | — |
| | Table: measured temperatures corrected for $t_a$ = 25 °C: | | P |
| | - abnormal operating mode : | | — |
| | - test 1: rated voltage ..... : | -- | — |
| | - test 2: 1,06 times rated voltage or 1,05 times rated wattage ..... : | 1.06 x 240V = 254.4V | — |
| | - 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 |
| Terminal block | -- | 34.2 | -- | 100 | -- | -- |
| Input wire of LED driver | -- | 36.8 | -- | 90 | -- | -- |
| tc of LED driver | -- | 73.6 | -- | 85 | -- | -- |
| Output wire of LED driver | -- | 37.5 | -- | 80 | -- | -- |
| Closed-end connector | | 39.1 | | Ref. | | |
| Wire to LED board | -- | 43.9 | -- | 80 | -- | -- |
| LED board | -- | 44.3 | -- | Ref. | -- | -- |
| Plastic cover | -- | 42.0 | -- | Ref. | -- | -- |
| Adjustment metal part (and around 5cm) | -- | 28.4 | -- | 60 | -- | -- |
| Adjustment non-metal part (and around 5cm) | -- | 41.7 | -- | 75 | -- | -- |
| Mounting surface | -- | 27.0 | -- | 90 | -- | -- |
| Illuminated surface (0.1m) | -- | 35.1 | -- | 90 | -- | -- |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---|---|---|
| Annex 2-1 | Type reference ..... : | 37650008/01 (VC1854-6) | — |
| | Lamp used ..... : | LED | — |
| | Lamp control gear used ..... : | KEDH030S0600NR07 | — |
| | Mounting position of luminaire ..... : | Acc. to user manual | — |
| | Supply wattage (W) ..... : | -- | — |
| | Supply current (A) ..... : | -- | — |
| | Calculated power factor ..... : | -- | — |
| | Table: measured temperatures corrected for $t_a$ = 25 °C: | | P |
| | - abnormal operating mode : | | — |
| | - test 1: rated voltage ..... : | -- | — |
| | - test 2: 1,06 times rated voltage or 1,05 times rated wattage ..... : | 1.06 x 240V = 254.4V | — |
| | - 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 |
| tc of LED driver | -- | 71.4 | -- | 85 | -- | -- |

| | | |
|---|---|---|
| **ANNEX 3** | **Screw terminals (part of the luminaire)** | **N** |

| | | | |
|---|---|---|---|
| (14) | SCREW TERMINALS | | N |
| (14.2) | Type of terminal ..... : | -- | — |
| | Rated current (A) ..... : | -- | — |
| (14.3.2.1) | One or more conductors | | N |
| (14.3.2.2) | Special preparation | | N |
| (14.3.2.3) | Terminal size | | N |
| | Cross-sectional area (mm²) ..... : | -- | N |
| (14.3.3) | Conductor space (mm) ..... : | -- | N |
| (14.4) | Mechanical tests | | N |
| (14.4.1) | Minimum distance | | N |
| (14.4.2) | Cannot slip out | | N |
| (14.4.3) | Special preparation | | N |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| (14.4.4) | Nominal diameter of thread (metric ISO thread).. : | -- | N |
| | External wiring | | N |
| | No soft metal | | N |
| (14.4.5) | Corrosion | | N |
| (14.4.6) | Nominal diameter of thread (mm) ..... : | -- | N |
| | Torque (Nm)..... : | -- | N |
| (14.4.7) | Between metal surfaces | | N |
| | Lug terminal | | N |
| | Mantle terminal | | N |
| | Pull test; pull (N)..... : | -- | N |
| (14.4.8) | Without undue damage | | N |
| **ANNEX 4** | **Screwless terminals (part of the luminaire)** | | **N** |
| **(15)** | **SCREWLESS TERMINALS** | | — |
| (15.2) | Type of terminal ..... : | -- | — |
| | Rated current (A) ..... : | -- | — |
| (15.3.1) | Material | | N |
| (15.3.2) | Clamping | | N |
| (15.3.3) | Stop | | N |
| (15.3.4) | Unprepared conductors | | N |
| (15.3.5) | Pressure on insulating material | | N |
| (15.3.6) | Clear connection method | | N |
| (15.3.7) | Clamping independently | | N |
| (15.3.8) | Fixed in position | | N |
| (15.3.10) | Conductor size | | N |
| | Type of conductor | | N |
| (15.5.1) | Terminals internal wiring | | N |
| (15.5.1.1) | Pull test spring-type terminals (4 N, 4 samples)….: | -- | N |
| (15.5.1.2) | Pull test pin or tab terminals (4 N, 4 samples)……: | -- | N |
| | Insertion force not exceeding 50 N | | N |
| (15.5.2) | Permanent connections: pull-off test (20 N) | | N |
| (15.6) | Electrical tests | | N |
| | Voltage drop (mV) after 1 h (4 samples) ..... : | -- | N |
| | Voltage drop of two inseparable joints | | N |
| | Number of cycles ..... : | -- | — |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---|---|---|
| | Voltage drop (mV) after 10th alt. 25th cycle (4 samples) ..... : | | N |
| | Voltage drop (mV) after 50th alt. 100th cycle (4 samples) ..... : | -- | N |
| | After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples) ..... : | -- | N |
| | After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples) ..... : | -- | N |
| (15.7) | Terminals external wiring | | N |
| | Terminal size and rating | | N |
| (15.8.1) | Pull test spring-type terminals or welded connections (4 samples); pull (N) ..... : | -- | N |
| | Pull test pin or tab terminals (4 samples); pull (N) ..... : | -- | N |
| (15.9) | Contact resistance test | | N |
| | Voltage drop (mV) after 1 h | | N |

| terminal | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| voltage drop (mV) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| | | | |
|---|---|---|---|
| | Voltage drop of two inseparable joints | -- | N |
| | Voltage drop after 10th alt. 25th cycle | | N |
| | Max. allowed voltage drop (mV) ..... : | -- | — |

| terminal | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| voltage drop (mV) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| | | | |
|---|---|---|---|
| | Voltage drop after 50th alt. 100th cycle | | N |
| | Max. allowed voltage drop (mV) ..... : | -- | — |

| terminal | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| voltage drop (mV) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| | | | |
|---|---|---|---|
| | Continued ageing: voltage drop after 10th alt. 25th cycle | | N |
| | Max. allowed voltage drop (mV) ..... : | -- | — |

| terminal | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| voltage drop (mV) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| | | | |
|---|---|---|---|
| | Continued ageing: voltage drop after 50th alt. 100th cycle | | N |
| | Max. allowed voltage drop (mV) ..... : | -- | — |

| terminal | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| voltage drop (mV) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

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

| | | |
|---|---|---|
| **ANNEX 5** | **National Differences for (country name) or Group Differences** | **P** |
| | | |
| | **CENELEC COMMON MODIFICATIONS (EN)** | P |

| | | | |
|---|---|---|---|
| **1.5 (3)** | **MARKING** | | N |
| 1.5 (3.3.101) | Adequate warning on the package | | N |

| | | | |
|---|---|---|---|
| **1.6 (4)** | **CONSTRUCTION** | | N |
| 1.6 (4.11.6) | Electro-mechanical contact systems | | N |

| | | | |
|---|---|---|---|
| **1.10 (5)** | **EXTERNAL AND INTERNAL WIRING** | | N |
| 1.10 (5.2.1) | Connecting leads | | N |
| | - without a means for connection to the supply | | N |
| | - terminal block specified | | N |
| | - relevant information provided | | N |
| | - compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1 | | N |
| 1.10 (5.2.2) | Cables equal to HD21 S2 or HD22 S2 | | N |

| | | | |
|---|---|---|---|
| **1.12 (12)** | **ENDURANCE TEST AND THERMAL TEST** | | P |
| 1.12 (12.4.2c) | Thermal test (normal operation) | | P |

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

| | | | |
|---|---|---|---|
| **ZC** | **ANNEX ZC, NATIONAL DEVIATIONS (EN)** | | N |
| (4 & 5) | FR: Shuttered socket-outlets 10/16A | | N |
| (13.3) | 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 |
| (13.3) | GB: Requirements according to United Kingdom Building Regulation | | N |

| | | |
|---|---|---|
| | **EN 60598-1:2008 + A11:2009** | **P** |
| | Replace the existing definition 1.2.76 with the following: | P |

| EN 60598-2-1 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.2.76 | Impulse withstand category (former term “overvoltage categories”) | | P |
| | Numeral defining a transient overvoltage condition | | P |
| Note 1 | Impulse withstand categories I, II, III and IV are used. | | P |
| Note 2 | Explanation is taken from IEC 60364-4-44:2007 | | P |
| | Table 1.1 | | P |

| EN 62031 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **ANNEX 6** | **LED modules for general lighting – Safety specifications EN 62031:2008+A1:2013** | | P |
| **4** | **GENERAL REQUIREMENTS** | | P |
| 4.4 | Integral modules treated as part of luminaires defined in clause 0.5 of IEC 60598-1 | | P |
| 4.5 | Independent modules complies with requirements in IEC 60598-1 | | N |
| **5** | **GENERAL TEST REQUIREMENTS** | | — |
| 5.5 | SELV-operated LED modules comply with Annex I of IEC 61347-2-13 | (see Annex 1) | N |
| | General conditions for tests in Annex A | (see Annex A) | N |
| **6** | **CLASSIFICATION** | | — |
| | Built-in module .....: | Yes ☐ No ☒ | — |
| | Independent module .....: | Yes ☐ No ☒ | — |
| | Integral module .....: | Yes ☒ No ☐ | — |
| | For Integral module; Note to 1.2.1 in IEC 60598-1 applies. | | — |
| **7** | **MARKING** | | **N** |
| | Requirements not applicable to the evaluated product. | | — |
| **8** | **TERMINALS** | | **N** |
| | Screw terminals according section 14 of IEC 60598-1: | | N |
| | Separately approved; component list | (see Annex 2) | N |
| | Part of the luminaire | (see Annex 3) | N |
| | Screwless terminals according section 15 of IEC 60598-1: | | N |
| | Separately approved; component list | (see Annex 2) | N |
| | Part of the luminaire | (see Annex 4) | N |
| | Connectors according IEC 60838-2-2: | | N |
| | Separately approved; component list | (see Annex 2) | N |
| **9 (9)** | **PROVISION FOR PROTECTIVE EARTHING** | | **N** |
| | Requirements not applicable to the evaluated product. | | — |

| EN 62031 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **10 (10)** | **PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS** | | **N** |
| | Requirements not applicable to the evaluated product. | | — |
| **11 (11)** | **MOISTURE RESISTANCE AND INSULATION** | | **P** |
| | After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ): | | P |
| | For basic insulation ≥ 2 MΩ .....: | 100MΩ | P |
| | For double or reinforced insulation ≥ 4 MΩ .....: | | N |
| | Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1 | | N |
| **12 (12)** | **ELECTRIC STRENGTH** | | **P** |
| | Immediately after clause 11 electric strength test for 1 min | | P |
| | Basic insulation for SELV, test voltage 500 V | | P |
| | Working voltage ≤ 50 V, test voltage 500 V | | N |
| | Working voltage > 50 V ≤ 1000 V, test voltage (V): | | N |
| | Basic insulation, 2U + 1000 V | | N |
| | Supplementary insulation, 2U + 1000 V | | N |
| | Double or reinforced insulation, 4U + 2000 V | | N |
| | No flashover or breakdown | | P |
| | Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1 | | N |
| **13 (14)** | **FAULT CONDITIONS** | | **P** |
| - (14) | When operated under fault conditions the controlgear: | | N |
| | - does not emit flames or molten material | | N |
| | - does not produce flammable gases | | N |
| | - protection against accidental contact not impaired | | N |
| | Thermally protected controlgear does not exceed the marked temperature value | | N |
| | Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected | (see appended table) | N |

| EN 62031 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| - (14.1) | Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts) | (see appended table) | N |
| | Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3 | | N |
| - (14.2) | Short-circuit or interruption of semiconductor devices | (see appended table) | N |
| - (14.3) | Short-circuit across insulation consisting of lacquer, enamel or textile | (see appended table) | N |
| - (14.4) | Short-circuit across electrolytic capacitors | (see appended table) | N |
| - (14.5) | After the tests has been carried out on three samples: | | N |
| | The insulation resistance ≥ 1 MΩ .....: | | N |
| | No flammable gases | | N |
| | No accessible parts have become live | | N |
| | During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite | | N |
| - (14.6) | Relevant fault condition tests with high-power supply | | — |
| 13.2 | Module withstands overpower condition >15 min. | | P |
| | Module with automatic protective device or power limiter, test performed 15 min. at limit. | | N |
| | During the tests, tissue paper, spread below module, does not ignite | | P |
| **15** | **CONSTRUCTION** | | **P** |
| | Wood, cotton, silk, paper and similar fibrous material not used as insulation | | P |
| **16** | **CREEPAGE DISTANCES AND CLEARANCES** | | **P** |
| | Creepage and distances and clearances in compliance with IEC 60598-1 | | P |
| **17 (17)** | **SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS** | | **P** |
| | Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1) | | P |
| **18 (18)** | **RESISTANCE TO HEAT, FIRE AND TRACKING** | | **N** |
| | Resistance to Heat, Fire and Tracking in compliance with IEC 61347-1 (clause numbers between parentheses refer to IEC 61347-1) | | N |
| (18.1) | Ball-pressure test: | | N |
| | - part tested; temperature (°C).....: | -- | N |

| EN 62031 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| (18.2) | Test of printed boards | | N |
| | - part tested.....: | -- | N |
| (18.3) | Glow-wire test (650°C): | | N |
| | - part tested.....: | -- | N |
| (18.4) | Needle flame test (10 s): | | N |
| | - part tested.....: | -- | N |
| (18.5) | Tracking test: | | N |
| | - part tested.....: | -- | N |
| **19 (19)** | **RESISTANCE TO CORROSION** | | **N** |
| | Rust protection: | | N |
| | - test according 4.18.1 of IEC 60598-1 | | N |
| | - adequate varnish on the outer surface | | N |
| **20** | **INFORMATION FOR LUMINAIRE DESIGN** | | **N** |
| | Information in Annex D | | — |
| **21** | **HEAT MANAGEMENT** | | **N** |
| 21.1 | General | | N |
| | Exchangeability is safeguarded by cap or base | | N |
| 21.2 | Heat-conducting foil and paste | | N |
| | Heat-conducting foil delivered with the module if necessary | | N |
| 21.4 | Construction | | N |
| | Electrical connection and mechanical holding are separate | | N |
| **A** | **ANNEX A - TESTS** | | **P** |
| | All tests performed in accordance with the advice given in Annex H of IEC 61347-1, if applicable | | P |
| | **ANNEX 1 - SELV-operated LED modules** | | **N** |
| | SELV-operated LED modules in compliance with Annex I of IEC 61347-2-13 | | N |

| EN 62471 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **Annex 7** | **Photobiological safety evaluated according to standard EN 62471:2008.** | **P** |
|---|---|---|

**Emission limits for risk groups of continuous wave lamps**
**α=0.0214rad** — P

| Risk | Action spectrum | Symbol | Units | Emission Measurement | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Exempt | | Low risk | | Mod risk | |
| | | | | Limit | Result | Limit | Result | Limit | Result |
| Actinic UV | $S_{UV}(\lambda)$ | $E_S$ | $W \cdot m^{-2}$ | 0.001 | 9.8e-05 | - | - | - | - |
| Near UV | | $E_{uvA}$ | $W \cdot m^{-2}$ | 0.33 | 0.0e+00 | - | - | - | - |
| Blue light | B(λ) | $L_B$ | $W \cdot m^{-2} \cdot sr^{-1}$ | 100 | 2.7e+00 | 10000 | - | 4000000 | - |
| Bluelight, small source | B(λ) | $E_B$ | $W \cdot m^{-2}$ | 0.01* | - | 1.0 | - | 400 | - |
| Retinal thermal | R(λ) | $L_R$ | $W \cdot m^{-2} \cdot sr^{-1}$ | 28000/α | 5.7e+02 | 28000/α | - | 71000/α | - |
| Retinal thermal, weak visual stimulus** | R(λ) | $L_{IR}$ | $W \cdot m^{-2} \cdot sr^{-1}$ | 545000 0.0017≤α≤0.011 | - | | | | |
| | | | | 6000/α 0.011≤α≤0.1 | - | | | | |
| IR radiation, eye | | $E_{IR}$ | $W \cdot m^{-2}$ | 100 | 0.0e+00 | 570 | - | 3200 | - |

* Small source defined as one with α<0.011 radian. Averaging field of view at 10000 s is 0.1 radian.
** Involves evaluation of non-GLS source.

**Assessment:**

Lamp classification group..... exempt☒ risk 1☐ risk 2☐ risk 3☐

| EN 62493 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | |
|---|---|---|
| **ANNEX 8** | **Assessment Of Lighting Equipment Related To Human Exposure To Electromagnetic Fields according to standard EN 62493:2010** | **P** |

| | | | |
|---|---|---|---|
| 4.2 | Application of limits (Test summary) | | P |
| | Specific absorption rate (SAR) | | P |
| a) | CISPR 15 clause 4.3.1<br>Disturbance voltage mains terminals<br>20 kHz to 30 MHz | See EMC report<br>WTF15F0122431E | P |
| b) | CISPR 15 clause 4.4<br>Radiated electromagnetic disturbances<br>100 kHz to 30 MHz | See EMC report<br>WTF15F0122431E | P |
| c) | CISPR 15 clause 4.4.2<br>Radiated electromagnetic disturbances<br>30MHz to 300MHz | See EMC report<br>WTF15F0122431E | P |
| | Induced current density | | P |
| d) | Induced current density<br>20 kHz - 10 MHz | See measurement results below | P |

| | | |
|---|---|---|
| 4.2.d | INDUCED CURRENT DENSITY | P |

| | | | |
|---|---|---|---|
| | Power supply system utilized: | | — |
| | Voltage ……: | 220-240V~ | — |
| | Frequency ……: | 50/60Hz | — |
| | Environmental conditions: | | — |
| | Temperature……: | 25 °C | — |
| | Humidity……: | 55% | — |
| | EuT operation mode: | | — |
| | ☒ Normal operation | Lighting | — |
| | ☐ Other operation: | | — |
| | | | — |

| | | | | | |
|---|---|---|---|---|---|
| 4.2.d | MEASUREMENT RESULTS | | | | P |
| | Measuring with “Van der Hoofden” test head | | | | |
| Location of EUT | Test model | Measuring distance | Result(F) | Limit(F) | Verdict |
| Reference Figure B.2a of EN 62493:2010 | VC1854-8 | 50cm | 0.035 | 0.85 | P |

| EN 62493 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.3 | Lighting equipment deemed to comply without testing | | N |
| | Lighting equipment without electronic control gear is deemed to comply with the requirements of the standard without testing.<br>All kind of ignitors, starters, switches, dimmers (including phase control units e.g. triac, GTO) and sensors are not considered as electronic control gear. | | N |

====== End of Report ======

# Photo Documentation

Reference No.: WTF15F0122430S

## Model: VC1854-8

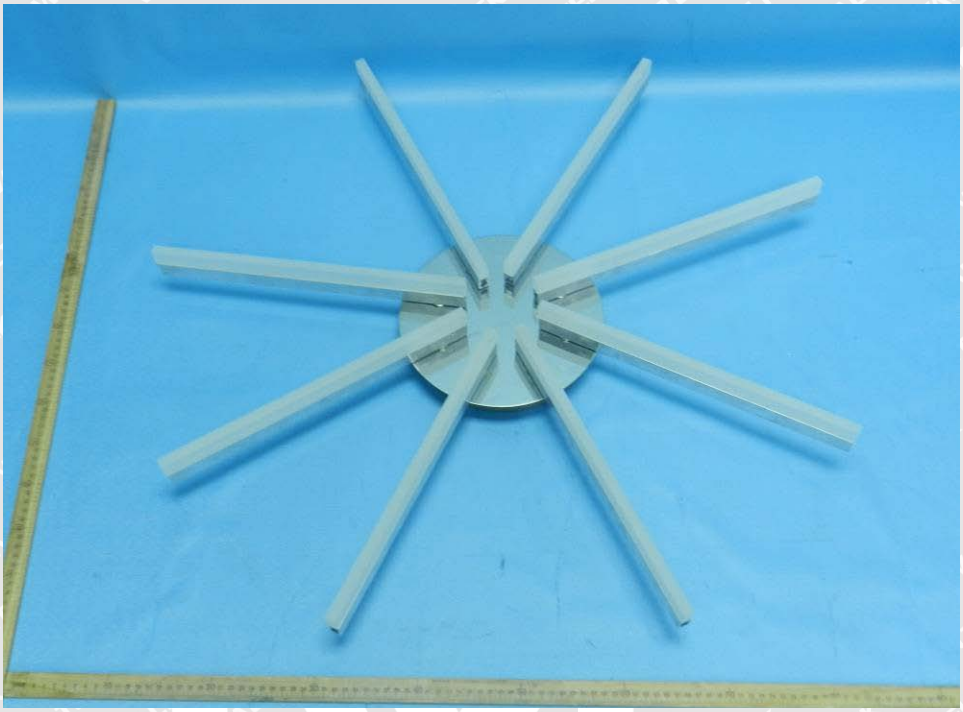

Photo 1


Photo 2

# Photo Documentation

Reference No.: WTF15F0122430S


Photo 3

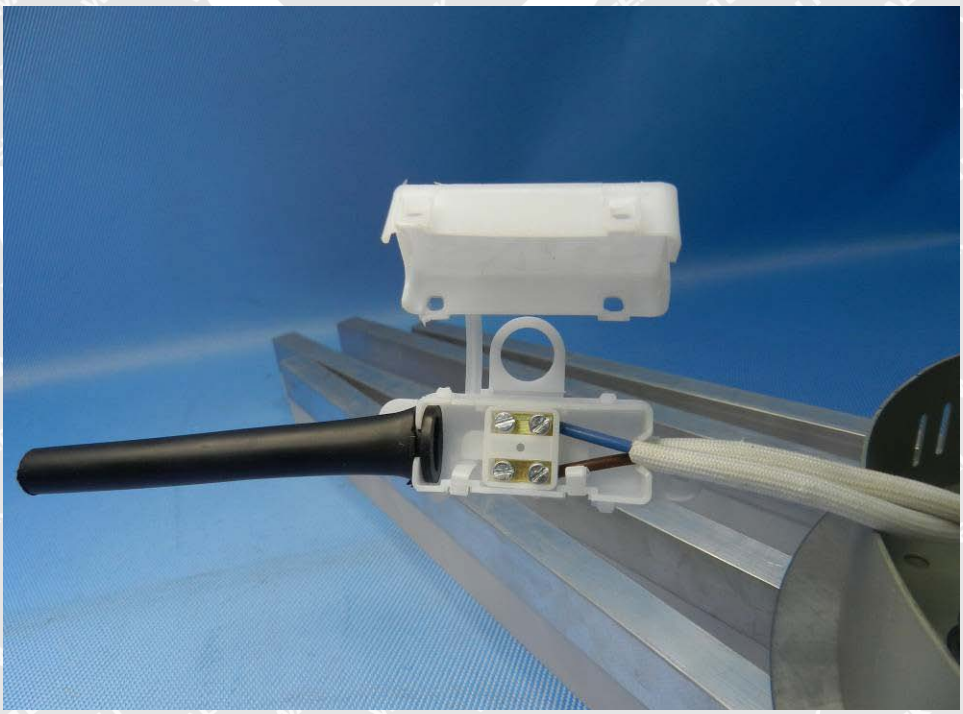

Photo 4

## Photo Documentation

Reference No.: WTF15F0122430S

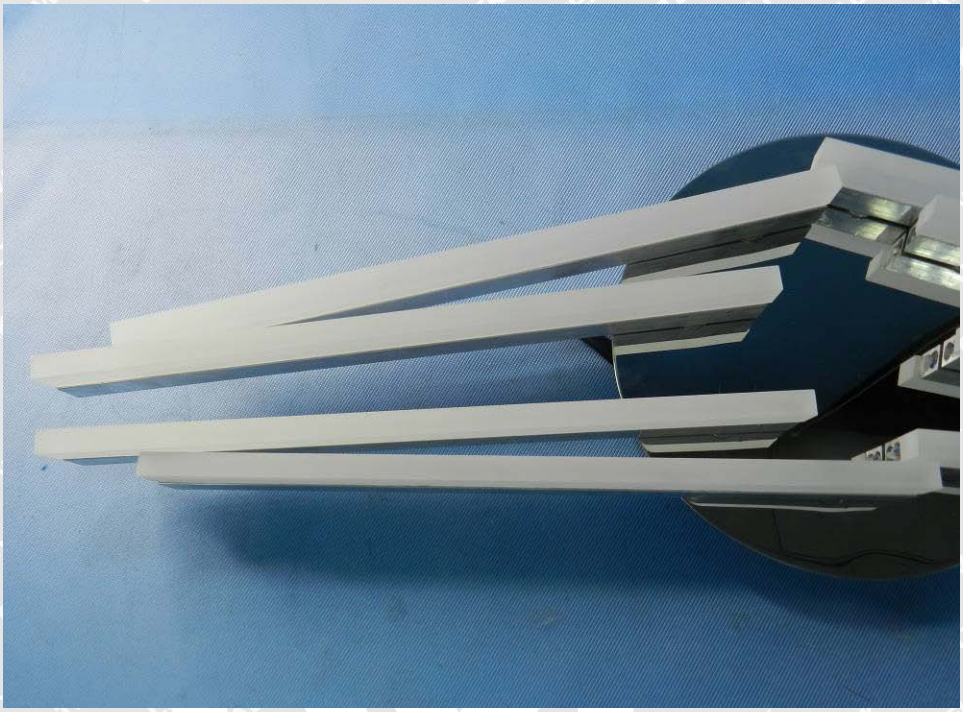

Photo 5


Photo 6

## Photo Documentation

Reference No.: WTF15F0122430S

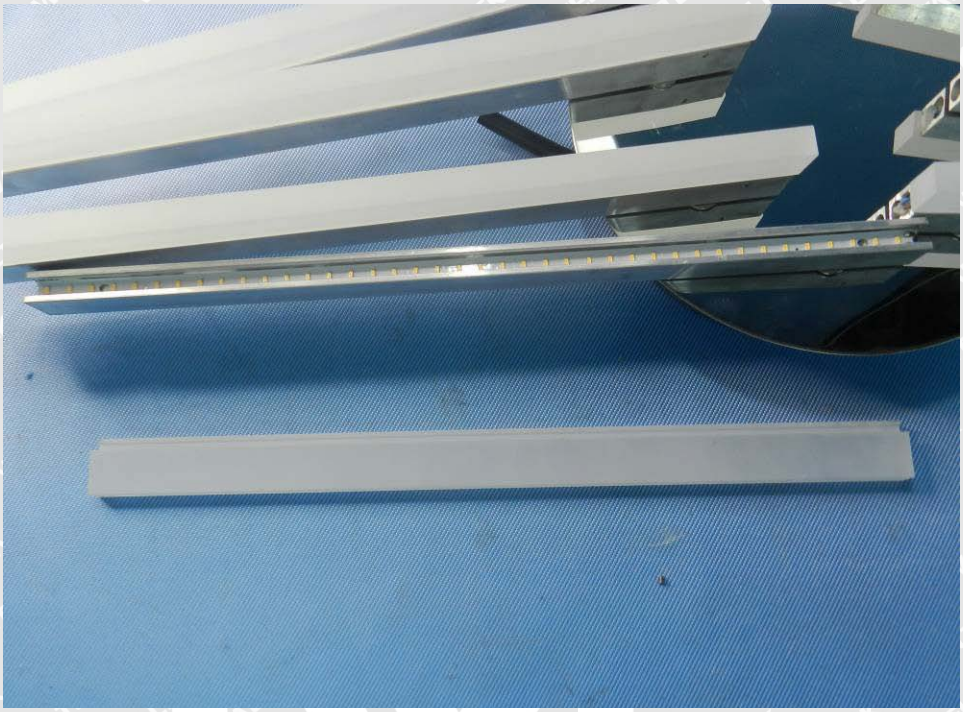

Photo 7

**Model: 37650008/01 (VC1854-6)**

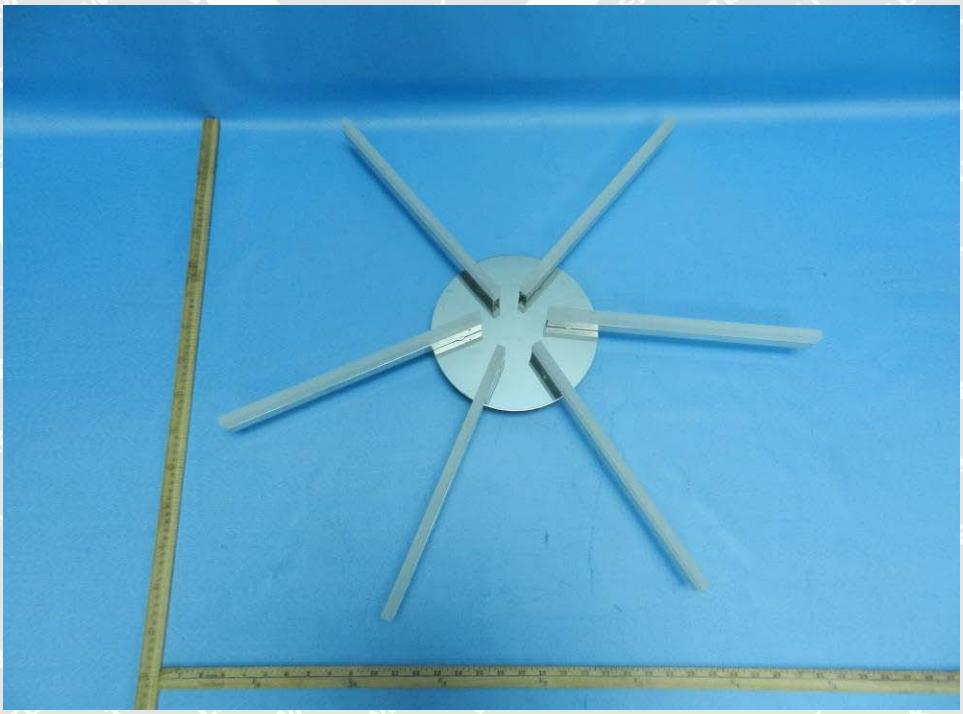

Photo 8

# Photo Documentation

Reference No.: WTF15F0122430S

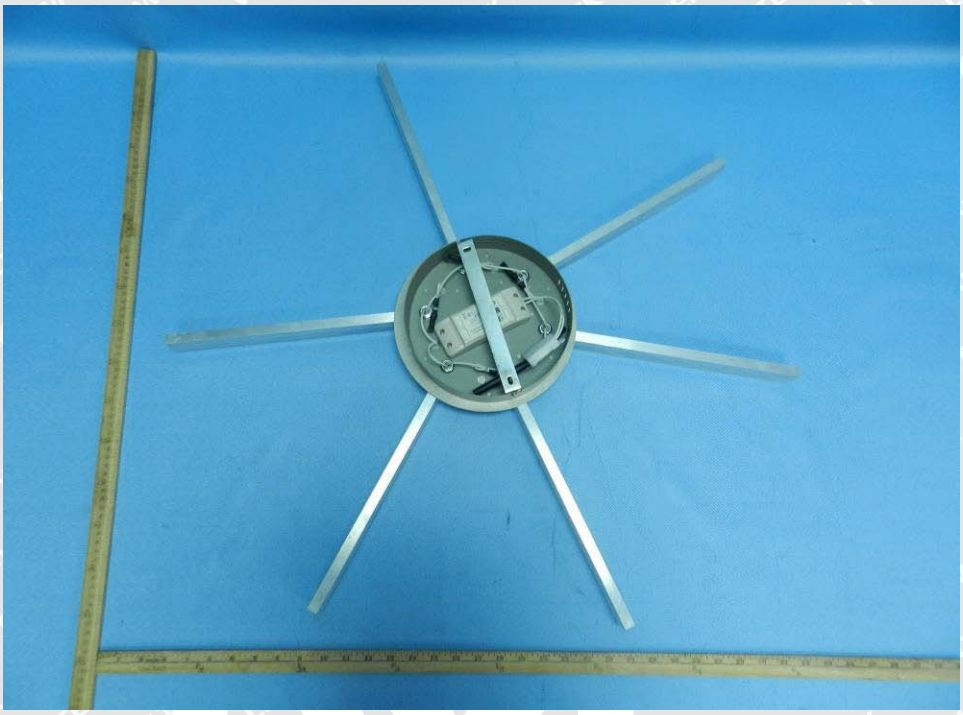

Photo 9


Photo 10

======END======