

TEST REPORT
On Behalf of
AOK LED Light Company Limited
LED Street Light
Model: AOK-50WiM

Prepared For : **AOK LED Light Company Limited**
Building 1, St George's Science and Technology Industrial
Park, Shajin Street, Shenzhen, Guangdong Province, China
Zip 518104

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Date of Test: Mar. 20, 2017 to Mar. 28, 2017
Date of Report: Mar. 28, 2017
Report Number: R0117030062S

TEST REPORT
IEC 60598-2-3
Luminaires
Part 2: Particular requirements
Section 3: Luminaires for road and street lighting

| | | | |
|---|---|--|--|
| Report Number | R0117030062S |  |   |
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| Compiled by | Dear Luo | | |
| Approved by | Luson Xiao | | |
| Applicant's name | AOK LED Light Company Limited | | |
| Address | Building 1, St George's Science and Technology Industrial Park, Shajin Street, Shenzhen, Guangdong Province, China Zip 518104 | | |
| Test specification: | | | |
| Standard | IEC 60598-1:2014 IEC 60598-2-3:2002+A1:2011 | | |
| Test procedure | LVD | | |
| Non-standard test method | N/A | | |
| Test Report Form No | IEC60598-2-3 | | |
| Test Report Form(s) Originator | N.A. | | |
| Master TRF | 2017-03 | | |
| | | | |
| Test item description | LED Street Light | | |
| Trade Mark |  | | |
| Manufacturer | AOK LED Light Company Limited | | |
| Address | Building 1, St George's Science and Technology Industrial Park, Shajin Street, Shenzhen, Guangdong Province, China Zip 518104 | | |
| Factory | AOK LED Light Company Limited | | |
| Address | Building 1, St George's Science and Technology Industrial Park, Shajin Street, Shenzhen, Guangdong Province, China Zip 518104 | | |
| Model/Type reference | AOK-50WiM | | |
| Ratings | AC100-240V, 50/60Hz, 50W | | |

| | |
|--|-------------------------------|
| Test item particulars | LED street light |
| Classification of installation and use | power cord |
| Supply Connection | Class I |
| | IP66 |
| Possible test case 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 | Mar. 20, 2017 |
| Date (s) of performance of tests | Mar. 20, 2017to Mar. 28, 2017 |
| General remarks: | |
| <p>“(See Enclosure #)” refers to additional information appended to the report. “(See appended table)” refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p> <p>Clause numbers between brackets refer to clauses in IEC 60598-1</p> | |
| <p>Tests performed</p> <p>IEC 60598-1:2014 IEC 60598-2-3:2002+A1:2011 IEC 62031:2008 IEC 62471:2006 IEC 62493:2015</p> <p>The submitted samples were found to comply with the above specification.</p> | |
| <p>Attachment to test report</p> <ol style="list-style-type: none"> 1. Attachment I: Attached report of IEC 62031. 2. Attachment II: Attached report of IEC 62471. 3. Attachment III: Attached report of IEC 62493. 4. Attachment IV: Photo documentation | |

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Rating label is stucked on the enclosure of LED Area Light (Size: height of WEEE mark at least 7mm, height of CE mark at least 5mm, height of letters and numbers at least 2mm)

| IEC 60598-2-3 | | | |
|----------------|---|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.2 (0) | GENERAL TEST REQUIREMENTS | | P |
| 3.2 (0.1) | Information for luminaire design considered.....: | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Lamp standard: | — |
| 3.2 (0.3) | More sections applicable.....: | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Section/s: | — |
| | | | |
| 3.4 (2) | CLASSIFICATION OF LUMINAIRES | | P |
| 3.4 (2.2) | Type of protection | Class I | P |
| 3.4 (2.3) | Degree of protection.....: | IP66 | P |
| 3.4 (2.4) | Luminaire suitable for direct mounting on normally flammable surfaces.....: | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | — |
| 3.4 (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"/> | — |
| 3.4 (-) | Modes of installation of road or street lighting | | — |
| | a) on a pipe | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |
| | b) on a mast arm | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | — |
| | c) on a post top | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |
| | d) on span or suspension wires | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |
| | e) on a wall | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |
| | | | |
| 3.5 (3) | MARKING | | P |
| 3.5 (3.2) | Mandatory markings | | P |
| | Position of the marking | | P |
| | Format of symbols/text | | P |
| 3.5 (3.3) | Additional information | | P |
| | Language of instructions | English | P |
| 3.5 (3.3.1) | Combination luminaires | | N |
| 3.5 (3.3.2) | Nominal frequency in Hz | 50/60Hz | P |
| 3.5 (3.3.3) | Operating temperature | | N |
| 3.5 (3.3.4) | Symbol or warning notice | | N |
| 3.5 (3.3.5) | Wiring diagram | | P |
| 3.5 (3.3.6) | Special conditions | | N |
| 3.5 (3.3.7) | Metal halide lamp luminaire – warning | | N |

| IEC 60598-2-3 | | | |
|---------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.5 (3.3.8) | Limitation for semi-luminaires | | N |
| 3.5 (3.3.9) | Power factor and supply current | | N |
| 3.5 (3.3.10) | Suitability for use indoors | | N |
| 3.5 (3.3.11) | Luminaires with remote control | | N |
| 3.5 (3.3.12) | Clip-mounted luminaire – warning | | N |
| 3.5 (3.3.13) | Specifications of protective shields | | N |
| 3.5 (3.3.14) | Symbol for nature of supply | ~ | P |
| 3.5 (3.3.15) | Rated current of socket outlet | | N |
| 3.5 (3.3.16) | Rough service luminaire | | N |
| 3.5 (3.3.17) | Mounting instruction for type Y, type Z and some type X attachments | | P |
| 3.5 (3.3.18) | Non-ordinary luminaires with PVC cable | | N |
| 3.5 (3.3.19) | Protective conductor current in instruction if applicable | | N |
| 3.5 (3.3.20) | Provided with information if not intended to be mounted within arm's reach | | N |
| 3.5 (3.3.21) | Non replaceable and non-user replaceable light sources information provided | | P |
| | Cautionary symbol | | N |
| 3.5 (3.3.22) | Controllable luminaires, classification of insulation provided | | N |
| 3.5 (3.4) | Test with water | 15s with water | P |
| | Test with hexane | 15s with hexane | P |
| | Legible after test | | P |
| | Label attached | | P |
| 3.5 (3.3.101) | For luminaires not supplied with terminal block: Adequate warning on the package | | N |
| 3.5 (-) | Additional information in instruction leaflet | | P |
| | a) Design attitude | | P |
| | b) Weight | | P |
| | c) Overall dimensions | | P |
| | d) Maximum projected area if applicable | | P |
| | e) Cross-sectional area of wires if applicable | | N |
| | f) Suitability for indoors use | | N |
| | g) Dimensions of the compartment | | N |

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|----------------------|--|-----------------|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | h) Torque setting to be applied to bolts or screws | | P |
| | i) Maximum mounting height | | P |
| 3.6 (4) | CONSTRUCTION | | P |
| 3.6 (4.2) | Components replaceable without difficulty | | P |
| 3.6 (4.3) | Wireways smooth and free from sharp edges | | P |
| 3.6 (4.4) | Lampholders | | N |
| 3.6 (4.4.1) | Integral lampholder | | N |
| 3.6 (4.4.2) | Wiring connection | | N |
| 3.6 (4.4.3) | Lampholder for end-to-end mounting | | N |
| 3.6 (4.4.4) | Positioning | | N |
| | - pressure test (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 (N) | | — |
| | After test the lampholder have not moved from its position and show no permanent deformation | | N |
| 3.6 (4.4.5) | Peak pulse voltage | | N |
| 3.6 (4.4.6) | Centre contact | | N |
| 3.6 (4.4.7) | Parts in rough service luminaires resistant to tracking | | N |
| 3.6 (4.4.8) | Lamp connectors | | N |
| 3.6 (4.4.9) | Caps and bases correctly used | | N |
| 3.6 (4.4.10) | Light source for lampholder or connection according IEC 60061 not connected another way | | N |
| 3.6 (4.5) | Starter holders | | N |
| | Starter holder in luminaires other than class II | | N |
| | Starter holder class II construction | | N |
| 3.6 (4.6) | Terminal blocks | | N |
| | Tails | | N |
| | Unsecured blocks | | N |
| 3.6 (4.7) | Terminals and supply connections | | P |

| IEC 60598-2-3 | | | |
|----------------------|--|-----------------|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.6 (4.7.1) | Contact to metal parts | | P |
| 3.6 (4.7.2) | Test 8 mm live conductor | | N |
| | Test 8 mm earth conductor | | N |
| 3.6 (4.7.3) | Terminals for supply conductors | | P |
| 3.6 (4.7.3.1) | Welded method and material | | N |
| | - stranded or solid conductor | | N |
| | - spot welding | | N |
| | - welding between wires | | N |
| | - Type Z attachment | | N |
| | - mechanical test according to 15.6.2 | | N |
| | - electrical test according to 15.6.3 | | N |
| | - heat test according to 15.6.3.2.3 and 15.6.3.2.4 | | N |
| 3.6 (4.7.4) | Terminals other than supply connection | | P |
| 3.6 (4.7.5) | Heat-resistant wiring/sleeves | | N |
| 3.6 (4.7.6) | Multi-pole plug | | N |
| | - test at 30 N | | N |
| 3.6 (4.8) | Switches | | N |
| | - adequate rating | | N |
| | - adequate fixing | | N |
| | - polarized supply | | N |
| | - compliance with IEC 61058-1 for electronic switches | | N |
| 3.6 (4.9) | Insulating lining and sleeves | | P |
| 3.6 (4.9.1) | Retainment | | P |
| | Method of fixing.....: Form part of luminaire | | P |
| 3.6 (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 |
| 3.6 (4.10) | Double or reinforced insulation | | N |
| 3.6 (4.10.1) | No contact, mounting surface – accessible metal parts – wiring of basic insulation | | N |
| | Safe installation fixed luminaires | | N |

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|-------------------|--|-----------------|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Capacitors and switches | | N |
| | Interference suppression capacitors according to IEC 60384-14 | | N |
| 3.6 (4.10.2) | Assembly gaps: | | N |
| | - not coincidental | | N |
| | - no straight access with test probe | | N |
| 3.6 (4.10.3) | Retention of insulation: | | N |
| | - fixed | | N |
| | - unable to be replaced; luminaire inoperative | | N |
| | - sleeves retained in position | | N |
| | - lining in lampholder | | N |
| 1.6 (4.10.4) | Protective impedance device | | N |
| | Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor | | N |
| | Y1 or Y2 capacitors comply with IEC 60384-14 | | N |
| | Resistors comply with test (a) in 14.1 of IEC 60065 | | N |
| 3.6 (4.11) | Electrical connections and current-carrying parts | | P |
| 3.6 (4.11.1) | Contact pressure | | P |
| 3.6 (4.11.2) | Screws: | | P |
| | - self-tapping screws | | P |
| | - thread-cutting screws | | N |
| 3.6 (4.11.3) | Screw locking: | | P |
| | - spring washer | | P |
| | - rivets | | N |
| 3.6 (4.11.4) | Material of current-carrying parts | | P |
| 3.6 (4.11.5) | No contact to wood or mounting surface | | P |
| 3.6 (4.11.6) | Electro-mechanical contact systems | | P |
| 3.6 (4.12) | Screws and connections (mechanical) and glands | | P |
| 3.6 (4.12.1) | Screws not made of soft metal | | P |
| | Screws of insulating material | | N |
| | Torque test: torque (Nm); part.....: | | P |
| | Torque test: torque (Nm); part.....: | | N |

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|-------------------|---|-------------------|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Torque test: torque (Nm); part.....: | | N |
| 3.6 (4.12.2) | Screws with diameter < 3 mm screwed into metal | | N |
| 3.6 (4.12.4) | Locked connections: | | N |
| | - fixed arms; torque (Nm).....: | | N |
| | - lampholder; torque (Nm).....: | | N |
| | - push-button switches; torque 0,8 Nm.....: | | N |
| 3.6 (4.12.5) | Screwed glands; force (Nm).....: | | N |
| 3.6 (4.13) | Mechanical strength | | P |
| 3.6 (4.13.1) | Impact tests: | | P |
| | - fragile parts; energy (Nm).....: | 0.5 | P |
| | - other parts; energy (Nm).....: | 0.7 | P |
| | a) live parts | | P |
| | b) linings | | P |
| | c) protection | | P |
| | d) covers | | P |
| 3.6 (4.13.3) | Straight test finger | 30N | P |
| 3.6 (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 |
| 3.6 (4.13.6) | Tumbling barrel | | N |
| 3.6 (4.14) | Suspensions, fixings and means of adjusting | | P |
| 3.6 (4.14.1) | Mechanical load: | | P |
| | A) four times the weight | 2.85 Kg x4=11.4Kg | 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 |

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|-------------------|--|---|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Fixed luminaire or independent control gear without fixing devices | | N |
| 3.6 (4.14.2) | Load to flexible cables | | N |
| | Mass (kg) | | — |
| | Stress in conductors (N/mm ²) | | N |
| | Mass (kg) of semi-luminaire | | N |
| | Bending moment (Nm) of semi-luminaire | | N |
| 3.6 (4.14.3) | Adjusting devices: | | P |
| | - flexing test; number of cycles..... | 45 | P |
| | - strands broken..... | | P |
| | - electric strength test afterwards | | P |
| 3.6 (4.14.4) | Telescopic tubes: cords not fixed to tube; no strain on conductors | | N |
| 3.6 (4.14.5) | Guide pulleys | | N |
| 3.6 (4.14.6) | Strain on socket-outlets | | N |
| 3.6 (4.15) | Flammable materials | | P |
| | - glow-wire test 650°C..... | See Test Table 3.15 (13.3.2) on Page 29 | P |
| | - spacing ≥30 mm | | N |
| | - screen withstanding test of 13.3.1 | | N |
| | - screen dimensions | | N |
| | - no fiercely burning material | | P |
| | - thermal protection | | N |
| | - electronic circuits exempted | | P |
| 3.6 (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 |
| 3.6 (4.16) | Luminaires for mounting on normally flammable surfaces | | P |
| | No lamp control gear..... | (compliance with Section 12) | N |
| 3.6 (4.16.1) | Lamp control gear spacing: | | N |
| | - spacing 35 mm | | N |
| | - spacing 10 mm | | N |
| 3.6 (4.16.2) | Thermal protection: | | N |

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|-------------------|--|---|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - in lamp control gear | | N |
| | - external | | N |
| | - fixed position | | N |
| | - temperature marked lamp control gear | | N |
| 3.6 (4.16.3) | Design to satisfy the test of 12.6 | (see clause 12.6) | N |
| 3.6 (4.17) | Drain holes | | N |
| | Clearance at least 5 mm | | N |
| 3.6 (4.18) | Resistance to corrosion | | P |
| 3.6 (4.18.1) | - rust-resistance | | P |
| 3.6 (4.18.2) | - season cracking in copper | | P |
| 3.6 (4.18.3) | - corrosion of aluminium | | P |
| 3.6 (4.19) | Igniters compatible with ballast | | P |
| 3.6 (4.20) | Rough service vibration | | N |
| 3.6 (4.21) | Protective shield | | N |
| 3.6 (4.21.1) | Shield fitted if tungsten halogen lamps or metal halide lamps | | N |
| | Shield of glass if tungsten halogen lamps | | N |
| 3.6 (4.21.2) | Particles from a shattering lamp not impair safety | | N |
| 3.6 (4.21.3) | No direct path | | N |
| 3.6 (4.21.4) | Impact test on shield | | N |
| | Glow-wire test on lamp compartment.....: | See Test Table 3.15 (13.3.2) on Page 29 | N |
| 3.6 (4.22) | Attachments to lamps not cause overheating or damage | | N |
| 3.6 (4.23) | Semi-luminaires comply Class II | | N |
| 3.6 (4.24) | Photobiological hazards | | P |
| 3.6 (4.24.1) | No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P) | | N |
| 3.6 (4.24.2) | Retinal blue light hazard | | P |
| | Class of risk group assessed according to IEC/TR 62778 | | — |
| | Luminaires with E_{thr} : | | N |
| | a) Fixed luminaires | | N |
| | - distance x m, borderline between RG1 and RG2... : | | N |
| | - marking and instruction according 3.2.23 | | N |

| IEC 60598-2-3 | | | |
|----------------------|--|-----------------|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | b) Portable and handheld luminaires | | N |
| | - marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778 | | N |
| | Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778 | | N |
| 3.6 (4.25) | Mechanical hazard | | P |
| | No sharp point or edges | | P |
| 3.6 (4.26) | Short-circuit protection | | N |
| 3.6 (4.26.1) | Adequate means of uninsulated accessible SELV parts | | N |
| 3.6 (4.26.2) | Short-circuit test with test chain according 4.26.3 | | N |
| | Test chain not melt through | | N |
| | Test sample not exceed values of Table 12.1 and 12.2 | | N |
| 3.6 (4.27) | Terminal blocks with integrated screwless earthing contacts | | N |
| | Test according Annex V | | N |
| | Pull test of terminal fixing (20 N) | | N |
| | After test, resistance < 0,05 Ω | | N |
| | Pull test of mechanical connection (50 N) | | N |
| | After test, resistance < 0,05 Ω | | N |
| | Voltage drop test, resistance < 0,05 Ω | | N |
| 3.6 (4.28) | Fixing of thermal sensing control | | N |
| | Not plug-in or easily replaceable type | | N |
| | Reliably kept in position | | N |
| | No adhesive fixing if UV radiations from a lamp can degrade the fixing | | N |
| | Not outside the luminaire enclosure | | N |
| | Test of adhesive fixing: | | N |
| | Max. temperature on adhesive material (°C) : | | — |
| | 100 cycles between t min and t max | | N |
| | Temperature sensing control still in position | | N |
| 3.6 (4.29) | Luminaires with non-replaceable light source | | N |
| | Not possible to replace light source | | N |

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|-------------------|---|-----------------|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Live part not accessible after parts have been opened by hand or tools | | N |
| 3.6 (4.30) | Luminaires with non-user replaceable light source | | P |
| | If protective cover provide protection against electric shock and marked with "caution, electric shock risk" symbol: | | N |
| | Minimum two fixing means | | P |
| 3.6 (4.31) | Insulation between circuits | | P |
| | Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3 | | N |
| | Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3 | | N |
| 3.6 (4.31.1) | SELV circuits | | P |
| | Used SELV source | | P |
| | Voltage ≤ ELV | | P |
| | Insulating of SELV circuits from LV supply | | N |
| | Insulating of SELV circuits from other non SELV circuits | | N |
| | Insulating of SELV circuits from FELV | | N |
| | Insulating of SELV circuits from other SELV circuits | | N |
| | SELV circuits insulated from accessible parts according Table X.1 | | P |
| | Plugs not able to enter socket-outlets of other voltage systems | | N |
| | Socket outlets does not admit plugs of other voltage systems | | N |
| | Plugs and socket-outlets does not have protective conductor contact | | N |
| 3.6 (4.31.2) | FELV circuits | | N |
| | Used FELV source | | N |
| | Voltage ≤ ELV | | N |
| | Insulating of FELV circuits from LV supply | | N |
| | FELV circuits insulated from accessible parts according Table X.1 | | N |
| | Plugs not able to enter socket-outlets of other voltage systems | | N |

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|----------------------|--|-----------------|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Socket outlets does not admit plugs of other voltage systems | | N |
| | Socket-outlets does not have protective conductor contact | | N |
| 3.6 (4.31.3) | Other circuits | | N |
| | Other circuits insulated from accessible parts according Table X.1 | | N |
| | Class II construction with equipotential bonding for protection against indirect contacts with live parts: | | N |
| | - conductive parts are connected together | | N |
| | - test according 7.2.3 | | N |
| | - conductive part not cause an electric shock in case of an insulation fault | | N |
| | - equipotential bonding in master/slave applications | | N |
| | - master luminaire provided with terminal for accessible conductive parts of slave luminaires | | N |
| | - slave luminaire constructed as class I | | N |
| 3.6(4.32) | Overvoltage protective devices | | N |
| | Comply with IEC 61643-11 | | N |
| | External to controlgear and connected to earth: | | N |
| | - only in fixed luminaires | | N |
| | - only connected to protective earth | | N |
| 3.6.1 (-) | At least IP X3 or X5 respectively. IP | | P |
| | Column-integrated luminaires: | | N |
| | - parts below 2,5 m. IP | | N |
| | - parts above 2,5 m. IP | | N |
| 3.6.2 (-) | Suspension on span wires | | N |
| 3.6.3 (-) | Means for attaching the luminaire or external parts to its support appropriate to the weight | | N |
| 3.6.3.1 (-) | Static load test | | P |
| | - drag coefficient..... : | | P |
| | - loaded area (m ²)..... : | | P |
| | - used load (N)..... : | | P |
| | - measured deformation (cm/m) | | P |
| | - no rotation | | P |

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|----------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.6.4 (-) | Adjustable lampholders | | N |
| 3.6.5 (-) | Luminaires installed above 5 m, glass covers shall be: | | N |
| | a) glass that fractures into small pieces (test according to 3.6.5.1), or | | N |
| | b) glass having a high impact shock resistance (test according to 3.6.5.2), or | | N |
| | c) protected by any means to retain glass fragments | | N |
| | For tunnel luminaires 3.6.5.1 apply | | N |
| | Method of protection declared by the manufacturer | | N |
| 3.6.5.1 (-) | Protection by the use of glass that fractures into small pieces | | N |
| | - number of particles is more than 40.....: | | N |
| 3.6.5.2 (-) | Protection by the use of high impact resistant glass | | N |
| 3.6.5.2.1 (-) | Glass covers have high mechanical strength | | N |
| | Test according IEC 62262 with test apparatus according IEC 60068-2-75 with impact energy of 5J on preconditioned sample | | N |
| 3.6.5.2.2 (-) | Glass covers not break into large pieces | | N |
| | - test according 3.6.5.1, number of particles is more than 20..... : | | N |
| 3.6.6 (-) | Connection compartment of column-integrated luminaire | | N |
| | - provides adequate space | | N |
| | - means for attachment | | N |
| | - means for attachment of metal corrosion-resistant | | N |
| 3.6.7 (-) | Compliance with ISO standard or other..... : | | N |
| 3.6.8 (-) | Doors of column-integrated luminaires: | | N |
| | - corrosion-resistant | | N |
| | - opening only possible for an authorized person | | N |
| | - impact test 5 Nm | | N |
| | - sample show no damage | | N |
| 3.6.9 (-) | Column-integrated luminaire: | | N |
| | - dimension of the cable entry slot (mm).....: | | N |
| | - cable path from the slot to the connection compartment (mm) | | N |
| | - cable path free from obstruction that might cause abrasion of the cable | | N |



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|------------------------|--|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.7 (11) | CREEPAGE DISTANCES AND CLEARANCES | | P |
| 3.7 (11.2) | Creepage distances and clearances.....: | See Table 3.7(11.2) on Page 28 | P |
| | Impulse withstand category (Normal category II) (Category III Annex U, Table U.1) | Category II <input type="checkbox"/> Category III <input checked="" type="checkbox"/> | — |
| 3.8 (7) | PROVISION FOR EARTHING | | P |
| 3.8 (7.2.1 + 7.2.3) | Accessible metal parts | | P |
| | Metal parts in contact with supporting surface | | P |
| | Resistance < 0,5 Ω.....: | 0.01Ω | P |
| | Self-tapping screws used | | P |
| | Thread-forming screws | | N |
| | Thread-forming screw used in a groove | | N |
| | Earth makes contact first | | N |
| | Terminal blocks with integrated screwless earthing contacts tested according Annex V | | N |
| | Protective earthing of the luminaire not via built-in control gear | | N |
| 3.8 (7.2.2 + 7.2.3) | Earth continuity in joints, etc. | | N |
| 3.8 (7.2.4) | Locking of clamping means | | P |
| | Compliance with 4.7.3 | | P |
| | Terminal blocks with integrated screwless earthing contacts tested according Annex V | | N |
| 3.8 (7.2.5) | Earth terminal integral part of connector socket | | N |
| 3.8 (7.2.6) | Earth terminal adjacent to mains terminals | | P |
| 3.8 (7.2.7) | Electrolytic corrosion of the earth terminal | | P |
| 3.8 (7.2.8) | Material of earth terminal | | P |
| | Contact surface bare metal | | P |
| 3.8 (7.2.10) | Class II luminaire for looping-in | | N |
| | Double or reinforced insulation to functional earth | | N |
| 3.8 (7.2.11) | Earthing core coloured green-yellow | | P |
| | Length of earth conductor | | N |
| 3.8.1 (-) | Attachment prevented from rotation | | N |

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|-------------------|---|---------------------|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.9 (14) | SCREW TERMINALS | | N |
| | Separately approved; component list | (see Annex 1) | N |
| | Part of the luminaire | (see Annex 3) | N |
| 3.9 (15) | SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS | | P |
| | Separately approved; component list.....: | (see Annex 1) | N |
| | Part of the luminaire.....: | Soldered connection | P |
| 3.10 (5) | EXTERNAL AND INTERNAL WIRING | | P |
| 3.10 (5.2) | Supply connection and external wiring | | P |
| 3.10 (5.2.1) | Means of connection.....: | | P |
| | Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment | | N |
| 3.10 (5.2.1) | Connecting leads | | P |
| | - without a means for connection to the supply | | P |
| | - terminal block specified | | P |
| | - relevant information provided | | P |
| | - compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1 | | P |
| 3.10 (5.2.2) | Type of cable.....: | | P |
| | Nominal cross-sectional area (mm ²)..... : | | P |
| | Cables equal to IEC 60227 or IEC 60245 | | P |
| 3.10 (5.2.2) | Cables equal to EN 50525 | | N |
| | Replace table 5.1 – Supply cord | | N |
| 3.10 (5.2.3) | Type of attachment, X, Y or Z | | P |
| 3.10 (5.2.5) | Type Z not connected to screws | | N |
| 3.10 (5.2.6) | Cable entries: | | P |
| | - suitable for introduction | | P |
| | - adequate degree of protection | | P |
| 3.10 (5.2.7) | Cable entries through rigid material have rounded edges | | P |
| 3.10 (5.2.8) | Insulating bushings: | | N |
| | - suitably fixed | | N |

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|-----------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - material in bushings | | N |
| | - material not likely to deteriorate | | N |
| | - tubes or guards made of insulating material | | N |
| 3.10 (5.2.9) | Locking of screwed bushings | | N |
| 3.10 (5.2.10) | Cord anchorage: | | P |
| | - covering protected from abrasion | | P |
| | - clear how to be effective | | P |
| | - no mechanical or thermal stress | | P |
| | - no tying of cables into knots etc. | | P |
| | - insulating material or lining | | P |
| 3.10 (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 |
| 3.10 (5.2.10.2) | Adequate cord anchorage for type Y and type Z attachment | | P |
| 3.10 (5.2.10.3) | Tests: | | P |
| | - impossible to push cable; unsafe | | P |
| | - pull test: 25 times; pull (N)..... : | | P |
| | - torque test: torque (Nm)..... : | | P |
| | - displacement ≤ 2 mm | | P |
| | - no movement of conductors | | P |
| | - no damage of cable or cord | | P |
| | - function independent of electrical connection | | P |
| 3.10 (5.2.11) | External wiring passing into luminaire | | P |



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|----------------------|--|-----------------|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.10 (5.2.12) | Looping-in terminals | | N |
| 3.10 (5.2.13) | Wire ends not tinned | | N |
| | Wire ends tinned: no cold flow | | P |
| 3.10 (5.2.14) | Mains plug same protection | | N |
| | Class III luminaire plug | | N |
| | No unsafe compatibility | | N |
| 3.10 (5.2.16) | Appliance inlets (IEC 60320) | | N |
| | Installation couplers (IEC 61535) | | N |
| | Other appliance inlet or connector according relevant IEC standard | | N |
| 3.10 (5.2.17) | No standardized interconnecting cables properly assembled | | N |
| 3.10 (5.2.18) | Used plug in accordance with | | N |
| | - IEC 60083 | | N |
| | - other standard | | N |
| 3.10 (5.3) | Internal wiring | | P |
| 3.10 (5.3.1) | Internal wiring of suitable size and type | | P |
| | Through wiring | | N |
| | - not delivered/ mounting instruction | | N |
| | - factory assembled | | N |
| | - socket outlet loaded (A)..... : | | N |
| | - temperatures..... : | (see Annex 2) | N |
| | Green-yellow for earth only | | P |
| 3.10 (5.3.1.1) | Internal wiring connected directly to fixed wiring | | N |
| | Cross-sectional area (mm ²)..... : | | N |
| | Insulation thickness | | N |
| | Extra insulation added where necessary | | N |
| 3.10 (5.3.1.2) | Internal wiring connected to fixed wiring via internal current-limiting device | | P |
| | Adequate cross-sectional area and insulation thickness | | P |



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|----------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.10 (5.3.1.3) | Double or reinforced insulation for class II | | N |
| 3.10 (5.3.1.4) | Conductors without insulation | | N |
| 3.10 (5.3.1.5) | SELV current-carrying parts | | N |
| 3.10 (5.3.1.6) | Insulation thickness other than PVC or rubber | | N |
| 3.10 (5.3.2) | Sharp edges etc. | | P |
| | No moving parts of switches etc. | | N |
| | Joints, raising/lowering devices | | P |
| | Telescopic tubes etc. | | N |
| | No twisting over 360° | | P |
| 3.10 (5.3.3) | Insulating bushings: | | N |
| | - suitable fixed | | N |
| | - material in bushings | | N |
| | - material not likely to deteriorate | | N |
| | - cables with protective sheath | | N |
| 3.10 (5.3.4) | Joints and junctions effectively insulated | | N |
| 3.10 (5.3.5) | Strain on internal wiring | | P |
| 3.10 (5.3.6) | Wire carriers | | N |
| 3.10 (5.3.7) | Wire ends not tinned | | N |
| | Wire ends tinned: no cold flow | | P |
| 3.10.1 (-) | Cord anchorage if applicable | | P |
| | - pull test: 25 times; pull (N)..... : | | P |
| | - torque test: torque (Nm)..... : | | P |

| | | | |
|----------------|--|--|----|
| 3.11(8) | PROTECTION AGAINST ELECTRIC SHOCK | | -- |
| 3.11 (8.2.1) | Live parts not accessible | | 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, settable and adjustable luminaires | | N |
| | Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires | | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements | | N |
| | Basic insulation only accessible under lamp or starter replacement | | P |
| | Protection in any position | | P |
| | Double-ended tungsten filament lamp | | N |
| | Insulation lacquer not reliable | | N |
| | Double-ended high pressure discharge lamp | | N |
| | Relevant warning according to 3.2.18 fitted to the luminaire | | N |
| 3.11 (8.2.2) | Portable luminaire adjusted in most unfavourable position | | N |
| 3.11 (8.2.3.a) | Class II luminaire: | | N |
| | - basic insulated metal parts not accessible during starter or lamp replacement | | N |
| | - basic insulation not accessible other than during starter or lamp replacement | | N |
| | - glass protective shields not used as supplementary insulation | | N |
| 3.11 (8.2.3.b) | BC lampholder of metal in class I luminaires shall be earthed | | N |
| 3.11 (8.2.3.c) | SELV circuits with exposed current carrying parts: | | N |
| | Ordinary luminaire: | | N |
| | - voltage under load (V).....: | | N |
| | - no-load voltage (V).....: | | N |
| | - touch current if applicable (mA) | | N |
| | One conductive part insulated if required | | N |
| | Other than ordinary luminaire: | | N |
| | - nominal voltage (V) | | N |
| | Class III luminaire only for connection to SELV | | N |
| | Class III luminaire not provided with means for protective earthing | | N |
| 1.11 (8.2.4) | Portable luminaire have protection independent of supporting surface | | N |

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|----------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.11 (8.2.5) | Compliance with the standard test finger or relevant probe | | P |
| 3.11 (8.2.6) | Covers reliably secured | | P |
| 3.11 (8.2.7) | Luminaire other than below with capacitor > 0,5 μ F not exceed 50 V 1 min after disconnection | | N |
| | Portable luminaire with capacitor > 0,1 μ F (0.25) not exceed 34 V 1 s after disconnection | | N |
| | Other luminaires with capacitor > 0,1 μ F (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection | | N |

| | | | |
|------------------|---|-----------------------|---|
| 3.12 (12) | ENDURANCE TEST AND THERMAL TEST | | P |
| 3.12.2 (-) | If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 3.13 | | — |
| 3.12 (12.3) | Endurance test: | | P |
| | - mounting- position..... : | As instruction manual | — |
| | - test temperature (°C)..... : | 45 | — |
| | - total duration (h)..... : | 240h | — |
| | - supply voltage: Un factor; calculated voltage (V).... : | Integrated supply | — |
| | - lamp used..... : | Integral LED | — |
| 3.12 (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. | | N |
| 3.12 (12.4) | Thermal test (normal operation) | (see Annex 2) | P |
| 3.12 (12.4.2c) | Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring | | P |
| 3.12 (12.5) | Thermal test (abnormal operation) | (see Annex 2) | N |
| 3.12 (12.6) | Thermal test (failed lamp control gear condition): | | N |
| 3.12 (12.6.1) | Through wiring or looping-in wiring loaded by a current of (A) | | — |
| | - case of abnormal conditions..... : | | — |

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|-----------------|--|------------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - 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 |
| 3.12 (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 |
| 3.12 (12.7) | Thermal test (failed lamp control gear in plastic luminaires): | | N |
| 3.12 (12.7.1) | Luminaire without temperature sensing control | | N |
| 3.12 (12.7.1.1) | Luminaire with fluorescent lamp ≤ 70W | | N |
| | Test method 12.7.1.1 or Annex W | | — |
| | 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 |
| | - Test with standard test finger after the test | | N |
| | Test according to Annex W: | | 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..... | See Table 3.15 (13.2.1) on Page 28 | N |

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|----------------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.12 (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.....: | See Table 3.15 (13.2.1) on Page 28 | N |
| 3.12 (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 |
| 3.12 (12.7.2) | Luminaire with temperature sensing control | | N |
| | - 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:.....: | See Table 3.15 (13.2.1) on Page 28 | N |
| 3.12.1 (-) | Temperature reduction if for outdoor use only | | N |
| 3.12.2 (-) | (See above) | | — |
| 3.12.3 (-) | Glass covers used within the thermal limits declared by the glass manufacturer | | N |

| | | | |
|-----------------|--|------|---|
| 3.13 (9) | RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE | | P |
| 3.13.1 (-) | If IP > IP 20 the order of tests as specified in clause 3.12 | | P |
| 3.13 (9.2) | Tests for ingress of dust, solid objects and moisture: | | P |
| | - classification according to IP.....: | IP66 | — |
| | - mounting position during test.....: | | — |
| | - fixing screws tightened; torque (Nm).....: | | — |

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|------------------|--|-------------------------------|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - tests according to clauses.....: | Clause 9.2.2 and clause 9.2.6 | — |
| | - electric strength test afterwards | | P |
| | a) no deposit in dust-proof luminaire | | N |
| | b) no talcum in dust-tight luminaire | | P |
| | c) no trace of water on current-carrying parts or on insulation where it could become a hazard | | P |
| | c.1) For luminaires without drain holes – no water entry | | P |
| | c.2) For luminaires with drain holes – no hazardous water entry | | N |
| | d) no water in watertight or pressure watertight luminaire | | N |
| | e) no contact with live parts (IP 2X) | | N |
| | e) no entry into enclosure (IP 3X and IP 4X) | | N |
| | e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X) | | N |
| | f) no trace of water on part of lamp requiring protection from splashing water | | N |
| | g) no damage of protective shield or glass envelope | | N |
| 3.13 (9.3) | Humidity test 48 h | | P |
| 3.14 (10) | INSULATION RESISTANCE AND ELECTRIC STRENGTH | | P |
| 3.14(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 | | N |
| | - between current-carrying parts of different polarity: | | N |
| | - between current-carrying parts and mounting surface.....: | | N |
| | - between current-carrying parts and metal parts of the luminaire.....: | | 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 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | Other than SELV | | P |
| | - between live parts of different polarity..... : | 100M | P |
| | - between live parts and mounting surface..... : | 100M | P |
| | - between live parts and metal parts..... : | 100M | 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 |
| 3.14(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)..... : | | N |
| | SELV | | N |
| | - between current-carrying parts of different polarity: | | N |
| | - between current-carrying parts and mounting surface..... : | | N |
| | - between current-carrying parts and metal parts of the luminaire..... : | | 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 |
| | Other than SELV | | P |
| | - between live parts of different polarity..... : | 1480V | P |
| | - between live parts and mounting surface..... : | 1480V | P |
| | - between live parts and metal parts..... : | 2960V | 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 |
| 3.14(10.3) | Touch current or protective conductor current (mA): | 0.29 mA | P |



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

| | | | |
|------------------|--|---|----------|
| 3.15 (13) | RESISTANCE TO HEAT, FIRE AND TRACKING | | P |
| 3.15 (13.2.1) | Ball-pressure test..... : | See Test Table 3.15 (13.2.1) on Page 28 | P |
| 3.15 (13.3.1) | Needle-flame test (10 s)..... : | See Test Table 3.15 (13.3.1) on Page 28 | N |
| 3.15 (13.3.2) | Glow-wire test (650°C)..... : | See Test Table 3.15(13.3.2) on Page 29 | P |
| 3.15 (13.4) | Proof tracking test (IEC 60112)..... : | See Test Table 3.15 (13.4) on Page 29 | N |

| | | | | | | | |
|--|---|---------------------------|------------------|---------------|--|-----------------|---------------|
| 3.7 (11.2) | TABLE: Creepage distances and clearances | | | | P | | |
| | Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages | | | | N | | |
| | Applicable part of IEC 60598-1 Table 11.1* and 11.2* | | | | P | | |
| | Insulation type ** | Measured clearance | Required | | Measured creepage | Required | |
| | | | clearance | *Table | | creepage | *Table |
| Distance 1: | R | 1.5 | 0.2 | 11 | | 1.2 | 11 |
| Working voltage (V)..... : | | | | | AC100-240V | | — |
| PTI..... : | | | | | < 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/> | | — |
| Pulse voltage if applicable (kV) | | | | | N.A. | | — |
| Supplementary information: N/A | | | | | | | |

** Insulation type: B – Basic; S – Supplementary; R – Reinforced. See also IEC 60598-1 Annex M.

| | | | | | |
|---|--|-------------------------|-----------------------|--------------------------|----------|
| 3.15 (13.2.1) | TABLE: Ball Pressure Test of Thermoplastics | | | | P |
| Allowed impression diameter (mm) | | | | | — |
| Object/ Part No./ Material | | Manufacturer/ trademark | Test temperature (°C) | Impression diameter (mm) | |
| LED cover | | See annex 1 | 75 | 1.06 | |
| Connector | | See annex 1 | 125 | 1.02 | |
| Supplementary information: | | | | | |

| | | |
|----------------------|--|----------|
| 3.15 (13.3.1) | TABLE: Needle-flame test (IEC 60695-11-5) | N |
|----------------------|--|----------|



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|----------------------------|-------------------------|---|------------------------------------|------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | | | Verdict |
| Object/ Part No./ Material | Manufacturer/ trademark | Duration of application of test flame (ta); (s) | Ignition of specified layer Yes/No | Duration of burning (tb) (s) | Verdict |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| Supplementary information: | | | | | |

| 3.15 (13.3.2) | TABLE: Glow-wire test (IEC 60695-2-11) | | | | P |
|---|--|------------------------------------|------------------------------|---------|---|
| Glow wire temperature | | 650°C | | | — |
| Object/ Part No./ Material | Manufacturer/ trademark | Ignition of specified layer Yes/No | Duration of burning (tb) (s) | Verdict | |
| LED cover | See annex 1 | No | 0 | P | |
| Any flame or glowing of the sample extinguished within 30 s of withdrawing the glow-wire, and any burning or molten drop did not ignite the underlying parts (Yes/No).....: | | | | Yes | |
| Supplementary information: N/A | | | | | |

| 3.15 (13.4) | TABLE: Proof tracking test (IEC 60112) | | | | N |
|----------------------------|--|--|----|----|---------|
| Test voltage PTI | | -- | | | — |
| Object/ Part No./ Material | Manufacturer/ trademark | Withstand 50 drops without failure on three places or on three specimens | | | Verdict |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| Supplementary information: | | | | | |

| IEC 60598-2-3 | | | |
|---------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| ANNEX 1 TABLE: Critical components information | | | | | | |
|--|------|--------------------------------------|---------------------|------------------------------------|---|-------------------------------------|
| Object / part No. | Code | Manufacturer/ trademark | Type / model | Technical data | Standard | Mark(s) of conformity ¹⁾ |
| Supply cord | B | Lucky United Electric Wire | H05RN-F | 300 /500V, 3 x 1,0 mm ² | --- | VDE 40016378 |
| Connector | B | Wago innovative connection | 222-412 | 600V/20A | --- | E69654 |
| LED driver | B | Inventronics | EUC-060S180STM 0006 | INPUT:AC100-240V50/60Hz | EN61347-1 EN61347-2-13 | TUV R50316937 |
| LED chip | B | PHILIPS | LUXEON-3030-2D | 5.8-6.2V 240mA 2700-6500K | --- | Test with appliance |
| Led cover | B | MITSUBISHI ENGINEERING-PLASTICS CORP | S3000+ | --- | IEC 60695-2-12 IEC 60695-2-13 IEC 60112 | UL E41179 |
| PCB of LED module | B | --- | SP1 | --- | --- | E348315 |

Supplementary information:

¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039.

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

| IEC 60598-2-3 | | | |
|---------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| ANNEX 2 | TABLE: Temperature measurements, thermal tests of Section 12 | P |
|---------|--|---------------------|
| | Type reference..... | LED Street Light |
| | Lamp used..... | Integral LED module |
| | Lamp control gear used..... | — |
| | Mounting position of luminaire..... | Normal use |
| | Supply wattage (W)..... | 49.25 |
| | Supply current (A)..... | 0.205 |
| | Calculated power factor..... | 0.94 |
| | 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..... | 1.06x240V=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 measurements, (°C)

| Part | Ambient | Clause 12.4 – normal | | | | Clause 12.5 – abnormal | |
|-----------------------|---------|----------------------|--------|--------|-------|------------------------|-------|
| | | test 1 | test 2 | test 3 | limit | test 4 | limit |
| Input wire | -- | -- | 24.9 | -- | 105 | -- | -- |
| Tc of LED driver | -- | -- | 43.6 | -- | 90 | -- | -- |
| Output wire | -- | -- | 35.4 | -- | 105 | -- | -- |
| Light board | -- | -- | 48.4 | -- | 130 | -- | -- |
| Lamp cover | -- | -- | 45.8 | -- | 90 | -- | -- |
| Metal enclosure | -- | -- | 33.5 | -- | 90 | -- | -- |
| Mounting surface | -- | -- | 36.1 | -- | 90 | -- | -- |
| Lighted object (10cm) | -- | -- | 22.4 | -- | 90 | -- | -- |



| IEC 60598-2-3 | | | |
|---------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|----------------|--|---|---|
| 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 (mm ²).....: | | — |
| (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 |
| (14.4.4) | Nominal diameter of thread (metric ISO thread).....: | M | 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 | | N |
| (15.2) | Type of terminal.....: | | — |
| | Rated current (A).....: | | — |
| (15.3.1) | Material | | N |
| (15.3.2) | Clamping | | N |
| (15.3.3) | Stop | | N |

| IEC 60598-2-3 | | | |
|---------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| (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) | Terminals and connections for internal wiring | | N |
| (15.5.1) | Mechanical tests | | N |
| (15.5.1.1.1) | Pull test spring-type terminals (4 N, 4 samples).....: | | N |
| (15.5.1.1.2) | Pull test pin or tab terminals (4 N, 4 samples).....: | | N |
| | Insertion force not exceeding 50 N | | N |
| (15.5.1.2) | Permanent connections: pull-off test (20 N) | | N |
| (15.5.2) | Electrical tests | | N |
| | Voltage drop (mV) after 1 h (4 samples).....: | | N |
| | Voltage drop of two inseparable joints | | N |
| | Number of cycles: | | — |
| | 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 |
| (15.6) | Terminals and connections for external wiring | | N |
| (15.6.1) | Conductors | | N |
| | Terminal size and rating | | N |
| 15.6.2 | Mechanical tests | | N |
| (15.6.2.1) | Pull test spring-type terminals or welded connections (4 samples); pull (N) | | N |
| (15.6.2.2) | Pull test pin or tab terminals (4 samples); pull (N) | | N |
| (15.6.3) | Electrical tests | | N |
| | Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1 | | N |



| IEC 60598-2-3 | | | | | | | | | | | |
|----------------------------|--|-----------------|---------|---|---|---|---|---|---|----|---|
| Clause | Requirement + Test | Result - Remark | Verdict | | | | | | | | |
| (15.6.3.1) (15.6.3.2) | TABLE: Contact resistance test / Heating tests | | | | | | | | | | N |
| | Voltage drop (mV) after 1 h | | | | | | | | | | — |
| terminal | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| voltage drop (mV) | | | | | | | | | | | |
| | Voltage drop of two inseparable joints | | | | | | | | | | |
| | Voltage drop after 10th alt. 25th cycle | | | | | | | | | | |
| | 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 | | | | | | | | | | |
| | 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 | | | | | | | | | | |
| | 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 | | | | | | | | | | |
| | Max. allowed voltage drop (mV).....: | | | | | | | | | | — |
| terminal | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| voltage drop (mV) | | | | | | | | | | | |
| Supplementary information: | | | | | | | | | | | |

| Attachment I: | | Attached Report of IEC 62031 | |
|---------------|---|------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 13 | FAULT CONDITIONS | | — |
| 13.1 | The module shall not impair safety when operated under fault conditions that may occur during the intended use. The requirements of IEC 61347-1, Clause 14, apply | | P |
| | When operated under fault conditions LED modules, compliance with : | | — |
| | - does not emit flames or molten material | | P |
| | - does not produce flammable gases | | P |
| | - protection against accidental in accordance with 10.1 not impaired | | P |
| | - totally enclosed LED modules or components not be opened. | | N |
| | -for LED modules marked with symbol of thermal protected, temperature at any place not exceed the marked temperature value | | N |
| | Short circuit across creepage distance and clearance less than value specified in clause 16 | | N |
| | Short circuit across or interruption of semi-conductor devices | | N |
| | Short circuit across insulation consisting of covering of lacquer, enamel or textile | | N |
| | Short circuit across electrolytic capacitors | | N |
| 13.2 | Overpower condition | | — |
| | The module shall be switched on and the power monitored (at the input side) and increased until 150 % of the rated voltage, current or power is reached. | | P |
| | If the module contains an automatic protective device or circuit which limits the power, it is subjected to a 15 min operation at this limit | | P |
| | After finalising the overpower mode, the module is operated under normal conditions until thermally being stable. | | P |
| 14 | CONFORMITY TESTING DURING MANUFACTURE | | — |
| | see Annex 2 | | — |
| 15 | Construction | | — |

| Attachment I: | | Attached Report of IEC 62031 | |
|---------------|---|------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Wood, cotton, silk, paper and similar fibrous material shall not be used as insulation | | P |
| 16 | CREEPAGE DISTANCES AND CLEARANCES | | — |
| | The requirements of IEC 60598-1, Section 11, apply. | | P |
| 17 | SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS | | N |
| | Screws, current-carrying parts and mechanical connections, the failure of which might cause the lamp controlgear to become unsafe, shall withstand the mechanical stresses occurring in normal use. | | N |
| | Screws, current-carrying parts and connections in compliance with IEC 60598-1 | | N |
| 18 | RESISTANCE TO HEAT, FIRE AND TRACKING | | P |
| 19 | RESISTANCE TO CORROSION | | P |
| 20 | INFORMATION FOR LUMINAIRE DESIGN | | N |
| | Information in Annex D (informative) | | — |
| 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 |
| 22 | PHOTOBIOLOGICAL SAFETY | | N |
| 22.1 | UV radiation | | N |
| | Luminous radiation not exceed 2mW/klm | | N |
| 22.2 | Blue light hazard | | N |
| | Assessed according to IEC TR 62778 | | N |
| 22.3 | Infrared radiation | | N |
| | Requirements for infrared radiation when required | | N |

| Attachment II: Attached Report of IEC 62471 | | | |
|--|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result – Remark | Verdict |

| Table 6.1 Emission limits for risk groups of continuous wave lamps | | | | | | | | | 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 | 0 | — | — | — | — |
| Near UV | | E_{UVA} | $W \cdot m^{-2}$ | 0,33 | 0,04766 | — | — | — | — |
| Blue light | $B(\lambda)$ | L_B | $W \cdot m^{-2} \cdot sr^{-1}$ | 100 | 53,2 | 10500 | — | 4000000 | — |
| Blue light, small source | $B(\lambda)$ | E_B | $W \cdot m^{-2}$ | 0,01* | --- | 1,0 | — | 400 | — |
| Retinal thermal | $R(\lambda)$ | L_R | $W \cdot m^{-2} \cdot sr^{-1}$ | $28000/\alpha$ | 1041 | $31000/\alpha$ | — | $71000/\alpha$ | — |
| Retinal thermal, weak visual stimulus** | $R(\lambda)$ | L_{IR} | $W \cdot m^{-2} \cdot sr^{-1}$ | — | | — | | — | |
| | | | | $6000/\alpha$ $0,011 \leq \alpha \leq 0,1$ | | — | | — | |
| IR radiation, eye | — | E_{IR} | $W \cdot m^{-2}$ | 100 | 2,5789 | 570 | — | 3200 | — |

* Small source defined as one with $\alpha < 0,011$ radian. Averaging field of view at 10000 s is 0,1 radian.
** Involves evaluation of non-GLS source

| Attachment III: | | Attached report of IEC 62493 | |
|-----------------|---|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4 | LIMITS | | P |
| 4.1 | General | | P |
| | Comply with Van der Hoofden test limit in 4.2.3 or inherently compliant in 4.2.2 and pass assessment procedure for intentional radiators in 4.3 | | P |
| 4.2 | Unintentional radiating part of lighting equipment | | P |
| 4.2.2 | Lighting equipment deemed to comply with the Van der Hoofden test without testing | | P |
| | 1) electronic controlgear | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |
| | 2) incandescent-lamp technology | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |
| | 3) LED-light-source technology | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | — |
| | 4) OLED-light-source technology | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |
| | 5) high-pressure discharge lamp LED-light-source technologies | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |
| | 6) low-pressure discharge lamp technologies with exposure distance ≥ 50 cm | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |
| | 7) independent auxiliary | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |
| | Not fulfil any of 1-7 above subject to 4.2.3 | | — |
| 4.2.3 | Applications of limits | | N/A |
| | Not fulfil any of 1-7 in 4.2.2 but the compliance factor F is ≤ 1 | | N/A |
| 4.3 | Intentional radiating part of lighting equipment | | N/A |
| | Comply with one of methods in Clause 7 if intentional radiator | | N/A |
| 5 | GENERAL | | N/A |
| 5.1 | Measurand | | N/A |
| | Test head, measuring instrumentation and measuring conditions according Clause 5.1 – 5.8 | | N/A |
| 6 | MEASUREMENT PROCEDURE FOR THE VAN DER HOOFDEN TEST | | N/A |
| 6.1 | General | | N/A |
| | Measurements carried out under conditions according Clause 6.1 – 6.6 | | N/A |
| 7 | ASSESSMENT PROCEDURE INTENTIONAL RADIATORS | | N/A |
| 7.2 | Low-power exclusion method | | N/A |

| Attachment III: | | Attached report of IEC 62493 | |
|-----------------|--|------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 7.2.1 | Input $P_{int,rad}$ | | — |
| | Exclusion level P_{max} | | — |
| | Input power $P_{int,rad}$ <input type="checkbox"/> exclusion level P_{max} | | N/A |
| 7.3 | Application of the EMF product standard for body worn-equipment | | N/A |
| | If not Clause 7.2 is met and expose distance ≤ 0.05 m, comply with IEC 62209-2 | | N/A |
| 7.4 | Application of the EMF product standard for base stations | | N/A |
| | If not Clause 7.2 is met and if intentional radiator is base station, comply with IEC 62232 | | N/A |
| 7.5 | Application of another EMF standard | | N/A |
| | If not Clause 7.2 is met and if intentional radiator cannot be considered as in Clause 7.3 or 7.4, comply with IEC 62311 | | N/A |

Attachment IV: Photos



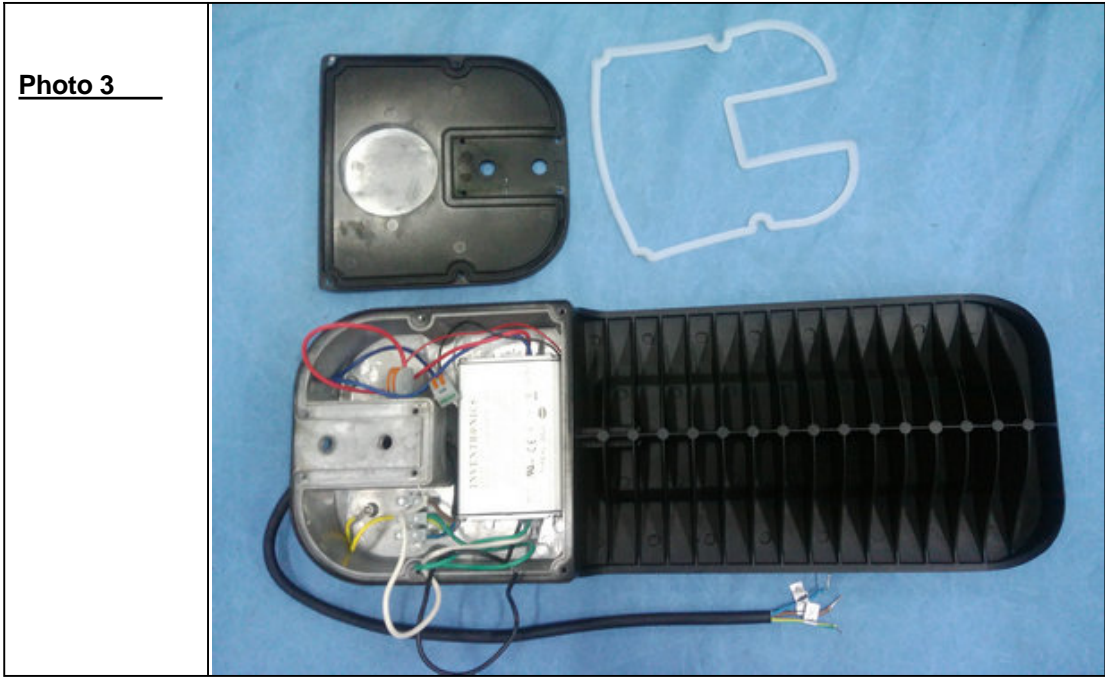


Photo 5

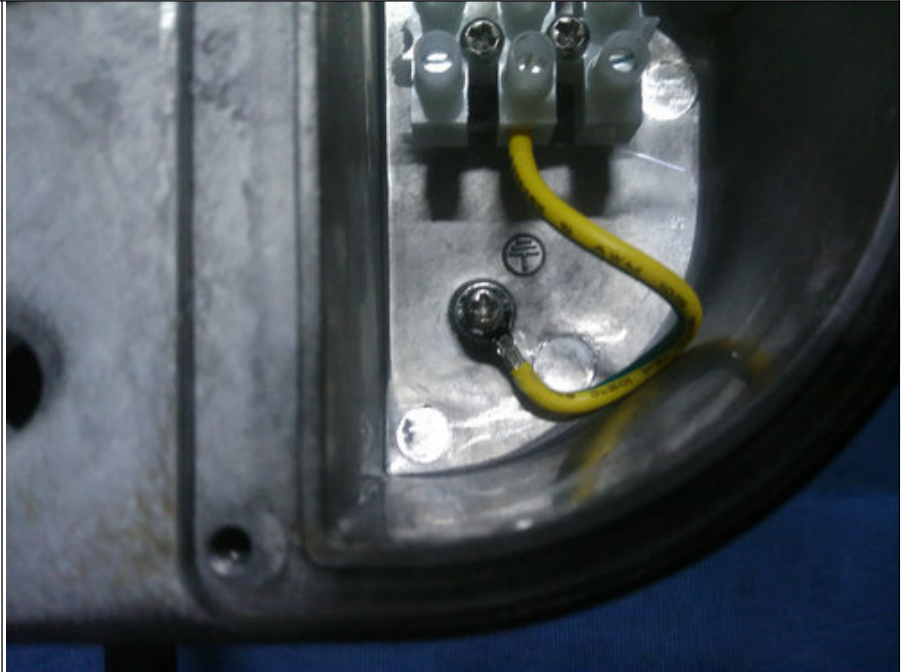


Photo 6



