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

| | |
|---|---|
| **Report Number.....:** | 68.140.17.146.02A |
| **Date of issue .....:** | 2018-12-17 |
| **Total number of pages.....** | 45 (not including attachments) |
| **Name of Testing Laboratory preparing the Report.....:** | TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch |
| **Applicant's name .....:** | SWEETLIGHT LCE, Bianca Dietz |
| **Address .....:** | Münchner Str. 6, 94563 Otzing, GERMANY |
| **Test specification:** | |
| **Standard.....:** | IEC 60598-2-3:2002/AMD1:2011 used in conjunction with IEC 60598-1:2014 |
| **Test procedure.....:** | CE-LVD |
| **Non-standard test method.....:** | N/A |
| **Test Report Form No. .....:** | IEC60598_2_3K |
| **Test Report Form(s) Originator....:** | Intertek Semko AB |
| **Master TRF .....:** | 2016-09 |



**General disclaimer:**

The test results presented in this report relate only to the object tested.
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| | |
|---|---|
| **Test item description..... :** | LED Street Light |
| **Trade Mark..... :** | Sweetlight-LCE |
| **Manufacturer..... :** | Same as applicant |
| **Model/Type reference..... :** | SL-SLA30; SL-SLA60;<br>SL-SLA90; SL-SLA120;<br>SL-SLA150; SL-SLA180;<br>SL-SLA210; SL-SLA240;<br>SL-SLA270; SL-SLA300;<br>SL-SLB40; SL-SLB80;<br>SL-SLB120; SL-SLB160;<br>SL-SLB200; SL-SLB240;<br>SL-SLB280; SL-SLB320 |
| **Ratings..... :** | 220-240VAC; 50/60Hz;<br>30W [SL-SLA30]; 60W [SL-SLA60];<br>90W [SL-SLA90]; 120W [SL-SLA120];<br>150W [SL-SLA150]; 180W [SL-SLA180];<br>210W [SL-SLA210]; 240W [SL-SLA240];<br>270W [SL-SLA270]; 300W [SL-SLA300];<br>40W [SL-SLB40]; 80W [SL-SLB80];<br>120W [SL-SLB120]; 160W [SL-SLB160];<br>200W [SL-SLB200]; 240W [SL-SLB240];<br>280W [SL-SLB280]; 320W [SL-SLB320] |

| | | | |
|---|---|---|---|
| **Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):** | | | |
| ☒ | **CB Testing Laboratory:** | TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch | |
| **Testing location/ address** ..... : | | Building 12&13, Zhiheng Wisdomland Business Park Nantou Checkpoint Road 2, Nanshan District 518052 Shenzhen CHINA | |
| ☐ | **Associated CB Testing Laboratory:** | | |
| **Testing location/ address** ..... : | | | |
| **Tested by (name, function, signature)** ..... : | | Danny Wang<br>Project Handler | |
| **Approved by (name, function, signature)** .. : | | Sunny Yan<br>Designated Reviewer | |
| | | | |
| ☐ | **Testing procedure: CTF Stage 1:** | | |
| **Testing location/ address** ..... : | | | |
| **Tested by (name, function, signature)** ..... : | | | |
| **Approved by (name, function, signature)** .. : | | | |
| | | | |
| ☐ | **Testing procedure: CTF Stage 2:** | | |
| **Testing location/ address** ..... : | | | |
| **Tested by (name + signature)** ..... : | | | |
| **Witnessed by (name, function, signature).** : | | | |
| **Approved by (name, function, signature)** .. : | | | |
| | | | |
| ☐ | **Testing procedure: CTF Stage 3:** | | |
| ☐ | **Testing procedure: CTF Stage 4:** | | |
| **Testing location/ address** ..... : | | | |
| **Tested by (name, function, signature)** ..... : | | | |
| **Witnessed by (name, function, signature).** : | | | |
| **Approved by (name, function, signature)** .. : | | | |
| **Supervised by (name, function, signature)** : | | | |
| | | | |

| **List of Attachments (including a total number of pages in each attachment):** | |
|---|---|
| Attachment No.1: | EU Group Differences and National differences (2 pages); |
| Attachment No.2: | EN 62031:2008+A1:2013+A2:2015: LED modules for general lighting – Safety specifications (5 pages); |
| Attachment No.3: | IEC TR 62778:2014 –blue light hazard to light sources and luminaires (2 pages) |
| Attachment No.4: | Photo documentation (18 pages). |

**Summary of testing:**

| **Tests performed (name of test and test clause):** | **Testing location:** |
|---|---|
| EN 60598-2-3:2003+A1:2011<br>EN 60598-1:2015<br>EN 62493:2015<br><br>The LED modules in products were found to comply with the requirements of EN 62031:2008+A1:2013+A2:2015.<br><br>The submitted samples were LED-light-source technology, they were found to comply with the requirement of EN 62493:2015 without test.<br><br>The submitted samples with XP-G3 LED were classified as RG2 and with other LED types were classified as RG1 according to IEC TR 62778:2014.<br><br>The submitted samples were found to comply with above test specification. | Building 12&13, Zhiheng Wisdomland Business Park<br>Nantou Checkpoint Road 2, Nanshan District 518052<br>Shenzhen CHINA |

**Summary of compliance with National Differences:**

– European Group difference and national difference

The product fulfils the requirements of below standards:

Ø EN 60598-2-3:2003+A1:2011

Ø EN 60598-1:2015

Ø EN 62493:2015

**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.**

**Representative label**


Location: sticking on metal enclosure.

**Remark:**

- The labels of other models are same as above label, except model number and rated power.
-  (for all models) Label for Caution, risk of electric shock; Location: silk-screen on the cover of LED module (height at least 15mm)
-  for models which used XP-G3 LED. Do not stare at the operating light source; Location: silk-screen on the cover of LED module (height at least 5mm)
- Height of CE marking at least 5mm, height of WEEE mark at least 7mm, height of other marks at least 5mm, height of letters and numerals at least 2mm.
- According to the EU decision 768/2008/EC, the name and address of manufacturer (an EU-based importer or authorized representative if the manufacturer is not based in EU) shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on EU market.

| | |
|---|---|
| **Test item particulars:** | |
| **Classification of installation and use.....:** | Fixed and suitable for indoor and outdoor use |
| **Supply Connection.....:** | Terminal (terminal block) |
| **Protection class .....:** | Class I |
| **Degree of protection .....:** | IP67 |
| **ta.....:** | 50°C |
| **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..... :** | 2018-12-07 |
| **Date (s) of performance of tests ..... :** | 2018-12-07 to 2018-12-17 |
| **General remarks:** | |
| "(See Enclosure #)" refers to additional information appended to the report.<br>"(See appended table)" refers to a table appended to the report.<br><br>**Throughout this report a ☒ comma / ☐ point is used as the decimal separator.**<br>The manufacturer/ Importer has to ensure the appliance placing on the EU market conforms to the applicable EU directives which provide the affixing of the CE marking, such as LVD, EMC, RoHS, ErP, and so on. | |
| **Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:** | |
| The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... : | ☐ **Yes**<br>☒ **Not applicable** |
| **When differences exist; they shall be identified in the General product information section.** | |
| **Name and address of factory (ies)..... :** | Same as applicant |

**General product information:**

LED street light for outdoor and indoor use.

For all models, maximum mounting height is 12m.

Details information are listed as follows:

| Model No. | Rated power (W) | Mounting height (m) | LED driver | LED module quantity (pcs) | Weight (kg) | Size (L x W x H) (mm) |
|---|---|---|---|---|---|---|
| SL-SLA series | | | | | | |
| SL-SLA30 | 30 | 6-12 | 1 type D or 1 type E | 1 | 6,13 | 463 x 345 x 116 |
| SL-SLA60 | 60 | 6-12 | 1 type D or 1 type E | 2 | 7,09 | 523 x 345 x 116 |
| SL-SLA90 | 90 | 6-12 | 1 type B or 1 type F | 3 | 8,02 | 583 x 345 x 116 |
| SL-SLA120 | 120 | 6-12 | 1 type B or 1 type F | 4 | 8,71 | 643 x 345 x 116 |
| SL-SLA150 | 150 | 6-12 | 1 type B | 5 | 9,47 | 703 x 345 x 116 |
| SL-SLA180 | 180 | 6-12 | 1 type D + 1 type B or 1 type E + 1 type F | 6 | 10,98 | 763 x 345 x 116 |
| SL-SLA210 | 210 | 6-12 | 1 type D + 1 type B or 1 type E + 1 type F | 7 | 11,62 | 823 x 345 x 116 |
| SL-SLA240 | 240 | 6-12 | 2 x type B or 2 type F | 8 | 12,39 | 883 x 345 x 116 |
| SL-SLA270 | 270 | 6-12 | 2 x type B | 9 | 13,06 | 943 x 345 x 116 |
| SL-SLA300 | 300 | 6-12 | 2 x type B | 10 | 13,73 | 1003 x 345 x 116 |
| SL-SLB series | | | | | | |
| SL-SLB40 | 40 | 6-12 | 1 type A or 1 type E | 1 | 6,13 | 463 x 345 x 116 |
| SL-SLB80 | 80 | 6-12 | 1 type A or 1 type E | 2 | 7,09 | 523 x 345 x 116 |
| SL-SLB120 | 120 | 6-12 | 1 type B or 1 type F | 3 | 8,02 | 583 x 345 x 116 |
| SL-SLB160 | 160 | 6-12 | 1 type B or 1 type F | 4 | 8,71 | 643 x 345 x 116 |
| SL-SLB200 | 200 | 6-12 | 1 type D + 1 type B or 1 type E + 1 type F | 5 | 9,69 | 703 x 345 x 116 |
| SL-SLB240 | 240 | 6-12 | 1 type D + 1 type B or 1 type E + 1 type F | 6 | 10,98 | 763 x 345 x 116 |
| SL-SLB280 | 280 | 6-12 | 2 type B or 2 type F | 7 | 11,62 | 823 x 345 x 116 |
| SL-SLB320 | 320 | 6-12 | 2 type B or 2 type F | 8 | 12,39 | 883 x 345 x 116 |

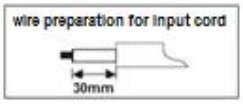
| Code | LED driver model | Rated value |
|---|---|---|
| Type A | XITANIUM 75W 0.70A AOCM 1-10 GL-Y sXt | Input: 120-277VAC; 50/60Hz; 0,7…0,3A; Output: 54-107VDC; 0,1-0,7A; $U_{out}$=130VDC; $P_{rated}$=75W; ta:55°C; tc: 80°C; Built-in |
| Type B | Xitanium 150W 0.35-0.70A GL Prog sXt | Input: 120-277VAC; 50/60Hz; 1,4...0,6A; Output: 125-280VDC; 350-700mA; $U_{out}$=300VDC; $P_{rated}$=150W; tc: 80°C; Built-in |

| | | |
|---|---|---|
| Type D | Xitanium 75W 0.35-0.70A GL Prog sXt | Input: 120-277VAC; 50/60Hz; 0,7...0,3A;<br>Output: 54-107VDC; 100-700mA; $U_{out}$=160VDC;<br>$P_{rated}$=75W; tc: 80°C; Built-in |
| Type E | Xitanium Dim 100W 0.7A 1-10V 230V Y | Input: 220-240VAC; 50/60Hz; 0,4…0,56A;<br>Output: 0,7A; 64-143VDC; $U_{out}$=220VDC; $P_{rated}$=100W;<br>ta: 55°C; tc: 80°C; Built-in |
| Type F | Xitanium Dim 150W 0.7A 1-10V 230V Y | Input: 220-240VAC; 50/60Hz; 0,6…0,83A;<br>Output: 0,7A; 96-214VDC; $U_{out}$=320VDC; $P_{rated}$=150W;<br>ta: 55°C; tc: 80°C; Built-in |

LED driver:

- The insulation between primary to secondary is considered as basic insulation;
- The insulation between primary/secondary to housing is considered as basic insulation.

Wire preparation for supply cable:




Unless otherwise specified, the models SL-SLA300 and SL-SLB320 were chosen as representative models to perform all tests.

| IEC 60598-2-3 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **3.2 (0)** | **GENERAL TEST REQUIREMENTS** | | ¾ |
| 3.2 (0.1) | Information for luminaire design considered.....: | Yes ☒ No ☐ | ¾ |
| 3.2 (0.3) | More sections applicable .....: | Yes ☐ No ☒ | ¾ |
| **3.4 (2)** | **CLASSIFICATION** | | ¾ |
| 3.4 (2.2) | Type of protection .....: | Class I | ¾ |
| 3.4 (2.3) | Degree of protection.....: | IP67 | ¾ |
| 3.4 (2.4) | Luminaire suitable for direct mounting on normally flammable surfaces .....: | Yes ☒ No ☐ | ¾ |
| 3.4 (2.5) | Luminaire for normal use .....: | Yes ☒ No ☐ | ¾ |
| | Luminaire for rough service .....: | Yes ☐ No ☒ | ¾ |
| 3.4 (-) | Modes of installation of road or street lighting | | ¾ |
| | a) on a pipe | Yes ☒ No ☐ | ¾ |
| | b) on a mast arm | Yes ☐ No ☒ | ¾ |
| | c) on a post top | Yes ☐ No ☒ | ¾ |
| | d) on span or suspension wires | Yes ☐ No ☒ | ¾ |
| | e) on a wall | Yes ☐ No ☒ | ¾ |
| **3.5 (3)** | **MARKING** | | ¾ |
| 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/A |
| 3.5 (3.3.2) | Nominal frequency in Hz | 50/60Hz | P |
| 3.5 (3.3.3) | Operating temperature | | N/A |
| 3.5 (3.3.4) | Symbol or warning notice | | N/A |
| 3.5 (3.3.5) | Wiring diagram | | N/A |
| 3.5 (3.3.6) | Special conditions | | N/A |
| 3.5 (3.3.7) | Metal halide lamp luminaire – warning | | N/A |
| 3.5 (3.3.8) | Limitation for semi-luminaires | | N/A |
| 3.5 (3.3.9) | Power factor and supply current | | N/A |

| IEC 60598-2-3 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.5 (3.3.10) | Suitability for use indoors | | P |
| 3.5 (3.3.11) | Luminaires with remote control | | N/A |
| 3.5 (3.3.12) | Clip-mounted luminaire – warning | | N/A |
| 3.5 (3.3.13) | Specifications of protective shields | | N/A |
| 3.5 (3.3.14) | Symbol for nature of supply |  | P |
| 3.5 (3.3.15) | Rated current of socket outlet | | N/A |
| 3.5 (3.3.16) | Rough service luminaire | | N/A |
| 3.5 (3.3.17) | Mounting instruction for type Y, type Z and some type X attachments | | N/A |
| 3.5 (3.3.18) | Non-ordinary luminaires with PVC cable | | N/A |
| 3.5 (3.3.19) | Protective conductor current in instruction if applicable | | N/A |
| 3.5 (3.3.20) | Provided with information if not intended to be mounted within arm's reach | | N/A |
| 3.5 (3.3.21) | Non-replaceable and non-user replaceable light sources information provided | Non-user replaceable light sources | P |
| | Cautionary symbol | | P |
| 3.5 (3.3.22) | Controllable luminaires, classification of insulation provided | | N/A |
| 3.5 (3.4) | Test with water | | P |
| | Test with hexane | | P |
| | Legible after test | | P |
| | Label attached | | P |
| 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/A |
| | f) Suitability for indoors use | | P |
| | g) Dimensions of the compartment | | N/A |
| | h) Torque setting to be applied to bolts or screws | | P |
| | i) Maximum mounting height | | P |
| **3.6 (4)** | **CONSTRUCTION** | | — |
| 3.6 (4.2) | Components replaceable without difficulty | | P |

| IEC 60598-2-3 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.6 (4.3) | Wireways smooth and free from sharp edges | | P |
| 3.6 (4.4) | Lampholders | | N/A |
| 3.6 (4.4.1) | Integral lampholder | | N/A |
| 3.6 (4.4.2) | Wiring connection | | N/A |
| 3.6 (4.4.3) | Lampholder for end-to-end mounting | | N/A |
| 3.6 (4.4.4) | Positioning | | N/A |
| | - pressure test (N) .....: | | — |
| | After test the lampholder comply with relevant standard sheets and show no damage | | N/A |
| | After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation | | N/A |
| | - bending test (N) .....: | | — |
| | After test the lampholder have not moved from its position and show no permanent deformation | | N/A |
| 3.6 (4.4.5) | Peak pulse voltage | | N/A |
| 3.6 (4.4.6) | Centre contact | | N/A |
| 3.6 (4.4.7) | Parts in rough service luminaires resistant to tracking | | N/A |
| 3.6 (4.4.8) | Lamp connectors | | N/A |
| 3.6 (4.4.9) | Caps and bases correctly used | | N/A |
| 3.6 (4.4.10) | Light source for lampholder or connection according IEC 60061 not connected another way | | N/A |
| 3.6 (4.5) | Starter holders | | N/A |
| | Starter holder in luminaires other than class II | | N/A |
| | Starter holder class II construction | | N/A |
| 3.6 (4.6) | Terminal blocks | | N/A |
| | Tails | | N/A |
| | Unsecured blocks | | N/A |
| 3.6 (4.7) | Terminals and supply connections | | P |
| 3.6 (4.7.1) | Contact to metal parts | | N/A |
| 3.6 (4.7.2) | Test 8 mm live conductor | | P |
| | Test 8 mm earth conductor | | P |
| 3.6 (4.7.3) | Terminals for supply conductors | | P |
| 3.6 (4.7.3.1) | Welded method and material | | N/A |
| | - stranded or solid conductor | | N/A |
| | - spot welding | | N/A |

| IEC 60598-2-3 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - welding between wires | | N/A |
| | - Type Z attachment | | N/A |
| | - mechanical test according to 15.8.2 | | N/A |
| | - electrical test according to 15.9 | | N/A |
| | - heat test according to 15.9.2.3 and 15.9.2.4 | | N/A |
| 3.6 (4.7.4) | Terminals other than supply connection | | P |
| 3.6 (4.7.5) | Heat-resistant wiring/sleeves | | N/A |
| 3.6 (4.7.6) | Multi-pole plug | | N/A |
| | - test at 30 N | | N/A |
| **3.6 (4.8)** | **Switches** | | **N/A** |
| | - adequate rating | | N/A |
| | - adequate fixing | | N/A |
| | - polarized supply | | N/A |
| | - compliance with IEC 61058-1 for electronic switches | | N/A |
| **3.6 (4.9)** | **Insulating lining and sleeves** | | **N/A** |
| 3.6 (4.9.1) | Retainment | | N/A |
| | Method of fixing.....: | | — |
| 3.6 (4.9.2) | Insulated linings and sleeves: | | N/A |
| | Resistant to a temperature > 20 °C to the wire temperature or | | N/A |
| | a) & c) Insulation resistance and electric strength | | N/A |
| | b) Ageing test. Temperature (°C).....: | | N/A |
| **3.6 (4.10)** | **Double or reinforced insulation** | | **N/A** |
| 3.6 (4.10.1) | No contact, mounting surface – accessible metal parts – wiring of basic insulation | | N/A |
| | Safe installation fixed luminaires | | N/A |
| | Capacitors and switches | | N/A |
| | Interference suppression capacitors according to IEC 60384-14 | | N/A |
| 3.6 (4.10.2) | Assembly gaps: | | N/A |
| | - not coincidental | | N/A |
| | - no straight access with test probe | | N/A |
| 3.6 (4.10.3) | Retainment of insulation: | | N/A |
| | - fixed | | N/A |
| | - unable to be replaced; luminaire inoperative | | P |

| IEC 60598-2-3 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - sleeves retained in position | | P |
| | - lining in lampholder | | N/A |
| **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: | | N/A |
| | - self-tapping screws | | N/A |
| | - thread-cutting screws | | N/A |
| 3.6 (4.11.3) | Screw locking: | | N/A |
| | - spring washer | | N/A |
| | - rivets | | N/A |
| 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/A |
| | Torque test: torque (Nm); part.....: | Screw for supply compartment; 8,0Nm | P |
| | Torque test: torque (Nm); part.....: | Screw for transparent cover: 0,5Nm | P |
| 3.6 (4.12.2) | Screws with diameter < 3 mm screwed into metal | | N/A |
| 3.6 (4.12.4) | Locked connections: | | N/A |
| | - fixed arms; torque (Nm).....: | | N/A |
| | - lampholder; torque (Nm).....: | | N/A |
| | - push-button switches; torque 0,8 Nm.....: | | N/A |
| 3.6 (4.12.5) | Screwed glands; force (Nm).....: | 7,5Nm | P |
| **3.6 (4.13)** | **Mechanical strength** | | **P** |
| 3.6 (4.13.1) | Impact tests: | | P |
| | - fragile parts; energy (Nm) .....: | | N/A |
| | - other parts; energy (Nm).....: | Metal enclosure; transparent cover; 0,7Nm | P |
| | 1) live parts | | P |
| | 2) linings | | N/A |
| | 3) protection | | P |
| | 4) covers | | P |

| IEC 60598-2-3 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.6 (4.13.3) | Straight test finger | | P |
| 3.6 (4.13.4) | Rough service luminaires | | N/A |
| | - IP54 or higher | | N/A |
| | a) fixed | | N/A |
| | b) hand-held | | N/A |
| | c) delivered with a stand | | N/A |
| | d) for temporary installations and suitable for mounting on a stand | | N/A |
| 3.6 (4.13.6) | Tumbling barrel | | N/A |
| **3.6 (4.14)** | **Suspensions, fixings and means of adjusting** | | **P** |
| 3.6 (4.14.1) | Mechanical load: | | P |
| | A) four times the weight | | P |
| | B) torque 2,5 Nm | | N/A |
| | C) bracket arm; bending moment (Nm) .....: | | N/A |
| | D) load track-mounted luminaires | | N/A |
| | E) clip-mounted luminaires, glass-shelve. Thickness (mm) .....: | | N/A |
| | Metal rod. diameter (mm) .....: | | N/A |
| | Fixed luminaire or independent control gear without fixing devices | | N/A |
| 3.6 (4.14.2) | Load to flexible cables | | N/A |
| | Mass (kg) .....: | | — |
| | Stress in conductors (N/mm²) .....: | | N/A |
| | Mass (kg) of semi-luminaire .....: | | — |
| | Bending moment (Nm) of semi-luminaire .....: | | N/A |
| 3.6 (4.14.3) | Adjusting devices: | | P |
| | - flexing test; number of cycles.....: | 45 times | P |
| | - strands broken .....: | 0 | P |
| | - electric strength test afterwards | | P |
| 3.6 (4.14.4) | Telescopic tubes: cords not fixed to tube; no strain on conductors | | N/A |
| 3.6 (4.14.5) | Guide pulleys | | N/A |
| 3.6 (4.14.6) | Strain on socket-outlets | | N/A |
| **3.6 (4.15)** | **Flammable materials** | | **N/A** |
| | - glow-wire test 650°C.....: | See Test Table 3.15 (13.3.2) | N/A |
| | - spacing ³ 30 mm | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - screen withstanding test of 13.3.1 | | N/A |
| | - screen dimensions | | N/A |
| | - no fiercely burning material | | N/A |
| | - thermal protection | | N/A |
| | - electronic circuits exempted | | N/A |
| 3.6 (4.15.2) | Luminaires made of thermoplastic material with lamp control gear | | N/A |
| | a) construction | | N/A |
| | b) temperature sensing control | | N/A |
| | c) surface temperature | | N/A |
| **3.6 (4.16)** | **Luminaires for mounting on normally flammable surfaces** | | **N/A** |
| | No lamp control gear .....: | Electronic control gears are exempt from the requirements of this clause | N/A |
| 3.6 (4.16.1) | Lamp control gear spacing: | | N/A |
| | - spacing 35 mm | | N/A |
| | - spacing 10 mm | | N/A |
| 3.6 (4.16.2) | Thermal protection: | | N/A |
| | - in lamp control gear | | N/A |
| | - external | | N/A |
| | - fixed position | | N/A |
| | - temperature marked lamp control gear | | N/A |
| 3.6 (4.16.3) | Design to satisfy the test of 12.6 | (see clause 12.6) | N/A |
| **3.6 (4.17)** | **Drain holes** | | **N/A** |
| | Clearance at least 5 mm | | N/A |
| 3.6 (4.18) | Resistance to corrosion | | N/A |
| 3.6 (4.18.1) | - rust-resistance | | N/A |
| 3.6 (4.18.2) | - season cracking in copper | | N/A |
| 3.6 (4.18.3) | - corrosion of aluminium | | N/A |
| 3.6 (4.19) | Igniters compatible with ballast | | N/A |
| 3.6 (4.20) | Rough service vibration | | N/A |
| **3.6 (4.21)** | **Protective shield** | | **N/A** |
| 3.6 (4.21.1) | Shield fitted if tungsten halogen lamps or metal halide lamps | | N/A |
| | Shield of glass if tungsten halogen lamps | | N/A |
| 3.6 (4.21.2) | Particles from a shattering lamp not impair safety | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.6 (4.21.3) | No direct path | | N/A |
| 3.6 (4.21.4) | Impact test on shield | | N/A |
| | Glow-wire test on lamp compartment.....: | See Test Table 3.15 (13.3.2) | N/A |
| 3.6 (4.22) | Attachments to lamps not cause overheating or damage | | N/A |
| 3.6 (4.23) | Semi-luminaires comply Class II | | N/A |
| **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/A |
| 3.6 (4.24.2) | Retinal blue light hazard | | P |
| | Class of risk group assessed according to IEC/TR 62778.....: | RG2 [for models with XP-G3 LED];<br>RG1 [for models with other LED types] | P |
| | Luminaires with $E_{thr}$: | | P |
| | a) Fixed luminaires | | P |
| | - distance x m, borderline between RG1 and RG2...: | 5,76m [for models with XP-G3 LED] | P |
| | - marking and instruction according 3.2.23 | | P |
| | b) Portable and handheld luminaires | | N/A |
| | - marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778 | | N/A |
| | 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/A |
| **3.6 (4.25)** | **Mechanical hazard** | | **P** |
| | No sharp point or edges | | P |
| **3.6 (4.26)** | **Short-circuit protection** | | **N/A** |
| 3.6 (4.26.1) | Adequate means of uninsulated accessible SELV parts | | N/A |
| 3.6 (4.26.2) | Short-circuit test with test chain according 4.26.3 | | N/A |
| | Test chain not melt through | | N/A |
| | Test sample not exceed values of Table 12.1 and 12.2 | | N/A |
| **3.6 (4.27)** | **Terminal blocks with integrated screwless earthing contacts** | | **P** |
| | Test according Annex V | | P |
| | Pull test of terminal fixing (20 N) | | P |
| | After test, resistance < 0,05 W | | P |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Pull test of mechanical connection (50 N) | | P |
| | After test, resistance < 0,05 W | | P |
| | Voltage drop test, resistance < 0,05 W | | P |
| **3.6 (4.28)** | **Fixing of thermal sensing control** | | **N/A** |
| | Not plug-in or easily replaceable type | | N/A |
| | Reliably kept in position | | N/A |
| | No adhesive fixing if UV radiations from a lamp can degrade the fixing | | N/A |
| | Not outside the luminaire enclosure | | N/A |
| | Test of adhesive fixing: | | N/A |
| | Max. temperature on adhesive material (°C).....: | | — |
| | 100 cycles between t min and t max | | N/A |
| | Temperature sensing control still in position | | N/A |
| **3.6 (4.29)** | **Luminaires with non-replaceable light source** | | **N/A** |
| | Not possible to replace light source | | N/A |
| | Live part not accessible after parts have been opened by hand or tools | | N/A |
| **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: | | P |
| | 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 | | P |
| | 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/A |
| 3.6 (4.31.1) | SELV circuits | | N/A |
| | Used SELV source | | N/A |
| | Voltage ≤ ELV | | N/A |
| | Insulating of SELV circuits from LV supply | | N/A |
| | Insulating of SELV circuits from other non SELV circuits | | N/A |
| | Insulating of SELV circuits from FELV | | N/A |
| | Insulating of SELV circuits from other SELV circuits | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | SELV circuits insulated from accessible parts according Table X.1 | | N/A |
| | Plugs not able to enter socket-outlets of other voltage systems | | N/A |
| | Socket outlets does not admit plugs of other voltage systems | | N/A |
| | Plugs and socket-outlets does not have protective conductor contact | | N/A |
| 3.6 (4.31.2) | FELV circuits | | N/A |
| | Used FELV source | | N/A |
| | Voltage ≤ ELV | | N/A |
| | Insulating of FELV circuits from LV supply | | N/A |
| | FELV circuits insulated from accessible parts according Table X.1 | | N/A |
| | Plugs not able to enter socket-outlets of other voltage systems | | N/A |
| | Socket outlets does not admit plugs of other voltage systems | | N/A |
| | Socket-outlets does not have protective conductor contact | | N/A |
| 3.6 (4.31.3) | Other circuits | | P |
| | Other circuits insulated from accessible parts according Table X.1 | | P |
| | Class II construction with equipotential bonding for protection against indirect contacts with live parts: | | N/A |
| | - conductive parts are connected together | | N/A |
| | - test according 7.2.3 of above | | N/A |
| | - conductive part not cause an electric shock in case of an insulation fault | | N/A |
| | - equipotential bonding in master/slave applications | | N/A |
| | - master luminaire provided with terminal for accessible conductive parts of slave luminaires | | N/A |
| | - slave luminaire constructed as class I | | N/A |
| **3.6 (4.32)** | **Overvoltage protective devices** | | **N/A** |
| | Comply with IEC 61643-11 | | N/A |
| | External to controlgear and connected to earth: | | N/A |
| | - only in fixed luminaires | | N/A |
| | - only connected to protective earth | | N/A |
| 3.6.1 (-) | At least IP X3 or X5 respectively. IP ..... : | IP67 | P |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Column-integrated luminaires: | | N/A |
| | - parts below 2,5 m. IP ..... : | | N/A |
| | - parts above 2,5 m. IP ..... : | | N/A |
| 3.6.2 (-) | Suspension on span wires | | N/A |
| 3.6.3 (-) | Means for attaching the luminaire or external parts to its support appropriate to the weight | | P |
| 3.6.3.1 (-) | Static load test | | P |
| | - drag coefficient..... : | 1,2 | P |
| | - loaded area ($m^2$)..... : | 0,3264 (model: SL-SLA300) | P |
| | - used load (N)..... : | 649N (model: SL-SLA300) | P |
| | - measured deformation (cm/m) ..... : | 0,8 (limit 2cm/m) | P |
| | - no rotation | | P |
| 3.6.4 (-) | Adjustable lampholders | | N/A |
| 3.6.5 (-) | Luminaires installed above 5 m, glass covers shall be: | | N/A |
| | a) glass that fractures into small pieces (test according to 3.6.5.1), or | | N/A |
| | b) glass having a high impact shock resistance (test according to 3.6.5.2), or | | N/A |
| | c) protected by any means to retain glass fragments | | N/A |
| | For tunnel luminaires 3.6.5.1 apply | | N/A |
| | Method of protection declared by the manufacturer | | N/A |
| 3.6.5.1 (-) | Protection by the use of glass that fractures into small pieces | | N/A |
| | - number of particles is more than 40..... : | | N/A |
| 3.6.5.2 (-) | Protection by the use of high impact resistant glass | | N/A |
| 3.6.5.2.1 (-) | Glass covers have high mechanical strength | | N/A |
| | Test according IEC 62262 with test apparatus according IEC 60068-2-75 with impact energy of 5J on preconditioned sample | | N/A |
| 3.6.5.2.2 (-) | Glass covers not break into large pieces | | N/A |
| | - test according 3.6.5.1, number of particles is more than 20..... : | | N/A |
| 3.6.6 (-) | Connection compartment of column-integrated luminaire | | N/A |
| | - provides adequate space | | N/A |
| | - means for attachment | | N/A |
| | - means for attachment of metal corrosion-resistant | | N/A |
| 3.6.7 (-) | Compliance with ISO standard or other..... : | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.6.8 (-) | Doors of column-integrated luminaires: | | N/A |
| | - corrosion-resistant | | N/A |
| | - opening only possible for an authorized person | | N/A |
| | - impact test 5 Nm | | N/A |
| | - sample show no damage | | N/A |
| 3.6.9 (-) | Column-integrated luminaire: | | N/A |
| | - dimension of the cable entry slot (mm)..... : | | N/A |
| | - cable path from the slot to the connection compartment (mm) ..... : | | N/A |
| | - cable path free from obstruction that might cause abrasion of the cable | | N/A |
| **3.7 (11)** | **CREEPAGE DISTANCES AND CLEARANCES** | | ¾ |
| 3.7 (11.2) | Creepage distances and clearances .....: | See Table 3.7 (11.2) | P |
| | Impulse withstand category (Normal category II) (Category III Annex U) | Category II ☒ Category III ☐ | ¾ |
| **3.8 (7)** | **PROVISION FOR EARTHING** | | ¾ |
| 3.8 (7.2.1 + 7.2.3) | Accessible metal parts | | P |
| | Metal parts in contact with supporting surface | | P |
| | Resistance < 0,5 W.....: | Max. 0,026W | P |
| | Self-tapping screws used | | N/A |
| | Thread-forming screws | | N/A |
| | Thread-forming screw used in a grove | | N/A |
| | Earth makes contact first | | N/A |
| | Terminal blocks with integrated screwless earthing contacts tested according Annex V | | P |
| | Protective earthing of the luminaire not via built-in control gear | | N/A |
| 3.8 (7.2.2 + 7.2.3) | Earth continuity in joints, etc. | | P |
| 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 | | P |
| 3.8 (7.2.5) | Earth terminal integral part of connector socket | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 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/A |
| | Double or reinforced insulation to functional earth | | N/A |
| 3.8 (7.2.11) | Earthing core coloured green-yellow | | N/A |
| | Length of earth conductor | | N/A |
| 3.8.1 (-) | Attachment prevented from rotation | | N/A |
| **3.9 (14)** | **SCREW TERMINALS** | | ¾ |
| | Separately approved; component list .....: | (see Annex 1) | N/A |
| | Part of the luminaire .....: | (see Annex 3) | N/A |
| **3.9 (15)** | **SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS** | | ¾ |
| | Separately approved; component list .....: | (see Annex 1) | P |
| | Part of the luminaire .....: | (see Annex 4) | P |
| **3.10 (5)** | **EXTERNAL AND INTERNAL WIRING** | | ¾ |
| **3.10 (5.2)** | **Supply connection and external wiring** | | **P** |
| 3.10 (5.2.1) | Means of connection.....: | Terminal (Terminal block) | 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/A |
| 3.10 (5.2.2) | Type of cable.....: | | N/A |
| | Nominal cross-sectional area (mm²).....: | | N/A |
| | Cables equal to IEC 60227 or IEC 60245 | | N/A |
| 3.10 (5.2.3) | Type of attachment, X, Y or Z | | N/A |
| 3.10 (5.2.5) | Type Z not connected to screws | | N/A |
| 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/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - suitably fixed | | N/A |
| | - material in bushings | | N/A |
| | - material not likely to deteriorate | | N/A |
| | - tubes or guards made of insulating material | | N/A |
| 3.10 (5.2.9) | Locking of screwed bushings | | N/A |
| 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. | | N/A |
| | - insulating material or lining | | N/A |
| 3.10 (5.2.10.1) | Cord anchorage for type X attachment: | | N/A |
| | a) at least one part fixed | | N/A |
| | b) types of cable | | N/A |
| | c) no damaging of the cable | | N/A |
| | d) whole cable can be mounted | | N/A |
| | e) no touching of clamping screws | | N/A |
| | f) metal screw not directly on cable | | N/A |
| | g) replacement without special tool | | N/A |
| | Glands not used as anchorage | | N/A |
| | Labyrinth type anchorages | | N/A |
| 3.10 (5.2.10.2) | Adequate cord anchorage for type Y and type Z attachment | | N/A |
| 3.10 (5.2.10.3) | Tests: | | P |
| | - impossible to push cable; unsafe | Tested with manufacturer stated supply cable on the instruction manual and the cable is H07RN-F 3x1,5mm$^2$ | P |
| | - pull test: 25 times; pull (N) .....: | 60 (according to clause 3.10.1 of EN 60598-2-3) | P |
| | - torque test: torque (Nm).....: | 0,25 (according to clause 3.10.1 of EN 60598-2-3) | P |
| | - displacement £ 2 mm | | P |
| | - no movement of conductors | | P |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - no damage of cable or cord | | P |
| | - function independent of electrical connection | | N/A |
| 3.10 (5.2.11) | External wiring passing into luminaire | | N/A |
| 3.10 (5.2.12) | Looping-in terminals | | N/A |
| 3.10 (5.2.13) | Wire ends not tinned | | N/A |
| | Wire ends tinned: no cold flow | | N/A |
| 3.10 (5.2.14) | Mains plug same protection | | N/A |
| | Class III luminaire plug | | N/A |
| | No unsafe compatibility | | N/A |
| 3.10 (5.2.16) | Appliance inlets (IEC 60320) | | N/A |
| | Installation couplers (IEC 61535) | | N/A |
| | Other appliance inlet or connector according relevant IEC standard | | N/A |
| 3.10 (5.2.17) | No standardized interconnecting cables properly assembled | | N/A |
| 3.10 (5.2.18) | Used plug in accordance with | | N/A |
| | - IEC 60083 | | N/A |
| | - other standard | | N/A |
| **3.10 (5.3)** | **Internal wiring** | | **P** |
| 3.10 (5.3.1) | Internal wiring of suitable size and type | | P |
| | Through wiring | | N/A |
| | - not delivered/ mounting instruction | | N/A |
| | - factory assembled | | N/A |
| | - socket outlet loaded (A).....: | | N/A |
| | - temperatures.....: | (see Annex 2) | N/A |
| | Green-yellow for earth only | | P |
| 3.10 (5.3.1.1) | Internal wiring connected directly to fixed wiring | | P |
| | Cross-sectional area (mm²) .....: | See annex 1 for details | P |
| | Insulation thickness | | P |
| | Extra insulation added where necessary | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 |
| 3.10 (5.3.1.3) | Double or reinforced insulation for class II | | N/A |
| 3.10 (5.3.1.4) | Conductors without insulation | | N/A |
| 3.10 (5.3.1.5) | SELV current-carrying parts | | N/A |
| 3.10 (5.3.1.6) | Insulation thickness other than PVC or rubber | | N/A |
| 3.10 (5.3.2) | Sharp edges etc. | | P |
| | No moving parts of switches etc. | | N/A |
| | Joints, raising/lowering devices | | N/A |
| | Telescopic tubes etc. | | N/A |
| | No twisting over 360° | | P |
| 3.10 (5.3.3) | Insulating bushings: | | N/A |
| | - suitable fixed | | N/A |
| | - material in bushings | | N/A |
| | - material not likely to deteriorate | | N/A |
| | - cables with protective sheath | | N/A |
| 3.10 (5.3.4) | Joints and junctions effectively insulated | | P |
| 3.10 (5.3.5) | Strain on internal wiring | | N/A |
| 3.10 (5.3.6) | Wire carriers | | N/A |
| 3.10 (5.3.7) | Wire ends not tinned | | P |
| | Wire ends tinned: no cold flow | | P |
| 3.10.1 (-) | Cord anchorage if applicable | | P |
| | - pull test: 25 times; pull (N) ..... : | 60N | P |
| | - torque test: torque (Nm)..... : | 0,25Nm | P |

| **3.11 (8)** | **PROTECTION AGAINST ELECTRIC SHOCK** | | ¾ |
|---|---|---|---|
| 3.11 (8.2.1) | Live parts not accessible | | P |
| | Basic insulated parts not used on the outer surface without appropriate protection | | P |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires | | N/A |
| | Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires | | P |
| | Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements | | N/A |
| | Basic insulation only accessible under lamp or starter replacement | | N/A |
| | Protection in any position | | P |
| | Double-ended tungsten filament lamp | | N/A |
| | Insulation lacquer not reliable | | N/A |
| | Double-ended high pressure discharge lamp | | N/A |
| | Relevant warning according to 3.2.18 fitted to the luminaire | | N/A |
| 3.11 (8.2.2) | Portable luminaire adjusted in most unfavourable position | | N/A |
| 3.11 (8.2.3.a) | Class II luminaire: | | N/A |
| | - basic insulated metal parts not accessible during starter or lamp replacement | | N/A |
| | - basic insulation not accessible other than during starter or lamp replacement | | N/A |
| | - glass protective shields not used as supplementary insulation | | N/A |
| 3.11 (8.2.3.b) | BC lampholder of metal in class I luminaires shall be earthed | | N/A |
| 3.11 (8.2.3.c) | SELV circuits with exposed current carrying parts: | | N/A |
| | Ordinary luminaire: | | N/A |
| | - touch current .....: | | N/A |
| | - no-load voltage.....: | | N/A |
| | Other than ordinary luminaire: | | N/A |
| | - nominal voltage .....: | | N/A |
| 3.11 (8.2.4) | Portable luminaire have protection independent of supporting surface | | N/A |
| 3.11 (8.2.5) | Compliance with the standard test finger or relevant probe | | P |
| 3.11 (8.2.6) | Covers reliably secured | | P |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.11 (8.2.7) | Discharging of capacitors ³ 0,5 mF | | P |
| | Portable plug connected luminaire with capacitor | | N/A |
| | Other plug connected luminaire with capacitor | | N/A |
| | Discharge device on or within capacitor | | N/A |
| | Discharge device mounted separately | | N/A |
| **3.12 (12)** | **ENDURANCE TEST AND THERMAL TEST** | | ¾ |
| 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 | | ¾ |
| 3.12 (12.3) | Endurance test: | | P |
| | - mounting-position.....: | As in normal use | ¾ |
| | - test temperature (°C).....: | 60 | ¾ |
| | - total duration (h).....: | 240 | ¾ |
| | - supply voltage: Un factor; calculated voltage (V)...: | 264 | ¾ |
| | - lamp used .....: | LED | ¾ |
| 3.12 (12.3.2) | After endurance test: | | P |
| | - no part unserviceable | | P |
| | - luminaire not unsafe | | P |
| | - no damage to track system | | N/A |
| | - marking legible | | P |
| | - no cracks, deformation etc. | | P |
| 3.12 (12.4) | Thermal test (normal operation) | (see Annex 2) | P |
| 3.12 (12.5) | Thermal test (abnormal operation) | (see Annex 2) | P |
| 3.12 (12.6) | Thermal test (failed lamp control gear condition): | | N/A |
| 3.12 (12.6.1) | Through wiring or looping-in wiring loaded by a current of (A) .....: | | ¾ |
| | - case of abnormal conditions .....: | | ¾ |
| | - electronic lamp control gear | | N/A |
| | - measured winding temperature (°C): at 1,1 Un ....: | | ¾ |
| | - measured mounting surface temperature (°C) at 1,1 Un .....: | | N/A |
| | - calculated mounting surface temperature (°C) .....: | | N/A |
| | - track-mounted luminaires | | N/A |
| 3.12 (12.6.2) | Temperature sensing control | | N/A |

| IEC 60598-2-3 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - case of abnormal conditions .....: | | ¾ |
| | - thermal link | | N/A |
| | - manual reset cut-out | | N/A |
| | - auto reset cut-out | | N/A |
| | - measured mounting surface temperature (°C).....: | | N/A |
| | - track-mounted luminaires | | N/A |
| 3.12 (12.7) | Thermal test (failed lamp control gear in plastic luminaires): | | N/A |
| 3.12 (12.7.1) | Luminaire without temperature sensing control | | N/A |
| 3.12 (12.7.1.1) | Luminaire with fluorescent lamp ≤ 70W | | N/A |
| | Test method 12.7.1.1 or Annex W .....: | | ¾ |
| | Test according to 12.7.1.1: | | N/A |
| | - case of abnormal conditions .....: | | ¾ |
| | - Ballast failure at supply voltage (V) .....: | | ¾ |
| | - Components retained in place after the test | | N/A |
| | - Test with standard test finger after the test | | N/A |
| | Test according to Annex W: | | N/A |
| | - case of abnormal conditions .....: | | ¾ |
| | - measured winding temperature (°C): at 1,1 Un .....: | | ¾ |
| | - measured temperature of fixing point/exposed part (°C): at 1,1 Un .....: | | ¾ |
| | - calculated temperature of fixing point/exposed part (°C) .....: | | ¾ |
| | Ball-pressure test..... : | See Table 3.15 (13.2.1) | N/A |
| 3.12 (12.7.1.2) | Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA | | N/A |
| | - case of abnormal conditions .....: | | ¾ |
| | - measured winding temperature (°C): at 1,1 Un .....: | | ¾ |
| | - measured temperature of fixing point/exposed part (°C): at 1,1 Un .....: | | ¾ |
| | - calculated temperature of fixing point/exposed part (°C) .....: | | ¾ |
| | Ball-pressure test.....: | See Table 3.15 (13.2.1) | N/A |
| 3.12 (12.7.1.3) | Luminaire with short circuit proof transformers ≤ 10 VA | | N/A |
| | - case of abnormal conditions .....: | | ¾ |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | - Components retained in place after the test | | N/A |
| | - Test with standard test finger after the test | | N/A |
| 3.12 (12.7.2) | Luminaire with temperature sensing control | | N/A |
| | - thermal link.....: | Yes ☐ No ☐ | ¾ |
| | - manual reset cut-out.....: | Yes ☐ No ☐ | ¾ |
| | - auto reset cut-out .....: | Yes ☐ No ☐ | ¾ |
| | - case of abnormal conditions .....: | | ¾ |
| | - highest measured temperature of fixing point/ exposed part (°C): .....: | | ¾ |
| | Ball-pressure test:.....: | See Table 3.15 (13.2.1) | N/A |
| 3.12.1 (-) | Temperature reduction if for outdoor use only | For indoor and outdoor use. | N/A |
| 3.12.2 (-) | (See above) | | ¾ |
| 3.12.3 (-) | Glass covers used within the thermal limits declared by the glass manufacturer | | N/A |

| **3.13 (9)** | **RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE** | | ¾ |
|---|---|---|---|
| 3.13.1 (-) | If IP > IP 20 the order of tests as specified in clause 3.12 | | ¾ |
| 3.13 (9.2) | Tests for ingress of dust, solid objects and moisture: | | ¾ |
| | - classification according to IP.....: | IP67 | ¾ |
| | - mounting position during test.....: | As in normal use | ¾ |
| | - fixing screws tightened; torque (Nm).....: | 2/3 torque force for screws fixing metal enclosure and transparent cover | ¾ |
| | - tests according to clauses .....: | 9.2.2 and 9.2.8 | ¾ |
| | - electric strength test afterwards | | P |
| | a) no deposit in dust-proof luminaire | | N/A |
| | 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 |
| | d) i) For luminaires without drain holes – no water entry | | P |
| | d) ii) For luminaires with drain holes – no hazardous water entry | | N/A |
| | e) no water in watertight luminaire | | P |
| | f) no contact with live parts (IP 2X) | | N/A |
| | f) no entry into enclosure (IP 3X and IP 4X) | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | f) no contact with live parts (IP3X and IP4X) | | N/A |
| | g) no trace of water on part of lamp requiring protection from splashing water | | N/A |
| | h) no damage of protective shield or glass envelope | | N/A |
| 3.13 (9.3) | Humidity test 48 h | 25°C; R.H. 93% | P |

| | | | |
|---|---|---|---|
| **3.14 (10)** | **INSULATION RESISTANCE AND ELECTRIC STRENGTH** | | ¾ |
| 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 .....: | | ¾ |
| | Insulation resistance (MW).....: | | ¾ |
| | SELV | | N/A |
| | - between current-carrying parts of different polarity: | | N/A |
| | - between current-carrying parts and mounting surface .....: | | N/A |
| | - between current-carrying parts and metal parts of the luminaire.....: | | N/A |
| | - between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....: | | N/A |
| | - Insulation bushings as described in Section 5 .....: | | N/A |
| | Other than SELV | | P |
| | - between live parts of different polarity.....: | | N/A |
| | - between live parts and mounting surface.....: | 100MW (required: 2MW) | P |
| | - between live parts and metal parts.....: | 100MW (required: 2MW) | P |
| | - between live parts of different polarity through action of a switch.....: | | N/A |
| | - between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....: | | N/A |
| | - Insulation bushings as described in Section 5 .....: | | N/A |
| 3.14 (10.2.2) | Electric strength test | | P |
| | Dummy lamp | | N/A |
| | Luminaires with ignitors after 24 h test | | N/A |
| | Luminaires with manual ignitors | | N/A |
| | Test voltage (V).....: | | N/A |

| IEC 60598-2-3 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | SELV | | N/A |
| | - between current-carrying parts of different polarity: | | N/A |
| | - between current-carrying parts and mounting surface .....: | | N/A |
| | - between current-carrying parts and metal parts of the luminaire.....: | | N/A |
| | - between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....: | | N/A |
| | - Insulation bushings as described in Section 5 .....: | | N/A |
| | Other than SELV | | P |
| | - between live parts of different polarity.....: | | N/A |
| | - between live parts and mounting surface .....: | 1480V (Input of LED driver circuit);<br>1640V (Output of LED driver circuit) | P |
| | - between live parts and metal parts.....: | 1480V (Input of LED driver circuit);<br>1640V (Output of LED driver circuit) | P |
| | - between live parts of different polarity through action of a switch.....: | | N/A |
| | - between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....: | | N/A |
| | - Insulation bushings as described in Section 5 .....: | | N/A |
| 3.14 (10.3) | Touch current or protective conductor current (mA).: | Touch current: Max. 0,01mA (limit: 0,7mA);<br>Protective conductor current: Max. 1,04mA (limit: 3,5mA) | P |

| **3.15 (13)** | **RESISTANCE TO HEAT, FIRE AND TRACKING** | | ¾ |
|---|---|---|---|
| 3.15 (13.2.1) | Ball-pressure test.....: | See Test Table 3.15 (13.2.1) | P |
| 3.15 (13.3.1) | Needle-flame test (10 s) .....: | See Test Table 3.15 (13.3.1) | P |
| 3.15 (13.3.2) | Glow-wire test (650°C).....: | See Test Table 3.15 (13.3.2) | P |
| 3.15 (13.4) | Proof tracking test (IEC 60112).....: | See Test Table 3.15 (13.4) | P |

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

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **3.7 (11.2)** | **TABLE: Creepage distances and clearances** | | | | | | | **P** |
| | **Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages** | | | | | | | **P** |
| | **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: | B | 3,6 | 1,5 | 11.1 | 3,6 | 2,5 | 11.1 | |
| Working voltage (V) ..... : | | | | | 240VAC | | | ¾ |
| PTI ..... : | | | | | < 600 ☒ ≥ 600 ☐ | | | ¾ |
| Pulse voltage if applicable (kV) ..... : | | | | | -- | | | ¾ |
| Supplementary information: Between live part and metal enclosure (Input of LED driver circuit) | | | | | | | | |
| Distance 2: | B | 2,7 | 2,0 | 11.1 | 2,7 | 2,0 | 11.1 | |
| Working voltage (V) ..... : | | | | | Max. 320VDC | | | ¾ |
| PTI ..... : | | | | | < 600 ☐ ≥ 600 ☒ | | | ¾ |
| Pulse voltage if applicable (kV) ..... : | | | | | | | | ¾ |
| Supplementary information:<br>1. Between live part and metal enclosure (output of LED driver circuit);<br>2. For creepage distances not liable to contamination by dust or moisture, the values specified for material with PTI ≥ 600 shall apply (independent of the real PTI). | | | | | | | | |

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

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

| 3.15 (13.2.1) | **TABLE: Ball Pressure Test of Thermoplastics** | | | **P** |
|---|---|---|---|---|
| **Allowed impression diameter (mm) .....:** | | ≤2,0mm | | ¾ |
| Object/ Part No./ Material | Manufacturer/ trademark | Test temperature (°C) | Impression diameter (mm) | |
| Quick connector | WAGO | 125 | 1,2 | |
| Wire connector | KSS | 125 | 1,0 | |
| DC connector | MOLEX | 97,3 | 1,2 | |
| Transparent cover | LG | 109,5 | 1,3 | |
| Supplementary information: -- | | | | |

| 3.15 (13.3.1) | **TABLE: Needle-flame test (IEC 60695-11-5)** | | | | **P** |
|---|---|---|---|---|---|
| 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 |
| Quick connector | WAGO | 0 | No | 0 | Pass |
| Wire connector | KSS | 0 | No | 0 | Pass |
| DC connector | MOLEX | 0 | No | 0 | Pass |
| Supplementary information: -- | | | | | |

| 3.15 (13.3.2) | **TABLE: Glow-wire test (IEC 60695-2-11)** | | | | **P** |
|---|---|---|---|---|---|
| **Glow wire temperature .....:** | | 650°C | | | ¾ |
| 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 |
| Transparent cover | LG | 0 | No | 0 | Pass |
| 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: -- | | | | | |

| 3.15 (13.4) | **TABLE: Proof tracking test (IEC 60112)** | | | | **P** |
|---|---|---|---|---|---|
| **Test voltage PTI .....:** | | 175 V | | | ¾ |
| Object/ Part No./ Material | Manufacturer/ trademark | Withstand 50 drops without failure on three places or on three specimens | | | Verdict |
| Transparent cover | LG | Yes | Yes | Yes | Pass |

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

Supplementary information: --

| ANNEX 1 | TABLE: Critical components information | P |
|---|---|---|

| Object/Part No. | code | Manufacturer/ Trademark | Type/Model | Technical Data | Standard | Mark(s) of Conformity1) |
|---|---|---|---|---|---|---|
| Terminal block | B | WAGO Kontakttechnik GmbH & Co.KG | 862-8603 | Screwless type; 0,5…4,0mm$^2$; 500VAC | EN 60998-2-2; EN 60998-1 | UL Demko A/S ENEC 143856-01 |
| Input wire & output wire of LED driver | B | SHANGHAI PANDA WIRE & CABLE CO LTD | 1316 | 18AWG, 80°C | -- | UL E109819 |
| Internal wire (between quick connector and DC connector of LED module) | B | SHIQING ELECTRONICS (HUIZHOU) CO LTD | 1330<br>1015 | 18AWG or 22AWG; 200°C | -- | UL E342682 |
| Alt. | B | GUANGZHOU TANG YAO WIRES CO LTD | 1330 | 18AWG or 22AWG; 200°C | -- | UL E207696 |
| Earthing wire | B | DONGGUAN CHENG XING ELECTRONIC CO LTD | 1015 | 18AWG; 105°C | -- | UL E249743 |
| Wire connect to LED module | B | DONGGUAN NISTAR TRANSMITTING TECHNOLOGY CO INC | 1330 | 18AWG or 22AWG; 200°C | -- | UL E214184 |
| Alt. | B | SHIQING ELECTRONICS (HUIZHOU) CO LTD | 1330<br>1015 | 18AWG or 22AWG; 200°C | -- | UL E342682 |
| Alt. | B | GUANGZHOU FENGTAI | 1330 | 18AWG or 22AWG; 200°C | -- | UL E204798 |
| Quick connector | B | WAGO | 222-412; 222-413 | Screwless type; 2,5…4,0mm$^2$; 400VAC | EN 60998-2-2; EN 60998-1 | UL Demko A/S ENEC 01360 |
| Alt. | B | WAGO | 2273-202; 2273-204 | Screwless type; 0,5…2,5mm$^2$; 450VAC | EN 60998-2-2; EN 60998-1 | VDE 40029794 |

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

| Object/Part No. | code | Manufacturer/ Trademark | Type/Model | Technical Data | Standard | Mark(s) of Conformity1) |
|---|---|---|---|---|---|---|
| DC connector | B | MOLEX INCORPORATED | 436450200; 436400201; 430300001; 430310001; 1042380210 | -- | -- | UL E29179 |
| Wire connector | B | KAI SUH SUH ENTERPRISE CO LTD | CE-1; CE-2 | 90°C | -- | UL E116091 |
| AL-PCB | B | HUIZHOU LEAD TECHNOLOGY CO LTD | LD-3; LD-1 | 90°C | -- | UL E333645 |
| Alt. | B | CHINA BRILLIANT | CBE-01 | 130°C | -- | UL E365061 |
| Alt. | B | HUI FENG (HK) INDUSTRIAL LTD | DFL-2 | 130°C | -- | UL E479355 |
| LED | B | PHILIPS LUMILEDS | LUXEON T | $I_F$: 700mA; $V_F$: 2,5-3,25V; CCT: 2700-6500K | IEC TR 62778 | Tested with appliance |
| Alt. | B | CREE | XP-G2 | $I_F$: 1500mA; $V_F$: 2,8-3,1; CCT: 2700-6500K; View angle: 115° | IEC TR 62778 | Tested with appliance |
| Alt. | B | CREE | XT-E | $I_F$: 1500mA; $V_F$: 2,85-3,4; CCT: 2700-6500K; View angle: 115° | IEC TR 62778 | Tested with appliance |
| Alt. | B | CREE | XP-G3 | $I_F$: 2000mA; $V_F$: 2,73-3,06; CCT: 2700-6500K; View angle: 125° | IEC TR 62778 | Tested with appliance |
| Alt. | B | LUMILEDS | LUXEON 5050 | $I_F$: 800/240mA; $V_F$: 6/24V; CCT: 2700-6500K | IEC TR 62778 | Tested with appliance |
| Alt. | B | NICHIA CORPORATION | NVSL219CT | $I_F$: Max.1800mA; $V_F$: 2,7-3,1VDC; CCT: 2700-4500K | IEC TR 62778 | Tested with appliance |
| | | | NVSW219CT | $I_F$: Max.1800mA; $V_F$: 2,7-3,1VDC; CCT: 5000-6500K | | Tested with appliance |
| Glass fibre sleeve | B | SHENZHEN WAHCHANGWEI INDUSTRIAL CO LTD | SGS-15 φ8 | -- | -- | UL E233804 |

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

| Object/Part No. | code | Manufacturer/ Trademark | Type/Model | Technical Data | Standard | Mark(s) of Conformity1) |
|---|---|---|---|---|---|---|
| Transparent cover (Lens) | B | LG CHEMICAL (GUANGZHOU) ENGINEERING PLASTICS CO LTD | LUPOY GP-1006F(f1) | V-0 | -- | UL E248280 |
| LED driver for EU (type A) | B | PHILIPS | XITANIUM 75W 0.70A AOCM 1-10 GL-Y sXt | Input: 120-277VAC; 50/60Hz; 0,7…0,3A; Output: 54-107VDC; 0,1-0,7A; $U_{out}$=130VDC; $P_{rated}$=75W; ta:55°C; tc: 80°C; Built-in | EN 61347-1; EN 61347-2-13 | DEKRA ENEC 05 2188185.08 |
| LED driver for EU (type B) | B | PHILIPS | Xitanium 150W 0.35-0.70A GL Prog sXt | Input: 120-277VAC; 50/60Hz; 1,4...0,6A; Output: 125-280VDC; 350-700mA; $U_{out}$=300VDC; $P_{rated}$=150W; tc: 80°C; Built-in | EN 61347-1; EN 61347-2-13 | DEKRA ENEC 05 2195050.02 |
| LED driver for EU (type D) | B | PHILIPS | Xitanium 75W 0.35-0.70A GL Prog sXt | Input: 120-277VAC; 50/60Hz; 0,7...0,3A; Output: 54-107VDC; 100-700mA; $U_{out}$=160VDC; $P_{rated}$=75W; tc: 80°C; Built-in | EN 61347-2-13; EN 61347-1 | DEKRA ENEC 05 2195050.03 |
| LED driver for EU (type E) | B | PHILIPS | Xitanium Dim 100W 0.7A 1-10V 230V Y | Input: 220-240VAC; 50/60Hz; 0,4…0,56A; Output: 0,7A; 64-143VDC; $U_{out}$=220VDC; $P_{rated}$=100W; ta: 55°C; tc: 80°C; Built-in | EN 61347-2-13; EN 61347-1 | DEKRA ENEC 05 31-101017 |
| LED driver for EU (type F) | B | PHILIPS | Xitanium Dim 150W 0.7A 1-10V 230V Y | Input: 220-240VAC; 50/60Hz; 0,6…0,83A; Output: 0,7A; 96-214VDC; $U_{out}$=320VDC; $P_{rated}$=150W; ta: 55°C; tc: 80°C; Built-in | EN 61347-2-13; EN 61347-1 | DEKRA ENEC 05 31-101017 |

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

| Object/Part No. | code | Manufacturer/ Trademark | Type/Model | Technical Data | Standard | Mark(s) of Conformity1) |
|---|---|---|---|---|---|---|
| The codes above have the following meaning:<br>A - The component is replaceable with another one, also certified, with equivalent characteristics<br>B - The component is replaceable if authorised by the test house<br>C - Integrated component tested together with the appliance<br>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 ..... : | SL-SLA300 | ¾ |
| | Lamp used..... : | LED | ¾ |
| | Lamp control gear used ..... : | LED driver (type B) | ¾ |
| | Mounting position of luminaire..... : | As in normal use | ¾ |
| | Supply wattage (W) ..... : | 300W (240V) | ¾ |
| | Supply current (A)..... : | 1,1A (240V) | ¾ |
| | Calculated power factor ..... : | 0,9 | ¾ |
| | Table: measured temperatures corrected for ta = 50°C: | | P |
| | - abnormal operating mode ..... : | Short circuit output of LED driver, output shut down immediately, the temperatures were lower than temperatures at normal operation, no temperature was recorded. | ¾ |
| | - test 1: rated voltage ..... : | 240V | ¾ |
| | - test 2: 1,06 times rated voltage or 1,05 times rated wattage..... : | 254,4V | ¾ |
| | - test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... : | -- | ¾ |
| | - test 4: 1,1 times rated voltage or 1,05 times rated wattage..... : | 264V | ¾ |
| | Through wiring or looping-in wiring loaded by a current of A during the test ..... : | -- | ¾ |

| temperature (°C) of part | Clause 12.4 – normal | | | | Clause 12.5 – abnormal | |
|---|---|---|---|---|---|---|
| | test 1 | test 2 | test 3 | limit | test 4 | limit |
| Fixed wire | -- | 58,2 | -- | 90 | -- | -- |
| Power supply terminal block | -- | 57,4 | -- | 110 | -- | -- |
| Input wire of LED driver | -- | 65,2 | -- | 80 | -- | -- |
| Output wire of LED driver | -- | 65,2 | -- | 80 | -- | -- |
| tc of LED driver | 76,5 | -- | -- | 80 | -- | -- |
| Quick connector | -- | 58,4 | -- | 110 | -- | -- |
| DC connector | -- | 61,3 | -- | Ref. | -- | -- |
| Input wire of LED module | -- | 66,6 | -- | 200 | -- | -- |
| PCB of LED module | -- | 72,8 | -- | 90 | -- | -- |

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

| | | | | | | |
|---|---|---|---|---|---|---|
| Transparent cover for LED (inside) | -- | 70,5 | -- | Ref. | -- | -- |
| Transparent cover for LED (outside) | -- | 65,3 | -- | Ref. | -- | -- |
| Metal enclosure (near LED module) | -- | 63,3 | -- | Ref. | -- | -- |
| Metal enclosure (near LED driver) | -- | 61,0 | -- | Ref. | -- | -- |
| Mounting surface | -- | 51,6 | -- | 90 | -- | -- |
| Supplementary information: -- | | | | | | |

| | | | |
|---|---|---|---|
| | Type reference ..... : | SL-SLB80 | ¾ |
| | Lamp used..... : | LED | ¾ |
| | Lamp control gear used ..... : | LED driver (type A or E) | ¾ |
| | Mounting position of luminaire..... : | As in normal use | ¾ |
| | Supply wattage (W) ..... : | 81W (240V) | ¾ |
| | Supply current (A)..... : | 0,33A (240V) | ¾ |
| | Calculated power factor ..... : | 0,9 | ¾ |
| | Table: measured temperatures corrected for ta = 50 °C: | | P |
| | - abnormal operating mode ..... : | Short circuit output of LED driver, output shut down immediately, the temperatures were lower than temperatures at normal operation, no temperature was recorded. | ¾ |
| | - test 1: rated voltage ..... : | 240V | ¾ |
| | - test 2: 1,06 times rated voltage or 1,05 times rated wattage..... : | -- | ¾ |
| | - test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... : | -- | ¾ |
| | - test 4: 1,1 times rated voltage or 1,05 times rated wattage..... : | 264V | ¾ |
| | Through wiring or looping-in wiring loaded by a current of A during the test ..... : | -- | ¾ |

**Temperature measurements, (°C)**

| Part | Ambient | Clause 12.4 – normal | | | | Clause 12.5 – abnormal | |
|---|---|---|---|---|---|---|---|
| | | test 1 | test 2 | test 3 | limit | test 4 | limit |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| tc of LED driver (type A) | 50 | 69,6 | -- | -- | 80 | -- | -- |
| tc of LED driver (type E) | 50 | 72,9 | -- | -- | 80 | -- | -- |
| Supplementary information: -- | | | | | | | |

| | | | |
|---|---|---|---|
| | Type reference ..... : | SL-SLB240 | ¾ |
| | Lamp used..... : | LED | ¾ |
| | Lamp control gear used ..... : | LED driver (type D + type B or type E + type F) | ¾ |
| | Mounting position of luminaire..... : | As in normal use | ¾ |
| | Supply wattage (W) ..... : | 242W (240V) | ¾ |
| | Supply current (A)..... : | 1,01A (240V) | ¾ |
| | Calculated power factor ..... : | 0,9 | ¾ |
| | Table: measured temperatures corrected for ta = 50 °C: | | P |
| | - abnormal operating mode..... : | Short circuit output of LED driver, output shut down immediately, the temperatures were lower than temperatures at normal operation, no temperature was recorded. | ¾ |
| | - test 1: rated voltage..... : | 240V | ¾ |
| | - test 2: 1,06 times rated voltage or 1,05 times rated wattage..... : | -- | ¾ |
| | - test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... : | -- | ¾ |
| | - test 4: 1,1 times rated voltage or 1,05 times rated wattage..... : | 264V | ¾ |
| | Through wiring or looping-in wiring loaded by a current of A during the test ..... : | -- | ¾ |

**Temperature measurements, (°C)**

| Part | Ambient | Clause 12.4 – normal | | | | Clause 12.5 – abnormal | |
|---|---|---|---|---|---|---|---|
| | | test 1 | test 2 | test 3 | limit | test 4 | limit |
| tc of LED driver (type D) | 50 | 74,7 | -- | -- | 80 | -- | -- |
| tc of LED driver (type B) | 50 | 75,3 | -- | -- | 80 | -- | -- |
| Alternative LED driver (type E) | 50 | 75,3 | -- | -- | 80 | -- | -- |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Alternative LED driver (type F) | 50 | 80,7 | -- | -- | 80+5 | -- | -- |
| Supplementary information: -- | | | | | | | |

| | | | |
|---|---|---|---|
| | Type reference ..... : | SL-SLB320 | ¾ |
| | Lamp used..... : | LED | ¾ |
| | Lamp control gear used ..... : | LED driver (2 type B) | ¾ |
| | Mounting position of luminaire..... : | As in normal use | ¾ |
| | Supply wattage (W) ..... : | 321W (240V) | ¾ |
| | Supply current (A)..... : | 1,34A (240V) | ¾ |
| | Calculated power factor ..... : | 0,9 | ¾ |
| | Table: measured temperatures corrected for ta = 50 °C: | | P |
| | - abnormal operating mode..... : | Short circuit output of LED driver, output shut down immediately, the temperatures were lower than temperatures at normal operation, no temperature was recorded. | ¾ |
| | - test 1: rated voltage ..... : | 240V | ¾ |
| | - test 2: 1,06 times rated voltage or 1,05 times rated wattage..... : | 254,4V | ¾ |
| | - test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... : | -- | ¾ |
| | - test 4: 1,1 times rated voltage or 1,05 times rated wattage..... : | 264V | ¾ |
| | Through wiring or looping-in wiring loaded by a current of A during the test ..... : | -- | ¾ |

**Temperature measurements, (°C)**

| Part | Ambient | Clause 12.4 – normal | | | | Clause 12.5 – abnormal | |
|---|---|---|---|---|---|---|---|
| | | test 1 | test 2 | test 3 | limit | test 4 | limit |
| Supply cord | 50 | -- | 50,7 | -- | 90 | -- | -- |
| Power supply terminal block | 50 | -- | 59,4 | -- | 110 | -- | -- |
| Input wire of LED driver | 50 | -- | 57,4 | -- | 80 | -- | -- |
| Output wire of LED driver | 50 | -- | 65,4 | -- | 80 | -- | -- |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| tc of LED driver (type B) | 50 | 79,7 | -- | -- | 80 | -- | -- |
| Quick connector | 50 | -- | 61,4 | -- | 110 | -- | -- |
| DC connector | 50 | -- | 69,7 | -- | Ref. | -- | -- |
| Input wire of LED module | 50 | -- | 75,5 | -- | 200 | -- | -- |
| PCB of LED module | 50 | -- | 84,8 | -- | 90 | -- | -- |
| Transparent cover (inside) | 50 | -- | 80,0 | -- | Ref. | -- | -- |
| Transparent cover (outside) | 50 | -- | 76,3 | -- | Ref. | -- | -- |
| Metal enclosure (near LED module) | 50 | -- | 74,3 | -- | Ref. | -- | -- |
| Mounting surface | 50 | -- | 53,4 | -- | 90 | -- | -- |
| Supplementary information: -- | | | | | | | |

| | | | |
|---|---|---|---|
| | Type reference ..... : | SL-SLB320 | ¾ |
| | Lamp used..... : | LED | ¾ |
| | Lamp control gear used ..... : | LED driver (2 type F) | ¾ |
| | Mounting position of luminaire..... : | As in normal use | ¾ |
| | Supply wattage (W) ..... : | 321W (240V) | ¾ |
| | Supply current (A)..... : | 1,34A (240V) | ¾ |
| | Calculated power factor ..... : | 0,9 | ¾ |
| | Table: measured temperatures corrected for ta = 50 °C: | | P |
| | - abnormal operating mode..... : | Short circuit output of LED driver, output shut down immediately, the temperatures were lower than temperatures at normal operation, no temperature was recorded. | ¾ |
| | - test 1: rated voltage ..... : | 240V | ¾ |
| | - test 2: 1,06 times rated voltage or 1,05 times rated wattage..... : | 254,4V | ¾ |
| | - test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... : | -- | ¾ |

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

| | | | |
|---|---|---|---|
| | - test 4: 1,1 times rated voltage or 1,05 times rated wattage..... : | 264V | ¾ |
| | Through wiring or looping-in wiring loaded by a current of A during the test ..... : | -- | ¾ |

**Temperature measurements, (°C)**

| Part | Ambient | Clause 12.4 – normal | | | | Clause 12.5 – abnormal | |
|---|---|---|---|---|---|---|---|
| | | test 1 | test 2 | test 3 | limit | test 4 | limit |
| Supply cord | 50 | -- | 50,9 | -- | 90 | -- | -- |
| Power supply terminal block | 50 | -- | 58,5 | -- | 110 | -- | -- |
| Input wire of LED driver | 50 | -- | 63,2 | -- | 80 | -- | -- |
| Output wire of LED driver | 50 | -- | 67,4 | -- | 80 | -- | -- |
| tc of LED driver (type F) | 50 | 82,9 | -- | -- | 80+5 | -- | -- |
| Quick connector | 50 | -- | 61,5 | -- | 110 | -- | -- |
| DC connector | 50 | -- | 69,2 | -- | Ref. | -- | -- |
| Close-end connector | 50 | -- | 68,0 | -- | Ref. | -- | -- |
| Input wire of LED module | 50 | -- | 81,4 | -- | 200 | -- | -- |
| PCB of LED module | 50 | -- | 82,1 | -- | 90 | -- | -- |
| Transparent cover (inside) | 50 | -- | 80,9 | -- | Ref. | -- | -- |
| Transparent cover (outside) | 50 | -- | 76,8 | -- | Ref. | -- | -- |
| Metal enclosure (near LED module) | 50 | -- | 70,7 | -- | Ref. | -- | -- |
| Mounting surface | 50 | -- | 52,9 | -- | 90 | -- | -- |

Supplementary information: --

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

| | | | |
|---|---|---|---|
| **ANNEX 3** | **Screw terminals (part of the luminaire)** | | ¾ |
| **(14)** | **SCREW TERMINALS** | | N/A |
| (14.2) | Type of terminal.....: | | ¾ |
| | Rated current (A).....: | | ¾ |
| (14.3.2.1) | One or more conductors | | N/A |
| (14.3.2.2) | Special preparation | | N/A |
| (14.3.2.3) | Terminal size | | N/A |
| | Cross-sectional area (mm²) .....: | | ¾ |
| (14.3.3) | Conductor space (mm) .....: | | N/A |
| (14.4) | Mechanical tests | | N/A |
| (14.4.1) | Minimum distance | | N/A |
| (14.4.2) | Cannot slip out | | N/A |
| (14.4.3) | Special preparation | | N/A |
| (14.4.4) | Nominal diameter of thread (metric ISO thread) .....: | M | N/A |
| | External wiring | | N/A |
| | No soft metal | | N/A |
| (14.4.5) | Corrosion | | N/A |
| (14.4.6) | Nominal diameter of thread (mm).....: | | N/A |
| | Torque (Nm).....: | | N/A |
| (14.4.7) | Between metal surfaces | | N/A |
| | Lug terminal | | N/A |
| | Mantle terminal | | N/A |
| | Pull test; pull (N).....: | | N/A |
| (14.4.8) | Without undue damage | | N/A |

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

| | | | |
|---|---|---|---|
| **ANNEX 4** | **Screwless terminals (part of the luminaire)** | | ¾ |
| **(15)** | **SCREWLESS TERMINALS** | | **P** |
| (15.2) | Type of terminal.....: | DC connector | ¾ |
| | Rated current (A).....: | Tested with appliance | ¾ |
| (15.3.1) | Material | | P |
| (15.3.2) | Clamping | | P |
| (15.3.3) | Stop | | P |
| (15.3.4) | Unprepared conductors | | P |
| (15.3.5) | Pressure on insulating material | | P |
| (15.3.6) | Clear connection method | | P |
| (15.3.7) | Clamping independently | | N/A |
| (15.3.8) | Fixed in position | | P |
| (15.3.10) | Conductor size | | N/A |
| | Type of conductor | | N/A |
| (15.5.1) | Terminals internal wiring | | P |
| (15.5.1.1) | Pull test spring-type terminals (4 N, 4 samples).....: | | N/A |
| (15.5.1.2) | Pull test pin or tab terminals (4 N, 4 samples) .....: | 4N | P |
| | Insertion force not exceeding 50 N | | P |
| (15.5.1.2) | Permanent connections: pull-off test (20 N) | | N/A |
| (15.5.2) | Electrical tests | | P |
| | Voltage drop (mV) after 1 h (4 samples).....: | 7,6mV (Max. value was recorded) | P |
| | Voltage drop of two inseparable joints | | P |
| | Number of cycles: | 25 cycles | ¾ |
| | Voltage drop (mV) after 10th alt. 25th cycle (4 samples) .....: | 7,9mV (Max. value was recorded) | P |
| | Voltage drop (mV) after 50th alt. 100th cycle (4 samples) .....: | | N/A |
| | After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples).....: | 8,3mV (Max. value was recorded) | P |
| | After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples).....: | | N/A |
| (15.6) | Terminals external wiring | | N/A |
| | Terminal size and rating | | N/A |

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

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| (15.6.2.1) | Pull test spring-type terminals or welded connections (4 samples); pull (N) .....: | | | | | | | | | | N/A |
| | Pull test pin or tab terminals (4 samples); pull (N) .....: | | | | | | | | | | N/A |
| **(15.6.3.1)** | **TABLE: Contact resistance test** | | | | | | | | | | **N/A** |
| | Voltage drop (mV) after 1 h | | | | | | | | | | ¾ |
| terminal | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| voltage drop (mV) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Voltage drop of two inseparable joints | | | | | | | | | | N/A |
| | Voltage drop after 10th alt. 25th cycle | | | | | | | | | | N/A |
| | Max. allowed voltage drop (mV).....: | -- | | | | | | | | | ¾ |
| terminal | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| voltage drop (mV) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Voltage drop after 50th alt. 100th cycle | | | | | | | | | | N/A |
| | Max. allowed voltage drop (mV).....: | | | | | | | | | | ¾ |
| terminal | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| voltage drop (mV) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Continued ageing: voltage drop after 10th alt. 25th cycle | | | | | | | | | | N/A |
| | Max. allowed voltage drop (mV).....: | -- | | | | | | | | | ¾ |
| terminal | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| voltage drop (mV) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Continued ageing: voltage drop after 50th alt. 100th cycle | | | | | | | | | | N/A |
| | Max. allowed voltage drop (mV).....: | -- | | | | | | | | | ¾ |
| terminal | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| voltage drop (mV) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Supplementary information: -- | | | | | | | | | | | |

# Attachment No. 1



| IEC60598_2_3K - ATTACHMENT | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

**ATTACHMENT TO TEST REPORT IEC 60598-2-3**
**EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES**
Luminaires
Part 2: Particular requirements:
Section Three – Luminaires for road and street lighting

**Differences according** ..... EN 60598-2-3:2003 +A1:2011 used in conjunction with EN 60598-1:2015

| | | | |
|---|---|---|---|
| | **CENELEC COMMON MODIFICATIONS (EN)** | | ¾ |
| **3.5 (3)** | **MARKING** | | ¾ |
| 3.5 (3.3.101) | Adequate warning on the package | | N/A |
| **3.6 (4)** | **CONSTRUCTION** | | ¾ |
| 3.6 (4.11.6) | Electro-mechanical contact systems | | P |
| **3.10 (5)** | **EXTERNAL AND INTERNAL WIRING** | | ¾ |
| 3.10 (5.2.1) | Connecting leads | | N/A |
| | - without a means for connection to the supply | | N/A |
| | - terminal block specified | | N/A |
| | - relevant information provided | | N/A |
| | - compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1 | | N/A |
| 3.10 (5.2.2) | Cables equal to EN 50525 | | N/A |
| | Replace table 5.1 – Supply cord | | N/A |
| **3.12 (12)** | **ENDURANCE TEST AND THERMAL TEST** | | ¾ |
| 3.12 (12.4.2c) | Thermal test (normal operation)<br>see footnote c to table 12.2 relating to unsleeved fixed wiring | | P |
| **ZB** | **ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)** | | ¾ |
| (3.3) | DK: power supply cord with label | | N/A |
| | IT: warning label on Class 0 luminaire | | N/A |
| (4.5.1) | DK: socket-outlets | | N/A |
| (5.2.1) | CY, DK, FI, SE, GB: type of plug | | N/A |

# Attachment No. 1



| IEC60598_2_3K - ATTACHMENT | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---|---|---|
| **ZC** | **ANNEX ZC, NATIONAL DEVIATIONS (EN)** | | ¾ |
| (4 & 5) | FR: Shuttered socket-outlets 10/16A | | N/A |
| | FR: Safety requirements for high buildings<br><br>(Arrêté du 30 décembre 2011 portant règlement de sécurité pour la construction des immeubles de grande hauteur et leur protection contre les risques d'incendie et de panique; Section VIII; Article GH 48, Eclairage)<br><br>Glow-wire test for outer parts of luminaires: | | N/A |
| | - 850°C for luminaires in stairways and horizontal travel paths | | N/A |
| | - 650°C for indoor luminaires | | N/A |
| | GB: Requirements according to United Kingdom Building Regulation | | N/A |

# Attachment No. 2



| EN 62031 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

**TEST REPORT**
**EN 62031**
**LED modules for general lighting – Safety specifications**

| | | | |
|---|---|---|---|
| **4** | **GENERAL REQUIREMENTS** | | ¾ |
| 4.4 | Integral modules tested assembled in the luminaire | | P |
| 4.5 | Independent modules complies with requirements in IEC 60598-1 | | N/A |

| | | | |
|---|---|---|---|
| **5** | **GENERAL TEST REQUIREMENTS** | | ¾ |
| 5.5 | SELV-operated LED modules comply with Annex I of IEC 61347-2-13 | (see Annex 1) | N/A |
| | General conditions for tests in Annex A | (see Annex A) | P |

| | | | |
|---|---|---|---|
| **6** | **CLASSIFICATION** | | ¾ |
| | Built-in module .....: | Yes ☐ No ☒ | ¾ |
| | Independent module .....: | Yes ☐ No ☒ | ¾ |
| | Integral module .....: | Yes ☒ No ☐ | ¾ |
| | For Integral module; Note to 1.2.1 in IEC 60598-1 applies. | | ¾ |

| | | |
|---|---|---|
| **7** | **MARKING** | ¾ |
| | Requirements not applicable to the evaluated product. | **N/A** |

| | | | |
|---|---|---|---|
| **8** | **TERMINALS** | | ¾ |
| | Screw terminals according section 14 of IEC 60598-1: | | N/A |
| | Separately approved; component list | (see Annex 2) | N/A |
| | Part of the luminaire | (see Annex 3) | N/A |
| | Screwless terminals according section 15 of IEC 60598-1: | | N/A |
| | Separately approved; component list | (see Annex 2) | N/A |
| | Part of the luminaire | (see Annex 4) | N/A |
| | Connectors according IEC 60838-2-2: | | N/A |
| | Separately approved; component list | (see Annex 2) | N/A |

| EN 62031 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | |
|---|---|---|
| **9 (9)** | **PROVISION FOR PROTECTIVE EARTHING** | ¾ |
| | Requirements not applicable to the evaluated product. | N/A |

| | | |
|---|---|---|
| **10 (10)** | **PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS** | ¾ |
| | Requirements not applicable to the evaluated product. | N/A |

| | | | |
|---|---|---|---|
| **11 (11)** | **MOISTURE RESISTANCE AND INSULATION** | | ¾ |
| | After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MW): | | P |
| | For basic insulation ³ 2 MW .....: | 100MΩ | P |
| | For double or reinforced insulation ³ 4 MW .....: | | N/A |
| | Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1 | | N/A |

| | | | |
|---|---|---|---|
| **12 (12)** | **ELECTRIC STRENGTH** | | ¾ |
| | Immediately after clause 11 electric strength test for 1 min | | P |
| | Basic insulation for SELV, test voltage 500 V | | N/A |
| | Working voltage £ 50 V, test voltage 500 V | | N/A |
| | Working voltage > 50 V £ 1000 V, test voltage (V): | | P |
| | Basic insulation, 2U + 1000 V | 1640V | P |
| | Supplementary insulation, 2U + 1000 V | | N/A |
| | Double or reinforced insulation, 4U + 2000 V | | N/A |
| | 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/A |

| | | | |
|---|---|---|---|
| **13 (14)** | **FAULT CONDITIONS** | | ¾ |
| - (14) | When operated under fault conditions the controlgear: | | N/A |
| | - does not emit flames or molten material | | N/A |
| | - does not produce flammable gases | | N/A |
| | - protection against accidental contact not impaired | | N/A |
| | Thermally protected controlgear does not exceed the marked temperature value | | N/A |

| EN 62031 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected | (see appended table) | N/A |
| - (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/A |
| | Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3 | | N/A |
| - (14.2) | Short-circuit or interruption of semiconductor devices | (see appended table) | N/A |
| - (14.3) | Short-circuit across insulation consisting of lacquer, enamel or textile | (see appended table) | N/A |
| - (14.4) | Short-circuit across electrolytic capacitors | (see appended table) | N/A |
| - (14.5) | After the tests has been carried out on three samples: | | N/A |
| | The insulation resistance ³ 1 MW .....: | | N/A |
| | No flammable gases | | N/A |
| | No accessible parts have become live | | N/A |
| | During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite | | N/A |
| - (14.6) | Relevant fault condition tests with high-power supply | | ¾ |
| 13.2 | Overpower condition | | P |
| | Module withstands overpower condition >15 min. | | P |
| | Module with automatic protective device or power limiter, test performed 15 min. at limit. | | N/A |
| | No fire, smoke or flammable gas is produced | | P |
| | Molten material does not ignite tissue paper, spread below the module | | P |
| **15** | **CONSTRUCTION** | | ¾ |
| | Wood, cotton, silk, paper and similar fibrous material not used as insulation | | P |
| **16 (16)** | **CREEPAGE DISTANCES AND CLEARANCES** | | ¾ |
| - (16) | Creepage and distances and clearances in compliance with IEC 61347-1 | | N/A |
| | Insulating lining of metallic enclosures | | N/A |

| EN 62031 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Basic insulation on printed boards tested according to clause 14 | | N/A |
| | Distances subjected to both sinusoidal voltage as non-sinusoidal pulses not less than value in Table 16 | | N/A |
| | Creepage distances not less than minimum clearance | | N/A |
| 16 (-) | Conductive accessible parts in compliance with applicable parts of IEC 60598-1 | See EN 60598-2-3 TRF | P |
| **17 (17)** | **SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS** | | ¾ |
| | 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** | | ¾ |
| - (18.1) | Ball-pressure test ..... | See Test Table 18 (18.1) | N/A |
| - (18.3) | Glow-wire test (650°C) ..... | See Test Table 18 (18.3) | N/A |
| - (18.4) | Needle-flame test (10 s) ..... | See Test Table 18 (18.4) | N/A |
| - (18.5) | Proof tracking test ..... | See Test Table 18 (18.5) | N/A |
| **19 (19)** | **RESISTANCE TO CORROSION** | | ¾ |
| | - test according 4.18.1 of IEC 60598-1 | | N/A |
| | - adequate varnish on the outer surface | | N/A |
| **20** | **INFORMATION FOR LUMINAIRE DESIGN** | | ¾ |
| | Information in Annex D (informative) | | ¾ |
| **21** | **HEAT MANAGEMENT** | | ¾ |
| 21.1 | General | | N/A |
| | Exchangeability is safeguarded by cap or base | | N/A |
| 21.2 | Heat-conducting foil and paste | | N/A |
| | Heat-conducting foil delivered with the module if necessary | | N/A |
| **22** | **PHOTOBIOLOGICAL SAFETY** | | **¾** |
| **22.1** | **UV radiation** | | N/A |
| | Luminous radiation not exceed 2mW/klm | | N/A |

| EN 62031 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **22.2** | **Blue light hazard** | | **P** |
| | Assessed according to IEC TR 62778 | RG2 [for models with XP-G3 LED];<br>RG1 [for models with other LED types] | P |
| **22.3** | **Infrared radiation** | | **N/A** |
| | Requirements for infrared radiation when required | | N/A |

| | | | |
|---|---|---|---|
| **A** | **ANNEX A - TESTS** | | **¾** |
| | 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** | **¾** |
| | SELV-operated LED modules in compliance with Annex I of IEC 61347-2-13 | N/A |

| IEC TR 62778 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

**TEST REPORT**
**IEC TR 62778**

## Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires

| | | | |
|---|---|---|---|
| **7** | **MEASUREMENT INFORMATION FLOW** | | ¾ |
| **7.1** | **Basic flow** | | **P** |
| | 'Law of conservation of luminance' applied | | P |
| | Use of only true luminance/radiance values | | P |
| | In case of luminaire:<br>The light source is operated in the luminaire under similar conditions as when tested as a component | | P |
| | In case $E_{thr}$ value for RG2 was established the peak value was derived from angular light distribution | | N/A |
| **7.2** | **Conditions for the radiance measurement** | | **P** |
| | Standard condition applied<br>(200mm distance, 0,011rad field of view) | | P |
| | Non-standard condition applied | | N/A |
| **7.3** | **Special cases (I): Replacement by a lamp or LED module of another type** | | **N/A** |
| | Light source is a white light source | | N/A |
| | Evaluation done based on highest luminance | | N/A |
| | Evaluation done based on CCT value | | N/A |
| **7.4** | **Special cases (II): Arrays and clusters of primary light sources** | | **N/A** |
| | LED package is evaluated as .....: | ☐ RG0 unlimited<br>☐ RG1 unlimited | N/A |
| | $E_{thr}$ of LED package applies to array | | N/A |

| | | | |
|---|---|---|---|
| **8** | **RISK GROUP CLASSIFICATION** | | ¾ |
| | Risk group achieved: | | P |
| | -...Risk Group 0 unlimited | | N/A |
| | -...Risk Group 1 unlimited | For models with other LED types | P |
| | - $E_{thr}$ ..... (lx) :<br>Distance to reach RG1..... (m) : | 621,236 [for models with XP-G3 LED]<br>5,76 | P |

| IEC TR 62778 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

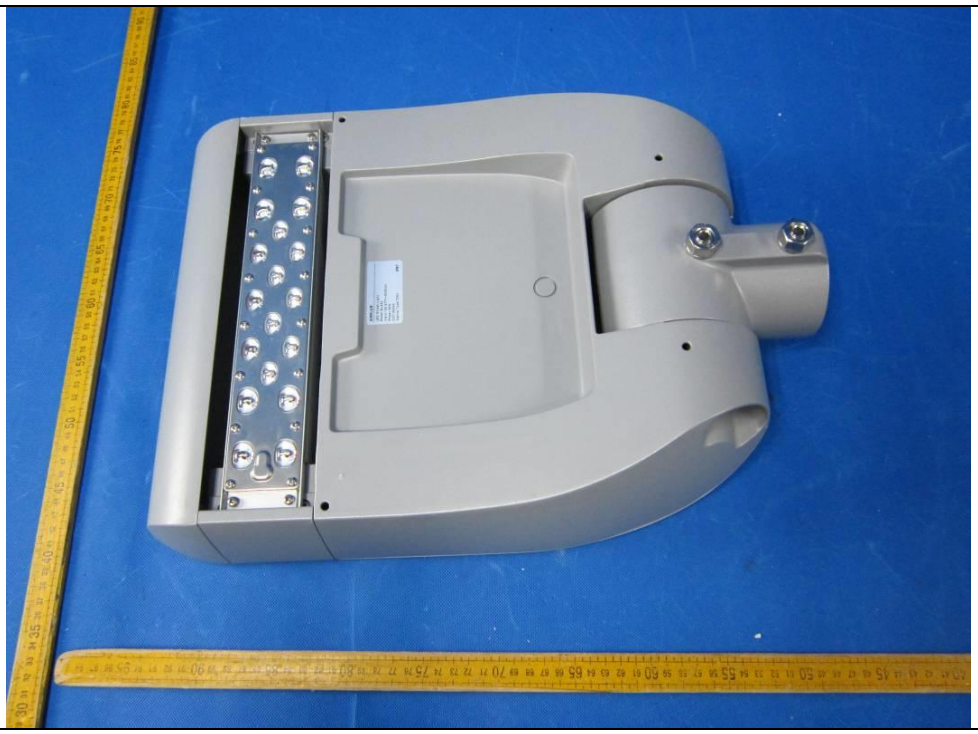
| | | | |
|---|---|---|---|
| | **TABLE: Spectroradiometric measurement** | | **P** |
| | **Measurement performed on:** | ☐ **LED package**<br>☐ **LED module**<br>☐ **Lamp**<br>☒ **Luminaires** | |
| | **Model number** | SL-SLB320 | |
| | **Test voltage (V)** | 240VAC | ¾ |
| | **Test current (mA)** | -- | ¾ |
| | **Test frequency (Hz)** | 50Hz | ¾ |
| | **Ambient, t (°C)** | 24,5°C | ¾ |
| | **Measurement distance** | ☒ 20 cm<br>☐ ... cm | ¾ |
| | **Source size** | ☒ Non-small<br>☐ Small: .... mm | ¾ |
| | **Field of view** | ☐ 100 mrad<br>☒ 11 mrad<br>☐ 1,7 mrad (for small sources) | ¾ |

| Item | Symbol | Units | Result | Remark |
|---|---|---|---|---|
| Correlated colour temperature | CCT | K | -- | -- |
| x/y colour coordinates | | -- | -- | -- |
| Blue light hazard radiance | $L_B$ | $W/(m^2 \cdot sr^1)$ | 1,51E+04 [XP-G3 LED];<br>6,24E+03 [LUXEON 5050 LED];<br>6,67E+03 [LUXEON T LED];<br>6,60E+03 [XP-G2 LED];<br>3,47E+03 [XT-E LED];<br>7,07E+03 [NICHIA LED] | RG2 [XP-G3 LED];<br>RG1 [other LED types] |
| Blue light hazard irradiance | $E_B$ | $W/m^2$ | -- | -- |
| Luminance | L | $cd/m^2$ | 1,30E+07 [XP-G3 LED];<br>3,22E+06 [LUXEON 5050 LED];<br>9,35E+06 [LUXEON T LED];<br>9,25E+06 [XP-G2 LED];<br>3,04E+06 [XT-E LED];<br>6,40E+06 [NICHIA LED] | -- |
| Illuminance | E | lx | 621,236 [XP-G3 LED] | 5,76m |
| Supplementary information: -- | | | | |

# Attachment No. 4



Details of: SL-SLA30 and SL-SLB40 front view



Details of: SL-SLA30 and SL-SLB40 back view

# Attachment No. 4



Details of: SL-SLA60 and SL-SLB80 front view

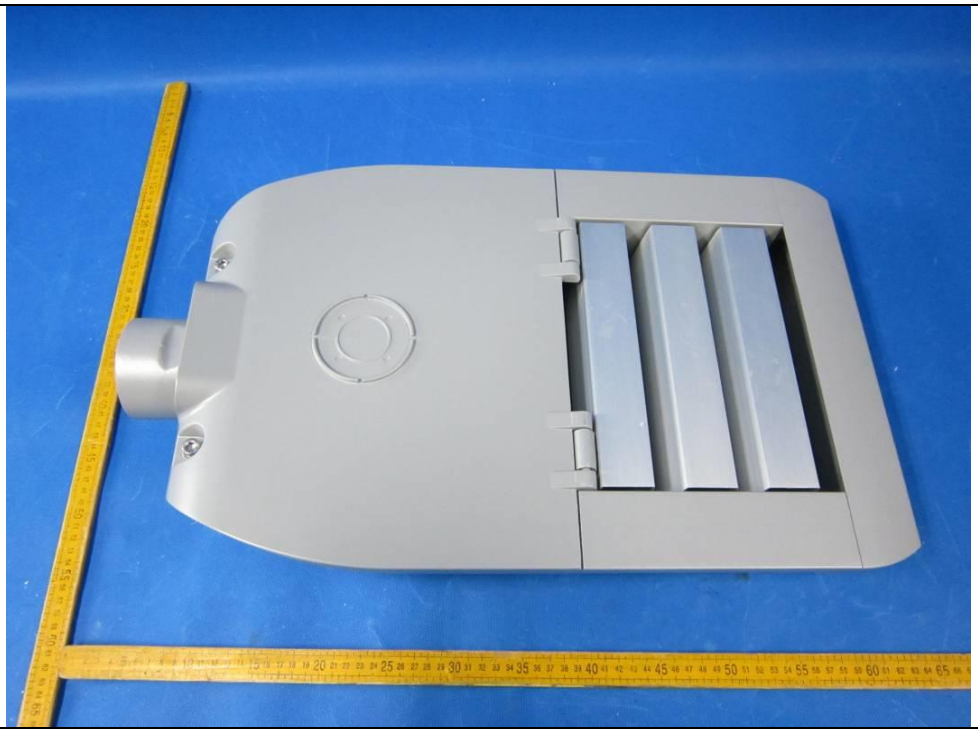
Details of: SL-SLA60 and SL-SLB80 back view

# Attachment No. 4



Details of: SL-SLA90 and SL-SLB120 front view

Details of: SL-SLA90 and SL-SLB120 back view



# Attachment No. 4



Details of: SL-SLA120 and SL-SLB160 front view

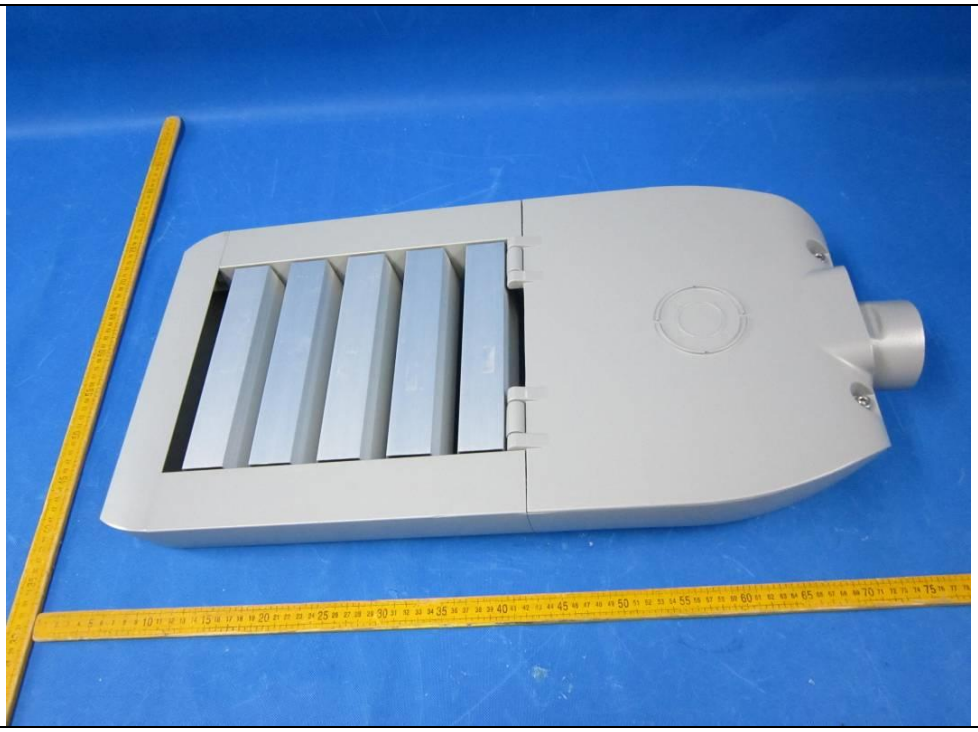
Details of: SL-SLA120 and SL-SLB160 back view

# Attachment No. 4



Details of: SL-SLA150 and SL-SLB200 front view

Details of: SL-SLA150 and SL-SLB200 back view



# Attachment No. 4



Details of: SL-SLA180 and SL-SLB240 front view

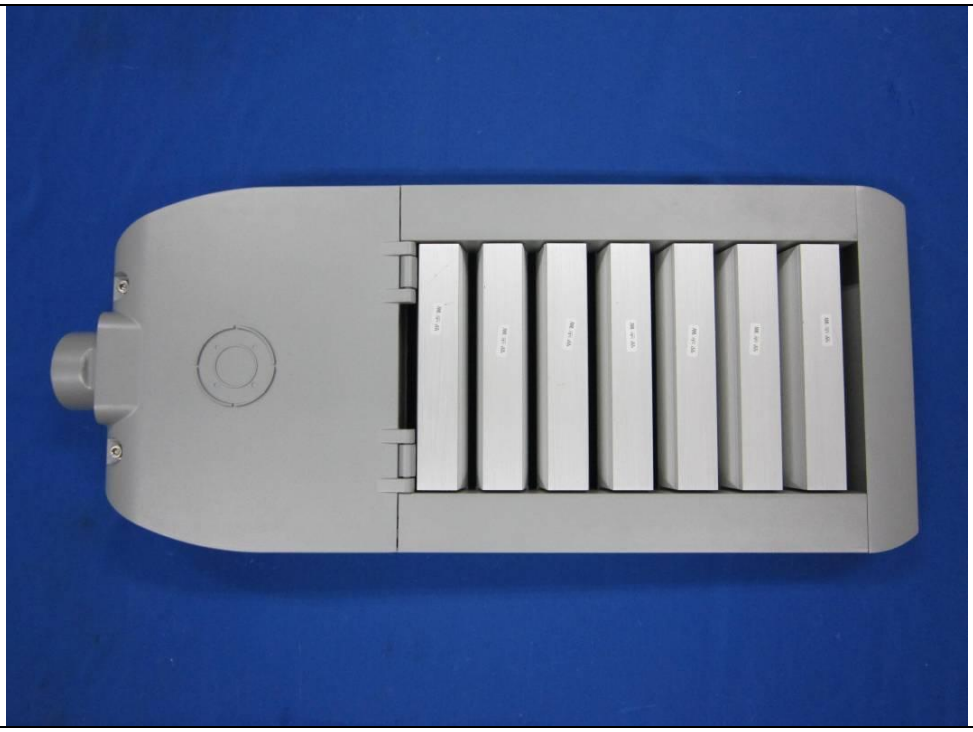
Details of: SL-SLA180 and SL-SLB240 back view

# Attachment No. 4



Details of: SL-SLA210 and SL-SLB280 front view

Details of: SL-SLA210 and SL-SLB280 back view

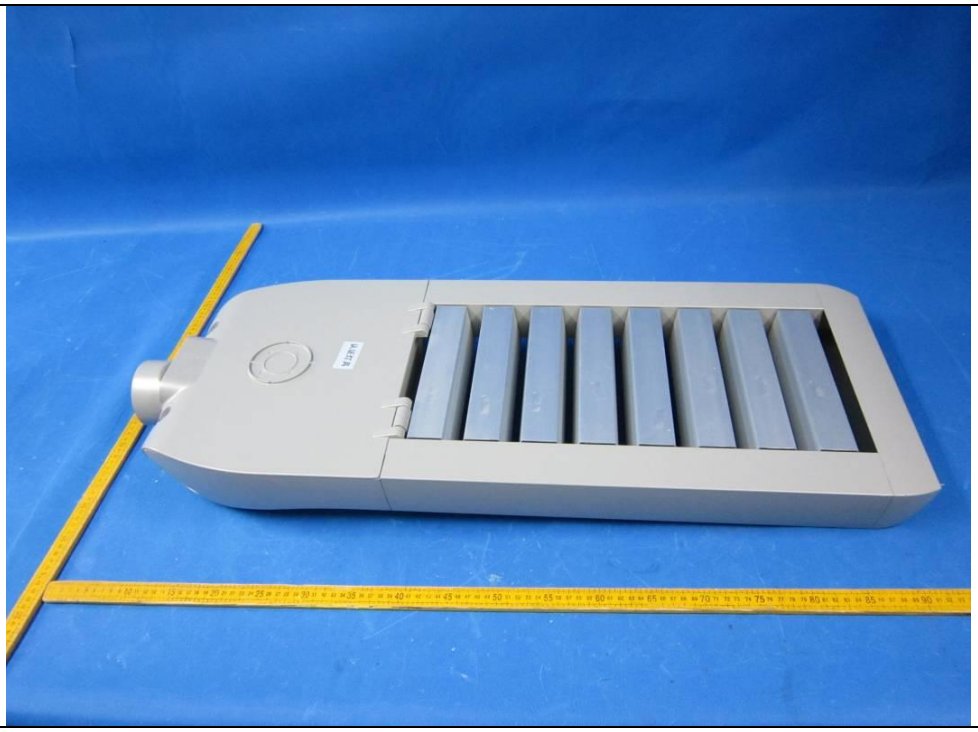


# Attachment No. 4



Details of: SL-SLA240 and SL-SLB320 front view

Details of: SL-SLA240 and SL-SLB320 back view

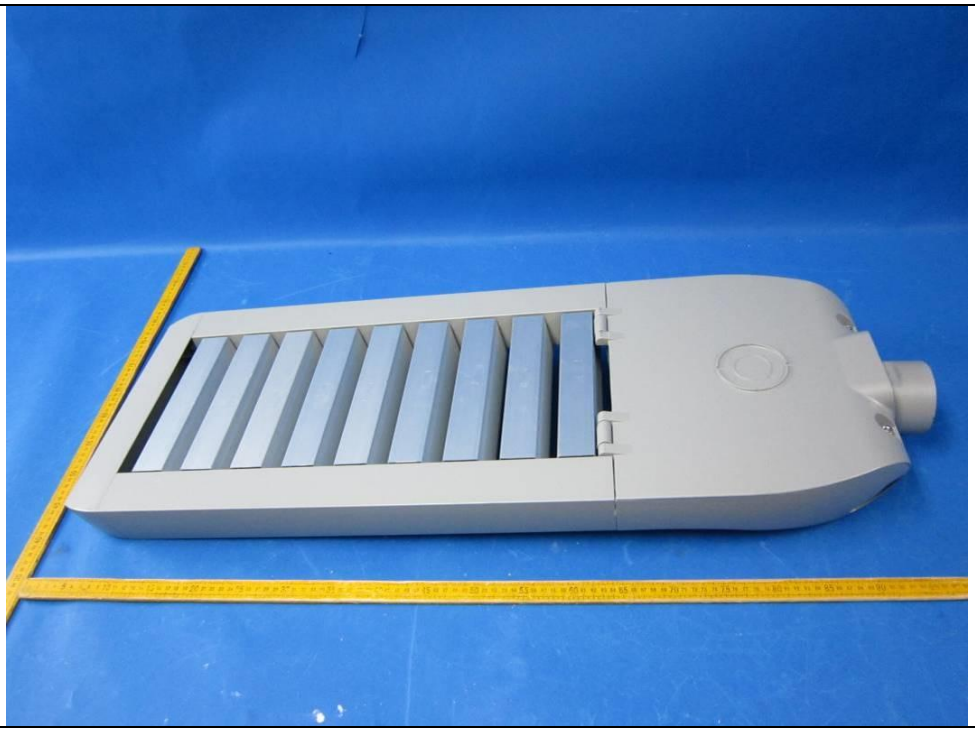


# Attachment No. 4



Details of: SL-SLA270 front view

Details of: SL-SLA270 back view

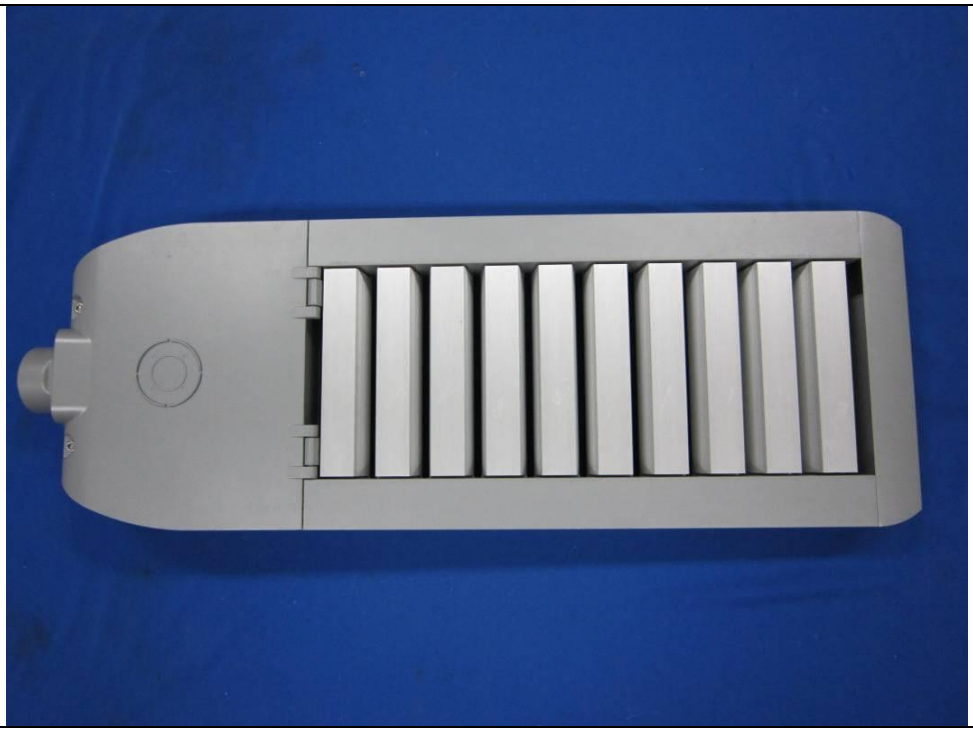


# Attachment No. 4



Details of: SL-SLA300 front view

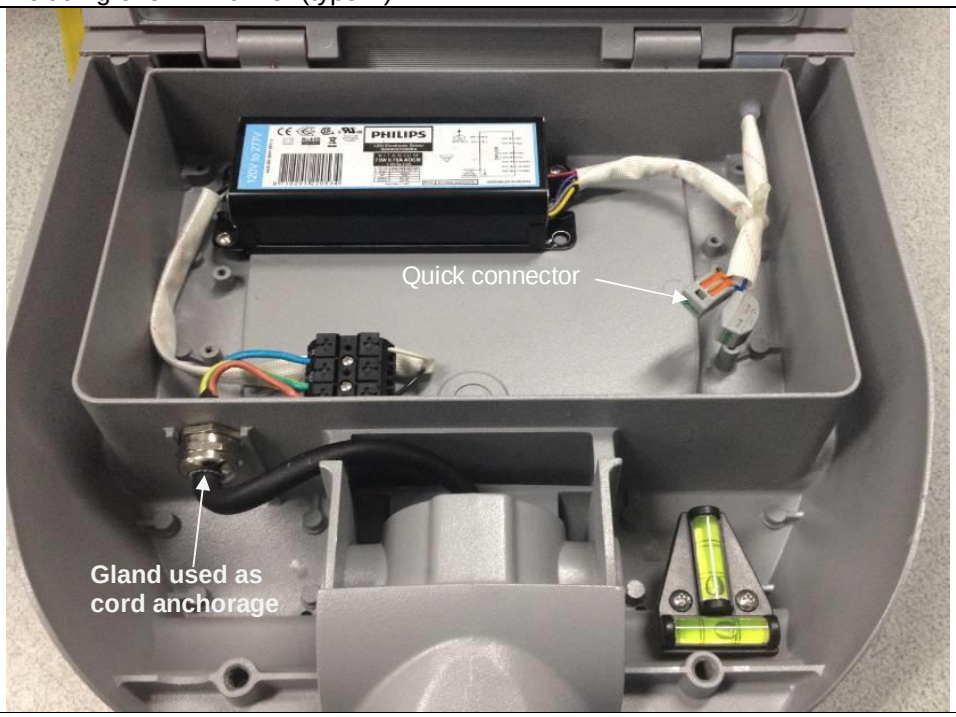
Details of: SL-SLA300 back view



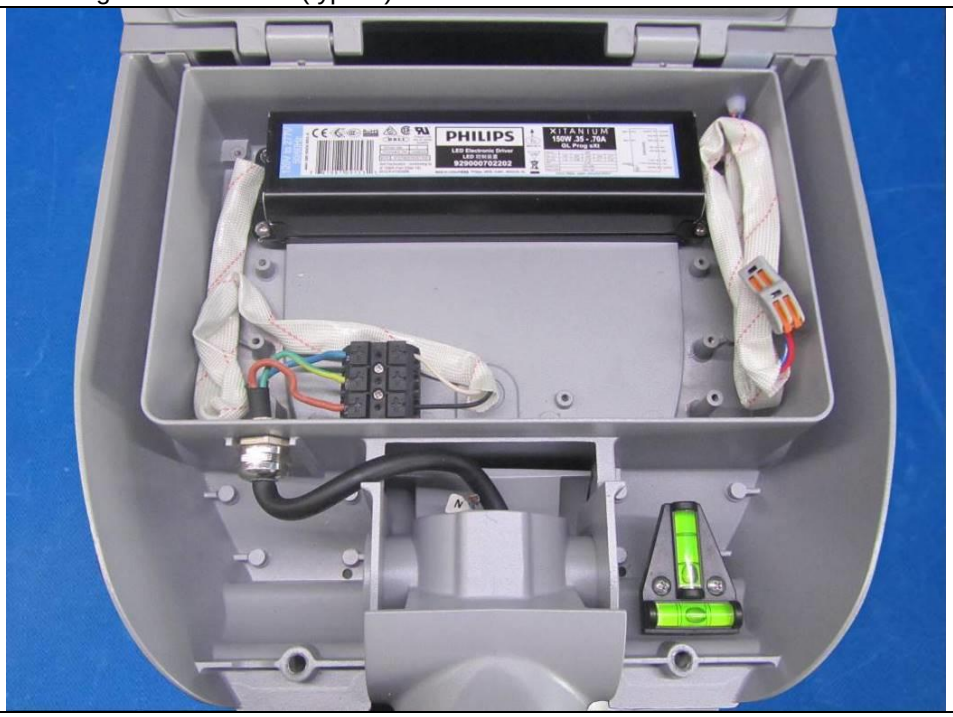
# Attachment No. 4



Details of: Internal view for models SL-SLB40 and SL-SLB80
Including one LED driver (type A)



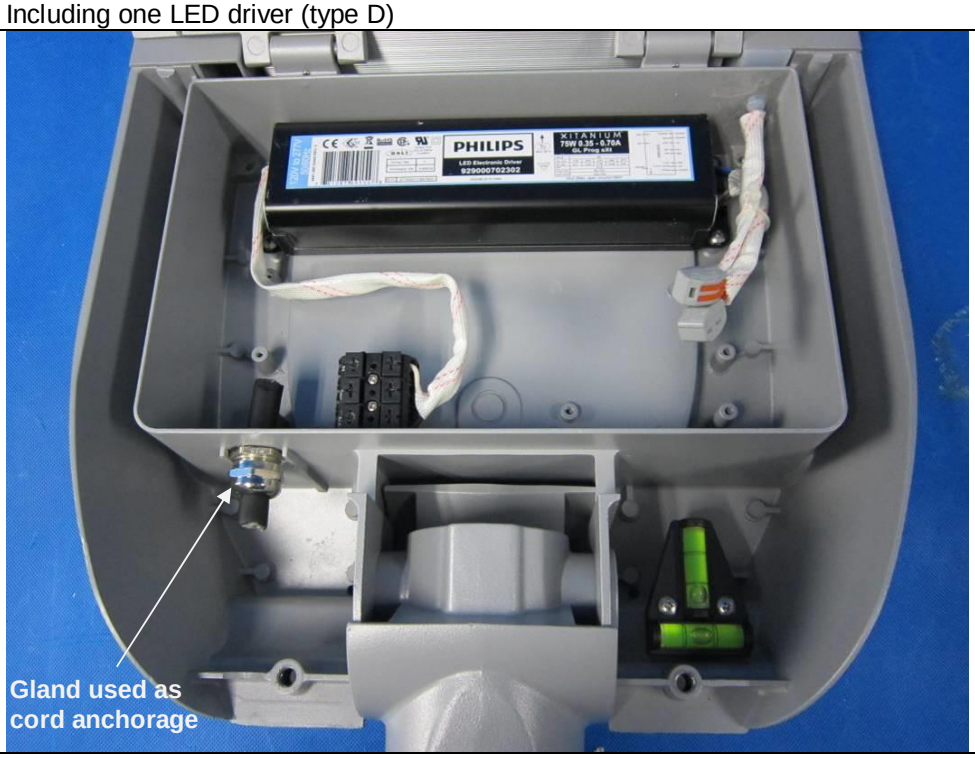

Details of: Internal view for models SL-SLA90, SL-SLA120, SL-SLA150, SL-SLB120 and SL-SLB160
Including one LED driver (type B)



# Attachment No. 4



Details of: Internal view for models SL-SLA30 and SL-SLA60
Including one LED driver (type D)

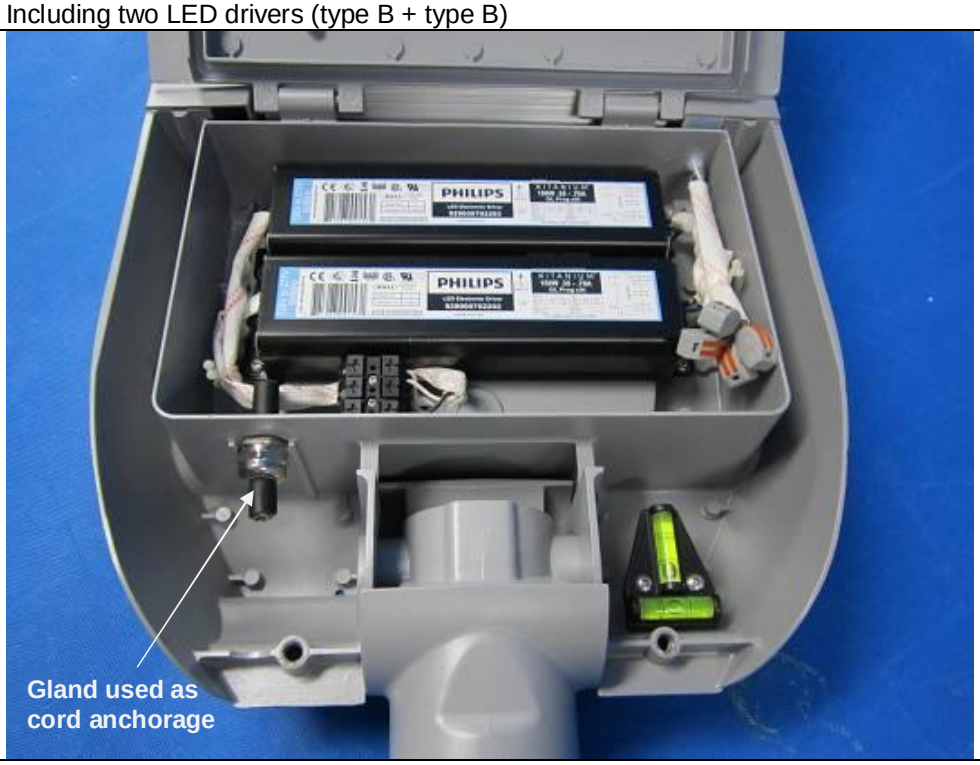



Details of: Internal view for models SL-SLA180, SL-SLA210, SL-SLB200 and SL-SLB240
Including two LED drivers (type D + type B)

# Attachment No. 4



Details of: Internal view for models SL-SLA240, SL-SLA270, SL-SLA300, SL-SLB280 and SL-SLB320
Including two LED drivers (type B + type B)




Details of: LED driver view (type A)

# Attachment No. 4



Details of: LED driver view (type B)

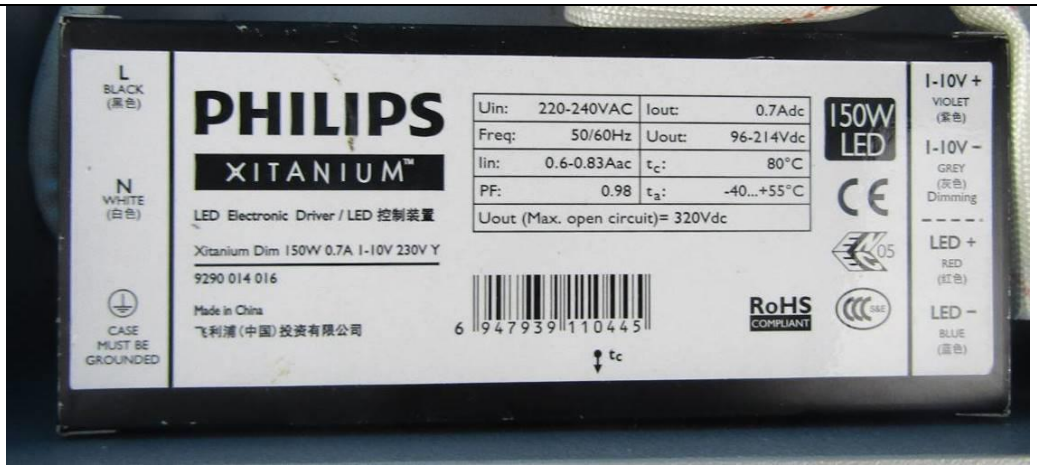

Details of: LED driver view (type D)

# Attachment No. 4



Details of: LED driver view (type E)

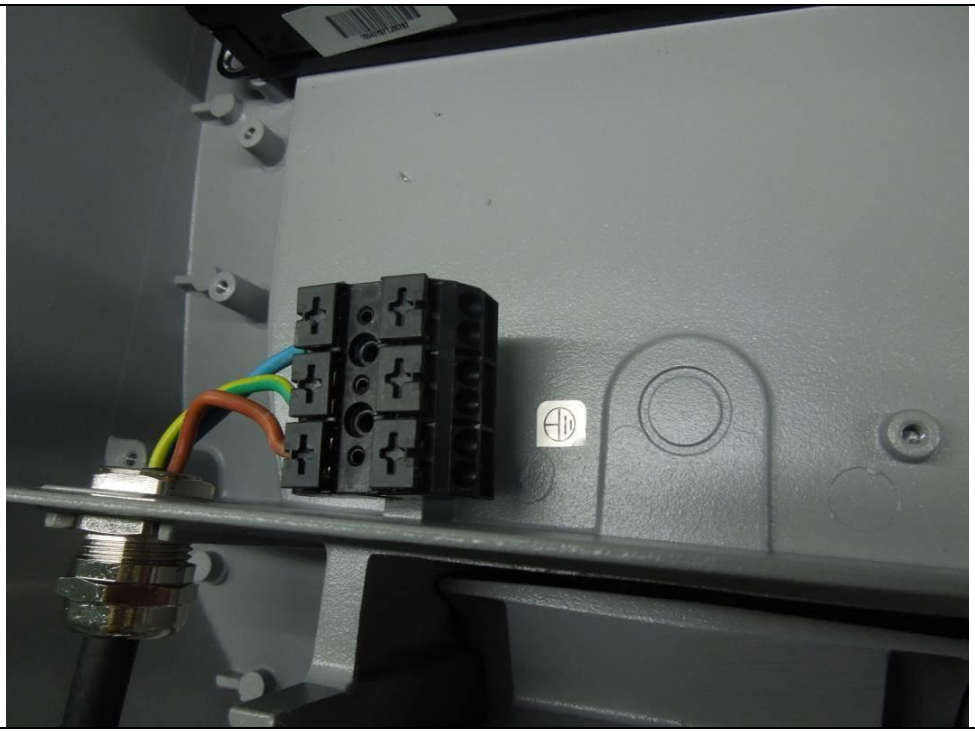

Details of: LED driver view (type F)



# Attachment No. 4



Details of: Earthing terminal view



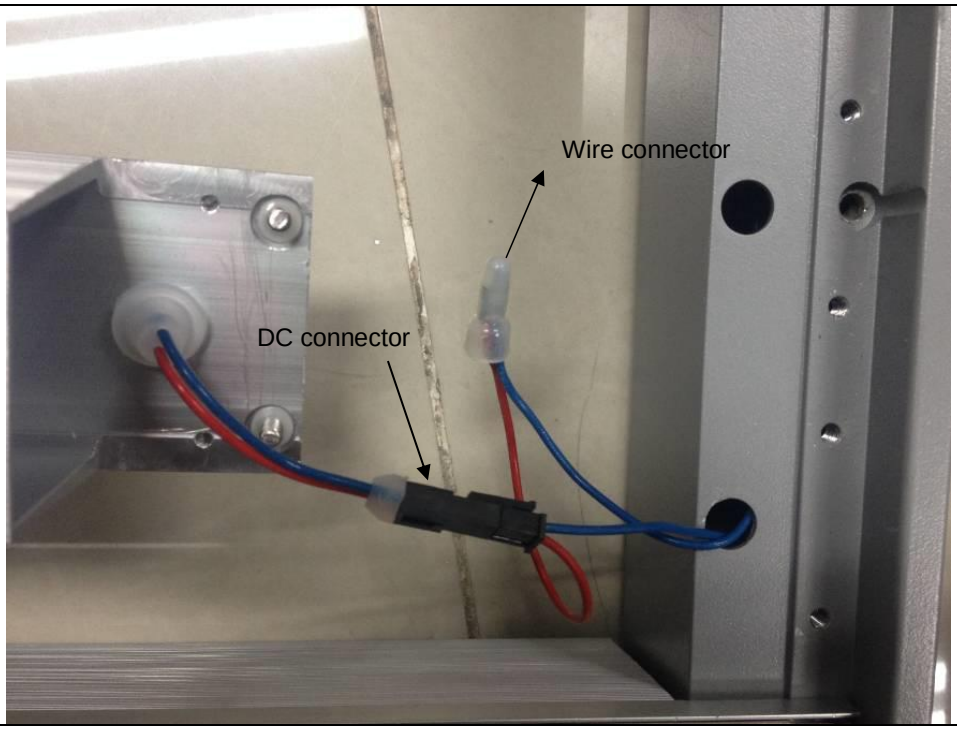
Details of: Earthing terminal internal view

Remark: the terminal block use the spring pin connect to metal enclosure.

# Attachment No. 4



Details of: Connector for LED module view

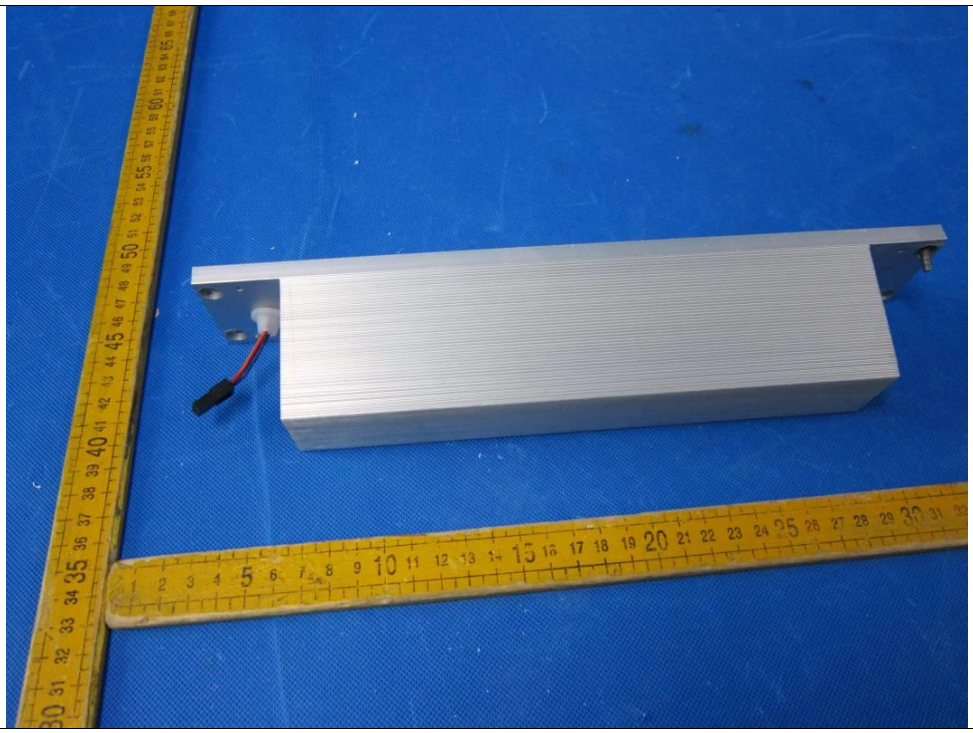



Details of: LED module view for all models

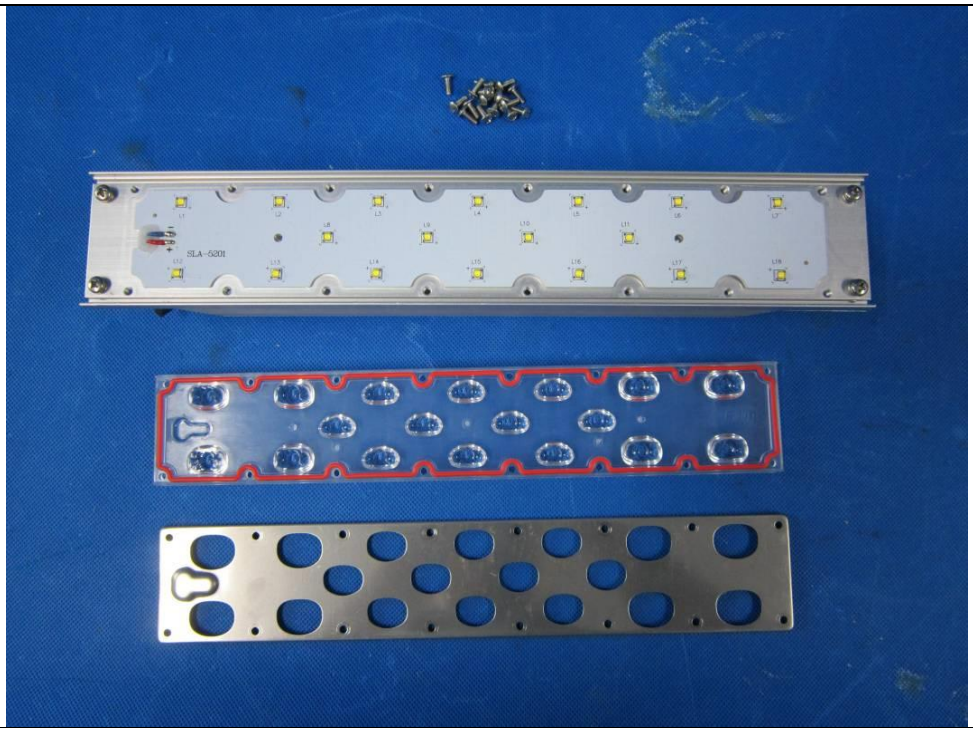
# Attachment No. 4



Details of: LED module side view for all models



Details of: LED module internal view for all models



*****End of Report*****