



Ref. Certif. No.

DE 2-026041-M1

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT  
(IECEE) CB SCHEME**CB TEST CERTIFICATE**

|   |  |
|---|--|
| Product   | LED Panel Light  |
| Name and address of the applicant   | Jiaxing Yibai Import&Export Co., Ltd.<br>Building No. 2, Henggang Village,<br>Baibu Town, Haiyan County, 314000 Jiaxing, Zhejiang, P.R.<br>China |
| Name and address of the manufacturer                                      | Jiaxing Landy OPTO Electricity Co., Ltd.<br>Building No.2 Henggang Village,<br>Baibu Town Haiyan County, Jiaxing, 314000 Zhejiang, P.R.<br>China |
| Name and address of the factory   | Jiaxing Landy OPTO Electricity Co., Ltd.<br>Building No.2 Henggang Village,<br>Baibu Town Haiyan County, Jiaxing, 314000 Zhejiang, P.R.<br>China |
| Ratings and principal characteristics                                     | AC 220-240V; 50/60Hz; ta:45°C; IP20; Class II;<br>For other ratings, see the test report.  |
| Trademark (if any)  | TENESTAR   |
| Customer's Testing Facility (CTF) Stage used                              | N/A  |
| Model / Type Ref.   | SL-BKL6060-40W-D/C; TS-BKL6060-40W; TS-BKL6060-48W;<br>TS-BKL30120-40W; TS-BKL30120-48W; TS-BKL60120-72W   |
| Additional information (if necessary may also be reported on page 2)      | -see also test report ref no. 50295797 002.<br>-Re-issue of DE 2-026041 dated 15.10.2019,<br>due to first Modification.                          |
| A sample of the product was tested and found to be in conformity with     | IEC 60598-2-2:2011<br>IEC 60598-1:2014+A1<br>for national differences see test report  |
| As shown in the Test Report Ref. No. which forms part of this Certificate | 50295797 002   |

This CB Test Certificate is issued by the National Certification Body

**TÜVRheinland**<sup>®</sup>TÜV Rheinland LGA Products GmbH  
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Date: 2020-12-30

Signature:

Dipl.-Ing. Univ. S. O. Steinke



Test Report issued under the responsibility of:



**TEST REPORT  
IEC 60598-2-2  
Luminaires  
Part 2: Particular requirements  
Section 2: Recessed luminaires**

**Report Number** .....: 50295797 002  
**Date of issue** .....: 28-12-2020  
**Total number of pages** .....: 41 Pages

**Name of Testing Laboratory preparing the Report** .....: TÜV Rheinland (Shenzhen) Co., Ltd.

**Applicant's name** .....: Jiaxing Yibai Import&Export Co., Ltd.  
**Address** .....: Building No.2 Henggang Village, Baibu Town, Haiyan County, 314000 Jiaxing, Zhejiang, P.R. China

**Test specification:**

**Standard** .....: IEC 60598-2-2:2011 used in conjunction with IEC 60598-1:2014, AMD1:2017  
**Test procedure** .....: CB Scheme  
**Non-standard test method** .....: N/A

**Test Report Form No.** .....: IEC60598\_2\_2F  
**Test Report Form(s) Originator** ....: Intertek Semko AB  
**Master TRF** .....: Dated 2017-12-21

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**This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.**

**General disclaimer:**

The test results presented in this report relate only to the object tested.  
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|   |   |  |
|---|---|--|
| <b>Test item description</b> ..... :  | LED Panel Light   |  |
| <b>Trade Mark</b> ..... :   | TENESTAR  |  |
| <b>Manufacturer</b> .....   | Jiaxing Landy OPTO Electricity Co., Ltd.<br>Building No.2 Henggang Village, Baibu Town Haiyan County,<br>Jiaxing, 314000 Zhejiang, P.R. China |  |
| <b>Model/Type reference</b> .....   | SL-BKL6060-40W-D/C, TS-BKL6060-40W, TS-BKL6060-48W,<br>TS-BKL30120-40W, TS-BKL30120-48W, TS-BKL60120-72W                                      |  |
| <b>Ratings</b> .....  | AC 220-240V, 50/60Hz, Class II, IP20, ta=45°C, details see<br>General product information.  |  |
| <b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b> |   |  |
| <input checked="" type="checkbox"/>   | <b>CB Testing Laboratory:</b>   | TÜV Rheinland (Shenzhen) Co., Ltd.   |
|   | <b>Testing location/ address</b> ..... :  | 1601 R&D Room, 1602-1604, 17-18F, Wanke Cloud City<br>Phase I, XingKe First Street, Xili Street, Xili Community,<br>Nanshan District, Shenzhen 518052, China |
|   | <b>Tested by (name, function, signature)</b> ..... :  | Martin Ma Project Engineer <i>Martin Ma</i>  |
|   | <b>Approved by (name, function, signature)</b> ... :  | Jack Li Reviewer <i>Jack Li</i>  |
| <input type="checkbox"/>  | <b>Testing procedure: CTF Stage 1:</b>  | N/A  |
|   | <b>Testing location/ address</b> ..... :  | N/A  |
|   | <b>Tested by (name, function, signature)</b> ..... :  | N/A  |
|   | <b>Approved by (name, function, signature)</b> ... :  | N/A  |
| <input type="checkbox"/>  | <b>Testing procedure: CTF Stage 2:</b>  | N/A  |
|   | <b>Testing location/ address</b> ..... :  | N/A  |
|   | <b>Tested by (name + signature)</b> .....   | N/A  |
|   | <b>Witnessed by (name, function, signature) . :</b>   | N/A  |
|   | <b>Approved by (name, function, signature)</b> ... :  | N/A  |
| <input type="checkbox"/>  | <b>Testing procedure: CTF Stage 3:</b>  | N/A  |
| <input type="checkbox"/>  | <b>Testing procedure: CTF Stage 4:</b>  | N/A  |
|   | <b>Testing location/ address</b> ..... :  | N/A  |
|   | <b>Tested by (name, function, signature)</b> ..... :  | N/A  |
|   | <b>Witnessed by (name, function, signature) . :</b>   | N/A  |
|   | <b>Approved by (name, function, signature)</b> ... :  | N/A  |
|   | <b>Supervised by (name, function, signature) :</b>  | N/A  |

**List of Attachments (including a total number of pages in each attachment):**

Attachment 1: EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES.(2 pages)

Attachment 2: Tests according to IEC 62031:2008+A1:2012+A2:2014, EN 62031:2008+A1:2013+A2:2015.(1 page)

Attachment 3: Photobiological safety of lamps and lamp systems were according to standard EN 62471:2008 and IEC TR 62778:2014.(1 page)

Attachment 4: Photo document.(7 pages)

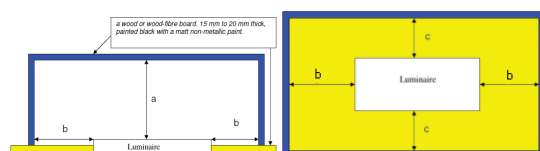
**Summary of testing:****Tests performed (name of test and test clause):**

| Clause(s)                | Test(s)   |
|--------------------------|---|
| IEC 60598-1:2014+A1:2017 |   |
| 3.4                      | Rubbing test  |
| 4.12.1                   | Screw torque test   |
| 4.13.1                   | Impact test   |
| 4.13.3                   | Straight unjointed test finger  |
| 4.14.1                   | Test for mechanical suspensions   |
| 8.2.5                    | Protection against electric shock test                                      |
| 8.2.6                    | Test for covers and other parts providing protection against electric shock |
| 9.2                      | Tests for ingress of dust, solid objects and moisture                       |
| 9.3.1                    | Humidity test   |
| 10.2.1                   | Insulation resistance test  |
| 10.2.2                   | Electric strength test  |
| 12.3.1                   | Endurance test  |
| 12.4                     | Thermal test (normal operation)   |
| 13.2                     | Ball pressure test  |
| 13.3.1                   | Needle-flame test   |

Based on 50295797 001 adding alternative models.

Full test were performed on model TS-SX-X64,  
Partial tests were performed on other models;During heating test, fix the luminaire to a ceiling,  
a box as following cover the luminaire,

a=b=c=0mm

**Testing location:****TÜV Rheinland (Shenzhen) Co., Ltd.**1601 R&D Room, 1602-1604, 17-18F, Wanke  
Cloud City Phase I, XingKe First Street, Xili Street,  
Xili Community, Nanshan District, Shenzhen  
518052, China

**Summary of compliance with National Differences:**

**List of countries addressed**

EU Group Differences


**The product fulfils the requirements of EN 60598-2-2:2012 used in conjunction with EN 60598-1:2015+A1:2018**

**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.

Label on luminaire body:


LED Panel Light  
Model: TS-SX-X64  
DC 25-42V, 1.5A, 63W



Jiaying Landy OPTO Electricity Co., Ltd.  
Building No.2 Henggang Village, Baibu Town Haiyan Country,  
Jiaying, Zhejiang 314000 P. R. China  
Importer:xxx  
Address:xxx  
MADE IN CHINA

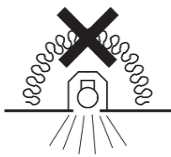
Label on packaging:

LED Panel Light  
Model: TS-SX-X64  
AC220-240V, 50/60Hz, 63W



Jiaying Landy OPTO Electricity Co., Ltd.  
Building No.2 Henggang Village, Baibu Town Haiyan Country,  
Jiaying, Zhejiang 314000 P. R. China  
Importer: xxx  
Address: xxx  
MADE IN CHINA

Below symbol was located on the front of enclosure with 25mm height



Remark:

- Above labels are only representative, other model labels are the same design, except model name and rating correspondingly.
- xxx on label means the name or address of importer.

|   |  |
|---|--|
| <b>Test item particulars</b> .....  | Recessed luminaires  |
| <b>Classification of installation and use</b> .....   | Recessed luminaires for indoor use only  |
| <b>Supply Connection</b> .....  | Supply cord  |
| .....   |  |
| <b>Possible test case verdicts:</b>   |  |
| - 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)   |
| <b>Testing</b> .....  |  |
| <b>Date of receipt of test item</b> .....   | 23-10-2020   |
| <b>Date (s) of performance of tests</b> .....   | 23-10-2020 to 20-11-2020   |
| <b>General remarks:</b>   |  |
| "(See Enclosure #)" refers to additional information appended to the report.<br>"(See appended table)" refers to a table appended to the report.  |  |
| <b>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</b>  |  |
| Clause numbers between brackets refer to clauses in IEC 60598-1   |  |
| <b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC 02:</b>   |  |
| 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 ..... | <input type="checkbox"/> <b>Yes</b><br><input checked="" type="checkbox"/> <b>Not applicable</b>   |
| <b>When differences exist; they shall be identified in the General product information section.</b>   |  |
| <b>Name and address of factory (ies)</b> .....  | Jiaxing Landy OPTO Electricity Co., Ltd.<br>Building No.2 Henggang Village, Baibu Town<br>Haiyan County, Jiaxing, 314000 Zhejiang, P.R.<br>China |

**General product information:**

Product: LED panel light

Original CB test report 50295797 001, dated 11-10-2019.

Amendment 1 Report 50311399 002:

The original test report 50295797 001, dated 11-10-2019 was modified on 28-12-2020 to include the following changes and/or additions:

(1) Adding alternative models show in below table.

(2) Alternative models information:

Rating for LED driver: AC 220-240V, 50/60Hz, constant current, Class II, SELV.

Rating for LED panel light: See below table, constant current input, IP20, ta=45°C, Class III.

- 1) The product is LED panel light (Class III) which is designed to be supplied from the approval of independent SELV constant current LED driver (Class II); the associated LED driver is connected to eh panel light through a DC connector.
- 2) All models were design for recessed mounting in ceiling.
- 3) Suitable for direct mounting on normally flammable surface, but not suitable for covering with thermally insulating material, for indoor use only.
- 4) All models have similar construction except LED type, power and LED driver.

Model list:

| Model No.          | Input rating for light part | LED Driver Model              | Size (mm)  | LED type |
|--------------------|-----------------------------|-------------------------------|------------|----------|
| SL-BKL6060-40W-D/C | DC30-42V,<br>1,0A, 42W      | DP5A048S-1000NC               | 595x595x9  | 2835;    |
| TS-BKL6060-40W     | DC33-40V,<br>0,95A, 38W     | LF-GIF040YA(H)0950H           | 595x 595x9 | 2835;    |
| TS-BKL6060-48W     | DC33-40V,<br>1,2A, 48W      | LF-GIF050YA(H)1200H           | 595x595x9  | 2835     |
| TS-BKL30120-40W    | DC33-40V,<br>0,95A, 38W     | LF-GIF040YA(H)0950H           | 295x1195x9 | 2835;    |
| TS-BKL30120-48W    | DC33-40V,<br>1,2A, 48W      | LF-GIF050YA(H)1200H           | 295x1195x9 | 2835;    |
| TS-BKL60120-72W    | DC33-40V,<br>0,9A, 36W      | LF-GIF040YA(H)0900H<br>x 2pcs | 595x1195x9 | 2835;    |



| IEC 60598-2-2    |  |   |         |
|------------------|--|---|---------|
| Clause           | Requirement + Test   | Result - Remark   | Verdict |
| <b>2.3 (0)</b>   | <b>GENERAL TEST REQUIREMENTS</b>                                   |   | P       |
| 2.3 (0.3)        | More sections applicable..... :                                    | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/><br>Section/s: | —       |
| 2.3 (0.5)        | Components   | (see Annex 1)   | —       |
| <b>2.3 (0.7)</b> | <b>Information for luminaire design in light sources standards</b> |   | —       |
| 2.3 (0.7.2)      | Light source safety standard .....                                 | IEC/EN 62031  | —       |
|                  | Luminaire design in the light source safety standard               |   | P       |

|                |   |   |   |
|----------------|---|---|---|
| <b>2.5 (2)</b> | <b>CLASSIFICATION OF LUMINAIRES</b>   |   | P |
| 2.5 (2.2)      | Type of protection .....  | Class III for light part;<br>Class II for LED driver                | P |
| 2.5 (2.3)      | Degree of protection..... :   | IP20  | — |
| 2.5 (2.4)      | Luminaire suitable for direct mounting on normally flammable surfaces ..... | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | — |
| 2.5 (2.5)      | Luminaire for normal use .....  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | — |
|                | Luminaire for rough service .....   | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | — |

|                |                                       |         |     |
|----------------|---------------------------------------|---------|-----|
| <b>2.6 (3)</b> | <b>MARKING</b>                        |         | P   |
| 2.6 (3.2)      | Mandatory markings                    |         | P   |
|                | Position of the marking               |         | P   |
|                | Format of symbols/text                |         | P   |
| 2.6 (3.3)      | Additional information                |         | P   |
|                | Language of instructions              | English | P   |
| 2.6 (3.3.1)    | Combination luminaires                |         | N/A |
| 2.6 (3.3.2)    | Nominal frequency in Hz               | 50/60Hz | P   |
| 2.6 (3.3.3)    | Operating temperature                 |         | P   |
| 2.6 (3.3.5)    | Wiring diagram                        |         | P   |
| 2.6 (3.3.6)    | Special conditions                    |         | N/A |
| 2.6 (3.3.7)    | Metal halide lamp luminaire – warning |         | N/A |
| 2.6 (3.3.8)    | Limitation for semi-luminaires        |         | N/A |
| 2.6 (3.3.9)    | Power factor and supply current       |         | N/A |
| 2.6 (3.3.10)   | Suitability for use indoors           |         | P   |
| 2.6 (3.3.11)   | Luminaires with remote control        |         | N/A |
| 2.6 (3.3.12)   | Clip-mounted luminaire – warning      |         | N/A |
| 2.6 (3.3.13)   | Specifications of protective shields  |         | N/A |

| IEC 60598-2-2 |  |                                    |         |
|---------------|--|------------------------------------|---------|
| Clause        | Requirement + Test   | Result - Remark                    | Verdict |
| 2.6 (3.3.14)  | Symbol for nature of supply  |                                    | N/A     |
| 2.6 (3.3.15)  | Rated current of socket outlet   |                                    | N/A     |
| 2.6 (3.3.16)  | Rough service luminaire  |                                    | N/A     |
| 2.6 (3.3.17)  | Mounting instruction for type Y, type Z and some type X attachments                                      | Type Y                             | P       |
| 2.6 (3.3.18)  | Non-ordinary luminaires with PVC cable   |                                    | N/A     |
| 2.6 (3.3.19)  | Protective conductor current in instruction if applicable  |                                    | N/A     |
| 2.6 (3.3.20)  | Provided with information if not intended to be mounted within arm's reach                               |                                    | N/A     |
| 2.6 (3.3.21)  | Non-replaceable and non-user replaceable light sources information provided                              | Non-user replaceable light sources | P       |
| 2.6 (3.3.22)  | Controllable luminaires, classification of insulation provided   |                                    | N/A     |
| 2.6 (3.3.23)  | Luminaire without controlgear provided with necessary information for selection of appropriate component |                                    | N/A     |
| 2.6 (3.3.24)  | If not supplied with terminal block, information on the packaging  |                                    | P       |
| 2.6 (3.4)     | Test with water  | 15s                                | P       |
|               | Test with hexane   | 15s                                | P       |
|               | Legible after test   |                                    | P       |
|               | Label attached   |                                    | P       |

|                  |  |  |            |
|------------------|--|--|------------|
| <b>2.7 (4)</b>   | <b>CONSTRUCTION</b>  |  | P          |
| 2.7 (4.2)        | Components replaceable without difficulty  |  | P          |
| 2.7 (4.3)        | Wireways smooth and free from sharp edges  |  | P          |
| <b>2.7 (4.4)</b> | <b>Lampholders</b>   |  | <b>N/A</b> |
| 2.7 (4.4.1)      | Integral lampholder  |  | N/A        |
| 2.7 (4.4.2)      | Wiring connection  |  | N/A        |
| 2.7 (4.4.3)      | Lampholder for end-to-end mounting   |  | N/A        |
| 2.7 (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) .....   |  | —          |

| IEC 60598-2-2    |  |                 |            |
|------------------|--|-----------------|------------|
| Clause           | Requirement + Test   | Result - Remark | Verdict    |
|                  | After test the lampholder have not moved from its position and show no permanent deformation |                 | N/A        |
| 2.7 (4.4.5)      | Peak pulse voltage   |                 | N/A        |
| 2.7 (4.4.6)      | Centre contact   |                 | N/A        |
| 2.7 (4.4.7)      | Parts in rough service luminaires resistant to tracking                                      |                 | N/A        |
| 2.7 (4.4.8)      | Lamp connectors  |                 | N/A        |
| 2.7 (4.4.9)      | Caps and bases correctly used  |                 | N/A        |
| 2.7 (4.4.10)     | Light source for lampholder or connection according IEC 60061 not connected another way      |                 | N/A        |
| <b>2.7 (4.5)</b> | <b>Starter holders</b>   |                 | <b>N/A</b> |
|                  | Starter holder in luminaires other than class II   |                 | N/A        |
|                  | Starter holder class II construction   |                 | N/A        |
| <b>2.7 (4.6)</b> | <b>Terminal blocks</b>   |                 | <b>N/A</b> |
|                  | Tails  |                 | N/A        |
|                  | Unsecured blocks   |                 | N/A        |
| <b>2.7 (4.7)</b> | <b>Terminals and supply connections</b>  |                 | <b>P</b>   |
| 2.7 (4.7.1)      | Contact to metal parts   |                 | N/A        |
| 2.7 (4.7.2)      | Test 8 mm live conductor   |                 | N/A        |
|                  | Test 8 mm earth conductor  |                 | N/A        |
| 2.7 (4.7.3)      | Terminals for supply conductors  |                 | P          |
| 2.7 (4.7.3.1)    | Welded method and material   |                 | N/A        |
|                  | - stranded or solid conductor  |                 | N/A        |
|                  | - spot welding   |                 | N/A        |
|                  | - welding between wires  |                 | N/A        |
|                  | - Type Z attachment  |                 | N/A        |
|                  | - mechanical test according to 15.6.2  |                 | N/A        |
|                  | - electrical test according to 15.6.3  |                 | N/A        |
|                  | - heat test according to 15.6.3.2.3 and 15.6.3.2.4   |                 | N/A        |
| 2.7 (4.7.4)      | Terminals other than supply connection   |                 | N/A        |
| 2.7 (4.7.5)      | Heat-resistant wiring/sleeves  |                 | N/A        |
| 2.7 (4.7.6)      | Multi-pole plug  |                 | N/A        |
|                  | - test at 30 N   |                 | N/A        |
| <b>2.7 (4.8)</b> | <b>Switches</b>  |                 | <b>N/A</b> |
|                  | - adequate rating  |                 | N/A        |
|                  | - adequate fixing  |                 | N/A        |

| <b>IEC 60598-2-2</b> |  |                      |            |
|----------------------|--|----------------------|------------|
| Clause               | Requirement + Test   | Result - Remark      | Verdict    |
|                      | - polarized supply   |                      | N/A        |
|                      | - compliance with IEC 61058-1 for electronic switches  |                      | N/A        |
| <b>2.7 (4.9)</b>     | <b>Insulating lining and sleeves</b>   |                      | <b>P</b>   |
| 2.7 (4.9.1)          | Retainment   | Heat-shrinkable tube | P          |
|                      | Method of fixing .....   |                      | P          |
| 2.7 (4.9.2)          | Insulated linings and sleeves:   |                      | P          |
|                      | Resistant to a temperature > 20 °C to the wire temperature or  |                      | P          |
|                      | a) & c) Insulation resistance and electric strength  |                      | N/A        |
|                      | b) Ageing test. Temperature (°C) .....   |                      | P          |
| <b>2.7 (4.10)</b>    | <b>Double or reinforced insulation</b>   |                      | <b>N/A</b> |
| 2.7 (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        |
| 2.7 (4.10.2)         | Assembly gaps:   |                      | N/A        |
|                      | - not coincidental   |                      | N/A        |
|                      | - no straight access with test probe   |                      | N/A        |
| 2.7 (4.10.3)         | Retainment of insulation:  |                      | N/A        |
|                      | - fixed  |                      | N/A        |
|                      | - unable to be replaced; luminaire inoperative   |                      | N/A        |
|                      | - sleeves retained in position   |                      | N/A        |
|                      | - lining in lampholder   |                      | N/A        |
| 2.7 (4.10.4)         | Protective impedance device  |                      | N/A        |
|                      | Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor |                      | N/A        |
|                      | Y1 or Y2 capacitors comply with IEC 60384-14   |                      | N/A        |
|                      | Resistors comply with test (a) in 14.1 of IEC 60065  |                      | N/A        |
| <b>2.7 (4.11)</b>    | <b>Electrical connections and current-carrying parts</b>   |                      | <b>P</b>   |
| 2.7 (4.11.1)         | Contact pressure   |                      | P          |
| 2.7 (4.11.2)         | Screws:  |                      | N/A        |
|                      | - self-tapping screws  |                      | N/A        |

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|-------------------|---|--|----------|
| Clause            | Requirement + Test                                    | Result - Remark                                    | Verdict  |
|                   | - thread-cutting screws                               |  | N/A      |
| 2.7 (4.11.3)      | Screw locking:  |  | N/A      |
|                   | - spring washer                                       |  | N/A      |
|                   | - rivets  |  | N/A      |
| 2.7 (4.11.4)      | Material of current-carrying parts                    |  | P        |
| 2.7 (4.11.5)      | No contact to wood or mounting surface                |  | P        |
| 2.7 (4.11.6)      | Electro-mechanical contact systems                    |  | P        |
| <b>2.7 (4.12)</b> | <b>Screws and connections (mechanical) and glands</b> |  | <b>P</b> |
| 2.7 (4.12.1)      | Screws not made of soft metal                         |  | P        |
|                   | Screws of insulating material                         |  | N/A      |
|                   | Torque test: torque (Nm); part..... :                 | Fixed enclosure for model TS-SX-X64: 3,14mm, 0,6Nm | P        |
|                   | Torque test: torque (Nm); part..... :                 |  | N/A      |
|                   | Torque test: torque (Nm); part..... :                 |  | N/A      |
| 2.7 (4.12.2)      | Screws with diameter < 3 mm screwed into metal        |  | N/A      |
| 2.7 (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      |
| 2.7 (4.12.5)      | Screwed glands; force (Nm)..... :                     |  | N/A      |
| <b>2.7 (4.13)</b> | <b>Mechanical strength</b>                            |  | <b>P</b> |
| 2.7 (4.13.1)      | Impact tests:   |  | P        |
|                   | - fragile parts; energy (Nm) .....                    |  | N/A      |
|                   | - other parts; energy (Nm)..... :                     | Translucent cover and metal enclosure: 0,35Nm      | P        |
|                   | 1) live parts   |  | N/A      |
|                   | 2) linings  |  | N/A      |
|                   | 3) protection   |  | P        |
|                   | 4) covers   |  | P        |
| 2.7 (4.13.2)      | Metal parts have adequate mechanical strength         |  | P        |
| 2.7 (4.13.3)      | Straight test finger                                  |  | P        |
| 2.7 (4.13.4)      | Rough service luminaires                              |  | N/A      |
|                   | - IP54 or higher                                      |  | N/A      |
|                   | a) fixed  |  | N/A      |
|                   | b) hand-held  |  | N/A      |

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|-------------------|---|----------------------------------|----------|
| Clause            | Requirement + Test  | Result - Remark                  | Verdict  |
|                   | c) delivered with a stand   |                                  | N/A      |
|                   | d) for temporary installations and suitable for mounting on a stand |                                  | N/A      |
| 2.7 (4.13.6)      | Tumbling barrel   |                                  | N/A      |
| <b>2.7 (4.14)</b> | <b>Suspensions, fixings and means of adjusting</b>                  |                                  | <b>P</b> |
| 2.7 (4.14.1)      | Mechanical load:  |                                  | P        |
|                   | A) four times the weight  | TS-BKL60120-72W:<br>4x3,0Kg=12Kg | 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      |
| 2.7 (4.14.2)      | Load to flexible cables   |                                  | N/A      |
|                   | Mass (kg) .....   |                                  | —        |
|                   | Stress in conductors (N/mm <sup>2</sup> ) .....                     |                                  | N/A      |
|                   | Mass (kg) of semi-luminaire .....                                   |                                  | N/A      |
|                   | Bending moment (Nm) of semi-luminaire .....                         |                                  | N/A      |
| 2.7 (4.14.3)      | Adjusting devices:  |                                  | N/A      |
|                   | - flexing test; number of cycles..... :                             |                                  | N/A      |
|                   | - strands broken .....  |                                  | N/A      |
|                   | - electric strength test afterwards                                 |                                  | N/A      |
| 2.7 (4.14.4)      | Telescopic tubes: cords not fixed to tube; no strain on conductors  |                                  | N/A      |
| 2.7 (4.14.5)      | Guide pulleys   |                                  | N/A      |
| 2.7 (4.14.6)      | Strain on socket-outlets  |                                  | N/A      |
| <b>2.7 (4.15)</b> | <b>Flammable materials</b>  |                                  | <b>P</b> |
|                   | - glow-wire test 650°C .....  | See Test Table 2.16 (13.3.2)     | P        |
|                   | - spacing ≥30 mm  |                                  | N/A      |
|                   | - screen withstanding test of 13.3.1                                |                                  | N/A      |
|                   | - screen dimensions   |                                  | N/A      |
|                   | - no fiercely burning material                                      |                                  | P        |
|                   | - thermal protection  |                                  | N/A      |

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| Clause            | Requirement + Test   | Result - Remark              | Verdict    |
|                   | - electronic circuits exempted   |                              | N/A        |
| 2.7 (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        |
| <b>2.7 (4.16)</b> | <b>Luminaires for mounting on normally flammable surfaces</b>  |                              | <b>P</b>   |
|                   | No lamp control gear ..... :   | (compliance with Section 12) | N/A        |
|                   | Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces |                              | N/A        |
| 2.7 (4.16.1)      | Lamp control gear spacing:   |                              | N/A        |
|                   | - spacing 35 mm  |                              | N/A        |
|                   | - spacing 10 mm  |                              | N/A        |
| 2.7 (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        |
| 2.7 (4.16.3)      | Design to satisfy the test of 12.6   | (see clause 12.6)            | N/A        |
| <b>2.7 (4.17)</b> | <b>Drain holes</b>   |                              | <b>N/A</b> |
|                   | Clearance at least 5 mm  |                              | N/A        |
| <b>2.7 (4.18)</b> | <b>Resistance to corrosion</b>   |                              | <b>N/A</b> |
| 2.7 (4.18.1)      | - rust-resistance  |                              | N/A        |
| 2.7 (4.18.2)      | - season cracking in copper  |                              | N/A        |
| 2.7 (4.18.3)      | - corrosion of aluminium   |                              | N/A        |
| 2.7 (4.19)        | Ignitors compatible with ballast   |                              | N/A        |
| 2.7 (4.20)        | Rough service vibration  |                              | N/A        |
| <b>2.7 (4.21)</b> | <b>Protective shield</b>   |                              | <b>N/A</b> |
| 2.7 (4.21.1)      | Shield fitted if tungsten halogen lamps or metal halide lamps  |                              | N/A        |
|                   | Shield of glass if tungsten halogen lamps  |                              | N/A        |
| 2.7 (4.21.2)      | Particles from a shattering lamp not impair safety   |                              | N/A        |
| 2.7 (4.21.3)      | No direct path   |                              | N/A        |
| 2.7 (4.21.4)      | Impact test on shield  |                              | N/A        |
|                   | Glow-wire test on lamp compartment..... :  | See Test Table 2.16 (13.3.2) | N/A        |

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| Clause            | Requirement + Test   | Result - Remark | Verdict    |
| 2.7 (4.22)        | Attachments to lamps not cause overheating or damage   |                 | N/A        |
| 2.7 (4.23)        | Semi-luminaires comply Class II  |                 | N/A        |
| <b>2.7 (4.24)</b> | <b>Photobiological hazards</b>   |                 | <b>P</b>   |
| 2.7 (4.24.1)      | No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)   |                 | N/A        |
| 2.7 (4.24.2)      | Retinal blue light hazard  |                 | P          |
|                   | Class of risk group assessed according to IEC/TR 62778 .....   | RG0             | —          |
|                   | Luminaires with $E_{thr}$ :  |                 | N/A        |
|                   | a) Fixed luminaires  |                 | N/A        |
|                   | - distance x m, borderline between RG1 and RG2 .. :  |                 | N/A        |
|                   | - marking and instruction according 3.2.23   |                 | N/A        |
|                   | 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        |
| <b>2.7 (4.25)</b> | <b>Mechanical hazard</b>   |                 | <b>P</b>   |
|                   | No sharp point or edges  |                 | P          |
| <b>2.7 (4.26)</b> | <b>Short-circuit protection</b>  |                 | <b>N/A</b> |
| 2.7 (4.26.1)      | Adequate means of uninsulated accessible SELV parts  |                 | N/A        |
| 2.7 (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        |
| <b>2.7 (4.27)</b> | <b>Terminal blocks with integrated screwless earthing contacts</b>   |                 | <b>N/A</b> |
|                   | Test according Annex V   |                 | N/A        |
|                   | Pull test of terminal fixing (20 N)  |                 | N/A        |
|                   | After test, resistance < 0,05 $\Omega$   |                 | N/A        |
|                   | Pull test of mechanical connection (50 N)  |                 | N/A        |
|                   | After test, resistance < 0,05 $\Omega$   |                 | N/A        |
|                   | Voltage drop test, resistance < 0,05 $\Omega$  |                 | N/A        |
| <b>2.7 (4.28)</b> | <b>Fixing of thermal sensing control</b>   |                 | <b>N/A</b> |
|                   | Not plug-in or easily replaceable type   |                 | N/A        |



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| Clause              | Requirement + Test  | Result - Remark | Verdict    |
|                     | 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        |
| <b>2.7 (4.29)</b>   | <b>Luminaires with non-replaceable light source</b>   |                 | <b>N/A</b> |
|                     | Not possible to replace light source  |                 | N/A        |
|                     | Live part not accessible after parts have been opened by hand or tools  |                 | N/A        |
| <b>2.7 (4.30)</b>   | <b>Luminaires with non-user replaceable light source</b>  |                 | <b>P</b>   |
|                     | If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:  |                 | N/A        |
|                     | Minimum two fixing means  |                 | P          |
| <b>2.7 (4.31)</b>   | <b>Insulation between circuits</b>  |                 | <b>P</b>   |
|                     | 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        |
| <b>2.7 (4.31.1)</b> | <b>SELV circuits</b>  |                 | <b>P</b>   |
|                     | Used SELV source  |                 | P          |
|                     | Voltage ≤ ELV   |                 | P          |
|                     | Insulating of SELV circuits from LV supply  |                 | P          |
|                     | Insulating of SELV circuits from other non SELV circuits  |                 | P          |
|                     | Insulating of SELV circuits from FELV   |                 | P          |
|                     | Insulating of SELV circuits from other SELV circuits  |                 | P          |
|                     | SELV circuits insulated from accessible parts according Table X.1   |                 | P          |
|                     | 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        |

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|-------------------|--|-----------------|------------|
| Clause            | Requirement + Test   | Result - Remark | Verdict    |
| 2.7 (4.31.2)      | FELV circuits  |                 | N/A        |
|                   | Used FELV source   |                 | N/A        |
|                   | Voltage $\leq$ 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        |
| 2.7 (4.31.3)      | Other circuits   |                 | N/A        |
|                   | Other circuits insulated from accessible parts according Table X.1   |                 | N/A        |
|                   | 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   |                 | 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        |
| <b>2.7 (4.32)</b> | <b>Overvoltage protective devices</b>  |                 | <b>N/A</b> |
|                   | 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        |

|                 |  |   |     |
|-----------------|--|---|-----|
| <b>2.8 (11)</b> | <b>CREEPAGE DISTANCES AND CLEARANCES</b>   |   | N/A |
| 2.8 (11.2.1)    | Impulse withstand category (Normal category II)  | Category II <input type="checkbox"/> Category III <input type="checkbox"/><br>Approved LED driver, SELV for luminaire part, Max. 55V d.c. | —   |
|                 | Category III according Annex U   |   | N/A |
|                 | Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1 |   | N/A |

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|---------------|---|------------------------------|---------|
| Clause        | Requirement + Test  | Result - Remark              | Verdict |
| 2.8 (11.2.2)  | Creepage distances for frequency up to 30 kHz   | See Test Table 2.8 (11.2) I  | N/A     |
|               | Creepage distances for frequency over 30 kHz:   |                              | N/A     |
|               | - Controlgear marked with $\hat{U}_{OUT}$ and $f_{OUT}$ according IEC 61347-1, clause 7.1, item w | See Test Table 2.8 (11.2) II | N/A     |
|               | - Requirements according IEC 60664-4 for controlgear not covered by IEC 61347                     | See Test Table 2.8 (11.2) II | N/A     |
| 2.8 (11.2.3)  | Clearances for frequency up to 30 kHz   | See Test Table 2.8 (11.2) I  | N/A     |
|               | Clearances distances for frequency over 30 kHz:   |                              | N/A     |
|               | - Controlgear marked with $U_P$   | See Test Table 2.8 (11.2) II | N/A     |
|               | - Requirements according IEC 60664-4 for controlgear not covered by IEC 61347                     | See Test Table 2.8 (11.2) II | N/A     |

|                     |  |  |     |
|---------------------|--|--|-----|
| <b>2.9 (7)</b>      | <b>PROVISION FOR EARTHING</b>  |  | N/A |
| 2.9 (7.2.1 + 7.2.3) | Accessible metal parts   |  | N/A |
|                     | Metal parts in contact with supporting surface                                       |  | N/A |
|                     | Resistance < 0,5 $\Omega$ ..... :  |  | N/A |
|                     | Self-tapping screws used   |  | N/A |
|                     | Thread-forming screws  |  | N/A |
|                     | Thread-forming screw used in a groove  |  | N/A |
|                     | Earth makes contact first  |  | N/A |
|                     | Terminal blocks with integrated screwless earthing contacts tested according Annex V |  | N/A |
|                     | Protective earthing of the luminaire not via built-in control gear                   |  | N/A |
| 2.9 (7.2.2 + 7.2.3) | Earth continuity in joints, etc.   |  | N/A |
| 2.9 (7.2.4)         | Locking of clamping means  |  | N/A |
|                     | Compliance with 4.7.3  |  | N/A |
|                     | Terminal blocks with integrated screwless earthing contacts tested according Annex V |  | N/A |
| 2.9 (7.2.5)         | Earth terminal integral part of connector socket                                     |  | N/A |
| 2.9 (7.2.6)         | Earth terminal adjacent to mains terminals   |  | N/A |
| 2.9 (7.2.7)         | Electrolytic corrosion of the earth terminal   |  | N/A |
| 2.9 (7.2.8)         | Material of earth terminal   |  | N/A |
|                     | Contact surface bare metal   |  | N/A |
| 2.9 (7.2.10)        | Class II luminaire for looping-in  |  | N/A |
|                     | Double or reinforced insulation to functional earth                                  |  | N/A |

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| Clause            | Requirement + Test  | Result - Remark       | Verdict  |
| 2.9 (7.2.11)      | Earthing core coloured green-yellow   |                       | N/A      |
|                   | Length of earth conductor   |                       | N/A      |
| <b>2.10 (14)</b>  | <b>SCREW TERMINALS</b>  |                       | N/A      |
|                   | Separately approved; component list   | (see Annex 1)         | N/A      |
|                   | Part of the luminaire   | (see Annex 3)         | N/A      |
| <b>2.10 (15)</b>  | <b>SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS</b>   |                       | N/A      |
|                   | Separately approved; component list..... :  | (see Annex 1)         | N/A      |
|                   | Part of the luminaire .....   | (see Annex 4)         | N/A      |
| <b>2.11 (5)</b>   | <b>EXTERNAL AND INTERNAL WIRING</b>   |                       | P        |
| <b>2.11 (5.2)</b> | <b>Supply connection and external wiring</b>  |                       | <b>P</b> |
| 2.11 (5.2.1)      | Means of connection .....   | Supply cord           | P        |
|                   | Outdoor luminaire has not PVC insulated external wiring if not class III or SELV $\leq 25$ V a.c./60 V d.c. or protected from outdoor environment |                       | N/A      |
| 2.11 (5.2.2)      | Type of cable .....   | H03VVH2-F             | P        |
|                   | Nominal cross-sectional area (mm <sup>2</sup> ) .....   | 2x0,75mm <sup>2</sup> | P        |
|                   | Cables equal to IEC 60227 or IEC 60245  |                       | P        |
| 2.11 (5.2.3)      | Type of attachment, X, Y or Z   | Type Y                | P        |
| 2.11 (5.2.5)      | Type Z not connected to screws  |                       | N/A      |
| 2.11 (5.2.6)      | Cable entries:  |                       | P        |
|                   | - suitable for introduction   |                       | P        |
|                   | - adequate degree of protection   |                       | P        |
| 2.11 (5.2.7)      | Cable entries through rigid material have rounded edges   |                       | P        |
| 2.11 (5.2.8)      | Insulating bushings:  |                       | N/A      |
|                   | - 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      |
| 2.11 (5.2.9)      | Locking of screwed bushings   |                       | N/A      |
| 2.11 (5.2.10)     | Cord anchorage:   |                       | P        |
|                   | - covering protected from abrasion  |                       | P        |

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|--------------------|--|--------------------------------------|---------|
| Clause             | Requirement + Test                                       | Result - Remark                      | Verdict |
|                    | - clear how to be effective                              |                                      | P       |
|                    | - no mechanical or thermal stress                        |                                      | P       |
|                    | - no tying of cables into knots etc.                     |                                      | P       |
|                    | - insulating material or lining                          |                                      | P       |
| 2.11<br>(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     |
| 2.11<br>(5.2.10.2) | Adequate cord anchorage for type Y and type Z attachment | Type Y                               | N/A     |
| 2.11<br>(5.2.10.3) | Tests:   |                                      | P       |
|                    | - impossible to push cable; unsafe                       |                                      | P       |
|                    | - pull test: 25 times; pull (N) .....                    | Input cord LED module: 60N for 20AWG | P       |
|                    | - torque test: torque (Nm) .....                         | 0,15Nm                               | P       |
|                    | - displacement $\leq 2$ mm                               | Max.0,25mm                           | P       |
|                    | - no movement of conductors                              |                                      | P       |
|                    | - no damage of cable or cord                             |                                      | P       |
|                    | - function independent of electrical connection          |                                      | N/A     |
| 2.11<br>(5.2.11)   | External wiring passing into luminaire                   |                                      | P       |
| 2.11<br>(5.2.12)   | Looping-in terminals                                     |                                      | N/A     |
| 2.11<br>(5.2.13)   | Wire ends not tinned                                     |                                      | N/A     |
|                    | Wire ends tinned: no cold flow                           |                                      | N/A     |
| 2.11<br>(5.2.14)   | Mains plug same protection                               |                                      | N/A     |
|                    | Class III luminaire plug                                 |                                      | N/A     |
|                    | No unsafe compatibility                                  |                                      | N/A     |

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|-------------------|--|-----------------|----------|
| Clause            | Requirement + Test   | Result - Remark | Verdict  |
| 2.11<br>(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      |
| 2.11<br>(5.2.17)  | No standardized interconnecting cables properly assembled                      |                 | N/A      |
| 2.11<br>(5.2.18)  | Used plug in accordance with   |                 | N/A      |
|                   | - IEC 60083  |                 | N/A      |
|                   | - other standard   |                 | N/A      |
| <b>2.11 (5.3)</b> | <b>Internal wiring</b>   |                 | <b>P</b> |
| 2.11 (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  |                 | N/A      |
| 2.11<br>(5.3.1.1) | Internal wiring connected directly to fixed wiring                             |                 | N/A      |
|                   | Cross-sectional area (mm <sup>2</sup> )..... :                                 |                 | N/A      |
|                   | Insulation thickness (mm) .....  |                 | N/A      |
|                   | Extra insulation added where necessary   |                 | N/A      |
| 2.11<br>(5.3.1.2) | Internal wiring connected to fixed wiring via internal current-limiting device |                 | P        |
|                   | Cross-sectional area (mm <sup>2</sup> )..... :                                 | 0,5             | P        |
| 2.11<br>(5.3.1.3) | Double or reinforced insulation for class II                                   |                 | N/A      |
| 2.11<br>(5.3.1.4) | Conductors without insulation  |                 | N/A      |
| 2.11<br>(5.3.1.5) | SELV current-carrying parts  |                 | P        |
| 2.11<br>(5.3.1.6) | Insulation thickness other than PVC or rubber                                  |                 | N/A      |
| 2.11 (5.3.2)      | Sharp edges etc.   |                 | P        |
|                   | No moving parts of switches etc.   |                 | N/A      |
|                   | Joints, raising/lowering devices   |                 | N/A      |

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|-------------------|--|-----------------|------------|
| Clause            | Requirement + Test   | Result - Remark | Verdict    |
|                   | Telescopic tubes etc.  |                 | N/A        |
|                   | No twisting over 360°  |                 | P          |
| 2.11 (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        |
| 2.11 (5.3.4)      | Joints and junctions effectively insulated   |                 | N/A        |
| 2.11 (5.3.5)      | Strain on internal wiring  |                 | N/A        |
| 2.11 (5.3.6)      | Wire carriers  |                 | N/A        |
| 2.11 (5.3.7)      | Wire ends not tinned   |                 | N/A        |
|                   | Wire ends tinned: no cold flow   |                 | N/A        |
| <b>2.11 (5.4)</b> | <b>Test to determine suitability of conductors having a reduced cross-sectional area</b>                 |                 | <b>N/A</b> |
|                   | Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2 | (see Annex 2)   | N/A        |
|                   | No damage to luminaire wiring after test   |                 | N/A        |

|                 |  |                          |          |
|-----------------|--|--------------------------|----------|
| <b>2.12 (8)</b> | <b>PROTECTION AGAINST ELECTRIC SHOCK</b>   |                          | <b>P</b> |
| 2.12 (8.2.1)    | Live parts not accessible  | Approved SELV LED driver | P        |
|                 | Basic insulated parts not used on the outer surface without appropriate protection                                     |                          | P        |
|                 | Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires         |                          | N/A      |
|                 | Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires                        |                          | N/A      |
|                 | 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      |

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|----------------|---|---------------------|---------|
| Clause         | Requirement + Test  | Result - Remark     | Verdict |
| 2.12 (8.2.2)   | Portable luminaire adjusted in most unfavourable position   |                     | N/A     |
| 2.12 (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     |
| 2.12 (8.2.3.b) | BC lampholder of metal in class I luminaires shall be earthed   |                     | N/A     |
| 2.12 (8.2.3.c) | SELV circuits with exposed current carrying parts:  |                     | N/A     |
|                | Ordinary luminaire:   |                     | N/A     |
|                | - voltage under load (V)..... :   |                     | N/A     |
|                | - no-load voltage (V)..... :  |                     | N/A     |
|                | - touch current if applicable (mA) ..... :  |                     | N/A     |
|                | One conductive part insulated if required   |                     | N/A     |
|                | Other than ordinary luminaire:  |                     | N/A     |
|                | - nominal voltage (V) ..... :   |                     | N/A     |
|                | Class III luminaire only for connection to SELV   |                     | N/A     |
|                | Class III luminaire not provided with means for protective earthing   |                     | N/A     |
| 2.12 (8.2.4)   | Portable luminaire has protection independent of supporting surface   |                     | N/A     |
| 2.12 (8.2.5)   | Compliance with the standard test finger or relevant probe  |                     | P       |
| 2.12 (8.2.6)   | Covers reliably secured   |                     | P       |
| 2.12 (8.2.7)   | Luminaire other than below with capacitor > 0,5 $\mu$ F not exceed 50 V 1 min after disconnection                         | Approved LED driver | N/A     |
|                | Portable luminaire with capacitor > 0,1 $\mu$ F (0.25) not exceed 34 V 1 s after disconnection                            |                     | N/A     |
|                | Other luminaires with capacitor > 0,1 $\mu$ F (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection |                     | N/A     |
| 2.12 (-)       | Parts within the ceiling space provide same degree of protection against electric shock as parts below the ceiling space  |                     | P       |



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|--------------------|---|---|------------|
| Clause             | Requirement + Test  | Result - Remark   | Verdict    |
| <b>2.13 (12)</b>   | <b>ENDURANCE TEST AND THERMAL TEST</b>  |   | <b>P</b>   |
| 2.13.1 (-)         | If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 2.14 |   | —          |
| <b>2.13 (12.2)</b> | <b>Selection of lamps and ballasts</b>  |   | <b>—</b>   |
|                    | Lamp used according Annex B   | (Lamp used see Annex 2)                                 | —          |
|                    | Controlgear if separate and not supplied  | (Controlgear used see Annex 2)                          | —          |
| <b>2.13 (12.3)</b> | <b>Endurance test</b>   |   | <b>P</b>   |
|                    | a) mounting-position .....  | According to manual instruction                         | —          |
|                    | b) test temperature (°C) .....  | 55°C  | —          |
|                    | c) total duration (h) .....   | 240h  | —          |
|                    | d) supply voltage (V) .....   | 264V for luminaires used together with nominated driver | —          |
|                    | d) if not equipped with controlgear, constant voltage/current (V) or (A) .....                      | --  | —          |
|                    | e) luminaire ceases to operate  | --  | —          |
| 2.13 (12.3.2)      | After endurance test:   |   | <b>P</b>   |
|                    | - no part unserviceable   |   | <b>P</b>   |
|                    | - luminaire not unsafe  |   | <b>P</b>   |
|                    | - no damage to track system   |   | <b>N/A</b> |
|                    | - marking legible   |   | <b>P</b>   |
|                    | - no cracks, deformation etc.   |   | <b>P</b>   |
| <b>2.13 (12.4)</b> | <b>Thermal test (normal operation)</b>  | (see Annex 2)   | <b>P</b>   |
| <b>2.13 (12.5)</b> | <b>Thermal test (abnormal operation)</b>  | (see Annex 2)   | <b>N/A</b> |
| <b>2.13 (12.6)</b> | <b>Thermal test (failed lamp control gear condition):</b>   |   | <b>N/A</b> |
| 2.13 (12.6.1)      | Through wiring or looping-in wiring loaded by a current of (A) .....                                |   | —          |
|                    | - case of abnormal conditions .....   |   | —          |
|                    | - electronic lamp control gear  |   | <b>N/A</b> |
|                    | - measured winding temperature (°C): at 1,1 Un .....  |   | —          |
|                    | - measured mounting surface temperature (°C) at 1,1 Un .....  |   | <b>N/A</b> |
|                    | - calculated mounting surface temperature (°C) .....  |   | <b>N/A</b> |
|                    | - track-mounted luminaires  |   | <b>N/A</b> |
| 2.13 (12.6.2)      | Temperature sensing control   |   | <b>N/A</b> |
|                    | - case of abnormal conditions .....   |   | —          |

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|--------------------|---|------------------------------|------------|
| Clause             | Requirement + Test  | Result - Remark              | Verdict    |
|                    | - 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        |
| <b>2.13 (12.7)</b> | <b>Thermal test (failed lamp control gear in plastic luminaires):</b>       |                              | <b>N/A</b> |
| 2.13<br>(12.7.1)   | Luminaire without temperature sensing control                               |                              | N/A        |
| 2.13<br>(12.7.1.1) | Luminaire with fluorescent lamp ≤ 70W                                       |                              | N/A        |
|                    | Test method 12.7.1.1 or Annex W ..... :                                     |                              | —          |
|                    | Test according to 12.7.1.1:   |                              | N/A        |
|                    | - case of abnormal conditions ..... :                                       |                              | —          |
|                    | - Ballast failure at supply voltage (V) ..... :                             |                              | —          |
|                    | - Components retained in place after the test                               |                              | N/A        |
|                    | - Test with standard test finger after the test                             |                              | N/A        |
|                    | Test according to Annex W:  |                              | N/A        |
|                    | - case of abnormal conditions ..... :                                       |                              | —          |
|                    | - measured winding temperature (°C): at 1,1 Un ..... :                      |                              | —          |
|                    | - measured temperature of fixing point/exposed part (°C): at 1,1 Un ..... : |                              | —          |
|                    | - calculated temperature of fixing point/exposed part (°C) ..... :          |                              | —          |
|                    | Ball-pressure test ..... :  | See Test Table 2.16 (13.2.1) | N/A        |
| 2.13<br>(12.7.1.2) | Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA  |                              | N/A        |
|                    | - case of abnormal conditions ..... :                                       |                              | —          |
|                    | - measured winding temperature (°C): at 1,1 Un ..... :                      |                              | —          |
|                    | - measured temperature of fixing point/exposed part (°C): at 1,1 Un ..... : |                              | —          |
|                    | - calculated temperature of fixing point/exposed part (°C) ..... :          |                              | —          |
|                    | Ball-pressure test ..... :  | See Test Table 2.16 (13.2.1) | N/A        |
| 2.13<br>(12.7.1.3) | Luminaire with short circuit proof transformers ≤ 10 VA                     |                              | N/A        |
|                    | - case of abnormal conditions ..... :                                       |                              | —          |
|                    | - Components retained in place after the test                               |                              | N/A        |

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|------------------|---|------------------------------|---------|
| Clause           | Requirement + Test  | Result - Remark              | Verdict |
|                  | - Test with standard test finger after the test   |                              | N/A     |
| 2.13<br>(12.7.2) | Luminaire with temperature sensing control  |                              | N/A     |
|                  | - thermal link..... : Yes <input type="checkbox"/> No <input type="checkbox"/>          |                              | —       |
|                  | - manual reset cut-out ..... : Yes <input type="checkbox"/> No <input type="checkbox"/> |                              | —       |
|                  | - auto reset cut-out ..... : Yes <input type="checkbox"/> No <input type="checkbox"/>   |                              | —       |
|                  | - case of abnormal conditions ..... :   |                              | —       |
|                  | - highest measured temperature of fixing point/<br>exposed part (°C): ..... :           |                              | —       |
|                  | Ball-pressure test: ..... :   | See Test Table 2.16 (13.2.1) | N/A     |
| 2.13.1 (-)       | Wiring, for connection to the supply, not reach unsafe temperature                      |                              | N/A     |
|                  | - measured temperature of the cable (°C) ..... :  |                              | N/A     |

|                 |   |  |          |
|-----------------|---|--|----------|
| <b>2.14 (9)</b> | <b>RESISTANCE TO DUST AND MOISTURE</b>  |  | <b>P</b> |
| 2.14 (-)        | If IP > IP 20 the order of tests as specified in clause 2.13                                      |  | N/A      |
| 2.14 (9.2)      | Tests for ingress of dust, solid objects and moisture:  |  | <b>P</b> |
|                 | - classification according to IP..... : IP20  |  | —        |
|                 | - mounting position during test..... : According to instruction                                   |  | —        |
|                 | - fixing screws tightened; torque (Nm) ..... : Fixed enclosure: 0,4Nm                             |  | —        |
|                 | - tests according to clauses..... : Clause 9.2.0  |  | —        |
|                 | - electric strength test afterwards   |  | <b>P</b> |
|                 | a) no deposit in dust-proof luminaire   |  | N/A      |
|                 | b) no talcum in dust-tight luminaire  |  | N/A      |
|                 | c) no trace of water on current-carrying parts or on<br>insulation where it could become a hazard |  | N/A      |
|                 | c.1) For luminaires without drain holes – no water<br>entry                                       |  | N/A      |
|                 | c.2) For luminaires with drain holes – no hazardous<br>water entry                                |  | N/A      |
|                 | d) no water in watertight or pressure watertight<br>luminaire                                     |  | N/A      |
|                 | e) no contact with live parts (IP 2X)   |  | <b>P</b> |
|                 | e) no entry into enclosure (IP 3X and IP 4X)  |  | N/A      |
|                 | e) no contact with live parts through drain holes and<br>ventilation slots (IP3X and IP4X)        |  | N/A      |
|                 | f) no trace of water on part of lamp requiring<br>protection from splashing water                 |  | N/A      |

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|------------------|--|-----------------------------|----------|
| Clause           | Requirement + Test   | Result - Remark             | Verdict  |
|                  | g) no damage of protective shield or glass envelope  |                             | P        |
| 2.14 (9.3)       | Humidity test 48 h   | 25°C, 93% R.H               | P        |
| <b>2.15 (10)</b> | <b>INSULATION RESISTANCE AND ELECTRIC STRENGTH</b>   |                             | <b>P</b> |
| 2.15 (10.2.1)    | Insulation resistance test   |                             | P        |
|                  | Cable or cord covered by metal foil or replaced by a metal rod of mm Ø .....   | Cable covered by metal foil | —        |
|                  | Insulation resistance (MΩ) .....   | SELV: >1 MΩ                 | —        |
|                  | SELV   |                             | P        |
|                  | - between current-carrying parts of different polarity :   | Min.100MΩ>1 MΩ              | P        |
|                  | - between current-carrying parts and mounting surface .....  | Min.100MΩ>1 MΩ              | P        |
|                  | - 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 .....   | Min.100MΩ>2 MΩ              | P        |
|                  | - between live parts and mounting surface .....  | Min.100MΩ>4 MΩ              | P        |
|                  | - between live parts and metal parts .....   | Min.100MΩ>4 MΩ              | 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      |
| 2.15 (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) .....   | SELV:500V                   | P        |
|                  | SELV   |                             | P        |
|                  | - between current-carrying parts of different polarity :   | 500V                        | P        |

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|---------------|---|--------------------------------------|---------|
| Clause        | Requirement + Test  | Result - Remark                      | Verdict |
|               | - between current-carrying parts and mounting surface..... :  | 500V                                 | P       |
|               | - 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 ..... :  | 1480                                 | P       |
|               | - between live parts and mounting surface ..... :   | 2960                                 | P       |
|               | - between live parts and metal parts ..... :  | 2960                                 | 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     |
| 2.15 (10.3)   | Touch current or protective conductor current (mA):   | Touch current:<br>Max, 0,061mA<0,7mA | P       |

|                  |  |                              |     |
|------------------|--|------------------------------|-----|
| <b>2.16 (13)</b> | <b>RESISTANCE TO HEAT, FIRE AND TRACKING</b> |                              | P   |
| 2.16 (13.2.1)    | Ball-pressure test ..... :                   | See Test Table 2.16 (13.2.1) | P   |
| 2.16 (13.3.1)    | Needle-flame test (10 s)..... :              | See Test Table 2.16 (13.3.1) | P   |
| 2.16 (13.3.2)    | Glow-wire test (650°C) ..... :               | See Test Table 2.16 (13.3.2) | P   |
| 2.16 (13.4)      | Proof tracking test (IEC 60112)..... :       | See Test Table 2.16 (13.4)   | N/A |

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

| 2.8 (11.2)                                      | TABLE I: Creepage distances and clearances                       |                    |           |        |                                |                                | N/A    |
|---|--|--------------------|-----------|--------|--------------------------------|--------------------------------|--------|
|   | Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages |                    |           |        |                                |                                | N/A    |
|   | Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*  |                    |           |        |                                |                                | N/A    |
|   | Insulation type **   | Measured clearance | Required  |        | Measured creepage              | Required                       |        |
|   |  |                    | clearance | *Table |                                | creepage                       | *Table |
| Distance 1:                                     | --   | --                 | --        | --     | --                             | --                             | --     |
| Working voltage (V) .....                       |  |                    |           |        | --                             | ---                            |        |
| PTI .....                                       |  |                    |           |        | < 600 <input type="checkbox"/> | ≥ 600 <input type="checkbox"/> | ---    |
| Pulse voltage or $U_P$ if applicable (kV) ..... |  |                    |           |        | --                             | ---                            |        |
| Supplementary information:--                    |  |                    |           |        |                                |                                |        |
| Distance 2:                                     | --   | --                 | --        | --     | --                             | --                             | --     |
| Working voltage (V) .....                       |  |                    |           |        | --                             | ---                            |        |
| PTI .....                                       |  |                    |           |        | < 600 <input type="checkbox"/> | ≥ 600 <input type="checkbox"/> | ---    |
| Pulse voltage or $U_P$ if applicable (kV) ..... |  |                    |           |        | --                             | ---                            |        |
| Supplementary information:--                    |  |                    |           |        |                                |                                |        |
| Distance 3:                                     | --   | --                 | --        | --     | --                             | --                             | --     |
| Working voltage (V) .....                       |  |                    |           |        | --                             | ---                            |        |
| PTI .....                                       |  |                    |           |        | < 600 <input type="checkbox"/> | ≥ 600 <input type="checkbox"/> | ---    |
| Pulse voltage or $U_P$ if applicable (kV) ..... |  |                    |           |        | --                             | ---                            |        |
| Supplementary information:--                    |  |                    |           |        |                                |                                |        |

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

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

| 2.8 (11.2)   | TABLE II: Creepage distances and clearances |                    |           |        |                                |                                | N/A    |
|--|---|--------------------|-----------|--------|--------------------------------|--------------------------------|--------|
| Minimum distances (mm) for a.c. higher than 30 kHz sinusoidal voltages     |   |                    |           |        |                                |                                |        |
| Applicable part of IEC 61347-1 Table 7 and 8* or IEC 60664-4 Table 1 and 2 |   |                    |           |        |                                |                                |        |
| Distances  | Insulation type **                          | Measured clearance | Required  |        | Measured creepage              | Required                       |        |
|  |   |                    | clearance | *Table |                                | creepage                       | *Table |
| Distance 1:  | --  | --                 | --        | --     | --                             | --                             | --     |
| Working voltage (V) .....  |   |                    |           |        | --                             | ---                            |        |
| Frequency if applicable (kHz) .....  |   |                    |           |        | --                             | ---                            |        |
| PTI .....  |   |                    |           |        | < 600 <input type="checkbox"/> | ≥ 600 <input type="checkbox"/> |        |
| Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... |   |                    |           |        | --                             | ---                            |        |
| Supplementary information:--   |   |                    |           |        |                                |                                |        |
| Distance 2:  | --  | --                 | --        | --     | --                             | --                             | --     |
| Working voltage (V) .....  |   |                    |           |        | --                             | ---                            |        |
| Frequency if applicable (kHz) .....  |   |                    |           |        | --                             | ---                            |        |
| PTI .....  |   |                    |           |        | < 600 <input type="checkbox"/> | ≥ 600 <input type="checkbox"/> |        |
| Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... |   |                    |           |        | --                             | ---                            |        |
| Supplementary information:--   |   |                    |           |        |                                |                                |        |
| Distance 3:  | --  | --                 | --        | --     | --                             | --                             | --     |
| Working voltage (V) .....  |   |                    |           |        | --                             | ---                            |        |
| Frequency if applicable (kHz) .....  |   |                    |           |        | --                             | ---                            |        |
| PTI .....  |   |                    |           |        | < 600 <input type="checkbox"/> | ≥ 600 <input type="checkbox"/> |        |
| Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... |   |                    |           |        | --                             | ---                            |        |
| Supplementary information:--   |   |                    |           |        |                                |                                |        |

\*\* Insulation type: B – Basic; S – Supplementary; R – Reinforced.

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

| 2.16<br>(13.2.1)                       | TABLE: Ball Pressure Test of Thermoplastics |                       |                          | P |
|--|---|-----------------------|--------------------------|---|
| Allowed impression diameter (mm) ..... |   | 2 mm                  | —                        |   |
| Object/ Part No./ Material             | Manufacturer/<br>trademark                  | Test temperature (°C) | Impression diameter (mm) |   |
| Translucent cover                      | See Annex 1                                 | 82,8                  | 0,9                      |   |
| DC connector                           | See Annex 1                                 | 125                   | 1,2                      |   |
| Supplementary information:--           |   |                       |                          |   |

| 2.16<br>(13.3.1)              | TABLE: Needle-flame test (IEC 60695-11-5) |   |  |                                    | P       |
|-------------------------------|---|---|--|------------------------------------|---------|
| Object/ Part No./<br>Material | Manufacturer/<br>trademark                | Duration of<br>application of test<br>flame (ta); (s) | Ignition of<br>specified layer<br>Yes/No | Duration of<br>burning (tb)<br>(s) | Verdict |
| DC connector                  | See Annex 1                               | 10  | No                                       | 0                                  | P       |
| Supplementary information:--  |   |   |  |                                    |         |

| 2.16<br>(13.3.2)              | TABLE: Glow-wire test (IEC 60695-2-11) |  |                                    |         | P |
|-------------------------------|--|--|------------------------------------|---------|---|
| Glow wire temperature .....   |  | 650°C                                    | —                                  |         |   |
| Object/ Part No./<br>Material | Manufacturer/<br>trademark             | Ignition of<br>specified layer<br>Yes/No | Duration of<br>burning (tb)<br>(s) | Verdict |   |
| Translucent cover             | See Annex 1                            | No                                       | 0                                  | P       |   |
| DC connector                  | See Annex 1                            | No                                       | 0                                  | P       |   |
| Supplementary information:--  |  |  |                                    |         |   |

| 2.16 (13.4)                  | TABLE: Proof tracking test (IEC 60112) |   |    |    | N/A     |
|------------------------------|--|---|----|----|---------|
| Test voltage PTI .....       |  | 175 V   | —  |    |         |
| Object/ Part No./ Material   | Manufacturer/<br>trademark             | Withstand 50 drops without failure on three<br>places or on three specimens |    |    | Verdict |
| --                           | --                                     | --  | -- | -- | --      |
| Supplementary information:-- |  |   |    |    |         |



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

| ANNEX 1                   |      | TABLE: Critical components information           |                      |   |                               |                                     | P |
|---------------------------|------|--|----------------------|---|-------------------------------|-------------------------------------|---|
| Object / part No.         | Code | Manufacturer/ trademark                          | Type / model         | Technical data  | Standard                      | Mark(s) of conformity <sup>1)</sup> |   |
| Supply Cord               | B    | Dong Guan Sheng Pai Electric Wire & Cable Co Ltd | H03VVH2              | 2x0,75mm <sup>2</sup>   | EN 50525-2-11                 | VDE 40042278                        |   |
| Output cord of LED driver | C    | Dong Guan Sheng Pai Electric Wire & Cable Co Ltd | H03VVH2              | 2x0,5mm <sup>2</sup>  | EN 50525-2-11                 | VDE 40042278                        |   |
| LED driver                | B    | Shenzhen Ledfriend Optoelectronics Co., Ltd.     | LF-GIF040YA(H) 0900H | Input: 220-240Vac, 50/60Hz, 0,35A<br>Output: 33-40Vdc, 900mA, 36W, Uout=55Vdc, Independent, SELV, Class II, ta=50°C, tc=90°C    | EN 61347-1<br>EN 61347-2-13   | TÜV SÜD<br>ENEC U6 17 06 74050 084  |   |
| LED driver                | B    | Shenzhen Ledfriend Optoelectronics Co., Ltd.     | LF-GIF040YA(H) 0950H | Input: 220-240Vac, 50/60Hz, 0,35A<br>Output: 33-40Vdc, 950mA, 38W, Uout=55Vdc, Independent, SELV, Class II, ta=50°C, tc=90°C    | EN 61347-1<br>EN 61347-2-13   | TÜV SÜD<br>ENEC U6 17 06 74050 084  |   |
| LED driver                | B    | Shenzhen Ledfriend Optoelectronics Co., Ltd.     | LF-GIF050YA(H) 1200H | Input: 220-240Vac, 50/60Hz, 0,4A<br>Output: 33-40Vdc, 1200mA, 48W, Uout=55Vdc, Independent, SELV, Class II, ta=50°C, tc=90°C    | IEC 61347-1<br>IEC 61347-2-13 | TÜV SÜD<br>CB SG PSB-LE-01456       |   |
| LED driver                | B    | Jiaxing Shenrong Electric Co., Ltd               | DPSA048S-1000NC      | Input: 220-240Vac, 50/60Hz, 0,25A<br>Output: 30-42Vdc, 1000mA, 42W, Uout=55Vdc<br>Independent, SELV, Class II, ta=40°C, tc=90°C | EN 61347-1<br>EN 61347-2-13   | TÜV Rh CB<br>DE 2-027925            |   |
| Internal wire             | C    | DONG GUAN CHUANG XU WIRE CO.LTD                  | 2464                 | 80°C; 300V; 20AWG   | IEC 60598-1<br>IEC 60598-2-2  | UL E483471<br>Test with appliance   |   |
| DC connector              | C    | Dong Guan Sheng Pai Electric Wire & Cable Co Ltd | PA2                  | 2A, 55V   | IEC 60598-1<br>IEC 60598-2-2  | Tested with appliance               |   |

| IEC 60598-2-2  |                    |   |           |   |                              |                                     |
|--|--------------------|---|-----------|---|------------------------------|-------------------------------------|
| Clause   | Requirement + Test |   |           | Result - Remark                             |                              | Verdict                             |
| Plastic Cover  | C                  | CHI MEI CORPORATION                     | PC-140LTU | 105°C                                       | IEC 60598-1<br>IEC 60598-2-2 | UL E56070<br>Test with appliance    |
| LED PCB  | C                  | SHENZHEN KAICHANGHONG CIRCUIT CO LTD    | HX001     | 125°C; V-0                                  | IEC 60598-1<br>IEC 60598-2-2 | UL E488718<br>Tested with appliance |
| LED  | C                  | ShenZhen JuFei Optoelectronics Co., Ltd | 2835      | Vf=8,8-9,7V,<br>If=120mA,<br>CCT=2700-6500K | IEC TR 62778                 | Tested with appliance               |
| <p>Supplementary information:</p> <p><sup>1)</sup> Provided evidence ensures the agreed level of compliance. See OD-CB2039.</p> <p>The codes above have the following meaning:</p> <p>A - The component is replaceable with another one, also certified, with equivalent characteristics</p> <p>B - The component is replaceable if authorised by the test house</p> <p>C - Integrated component tested together with the appliance</p> <p>D - Alternative component</p> |                    |   |           |   |                              |                                     |

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

| ANNEX 2                       | TABLE: Thermal tests of Section 12   |  |        | P      |       |                     |       |
|-------------------------------|--|--|--------|--------|-------|---------------------|-------|
|                               | Type reference .....   | SL-BKL6060-40W-D/C   |        | —      |       |                     |       |
|                               | Lamp used.....   | LED module   |        | —      |       |                     |       |
|                               | Lamp control gear used.....  | DPSA048S-1000NC  |        | —      |       |                     |       |
|                               | Mounting position of luminaire .....   | According to instruction from manufacturer mounted the luminaire into a recess box |        | —      |       |                     |       |
|                               | Supply wattage (W) .....   | 38,0   |        | —      |       |                     |       |
|                               | Supply current (A) .....   | 0,157  |        | —      |       |                     |       |
|                               | Temperatures in test 1 - 4 below are corrected for ta (°C) .....   | 45°C   |        | —      |       |                     |       |
|                               | - abnormal operating mode .....  | --   |        | —      |       |                     |       |
| 1.12 (12.4)                   | - test 1: rated voltage .....  | 240V   |        | —      |       |                     |       |
|                               | - test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current ..... | 240Vx1,06=254,4V   |        | —      |       |                     |       |
|                               | - test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage .....                  | --   |        | —      |       |                     |       |
|                               | Through wiring or looping-in wiring loaded by a current of A during the test .....                         | --   |        | —      |       |                     |       |
| 1.12 (12.5)                   | - test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current .....  | --   |        | —      |       |                     |       |
| Temperature measurements (°C) |  |  |        |        |       |                     |       |
| Part                          | Ambient  | Cl. 12.4 – normal  |        |        |       | Cl. 12.5 – abnormal |       |
|                               |  | test 1   | test 2 | test 3 | limit | test 4              | limit |
| Input cord of LED driver      | 45,0   | --   | 51,7   | --     | 90    | --                  | --    |
| tc of LED Driver              | 45,0   | 79,0   | --     | --     | 90    | --                  | --    |
| Output cord of LED driver     | 45,0   | --   | 62,9   | --     | Ref.  | --                  | --    |
| DC connector                  | 45,0   | --   | 51,6   | --     | Ref.  | --                  | --    |
| Input cord for LED module     | 45,0   | --   | 57,7   | --     | Ref.  | --                  | --    |
| LED module PCB                | 45,0   | --   | 64,3   | --     | Ref.  | --                  | --    |
| Internal wire                 | 45,0   | --   | 61,1   | --     | 80    | --                  | --    |
| Lens                          | 45,0   | --   | 60,1   | --     | Ref.  | --                  | --    |
| Translucent cover             | 45,0   | --   | 51,8   | --     | Ref.  | --                  | --    |
| Lighting surface (10cm)       | 45,0   | --   | 46,6   | --     | 90    | --                  | --    |
| Mounting surface              | 45,0   | --   | 52,6   | --     | 90    | --                  | --    |
| Supplementary information:--  |  |  |        |        |       |                     |       |

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

| ANNEX 2                       | TABLE: Thermal tests of Section 12   |  |        | P      |       |                     |       |
|-------------------------------|--|--|--------|--------|-------|---------------------|-------|
|                               | Type reference .....   | TS-BKL6060-48W   |        | —      |       |                     |       |
|                               | Lamp used.....   | LED module   |        | —      |       |                     |       |
|                               | Lamp control gear used.....  | LF-GIF050YA(H)1200H  |        | —      |       |                     |       |
|                               | Mounting position of luminaire .....   | According to instruction from manufacturer mounted the luminaire into a recess box |        | —      |       |                     |       |
|                               | Supply wattage (W).....  | 45,6   |        | —      |       |                     |       |
|                               | Supply current (A) .....   | 0,190  |        | —      |       |                     |       |
|                               | Temperatures in test 1 - 4 below are corrected for ta (°C) .....   | 45°C   |        | —      |       |                     |       |
|                               | - abnormal operating mode .....  | --   |        | —      |       |                     |       |
| 1.12 (12.4)                   | - test 1: rated voltage .....  | 240V   |        | —      |       |                     |       |
|                               | - test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current ..... | 240Vx1,06=254,4V   |        | —      |       |                     |       |
|                               | - test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage .....                  | --   |        | —      |       |                     |       |
|                               | Through wiring or looping-in wiring loaded by a current of A during the test .....                         | --   |        | —      |       |                     |       |
| 1.12 (12.5)                   | - test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current .....  | --   |        | —      |       |                     |       |
| Temperature measurements (°C) |  |  |        |        |       |                     |       |
| Part                          | Ambient  | Cl. 12.4 – normal  |        |        |       | Cl. 12.5 – abnormal |       |
|                               |  | test 1   | test 2 | test 3 | limit | test 4              | limit |
| Input cord of LED driver      | 45,0   | --   | 52,7   | --     | 90    | --                  | --    |
| tc of LED Driver              | 45,0   | 79,6   | --     | --     | 90    | --                  | --    |
| Output cord of LED driver     | 45,0   | --   | 64,6   | --     | Ref.  | --                  | --    |
| DC connector                  | 45,0   | --   | 51,9   | --     | Ref.  | --                  | --    |
| Input cord for LED module     | 45,0   | --   | 57,9   | --     | Ref.  | --                  | --    |
| LED module PCB                | 45,0   | --   | 62,0   | --     | Ref.  | --                  | --    |
| Internal wire                 | 45,0   | --   | 58,0   | --     | 80    | --                  | --    |
| Lens                          | 45,0   | --   | 61,9   | --     | Ref.  | --                  | --    |
| Translucent cover             | 45,0   | --   | 52,8   | --     | Ref.  | --                  | --    |
| Lighting surface (10cm)       | 45,0   | --   | 46,8   | --     | 90    | --                  | --    |
| Mounting surface              | 45,0   | --   | 52,7   | --     | 90    | --                  | --    |

| <b>IEC 60598-2-2</b> |                    |                 |         |
|----------------------|--------------------|-----------------|---------|
| Clause               | Requirement + Test | Result - Remark | Verdict |

Supplementary information:--

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

| ANNEX 2     | TABLE: Thermal tests of Section 12   |  | P |
|-------------|--|--|---|
|             | Type reference .....   | TS-BKL60120-72W  | — |
|             | Lamp used.....   | LED module   | — |
|             | Lamp control gear used.....  | LF-GIF040YA(H)0900H  | — |
|             | Mounting position of luminaire .....   | According to instruction from manufacturer mounted the luminaire into a recess box | — |
|             | Supply wattage (W).....  | 68,2   | — |
|             | Supply current (A) .....   | 0,288  | — |
|             | Temperatures in test 1 - 4 below are corrected for ta (°C) .....   | 45°C   | — |
|             | - abnormal operating mode .....  | --   | — |
| 1.12 (12.4) | - test 1: rated voltage .....  | 240V   | — |
|             | - test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current ..... | 240Vx1,06=254,4V   | — |
|             | - test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage .....                  | --   | — |
|             | Through wiring or looping-in wiring loaded by a current of A during the test .....                         | --   | — |
| 1.12 (12.5) | - test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current .....  | --   | — |

#### Temperature measurements (°C)

| Part                      | Ambient | Cl. 12.4 – normal |        |        |       | Cl. 12.5 – abnormal |       |
|---------------------------|---------|-------------------|--------|--------|-------|---------------------|-------|
|                           |         | test 1            | test 2 | test 3 | limit | test 4              | limit |
| Input cord of LED driver  | 45,0    | --                | 51,8   | --     | 90    | --                  | --    |
| tc of LED Driver 1        | 45,0    | 71,5              | --     | --     | 90    | --                  | --    |
| tc of LED Driver 2        | 45,0    | 73,4              | --     | --     | 90    | --                  | --    |
| Output cord of LED driver | 45,0    | --                | 60,4   | --     | Ref.  | --                  | --    |
| DC connector              | 45,0    | --                | 50,1   | --     | Ref.  | --                  | --    |
| Input cord for LED module | 45,0    | --                | 56,3   | --     | Ref.  | --                  | --    |
| LED module PCB            | 45,0    | --                | 59,8   | --     | Ref.  | --                  | --    |
| Internal wire             | 45,0    | --                | 55,8   | --     | 80    | --                  | --    |
| Lens                      | 45,0    | --                | 58,5   | --     | Ref.  | --                  | --    |
| Translucent cover         | 45,0    | --                | 51,3   | --     | Ref.  | --                  | --    |
| Lighting surface (10cm)   | 45,0    | --                | 46,7   | --     | 90    | --                  | --    |

| IEC 60598-2-2                |                    |    |      |                 |    |    |         |
|------------------------------|--------------------|----|------|-----------------|----|----|---------|
| Clause                       | Requirement + Test |    |      | Result - Remark |    |    | Verdict |
| Mounting surface             | 45,0               | -- | 50,9 | --              | 90 | -- | --      |
| Supplementary information:-- |                    |    |      |                 |    |    |         |

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

|                |  |   |     |
|----------------|--|---|-----|
| <b>ANNEX 3</b> | <b>Screw terminals (part of the luminaire)</b>         |   | N/A |
| <b>(14)</b>    | <b>SCREW TERMINALS</b>                                 |   | N/A |
| (14.2)         | Type of terminal..... :                                |   | —   |
|                | Rated current (A)..... :                               |   | —   |
| (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 (mm <sup>2</sup> )..... :         |   | —   |
| (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 60598-2-2 |                    |                 |         |
|---------------|--------------------|-----------------|---------|
| Clause        | Requirement + Test | Result - Remark | Verdict |

|                |   |  |     |
|----------------|---|--|-----|
| <b>ANNEX 4</b> | <b>Screwless terminals (part of the luminaire)</b>                            |  | N/A |
| <b>(15)</b>    | <b>SCREWLESS TERMINALS</b>  |  | N/A |
| (15.2)         | Type of terminal..... :   |  | —   |
|                | Rated current (A)..... :  |  | —   |
| (15.3.1)       | Material  |  | N/A |
| (15.3.2)       | Clamping  |  | N/A |
| (15.3.3)       | Stop  |  | N/A |
| (15.3.4)       | Unprepared conductors   |  | N/A |
| (15.3.5)       | Pressure on insulating material   |  | N/A |
| (15.3.6)       | Clear connection method   |  | N/A |
| (15.3.7)       | Clamping independently  |  | N/A |
| (15.3.8)       | Fixed in position   |  | N/A |
| (15.3.10)      | Conductor size  |  | N/A |
|                | Type of conductor   |  | N/A |
| (15.5)         | Terminals and connections for internal wiring                                 |  | N/A |
| (15.5.1)       | Mechanical tests  |  | N/A |
| (15.5.1.1.1)   | Pull test spring-type terminals (4 N, 4 samples) .....                        |  | N/A |
| (15.5.1.1.2)   | Pull test pin or tab terminals (4 N, 4 samples) .....                         |  | N/A |
|                | Insertion force not exceeding 50 N  |  | N/A |
| (15.5.1.2)     | Permanent connections: pull-off test (20 N)                                   |  | N/A |
| (15.5.2)       | Electrical tests  |  | N/A |
|                | Voltage drop (mV) after 1 h (4 samples)..... :                                |  | N/A |
|                | Voltage drop of two inseparable joints  |  | N/A |
|                | Number of cycles:   |  | —   |
|                | Voltage drop (mV) after 10th alt. 25th cycle (4 samples)..... :               |  | N/A |
|                | Voltage drop (mV) after 50th alt. 100th cycle (4 samples)..... :              |  | N/A |
|                | After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples) .....  |  | N/A |
|                | After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples) ..... |  | N/A |
| (15.6)         | Terminals and connections for external wiring                                 |  | N/A |
| (15.6.1)       | Conductors  |  | N/A |
|                | Terminal size and rating  |  | N/A |

| IEC 60598-2-2                          |   |    |    |    |    |    |    |    |    |                 |         |
|--|---|----|----|----|----|----|----|----|----|-----------------|---------|
| Clause                                 | Requirement + Test  |    |    |    |    |    |    |    |    | Result - Remark | Verdict |
| 15.6.2                                 | Mechanical tests  |    |    |    |    |    |    |    |    |                 | N/A     |
| (15.6.2.1)                             | Pull test spring-type terminals or welded connections (4 samples); pull (N) ..... |    |    |    |    |    |    |    |    |                 | N/A     |
| (15.6.2.2)                             | Pull test pin or tab terminals (4 samples); pull (N) .....                        |    |    |    |    |    |    |    |    |                 | N/A     |
| (15.6.3)                               | Electrical tests  |    |    |    |    |    |    |    |    |                 | N/A     |
|  | Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1                                |    |    |    |    |    |    |    |    |                 | N/A     |
| <b>(15.6.3.1)</b><br><b>(15.6.3.2)</b> | <b>TABLE: Contact resistance test / Heating tests</b>                             |    |    |    |    |    |    |    |    |                 | N/A     |
|  | Voltage drop (mV) after 1 h   |    |    |    |    |    |    |    |    |                 | —       |
| terminal                               | 1   | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10              |         |
| voltage drop (mV)                      | --  | -- | -- | -- | -- | -- | -- | -- | -- | --              |         |
|  | Voltage drop of two inseparable joints  |    |    |    |    |    |    |    |    |                 | N/A     |
|  | Voltage drop after 10th alt. 25th cycle   |    |    |    |    |    |    |    |    |                 | N/A     |
|  | Max. allowed voltage drop (mV) .....  |    |    |    |    |    |    |    |    | --              | —       |
| terminal                               | 1   | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10              |         |
| voltage drop (mV)                      | --  | -- | -- | -- | -- | -- | -- | -- | -- | --              |         |
|  | Voltage drop after 50th alt. 100th cycle  |    |    |    |    |    |    |    |    |                 | N/A     |
|  | Max. allowed voltage drop (mV) .....  |    |    |    |    |    |    |    |    | --              | —       |
| terminal                               | 1   | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10              |         |
| voltage drop (mV)                      | --  | -- | -- | -- | -- | -- | -- | -- | -- | --              |         |
|  | Continued ageing: voltage drop after 10th alt. 25th cycle                         |    |    |    |    |    |    |    |    |                 | N/A     |
|  | Max. allowed voltage drop (mV) .....  |    |    |    |    |    |    |    |    | --              | —       |
| terminal                               | 1   | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10              |         |
| voltage drop (mV)                      | --  | -- | -- | -- | -- | -- | -- | -- | -- | --              |         |
|  | Continued ageing: voltage drop after 50th alt. 100th cycle                        |    |    |    |    |    |    |    |    |                 | N/A     |
|  | Max. allowed voltage drop (mV) .....  |    |    |    |    |    |    |    |    | --              | —       |
| terminal                               | 1   | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10              |         |
| voltage drop (mV)                      | --  | -- | -- | -- | -- | -- | -- | -- | -- | --              |         |
| Supplementary information:--           |   |    |    |    |    |    |    |    |    |                 |         |

| <b>Attachment 1: EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b> |                    |                 |         |
|--|--------------------|-----------------|---------|
| Clause   | Requirement + Test | Result - Remark | Verdict |

| <b>ATTACHMENT TO TEST REPORT IEC 60598-2-2</b><br><b>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b><br>LUMINAIRES<br>PART 2: PARTICULAR REQUIREMENTS<br>SECTION 2: RECESSED LUMINAIRES |  |  |  |
|---|--|--|--|
| <b>Differences according to</b> .....: EN 60598-2-2:2012 used in conjunction with<br>EN 60598-1:2015 + A1:2018  |  |  |  |
| <b>Annex Form No</b> .....: EU_GD_IEC60598_2_2F   |  |  |  |
| <b>Annex Form Originator</b> .....: OVE   |  |  |  |
| <b>Master Annex Form</b> .....: 2019-01-24  |  |  |  |
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| <b>CENELEC COMMON MODIFICATIONS (EN)</b> |  |  | <b>P</b> |
|--|--|--|----------|
|--|--|--|----------|

| <b>2.6 (3)</b> | <b>MARKING</b>  |  | <b>P</b> |
|----------------|---|--|----------|
| 2.6 (3.3.101)  | For luminaires not supplied with terminal block:<br>Adequate warning on the package |  | N/A      |

| <b>2.7 (4)</b> | <b>CONSTRUCTION</b>                |  | <b>P</b> |
|----------------|------------------------------------|--|----------|
| 2.7 (4.11.6)   | Electro-mechanical contact systems |  | N/A      |

| <b>2.11 (5)</b> | <b>EXTERNAL AND INTERNAL WIRING</b>   |  | <b>P</b> |
|-----------------|---|--|----------|
| 2.11 (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,<br>12 and 13.2 of Part 1 |  | N/A      |
| 2.11 (5.2.2)    | Cables equal to EN 50525  |  | P        |
|                 | Replace table 5.1 – Supply cord   |  | P        |

| <b>2.13 (12)</b> | <b>ENDURANCE TESTS AND THERMAL TESTS</b>  |  | <b>P</b> |
|------------------|---|--|----------|
| 2.13 (12.4.2c)   | Thermal test (normal operation)<br>see footnote c to table 12.2 relating to unsleeved<br>fixed wiring |  | N/A      |
| <b>ZB</b>        | <b>ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)</b>   |  | N/A      |
| (3.3)            | DK: power supply cords of class I luminaires<br>with label  |  | N/A      |
| (4.5.1)          | DK: socket-outlets  |  | N/A      |

| <b>Attachment 1: EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b> |   |                 |         |
|--|---|-----------------|---------|
| Clause   | Requirement + Test  | Result - Remark | Verdict |
| (5.2.1)  | CY, DK, FI, GB: type of plug  |                 | N/A     |
| <b>ZC</b>  | <b>ANNEX ZC, NATIONAL DEVIATIONS (EN)</b>   |                 | N/A     |
| (4 & 5)  | FR: Shuttered socket-outlets 10/16A   |                 | N/A     |
|  | FR: Safety requirements for high buildings<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     |

| <b>Attachment 2: Tests according to IEC 62031:2008+A1:2012+A2:2014, EN 62031:2008+A1:2013+A2:2015</b> |   |                      |          |
|---|---|----------------------|----------|
| Clause  | Requirement + Test  | Result - Remark      | Verdict  |
| <b>12 (14)</b>  | <b>FAULT CONDITIONS</b>   |                      | <b>P</b> |
| - (14.1)  | When operated under fault conditions the controlgear:   |                      | P        |
|   | - does not emit flames or molten material   |                      | P        |
|   | - does not produce flammable gases  |                      | P        |
|   | - protection against accidental contact not impaired  |                      | N/A      |
|   | Thermally protected controlgear does not exceed the marked temperature value  |                      | N/A      |
|   | Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected | (see appended table) | P        |
| - (14.2)  | Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (after any reduction in 14.2 - 14.5)                   | (see appended table) | P        |
| - (14.3)  | Short-circuit or interruption of semiconductor devices  | (see appended table) | P        |
| - (14.4)  | Short-circuit across insulation consisting of lacquer, enamel or textile  | (see appended table) | P        |
| - (14.5)  | Short-circuit across electrolytic capacitors  | (see appended table) | P        |
|   | Short-circuit or interruption of SPDs   | (see appended table) | N/A      |
| - (14.6)  | After the tests has been carried out on three samples:  |                      | P        |
|   | The insulation resistance $\geq 1 \text{ M}\Omega$ .....  |                      | P        |
|   | No flammable gases  |                      | P        |
|   | No accessible parts have become live  |                      | P        |
|   | During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite  |                      | P        |
| - (14.7)  | Relevant fault condition tests with high-power a.c. supply and in turn to a d.c. supply   |                      | —        |
| <b>12.2</b>   | <b>Overpower condition</b>  |                      | <b>P</b> |
|   | Module withstands overpower condition >15 min.  |                      | P        |
|   | Module with automatic protective device or power limiter, test performed 15 min. at limit.  |                      | P        |
|   | No fire, smoke or flammable gas is produced   |                      | P        |
|   | Molten material does not ignite tissue paper, spread below the module   |                      | P        |

**Attachment 3:Photobiological safety of lamps and lamp systems were according to standard IEC 62471:2006 and IEC TR 62778:2014**

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

| TS-BKL60120-72W (Exempt Group) Measure distance 1372,0mm, $\alpha=0,1000$ rad |                              |                                       |             |      |
|---|------------------------------|---------------------------------------|-------------|------|
| Optical hazard  | Test result                  | Used hazard exposure limit            |             | Ref. |
| 1. $E_s$  | 2,0E-10 W/m <sup>2</sup>     | 0,001 W/m <sup>2</sup>                | 200-400 nm  | P    |
| 2. $E_{UVA}$  | 6,6E-06 W/m <sup>2</sup>     | 0,33 W/m <sup>2</sup>                 | 315-400 nm  | P    |
| 3. $L_B$  | 1,42E+01 W/m <sup>2</sup> sr | 100 W/m <sup>2</sup> sr               | 300-700 nm  | P    |
| 4. $E_B$ (small source)   | --                           | --                                    | 300-700 nm  | N/A  |
| 5. $L_R$  | 1,7E+02 W/m <sup>2</sup> sr  | 2,8E+04/ $\alpha$ W/m <sup>2</sup> sr | 380-1400 nm | P    |
| 6. $L_{IR}$   | 1,8E-02 W/m <sup>2</sup> sr  | 6000/ $\alpha$ W/m <sup>2</sup> sr    | 780-1400 nm | P    |
| 7. $E_{IR}$   | 1,4E-03 W/m <sup>2</sup>     | 100 W/m <sup>2</sup>                  | 780-3000 nm | P    |
| 8. $E_H$  | 2,2E+00 W/m <sup>2</sup>     | 3556,56 W/m <sup>2</sup>              | 380-3000 nm | P    |

|  |                                   |   |   |
|--|-----------------------------------|---|---|
|  | <b>Measurement performed on:</b>  | <input type="checkbox"/> LED package<br><input type="checkbox"/> LED module<br><input type="checkbox"/> Lamp<br><input checked="" type="checkbox"/> Luminaire |   |
|  | <b>Model number</b> .....:        | TS-BKL60120-72W   |   |
|  | <b>Test voltage (V)</b> .....     | 240V  | — |
|  | <b>Test current (mA)</b> .....    | 299mA   | — |
|  | <b>Test frequency (Hz)</b> .....: | 50Hz  | — |
|  | <b>Ambient, t (°C)</b> .....:     | 25,0°C  | — |
|  | <b>Measurement distance</b> ..... | <input checked="" type="checkbox"/> 20 cm<br><input type="checkbox"/> ... cm  | — |
|  | <b>Source size</b> .....          | <input checked="" type="checkbox"/> Non-small<br><input type="checkbox"/> Small : .... mm   | — |
|  | <b>Field of view</b> .....        | <input type="checkbox"/> 100 mrad<br><input checked="" type="checkbox"/> 11 mrad<br><input type="checkbox"/> 1,7 mrad (for small sources)                     | — |

| Item                          | Symbol | Units                                | Result     | Remark |
|-------------------------------|--------|--------------------------------------|------------|--------|
| Correlated colour temperature | CCT    | K                                    | --         | --     |
| x/y colour coordinates        | --     | --                                   | --         | --     |
| Blue light hazard radiance    | $L_B$  | W/(m <sup>2</sup> •sr <sup>1</sup> ) | 2          | RG0    |
| Blue light hazard irradiance  | $E_B$  | W/m <sup>2</sup>                     | --         | --     |
| Luminance                     | L      | cd/m <sup>2</sup>                    | 3,083E+003 | --     |
| Illuminance                   | E      | lx                                   | --         | --     |

Attachment 4:Photo document

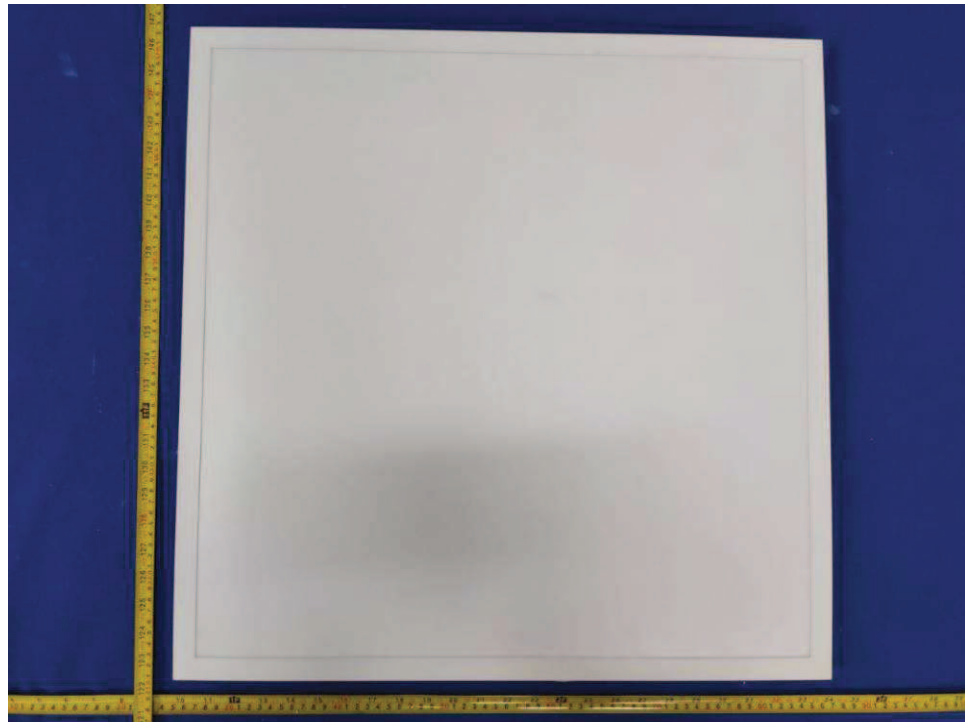


Figure 1. Light part for model TS-BKL6060-48W



Figure 2. Light part for model TS-BKL6060-48W

Attachment 4: Photo document

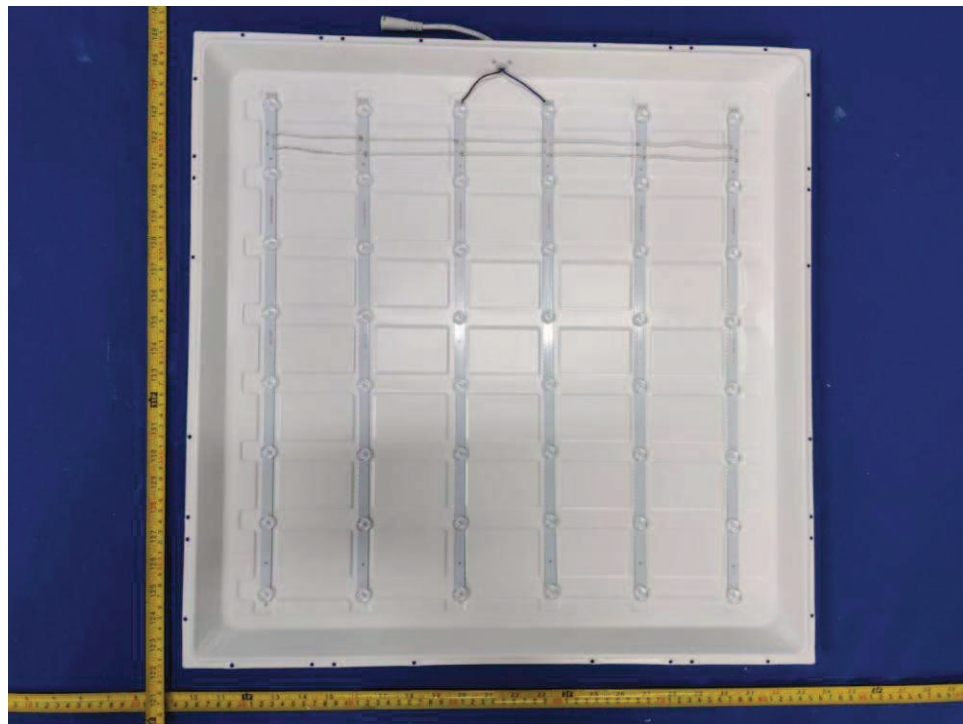


Figure 3. Internal view of light part for model TS-BKL6060-48W



Figure 4. LED module for model TS-BKL6060-48W



Attachment 4: Photo document

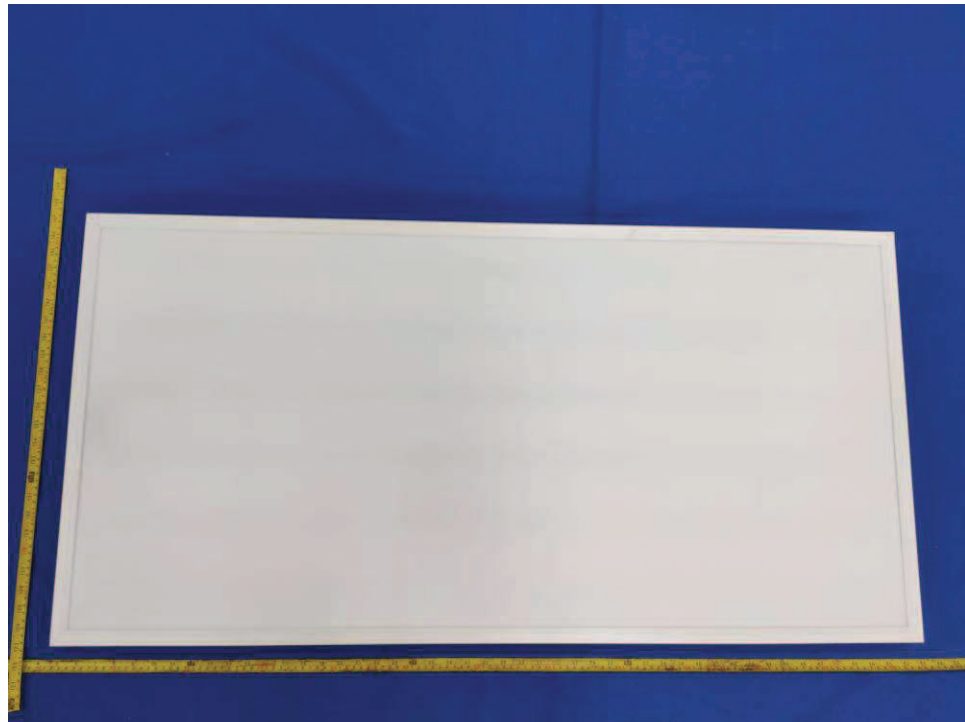


Figure 5. Front view for model TS-BKL60120-72W

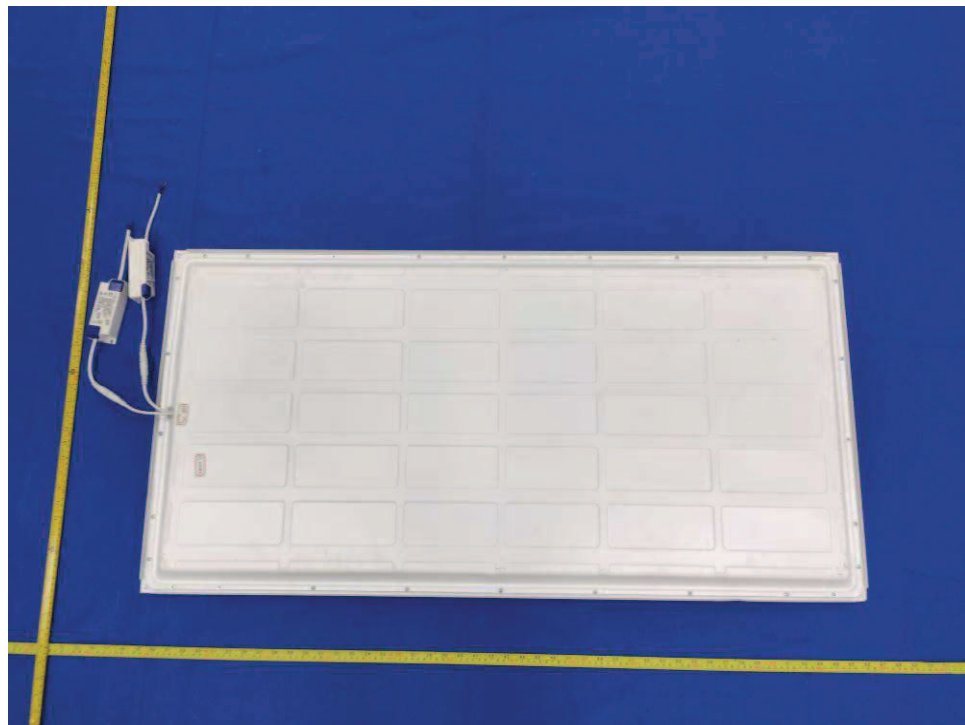


Figure 6. Back view for model TS-BKL60120-72W

Attachment 4: Photo document



Figure 7. Cord anchorage for model TS-BKL60120-72W

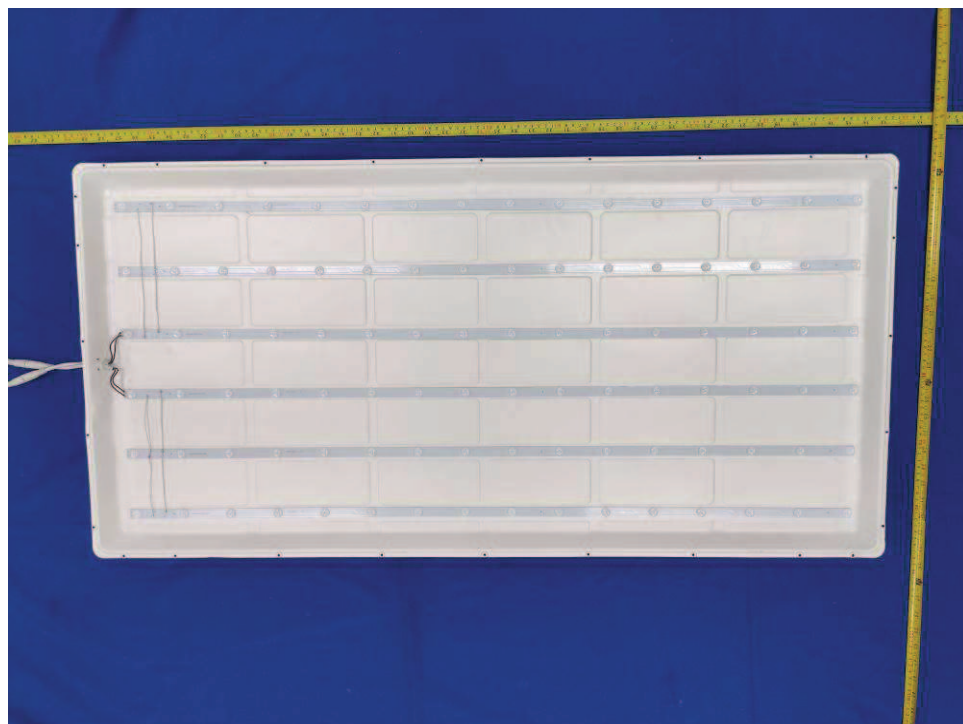


Figure 8. Internal view for model TS-BKL60120-72W

Attachment 4: Photo document

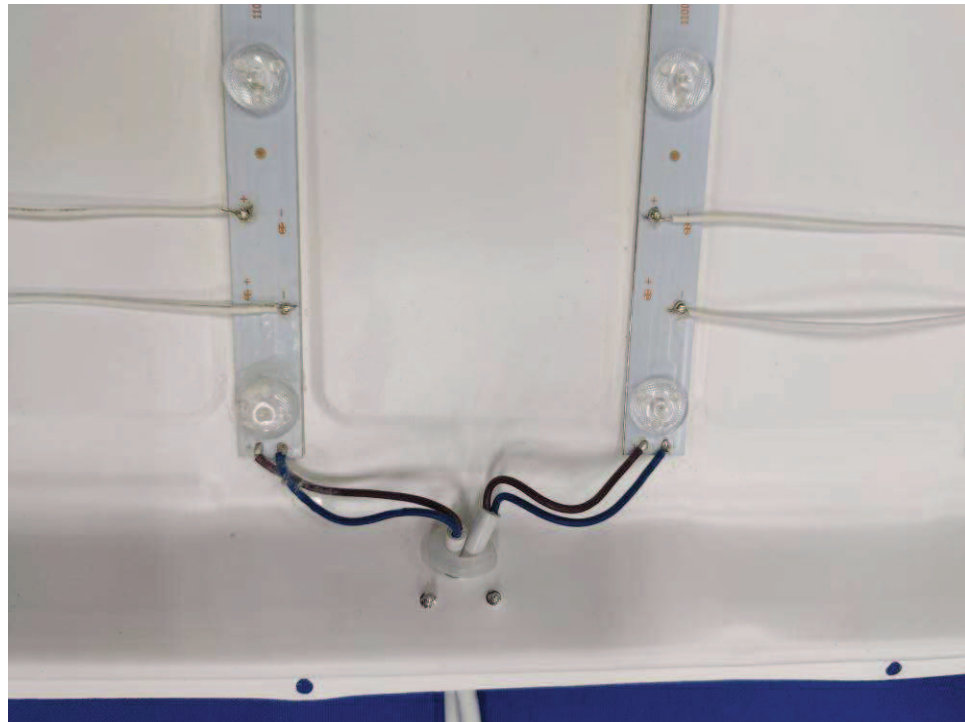


Figure 9. Internal view for model TS-BKL60120-72W



Figure 10. LED driver view for model DPSA048S-1000NC



## Attachment 4: Photo document



Figure 11. LED driver view for model LF-GIF040YA(H)0900H



Figure 12. LED driver view for model LF-GIF040YA(H)0950H

## Attachment 4: Photo document



Figure 13. LED driver view for model LF-GIF050YA(H)1200H

- END OF REPORT -