

TEST REPORT
IEC 60598-2-21
Part 2: Particular requirements
Section 21: Rope Lights

Report Number GZES220100150701

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Total number of pages 45

Name of Testing Laboratory preparing the Report SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

Applicant's name Blueview Elec-optic Tech Co., Ltd.

Address 1000, Section 2, 2nd Konggang Road, Southwest Aviation Industrial Development Zone, Chengdu, Sichuan, China

Test specification:

Standard IEC 60598-2-21:2014 used in conjunction with IEC 60598-1:2020

Test procedure SGS CSTC / CE_LVD

Non-standard test method N/A

TRF template used IECEE OD-2020-F1:2021, Ed.1.4

Test Report Form No. IEC60598_2_21D

Test Report Form(s) Originator DEKRA Certification B.V.

Master TRF Dated 2021-09-16

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General disclaimer:

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Test item description..... :	Rope light / LED Strip	
Trade Mark(s)..... :		
Manufacturer..... :	Same as applicant	
Model/Type reference..... :	AWHE1608-D-X (The "X" is means the length with two digit number "01 to 40", the unit is "m")	
Ratings..... :	230 V~; 50/60 Hz; ta: 45°C; Class II; IP65; 8 W/m; Max. 320 W	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒	CB Testing Laboratory:	SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch
Testing location/ address.....:		198 Kezhu Road, Science City, Economic & Technology Development Area, Guangzhou, Guangdong, China
Tested by (name, function, signature).....:		Ivan Zhang / Project Engineer <i>Ivan Zhang</i>
Approved by (name, function, signature)....:		Mon Liang / Reviewer <i>Mon Liang</i>
☐	Testing procedure: CTF Stage 1:	N/A
Testing location/ address.....:		
Tested by (name, function, signature).....:		
Approved by (name, function, signature)....:		
☐	Testing procedure: CTF Stage 2:	N/A
Testing location/ address.....:		
Tested by (name + signature)		
Witnessed by (name, function, signature)..:		
Approved by (name, function, signature)....:		
☐	Testing procedure: CTF Stage 3:	N/A
☐	Testing procedure: CTF Stage 4:	N/A
Testing location/ address.....:		
Tested by (name, function, signature).....:		
Witnessed by (name, function, signature)..:		
Approved by (name, function, signature)....:		
Supervised by (name, function, signature) :		

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

Attachment 1: Additional test for LED driver according to the standard EN 61347-2-13 used in conjunction with EN 61347-1 (Total:12 pages)

Attachment 2: Additional requirement of EN IEC 62031: 2020 (Total: 8 pages)

Attachment 3: PCB circuit diagram and PCB layout (Total: 1 page)

Attachment 4: Photo documentations (Total: 7 pages)

Summary of testing:

1. The submitted samples were found to be in compliance with EN 60598-2-20: 2015 used in conjunction with EN IEC 60598-1: 2021.
2. The submitted appliance with lighting source was found to be in compliance with the standard EN 62493: 2015 according to the clause 4.2.2.
3. The LED module has been tested according to EN IEC 62031: 2020, the result was positive.
4. Photobiological hazard measurements have been tested according to Technical report IEC/TR 62778:2014 (Ed 2). According to the test results, the product belongs to RG1 and therefore no markings are required on the product or in the instruction.
5. The LED driver has been tested according to EN 61347-2-13: 2014 + A1: 2017 used in conjunction with EN 61347-1: 2015 + A1: 2021, the result was positive.
6. After review, the model AWHE1608-D-40 was selected to perform the full test, as it has the most onerous structure and maximum power consumption. Other models were performed construction check.

Tests performed (name of test and test clause):

21.6 Marking
 21.7 Construction
 21.8 Creepage distances and clearances
 21.11 External and internal wiring
 21.12 Protection against electric shock
 21.13 Endurance tests and thermal tests
 21.14 Resistance to dust, solid objects and moisture
 21.15 Insulation resistance and electric strength
 21.16 Resistance to heat, fire and tracking

Testing location:

198 Kezhu Road, Science City, Economic & Technology Development Area, Guangzhou, Guangdong, China

Summary of compliance with National Differences (List of countries addressed):

European ground differences were considered.

☒ The product fulfils the requirements of EN 60598-2-21: 2015 and EN IEC 60598-1: 2021.

Use of uncertainty of measurement for decisions on conformity (decision rule) :

☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

☐ Other:... (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

Information on uncertainty of measurement:

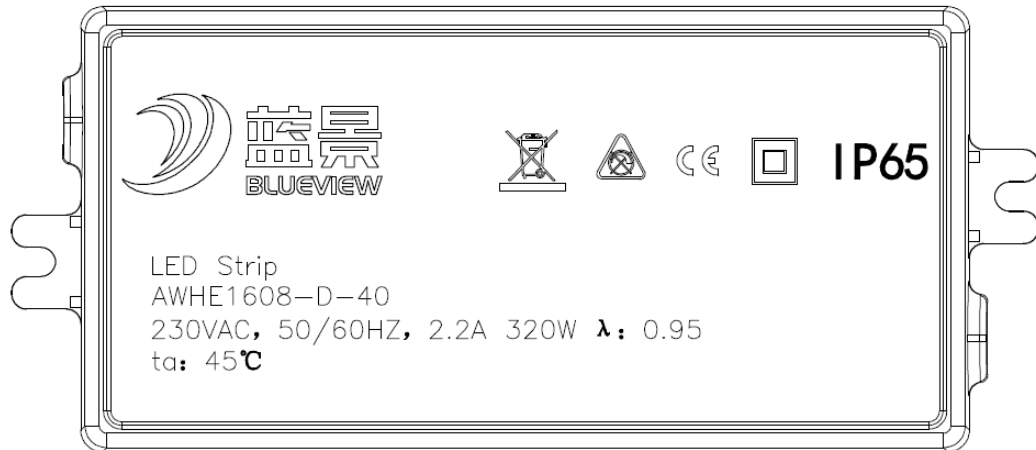
The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.

IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Copy of marking plate:

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

Representative

Location: attached on the enclosure of LED driver

1. The height of WEEE symbol is not less than 7 mm;
2. The height of other graphical symbols and CE logo are not less than 5 mm;
3. The height of letters and numerals is not less than 2 mm;
4. According to the standard, warning and text required by the standard should be written in the official language(s) of the country in which the appliance is to be sold. The applicant should ensure that the samples in future production fulfill the requirement;
5. As declared by the applicant, the importer (and manufacturer, if it is different)'s name, registered trade name or registered trade mark and the postal address will be marked on the products before being place on the market. The contact details shall be in a language easily understood by end-users and market surveillance authorities.
6. Other models have similar label as above, just model no. and wattage are different

Test item particulars	
Classification of installation and use..... : IP65, for indoor and outdoor use	
Supply Connection : Supply cord	
Possible test case verdicts:	
- test case does not apply to the test object..... : N/A	
- test object does meet the requirement..... : P (Pass)	
- test object does not meet the requirement..... : F (Fail)	
Testing	
Date of receipt of test item..... : 2022-01-20	
Date (s) of performance of tests : 2022-01-20 to 2022-03-10	
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a ☒ comma / ☐ point is used as the decimal separator. Clause numbers between brackets refer to clauses in IEC 60598-1 This document is issued by the Company subject to its General Conditions of Service, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60598-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	

Name and address of factory (ies)..... : Blueview Elec-optic Tech Co., Ltd. 1000, Section 2, 2nd Konggang Road, Southwest Aviation Industrial Development Zone, Chengdu, Sichuan, China
General product information: LED sealed light chain with a non-detachable supply cord. It is intended to be permanently connected to fixed wiring through a junction box., IP65, Class II, use for indoor and outdoor.

IEC 60598-2-21			
Clause	Requirement + Test	Result - Remark	Verdict

21.4 (0)	GENERAL TEST REQUIREMENTS		
21.4 (0.3)	More sections applicable	Yes ☐ No ☒ Section/s:	—
21.4 (0.5)	Components	(see Annex 1)	—
21.4 (0.7)	Information for luminaire design in light sources standards		—
21.4 (0.7.2)	Light source safety standard	EN IEC 62031	—
	Luminaire design in the light source safety standard		P

21.5 (2)	CLASSIFICATION		
21.5 (2.2)	Type of protection	Class II	P
21.5 (2.3)	Degree of protection	IP65	P
21.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces	Yes ☒ No ☐	—
21.5 (2.5)	Luminaire for normal use	Yes ☒ No ☐	—
	Luminaire for rough service	Yes ☐ No ☒	—
21.5.2 (-)	Class II or Class III		P
21.5.3 (-)	Rope lights for outdoor use shall be IP44 or higher		P

21.6 (3)	MARKING		
21.6 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
21.6 (3.3)	Additional information		P
	Language of instructions	English	P
21.6 (3.3.1)	Combination luminaires		N/A
21.6 (3.3.2)	Nominal frequency in Hz	50/60 Hz	P
21.6 (3.3.3)	Operating temperature		N/A
21.6 (3.3.5)	Wiring diagram		N/A
21.6 (3.3.6)	Special conditions		N/A
21.6 (3.3.7)	Metal halide lamp luminaire – warning		N/A
21.6 (3.3.8)	Limitation for semi-luminaires		N/A
21.6 (3.3.9)	Power factor and supply current		P
21.6 (3.3.10)	Suitability for use indoors		P

IEC 60598-2-21			
Clause	Requirement + Test	Result - Remark	Verdict
21.6 (3.3.11)	Luminaires with remote control		N/A
21.6 (3.3.12)	Clip-mounted luminaire – warning		N/A
21.6 (3.3.13)	Specifications of protective shields		N/A
21.6 (3.3.14)	Symbol for nature of supply		N/A
21.6 (3.3.15)	Rated current of socket outlet		N/A
21.6 (3.3.16)	Rough service luminaire		N/A
21.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Z	P
21.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
21.6 (3.3.19)	Protective conductor current in instruction if applicable		N/A
21.6 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
21.6 (3.3.21)	Non replaceable and non-user replaceable light sources information provided	Non-replaceable	P
	Cautionary symbol		N/A
21.6 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
21.6 (3.3.23)	Luminaires delivered without controlgear necessary information provided		N/A
21.6 (3.3.24)	Information when terminal block not supplied with the luminaire		P
21.6 (3.3.25)	Information protection for on-site mains wiring against UV		N/A
21.6 (3.3.26)	Instructions fixed wall mounted and portable wall mounted luminaires		N/A
21.6 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
21.6.2 (-)	Rope light marking		P
	Rated voltage and wattage marked on the rope light		P

IEC 60598-2-21			
Clause	Requirement + Test	Result - Remark	Verdict
	Durable non-removable label if information on the cable		N/A
21.6.3 (-)	Rope light and packing marking		N/A
	Marking if only for indoor use		N/A
21.6.4 (-)	Marking on the packing or instructions		P
	Marking a) – e)		P
21.7 (4)	CONSTRUCTION		
21.7 (4.2)	Components replaceable without difficulty	No replaceable components	N/A
21.7 (4.3)	Wireways smooth and free from sharp edges		P
21.7 (4.4)	Lampholders		N/A
21.7 (4.4.1)	Integral lampholder		N/A
21.7 (4.4.2)	Wiring connection		N/A
21.7 (4.4.3)	Lampholder for end-to-end mounting		N/A
21.7 (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)		—
	After test the lampholder have not moved from its position and show no permanent deformation		N/A
21.7 (4.4.5)	Peak pulse voltage		N/A
21.7 (4.4.6)	Centre contact		N/A
21.7 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
21.7 (4.4.8)	Lamp connectors		N/A
21.7 (4.4.9)	Caps and bases correctly used		N/A
21.7 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
21.7 (4.5)	Starter holders		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
21.7 (4.7)	Terminals and supply connections		P
21.7 (4.7.1)	Contact to metal parts	No metal parts	N/A

IEC 60598-2-21			
Clause	Requirement + Test	Result - Remark	Verdict
21.7 (4.7.2)	Test 8 mm live conductor		N/A
	Test 8 mm earth conductor		N/A
21.7 (4.7.3)	Terminals for supply conductors		P
21.7 (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 15.6.2.3 and 15.6.2.4		N/A
21.7 (4.7.4)	Terminals other than supply connection		P
21.7 (4.7.5)	Heat-resistant wiring/sleeves		N/A
21.7 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
21.7 (4.8)	Switches		N/A
	- adequate rating		N/A
	- adequate fixing		N/A
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
21.7 (4.9)	Insulating lining and sleeves		N/A
21.7 (4.9.1)	Retainment		N/A
	Method of fixing		N/A
21.7 (4.9.2)	Insulated linings and sleeves:		N/A
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C)		N/A
21.7 (4.10)	Double or reinforced insulation		P
21.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		P
	Safe installation fixed luminaires		N/A
	Capacitors and switches		N/A

IEC 60598-2-21			
Clause	Requirement + Test	Result - Remark	Verdict
	Interference suppression capacitors according to IEC 60384-14		N/A
21.7 (4.10.2)	Assembly gaps:		N/A
	- not coincidental		N/A
	- no straight access with test probe		N/A
21.7 (4.10.3)	Retainment of insulation:		P
	- fixed		P
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
21.7 (4.10.4)	Protective impedance device		N/A
	Insulation bridged by appropriate resistor(s) or Y capacitor(s)		N/A
	Y1, Y2, or Y4 capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
21.7 (4.11)	Electrical connections and current-carrying parts		P
21.7 (4.11.1)	Contact pressure		P
21.7 (4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
21.7 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
21.7 (4.11.4)	Material of current-carrying parts		P
21.7 (4.11.5)	No contact to wood or mounting surface		P
21.7 (4.11.6)	Electro-mechanical contact systems		N/A
21.7 (4.12)	Screws and connections (mechanical) and glands		N/A

IEC 60598-2-21			
Clause	Requirement + Test	Result - Remark	Verdict
21.7 (4.12.1)	Screws not made of soft metal		N/A
	Screws of insulating material		N/A
	Torque test: torque (Nm); part.....:		N/A
	Torque test: torque (Nm); part.....:		N/A
	Torque test: torque (Nm); part.....:		N/A
21.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
21.7 (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
21.7 (4.12.5)	Screwed glands; force (Nm)		N/A
21.7 (4.13)	Mechanical strength		P
21.7 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm).....:		N/A
	- other parts; energy (Nm).....:	LED driver box; 0,35	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P
21.7 (4.13.3)	Straight test finger		P
21.7 (4.13.4)	Rough service luminaires		N/A
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A
	d) for temporary installations and suitable for mounting on a stand		N/A
21.7 (4.13.6)	Tumbling barrel		N/A
21.7 (4.14)	Suspensions, fixings and means of adjusting		P

IEC 60598-2-21			
Clause	Requirement + Test	Result - Remark	Verdict
21.7 (4.14.1)	Mechanical load:		P
	A) four times the weight	6 kg x 4 =24 kg	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
21.7 (4.14.2)	Load to flexible cables		N/A
	Mass (kg)		—
	Stress in conductors (N/mm ²)		N/A
	Mass (kg) of semi-luminaire		N/A
	Bending moment (Nm) of semi-luminaire		N/A
21.7 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles.....		N/A
	- strands broken		N/A
	- electric strength test afterwards		N/A
21.7 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
21.7 (4.14.5)	Guide pulleys		N/A
21.7 (4.14.6)	Strain on socket-outlets		N/A
21.7 (4.15)	Flammable materials		P
	- glow-wire test 650°C	See Test Table 21.16 (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
	- electronic circuits exempted		N/A

IEC 60598-2-21			
Clause	Requirement + Test	Result - Remark	Verdict
21.7 (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
21.7 (4.16)	Luminaires for mounting on normally flammable surfaces		P
	No lamp control gear: (compliance with Section 12)		N/A
21.7 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
21.7 (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
21.7 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
21.7 (4.17)	Drain holes		N/A
	Clearance at least 5 mm		N/A
21.7 (4.18)	Resistance to corrosion		P
21.7 (4.18.1)	- rust-resistance		N/A
21.7 (4.18.2)	- season cracking in copper		P
21.7 (4.18.3)	- corrosion of aluminium		N/A
21.7 (4.19)	Ignitors compatible with ballast		N/A
21.7 (4.20)	Rough service vibration		N/A
21.7 (4.21)	Protective shield		N/A
21.7 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
21.7 (4.21.2)	Particles from a shattering lamp not impair safety		N/A

IEC 60598-2-21			
Clause	Requirement + Test	Result - Remark	Verdict
21.7 (4.21.3)	No direct path		N/A
21.7 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment.....:	See Test Table 21.16 (13.3.2)	N/A
21.7 (4.22)	Attachments to lamps not cause overheating or damage		N/A
21.7 (4.23)	Semi-luminaires comply Class II		N/A
21.7 (4.24)	Photobiological hazards		P
21.7 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
21.7 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778	RG1	—
	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
21.7 (4.25)	Mechanical hazard		P
	No sharp point or edges		P
21.7 (4.26)	Short-circuit protection		N/A
21.7 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N/A
21.7 (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
21.7 (4.27)	Terminal blocks with integrated screwless earthing contacts		N/A
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A

IEC 60598-2-21			
Clause	Requirement + Test	Result - Remark	Verdict
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
21.7 (4.28)	Fixing of thermal sensing control		N/A
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A
	Test of adhesive fixing:		N/A
	Max. temperature on adhesive material (°C)		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
21.7 (4.29)	Luminaires with non-replaceable light source		P
	Not possible to replace light source		P
	Live part not accessible after parts have been opened by hand or tools		P
21.7 (4.30)	Luminaires with non-user replaceable light source		N/A
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N/A
	Minimum one fixing means		N/A
21.7 (4.31)	Insulation between circuits		P
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N/A
21.7 (4.31.1)	SELV or PELV circuits		N/A
	Used SELV or PELV source		N/A
	PELV circuit connected to earth		N/A
	Voltage $\leq$ ELV		N/A
	Insulating of SELV or PELV circuits from LV supply		N/A
	Insulating of SELV or PELV circuits from other non SELV circuits		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Insulating of SELV or PELV circuits from FELV		N/A
	Insulating of SELV or PELV circuits from other SELV or PELV circuits		N/A
	SELV or PELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to make any electrical contact with 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
21.7 (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 make any electrical contact with 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
21.7 (4.31.3)	Other circuits		P
	Other circuits insulated from accessible parts according Table X.1		P
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N/A
	- conductive parts are connected together		N/A
	- test according 7.2.3		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
21.7 (4.32)	Overvoltage protective devices		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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
21.7 (4.33)	Luminaire powered via information technology communication cabling		N/A
	Luminaire powered via IT communication cabling complies with class III requirements		N/A
	Rated voltage within the range of ES1 and not exceed max. voltage used connector		N/A
	Luminaire in line with limits electric parameters PSE		N/A
	No hazard when supplied with		N/A
	- 130 % rated input voltage > 5 V (minimum 7,5 V)		N/A
	- 150 % rated in put voltage ≤ 5 V		N/A
21.7 (4.34)	Electromagnetic fields (EMF)		P
	Comply with IEC 62493:2015		P
21.7 (4.35)	Protection against moving fan blades		N/A
	No contact to the fan blade with relevant test probe		N/A
	Fan has leading edges and tips rounded with a radius of not less than 0,5 mm and:		N/A
	- hardness less than D60 Shore, or		N/A
	- peripheral speed less than 15 m/s, or		N/A
	- input power not exceeding 2 W		N/A
21.7 (4.36)	Track-mounted luminaires		N/A
	Comply with Annex A of IEC 60570:2003/AMD2:2019		N/A
21.7.2 (-)	Terminal blocks		N/A
	Clause 4.6 of IEC 60598-1 referring to terminal blocks does not apply		—
21.7.3 (-)	Terminals and supply connections		N/A
	Comply with Annex A		N/A
21.7.4 (-)	Control units		P
	Forming an integral part enclosed in non-flammable insulating material tested according 21.16		P
	Securely fixed to the cable		P
	Electronic control device comply with IEC 61347-2-11		N/A
	LED driver comply with IEC 61347-2-13		P

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Clause	Requirement + Test	Result - Remark	Verdict

21.7.5 (-)	Mechanical strength		P
	a) Rigid rope lights		N/A
	1) Pull test: force 60 N		N/A
	2) Torque test: torque 0,15 Nm		N/A
	b) Flexible rope lights		P
	1) Pull test: force 60 N		P
	2) Torque test: torque 0,15 Nm		P
	3) Cylinder 150 mm @ 10 times at 25 °C ± 2 °C		N/A
	For rope lights having an IP number over X0 Additionally: Cylinder 150 mm @ 10 times at -15 °C ± 2 °C		P
	4) Mandrel of between 4 and 5 times the diameter of test piece		P
	c) Impact test at low temperature of -15 °C ± 5 °C		P

21.8 (11)	CREEPAGE DISTANCES AND CLEARANCES		
21.8 (11.2.1)	Impulse withstand category (Normal category II)	Category II ☒ Category III ☐	—
	Category III according Annex U		N/A
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N/A
1.7 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 1.7 (11.2) I	P
	Creepage distances for frequency over 30 kHz:		N/A
	- Controlgear marked with $\hat{U}_{OUT}$ and f_{UOUT} according IEC 61347-1, clause 7.1, item w	See Test Table 1.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 1.7 (11.2) II	N/A
1.7 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 1.7 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with U_P	See Test Table 1.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 1.7 (11.2) II	N/A

21.10 (14)	SCREW TERMINALS		
	Separately approved; component list	(see Annex 1)	N/A
	Part of the luminaire	(see Annex 3)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

21.10 (15)	SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS		
	Separately approved; component list	(see Annex 1)	N/A
	Part of the luminaire	(see Annex 4)	N/A

21.11 (5)	EXTERNAL AND INTERNAL WIRING		
21.11 (5.2)	Supply connection and external wiring		P
21.11 (5.2.1)	Means of connection	Supply cord	P
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment		P
21.11 (5.2.2)	Type of cable.....	Replaced by 21.11.2	—
	Nominal cross-sectional area (mm ²)	Replaced by 21.11.2	—
	Cables equal to IEC 60227 or IEC 60245	Replaced by 21.11.2	—
21.11 (5.2.3)	Type of attachment, X, Y or Z	Type Z	P
21.11 (5.2.5)	Type Z not connected to screws		P
21.11 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
21.11 (5.2.7)	Cable entries through rigid material have rounded edges		P
21.11 (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
21.11 (5.2.9)	Locking of screwed bushings		N/A
21.11 (5.2.10)	Cord anchorage:		P
	- covering protected from abrasion		P
	- clear how to be effective		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		P
	- insulating material or lining		P
21.11 (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
21.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		P
21.11 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N): 60		P
	- torque test: torque (Nm): 0,25		P
	- displacement ≤ 2 mm	Max. 1,68 mm	P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
21.11 (5.2.10.4)	Tests:		N/A
	- pull test: 30N for 1 min		N/A
	- no movement of conductors		N/A
	- no disconnection when soldered		N/A
	- impossible to push cable; unsafe		N/A
21.11 (5.2.11)	External wiring passing into luminaire		P
21.11 (5.2.12)	Looping-in terminals		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
21.11 (5.2.13)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N/A
21.11 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
21.11 (5.2.15)	Class III luminaire powered via IT communication cabling connectors (IEC 60603 or IEC 62680)		N/A
21.11 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Appliance inlet or connector (IEC 61984)		N/A
21.11 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
21.11 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- other standard		N/A
21.11 (5.3)	Internal wiring		P
21.11 (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 protective earth only		N/A
21.11 (5.3.1.1)	Internal wiring connected directly to fixed wiring		P
	Cross-sectional area (mm²)	2 x 1,0	P
	Insulation thickness		P
	Extra insulation added where necessary		N/A
21.11 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Adequate cross-sectional area and insulation thickness		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Current limit rating protection device		N/A
21.11 (5.3.1.3)	Double or reinforced insulation for class II		P
21.11 (5.3.1.4)	Conductors without insulation		N/A
21.11 (5.3.1.5)	SELV or PELV current-carrying parts		N/A
21.11 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
21.11 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		P
21.11 (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
21.11 (5.3.4)	Joints and junctions effectively insulated		N/A
21.11 (5.3.5)	Strain on internal wiring		N/A
21.11 (5.3.6)	Wire carriers		N/A
21.11 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		P
21.11 (5.4)	Test to determine suitability of conductors having a reduced cross-sectional area		N/A
	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
21.11.2 (-)	Cables for rope lights		P
	Type of cable..... :	H05RN-F	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Cables not lighter than IEC 60227 or IEC 60245 for class II rope lights		P
	Cables not lighter than insulation according to 5.3.1 of part 1 for class III rope lights		N/A
	Nominal cross-sectional area (mm ²) :	2 x 1,0	P
	Mechanical properties according 4.14.1 and 4.14.2 of part 1		N/A
21.11.3 (-)	Cord anchorage test		P
	Pull test 30 N 25 times on single-core cable		P
21.11.4 (-)	Plugs and cable length		P
	Splash-proof plug or permanent connection if for outdoor use		P
	Length of the cable between the plug and the connection to the rope light not less than 1,5 m		P
21.11.5 (-)	Maximum length of extendable class II rope lights		N/A
	Maximum length 100 m for 0,5 mm ² cable		N/A
	Maximum length 150 m for 0,75 mm ² cable		N/A
21.12 (8)	PROTECTION AGAINST ELECTRIC SHOCK		
21.12 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		P
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		P
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		N/A
	Double-ended high pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
21.12 (8.2.2)	Portable luminaire adjusted in most unfavourable position		P
21.12 (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
21.12 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N/A
21.12 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load		N/A
	- no-load voltage.....		N/A
	- touch current if applicable (mA)		N/A
	At least one of the conductive parts is insulated (if applicable)		N/A
	Other than ordinary luminaire:		N/A
	- nominal voltage		N/A
21.12 (8.2.3.d)	PELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load		N/A
	- no-load voltage.....		N/A
	Other than ordinary luminaire:		N/A
	- voltage under load		N/A
	- no-load voltage.....		N/A
	Only pole connected to earth accessible, other pole is insulated (if applicable)		N/A
	Class III luminaire only for connection to SELV or PELV		N/A
21.12 (8.2.4)	Portable luminaire have protection independent of supporting surface		P
21.12 (8.2.5)	Compliance with the standard test finger or relevant probe		P

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Clause	Requirement + Test	Result - Remark	Verdict
21.12 (8.2.6)	Covers reliably secured		P
21.12 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$		P
	Portable plug connected luminaire with capacitor	1,2 V	P
	Other plug connected luminaire with capacitor	1,2 V	P
	Discharge device on or within capacitor		P
	Discharge device mounted separately		N/A

21.13 (12)	ENDURANCE TEST AND THERMAL TEST		
21.13.1 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 21.14		—
21.13 (12.3)	Endurance test:		P
	- mounting-position	As normal use	—
	- test temperature (°C)	55	—
	- total duration (h)	240	—
	- supply voltage: Un factor; calculated voltage (V) ...:	253,0	—
	- lamp used	LED	—
21.13 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P
21.13 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
21.13 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	P
21.13 (12.6)	Thermal test (failed lamp control gear condition):		N/A
21.13 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		—
	- case of abnormal conditions		—
	- electronic lamp control gear		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- measured winding temperature (°C): at 1,1 Un		—
	- measured mounting surface temperature (°C) at 1,1 Un		N/A
	- calculated mounting surface temperature (°C)		N/A
	- track-mounted luminaires		N/A
21.13 (12.6.2)	Temperature sensing control		N/A
	- case of abnormal conditions		—
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C).....		N/A
	- track-mounted luminaires		N/A
21.13 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N/A
21.13 (12.7.1)	Luminaire without temperature sensing control		N/A
21.13 (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 Table 21.16 (13.2.1)	N/A
21.13 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A
	- case of abnormal conditions		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- measured winding temperature (°C): at 1,1 Un		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un		—
	- calculated temperature of fixing point/exposed part (°C)		—
	Ball-pressure test.....	See Table 21.16 (13.2.1)	N/A
21.13 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
21.13 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link.....	Yes ☐ No ☐	—
	- manual reset cut-out.....	Yes ☐ No ☐	—
	- auto reset cut-out	Yes ☐ No ☐	—
	- case of abnormal conditions		—
	- highest measured temperature of fixing point/ exposed part (°C):		—
	Ball-pressure test.....	See Table 21.16 (13.2.1)	N/A
21.13.2 (-)	Test voltage		N/A
	Provision of 12.3.1 d) of part 1 and if class III rope lights 1,1 x rated voltage of transformer/convertor		—
	Provision of 12.4.1 d) of part 1 and if class III rope lights 1,06 x rated voltage of transformer/convertor		—
21.13.3 (-)	Short-circuit test of rectifier		N/A
	No emission of flames or molten material or production of flammable gases and no live parts accessible when short-circuit output of the rectifier		N/A

21.14 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		
21.14 (-)	If IP > IP 20 the order of tests as specified in clause 21.13		—
21.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP.....	IP65	—
	- mounting position during test	As normal use	—
	- fixing screws tightened; torque (Nm)	—	—

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Clause	Requirement + Test	Result - Remark	Verdict
	- tests according to clauses	9.2.2 & 9.2.6 of EN IEC 60598-1	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		P
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		P
	c) i) For luminaires without drain holes – no water entry		P
	c) ii) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight and high pressure water jet-proof luminaire		N/A
	e) no contact with live parts (IP 2X)		N/A
	e) no entry into enclosure (IP 3X and IP 4X)		N/A
	e) no contact with live parts (IP3X and IP4X)		N/A
	f) no trace of water on part of lamp requiring protection from splashing water		N/A
	g) no damage of protective shield or glass envelope		P
21.14 (9.3)	Humidity test 48 h	25 °C; RH: 93 %	P

21.15 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		
21.15 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø	Covered by metal foil	—
	Insulation resistance (MΩ)	As below	—
	SELV		N/A
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface		N/A
	- between current-carrying parts and metal parts of the luminaire		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N/A
	- Insulation bushings as described in Section 5		N/A
	Other than SELV		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- between live parts of different polarity	20 MΩ	P
	- between live parts and mounting surface	20 MΩ	P
	- between live parts and metal parts.....		N/A
	- 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	20 MΩ	P
	- Insulation bushings as described in Section 5		N/A
21.15 (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)	As below	P
	SELV		N/A
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface		N/A
	- between current-carrying parts and metal parts of the luminaire.....		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N/A
	- Insulation bushings as described in Section 5		N/A
	Other than SELV		P
	- between live parts of different polarity	1800 V	P
	- between live parts and mounting surface	3600 V	P
	- between live parts and metal parts.....		N/A
	- 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	1800 V	P
	- Insulation bushings as described in Section 5		N/A
21.15 (10.3)	Touch current or protective conductor current (mA):	Touch current: 0,02 mA; (Limit: 0,7 mA)	P

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Clause	Requirement + Test	Result - Remark	Verdict
21.16 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		
21.16 (13.2.1)	Ball-pressure test.....:	See Test Table 21.16 (13.2.1)	P
21.16 (13.3.1)	Needle-flame test (10 s)	See Test Table 21.16 (13.3.1)	P
21.16 (13.3.2)	Glow-wire test (650°C).....:	See Test Table 21.16 (13.3.2)	P
21.16 (13.4)	Proof tracking test (IEC 60112)	See Test Table 21.16 (13.4)	P
20.16 (-)	Flexible pipes of rope lights in compliance with IEC 60811-508		P

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Clause	Requirement + Test	Result - Remark	Verdict

21.8 (11.2)	TABLE I: Creepage distances and clearances						P
	Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages						P
	Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*						P
	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	—	—	—	—	—	—	—
Working voltage (V)					—	—	—
PTI					< 600 ☐	≥ 600 ☐	—
Pulse voltage or U_P if applicable (kV)					—	—	—
Supplementary information: Measured at fuse at LED driver & L/N was sealed							
Distance 2:	R	>11,0	4,0	Table 11.1.B	>11,0	8,5	Table 11.1.A
Working voltage (V)					400 V	—	—
PTI					< 600 ☒	≥ 600 ☐	—
Pulse voltage or U_P if applicable (kV)					—	—	—
Supplementary information: Measured at PCB of LED driver & live part of light chain to accessible part or mounting surface							
Distance 3:	S	4,0	2,0	Table 11.1.B	4,0	3,9	Table 11.1.A
Working voltage (V)					400 V	—	—
PTI					< 600 ☒	≥ 600 ☐	—
Pulse voltage or U_P if applicable (kV)					—	—	—
Supplementary information: Measured at cord anchorage of LED driver							

** 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

21.8 (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 ☐ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) :							—

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:							
Distance 2:							
Working voltage (V)							—
Frequency if applicable (kHz)							—
PTI					< 600 ☐ ≥ 600 ☐		—
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 ☐ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV)							—
Supplementary information:							

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

21.16 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm):		2		—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Plastic enclosure of LED driver	See Annex 1	104	1,47	
PCB of LED driver	See Annex 1	125	1,22	
Potting compound for LED driver	See Annex 1	125	1,3	
End cover of lighting chain	See Annex 1	75	1,3	
Bobbin of transformer	See Annex 1	125	0,68	
Supplementary information: —				

21.16 (13.3.1)	TABLE: Needle-flame test (IEC 60695-11-5)				P
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
PCB of LED driver	See Annex 1	10	No	10	P

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Clause	Requirement + Test	Result - Remark			Verdict
Potting compound for LED driver	Blueview Elec-optic Tech Co., Ltd.	10	No	10	P
Bobbin of transformer	See Annex 1	10	No	10	P
Supplementary information: —					

21.16 (13.3.2)	TABLE: Glow-wire test (IEC 60695-2-11)				P
Glow wire temperature		650°C			—
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict	
Plastic enclosure of LED driver	See Annex 1	No	0	P	
Plastic tube of lighting chain	See Annex 1	No	0	P	
End cover of lighting chain	See Annex 1	No	0	P	
Any flame or glowing of the sample extinguished within 30 s of withdrawing the glow-wire, and any burning or molten drop did not ignite the underlying parts (Yes/No).....:					No
Supplementary information: —					

21.16 (13.4)	TABLE: Proof tracking test (IEC 60112)				P
Test voltage PTI		175 V			—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Potting compound for LED drive	Blueview Elec-optic Tech Co., Ltd.	pass	pass	pass	P
PCB of LED driver	See Annex 1	pass	pass	pass	P
Supplementary information: —					

IEC 60598-2-21			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX A	Requirements for interconnecting connectors for use in rope lights		
	This Annex A consist relevant requirements and modifications of IEC 61984		N/A
5.2	Classification according to protection against electric shock		N/A
	Only enclosed connectors		N/A
5.3	Classification according to the style of connector		N/A
	Only free connectors		N/A
5.4	Classification according to additional characteristics of connectors		N/A
	According b), d), e), f), h), and j)		N/A
6.2.1	Identification		N/A
	According a) and b)		N/A
6.4.1	Non accessibility of live parts		N/A
	Test with test finger on class II rope lights		N/A
6.9.1	Polarisation		N/A
	Improper connection of mating parts is prevented		N/A
	No unsafe compatibility between connectors for class II and class III rope lights of the same manufacturer		N/A
	Male part of class III rope lights not make contact in the female contact of low voltage connectors (e.g. IEC 60320)		N/A
	Manufacturer designed connectors, no unsafe compatibility with systems according IEC 60320 and IEC 60906 and national domestic plug and socket-outlet systems in the country where the rope light is placed on the market		N/A
6.9.3	Connection of conductors		N/A
	Cross sectional area of the contact making part of the interconnecting coupler not less than the corresponding conductor in the interconnected cable		N/A
6.10	Design of a CBC		N/A
	Adequate breaking capacity		N/A
	Female part at the end of the rope light, other than ordinary, provided with sealing device securely fixed to the coupler		N/A
6.13	Dielectric strength		N/A
	Test according clause 21.15 of this standard		N/A
6.14.2	Electrical endurance (CBC)		N/A
	Meet the specified breaking capacity		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Number of cycles 50		—
	Test according 7.3.5		N/A
6.14.3	Bendings (non-rewirable connectors)		N/A
	Meet the specified number of bendings		N/A
	Number of cycles 1000		—
	Test according 7.3.10		N/A
6.17	Cable clamp		N/A
	Test according clause 21.11.3 of this standard		N/A

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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 ¹⁾	
Input wire of LED driver	B	Guangdong Rifeng Electrical Cable Co., Ltd.	H05RN-F	2 x 1,0 mm ²	EN 50525-2-21	VDE	
Output wire of LED driver	B	Guangdong Rifeng Electrical Cable Co., Ltd.	H05RN-F	2 x 1,0 mm ²	EN 50525-2-21	VDE	
Enclosure of LED driver	B	Sabic Innovative Plastics US L L C	--	PC-945; 1,5 mm; V-0; L141.3*W61.2*H35 mm	EN IEC 60598-1 EN 60598-2-21	UL & Tested with appliance	
End cover of lighting chain	B	Sabic Innovative Plastics US L L C	--	PC-945; 1,5 mm; V-0; L141.3*W61.2*H35mm	EN IEC 60598-1 EN 60598-2-21	UL & Tested with appliance	
Plastic tube of lighting chain	B	Shenzhen Sisun Silicone Technology Co., Ltd.	XS1110-ZA	HB; Solid Silica Ge	EN IEC 60598-1 EN 60598-2-21	UL & Tested with appliance	
LED	B	Henzhen HSG Electronics Co., Ltd.	2835	VF: 8,5-9,4 V IF: 30 mA; 2700-6500K	EN IEC 62031	Tested with appliance	
- Fuse	B	Conquer Electronics Co Ltd	MST	5 A; 300 V	EN 60127-1 EN 60127-3	VDE	
- Varistor	B	Shenzhen Spsemi Electronics Co., Ltd.	HEL-10D561K	385 V DC; 8/20 µs; 1750 A; 40/85/56	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE	
	B	Shenzhen Spsemi Electronics Co., Ltd.	HEL-10D471K	385 V DC; 8/20 µs; 1750 A; 40/85/56	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE	
- X2 cap	B	Guangdong Jurcc Electronics Co., Ltd.	MPX/MKP	0,68 µF; 275 VAC; 40/110/56/B	EN 60384-14	VDE	
- Y cap	B	Jusun (Taishan) Electronics Ltd.	JB	400 V ac; 220 pF; 25/85/21/C; Y1	EN 60384-14	VDE	
- PCB	B	Chengdu Tianmu Electronic Equipment Co., Ltd.	TM-001	V-0; 130 °C	EN 61347-1 EN 61347-2-13	UL & Tested with appliance	

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Clause	Requirement + Test			Result - Remark		Verdict
- Transformer	B	TDG Co., Ltd.	POT4020	Class B	EN 61347-1 EN 61347-2-13	Tested with appliance
- Winding of transformer	B	Shantou Shengang Electrical Industrial Co., Ltd.	xUEW/155	155 °C	EN 61347-1 EN 61347-2-13	UL & Tested with appliance
- Insulation tape of transformer	B	Jingjiang Yahua Pressure Sensitive Glue Co., Ltd.	CT-280B	130 °C	EN 61347-1 EN 61347-2-13	UL & Tested with appliance
- Bobbin of transformer	B	Chang Chun Plastic Co., Ltd.	T375J(G5)(G6)	150 °C	EN 61347-1 EN 61347-2-13	UL & Tested with appliance
Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039. The codes above have the following meaning: A - The component is replaceable with another one, also certified, with equivalent characteristics B - The component is replaceable if authorised by the test house C - Integrated component tested together with the appliance D - Alternative component						

IEC 60598-2-21			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		P				
	Type reference	AWHE1608-D-40	—				
	Lamp used.....	Non-replaceable LEDs	—				
	Lamp control gear used	LED driver	—				
	Mounting position of luminaire.....	As normal use	—				
	Supply wattage (W)	322,0	—				
	Supply current (A).....	1,42	—				
	Calculated power factor	0,93	—				
	Table: measured temperatures corrected for ta = 45 °C:		P				
	- abnormal operating mode	Shorted circuit SEC circuit	—				
	- test 1: rated voltage	—	—				
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....	230 V X 1,06 = 243,8 V	—				
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	—	—				
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage.....	230 V x 1,1 = 253 V	—				
	Through wiring or looping-in wiring loaded by a current of A during the test	—	—				
Temperature measurements, (°C)							
Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Supply cord	45,0	—	68,1	—	90		
By clamped for input wire	45,0	—	63,1	—	75	—	—
Output wire	45,0	—	75,0	—	90		
By clamped for output wire	45,0	—	64,3	—	75	—	—
End cover	45,0	—	51,4	—	Ref.	—	—
LED	45,0	—	54,4	—	Ref.	—	—
Plastic tube	45,0	—	53,7	—	Ref.	—	—
Mounting surface	45,0	—	54,2	—	90	73,7	130

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Clause	Requirement + Test				Result - Remark		Verdict
Object lighted (0,1 m)	45,0	—	46,6	—	90	65,1	175
Plastic enclosure of driver	45,0	—	80,8	—	Ref.	—	—
PCB of LED driver	45,0	—	85,0	—	130	—	—
Fuse of LED driver	45,0	—	64,2	—	Ref.	—	—
CY1 of LED driver	45,0	—	85,2	—	125	83,8	135
VR1 of LED driver	45,0	—	67,9	—	85	—	—
X2 cap of LED driver	45,0	—	73,2	—	110	72,2	120
Electrical cap	45,0	—	80,2	—	105	79,0	115
Winding of transformer (pri)	45,0	—	91,6	—	120	89,4	175
Winding of transformer (sec)	45,0	—	92,8	—	120	90,6	175
Insulation tape of transformer	45,0	—	89,7	—	130	—	—
Bobbin of transformer	45,0	—	90,8	—	150	—	—
Supplementary information: —							

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 3	Screw terminals (part of the luminaire)		
(14)	SCREW TERMINALS		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 ²)		—
(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

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 4	Screwless terminals (part of the luminaire)		
(15)	SCREWLESS TERMINALS		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

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Clause	Requirement + Test					Result - Remark				Verdict
	Terminal size and rating									N/A
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
(15.6.3.1) (15.6.3.2)	TABLE: Contact resistance test / Heating tests									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									
	Voltage drop after 10th alt. 25th cycle									
	Max. allowed voltage drop (mV)..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop after 50th alt. 100th cycle									
	Max. allowed voltage drop (mV)..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 10th alt. 25th cycle									
	Max. allowed voltage drop (mV)..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 50th alt. 100th cycle									
	Max. allowed voltage drop (mV)..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
Supplementary information:										

----- End of main test report -----

Attachment 2: Additional test for LED driver according to the standard EN 61347-2-13 used in conjunction with EN 61347-1			
Clause	Requirement + Test	Result - Remark	Verdict

4 (4)	GENERAL REQUIREMENTS		
- (4)	<u>Insulation materials</u> for double or reinforced insulation according requirements in Annex N of IEC 61347-1	(see Annex N)	N/A
- (4)	Compliance of <u>independent controlgear enclosure</u> with IEC 60598-1		N/A
- (4)	<u>Built-in electronic controlgear</u> with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
4 (4)	<u>SELV controlgear</u> comply with Annex I of this part 2 and Annex L of IEC 61347-1	(see Annex L)	N/A
4 (-)	Transformer comply with IEC 61558		N/A
	Dielectric strength test of insulated winding wires is limited to 3 kV if input voltage $\leq$ 300 V		N/A

6 (6)	CLASSIFICATION		
	Built-in controlgear	Yes ☐ No ☒	—
	Independent controlgear.....	Yes ☒ No ☐	—
	Integral controlgear	Yes ☐ No ☒	—
6 (-)	Auto-wound controlgear	Yes ☐ No ☒	—
	Separating controlgear	Yes ☐ No ☒	—
	Isolating controlgear	Yes ☐ No ☒	—
	SELV controlgear	Yes ☐ No ☒	—

7 (7)	MARKING	N/A
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8 (10)	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS		
- (10.1)	Controlgear protected against accidental contact with live parts		P
- (A2)	Voltage measured with 50 k Ω		N/A
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impedance device		N/A
- (10.1)	Lacquer or enamel not used for protection or insulation		N/A
	Adequate mechanical strength on parts providing protection		N/A
- (10.2)	Capacitors > 0,5 μ F: voltage after 1 min (V): < 50 V	Evaluated with luminaire	N/A
- (10.3)	Controlgear providing SELV		N/A

Attachment 2: Additional test for LED driver according to the standard EN 61347-2-13 used in conjunction with EN 61347-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		N/A
	No connection between output circuit and the body or protective earthing circuit		N/A
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		N/A
	SELV outputs separated by at least basic insulation		N/A
	ELV conductive parts insulated as live parts		N/A
	Tests according Annex L of IEC 61347-1	(see Annex L)	P
- (10.4)	Accessible conductive parts in SELV circuits		N/A
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		N/A
	If output voltage > 25 V r.m.s. or > 60 V d.c.;; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c.:		N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		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
9 (8)	TERMINALS		N/A
10 (9)	PROVISION FOR PROTECTIVE EARTHING		N/A
11 (11)	MOISTURE RESISTANCE AND INSULATION		
- (11)	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance:		P
	For basic insulation ≥ 2 M Ω	> 20 M Ω	P
	For double or reinforced insulation ≥ 4 M Ω	> 20 M Ω	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		N/A

Attachment 2: Additional test for LED driver according to the standard EN 61347-2-13 used in conjunction with EN 61347-1			
Clause	Requirement + Test	Result - Remark	Verdict

12 (12)	ELECTRIC STRENGTH		
- (12)	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		N/A
	Working voltage ≤ 50 V, test voltage 500 V		N/A
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, $2U + 1000$ V	1800 V	P
	Supplementary insulation, $2U + 1000$ V		N/A
	Double or reinforced insulation, $4U + 2000$ V	3600 V	P
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N/A

14 (14)	FAULT CONDITIONS		
- (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		P
	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)	N/A
- (14.5)	Short-circuit across electrolytic capacitors	(see appended table)	P
	Short-circuit or interruption of SPDs	(see appended table)	N/A
14 (-)	Reversed voltage polarity if d.c. supplied control gear	(see appended table)	N/A
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 M Ω	> 20 M Ω	P
	No flammable gases		P

Attachment 2: Additional test for LED driver according to the standard EN 61347-2-13 used in conjunction with EN 61347-1			
Clause	Requirement + Test	Result - Remark	Verdict

	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		—
14 (-)	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C		N/A

15 (-)	TRANSFORMER HEATING		
15.1	General		N/A
	Transformer comply with clause L.6 and L.7 of IEC 61347-1		N/A
	Output voltage of SELV controlgear not exceed limits in 10.4 of IEC 61347-1 during the test of 15.1 and 15.2		N/A
15.2 (-)	Normal operation		N/A
	Comply with clause L.6 of IEC 61347-1		N/A
15.3 (-)	Abnormal operation		N/A
	Comply with clause L.7 of IEC 61347-1		N/A
	Double LED modules or equivalent load connected in parallel to the output terminals of constant voltage type		N/A
	Double LED modules or equivalent load connected in serial to the output terminals of constant current type		N/A
15 (-)	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		N/A

16 (15)	CONSTRUCTION		
- (15.1)	Wood, cotton, silk, paper and similar fibrous material		P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	Printed circuits		P
	Printed circuits used as internal connections complies with clause 14		P
- (15.3)	Plugs and socket-outlets used in SELV or ELV circuits		N/A
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N/A

Attachment 2: Additional test for LED driver according to the standard EN 61347-2-13 used in conjunction with EN 61347-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N/A
	Plugs and socket-outlets for SELV ≤ 3 A, ≤ 25 V r.m.s. or ≤ 60 V d.c. and ≤ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:		N/A
	- plugs not able to enter socket-outlets of other standardised system		N/A
	- socket-outlets not admit plugs of other standardised system		N/A
	- socket-outlets without protective earth		N/A
- (15.4)	Insulation between circuits and accessible parts		N/A
- (15.4.2)	SELV circuits		N/A
	Source used to supply SELV circuits:		N/A
	- safety isolating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- controlgear providing SELV in accordance with relevant part 2 of IEC 61347		N/A
	- another source		N/A
	Voltage in the circuit not higher than ELV		N/A
	SELV circuits insulated from LV by double or reinforced insulation		N/A
	SELV circuits insulated from non SELV circuits by double or reinforced insulation		N/A
	SELV circuits insulated from FELV circuits by supplementary insulation		N/A
	SELV circuits insulated from other SELV circuits by basic insulation		N/A
	SELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
- (15.4.3)	FELV circuits		N/A
	Source used to supply FELV circuits:		N/A
	- separating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- separating controlgear providing basic insulation between input and output circuits in accordance with relevant part 2 of IEC 61347		N/A
	- another source		N/A
	- source in circuits separated by the LV supply by basic insulation		N/A
	Voltage in the circuit not higher than ELV		N/A

Attachment 2: Additional test for LED driver according to the standard EN 61347-2-13 used in conjunction with EN 61347-1			
Clause	Requirement + Test	Result - Remark	Verdict

	FELV circuits insulated from LV supply by at least basic insulation		N/A
	FELV circuits insulated from other FELV circuits if functional purpose		N/A
	FELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
	Plugs and socket-outlets for FELV system comply with:		N/A
	- plugs not able to enter socket-outlets of other voltage systems		N/A
	- socket-outlets not admit plugs of other voltage systems		N/A
	- socket-outlets have a protective conductor contact		N/A
- (15.4.4)	Other circuits		N/A
	Insulation between circuits other than SELV or FELV and accessible conductive parts in according Table 6 in 15.4.5.		N/A
- (15.4.5)	Insulation between circuits and accessible conductive parts		N/A
	Accessible conductive parts insulated from active parts of electric circuits by insulating according Table 6		N/A
	Requirements for Class II construction with equipotential bonding for protection against indirect contact with live parts:		N/A
	- all conductive parts are connected together		N/A
	- conductive parts are reliably connected together according test of IEC 60598-1 cl. 7.2.3		N/A
	- conductive parts comply with requirements of Annex A in case of insulation fault		N/A

17 (16)	CREEPAGE DISTANCES AND CLEARANCES		
- (16.1)	General		P
	Creepage distances and clearances according to 16.2 and 16.3		P
	Controlgears providing SELV comply with additional requirements in Annex L		N/A
	Insulating lining of metallic enclosures		N/A
	Controlgear protected against pollution comply with Annex P	(see Annex P)	N/A
- (16.2)	Creepage distances		P
- (16.2.2)	Minimum creepage distances for working voltages		P

Attachment 2: Additional test for LED driver according to the standard EN 61347-2-13 used in conjunction with EN 61347-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Creepage distances according to Table 7	(see appended table)	P
- (16.2.3)	Creepage distances for working voltages with frequencies above 30 kHz		N/A
	Creepage distances according to Table 8	(see appended table)	N/A
- (16.3)	Clearances		P
- (16.3.2)	Clearances for working voltages		P
	Clearances distances according to Table 9	(see appended table)	P
- (16.3.3)	Clearances for ignition voltages and working voltages with higher frequencies		N/A
	Clearances distances for basic or supplementary insulation according to Table 10	(see appended table)	N/A
	Clearances distances for reinforced insulation according to Table 11	(see appended table)	N/A
18 (17)	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS		
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
(4.11)	Electrical connections		P
(4.11.1)	Contact pressure		P
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	Mechanical connections and glands		N/A
(4.12.1)	Screws not made of soft metal		N/A
	Screws of insulating material		N/A
	Torque test: torque (Nm); part..... :		N/A
	Torque test: torque (Nm); part..... :		N/A
	Torque test: torque (Nm); part..... :		N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
(4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm) :		N/A

Attachment 2: Additional test for LED driver according to the standard EN 61347-2-13 used in conjunction with EN 61347-1			
Clause	Requirement + Test	Result - Remark	Verdict

	- lampholder; torque (Nm)..... :		N/A
	- push-button switches; torque 0,8 Nm..... :		N/A
(4.12.5)	Screwed glands; force (Nm)..... :		N/A

19 (18)	RESISTANCE TO HEAT, FIRE AND TRACKING		
- (18.1)	Ball-pressure test	See main test report	P
- (18.2)	Test of printed boards	See main test report	P
- (18.3)	Glow-wire test	See main test report	P
- (18.4)	Needle flame test	See main test report	P
- (18.5)	Tracking test	See main test report	P

20 (19)	RESISTANCE TO CORROSION		
	- test according 4.18.1 of IEC 60598-1		N/A
	- adequate varnish on the outer surface		N/A

21 (-)	MAXIMUM WORKING VOLTAGE (U_{out}) IN ANY LOAD CONDITION		
	Not exceed declared maximum working voltage U_{out} in any load condition		N/A

14	TABLE: tests of fault conditions		P
Part	Simulated fault		Hazard
DB	Shorted circuit; fuse broken, no damage, non-recoverable when removed the fault		NO
DB	Opened circuit; no damage, recoverable when removed the fault		NO
C1	Opened circuit; no damage, non-recoverable when removed the fault		NO
D4	Shorted circuit; no damage, recoverable when removed the fault		NO
Z1	Shorted circuit; no damage, recoverable when removed the fault		NO
C2	Shorted circuit; no damage, recoverable when removed the fault		NO
D1	Shorted circuit; no damage, recoverable when removed the fault		NO
C6	Shorted circuit; no damage, recoverable when removed the fault		NO
Q3	Shorted circuit; no damage, non-recoverable when removed the fault		NO
D3	Shorted circuit; no damage, recoverable when removed the fault		NO

Attachment 2: Additional test for LED driver according to the standard EN 61347-2-13 used in conjunction with EN 61347-1			
Clause	Requirement + Test	Result - Remark	Verdict

17 (16)		TABLE: clearance and creepage distance measurements (mm)						N/A	
Applicable part of IEC 61347-1 Table 7 – 11*									
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required			
			clearance	*Table		creepage	*Table		
Distance 1:	—	—	—	—	—	—	—		
Working voltage (V)					400 V		—		
Frequency if applicable (kHz)					—		—		
PTI					< 600 ☒ ≥ 600 ☐		—		
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV)					—		—		
Pulse voltage if applicable (kV)					—		—		
Supplementary information: —									
Distance 2:	—	—	—	—	—	—	—		
Working voltage (V)					400 V		—		
Frequency if applicable (kHz)					—		—		
PTI					< 600 ☒ ≥ 600 ☐		—		
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV)					—		—		
Pulse voltage if applicable (kV)					—		—		
Supplementary information: —									
Distance 3:	—	—	—	—	—	—	—		
Working voltage (V)					400 V		—		
Frequency if applicable (kHz)					—		—		
PTI					< 600 ☒ ≥ 600 ☐		—		
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV)					—		—		
Pulse voltage if applicable (kV)					—		—		
Supplementary information: —									

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

Attachment 2: Additional test for LED driver according to the standard EN 61347-2-13 used in conjunction with EN 61347-1			
Clause	Requirement + Test	Result - Remark	Verdict
(A)	ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK		
(A.1)	Comply with A.2 or A.3		N/A
(A.2)	Voltage ≤ 35 V peak or ≤ 60 V d.c. :		N/A
(A.3)	If voltage measured according Clause A.2 exceeds the limit value; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. :		N/A
	Comply with Annex G.2 of IEC 60598-1		N/A
(C)	ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING		N/A
(D)	ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR		N/A
(F)	ANNEX F – DRAUGHT-PROOF ENCLOSURE		P
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P
	Other design; description		N/A
(H)	ANNEX H - TESTS		
	All tests performed in accordance with the advice given in Annex H, if applicable		P
I (L)	ANNEX I IN THIS PART 2 – PARTICULAR ADDITIONAL REQUIREMENTS FOR SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEARS FOR LED MODULES		N/A
J (-)	ANNEX J IN THIS PART 2 – PARTICULAR ADDITIONAL SAFETY REQUIREMENTS FOR A.C., A.C./D.C. OR D.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR EMERGENCY LIGHTING		N/A
(N)	ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION		N/A
(O)	ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION		N/A

Attachment 2: Additional test for LED driver according to the standard EN 61347-2-13 used in conjunction with EN 61347-1			
Clause	Requirement + Test		Verdict
(P)	Creepage distances and clearances and distance through isolation (DTI) for lamp controlgear which are protected against pollution by the use of coating or potting		P
(P.1)	General		P
	P.2 applies if creepage distances less than the minimum in Table 7 and 8		P
	P.3 applies if clearance less than the minimum in Table 9, 10 and 11		P
(P.2)	Creepage distances		P
(P.2.2)	Minimum creepage distances for working voltages and rated voltages with frequencies up to 30 kHz (Table P.1)		P
	Basic or supplementary insulation:		P
	Required creepage	1,3 mm	—
	Measured	2,8 mm	
	Supplementary information		—
	Reinforced insulation:		P
	Required creepage	2,6 mm	—
	Measured	>3,9 mm	P
	Supplementary information		—
(P.2.3)	Creepage distances for working voltages with frequencies above 30 kHz (Table P.2)		N/A
	Voltage $\hat{U}_{out}$ kV		—
	Frequency		—
	Required distance.....		—
	Measured		N/A
	Supplementary information		—
(P.2.4)	Compliance with the required creepage distances		P
(P.2.4.1)	Compliance in accordance with 16.3.3 and test according P.2.4.2		P
(P.2.4.3)	Electrical tests after conditioning		P
(P.2.4.3.1)	Insulation resistance and electric strength according Clause 11 and 12		P
(P.3)	Distance through isolation		N/A
(P.3.4)	Electrical tests after conditioning		N/A
(P.3.4.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A
(P.3.4.2)	Impulse voltage dielectrical test		N/A
	Basic or supplementary insulation:		N/A
	Working/rated voltage		—
	Impulse voltage		N/A
	Supplementary information		—

Attachment 2: Additional test for LED driver according to the standard EN 61347-2-13 used in conjunction with EN 61347-1			
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Clause	Requirement + Test	Result - Remark	Verdict
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	Reinforced insulation:		N/A
	Working/rated voltage		—
	Impulse voltage		N/A
	Supplementary information		—

ANNEX 2	Screw terminals (part of the luminaire)	N/A
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ANNEX 3	Screwless terminals (part of the luminaire)	N/A
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- - - End of attachment 2 - - -

Attachment 2: Additional requirement of EN IEC 62031: 2020			
Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		
4.2	Classification		
	Built-in module: Yes ☐ No ☒		—
	Independent module: Yes ☐ No ☒		—
	Integral module: Yes ☒ No ☐		—
4.6	Independent modules comply with requirements in IEC 60598-1:2014/AMD1:2017		N/A
4.8	Modules with integrated controlgear providing SELV comply with requirements according to IEC 61347-1:2015/AMD1:2017 clause L.5 to L.11.	(see Annex 1)	N/A
6	MARKING		N/A
7	TERMINALS		N/A
8 (9)	EARTHING		N/A
9 (10)	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS		
- (10.1)	Controlgear protected against accidental contact with live parts	Rely upon the luminaire enclosure for protection against electric shock	N/A
- (A2)	Voltage measured with 50 kΩ	(see Annex A)	N/A
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impedance device	(see Annex A)	N/A
- (10.1)	Lacquer or enamel not used for protection or insulation		N/A
	Adequate mechanical strength on parts providing protection		N/A
- (10.2)	Capacitors > 0,5 μF: voltage after 1 min (V): < 50 V :		N/A
- (10.3)	Controlgear providing SELV		N/A
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		N/A
	No connection between output circuit and the body or protective earthing circuit		N/A
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		N/A
	SELV outputs separated from earth by at least basic insulation		N/A
	ELV conductive parts insulated as live parts		N/A

Attachment 2: Additional requirement of EN IEC 62031: 2020			
Clause	Requirement + Test	Result - Remark	Verdict
	Tests according Annex L of IEC 61347-1		N/A
- (10.4)	Accessible conductive parts in SELV circuits		N/A
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		N/A
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c.:		N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		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
10 (11)	MOISTURE RESISTANCE AND INSULATION		
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (M Ω):		P
	For basic insulation ≥ 2 M Ω	20 M Ω	P
	For double or reinforced insulation ≥ 4 M Ω	20 M Ω (tested with luminaire)	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		N/A
11 (12)	ELECTRIC STRENGTH		
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		N/A
	Working voltage ≤ 50 V, test voltage 500 V		N/A
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		N/A
	Basic insulation, $2U + 1000$ V	1800 V	P
	Supplementary insulation, $2U + 1000$ V		N/A
	Double or reinforced insulation, $4U + 2000$ V	3600 V (tested with luminaire)	P
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N/A

Attachment 2: Additional requirement of EN IEC 62031: 2020			
Clause	Requirement + Test	Result - Remark	Verdict
12 (14)	FAULT CONDITIONS		
- (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		P
	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)	N/A
- (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)	N/A
- (14.5)	Short-circuit across electrolytic capacitors	(see appended table)	N/A
	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 $\geq 1 \text{ M}\Omega$	20 $\text{M}\Omega$	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		—
12.2	Overpower condition		P
	Module withstands overpower condition >15 min.		P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		N/A
	No fire, smoke or flammable gas is produced		P
	Molten material does not ignite tissue paper, spread below the module		P
14 (15)	CONSTRUCTION		
- (15.1)	Wood, cotton, silk, paper and similar fibrous material		P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	Printed circuits		N/A

Attachment 2: Additional requirement of EN IEC 62031: 2020			
Clause	Requirement + Test	Result - Remark	Verdict
	Printed circuits used as internal connections complies with clause 14		N/A
15 (16)	CREEPAGE DISTANCES AND CLEARANCES		
- (16.1)	General		P
	Creepage distances and clearances according to 16.2 and 16.3		P
	Controlgears providing SELV comply with additional requirements in Annex L		N/A
	Insulating lining of metallic enclosures		N/A
	Controlgear protected against pollution comply with Annex P		N/A
- (16.2)	Creepage distances		P
- (16.2.2)	Minimum creepage distances for working voltages		P
	Creepage distances according to Table 7	(see appended table)	P
- (16.2.3)	Creepage distances for working voltages with frequencies above 30 kHz		N/A
	Creepage distances according to Table 8	(see appended table)	N/A
- (16.3)	Clearances		P
- (16.3.2)	Clearances for working voltages		P
	Clearances distances according to Table 9	(see appended table)	P
- (16.3.3)	Clearances for ignition voltages and working voltages with higher frequencies		N/A
	Clearances distances for basic or supplementary insulation according to Table 10		N/A
	Clearances distances for reinforced insulation according to Table 11		N/A
16 (17)	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS		
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		—
(4.11)	Electrical connections		P
(4.11.1)	Contact pressure		P
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P

Attachment 2: Additional requirement of EN IEC 62031: 2020			
Clause	Requirement + Test	Result - Remark	Verdict
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	Mechanical connections and glands		N/A
(4.12.1)	Screws not made of soft metal		N/A
	Screws of insulating material		N/A
	Torque test: torque (Nm); part.....:		N/A
	Torque test: torque (Nm); part.....:		N/A
	Torque test: torque (Nm); part.....:		N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
(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
(4.12.5)	Screwed glands; force (Nm).....:		N/A
17 (18)	RESISTANCE TO HEAT, FIRE AND TRACKING		
- (18.1)	Ball-pressure test	See Test Table 17 (18.1)	N/A
- (18.2)	Test of printed boards	See Test Table 17 (18.2)	N/A
- (18.3)	Glow-wire test (650°C)	See Test Table 17 (18.3)	N/A
- (18.4)	Needle-flame test (10 s)	See main test report	P
- (18.5)	Proof tracking test	See Test Table 17 (18.5)	N/A
18	RESISTANCE TO CORROSION		
	Comply with requirements according 4.18 of IEC 60598-1		N/A
20	HEAT MANAGEMENT		N/A
22	PHOTOBIOLOGICAL SAFETY		
22.1	UV radiation		P
	Luminous radiation not exceed 2mW/klm		P
22.2	Blue light hazard		P
	Assessed according to IEC TR 62778	RG1	P
22.3	Infrared radiation		N/A
	Requirements for infrared radiation when required		N/A

Attachment 2: Additional requirement of EN IEC 62031: 2020			
Clause	Requirement + Test	Result - Remark	Verdict

A	ANNEX A - TESTS		
	All tests performed in accordance with the advice given in Annex H of IEC 61347-1, if applicable		P

12 (14)	TABLE: tests of fault conditions		P
Part	Simulated fault		Hazard
LED	Short-circuited		NO
LED	Open circuit		NO

Attachment 2: Additional requirement of EN IEC 62031: 2020			
Clause	Requirement + Test	Result - Remark	Verdict

15 (16)	TABLE: clearance and creepage distance measurements (mm)						P
Applicable part of IEC 61347-1 Table 7 – 11*							
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	—	—	—	—	—	—	—
Working voltage (V).....:					—		—
Frequency if applicable (kHz)					—		—
PTI.....:					< 600 ☐ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV)					—		—
Pulse voltage if applicable (kV)					—		—
Supplementary information: L&N was sealed.							
Distance 2:	R	>6,5	4,0	Table 9	>11,0	8,5	Table 7
Working voltage (V).....:					400 V		—
Frequency if applicable (kHz)					—		—
PTI.....:					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV)					—		—
Pulse voltage if applicable (kV)					—		—
Supplementary information: Measured at live parts to accessible parts							
Distance 3:	R	>6,5	4,0	Table 9	>11,0	8,5	Table 7
Working voltage (V).....:					400 V		—
Frequency if applicable (kHz)					—		—
PTI.....:					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV)					—		—
Pulse voltage if applicable (kV)					—		—
Supplementary information: Measured at live parts to mounting surface							

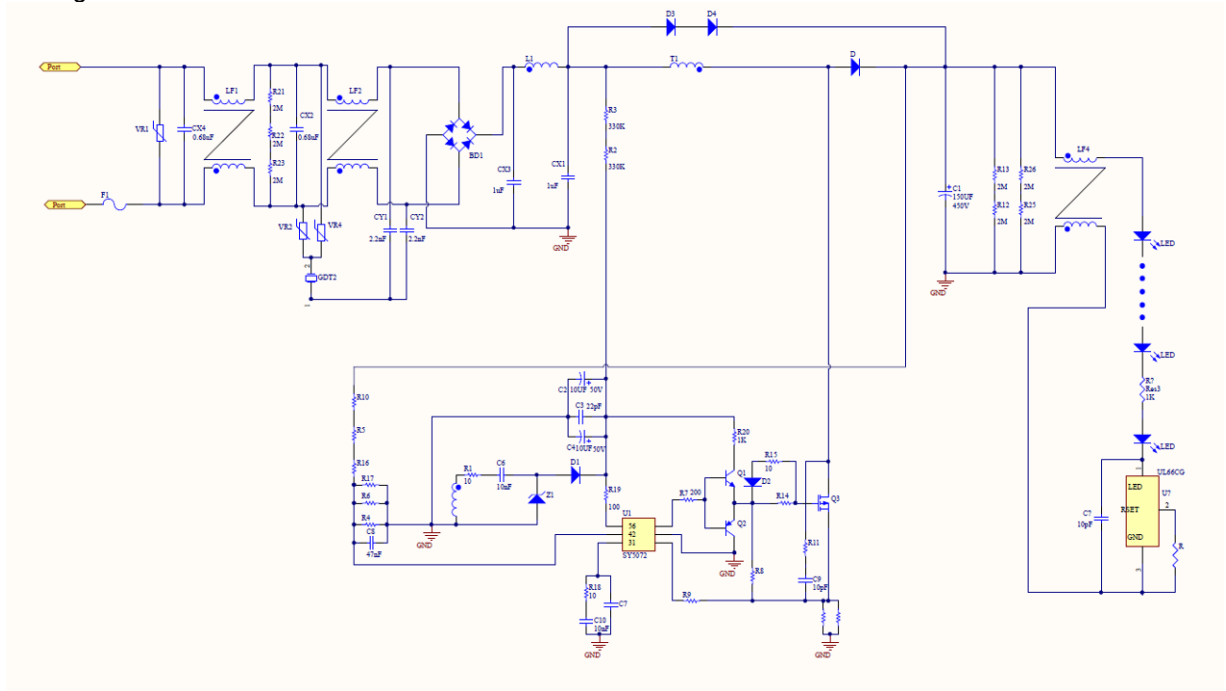
** Insulation type: B – Basic; S – Supplementary; R – Reinforced

Attachment 2: Additional requirement of EN IEC 62031: 2020			
Clause	Requirement + Test	Result - Remark	Verdict
17 (18.1)	TABLE: Ball Pressure Test of Thermoplastics		N/A
17 (18.2)	TABLE: Test of printed boards		N/A
17 (18.3)	TABLE: Glow-wire test		N/A
17 (18.4)	TABLE: Needle-flame test		N/A
17 (18.5)	TABLE: Proof tracking test		N/A
(A)	ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK		N/A
ANNEX 1	LED MODULES WITH INTEGRAL CONTROLGEAR PROVIDING SELV		N/A
ANNEX 3	Screw terminals (part of the luminaire)		N/A
ANNEX 4	Screwless terminals (part of the luminaire)		N/A

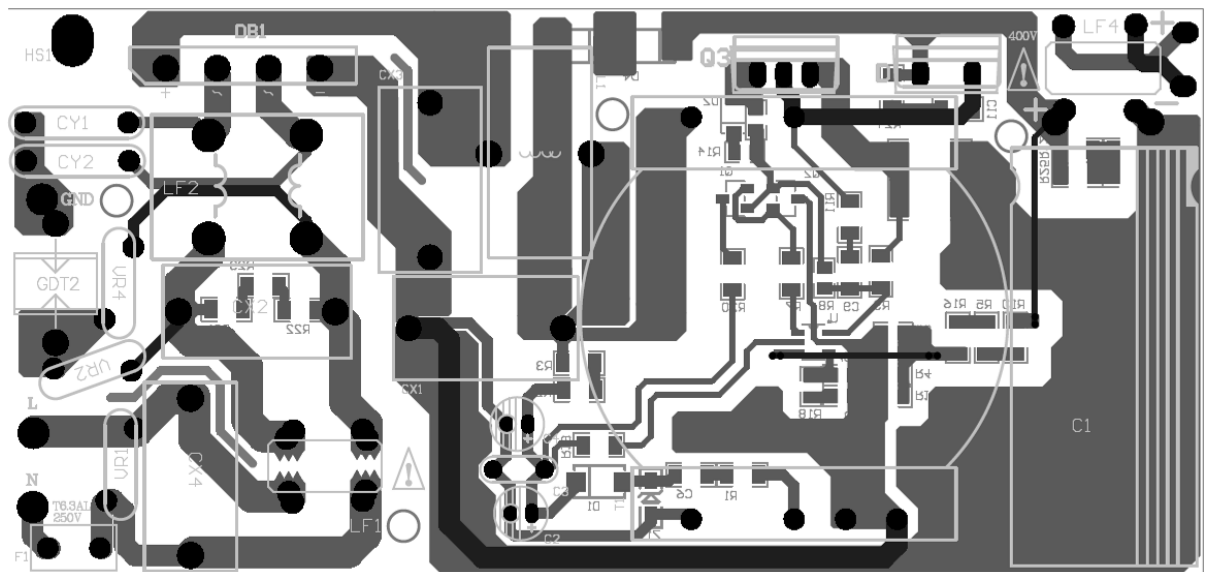
- - - End of attachment 2 - - -

Attachment 3: PCB circuit diagram and PCB layout

Circuit diagram:



Blueview Elec-optic Tech Co., Ltd.



- - - End of attachment 3 - - -

Attachment 5: photo documentations

Clause	Requirement + Test	Result - Remark	Verdict
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Details of: General view for AWHE1608-D-40, similar to other models, just different in length.

View:

☒ general

☐ front

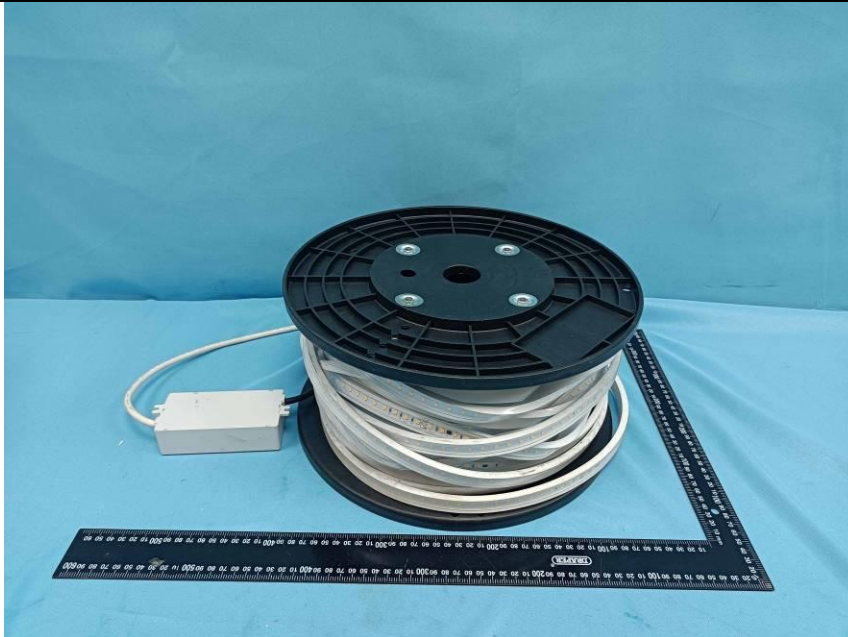
☐ rear

☐ right

☐ left

☐ top

☐ bottom



Details of: End cover view (sealed by glue)

View:

☒ general

☐ front

☐ rear

☐ right

☐ left

☐ top

☐ bottom



Attachment 5: photo documentations

Clause	Requirement + Test	Result - Remark	Verdict
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Details of: End cover view for AWHE1608-D-40 (filled with glue)

View:

☒ general

☐ front

☐ rear

☐ right

☐ left

☐ top

☐ bottom



Details of: Details view for AWHE1608-D-40

View:

☒ general

☐ front

☐ rear

☐ right

☐ left

☐ top

☐ bottom



Attachment 5: photo documentations

Clause	Requirement + Test	Result - Remark	Verdict
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Details of: LED module view

View:

☒ general

☐ front

☐ rear

☐ right

☐ left

☐ top

☐ bottom



Details of: Detail view (end-cover filled with glue)

View:

☒ general

☐ front

☐ rear

☐ right

☐ left

☐ top

☐ bottom



Attachment 5: photo documentations

Clause	Requirement + Test	Result - Remark	Verdict
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Details of: Detail view (end-cover filled with glue)

View:

☒ general

☐ front

☐ rear

☐ right

☐ left

☐ top

☐ bottom



Details of: LED driver view

View:

☐ general

☒ front

☐ rear

☐ right

☐ left

☐ top

☐ bottom



Attachment 5: photo documentations

Clause	Requirement + Test	Result - Remark	Verdict
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Details of: LED driver view

View:

☐ general

☐ front

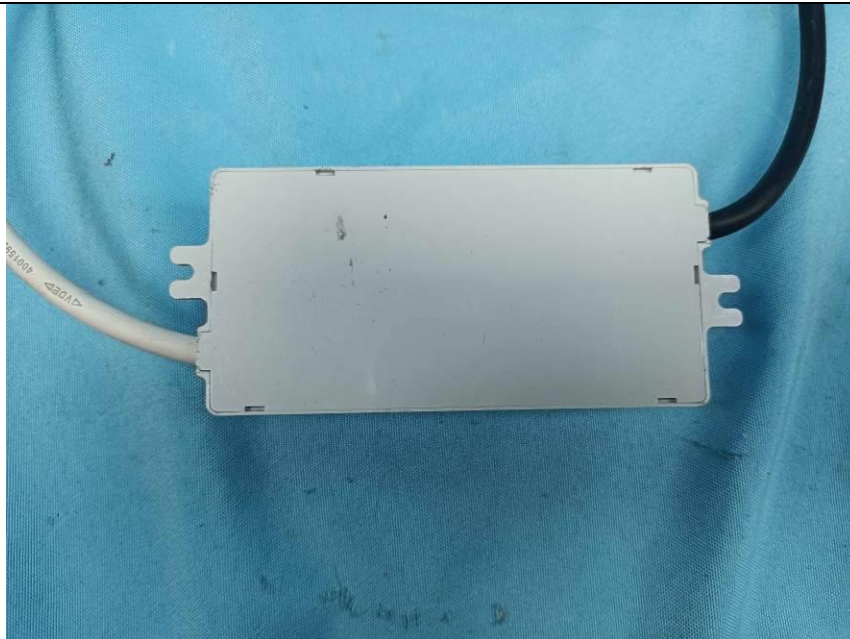
☒ rear

☐ right

☐ left

☐ top

☐ bottom



Details of: Detail view for LED driver (after potting)

View:

☒ general

☐ front

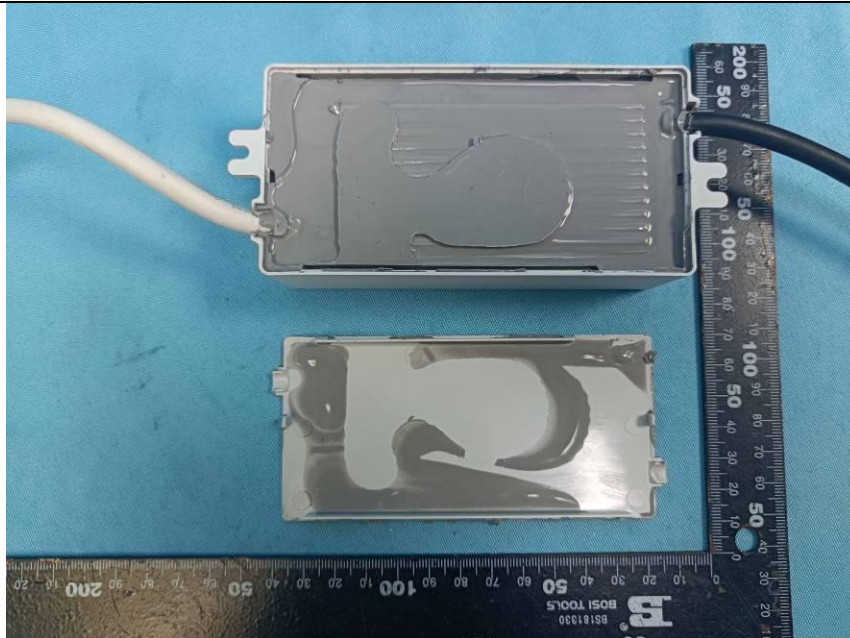
☐ rear

☐ right

☐ left

☐ top

☐ bottom



Attachment 5: photo documentations

Clause	Requirement + Test	Result - Remark	Verdict
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Details of: Detail view for LED driver (before potting)

View:

☒ general

☐ front

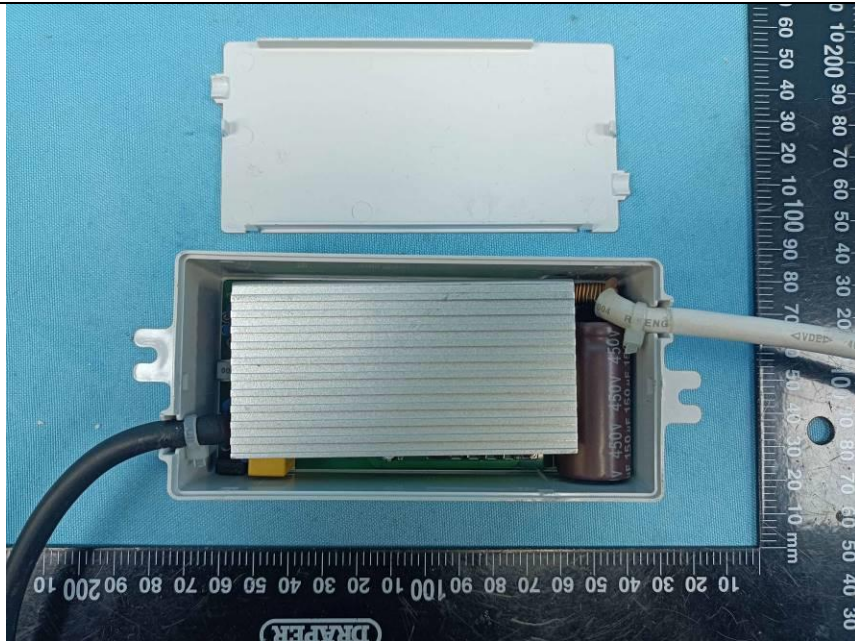
☐ rear

☐ right

☐ left

☐ top

☐ bottom



Details of: Front view of PCB board of LED driver

View:

☐ general

☒ front

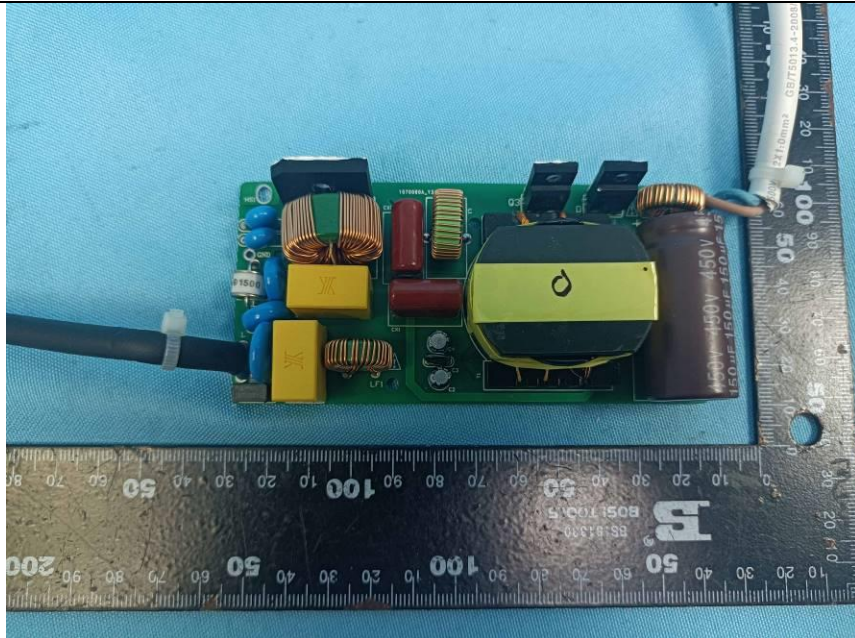
☐ rear

☐ right

☐ left

☐ top

☐ bottom



Attachment 5: photo documentations			
Clause	Requirement + Test	Result - Remark	Verdict

Details of: Rear view of PCB board of LED driver

View:

[] general

[] front

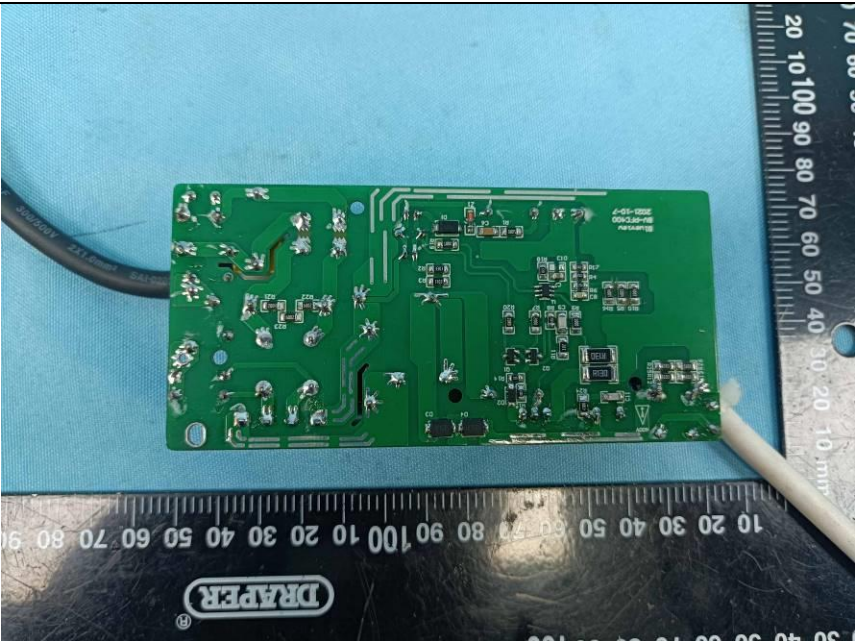
[x] rear

[] right

[] left

[] top

[] bottom



- - - End of attachment 5 - - -