



LVD TEST REPORT

Applicant: BRAYTRON S.R.L.
Address of Applicant: B.DUL IULIU MANIU, NR.616, CORP B, ETAJ 1 SECTOR 6,
061129, BUCHAREST, ROMANIA

Equipment Under Test (EUT)

Product Name: LED OUTDOOR LIGHTING FIXTURE

Brand Name: 

Model No.: Please refer to page 5

Applicable standards: EN 60598-2-5:2015
EN 60598-1:2015+A1:2018

Date of sample receipt: April 25, 2021

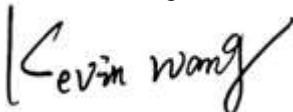
Date of Test: April 25, 2021 To May 13, 2021

Date of report issued: May 14, 2021

Test Result : PASS

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

Authorized Signature



Kevin Wang
Laboratory Manager





TEST REPORT
EN 60598-2-5
Luminaires
Part 2: Particular requirements
Section 1: Fixed general purpose luminaires

Report Reference No.: EBO2104161-E349

Tested by (name + signature).....: Bernie Xia *Bernie Xia*

Approved by (name + signature): Kevin Wang *Kevin Wang*

Date of issue.....: May 14, 2021

Testing Laboratory: Shenzhen EBO Testing Center

Address.....: Building A, Qinye Business Center , Xin'an Sixth Road, 82th District, Bao'an, Shenzhen, China.

Total number of pages.....: 42 pages(not including attachments)



Applicant's name: BRAYTRON S.R.L.

Address.....: B.DUL IULIU MANIU, NR.616, CORP B, ETAJ 1 SECTOR 6, 061129, BUCHAREST, ROMANIA

Manufacturer's name.....: DEMGRUP INTERNATIONAL LIGHTING LIMITED

Address.....: UNIT D 16/F, ONE CAPITAL PLACE, 18 LUARD ROAD, WAN CHAI, HONG KONG

Test specification:

Standard: EN 60598-2-5:2015 used in conjunction with EN 60598-1:2015+A1:2018

Test procedure.....: LVD

Non-standard test method.....: N/A

Test Report Form No.: IEC60598_2_2D

Test Report Form(s) Originator: Intertek Semko AB

Master TRF.....: 2014-09

Test item description.....: LED OUTDOOR LIGHTING FIXTUREE

Trade Mark: **Braytron**

Model/Type reference.....: Please refer to page 5

Test Model No.: BT42-89632

Ratings.....: AC220-240V, 50/60Hz, 200W

Summary of testing:

Testing location:

Shenzhen EBO Testing Center
Building A, Qinye Business Center , Xin'an Sixth Road, 82th District, Bao'an, Shenzhen, China.

Tests performed (name of test and test clause):

- EN 60598-2-5:1998+A1:2015
- EN 60598-1:2015+A1:2018
- EN 62031:2008+A1:2013+A2:2015
- EN 62493:2015

The submitted samples were found to comply with the requirements of above specification.

The submitted samples were found to comply with requirement EN 62493:2015 without testing. because they are LED-light source technology

Summary of compliance with National Differences:

Compliance with the National requirements of CENELEC common modification.

Copy of marking plates:

<p>LED OUTDOOR LIGHTING FIXTUREE Model: BT42-89632 Input: AC220-240V, 50/60Hz, 200W DEMGRUP INTERNATIONAL LIGHTING LIMITED UNIT D 16/F, ONE CAPITAL PLACE, 18 LUARD ROAD, WAN CHAI, HONG KONG Importer name: xxx Importer address: xxx MADE IN CHINA</p> <p>  </p>

Remark:

1. The marking plates of the other models are of the same pattern.



Test item particulars :	
Equipment mobility	--
Supply Connection.....	Power cord without plug
Protection class	Class I
Ddegree of protection	IP 66
Possible test case verdicts:	
- test case does not apply to the test object.....	N (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	April 25, 2021
Date(s) of performance of tests	April 25, 2021 To May 13, 2021
General remarks:	
<p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report a point is used as the decimal separator.</p> <p>This document is issued by the company under its General Conditions of Service accessible at www.ebotest.com. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.</p> <p>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. 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.</p> <p>Unless otherwise stated: (a) the results shown in this document refer only to the sample(s) tested and (b) such sample(s) are retained for 1 month. This document cannot be reproduced except in full, without prior approval of the company.</p>	
General product information:	
<p>The submitted unit is a LED OUTDOOR LIGHTING FIXTUREE, comprised of LED module, independent LED driver and AC Connecting leads. The models BT42-89632 were selected representative models to perform all tests</p>	



Model No.:

BT42-89632	BT40-020X2	BT40-030X2	BT40-040X2
BT40-050X2	BT40-060X2	BT40-070X2	BT40-080X2
BT40-090X2	BT40-091X2	BT40-092X2	BT40-093X2
BT40-094X2	BT40-095X2	BT40-096X2	BT40-097X2
BT40-098X2	BT40-X20X2	BT40-X30X2	BT40-X40X2
BT40-X50X2	BT40-X60X2	BT40-X70X2	BT40-X80X2
BT40-X90X2	BT40-X91X2	BT40-X92X2	BT40-X93X2
BT40-X94X2	BT40-X95X2	BT40-X96X2	BT40-X97X2
BT40-X98X2	BT41-X20X2	BT41-X30X2	BT41-X40X2
BT41-X50X2	BT41-X60X2	BT41-X70X2	BT41-X80X2
BT41-X90X2	BT41-X91X2	BT41-X92X2	BT41-X93X2
BT41-X94X2	BT41-X95X2	BT41-X96X2	BT41-X97X2
BT41-X98X2	BT42-020X2	BT42-030X2	BT42-040X2
BT42-050X2	BT42-060X2	BT42-070X2	BT42-080X2
BT42-090X2	BT42-091X2	BT42-092X2	BT42-093X2
BT42-094X2	BT42-095X2	BT42-096X2	BT42-097X2
BT42-098X2	BT42-320X2	BT42-330X2	BT42-340X2
BT42-350X2	BT42-360X2	BT42-370X2	BT42-380X2
BT42-390X2	BT42-391X2	BT42-392X2	BT42-393X2
BT42-394X2	BT42-395X2	BT42-396X2	BT42-397X2
BT42-398X2	BT42-520X2	BT42-530X2	BT42-540X2
BT42-550X2	BT42-560X2	BT42-570X2	BT42-580X2
BT42-590X2	BT42-591X2	BT42-592X2	BT42-593X2
BT42-594X2	BT42-595X2	BT42-596X2	BT42-597X2
BT42-598X2	BT42-820X2	BT42-830X2	BT42-840X2
BT42-850X2	BT42-860X2	BT42-870X2	BT42-880X2
BT42-890X2	BT42-891X2	BT42-892X2	BT42-893X2
BT42-894X2	BT42-895X2	BT42-896X2	BT42-897X2
BT42-898X2	BT42-920X2	BT42-930X2	BT42-940X2
BT42-950X2	BT42-960X2	BT42-970X2	BT42-980X2
BT42-990X2	BT42-991X2	BT42-992X2	BT42-993X2
BT42-994X2	BT42-995X2	BT42-996X2	BT42-997X2
BT42-998X2	BT42-X20X2	BT42-X30X2	BT42-X40X2
BT42-X50X2	BT42-X60X2	BT42-X70X2	BT42-X80X2
BT42-X90X2	BT42-X91X2	BT42-X92X2	BT42-X93X2
BT42-X94X2	BT42-X95X2	BT42-X96X2	BT42-X97X2
BT42-X98X2	X=0,1,2,3,4,5,6,7,8,9		


Remark: All models are identical in the same PCB layout, interior structure and electrical circuits. The only differences are the model name and appearance color for commercial purpose.



EN 60598-2-5			
Cl.	Requirement – Test	Result	Verdict

1.2 (0)	GENERAL TEST REQUIREMENTS		—
1.2 (0.1)	Information for luminaire design considered	Standard Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
1.2 (0.3)	More sections applicable	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

1.4 (2)	CLASSIFICATION		—
1.4 (2.2)	Type of protection	Class I	—
1.4 (2.3)	Degree of protection.....	IP65	—
1.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
1.4 (2.5)	Luminaire for normal use	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

1.5 (3)	MARKING		—
1.5 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
1.5 (3.3)	Additional information		P
	Language of instructions	English	P
1.5 (3.3.1)	Combination luminaires		N
1.5 (3.3.2)	Nominal frequency in Hz	50/60 Hz	P
1.5 (3.3.3)	Operating temperature		N
1.5 (3.3.4)	Symbol or warning notice		N
1.5 (3.3.5)	Wiring diagram		N
1.5 (3.3.6)	Special conditions		N
1.5 (3.3.7)	Metal halide lamp luminaire – warning		N
1.5 (3.3.8)	Limitation for semi-luminaires		N
1.5 (3.3.9)	Power factor and supply current		N
1.5 (3.3.10)	Suitability for use indoors		N
1.5 (3.3.11)	Luminaires with remote control		N
1.5 (3.3.12)	Clip-mounted luminaire – warning		N
1.5 (3.3.13)	Specifications of protective shields		N
1.5 (3.3.14)	Symbol for nature of supply		P
1.5 (3.3.15)	Rated current of socket outlet		N



EN 60598-2-5			
Cl.	Requirement – Test	Result	Verdict

1.5 (3.3.16)	Rough service luminaire		N
1.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Z	P
1.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N
1.5 (3.3.19)	Protective conductor current in instruction if applicable		N
1.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N
1.5 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided	Non-user replaceable light sources	P
	Cautionary symbol		N
1.5 (3.3.22)	Controllable luminaires, classification of insulation provided		P
1.5 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P

1.6 (4)	CONSTRUCTION		—
1.6 (4.2)	Components replaceable without difficulty		P
1.6 (4.3)	Wireways smooth and free from sharp edges		P
1.6 (4.4)	Lampholders		N
1.6 (4.4.1)	Integral lampholder		N
1.6 (4.4.2)	Wiring connection		N
1.6 (4.4.3)	Lampholder for end-to-end mounting		N
1.6 (4.4.4)	Positioning		N
	- pressure test (N)		—
	After test the lampholder comply with relevant standard sheets and show no damage		N
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N
	- bending test (N)		—
	After test the lampholder have not moved from its position and show no permanent deformation		N
1.6 (4.4.5)	Peak pulse voltage		N
1.6 (4.4.6)	Centre contact		N
1.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N



EN 60598-2-5			
Cl.	Requirement – Test	Result	Verdict
1.6 (4.4.8)	Lamp connectors		N
1.6 (4.4.9)	Caps and bases correctly used		N
1.6 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N
1.6 (4.5)	Starter holders		N
	Starter holder in luminaires other than class II		N
	Starter holder class II construction		N
1.6 (4.6)	Terminal blocks		N
	Tails		N
	Unsecured blocks		N
1.6 (4.7)	Terminals and supply connections		P
1.6 (4.7.1)	Contact to metal parts		N
1.6 (4.7.2)	Test 8 mm live conductor		N
	Test 8 mm earth conductor		N
1.6 (4.7.3)	Terminals for supply conductors		N
1.6 (4.7.3.1)	Welded method and material		N
	- stranded or solid conductor		N
	- spot welding		N
	- welding between wires		N
	- Type Z attachment		N
	- mechanical test according to 15.8.2		N
	- electrical test according to 15.9		N
	- heat test according to 15.9.2.3 and 15.9.2.4		N
1.6 (4.7.4)	Terminals other than supply connection		N
1.6 (4.7.5)	Heat-resistant wiring/sleeves		N
1.6 (4.7.6)	Multi-pole plug		N
	- test at 30 N		N
1.6 (4.8)	Switches		N
	- adequate rating		N
	- adequate fixing		N
	- polarized supply		N
	- compliance with IEC 61058-1 for electronic switches		N
1.6 (4.9)	Insulating lining and sleeves		N
1.6 (4.9.1)	Retainment		N



EN 60598-2-5			
Cl.	Requirement – Test	Result	Verdict
	Method of fixing		—
1.6 (4.9.2)	Insulated linings and sleeves:		N
	Resistant to a temperature > 20 °C to the wire temperature or		N
	a) & c) Insulation resistance and electric strength		N
	b) Ageing test. Temperature (°C)		N
1.6 (4.10)	Double or reinforced insulation		N
1.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N
	Safe installation fixed luminaires		N
	Capacitors and switches		N
	Interference suppression capacitors according to IEC 60384-14		N
1.6 (4.10.2)	Assembly gaps:		N
	- not coincidental		N
	- no straight access with test probe		N
1.6 (4.10.3)	Retention of insulation:		N
	- fixed		N
	- unable to be replaced; luminaire inoperative		N
	- sleeves retained in position		N
	- lining in lampholder		N
1.6 (4.11)	Electrical connections and current-carrying parts		P
1.6 (4.11.1)	Contact pressure		P
1.6 (4.11.2)	Screws:		N
	- self-tapping screws		N
	- thread-cutting screws		N
1.6 (4.11.3)	Screw locking:		P
	- spring washer		P
	- rivets		N
1.6 (4.11.4)	Material of current-carrying parts		P
1.6 (4.11.5)	No contact to wood or mounting surface		P
1.6 (4.11.6)	Electro-mechanical contact systems		N
1.6 (4.12)	Screws and connections (mechanical) and glands		P
1.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N



EN 60598-2-5			
Cl.	Requirement – Test	Result	Verdict
	Torque test: torque (Nm); part..... :	Screws for fixing LED driver:1.2 Nm	P
	Torque test: torque (Nm); part..... :	Screws for fixing Glass cover: 1.2 Nm	P
1.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N
1.6 (4.12.4)	Locked connections:		N
	- fixed arms; torque (Nm)		N
	- lampholder; torque (Nm)		N
	- push-button switches; torque 0,8 Nm		N
1.6 (4.12.5)	Screwed glands; force (Nm)..... :		P
1.6 (4.13)	Mechanical strength		P
1.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm)	Glass cover: 0.5Nm	P
	- other parts; energy (Nm)..... :	Metal enclosure: 0.7 Nm	P
	1) live parts		P
	2) linings		N
	3) protection		P
	4) covers		P
1.6 (4.13.3)	Straight test finger		P
1.6 (4.13.4)	Rough service luminaires		N
	- IP54 or higher		N
	a) fixed		N
	b) hand-held		N
	c) delivered with a stand		N
	d) for temporary installations and suitable for mounting on a stand		N
1.6 (4.13.6)	Tumbling barrel		N
1.6 (4.14)	Suspensions, fixings and means of adjusting		P
1.6 (4.14.1)	Mechanical load:		P
	A) four times the weight		P
	B) torque 2,5 Nm		N
	C) bracket arm; bending moment (Nm)..... :		N
	D) load track-mounted luminaires		N
	E) clip-mounted luminaires, glass-shelve. Thickness (mm)		N
	Metal rod. diameter (mm)		N



EN 60598-2-5			
Cl.	Requirement – Test	Result	Verdict
	Fixed luminaire or independent control gear without fixing devices		N
1.6 (4.14.2)	Load to flexible cables		N
	Mass (kg)		—
	Stress in conductors (N/mm ²)		N
	Mass (kg) of semi-luminaire		—
	Bending moment (Nm) of semi-luminaire		N
1.6 (4.14.3)	Adjusting devices:		P
	- flexing test; number of cycles.....	Adjusting brackets, 45	P
	- strands broken	No broken	P
	- electric strength test afterwards		P
1.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N
1.6 (4.14.5)	Guide pulleys		N
1.6 (4.14.6)	Strain on socket-outlets		N
1.6 (4.15)	Flammable materials		P
	- glow-wire test 650°C	See Test Table 1.15 (13.3.2)	P
	- spacing ≥30 mm		N
	- screen withstanding test of 13.3.1		N
	- screen dimensions		N
	- no fiercely burning material		N
	- thermal protection		N
	- electronic circuits exempted		N
1.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N
	a) construction		N
	b) temperature sensing control		N
	c) surface temperature		N
1.6 (4.16)	Luminaires for mounting on normally flammable surfaces		N
	No lamp control gear	Electronic LED driver is exempt from the requirements of this clause	N
1.6 (4.16.1)	Lamp control gear spacing:		N
	- spacing 35 mm		N
	- spacing 10 mm		N
1.6 (4.16.2)	Thermal protection:		N
	- in lamp control gear		N



EN 60598-2-5			
Cl.	Requirement – Test	Result	Verdict
	- external		N
	- fixed position		N
	- temperature marked lamp control gear		N
1.6 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N
1.6 (4.17)	Drain holes		N
	Clearance at least 5 mm		N
1.6 (4.18)	Resistance to corrosion		N
1.6 (4.18.1)	- rust-resistance		N
1.6 (4.18.2)	- season cracking in copper		N
1.6 (4.18.3)	- corrosion of aluminium		N
1.6 (4.19)	Igniters compatible with ballast		N
1.6 (4.20)	Rough service vibration		N
1.6 (4.21)	Protective shield		N
1.6 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N
	Shield of glass if tungsten halogen lamps		N
1.6 (4.21.2)	Particles from a shattering lamp not impair safety		N
1.6 (4.21.3)	No direct path		N
1.6 (4.21.4)	Impact test on shield		N
	Glow-wire test on lamp compartment..... :	See Test Table 1.15 (13.3.2)	N
1.6 (4.22)	Attachments to lamps not cause overheating or damage		N
1.6 (4.23)	Semi-luminaires comply Class II		N
1.6 (4.24)	Photobiological hazards		N
1.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N
1.6 (4.24.2)	Retinal blue light hazard		N
	Luminaires with E_{thr} :		N
	a) Fixed luminaires		N
	- distance x m, borderline between RG1 and RG2 .. :		N
	- marking and instruction according 3.2.23		N
	b) Portable and handheld luminaires		N
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N



EN 60598-2-5			
Cl.	Requirement – Test	Result	Verdict
1.6 (4.25)	Mechanical hazard		P
	No sharp point or edges		P
1.6 (4.26)	Short-circuit protection		N
1.6 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N
1.6 (4.26.2)	Short-circuit test with test chain according 4.26.3		N
	Test chain not melt through		N
	Test sample not exceed values of Table 12.1 and 12.2		N
1.6 (4.27)	Terminal blocks with integrated screwless earthing contacts		N
	Test according Annex V		N
	Pull test of terminal fixing (20 N)		N
	After test, resistance < 0,05 Ω		N
	Pull test of mechanical connection (50 N)		N
	After test, resistance < 0,05 Ω		N
	Voltage drop test, resistance < 0,05 Ω		N
1.6 (4.28)	Fixing of thermal sensing control		N
	Not plug-in or easily replaceable type		N
	Reliably kept in position		N
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N
	Not outside the luminaire enclosure		N
	Test of adhesive fixing:		N
	Max. temperature on adhesive material (°C) :		—
	100 cycles between t min and t max		N
	Temperature sensing control still in position		N
1.6 (4.29)	Luminaires with non-replaceable light source		N
	Not possible to replace light source		N
	Live part not accessible after parts have been opened by hand or tools		N
1.6 (4.30)	Luminaires with non-user replaceable light source		N
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N
	Minimum two fixing means		N
1.6 (4.31)	Insulation between circuits		P
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P



EN 60598-2-5

Cl.	Requirement – Test	Result	Verdict
	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		P
1.6 (4.31.1)	SELV circuits		P
	Used SELV source		P
	Voltage \leq ELV		P
	Insulating of SELV circuits from LV supply		P
	Insulating of SELV circuits from other non SELV circuits		N
	Insulating of SELV circuits from FELV		N
	Insulating of SELV circuits from other SELV circuits		N
	SELV circuits insulated from accessible parts according Table X.1		P
	Plugs not able to enter socket-outlets of other voltage systems		N
	Socket outlets does not admit plugs of other voltage systems		N
	Plugs and socket-outlets does not have protective conductor contact		N
1.6 (4.31.2)	FELV circuits		N
	Used FELV source		N
	Voltage \leq ELV		N
	Insulating of FELV circuits from LV supply		N
	FELV circuits insulated from accessible parts according Table X.1		N
	Plugs not able to enter socket-outlets of other voltage systems		N
	Socket outlets does not admit plugs of other voltage systems		N
	Socket-outlets does not have protective conductor contact		N
1.6 (4.31.3)	Other circuits		N
	Other circuits insulated from accessible parts according Table X.1		N
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N
	- conductive parts are connected together		N
	- test according 7.2.3 of above		N



EN 60598-2-5			
Cl.	Requirement – Test	Result	Verdict

	- conductive part not cause an electric shock in case of an insulation fault		N
	- equipotential bonding in master/slave applications		N
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N
	- slave luminaire constructed as class I		N
1.6 (4.32)	Overvoltage protective devices		N
	Comply with IEC 61643-11		N
	External to control gear and connected to earth:		N
	- only in fixed luminaires		N
	- only connected to protective earth		N

1.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		—
1.7 (11.2)	Creepage distances and clearances..... :	For class I construction: Approved SELV LED driver used; For class II construction: No value was specified for working voltage below 60 VDC as the electric strength test voltage of 500 V is considered sufficient.	P
	Working voltage (V)..... :	100-240 Vac (Input of LED driver) MAX. 60 Vdc (Input of LED module)	—
	Rated pulse voltage (kV)..... :		—
	Voltage form..... :	Sinusoidal <input checked="" type="checkbox"/> Non-sinusoidal <input checked="" type="checkbox"/>	—
	PTI..... :	< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>	—
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II <input type="checkbox"/> Category III <input type="checkbox"/>	—

1.8 (7)	PROVISION FOR EARTHING		—
1.8 (7.2.1 + 7.2.3)	Accessible metal parts		P
	Metal parts in contact with supporting surface		P
	Resistance < 0,5 Ω..... :	0.009 Ω	P
	Self-tapping screws used		N
	Thread-forming screws		N



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Cl.	Requirement – Test	Result	Verdict

	Thread-forming screw used in a groove		N
	Earth makes contact first		N
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N
	Protective earthing of the luminaire not via built-in control gear		N
1.8 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		P
1.8 (7.2.4)	Locking of clamping means		P
	Compliance with 4.7.3		P
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N
1.8 (7.2.5)	Earth terminal integral part of connector socket		N
1.8 (7.2.6)	Earth terminal adjacent to mains terminals		P
1.8 (7.2.7)	Electrolytic corrosion of the earth terminal		P
1.8 (7.2.8)	Material of earth terminal		P
	Contact surface bare metal		P
1.8 (7.2.10)	Class II luminaire for looping-in		N
	Double or reinforced insulation to functional earth		N
1.8 (7.2.11)	Earthing core coloured green-yellow		P
	Length of earth conductor		P

1.9 (14)	SCREW TERMINALS		—
	Separately approved; component list..... :	(see Annex 1)	N
	Part of the luminaire	(see Annex 3)	N

1.9 (15)	SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS		—
	Separately approved; component list..... :	(see Annex 1)	N
	Part of the luminaire	(see Annex 4)	N

1.10 (5)	EXTERNAL AND INTERNAL WIRING		—
1.10 (5.2)	Supply connection and external wiring		P
1.10 (5.2.1)	Means of connection	Supply cord without plug	P
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment		N
1.10 (5.2.2)	Type of cable..... :	H05RN-F	P



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Cl.	Requirement – Test	Result	Verdict
	Nominal cross-sectional area (mm ²) :	3 x 0.75 mm ²	P
	Cables equal to IEC 60227 or IEC 60245		P
1.10 (5.2.3)	Type of attachment, X, Y or Z	Type Z	P
1.10 (5.2.5)	Type Z not connected to screws		P
1.10 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
1.10 (5.2.7)	Cable entries through rigid material have rounded edges		P
1.10 (5.2.8)	Insulating bushings:		N
	- suitably fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- tubes or guards made of insulating material		N
1.10 (5.2.9)	Locking of screwed bushings		N
1.10 (5.2.10)	Cord anchorage:		P
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		P
	- insulating material or lining		P
1.10 (5.2.10.1)	Cord anchorage for type X attachment:		N
	a) at least one part fixed		N
	b) types of cable		N
	c) no damaging of the cable		N
	d) whole cable can be mounted		N
	e) no touching of clamping screws		N
	f) metal screw not directly on cable		N
	g) replacement without special tool		N
	Glands not used as anchorage		N
	Labyrinth type anchorages		N
1.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	Type Z	P
1.10 (5.2.10.3)	Tests:		P



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Cl.	Requirement – Test	Result	Verdict
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) :	60 N	P
	- torque test: torque (Nm)..... :	0.25 Nm	P
	- displacement ≤ 2 mm		P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
1.10 (5.2.11)	External wiring passing into luminaire		P
1.10 (5.2.12)	Looping-in terminals		N
1.10 (5.2.13)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		P
1.10 (5.2.14)	Mains plug same protection		N
	Class III luminaire plug		N
	No unsafe compatibility		N
1.10 (5.2.16)	Appliance inlets (IEC 60320)		N
	Installation couplers (IEC 61535)		N
	Other appliance inlet or connector according relevant IEC standard		N
1.10 (5.2.17)	No standardized interconnecting cables properly assembled		N
1.10 (5.2.18)	Used plug in accordance with		N
	- IEC 60083		N
	- other standard		N
1.10 (5.3)	Internal wiring		P
1.10 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		P
	- not delivered/ mounting instruction		N
	- factory assembled		P
	- socket outlet loaded (A) :		N
	- temperatures :	(see Annex 2)	N
	Green-yellow for earth only		P
1.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		P
	Cross-sectional area (mm) ² :		P
	Insulation thickness		P
	Extra insulation added where necessary		N



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Cl.	Requirement – Test	Result	Verdict

1.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N
	Adequate cross-sectional area and insulation thickness		N
1.10 (5.3.1.3)	Double or reinforced insulation for class II		N
1.10 (5.3.1.4)	Conductors without insulation		N
1.10 (5.3.1.5)	SELV current-carrying parts		P
1.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N
1.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N
	Joints, raising/lowering devices		N
	Telescopic tubes etc.		N
	No twisting over 360°		N
1.10 (5.3.3)	Insulating bushings:		N
	- suitable fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- cables with protective sheath		N
1.10 (5.3.4)	Joints and junctions effectively insulated		N
1.10 (5.3.5)	Strain on internal wiring		P
1.10 (5.3.6)	Wire carriers		N
1.10 (5.3.7)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		P

1.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		—
1.11 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P



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Cl.	Requirement – Test	Result	Verdict
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N
	Basic insulation only accessible under lamp or starter replacement		N
	Protection in any position		P
	Double-ended tungsten filament lamp		N
	Insulation lacquer not reliable		N
	Double-ended high pressure discharge lamp		N
	Relevant warning according to 3.2.18 fitted to the luminaire		N
1.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N
1.11 (8.2.3.a)	Class II luminaire:		N
	- basic insulated metal parts not accessible during starter or lamp replacement		N
	- basic insulation not accessible other than during starter or lamp replacement		N
	- glass protective shields not used as supplementary insulation		N
1.11 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N
1.11 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N
	Ordinary luminaire:		N
	- touch current		N
	- no-load voltage.....		N
	Other than ordinary luminaire:		N
	- nominal voltage		N
1.11 (8.2.4)	Portable luminaire have protection independent of supporting surface		N
1.11 (8.2.5)	Compliance with the standard test finger or relevant probe		P
1.11 (8.2.6)	Covers reliably secured		P
1.11 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$		N
	Portable plug connected luminaire with capacitor		N
	Other plug connected luminaire with capacitor		N
	Discharge device on or within capacitor		N



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Cl.	Requirement – Test	Result	Verdict

	Discharge device mounted separately		N
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1.12 (12)	ENDURANCE TEST AND THERMAL TEST		—
1.12 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 4.13		—
1.12 (12.3)	Endurance test:		P
	- mounting-position..... :	As normal used	—
	- test temperature (°C)	55	—
	- total duration (h)	240	—
	- supply voltage: Un factor; calculated voltage (V)... :	264	—
	- lamp used..... :	LED	—
1.12 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N
	- marking legible		P
	- no cracks, deformation etc.		P
1.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
1.12 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	N
1.12 (12.6)	Thermal test (failed lamp control gear condition):		N
1.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		—
	- case of abnormal conditions		—
	- electronic lamp control gear		N
	- measured winding temperature (°C): at 1,1 Un :		—
	- measured mounting surface temperature (°C) at 1,1 Un..... :		N
	- calculated mounting surface temperature (°C)		N
	- track-mounted luminaires		N
1.12 (12.6.2)	Temperature sensing control		N
	- case of abnormal conditions		—
	- thermal link		N
	- manual reset cut-out		N
	- auto reset cut-out		N
	- measured mounting surface temperature (°C)		N



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Cl.	Requirement – Test	Result	Verdict
	- track-mounted luminaires		N
1.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N
1.12 (12.7.1)	Luminaire without temperature sensing control		N
1.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N
	Test method 12.7.1.1 or Annex W		—
	Test according to 12.7.1.1:		N
	- case of abnormal conditions		—
	- Ballast failure at supply voltage (V)		—
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
	Test according to Annex W:		N
	- case of abnormal conditions		—
	- measured winding temperature (°C): at 1,1 Un		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un		—
	- calculated temperature of fixing point/exposed part (°C)		—
	Ball-pressure test	See Table 1.15 (13.2.1)	N
1.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N
	- case of abnormal conditions		—
	- measured winding temperature (°C): at 1,1 Un		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un		—
	- calculated temperature of fixing point/exposed part (°C)		—
	Ball-pressure test	See Table 1.15 (13.2.1)	N
1.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N
	- case of abnormal conditions		—
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
1.12 (12.7.2)	Luminaire with temperature sensing control		N
	- thermal link.....	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- manual reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—



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Cl.	Requirement – Test	Result	Verdict

	- auto reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- case of abnormal conditions		—
	- highest measured temperature of fixing point/ exposed part (°C):		—
	Ball-pressure test:	See Table 1.15 (13.2.1)	N

1.13 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		—
1.13 (-)	If IP > IP 20 the order of tests as specified in clause 1.12		P
1.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		—
	- classification according to IP.....	IP65	—
	- mounting position during test	As normal used	—
	- fixing screws tightened; torque (Nm)		—
	- tests according to clauses.....	Clause 9.2.2 and 9.2.6	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N
	b) no talcum in dust-tight luminaire		P
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		P
	d) i) For luminaires without drain holes – no water entry		P
	d) ii) For luminaires with drain holes – no hazardous water entry		N
	e) no water in watertight luminaire		N
	f) no contact with live parts (IP 2X)		N
	f) no entry into enclosure (IP 3X and IP 4X)		N
	f) no contact with live parts (IP3X and IP4X)		N
	g) no trace of water on part of lamp requiring protection from splashing water		N
	h) no damage of protective shield or glass envelope		P
1.13 (9.3)	Humidity test 48 h	25°C, 93% R.H.	P

1.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		—
1.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø		—
	Insulation resistance (MΩ)		—



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Cl.	Requirement – Test	Result	Verdict
	SELV		P
	- between current-carrying parts of different polarity :		N
	- between current-carrying parts and mounting surface..... :	100 MΩ(Required:1 MΩ)	P
	- between current-carrying parts and metal parts of the luminaire..... :	100 MΩ(Required:1 MΩ)	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N
	- Insulation bushings as described in Section 5 :		N
	Other than SELV		P
	- between live parts of different polarity :		N
	- between live parts and mounting surface :	100 MΩ (Required:2 MΩ)	P
	- between live parts and metal parts :	Class I construction: 100 MΩ (Required: 2 MΩ) Class II construction: 100 MΩ (Required: 4 MΩ)	P
	- between live parts of different polarity through action of a switch..... :		N
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N
	- Insulation bushings as described in Section 5 :		N
1.14 (10.2.2)	Electric strength test		P
	Dummy lamp		N
	Luminaires with ignitors after 24 h test		N
	Luminaires with manual ignitors		N
	Test voltage (V) :		N
	SELV		P
	- between current-carrying parts of different polarity :		N
	- between current-carrying parts and mounting surface..... :	500 V	P
	- between current-carrying parts and metal parts of the luminaire..... :	500 V	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N
	- Insulation bushings as described in Section 5 :		N
	Other than SELV		P



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Cl.	Requirement – Test	Result	Verdict

	- between live parts of different polarity		N
	- between live parts and mounting surface	1480 V	P
	- between live parts and metal parts	Class I construction:1480 V Class II construction:2960 V	P
	- between live parts of different polarity through action of a switch		N
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N
	- Insulation bushings as described in Section 5		N
1.14 (10.3)	Touch current or protective conductor current (mA) :	Protective conductor current Max. 0.65 mA (limit:3.5 mA) Touch current: Max. 0.01 mA (limit:0.7 mA)	P

1.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		—
1.15 (13.2.1)	Ball-pressure test	See Test Table 1.15 (13.2.1)	P
1.15 (13.3.1)	Needle-flame test (10 s)	See Test Table 1.15 (13.3.1)	P
1.15 (13.3.2)	Glow-wire test (650°C)	See Test Table 1.15 (13.3.2)	P
1.15 (13.4)	Proof tracking test (IEC 60112)	See Test Table 1.15 (13.4)	N



1.7 (11.2)	TABLES: Creepage distances and clearances						N
Table 11.1	Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages						
RMS working voltage (V) not exceeding	50	150	250	500	750	1000	
Creepage distances							
Required basic insulation, PTI ≥ 600	0,6	0,8	1,5	3	4	5,5	
Measured							
Required basic insulation, PTI < 600	1,2	1,6	2,5	5	8	10	
Measured							
Required supplementary insulation PTI ≥ 600	-	0,8	1,5	3	4	5,5	
Measured							
Required supplementary insulation PTI < 600	-	1,6	2,5	5	8	10	
Measured							
Required reinforced insulation	-	3,2	5	6	8	11	
Measured							
Clearances							
Required basic insulation	0,2	0,8	1,5	3	4	5,5	
Measured							
Required supplementary insulation	-	0,8	1,5	3	4	5,5	
Measured							
Required reinforced insulation	-	1,6	3	6	8	11	
Measured							
Table 11.2	Minimum distances (mm) for non-sinusoidal pulse voltages						
Rated pulse voltage (peak Kv)	2,0	2,5	3,0	4,0	5,0	6,0	8,0
Required clearances	1,0	1,5	2	3	4	5,5	8
Measured							
Rated pulse voltage (peak Kv)	10	12	15	20	25	30	40
Required clearances	11	14	18	25	33	40	60
Measured							
Rated pulse voltage (peak Kv)	50	60	80	100	-	-	-
Required clearances	75	90	130	170	-	-	-
Measured							



1.15 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics				P
Allowed impression diameter (mm)					—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)		
Wire connector	DONGGUAN ZHONGZHEN ELECTRONIC WIRE CO., LTD	125	1.1		
Supplementary information:--					

1.15 (13.3.1)	TABLE: Needle-flame test (IEC 60695-11-5)				P
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Wire connector	DONGGUAN ZHONGZHEN ELECTRONIC WIRE CO., LTD	10	No	0	P
Supplementary information:--					

1.15 (13.3.2)	TABLE: Glow-wire test (IEC 60695-2-11)				P
Glow wire temperature					650 °C
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
Wire connector	DONGGUAN ZHONGZHEN ELECTRONIC WIRE CO., LTD	30	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)					-
Supplementary information:-					

1.15 (13.4)	TABLE: Proof tracking test (IEC 60112)				N
Test voltage PTI					175 V
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
--	--	--	--	--	--
Supplementary information:					



ANNEX 1		TABLE: Critical components information				P
Object/Part No.	Code	Manufacturer/Tra demark	Type/Model	Technical Data	Standard	Mark(s) of conformity ¹⁾
Supply Cord (alternative)	B	Chau's Electrical Co., Ltd.	H05RN-F	300/500V 3x1.0mm ²	DIN EN 50525-2-21	VDE 40016331
Supply cord (alternative)	B	Dong Guan Recheer Electric Wire & Cable Co., Ltd.	IH05RN-F	3x1.0mm ²	DIN EN 50525-2-21	VDE 40015173
Supply cord (alternative)	B	GuangDong RiFeng Electrical Cable Co., Ltd.	H05RN-F	3x1.0mm ²	DIN EN 50525-2-21	VDE 40015999
Internal wire of LED driver	B	DONGGUAN ZHONGZHEN ELECTRONIC WIRE CO., LTD.	3239	Max.60000Vdc; 18AWG; VW-1; Max.200°C	--	UL E355578
(alternative)	B	GUANGZHOU FENGTAI MEIHUA CABLE CO., LTD.	3239	Max.60000Vdc; 18AWG; VW-1; Max.200°C	--	UL E204798
(alternative)	B	QIFURUI ELECTRONICS CO	3239	Max.60000Vdc; 18AWG; VW-1; Max.200°C	--	UL E211048
Earthing Wire	B	DONGGUAN ZHONGZHENG WIRE & CABLE TECH CO LTD	1007	300V; 18AWG; 80°C;	--	UL E336285
(alternative)	B	GUANGDONG HAERKN NEW ENERGY CO LTD	1007	300V; 18AWG; 80°C	--	UL E300956
(alternative)	B	DONGGUAN ZHENGWEI ELECTRIC WIRE & CABLE INDUSTRY CO LTD	1007	300V; 18AWG; 80°C	--	UL E326510
(alternative)	B	DONG GUAN CHUANG XU WIRE CO., LTD.	1007	300V; 18AWG; 80°C	--	UL E483471
LED	B	LUMILEDS	LUXEON 3030	5.8-6.6V 120MA	EN 62031	Tested in appliance
PCB for LED module	B	HANGZHOU DEJIA ELECTRONICS CO., LTD.	DJ-A11	MPCB; V-0; 130°C	UL 94	UL E344718
Nipple Cap	B	HEAVY POWER CO LTD	CE2; CE5	PC; 150°C	--	UL E113650
Insulation Lining	B	JINGMEN GORUN TECHNOLOGY CO LTD	HF70	PC; V-0; 80°C 1860V	UL 94	UL E305163
(alternative)	B	CHENGDU KANGLONGXIN PLASTICS CO LTD	--	PC; V-0; 80°C 1860V	UL 94	UL E315185
Components for LED driver						



LED Driver (For 200W)	B	Jiangxi Zhongguang Optoelectronics Technology CO., LTD.	LED driver 200W	Input: 100-240V~, 50/60Hz Output: 0.64A, 265-300V Uout: 430Vdc auto-wound; Integral	EN 61347-1 EN 61347-2- 13	CE
PCB for LED driver	B	SHENZHEN BEN CHUANG ELECTRONIC CO LTD	BC-2	V-0; 130°C	UL 94	UL E257130
Fuse	B	Shenzhen Lanson Electronics Co., Ltd.	SMT	300V~, 5A	EN 60127-1	VDE
(alternative)	B	Dongguan Better Electronics Technology CO., Ltd.	932	300V~, 5A	EN 60127-1	VDE
Gas discharge tube	B	Shanghai Boarden Industrial Co., Ltd.	BIS	2000V, 350A	--	UL
X2 capacitor	B	Hongzhi Electronics CO., Ltd.	MPX	275V~; 0.47uF; X2; 100°C	EN 60384- 14	VDE 40023936
(alternative)	B	Xiamen Faratronic Co., Ltd.	MKP62	275V~; 0.47uF; X2; 100°C	EN 60384- 14	VDE 40000358
(alternative)	B	Guangzhou Yes Electronic Technology Co., Ltd.	Interchange able	275V~; 0.47uF; X2; 100°C	EN 60384- 14	VDE 40043020
Y capacitor	B	Murata Mfg. Co., Ltd.	KX	AC300V; 1000pF; Y1; 125°C	EN 60384- 14	VDE 40002831
(alternative)	B	Dongguan Easy- gather Electronic Co., Ltd.	DCF	AC250/400V; 1000pF; Y1; 125°C	EN 60384- 14	VDE 40022942
(alternative)	B	Hongzhi Electronics CO., Ltd.	Y	1000pF; Y1; 400/250VAC	EN 60384- 14	VDE 40038760
(alternative)	B	Anshan Kei Fat Electronic Ceramic Technical Co., Ltd.	CT7	AC250V, 1000pF; Y1; 125°C	EN 60384- 14	VDE 40036847
Varistor	B	Joyin Co., Ltd.	10N821K	820V, 25A;	EN 61051	VDE 005937
(alternative)	B	Cerglass MFG Inc	10D821K	820V, 25A;	EN 61051	VDE 40028836
(alternative)	B	Hongzhi Enterprises Ltd.	HEL10D821 K	820V, 25A	EN 61051	VDE 40037512
(alternative)	B	Thinking Electronic Industrial Co., Ltd.	TVR10821- V/-B	820V, 25A	EN 61051	VDE 005944



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

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference	BT42-89632	—
	Lamp used	LED	—
	Lamp control gear used	89632	—
	Mounting position of luminaire	As normal used	—
	Supply wattage (W).....	200W	—
	Supply current (A)		—
	Calculated power factor		—
	Table: measured temperatures corrected for $t_a = 45\text{ }^\circ\text{C}$:		
	- abnormal operating mode		—
	- test 1: rated voltage		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....	220 V x 1.06 = 233.2 Vac 240 V x 1.06 = 254.4 Vac	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage		—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage.....		—
	Through wiring or looping-in wiring loaded by a current of A during the test		—

Temperature measurements, ($^\circ\text{C}$)

Part	Ambient	Clause 12.4 – normal					Clause 12.5 – abnormal	
		test 1	test 2		test 3	limit	test 4	limit
			106V	254.4V				
Supply cord	45	--	51.8	50.9	--	105	--	--
tc of LED driver	45	--	82.4	79.8	--	90	--	--
LED driver output wire	45	--	63.1	59.8	--	105	--	--
LED module PCB	45	--	97.2	91.4	--	Ref.	--	--
Metal enclosure	45	--	74.8	72.3	--	Ref.	--	--



Glass cover outside	45	--	62.3	58.9	--	Ref.	--	--
Mounting surface	45	--	53.3	52.8	--	90	--	--
Supplementary information:								

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference	: BT42-89632	—
	Lamp used	: LED	—
	Lamp control gear used	: 89632	—
	Mounting position of luminaire	: As normal used	—
	Supply wattage (W).....	: 200W	—
	Supply current (A)	:	—
	Calculated power factor	:	—
	Table: measured temperatures corrected for $t_a = 45\text{ }^\circ\text{C}$:		
	- abnormal operating mode.....	:	—
	- test 1: rated voltage	:	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....	: 220 V x 1.06 = 233.2 Vac 240 V x 1.06 = 254.4 Vac	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	:	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage.....	:	—
	Through wiring or looping-in wiring loaded by a current of A during the test	:	—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal					Clause 12.5 – abnormal	
		test 1	test 2		test 3	limit	test 4	limit
			233.2V	254.4V				
Supply cord	45	--	57.2	55.4	--	105	--	--
tc of LED driver	45	--	85.3	83.9	--	90	--	--
LED driver output wire	45	--	68.5	66.7	--	105	--	--
Wire connector	45	--	68.9	66.4	--	150	--	--
Internal wire to LED module	45	--	81.1	78.3	--	105	--	--
LED module PCB	45	--	111.6	106.2	--	Ref.	--	--
Metal enclosure	45	--	86.8	80.9	--	Ref.	--	--



Glass cover outside	45	--	66.4	64.8	--	Ref.	--	--
Mounting surface	45	--	56.2	54.4	--	90	--	--
Supplementary information:								

ANNEX 3	Screw terminals (part of the luminaire)		N
(14)	SCREW TERMINALS		—
(14.2)	Type of terminal	:	—
	Rated current (A)	:	—
(14.3.2.1)	One or more conductors		N
(14.3.2.2)	Special preparation		N
(14.3.2.3)	Terminal size		N
	Cross-sectional area (mm ²)	:	—
(14.3.3)	Conductor space (mm)		N
(14.4)	Mechanical tests		N
(14.4.1)	Minimum distance		N
(14.4.2)	Cannot slip out		N
(14.4.3)	Special preparation		N
(14.4.4)	Nominal diameter of thread (metric ISO thread)..... :		N
	External wiring		N
	No soft metal		N
(14.4.5)	Corrosion		N
(14.4.6)	Nominal diameter of thread (mm)		N
	Torque (Nm)..... :		N
(14.4.7)	Between metal surfaces		N
	Lug terminal		N
	Mantle terminal		N
	Pull test; pull (N)..... :		N
(14.4.8)	Without undue damage		N

ANNEX 4	Screwless terminals (part of the luminaire)		N
(15)	SCREWLESS TERMINALS		—
(15.2)	Type of terminal	:	—
	Rated current (A)	:	—
(15.3.1)	Material		N



(15.3.2)	Clamping		N
(15.3.3)	Stop		N
(15.3.4)	Unprepared conductors		N
(15.3.5)	Pressure on insulating material		N
(15.3.6)	Clear connection method		N
(15.3.7)	Clamping independently		N
(15.3.8)	Fixed in position		N
(15.3.10)	Conductor size		N
	Type of conductor		N
(15.5.1)	Terminals internal wiring		N
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples) :		N
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples) :		N
	Insertion force not exceeding 50 N		N
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N
(15.5.2)	Electrical tests		N
	Voltage drop (mV) after 1 h (4 samples)..... :		N
	Voltage drop of two inseparable joints		N
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples) :		N
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples) :		N
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples) :		N
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples) :		N
(15.6)	Terminals external wiring		N
	Terminal size and rating		N
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) :		N
	Pull test pin or tab terminals (4 samples); pull (N) :		N



(15.6.3.1) TABLE: Contact resistance test											N
Voltage drop (mV) after 1 h										—	
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	--	--	--	--	--	--	--	--	--	N	
Voltage drop of two inseparable joints					--					N	
Voltage drop after 10th alt. 25th cycle										N	
Max. allowed voltage drop (mV).....: --										—	
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	--	--	--	--	--	--	--	--	--	N	
Voltage drop after 50th alt. 100th cycle										N	
Max. allowed voltage drop (mV).....: --										—	
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	--	--	--	--	--	--	--	--	--	N	
Continued ageing: voltage drop after 10th alt. 25th cycle										N	
Max. allowed voltage drop (mV).....: --										—	
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	--	--	--	--	--	--	--	--	--	N	
Continued ageing: voltage drop after 50th alt. 100th cycle										N	
Max. allowed voltage drop (mV).....: --										—	
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	--	--	--	--	--	--	--	--	--	N	
Supplementary information:											



ATTACHMENT TO TEST REPORT IEC 60598-2-5 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Luminaires Part 2: Particular requirements: Section Five – Floodlight	
Differences according	EN 60598-2-1:1989 used in conjunction with EN 60598-1:2015
Annex Form No.	EU_GD_IEC_60598_2_5C
Master Annex Form	2013-01
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	CENELEC COMMON MODIFICATIONS (EN)	—
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2.5 (3)	MARKING	—
2.5 (3.3.101)	Adequate warning on the package	N

2.6 (4)	CONSTRUCTION	—
2.6 (4.11.6)	Electro-mechanical contact systems	P

2.10 (5)	EXTERNAL AND INTERNAL WIRING	—
2.10 (5.2.1)	Connecting leads	N
	- without a means for connection to the supply	N
	- terminal block specified	N
	- relevant information provided	N
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1	N
2.10 (5.2.2)	Cables equal to HD21 S2 or HD22 S2	N

2.12 (12)	ENDURANCE TEST AND THERMAL TEST	—
2.12 (12.4.2c)	Thermal test (normal operation)	P

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

ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)	—
(4 & 5)	FR: Shuttered socket-outlets 10/16A	N
(13.3)	FR: Glow-wire test 850°C alt. 750°C for luminaires in premises open to public or 960°C for luminaires in emergency exits	N
(13.3)	GB: Requirements according to United Kingdom Building Regulation	N



TEST REPORT EN 62031 LED modules for general lighting – Safety specifications
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4	GENERAL REQUIREMENTS	—
4.4	Integral modules tested assembled in the luminaire	P
4.5	Independent modules complies with requirements in IEC 60598-1	N

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

6	CLASSIFICATION	—
	Built-in module : Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Independent module : Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Integral module : Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	For Integral module; Note to 1.2.1 in IEC 60598-1 applies.	—

7	MARKING	N
	Requirements not applicable to the evaluated product.	—

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

9 (9)	PROVISION FOR PROTECTIVE EARTHING	N
	Requirements not applicable to the evaluated product.	—

10 (10)	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS	N
	Requirements not applicable to the evaluated product.	—

11 (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 (MΩ):	P
	For basic insulation $\geq 2 \text{ M}\Omega$: 100MΩ	P
	For double or reinforced insulation $\geq 4 \text{ M}\Omega$:	N



	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		N
--	--	--	---

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

13 (14)	FAULT CONDITIONS		—
- (14)	When operated under fault conditions the controlgear:		N
	- does not emit flames or molten material		N
	- does not produce flammable gases		N
	- protection against accidental contact not impaired		N
	Thermally protected controlgear does not exceed the marked temperature value		N
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	N
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)	(see appended table)	N
	Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3		N
- (14.2)	Short-circuit or interruption of semiconductor devices	(see appended table)	N
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	N
- (14.5)	After the tests has been carried out on three samples:		N
	The insulation resistance ≥ 1 MΩ		N
	No flammable gases		N
	No accessible parts have become live		N
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		N
- (14.6)	Relevant fault condition tests with high-power supply		—
13.2	Module withstands overpower condition >15 min.		P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		N
	During the tests, tissue paper, spread below module, does not ignite		P



15	CONSTRUCTION	—
	Wood, cotton, silk, paper and similar fibrous material not used as insulation	P

16	CREEPAGE DISTANCES AND CLEARANCES	—
	Creepage and distances and clearances in compliance with IEC 60598-1	P
	Working voltage (V): MAX 60VDC	—
	Voltage form Sinusoidal <input type="checkbox"/> Non-sinusoidal <input checked="" type="checkbox"/>	—
	PTI < 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>	—
	Impulse withstand category (Normal category II) (Category III Annex U) Category II <input checked="" type="checkbox"/> Category III <input type="checkbox"/>	—
	Rated pulse voltage (kV).....:	—
	(1) Current-carrying parts of different polarity: cr (mm); cl (mm) :	N
	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm).....: No values are specified for working voltage below 60VDC as the test voltage 500V is considered sufficient.	N
	(3) Parts becoming live due to breakdown of basic insulation and metal parts: cr (mm); cl (mm).....:	N
	(4) Outer surface of cable where it is clamped and metal parts: cr (mm); cl (mm).....:	N
	(6) Current-carrying parts and supporting surface: cr (mm); cl (mm).....: No values are specified for working voltage below 60VDC as the test voltage 500V is considered sufficient.	N

17 (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

18 (18)	RESISTANCE TO HEAT, FIRE AND TRACKING	—
	Resistance to Heat, Fire and Tracking in compliance with IEC 61347-1 (clause numbers between parentheses refer to IEC 61347-1)	N
(18.1)	Ball-pressure test: - part tested; temperature (°C).....:	N
(18.2)	Test of printed boards - part tested.....:	N
(18.3)	Glow-wire test (650°C): - part tested.....:	N
(18.4)	Needle flame test (10 s): - part tested.....:	N
(18.5)	Tracking test: - part tested.....:	N

19 (19)	RESISTANCE TO CORROSION	—
	Rust protection:	N
	- test according 4.18.1 of IEC 60598-1	N
	- adequate varnish on the outer surface	N



20	INFORMATION FOR LUMINAIRE DESIGN	N
	Information in Annex D	—

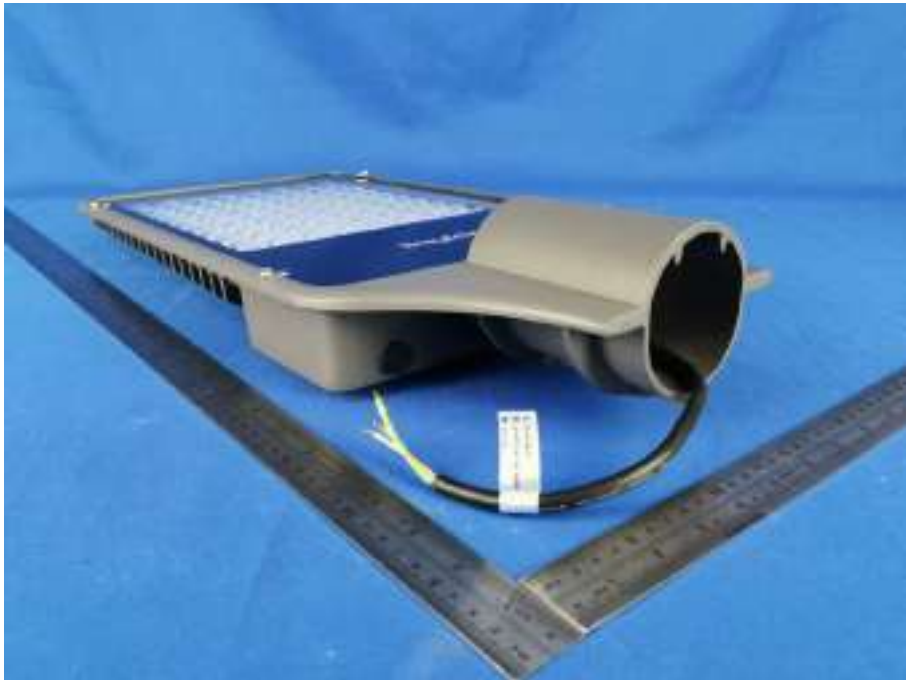
21	HEAT MANAGEMENT	—
21.1	General	N
	Exchangeability is safeguarded by cap or base	N
21.2	Heat-conducting foil and paste	N
	Heat-conducting foil delivered with the module if necessary	N
21.4	Construction	N
	Electrical connection and mechanical holding are separate	N

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

ANNEX 1	SELV-operated LED modules	—
	Requirement not applicable to the evaluated product.	N

Attachment – Photos







(EBO authenticate the photo on original report only)
*** End of Report ***