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:	Braytron
Model No.:	Please refer to page 5
Applicable standards:	EN 60598-2-5:2015 EN 60598-1:2015+A1:2018
Date of sample receipt:	May 17, 2021
Date of Test:	May 17, 2021 To June 1, 2021
Date of report issued:	June 3, 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. .....:	EBO2104195-E465
Tested by (name + signature).....:	Bernie Xia
Approved by (name + signature) .....:	Kevin Wang
Date of issue.....:	June 3, 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
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. .....:	BT45-19632
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: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:

LED OUTDOOR LIGHTING FIXTUREE
Model: BT45-19632
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

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 65
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.....:	May 17, 2021
Date(s) of performance of tests.....:	May 17, 2021 To June 1, 2021

General remarks:

The test results presented in this report relate only to the object tested.
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"(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 point is used as the decimal separator.

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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.

General product information:

LED OUTDOOR LIGHTING FIXTUREE, comprised of LED module, independent LED driver and AC Connecting leads. The models BT45-19632 were selected representative models to perform all tests

Model No.:

BT45-09112	BT45-09132	BT45-09412	BT45-09432
BT45-09612	BT45-09632	BT45-19112	BT45-19132
BT45-19412	BT45-19432	BT45-19612	BT45-19632
BT44-080X2	BT44-090X2	BT44-091X2	BT44-092X2
BT44-093X2	BT44-094X2	BT44-095X2	BT44-096X2
BT44-097X2	BT44-098X2	BT44-099X2	BT44-180X2
BT44-190X2	BT44-191X2	BT44-192X2	BT44-193X2
BT44-194X2	BT44-195X2	BT44-196X2	BT44-197X2
BT44-198X2	BT44-199X2	BT45-080X2	BT45-090X2
BT45-091X2	BT45-092X2	BT45-093X2	BT45-094X2
BT45-095X2	BT45-096X2	BT45-097X2	BT45-098X2
BT45-099X2	BT45-180X2	BT45-190X2	BT45-191X2
BT45-192X2	BT45-193X2	BT45-194X2	BT45-195X2
BT45-196X2	BT45-197X2	BT45-198X2	BT45-199X2
BT45-380X2	BT45-390X2	BT45-391X2	BT45-392X2
BT45-393X2	BT45-394X2	BT45-395X2	BT45-396X2
BT45-397X2	BT45-398X2	BT45-399X2	BT46-060XX
BT46-075XX	BT46-080XX	BT46-090XX	BT46-091XX
BT46-092XX	BT46-093XX	BT46-094XX	BT46-095XX
BT46-096XX	BT46-097XX	BT47-001XX	BT47-002XX
BT47-003XX	BT47-004XX	BT47-005XX	BT47-006XX
BT47-007XX	BT47-008XX	BT47-009XX	
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 ☒ No ☐	—
1.2 (0.3)	More sections applicable ..... :	Yes ☐ No ☒	—
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 ☒ No ☐	—
1.4 (2.5)	Luminaire for normal use ..... :	Yes ☒ No ☐	—
	Luminaire for rough service ..... :	Yes ☐ No ☒	—
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)	Retainment 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

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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/mm²) ..... :		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 deriver 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

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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 ≤ 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 ≤ 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) ..... :	220-240 Vac (Input of LED driver)	—
	Rated pulse voltage (kV) ..... :		—
	Voltage form ..... :	Sinusoidal ☒ Non-sinusoidal ☒	—
	PTI ..... :	< 600 ☒ ≥ 600 ☐	—
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II ☐ Category III ☐	—
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
	Thread-forming screw used in a grove		N
	Earth makes contact first		N

EN 60598-2-5			
Cl.	Requirement – Test	Result	Verdict
	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
	Nominal cross-sectional area (mm²) ..... :	3 x 0.75 mm²	P
	Cables equal to IEC 60227 or IEC 60245		P

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Cl.	Requirement – Test	Result	Verdict
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
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) ..... :	60 N	P

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Cl.	Requirement – Test	Result	Verdict
	- 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
1.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N

EN 60598-2-5			
Cl.	Requirement – Test	Result	Verdict
	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
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N

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Cl.	Requirement – Test	Result	Verdict
	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 ≥ 0,5 μF		N
	Portable plug connected luminaire with capacitor		N
	Other plug connected luminaire with capacitor		N
	Discharge device on or within capacitor		N
	Discharge device mounted separately		N

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Cl.	Requirement – Test	Result	Verdict
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
	- track-mounted luminaires		N
1.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N

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Cl.	Requirement – Test	Result	Verdict
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 ☐ No ☐	—
	- manual reset cut-out ..... :	Yes ☐ No ☐	—
	- auto reset cut-out ..... :	Yes ☐ No ☐	—
	- case of abnormal conditions ..... :		—

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Cl.	Requirement – Test	Result	Verdict
	- 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) ..... :		—
	SELV		P
	- between current-carrying parts of different polarity :		N

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Cl.	Requirement – Test	Result	Verdict
	- 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
	- between live parts of different polarity ..... :		N
	- between live parts and mounting surface ..... :	1480 V	P

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Cl.	Requirement – Test	Result	Verdict
	- 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	1.0	
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 ℃			—
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/Trademark**	**Type/Model**	**Technical Data**	**Standard**	**Mark(s) of conformity[1)]**
For LED Driver						
Power Cord	B	GuangDong RiFeng Electrical Cable Co., Ltd.	H05RN-F	2x1.0 mm^2 3x1.0 mm^2	DIN EN 50525-2-21	VDE 40015999
(alternative)	B	Queshan Yuqiang Cable Co., Ltd.	H05RN-F	2x1.0 mm^2 3x1.0 mm^2	DIN EN 50525-2-21	VDE 40044073
X capacitor	B	Shantou Free Trade Zone Songtian Electronic Technology Co., Ltd.	MPX	max0.47Uf AC310V	EN 60384-14	VDE 40034679
(alternative)	B	Liuhe Electronics (Jiangxi) Co., Ltd.	MPR	max0.47uF AC310V	EN 60384-14	VDE 40032056
Y Capacitor	B	Shantou Free Trade Zone Songtian Electronic Technology Co., Ltd.	CD-Series	max2200Pf AC400V	EN 60384-14	VDE 40025754
(alternative)	B	HSUAN TAI ELECTRONIC (SUZHOU) CO., LTD.	CY	max2200pF AC400V	EN 60384-14	VDE 40008912
Y Capacitor	B	Shantou Free Trade Zone Songtian Electronic Technology Co., Ltd.	CE-Series	max470pF AC250V	EN 60384-14	VDE 40025748
(alternative)	B	HSUAN TAI ELECTRONIC (SUZHOU) CO., LTD.	CY	max470pF AC250V	EN 60384-14	VDE 118413
Rectifier	B	Yangzhou Hongyang Electronics Co., Ltd.	GBU1010	10A/1000V	EN 60598-1	Tested with appliance
(alternative)	B	Yangzhou Yangjie Electronic Technology Co., Ltd.	GBU1010	10A/1000V	EN 60598-1	Tested with appliance
PCB	B	Guangde Sanyang Electronics Co., Ltd.	SY-S	V-0, 130℃	UL94	UL E473856
Fuse	B	Dongguan Beite Electronic Technology Co., Ltd.	932	AC300V, 6.3A	EN 60127-1	VDE
(alternative)	B	Conquer	MST series	AC300V, 6.3A	EN 60127-1	VDE
Bobbin	B	Chang Chun Plastics Co., Ltd.	T375J	V-0, 150℃		UL E59481
(alternative)	B	Sumitomo Bakelite Co., Ltd.	PM-9630, PM-9820	V-0, 150℃		UL E41429
Insulation Tape	B	Jingjiang Yahua Pressure Sensitive Adhesive Co., Ltd.	PZ	180℃	--	UL E165111
(alternative)	B	Jingjiang Jingyi Adhesive Products Co., Ltd.	JY25A	130℃	--	UL E246950
(alternative)	B	Haining Chulong tape Co., Ltd.	CLtape	130℃	--	UL E464604
Varnish	B	Taihu Corporation	T-4260(a)	MW 80-C	--	UL E228349
(alternative)	B	KYOCERA	TVB2180T*(a)	MW 28-C	--	UL E83702
(alternative)	B	Taihu Corporation	T-4260(a)	MW 76-C	--	UL E228349

Varistor	B	Thinking Electronic Industrial Co., Ltd.	TVR10561-D	350V/min 4000A	EN 61051	VDE 40021243
(alternative)	B	Shenzhen Junyao Electronics Co., Ltd.	561KD10	350V/min 4000A	EN 61051	VDE 40027827
(alternative)	B	Thinking Electronic Industrial Co., Ltd.	TVR10471-D	300V/min 4000A	EN 61051	VDE 40021243
(alternative)	B	Shenzhen Junyao Electronics Co., Ltd.	471KD10	300V/min 4000A	EN 61051	VDE 40027827
(alternative)	B	Thinking Electronic Industrial Co., Ltd.	TVR14561-D	350V/min 8000A	EN 61051	VDE 40021243
(alternative)	B	Shenzhen Junyao Electronics Co., Ltd.	561KD14	350V/min 8000A	EN 61051	VDE 40027827
Thermistor	B	Thinking Electronic Industrial Co., Ltd.	SCK-2R55A	2.5Ω/5A	EN 60539-1	VDE
(alternative)	B	Nanjing Shiheng Electronic Technology Co., Ltd.	MF72 2.5D-11	2.5Ω/5A	EN 60539-1	VDE
For Light						
PCB	B	Shenzhen Huaerkang Electronics Co., Ltd.	--	1.6mm, 35um 3KV	UL94	UL
LED	B	Shenzhen Lepower Opto Electronics Corp., Ltd.	SMD3030	1W, 6V, 150mA	EN 62031	Tested in 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

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference ..... :	BT45-19632	—
	Lamp used ..... :	LED	—
	Lamp control gear used ..... :	200W	—
	Mounting position of luminaire ..... :	As normal used	—
	Supply wattage (W)..... :	200W	—
	Supply current (A) ..... :		—
	Calculated power factor ..... :		—
	Table: measured temperatures corrected for ta =45 °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	--	51.6	50.1	--	105	--	--
tc of LED driver	45	--	80.6	79.4	--	90	--	--
LED driver output wire	45	--	61.5	59.4	--	105	--	--
LED module PCB	45	--	95.7	90.3	--	Ref.	--	--
Metal enclosure	45	--	73.7	70.2	--	Ref.	--	--
Glass cover outside	45	--	61.7	58.9	--	Ref.	--	--
Mounting surface	45	--	52.9	52.8	--	90	--	--
Supplementary information:								

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference ..... :	BT45-19632	—
	Lamp used ..... :	LED	—

	Lamp control gear used ..... :	200W	—
	Mounting position of luminaire ..... :	As normal used	—
	Supply wattage (W)..... :	200W	—
	Supply current (A) ..... :		—
	Calculated power factor ..... :		—
	Table: measured temperatures corrected for ta = 45 °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	--	55.8	53.5	--	105	--	--
tc of LED driver	45	--	84.3	83.2	--	90	--	--
LED driver output wire	45	--	67.2	65.5	--	105	--	--
Wire connector	45	--	67.6	65.5	--	150	--	--
Internal wire to LED module	45	--	79.8	77.4	--	105	--	--
LED module PCB	45	--	110.3	105.3	--	Ref.	--	--
Metal enclosure	45	--	85.5	80.2	--	Ref.	--	--
Glass cover outside	45	--	65.1	63.9	--	Ref.	--	--
Mounting surface	45	--	54.9	53.5	--	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 (mm²) ..... :		—
(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

	CENELEC COMMON MODIFICATIONS (EN)		—
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℃ 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

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 ☐ No ☒	—
	Independent module ..... :	Yes ☐ No ☒	—
	Integral module ..... :	Yes ☒ No ☐	—
	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 ≥ 2 MΩ ..... :	100MΩ	P
	For double or reinforced insulation ≥ 4 MΩ ..... :		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 ☐ Non-sinusoidal ☒	—
	PTI	< 600 ☒ ≥ 600 ☐	—
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II ☒ Category III ☐	—
	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:		N
	- part tested; temperature (°C).....:		N
(18.2)	Test of printed boards		N
	- part tested.....:		N
(18.3)	Glow-wire test (650°C):		N
	- part tested.....:		N
(18.4)	Needle flame test (10 s):		N
	- part tested.....:		N
(18.5)	Tracking test:		N
	- 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

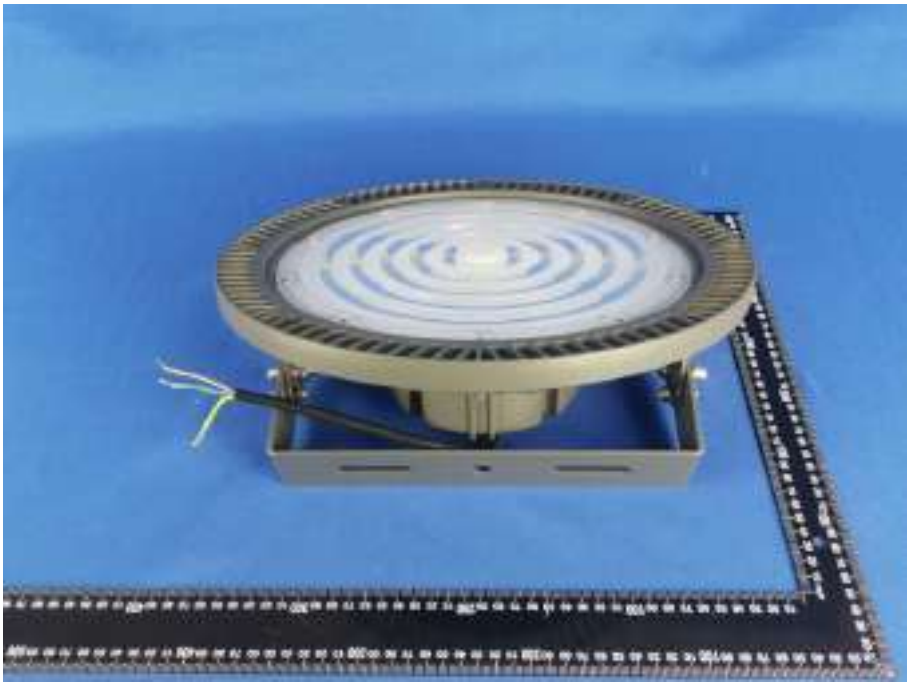
20	**INFORMATION FOR LUMINAIRE DESIGN**	N
	Information in Annex D	—

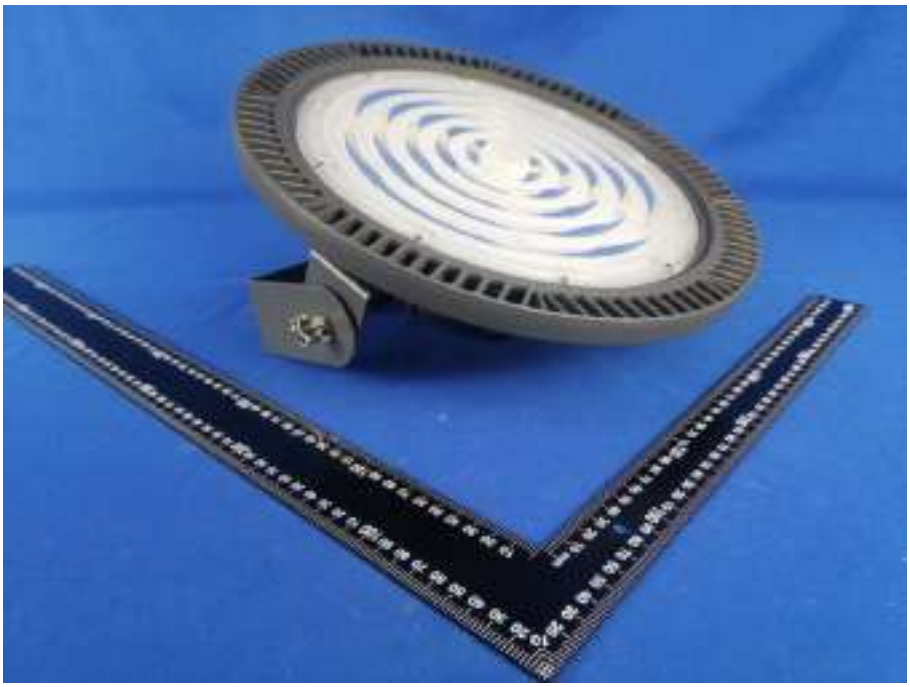
21	**HEAT MANAGEMENT**		—
21.1	General		N
	Exchangeability is safeguarded by cap or base		N
21.2	Heat-conducting foil and paste		N
	Heat-conducting foil delivered with the module if necessary		N
21.4	Construction		N
	Electrical connection and mechanical holding are separate		N

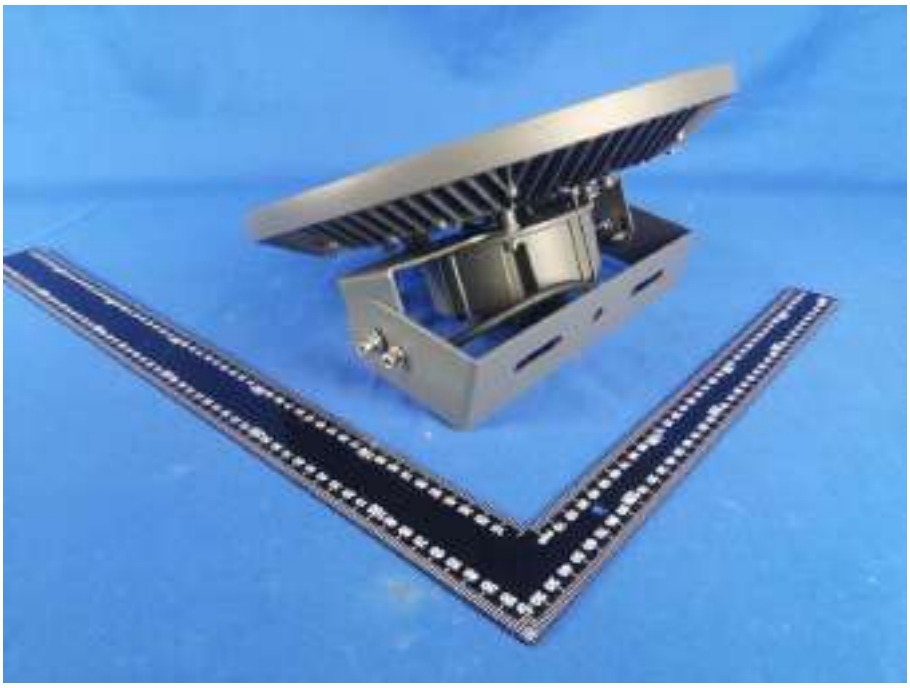
A	**ANNEX A - TESTS**		—
	All tests performed in accordance with the advice given in Annex H of IEC 61347-1, if applicable		P

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 ***