



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Reference No. : WTF18F10126836L
Applicant..... : Abstracta AB
Address..... : Lammengatan 2, 363 45 Lammhult
Manufacturer : Shenzhen Eastfield Lighting Co., Ltd.
Address..... : No.A,B,C,D building, No.10 of Huanping Road, Gaoqiao District,
Pingdi Street, Longgang Area, Shenzhen, Guangdong, P.R.China
518116
Product Name : LILY ARMATUR - DOWNLIGHT
Model No : 2490617
Standards..... : Luminaires
Part 2-1: Fixed general purpose luminaires
EN 60598-2-1:1989
EN 60598-1:2015+A1:2018
Date of Receipt sample : 2018-10-25
Date of Test : 2018-10-25 to 2018-11-05
Date of Issue..... : 2018-11-06
Test Report Form No. : WSL-6059821A-02A
Test Result..... : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

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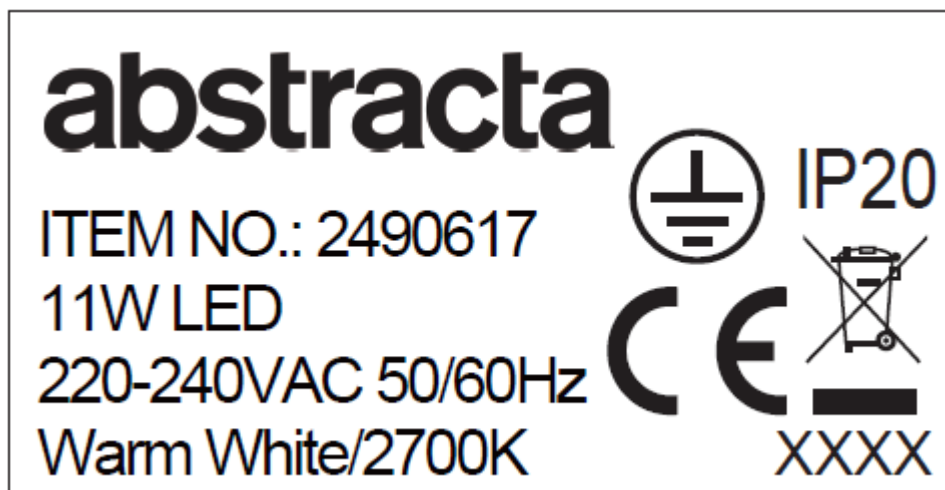
Nicole He / Project Engineer

Approved by:



Michael Chen / Supervisor

Test item description..... : LED LAMP
Trade Mark..... : ABSTRACTA
Model/Type reference..... : 2490617
Ratings..... : 220-240V~, 50/60Hz, 11W, IP20, Class I

Copy of marking plate:

On the luminaries surface



On the lamp cover

Remark:

1. As declared by the applicant, the importer (and manufacturer, if it is different)'s name, registered trade name or registered trade mark and the postal address will be marked on the products before being place on the market. The contact details shall be in a language easily understood by end-users and market surveillance authorities.
2. Marking on the packaging or in a document accompanying the electrical equipment is only acceptable if it is not possible to place such markings on the product.

Summary of testing:

1. All tests were carried out on the model 2490617 and the tests results complied with the requirements of the standards mentioned on page one.
2. Integral LED module was assessed according to EN 62031:2008+A1:2013+A2:2015 and found to comply with the requirement.
3. Photobiological safety was assessed according to EN 62471:2008, classification group: exempt ☒ risk 1 ☐ risk 2 ☐ risk 3 ☐.
4. Assessment of lighting equipment related to human exposure to electromagnetic fields was evaluated and fulfilled the requirements of EN 62493:2015 and found to comply with the requirement.
5. Only the most unfavorable results are recorded in this report.

Test items particulars:

Classification of installation and use.....: Fixed

Supply Connection.....: Non-detachable flexible cable with plug

Possible test case verdicts:

- test case does not apply to the test object.....: N (Not applicable)

- test object does meet the requirement.....: P (Pass)

- test object does not meet the requirement.....: F (Fail)

General remarks:

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

General product information:

1. Fixed general purpose luminaires, for indoor use only.

2. Luminaires suitable for direct mounting on normally flammable surfaces.

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.2 (0)	GENERAL TEST REQUIREMENTS		P
1.2 (0.3)	More sections applicable	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
1.2 (0.5)	Components	(see Annex 1)	—
1.2 (0.7)	Information for luminaire design in light sources standards		—
1.2 (0.7.2)	Light source safety standard	EN 62031	—
	Luminaire design in the light source safety standard		P

1.4 (2)	CLASSIFICATION		P
1.4 (2.2)	Type of protection (Class 0 excluded)..... :	Class I	—
1.4 (2.3)	Degree of protection (Requirement: Ordinary)..... :	IP20	—
1.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire not suitable for direct mounting on normally flammable surfaces..... :	Yes <input type="checkbox"/> No <input checked="" 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		P
1.5 (3.2)	Mandatory markings	See "Copy of marking plate"	P
	Position of the marking		P
	Format of symbols/text		P
1.5 (3.3)	Additional information		P
	Language of instructions	In English	P
1.5 (3.3.1)	Combination luminaires		N
1.5 (3.3.2)	Nominal frequency in Hz	50/60Hz	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

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
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
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 Y	P
1.5 (3.3.18)	Non-ordinary luminaires with PVC cable		P
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 arms reach		P
1.5 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided	Non-user replaceable	P
	Cautionary symbol		P
1.5 (3.3.22)	Controllable luminaires, classification of insulation provided		N
1.5 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P

1.6 (4)	CONSTRUCTION		P
1.6 (4.2)	Components replaceable without difficulty		N
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)	--	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 (Nm)	--	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

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.4.6)	Centre contact		N
1.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N
1.6 (4.4.8)	Lamp connectors		N
1.6 (4.4.9)	Caps and bases correctly used		N
1.6 (4.5)	Starter holders		N
	Starter holder in luminaires other than class II	No starter holder used	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		P
1.6 (4.7.3.1)	Welded connections:		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 61058-1 for electronic switches		N
1.6 (4.9)	Insulating lining and sleeves		N
1.6 (4.9.1)	Retainment		N
	Method of fixing : --		N

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
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)	Insulation of Class II luminaires		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		N
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)	Mechanical connections and glands		P
1.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N
	Torque test: torque (Nm); part : Screw used as metal enclosure: 1,2Nm		P

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Torque test: torque (Nm); part	Screw used as earth terminal: 0,5Nm	P
	Torque test: torque (Nm); part	Screw used as internal plastic enclosure: 0,5Nm	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)	6,25Nm	P
1.6 (4.13)	Mechanical strength		P
1.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm).....	--	N
	- other parts; energy (Nm)	All enclosure & cover: 0,35Nm	P
	1) live parts		P
	2) linings		N
	3) protection		P
	4) covers		P
1.6 (4.13.3)	Straight test finger	30N	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 and adjusting devices		P
1.6 (4.14.1)	Mechanical load:		P
	A) four times the weight	4x1,14kg	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

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Fixed luminaire or independent control gear without fixing devices		N
1.6 (4.14.2)	Load to flexible cables		N
	Mass (kg): --		N
	Stress in conductors (N/mm ²): --		N
	Mass (kg) of semi-luminaire: --		N
	Bending moment (Nm) of semi-luminaire: --		N
1.6 (4.14.3)	Adjusting devices:		N
	- flexing test; number of cycles: --		N
	- strands broken		N
	- electric strength test afterwards		N
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:		N
	- glow-wire test 650 °C		N
	- spacing \geq 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		P
	No lamp control gear	Integral LED module	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
	- external		N
	- fixed position		N

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- temperature marked lamp control gear		N
1.6 (4.16.3)	Design to satisfy the test of 12.6	(see 12.6)	N
1.6 (4.17)	Drain holes		N
	Clearance at least 5 mm		N
1.6 (4.18)	Resistance to corrosion:		P
1.6 (4.18.1)	- rust-resistance		N
1.6 (4.18.2)	- season cracking in copper		P
1.6 (4.18.3)	- corrosion of aluminium		N
1.6 (4.19)	Ignitors 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		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		N
1.6 (4.22)	Attachments to lamps		N
1.6 (4.23)	Semi-luminaires comply Class II		N
1.6 (4.24)	Photobiological hazards		P
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		P
	Luminaires with E_{thr} :		N
	a) Fixed luminaires	RG0 unlimited	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
1.6 (4.25)	No sharp point or edges		P
1.6 (4.26)	Short-circuit protection:		N

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
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		P
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		P
	Minimum two fixing means		P
1.6 (4.31)	Insulation between circuits		P
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N
1.6 (4.31.1)	SELV circuits		N

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Used SELV source		N
	Voltage \leq ELV		N
	Insulating of SELV circuits from LV supply		N
	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		N
	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		P
	Other circuits insulated from accessible parts according Table X.1		P
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N
	- conductive parts are connected together		N
	- test according 7.2.3 of above		N
	- 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

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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		P
1.7 (11.2.1)	Impulse withstand category (Normal category II)	Category II <input checked="" type="checkbox"/> Category III <input type="checkbox"/>	—
	Category III according Annex U		N
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N
1.7 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 1.7 (11.2) I	P
	Creepage distances for frequency over 30 kHz:		N
	- Controlgear marked with \hat{U}_{OUT} and f_{UOUT} according IEC 61347-1, clause 7.1, item w	See Test Table 1.7 (11.2) II	N
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 1.7 (11.2) II	N
1.7 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 1.7 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N
	- Controlgear marked with U_P	See Test Table 1.7 (11.2) II	N
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 1.7 (11.2) II	N

1.8 (7)	PROVISION FOR EARTHING		P
1.8 (7.2.1 + 7.2.3)	Accessible metal parts		P
	Metal parts in contact with supporting surface		P
	Resistance < 0,5 Ω	0,07 Ω	P
	Self-tapping screws used		N
	Thread-forming screws		N
	Thread-forming screw used in a grove		N
	Earth makes contact first		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

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
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		N
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		N
1.9 (14)	SCREW TERMINALS		N
	Separately approved; component list	(see Annex 1)	N
	Part of the luminaire	(see Annex 3)	N
1.9 (15)	SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS		N
	Separately approved; component list	(see Annex 1)	N
	Part of the luminaire	(see Annex 4)	N
1.10 (5)	EXTERNAL AND INTERNAL WIRING		P
1.10 (5.2)	Supply connection and external wiring		P
1.10 (5.2.1)	Means of connection..... :	Non-detachable flexible cable with plug	P
1.10 (5.2.2)	Type of cable :	(see Annex 1)	P
	Nominal cross-sectional area (mm ²)..... :	(see Annex 1)	P
	Cables equal to IEC 60227 or IEC 60245		P
1.10 (5.2.3)	Type of attachment, X, Y or Z	Type Y	P
1.10 (5.2.5)	Type Z not connected to screws		N
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		N
1.10 (5.2.8)	Insulating bushings:		P
	- suitably fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- tubes or guards made of insulating material		P

IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
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 Y	P
1.10 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) : 60N		P
	- torque test: torque (Nm) : 0,25Nm		P
	- displacement ≤ 2 mm		P
	- no movement of conductors		P
	- no damage of cable or cord		P
1.10 (5.2.11)	External wiring passing into luminaire		N
1.10 (5.2.12)	Looping-in terminals		N
1.10 (5.2.13)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N
1.10 (5.2.14)	Mains plug same protection		P
	Class III luminaire plug		N
1.10 (5.2.16)	Appliance inlets (IEC 60320)		N
	Appliance couplers of class II type		N

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Clause	Requirement + Test	Result - Remark	Verdict
1.10 (5.2.17)	No standardized interconnecting cables properly assembled		N
1.10 (5.2.18)	Used plug in accordance with		P
	- IEC 60083		N
	- other standard		P
1.10 (5.3)	Internal wiring		P
1.10 (5.3.1)	Internal wiring of suitable size and type	(see Annex 1)	P
	Through wiring		N
	- not delivered/ mounting instruction		N
	- factory assembled		N
	- socket outlet loaded (A)..... : --		N
	- temperatures : --		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) : (see Annex 1)		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
	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		N
1.10 (5.3.1.6)	Insulation thickness other than PVC or rubber	PVC	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°		P
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		N

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Clause	Requirement + Test	Result - Remark	Verdict
1.10 (5.3.6)	Wire carriers		N
1.10 (5.3.7)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N
1.10 (5.4)	Test to determine suitability of conductors having a reduced cross-sectional area		P
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	(see Annex 2)	P
	No damage to luminaire wiring after test		P
1.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
1.11 (8.2.1)	Live parts not accessible with standard test finger		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 and adjustable luminaires		N
	Basic insulated parts not accessible with Ø 50 mm probe from outside, within arms reach, on wall-mounted luminaires		P
	Lampholder 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)	Class III luminaires with exposed SELV parts:		N

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Clause	Requirement + Test	Result - Remark	Verdict
	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:		N
	- protection independent of supporting surface		N
	- terminal block completely covered		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		P
	Discharge device on or within capacitor		N
	Discharge device mounted separately		P
1.12 (12)	ENDURANCE TEST AND THERMAL TEST		P
1.12 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 1.13		—
1.12 (12.2)	Selection of lamps and ballasts		—
	Lamp used according Annex B	(Lamp used see Annex 2)	—
	Controlgear if separate and not supplied	(Controlgear used see Annex 2)	—
1.12 (12.3)	Endurance test:		P
	a) mounting-position	Mounted according to the suggestion of manufacturer	—
	b) test temperature (°C)	35°C	—
	c) total duration (h)	240h	—
	d) supply voltage (V)	240V x 1,1=264V	—
	d) if not equipped with controlgear, constant voltage/current (V) or (A)	--	—
	e) luminaire ceases to operate		—
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

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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
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 V	--	—
	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 V:		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.....	--	—

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Clause	Requirement + Test	Result - Remark	Verdict
	- calculated temperature of fixing point/exposed part (°C)	--	—
	Ball-pressure test:		N
	- part tested; temperature (°C).....	--	N
	- part tested; temperature (°C).....	--	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:		N
	- part tested; temperature (°C).....	--	N
	- part tested; temperature (°C).....	--	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"/>	—
	- 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:		N
	- part tested; temperature (°C).....	--	N
	- part tested; temperature (°C).....	--	N
1.13 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
1.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP	IP20	—
	- mounting position during test	Acc. to user manual	—
	- fixing screws tightened; torque (Nm).....	--	—

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Clause	Requirement + Test	Result - Remark	Verdict
	- tests according to clauses	9.2.0	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N
	b) no talcum in dust-tight luminaire		N
	c) no trace of water on current-carrying parts or SELV parts or where it could become a hazard		N
	c.1) For luminaires without drain holes – no water entry		N
	c.2) For luminaires with drain holes – no hazardous water entry		N
	d) no water in watertight or pressure watertight luminaire		N
	e) no contact with live parts (IP 2X)	IP20	P
	e) no entry into enclosure (IP 3X and IP 4X)		N
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N
	f) no trace of water on part of lamp requiring protection from splashing water		N
	g) no damage of protective shield or glass envelope		N
1.13 (9.3)	Humidity test 48 h	25 °C, 93%RH	P
1.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
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:		N
	- between current-carrying parts of different polarity	--	N
	- between current-carrying parts and mounting surface	--	N
	- between current-carrying parts and metal parts of the luminaire	--	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
	Other than SELV:		P
	- between live parts of different polarity	>100MΩ	P
	- between live parts and mounting surface.....	>100MΩ	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- between live parts and metal parts..... :	>100MΩ	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 :	>100MΩ	P
	- Insulation bushings as described in Section 5 .. :	>100MΩ	P
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):		P
	SELV:		N
	- between current-carrying parts of different polarity :	--	N
	- between current-carrying parts and mounting surface :	--	N
	- between current-carrying parts and metal parts of the luminaire :	--	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
	Other than SELV:		P
	- between live parts of different polarity..... :	1480V	P
	- between live parts and mounting surface..... :	1480V	P
	- between live parts and metal parts..... :	1480V	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 :	1480V	P
	- Insulation bushings as described in Section 5 .. :	1480V	P
1.14 (10.3)	Touch current (mA)..... :	--	N
	Protective conductor current(mA)..... :	Max. 0,8mA	P

1.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
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)	N
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

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Clause	Requirement + Test	Result - Remark	Verdict

1.7 (11.2)	TABLE: Creepage distances and clearances						P
	Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages						P
	Applicable part of IEC 60598-1 Table 11.1* and 11.2*						P
	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	B	4.0	1.5	11.1	4.0	2.5	11.1
Working voltage (V).....:					240VAC		—
PTI.....:					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV)					--		—
Supplementary information: Live parts of different polarity							
Distance 2:	S	3.0	1.5	11.1	3.0	2.5	11.1
Working voltage (V).....:					240VAC		—
PTI.....:					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV)					--		—
Supplementary information: Outer surface of cable where it is clamped and metal parts							
Distance 3:	B	3.4	1.5	11.1	3.4	2.5	11.1
Working voltage (V).....:					240VAC		—
PTI.....:					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV)					--		—
Supplementary information: Current-carrying parts and earth metal parts							
Distance 4:	B	3.4	1.5	11.1	3.4	2.5	11.1
Working voltage (V).....:					240VAC		—
PTI.....:					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV)					--		—
Supplementary information: Current-carrying parts and mounting surface							

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

1.7 (11.2)	TABLE II: Creepage distances and clearances						N
	Minimum distances (mm) for a.c. higher than 30 kHz sinusoidal voltages						
	Applicable part of IEC 61347-1 Table 7 and 8* or IEC 60664-4 Table 1 and 2						
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:							
Working voltage (V).....:							—

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Clause	Requirement + Test				Result - Remark		Verdict
Frequency if applicable (kHz).....:							—
PTI.....:					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)							—
Supplementary information:							
Distance 2:							
Working voltage (V).....:							—
Frequency if applicable (kHz).....:							—
PTI.....:					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)							—
Supplementary information:							
Distance 3:							
Working voltage (V).....:							—
Frequency if applicable (kHz).....:							—
PTI.....:					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)							—
Supplementary information:							

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

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Clause	Requirement + Test	Result - Remark	Verdict

1.15 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm)		≤2,0		—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Lamp cover	See annex 1	77,0	1,2	
Supplementary information:				

1.15 (13.3.1)	TABLE: Needle-flame test (IEC 60695-11-5)				N
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
--	--	--	--	--	--
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 glow (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict	
Lamp cover	See annex 1	30	No	0	P	
Internal plastic enclosure	See annex 1	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)					Yes	
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:					

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1	TABLE: Critical components information					P
object/part No.	Code	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
Plug	A	Various	Various	AC250V, 16A	VDE 0620-2-1	VDE approved
Power cord	A	Various	Various	3x 0.75mm ²	EN 50525-2-11	VDE approved
LED	B	Bridgelux, Inc	BXEN-27E-11L-3B-00-0-0	I _F =60mA; 2700K	EN 62471	Tested with appliance
LED board	A	Various	Various	V-0;AI	--	UL approved
Lamp cover, internal plastic enclosure	B	BAYER MATERIALSCIENC E AG	3100 + (z)(f1), ET3113 + (z)(f1), 3105 + (z)(f2), 3107 + (z)(f1), 3108 + (z), ET3117 + (z)(f1)	PC,V-2	--	UL E41613
Fuse resistor	B	Shenzhen Great Electronics Co. Ltd.	RXF	0.22Ω; 0.5W	EN 60065	VDE 40026608
Alternative	D	Shenzhen Great Electronics Co. Ltd.	RXF	0.22Ω; 0.5W	EN 60065	VDE 40026608
X2 capacitor	B	Carli Electronics Co., Ltd.	MPX	AC 275V; 0.022μF; T100	EN 60384-14	VDE 40008520
Insulation tape	B	JINGJIANG HENG HE RUBBER INDUSTRY CO LTD	PVCH	130°C	--	UL E219145
Alternative	D	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT-280B	130°C	--	UL E165111
Alternative	D	SUZHOU MAILADUONA ELECTRIC MATERIAL CO LTD	JY312#	130°C	--	UL E188295
Bobbin	B	Chang Chun Plastics Co Ltd	T375HF T375J	150°C	--	UL E59481
Alternative	D	SUMITOMO BAKELITE CO LTD	PM-9820 PM-9630	150°C	--	UL E41429
Alternative	D	SUMITOMO CHEMICAL CO LTD	E4008(c4)(c 2)(c3)(j)		--	UL E54705
Magnet Wire	B	DONG GUAN YIDA INDUSTRIAL CO LTD	xUEW/155r QA-x/155	155°C	--	UL E344055

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Clause	Requirement + Test			Result - Remark		Verdict
Alternative	D	SIHUI HENGHUI ELECTRICAL APPLIANCES CO LTD	2UEW/155)	180°C	--	UL E337948
Alternative	D	ELEKTRISOLA HANGZHOU CO LTD	Polysol 155	155°C	--	UL E258243
Alternative	D	JUNG SHING WIRE CO LTD	SFFW-2@	155°C	--	UL E174837
Alternative	D	HUIZHOU GOLDEN OCEAN MAGNET WIRE FACTORY	UEW-x, UEW-x	130°C	--	UL E225143
Alternative	D	HUIZHOU GOLDEN OCEAN MAGNET WIRE FACTORY	xUEW-F	155°C	--	UL E225143

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

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference.....	2490617	—
	Lamp used	Integral LED	—
	Lamp control gear used	Integral LED module	—
	Mounting position of luminaire	Acc. to user manual	—
	Supply wattage (W)	--	—
	Supply current (A).....	--	—
	Temperatures in test 1 - 4 below are corrected for ta (°C)	25,0	—
	- abnormal operating mode.....	--	—
1.12 (12.4)	- test 1: rated voltage	--	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current	1,06 times rated voltage	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....	--	—
	Through wiring or looping-in wiring loaded by a current of A during the test	--	—
1.12 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current.....	--	—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Power cord (pressed)	25,0	--	50,0	--	75	--	--
Internal plastic enclosure	25,0	--	57,1	--	Ref.	--	--
X2 capacitor	25,0	--	50,8	--	100	--	--
LF1 winding	25,0	--	51,1	--	130	--	--
LF1 bobbin	25,0	--	52,0	--	Ref.	--	--
LED board	25,0	--	57,8	--	Ref.	--	--
Lamp cover	25,0	--	52,0	--	Ref.	--	--
Mounting surface	25,0	--	26,8	--	90	--	--
Illuminated surface (0.1m)	25,0	--	29,3	--	90	--	--
T1 winding	25,0	--	80,3	--	130	--	--
T1 bobbin	25,0	--	74,9	--	Ref.	--	--

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 3	Screw terminals (part of the luminaire)		N
(14)	SCREW TERMINALS		N
(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)	M	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

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Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 4	Screwless terminals (part of the luminaire)		N
(15)	SCREWLESS TERMINALS		N
(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)	Terminals and connections for internal wiring		N
(15.5.1)	Mechanical tests		N
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N
(15.5.1.1.2)	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 and connections for external wiring		N
(15.6.1)	Conductors		N
	Terminal size and rating		N
15.6.2	Mechanical tests		N

EN 60598-2-1											
Clause	Requirement + Test								Result - Remark		Verdict
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N)										N
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N)										N
(15.6.3)	Electrical tests										N
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1										N
(15.6.3.1) (15.6.3.2)	TABLE: Contact resistance test / Heating tests										N
	Voltage drop (mV) after 1 h										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop of two inseparable joints										N
	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)											
	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)											
	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)											
	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)											
Supplementary information:											

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 5	National Differences for (country name) or Group Differences	P
	CENELEC COMMON MODIFICATIONS (EN)	P

<p align="center">ATTACHMENT TO TEST REPORT IEC 60598-2-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Luminaires Part 2: Particular Requirements: Section One – Fixed general purpose luminaires</p>	
Differences according to.....	EN 60598-2-1:1989 used in conjunction with EN 60598-1:2015+A1:2018
Annex Form No.....	--
Annex Form Originator	--
Master Annex Form.....	--
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ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)	N
(3.3)	DK: power supply cords of class I luminaires with label	N
(4.5.1)	DK: socket-outlets	N
(5.2.1)	CY, DK, FI, GB: type of plug	N

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

EN 62031			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 6	LED modules for general lighting – Safety specifications EN 62031:2008+A1:2013+A2:2015		P
4	GENERAL REQUIREMENTS		P
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)	N
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		N
	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.		—

EN 62031			
Clause	Requirement + Test	Result - Remark	Verdict

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

11 (11)	MOISTURE RESISTANCE AND INSULATION		P
	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		P
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		N
	Working voltage $\leq 50 \text{ V}$, test voltage 500 V		N
	Working voltage $> 50 \text{ V} \leq 1000 \text{ V}$, test voltage (V):		P
	Basic insulation, $2U + 1000 \text{ V}$		P
	Supplementary insulation, $2U + 1000 \text{ V}$		N
	Double or reinforced insulation, $4U + 2000 \text{ V}$		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		P
- (14)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected		P

EN 62031			
Clause	Requirement + Test	Result - Remark	Verdict
- (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	DB1, IC, D1, D2, D3, Q1, Q2, Q3, ZD1	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N
- (14.4)	Short-circuit across electrolytic capacitors	C10, C10A	P
- (14.5)	After the tests has been carried out on three samples:		P
	The insulation resistance $\geq 1 \text{ M}\Omega$	100 $\text{M}\Omega$	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.6)	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	P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation	P

16	CREEPAGE DISTANCES AND CLEARANCES	P
	Creepage and distances and clearances in compliance with IEC 60598-1	P

17 (17)	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS	P
	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	N
	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

EN 62031			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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		N
	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		N
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
22	Photobiological safety		P
22.1	UV radiation		N
22.2	Blue light hazard		P
	RG at 200 mm according to IEC/62778		P
22.3	Infrared radiation		N

EN 62031			
Clause	Requirement + Test	Result - Remark	Verdict
A	ANNEX A - TESTS		P
	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		N
	SELV-operated LED modules in compliance with Annex I of IEC 61347-2-13		N

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict

Annex 7	Photobiological safety evaluated according to standard EN 62471:2008.	P
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Emission limits for risk groups of continuous wave lamps $\alpha=0,089\text{rad}$									P
Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	$S_{UV}(\lambda)$	E_S	$\text{W}\cdot\text{m}^{-2}$	0.001	3,5e-04	-	-	-	-
Near UV		E_{UVA}	$\text{W}\cdot\text{m}^{-2}$	0.33	0,0	-	-	-	-
Blue light	$B(\lambda)$	L_B	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	100	4,6e-01	10000	-	4000000	-
Bluelight, small source	$B(\lambda)$	E_B	$\text{W}\cdot\text{m}^{-2}$	0.01*	-	1.0	-	400	-
Retinal thermal	$R(\lambda)$	L_R	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	$28000/\alpha$	6,5e+03	$28000/\alpha$	-	$71000/\alpha$	-
Retinal thermal, weak visual stimulus**	$R(\lambda)$	L_{IR}	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	545000 $0.0017\leq\alpha$ ≤ 0.011	-				
				$6000/\alpha$ $0.011\leq\alpha\leq 0.1$	-				
IR radiation, eye		E_{IR}	$\text{W}\cdot\text{m}^{-2}$	100	0,0	570	-	3200	-
* Small source defined as one with $\alpha<0.011$ radian. Averaging field of view at 10000 s is 0.1 radian.									
** Involves evaluation of non-GLS source.									
Assessment:									
Lamp classification group..... exempt <input checked="" type="checkbox"/> risk 1 <input type="checkbox"/> risk 2 <input type="checkbox"/> risk 3 <input type="checkbox"/>									

EN 62493			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 8	Assessment Of Lighting Equipment Related To Human Exposure To Electromagnetic Fields according to standard EN 62493:2015		P
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4	LIMITS		P
4.1	General		P
	Comply with Van der Hoofden test limit in 4.2.3 or inherently compliant in 4.2.2 and pass assessment procedure for intentional radiators in 4.3		P
4.2	Unintentional radiating part of lighting equipment		P
4.2.2	Lighting equipment deemed to comply with the Van der Hoofden test without testing		P
	1) electronic controlgear	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	2) incandescent-lamp technology	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	3) LED-light-source technology	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	4) OLED-light-source technology	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	5) high-pressure discharge lamp LED-light-source technologies	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	6) low-pressure discharge lamp technologies with exposure distance ≥ 50 cm	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	7) independent auxiliary	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	Not fulfil any of 1-7 above subject to 4.2.3		—
4.2.3	Applications of limits		N
	Not fulfil any of 1-7 in 4.2.2 but the compliance factor F is ≤ 1		N
4.3	Intentional radiating part of lighting equipment		N
	Comply with one of methods in Clause 7 if intentional radiator		N

6	MEASUREMENT PROCEDURE FOR THE VAN DER HOOFDEN TEST		N
6.1	General		N
	Measurements carried out under conditions according Clause 6.1 – 6.6	See Table 6	N

7	ASSESSMENT PROCEDURE INTENTIONAL RADIATORS		N
7.2	Low-power exclusion method		N
7.2.1	Input $P_{\text{int,rad}}$		—
	Exclusion level P_{max}		—
	Input power $P_{\text{int,rad}}$ <input type="checkbox"/> exclusion level P_{max}		N
7.3	Application of the EMF product standard for body worn-equipment		N

EN 62493						
Clause	Requirement + Test		Result - Remark		Verdict	
	If not Clause 7.2 is met and expose distance \leq 0.05 m, comply with IEC 62209-2				N	
7.4	Application of the EMF product standard for base stations				N	
	If not Clause 7.2 is met and if intentional radiator is base station, comply with IEC 62232				N	
7.5	Application of another EMF standard				N	
	If not Clause 7.2 is met and if intentional radiator cannot be considered as in Clause 7.3 or 7.4, comply with IEC 62311				N	
6	TABLE: Measurement results with Van der Hoofden test head				N	
Location of EUT		Test model	Measuring distance	Result(F)	Limit(F)	Verdict
Reference Annex B of EN 62493:2015						

===== End of Report =====

Photo Documentation

Model: 2490617



Photo 1



Photo 2

Photo Documentation



Photo 3

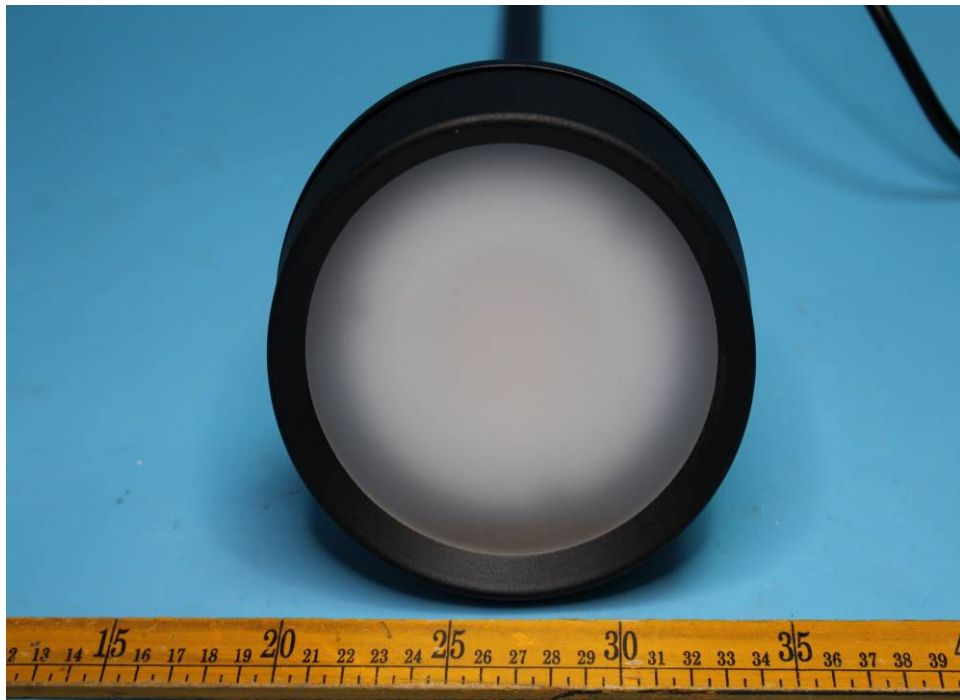


Photo 4

Photo Documentation



Photo 5



Photo 6

Photo Documentation



Photo 7

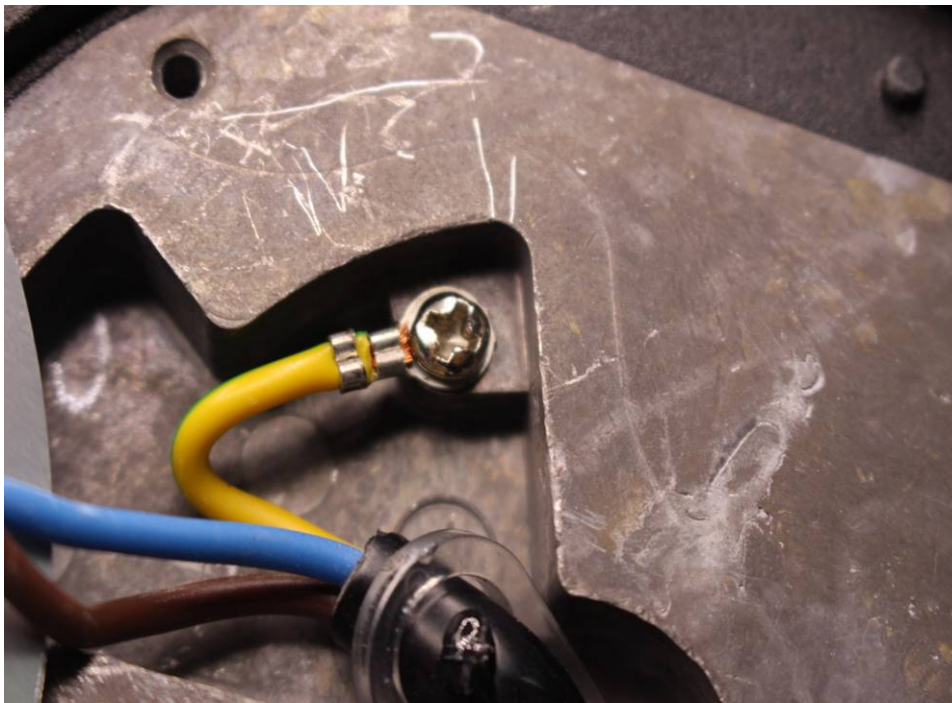


Photo 8

===== End of Photo =====