

Report No.: 18240SC30012701

Test Report

Applicant : Zhongshan Litian Lighting Co., Ltd

Address : Block B 4/F, No.2 Yihui NO.2 Road Maohui
Industry, Sisha, Henglan Town, Zhongshan
City, Guang dong Province, China

Product Name : LED landscape light

Date : Jun. 17, 2023



Shenzhen Anbotek Compliance Laboratory Limited

Shenzhen Anbotek Compliance Laboratory Limited

Address: 1/F., Building D, Sogood Science and Technology Park, Sanwei Community,
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TEST REPORT
IEC 60598-2-13
Luminaires
Part 2: Particular requirements
Section 13: Ground recessed luminaires

Report Number.....: 18240SC30012701

Date of issue.....: Jun. 17, 2023

Tested by: Otto Guo

Approved by: Jeff Zhu

Total number of pages: 67 pages of report

Otto Guo
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Applicant's name: Zhongshan Litian Lighting Co., Ltd

Address.....: Block B 4/F, No.2 Yihui NO.2 Road Maohui Industry, Sisha, Henglan Town, Zhongshan City, Guang dong Province, China

Test specification:

Standard.....: IEC 60598-2-13:2006, IEC 60598-2-13:2006/AMD1:2011, IEC 60598-2-13:2006/AMD2:2016 used in conjunction with IEC 60598-1:2020

Test procedure: Type test

Non-standard test method: N/A



Test item description	LED landscape light
Trade Mark	
Manufacturer	Zhongshan Litian Lighting Co., Ltd Block B 4/F, No.2 Yihui NO.2 Road Maohui Industry, Sisha, Henglan Town, Zhongshan City, Guang dong Province, China
Factory	Zhongshan Litian Lighting Co., Ltd Block B 4/F, No.2 Yihui NO.2 Road Maohui Industry, Sisha, Henglan Town, Zhongshan City, Guang dong Province, China
Model/Type reference	6012-15W, 6012-10W, 6012-12W
Ratings	220-240VAC, 50/60Hz, 15W

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

Attachment 1: test report EN IEC 62031:2020+A11:2021

Attachment 2: EN 62493:2015

Attachment 3: IEC TR 62778:2014

Attachment 4: photo documentation

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

EN IEC 60598-1:2021+A11:2022

EN 60598-2-13: 2006+A1: 2012+A12: 2016+A11: 2021

EN IEC 62031:2020+A11:2021

EN 62493:2015

IEC TR 62778:2014

Testing location:**Shenzhen Anbotek Compliance Laboratory Limited**

Location 1: 1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China. 518102

Location 2: Zone B, 1/F., Building 2, Hengchangrong High-Tech Industrial Park, Huangtian, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China. 518128



Copy of marking plate:

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

LED landscape light
Model: 6012-15W
Rating: 220-240VAC, 50/60Hz, 15W IP66



Zhongshan Litian Lighting Co., Ltd
Block B 4/F, No.2 Yihui NO.2 Road Maohui Industry, Sisha, Henglan Town,
Zhongshan City, Guang dong Province, China
Importer: xxxxxx
Address: xxxxxx



Test item particulars	: LED landscape light
Classification of installation and use	: Fixed installation
Supply Connection	: Supply cord
Protection class	: I
Degree of protection	: IP66
Possible test case verdicts:	
- test case does not apply to the test object.....: N/A	
- test object does meet the requirement.....: P (Pass)	
- test object does not meet the requirement.....: F (Fail)	
Testing	
Date of receipt of test item	: May 20, 2023
Date (s) of performance of tests	: May 20, 2023 to May 31, 2023
General remarks:	
“(See Enclosure #)” refers to additional information appended to the report. “(See appended table)” refers to a table appended to the report.	
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
Clause numbers between brackets refer to clauses in IEC 60598-1	
General product information:	
Unless otherwise specified, models 6012-15W were selected as representative models to perform all tests. IEC 60598-2-20 Clause 20.7 (4.24.2) were tested at location 2, others were tested at location 1.	



IEC 60598-2-13

Clause	Requirement + Test	Result - Remark	Verdict
13.2 (0)	GENERAL TEST REQUIREMENTS		P
13.2 (0.3)	More sections applicable..... :	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Section/s:	—
13.2 (0.5)	Components	(see Annex 1)	—
13.2 (0.7)	Information for luminaire design in light sources standards		—
13.2 (0.7.2)	Light source safety standard	IEC 60598-1	—
	Luminaire design in the light source safety standard		P

13.4 (2)	CLASSIFICATION OF LUMINAIRES		P
13.4 (2.2)	Type of protection	Class I	P
13.4 (2.3)	Degree of protection	IP66	—
13.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces..... :	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
13.4 (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"/>	—

13.5 (3)	MARKING		P
13.5 (3.2)	Mandatory markings		P
	Position of the marking	Surface for enclosure	P
	Format of symbols/text		P
13.5 (3.3)	Additional information		P
	Language of instructions	English	P
13.5 (3.3.1)	Combination luminaires		N/A
13.5 (3.3.2)	Nominal frequency in Hz	50/60Hz	P
13.5 (3.3.3)	Operating temperature		P
13.5 (3.3.5)	Wiring diagram		P
13.5 (3.3.6)	Special conditions		N/A
13.5 (3.3.7)	Metal halide lamp luminaire – warning		N/A
13.5 (3.3.8)	Limitation for semi-luminaires		N/A
13.5 (3.3.9)	Power factor and supply current		P
13.5 (3.3.10)	Suitability for use indoors		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
13.5 (3.3.11)	Luminaires with remote control		N/A
13.5 (3.3.12)	Clip-mounted luminaire – warning		N/A
13.5 (3.3.13)	Specifications of protective shields		N/A
13.5 (3.3.14)	Symbol for nature of supply		P
13.5 (3.3.15)	Rated current of socket outlet		N/A
13.5 (3.3.16)	Rough service luminaire		N/A
13.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Y	P
13.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
13.5 (3.3.19)	Protective conductor current in instruction if applicable		N/A
13.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
13.5 (3.3.21)	Non replaceable and non-user replaceable light sources information provided	Non-user replaceable light sources	P
13.5 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
13.5 (3.3.23)	Luminaires without control gear provided with necessary information for selection of appropriate component		N/A
13.5 (3.3.24)	If not supplied with terminal block, information on the packaging		N/A
13.5 (3.3.25)	Luminaires employing light sources emitting UV on mains wiring, information provided		N/A
13.5 (3.3.26)	Wall mounted luminaire using external flexible cable or cord longer than 0.3 m, information provided		N/A
13.5 (3.4)	Test with water	15s	P
	Test with hexane	15s	P
	Legible after test		P



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Clause	Requirement + Test	Result - Remark	Verdict
	Label attached		P
13.5.1 (-)	Rated load in the manufacturer's instruction (N)		P
13.5.2 (-)	Rated maximum surface temperature T (°C)		P
13.5.3 (-)	Information concerning external connection box		N/A

13.6 (4)	CONSTRUCTION		P
13.6 (4.2)	Components replaceable without difficulty		P
13.6 (4.3)	Wireways smooth and free from sharp edges		P
13.6 (4.4)	Lamp holders		N/A
13.6 (4.4.1)	Integral lamp holder		N/A
13.6 (4.4.2)	Wiring connection		N/A
13.6 (4.4.3)	Lamp holder for end-to-end mounting		N/A
13.6 (4.4.4)	Positioning		N/A
	- pressure test (N)		—
	After test the lamp holder comply with relevant standard sheets and show no damage		N/A
	After test on single-capped lamp holder the lamp holder has not moved from its position and show no permanent deformation		N/A
	- bending test (N)		—
	After test the lamp holder has not moved from its position and show no permanent deformation		N/A
13.6 (4.4.5)	Peak pulse voltage		N/A
13.6 (4.4.6)	Centre contact		P
13.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
13.6 (4.4.8)	Lamp connectors		P
13.6 (4.4.9)	Caps and bases correctly used		N/A
13.6 (4.4.10)	Light source for lamp holder or connection according IEC 60061 not connected another way		N/A
13.6 (4.5)	Starter holders		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
13.6 (4.6)	Terminal blocks		N/A
	Tails		N/A
	Unsecured blocks		N/A
13.6 (4.7)	Terminals and supply connections		P
13.6 (4.7.1)	Contact to metal parts		P
13.6 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		P
13.6 (4.7.3)	Terminals for supply conductors		N/A
13.6 (4.7.3.1)	Welded method and material		N/A
	- stranded or solid conductor		N/A
	- spot welding		N/A
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.6.2		N/A
	- electrical test according to 15.6.3		N/A
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N/A
13.6 (4.7.4)	Terminals other than supply connection		N/A
13.6 (4.7.5)	Heat-resistant wiring/sleeves		N/A
13.6 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
13.6 (4.8)	Switches		N/A
	- adequate rating		N/A
	- adequate fixing		N/A
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
13.6 (4.9)	Insulating lining and sleeves		N/A
13.6 (4.9.1)	Retainment		N/A
	Method of fixing.....:		N/A
13.6 (4.9.2)	Insulated linings and sleeves:		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C).....:		N/A
13.6 (4.10)	Double or reinforced insulation		N/A
13.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N/A
	Safe installation fixed luminaires		N/A
	Capacitors and switches		N/A
13.6 (4.10.2)	Assembly gaps:		N/A
	- not coincidental		N/A
	- no straight access with test probe		N/A
13.6 (4.10.3)	Retention of insulation:		N/A
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lamp holder		N/A
13.6 (4.10.4)	Protective impedance device		N/A
	Basic and supplementary insulation bridged by resistor(s) or appropriate capacitor		N/A
	Double or reinforced insulation bridged by at least two separate resistors in series or appropriate capacitor(s)		N/A
	Capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.2 of IEC 60065		N/A
13.6 (4.11)	Electrical connections and current-carrying parts		N/A
13.6 (4.11.1)	Contact pressure		N/A
13.6 (4.11.2)	Screws:		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
13.6 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
13.6 (4.11.4)	Material of current-carrying parts		N/A
13.6 (4.11.5)	No contact to wood or mounting surface		N/A
13.6 (4.11.6)	Electro-mechanical contact systems		N/A
13.6 (4.12)	Screws and connections (mechanical) and glands		P
13.6 (4.12.1)	Screws not made of soft metal		N/A
	Screws of insulating material		P
	Torque test: torque (Nm); part	Fixed light cover screw 2.94mm, 0.5Nm	P
	Torque test: torque (Nm); part	Fixed support screw 2.95mm, 0.5Nm	P
	Torque test: torque (Nm); part		N/A
13.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
13.6 (4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm)		N/A
	- lamp holder; torque (Nm).....		N/A
	- push-button switches; torque 0,8 Nm		N/A
13.6 (4.12.5)	Screwed glands; force (Nm)		N/A
13.6 (4.13)	Mechanical strength		P
13.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm)	Light cover 0.50Nm	P



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Clause	Requirement + Test	Result - Remark	Verdict
	- other parts; energy (Nm)	Enclosure for 0.70Nm	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P
13.6 (4.13.2)	Metal parts have adequate mechanical strength		P
13.6 (4.13.3)	Straight test finger		P
13.6 (4.13.4)	Rough service luminaires		N/A
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A
	d) for temporary installations and suitable for mounting on a stand		N/A
13.6 (4.13.6)	Tumbling barrel		N/A
13.6 (4.14)	Suspensions, fixings and means of adjusting		P
13.6 (4.14.1)	Mechanical load:		P
	A) four times the weight	0.73*4=2.92kg	P
	B) torque 2,5 Nm		P
	C) bracket arm; bending moment (Nm)		N/A
	D) load track-mounted luminaires		N/A
	E) clip-mounted luminaires, glass-shelve. Thickness (mm)		N/A
	Metal rod. diameter (mm)		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
13.6 (4.14.2)	Load to flexible cables		N/A
	Mass (kg)		—



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Clause	Requirement + Test	Result - Remark	Verdict
	Stress in conductors (N/mm ²)		N/A
	Mass (kg) of semi-luminaire		N/A
	Bending moment (Nm) of semi-luminaire		N/A
13.6 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles		N/A
	- strands broken		N/A
	- electric strength test afterwards		N/A
13.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
13.6 (4.14.5)	Guide pulleys		N/A
13.6 (4.14.6)	Strain on socket-outlets		N/A
13.6 (4.15)	Flammable materials		N/A
	- glow-wire test 650°C	See Test Table 13.15 (13.3.2)	N/A
	- spacing ≥30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		N/A
	- thermal protection		N/A
	- electronic circuits exempted		N/A
13.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N/A
	a) construction		N/A
	b) temperature sensing control		N/A
	c) surface temperature		N/A
13.6 (4.16)	Luminaires for mounting on normally flammable surfaces		N/A
	No lamp control gear	(compliance with Section 12)	N/A
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
13.6 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
13.6 (4.16.2)	Thermal protection:		N/A
	- in lamp control gear		N/A
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear		N/A
13.6 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
13.6 (4.17)	Drain holes		N/A
	Clearance at least 5 mm		N/A
13.6 (4.18)	Resistance to corrosion		N/A
13.6 (4.18.1)	- rust-resistance		N/A
13.6 (4.18.2)	- season cracking in copper		N/A
13.6 (4.18.3)	- corrosion of aluminium		N/A
13.6 (4.19)	Igniters compatible with ballast		N/A
13.6 (4.20)	Rough service vibration		N/A
13.6 (4.21)	Protective shield		N/A
13.6 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
13.6 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
13.6 (4.21.3)	No direct path		N/A
13.6 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment	See Test Table 13.15 (13.3.2)	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
13.6 (4.22)	Attachments to lamps not cause overheating or damage		N/A
13.6 (4.23)	Semi-luminaires comply Class II		N/A
13.6 (4.24)	Photobiological hazards		N/A
13.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
13.6 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778		—
	Luminaires with E_{thr} :		P
	a) Fixed luminaires	RG0	P
	- distance x m, borderline between RG1 and RG2....:		N/A
	- marking and instruction according 3.2.23		N/A
	b) Portable and handheld luminaires		N/A
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N/A
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N/A
13.6 (4.25)	Mechanical hazard		P
	No sharp point or edges		P
13.6 (4.26)	Short-circuit protection		N/A
13.6 (4.26.1)	Adequate means of uninsulated accessible SELV / PELV parts		N/A
13.6 (4.26.2)	Short-circuit test with test chain according 4.26.3:		N/A
	Supply source ES1 PSE		N/A
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
13.6 (4.27)	Terminal blocks with integrated screwless protective earthing contacts		N/A
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
13.6 (4.28)	Fixing of thermal sensing control		N/A
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A
	Test of adhesive fixing:		N/A
	Max. temperature on adhesive material (°C)		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
13.6 (4.29)	Luminaires with non-replaceable light source		N/A
	Not possible to replace light source		N/A
	Live part not accessible after parts have been opened by hand or tools		N/A
13.6 (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
	At least one fixing means requiring use of tool		N/A
13.6 (4.31)	Insulation between circuits		N/A
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		N/A
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N/A
13.6 (4.31.1)	SELV or PELV circuits		N/A
	Used SELV/PELV source		N/A
	Voltage ≤ ELV		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Insulating of SELV/PELV circuits from LV supply		N/A
	Insulating of SELV/PELV circuits from other non SELV/PELV circuits		N/A
	Insulating of SELV/PELV circuits from FELV		N/A
	Insulating of SELV/PELV circuits from other SELV/PELV circuits		N/A
	SELV/PELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to make any electrical contact with socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Plugs and socket-outlets does not have protective conductor contact		N/A
13.6 (4.31.2)	FELV circuits		N/A
	Used FELV source		N/A
	Voltage \leq ELV		N/A
	Insulating of FELV circuits from LV supply		N/A
	FELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to make any electrical contact with socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Socket-outlets have protective conductor contact		N/A
13.6 (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/A
	- conductive parts are connected together		N/A
	- test according 7.2.3		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	- conductive part not cause an electric shock in case of an insulation fault		N/A
	- equipotential bonding in master/slave applications		N/A
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N/A
	- slave luminaire constructed as class I		N/A
13.6 (4.32)	Overvoltage protective devices		N/A
	Comply with IEC 61643-11		N/A
	External to controlgear and connected to earth:		N/A
	- only in fixed luminaires		N/A
	- only connected to protective earth		N/A
13.6 (4.33)	Luminaire powered via information technology communication cabling		N/A
	Requirements for Class III luminaire		N/A
	Rated voltage within the range of ES1 and does not exceed maximum voltage of used connector		N/A
	Luminaire does not create any hazard from overvoltage	(see Annex 2)	N/A
13.6 (4.34)	Electromagnetic fields (EMF)		P
	No harmful electromagnetic fields	The submitted samples were LED-light-source technology, they were found to comply with the requirement of EN 62493:2015	P
13.6 (4.35)	Protection against moving fan blades		N/A
	Test with a standard test finger		N/A
	Test with test probe acc. to Figure 13 (IEC 61032) for portable luminaire		N/A
	Blades rounded with radius ≥ 0.5 mm and:		N/A
	-hardness less than D60 Shore		N/A
	-peripheral speed less than 15 m/s		N/A
	-input power of fan ≤ 2 W at rated voltage		N/A
13.6 (4.36)	Track-mounted luminaires		N/A
	Test in accordance with Annex A of IEC60570:2003/AMD2:2019		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
13.6.1 (-)	Resistance to static load		N/A
	Withstand the minimum static load		N/A
	Comply with 4.13.1 of Part 1 after test		N/A
13.6.2 (-)	Resistance to torque and shear loads		P
13.6.2.1 (-)	Torque test 50 N 1 min.		P
	Comply with 4.13.1 of Part 1 after test		P
13.6.3 (-)	Resistance to thermal shock		P
	Resistance to thermal shock with iced water		P
13.6.4 (-)	Edges		P
	Accessible edges are rounded		P
	Surface of top assembly is smooth and free from burrs, flashes and the like		P
13.6.5 (-)	Mechanical strength		P
	Mechanical strength with impact energy of 5 Nm		P

13.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
13.7 (11.2.1)	Impulse withstand category (Normal category II)	Category II <input type="checkbox"/> Category III <input type="checkbox"/>	—
	Category III according Annex U		N/A
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N/A
13.7 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 13.7 (11.2) I	P
	Creepage distances for frequency over 30 kHz:		N/A
	- Controlgear marked with \hat{U}_{OUT} and f_{UOUT} according IEC 61347-1, clause 7.1, item w	See Test Table 13.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 13.7 (11.2) II	N/A
13.7 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 13.7 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with U_P	See Test Table 13.7 (11.2) II	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 13.7 (11.2) II	N/A

13.8 (7)	PROVISION FOR EARTHING		P
13.8 (7.2.1 + 7.2.3)	Accessible metal parts		P
	Metal parts in contact with supporting surface		P
	Resistance < 0,5 Ω	0.013Ω	P
	Self-tapping screws used		N/A
	Thread-forming screws		P
	Thread-forming screw used in a groove		N/A
	Protective earth makes contact first		P
	Terminal blocks with integrated screwless protective earthing contacts tested according Annex V		N/A
	Protective earthing of the luminaire not via built-in control gear		N/A
13.8 (7.2.2 + 7.2.3)	Protective earth continuity in joints, etc.		N/A
13.8 (7.2.4)	Locking of clamping means		N/A
	Compliance with 4.7.3		N/A
13.8 (7.2.5)	Protective earth terminal integral part of connector socket		N/A
13.8 (7.2.6)	Protective earth terminal adjacent to mains terminals		N/A
13.8 (7.2.7)	Electrolytic corrosion of the protective earth terminal		N/A
13.8 (7.2.8)	Material of protective earth terminal		N/A
	Contact surface bare metal		N/A
13.8 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
13.8 (7.2.11)	Protective earthing core coloured green-yellow		P
	Length of protective earthing conductor		P
13.8 (7.2.12)	PELV circuit connected to protective earth for functional purpose		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
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13.9 (14)	SCREW TERMINALS		P
	Separately approved; component list	(see Annex 1)	P
	Part of the luminaire	(see Annex 3)	N/A

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

13.10 (5)	EXTERNAL AND INTERNAL WIRING		N/A
13.10 (5.2)	Supply connection and external wiring		P
13.10 (5.2.1)	Means of connection	Supply cord	P
	Outdoor luminaire has not PVC insulated external wiring if not Class III or SELV/PELV circuits ≤ 25 V AC/60 V DC/25 V peak interrupted DC voltage with frequency 10Hz -200 Hz or protected from outdoor environment		N/A
13.10 (5.2.2)	Type of cable.....	3*1.0mm ²	P
	Nominal cross-sectional area (mm ²).....	1.0mm ²	P
	Cables equal to IEC 60227 or IEC 60245		P
13.10 (5.2.3)	Type of attachment, X, Y or Z	type Y	P
13.10 (5.2.5)	Type Z not connected to screws		N/A
13.10 (5.2.6)	Cable entries:		N/A
	- suitable for introduction		N/A
	- adequate degree of protection		N/A
13.10 (5.2.7)	Cable entries through rigid material have rounded edges		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
13.10 (5.2.8)	Insulating bushings:		N/A
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
13.10 (5.2.9)	Locking of screwed bushings		N/A
13.10 (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
13.10 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
13.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	type Y	P
13.10 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) :	60	P
	- torque test: torque (Nm)..... :	0.25	P



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Clause	Requirement + Test	Result - Remark	Verdict
	- displacement ≤ 2 mm	1.15mm	P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		N/A
13.10 (5.2.10.4)	Luminaire with/designed for use with supply cord with maximum current of 2A:		N/A
	- Ordinary Class III luminaire supplied with SELV $\leq 25V$ RMS/60V DC		N/A
	- Ordinary Class III luminaire supplied with PELV $\leq 12V$ RMS/30V DC		N/A
	- Other than ordinary Class III luminaire supplied with voltage $\leq 12V$ RMS/30V DC		N/A
	Pull test of 30N		N/A
13.10 (5.2.11)	External wiring passing into luminaire		P
13.10 (5.2.12)	Looping-in terminals		N/A
13.10 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
13.10 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
13.10 (5.2.15)	Connectors for Class III luminaires (IEC 60603 or IEC 62680)		N/A
13.10 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Appliance inlet or connector systems (IEC 61984)		N/A
13.10 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
13.10 (5.2.18)	Used plug in accordance with		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	- IEC 60083		N/A
	- other standard		N/A

13.10 (5.3)	Internal wiring		P
13.10 (5.3.1)	Internal wiring of suitable size and type		N/A
	Through wiring		N/A
	- not delivered/ mounting instruction		N/A
	- factory assembled		N/A
	- socket outlet loaded (A)		N/A
	- temperatures.....	(see Annex 2)	N/A
	Green-yellow for protective earth only		P
13.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm ²)		N/A
	Insulation thickness (mm)		N/A
	Extra insulation added where necessary		N/A
13.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Cross-sectional area (mm ²)		N/A
13.10 (5.3.1.3)	Double or reinforced insulation for class II		N/A
13.10 (5.3.1.4)	Conductors without insulation		N/A
13.10 (5.3.1.5)	SELV/PELV current-carrying parts		N/A
13.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
13.10 (5.3.2)	Sharp edges etc.		N/A
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	No twisting over 360°		N/A
13.10 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
13.10 (5.3.4)	Joints and junctions effectively insulated		N/A
13.10 (5.3.5)	Strain on internal wiring		N/A
13.10 (5.3.6)	Wire carriers		N/A
13.10 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
13.10 (5.4)	Test to determine suitability of conductors having a reduced cross-sectional area		N/A
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	(see Annex 2)	N/A
	No damage to luminaire wiring after test		N/A
13.10 (-)	Cable for outdoor use provided by the luminaire manufacturer equal to:		N/A
	- 60245 IEC 57 or 60245 IEC 66		N/A
	- other rubber sheathed cables 450/750V according to regional Wiring Rules		N/A

13.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
13.11 (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		P



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Clause	Requirement + Test	Result - Remark	Verdict
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	Lamp and starter holders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		P
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		N/A
	Double-ended high-pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
13.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
13.11 (8.2.3.a)	Class II luminaire:		N/A
	- basic insulated metal parts not accessible		N/A
	- required insulation from live parts in compliance with Table X.1		N/A
	- glass protective shields not used as supplementary insulation		N/A
13.11 (8.2.3.b)	BC lamp holder of metal in class I luminaires shall be connected to protective earth		N/A
13.11 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V)		N/A
	- voltage under load/ no-load DC (V).....		N/A
	- interrupted DC voltage (V)		N/A
	- touch current if applicable (mA)		N/A
	One conductive part insulated if required		N/A
	Other than ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V)		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	- voltage under load/ no-load DC (V).....:		N/A
	- interrupted DC voltage (V)		N/A
	Class III luminaire only for connection to SELV/PELV		N/A
			N/A
13.11 (8.2.3.d)	PELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V)		N/A
	- voltage under load/ no-load DC (V).....:		N/A
	Other than ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V)		N/A
	- voltage under load/ no-load DC (V).....:		N/A
	One pole insulated if required		N/A
13.11 (8.2.4)	Portable luminaire has protection independent of supporting surface		N/A
13.11 (8.2.5)	Compliance with the standard test finger or relevant probe		N/A
13.11 (8.2.6)	Covers reliably secured		N/A
13.11 (8.2.7)	Luminaire other than below with capacitor > 0,5 μF not exceed 50 V 1 min after disconnection		N/A
	Portable luminaire with capacitor > 0,1 μF (0.25) not exceed 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor > 0,1 μF (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection		N/A

13.12 (12)	ENDURANCE TEST AND THERMAL TEST		P
13.12 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 13.13		
13.12 (12.2)	Selection of lamps and ballasts		—
	Lamp used according Annex B	(Lamp used see Annex 2)	—



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Clause	Requirement + Test	Result - Remark	Verdict
	Control gear if separate and not supplied	(Control gear used see Annex 2)	—
13.12 (12.3)	Endurance test		P
	a) mounting-position	Normal installation	—
	b) test temperature (°C)	35°C	—
	c) total duration (h)	240h	—
	d) supply voltage (V)	264VAC	—
	d) if not equipped with control gear, constant voltage/current (V) or (A)		—
13.12 (12.3.1d)	d) Class III luminaires powered via information technology communication cable:		N/A
	- voltage under normal operation (V).....		—
	- voltage under abnormal operation (V).....		—
	e) luminaire ceases to operate		—
	f) luminaire with constant light output function		N/A
13.12 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		P
	- marking legible		P
	- no cracks, deformation etc.		P
13.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
13.12 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	N/A
13.12 (12.6)	Thermal test (failed lamp control gear condition):		N/A
13.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		—
	- case of abnormal conditions		—
	- electronic lamp control gear		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	- measured winding temperature (°C): at 1,1 Un :		—
	- measured mounting surface temperature (°C) at 1,1 Un		N/A
	- calculated mounting surface temperature (°C)		N/A
	- track-mounted luminaires		N/A
13.12 (12.6.2)	Temperature sensing control		N/A
	- case of abnormal conditions		—
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C)		N/A
	- track-mounted luminaires		N/A
13.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N/A
13.12 (12.7.1)	Luminaire without temperature sensing control		N/A
13.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N/A
	Test method 12.7.1.1 or Annex W		—
	Test according to 12.7.1.1:		N/A
	- case of abnormal conditions		—
	- Ballast failure at supply voltage (V)		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex W:		N/A
	- case of abnormal conditions		—
	- measured winding temperature (°C): at 1,1 Un..... :		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un		—
	- calculated temperature of fixing point/exposed part (°C)		—
	Ball-pressure test	See Test Table 13.15 (13.2.1)	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
13.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A
	- case of abnormal conditions		—
	- measured winding temperature (°C): at 1,1 Un		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un		—
	- calculated temperature of fixing point/exposed part (°C)		—
	Ball-pressure test	See Test Table 13.15 (13.2.1)	N/A
13.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
13.12 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- manual reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- auto reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- case of abnormal conditions		—
	- highest measured temperature of fixing point/exposed part (°C):		—
	Ball-pressure test:	See Test Table 13.15 (13.2.1)	N/A
13.12 (-)	Temperatures of translucent covers and accessible metal parts not exceed rated maximum surface temperature T		N/A

13.13 (9)	RESISTANCE TO DUST AND MOISTURE		P
13.13.1 (-)	If IP > IP 20 the order of tests as specified in clause 13.12		P
13.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP	IP66	—
	- mounting position during test	Normal installation	—
	- fixing screws tightened; torque (Nm)	0.5	—



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Clause	Requirement + Test	Result - Remark	Verdict
	- tests according to clauses :	Clause 9.2.2 and 9.2.7	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		P
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		P
	c.1) For luminaires without drain holes – no water entry		P
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight, pressure watertight, high pressure and temperature water jet-proof or high pressure and cold water jet-proof luminaire		N/A
	e) no contact with live parts (IP 2X)		N/A
	e) no entry into enclosure (IP 3X and IP 4X)		N/A
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N/A
	f) no trace of water on part of lamp requiring protection from splashing water		N/A
	g) no damage of protective shield or glass envelope		P
13.13 (9.3)	Humidity test 48 h	Humidity 93%, temperature 25°C	P
13.13 (-)	Meet IP65 and IP67 requirements	IP66	P

13.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
13.14 (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):		P
	SELV/PELV:		N/A
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface :		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts and metal parts of the luminaire..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts :		N/A
	- Insulation bushings as described in Section 5 :		N/A
	Other than SELV/PELV:		P
	- between live parts of different polarity :	> 100MΩ	P
	- between live parts and mounting surface :	> 100MΩ	P
	- between live parts and metal parts :	> 100MΩ	P
	- between live parts of different polarity through action of a switch :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts :	> 100MΩ	P
	- Insulation bushings as described in Section 5 :		N/A
13.14 (10.2.2)	Electric strength test		P
	Dummy lamp		P
	Luminaires with ignitors after 24 h test		P
	Luminaires with manual ignitors		P
	Test voltage (V):		P
	SELV/PELV:		N/A
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface :		N/A
	- between current-carrying parts and metal parts of the luminaire..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts :		N/A
	- Insulation bushings as described in Section 5 :		N/A
	Other than SELV/PELV:		P
	- between live parts of different polarity :	1480V	P



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Clause	Requirement + Test	Result - Remark	Verdict
	- 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/A
	- 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		N/A
13.14 (10.3)	Touch current (mA).....		N/A
	Protective conductor current (mA).....	0.15mA	P

13.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
13.15 (13.2.1)	Ball-pressure test	See Test Table 13.15 (13.2.1)	P
13.15 (13.3.1)	Needle-flame test (10 s).....	See Test Table 13.15 (13.3.1)	P
13.15 (13.3.2)	Glow-wire test (650°C).....	See Test Table 13.15 (13.3.2)	P
13.15 (13.4)	Proof tracking test (IEC 60112).....	See Test Table 13.15 (13.4)	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
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EN IEC 60598_1 ATTACHMENT

Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT			
IEC 60598-1			
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES			
LUMINAIRES			
Differences according to : EN IEC 60598-1: A11: 2022			
TRF template used : EN IEC 60598-1:2021 Ed. 1.1			
Attachment Form No. : EU_GD_IEC 60598_1			
Attachment Originator : Anbotek			
Master Attachment : 2023-02-16			
CENELEC COMMON MODIFICATIONS (EN)			
4	CONSTRUCTION		P
4.11.6	Following completion of these test..., add the following test: the test voltage however being reduced to 1500V		P
5	EXTERNAL AND INTERNAL WIRING		P
5.2.2	Replace "IEC 60227 (all parts) and IEC 60245 (all parts), by EN 50525 (all parts), and delete paragraph 2.		P
	Replace table 5.1 – by the following new table		P
12	ENDURANCE TESTS AND THERMAL TESTS		P
12.4.2c	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		P
	In table 12.2 footnote add the following: -after European installation standards (HD 60364 all parts) and (HD 384 all parts) -after European cable standard (EN 50525 all parts)		P
ZB	Addition of Annex ZB, Special national conditions and Annex ZC		P



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Clause	Requirement + Test	Result - Remark	Verdict
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EN IEC 60598_1 ATTACHMENT

Clause	Requirement + Test	Result - Remark	Verdict
3.3	<p>Denmark: supply cords of class I luminaires which are delivered without a plug, shall be provided with a visible tag with the following text</p> <p style="text-align: center;">Vigtigt ! Lederen med grøn/gul isolation må kun tilsluttes en klemme mærket</p> <p style="text-align: center;">  eller  </p>		P
5.2.18	Denmark		N/A
	Socket-outlets intended for providing power to other appliances shall be in compliance with SD 60884-2-D1:2017		N/A
5.2.1	Cyprus		N/A
	Domestic luminaires intended for connection to a standard United Kingdom 13A socket must be pre-fitted with an approved plug complying with BS 1363		N/A
	Cord sets for domestic luminaires for connection with an appliance inlet must be pre-fitted with an approved plug complying with BS 1363 Plug must be fitted with the correct fuse		N/A
	Denmark		N/A
	Supply cords on single-phase portable luminaires having a rated current not exceeding 13A		N/A
	For luminaires having an appliance inlet, the plug on the supply cord shall comply with the above requirements		N/A
	If multi-phase luminaires and single-phase luminaires having a rated current exceeding 13A are provided with a supply cord with a plug, the plug shall comply with the following table or EN 60309.		N/A
	Finland		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
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EN IEC 60598_1 ATTACHMENT

Clause	Requirement + Test	Result - Remark	Verdict
	For luminaires provided with non-detachable flexible cables and cords and a plug, the plug shall comply with the requirements of SFS 5610 and EN 50075, the Standard sheets to be applied being as follows		N/A
Annex ZC	A-deviation : National deviation due to regulations, the alteration of which is for the time being outside the competence of the CEN-CENELEC national member.		P
	This European Standard falls under Directive 2014/35/EU		P



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Clause	Requirement + Test	Result - Remark	Verdict
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13.7 (11.2) TABLE I: Creepage distances and clearances								P
Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages								P
Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*								P
	Insulation type **	Measured clearance	Required		Measured creepage	Required		
			clearance	*Table		creepage	*Table	
Distance 1:	B	2.8	1.5	11.1	2.8	2.5	11.1	
Working voltage (V)					230V		—	
PTI					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—	
Pulse voltage or U_P if applicable (kV)							—	
Supplementary information:								
Distance 2:	B	2.6	1.5	11.1	2.6	2.5	11.1	
Working voltage (V)							—	
PTI					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—	
Pulse voltage or U_P if applicable (kV)							—	
Supplementary information:								
Distance 3:	B	4.2	1.5	11.1	4.2	2.5	11.1	
Working voltage (V)							—	
PTI					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—	
Pulse voltage or U_P if applicable (kV)							—	
Supplementary information:								
Distance 1: between for L and N of LED driver;								
Distance 2: between for + and - of LED driver;								
Distance 3: between for live part to metal enclosure.								

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

13.7 (11.2) TABLE II: Creepage distances and clearances								N/A
Minimum distances (mm) for a.c. higher than 30 kHz sinusoidal voltages								
Applicable part of IEC 61347-1 Table 7 and 8* or IEC 60664-4 Table 1 and 2								
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required		
			clearance	*Table		creepage	*Table	
Distance 1:								



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

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



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Clause	Requirement + Test	Result - Remark	Verdict
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13.15 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm)		2	—	
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
LED driver cover	See the annex 1	125	1.35	
PCB	See the annex 1	125	0.78	
LED cover	See the annex 1	125	1.14	
Supplementary information:				

13.15 (13.3.1)	TABLE: Needle-flame test				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
LED driver cover	See the annex 1	0	No	0	Pass
--	--	--	--	--	--
--	--	--	--	--	--
Supplementary information:					

13.15 (13.3.2)	TABLE: Resistance to heat and fire - Glow wire tests				P
Object/ Part No./ Material	Manufacturer/ trademark	GWT (°C): 650			Verdict
		t _E (s)	t _I (s)	t _R (s)	
LED driver cover	See the annex 1	0	0	0	Pass
PCB	See the annex 1	0	0	0	Pass
LED cover	See the annex 1	0	0	0	Pass
Ignition of the specified layer placed underneath the test specimen (Yes/No)					Yes
Supplementary information:					



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Clause	Requirement + Test	Result - Remark	Verdict
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13.15 (13.4)	TABLE: Proof tracking test			N/A
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
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ANNEX 1	TABLE: Critical components information					P
Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
Supply cord	B	HAN LI ELECTRICAL WIRE PRODUCTION CO.,LTD.	H05VV-F	3G1.0mm ²	VDE 0282	VDE 40021389
LED driver	B	EAGLCRISE	SC-15-350 SB	Input: 220-240VAC, 50/60Hz, 0.22A, ta:60°C, tc:90°C Output: 28-42VDC, 14.7W	EN 61347-1 EN 61347-2-13	CE
LED Cover	B	Various	Various	V-0, 110°C	UL 94	UL
LED PCB	B	KINGBOARD LAMINATES HOLDINGS LTD	KB-2150	V-0, 130°C, FR-2	UL 796	UL E123995
LED	B	MSL CO.,LTD.	1672	VF-3~3.3V IF-60mA	EN 60598-1 EN 60598-2-13	Tested with appliance

Supplementary information:

8) 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



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Clause	Requirement + Test	Result - Remark	Verdict
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ANNEX 2	TABLE: Thermal tests of Section 12		P
	Type reference	6012-15W	—
	Lamp used	LED	—
	Lamp control gear used	LED driver	—
	Mounting position of luminaire	Normally mounted	—
	Supply wattage (W)	14.8	—
	Supply current (A)	0.112	—
	Power factor	0.575	—
	Temperatures in test 1 – 4 below are corrected for ta (°C)	25	—
	- 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	240V*1.06=254.4VAC	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage		—
	Through wiring or looping-in wiring loaded by a current of A during the test		—
1.12 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current		—

Temperature measurements (°C)

Part	Ambient	Cl. 12.4 – normal				Cl. 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Supply cord	25	--	32.5	--	75	--	--
Internal wire	25	--	37.8	--	105	--	--
Tc for LED driver	25	--	78.3	--	90	--	--
PCB	25	--	53.1	--	130	--	--
LED PCB	25	--	57.4	--	130	--	--
LED	25	--	63.0	--	Ref.	--	--
LED cover	25	--	42.8	--	Ref.	--	--
Mounting surface	25	--	26.4	--	Ref.	--	--



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



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



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Clause	Requirement + Test	Result - Remark	Verdict
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		N/A
	Terminal size and rating		N/A
15.6.2	Mechanical tests		N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N)		N/A
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N)		N/A
(15.6.3)	Electrical tests		N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N/A

(15.6.3.1) (15.6.3.2)	TABLE: Contact resistance test / Heating tests										N/A
	Voltage drop (Mv) after 1 h										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (Mv)											
	Voltage drop of two inseparable joints										
	Voltage drop after 10 th alt. 25 th cycle										
	Max. allowed voltage drop (Mv)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (Mv)											
	Voltage drop after 50 th alt. 100 th cycle										
	Max. allowed voltage drop (Mv)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (Mv)											
	Continued ageing: voltage drop after 10 th alt. 25 th cycle										
	Max. allowed voltage drop (Mv)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (Mv)											
	Continued ageing: voltage drop after 50 th alt. 100 th cycle										
	Max. allowed voltage drop (Mv)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (Mv)											



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Clause	Requirement + Test	Result - Remark	Verdict
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IEC 62031

Clause	Requirement + Test	Result - Remark	Verdict
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Attachment 1: EN IEC 62031:2020+A11:2021

4	GENERAL REQUIREMENTS		—
4.2	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"/>	—
4.6	Independent modules comply with requirements in IEC 60598-1:2014/AMD1:2017		P
4.8	Modules with integrated controlgear providing SELV comply with requirements according to IEC 61347-1:2015/AMD1:2017 clause L.5 to L.11.		(see Annex 1) P

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

6	MARKING		—
6.2	Contents of marking for built-in and for independent LED modules		N/A
	a) mark of origin		P
	b) model number, type reference	6012-15W	P
	c1) constant voltage module; rated supply voltage and supply frequency		P
	c2) constant current module; rated supply current and supply frequency		N/A
	d) rated power		P
	e) indication of connections, wiring diagram		P
	f) value of t_c and place on the module		N/A
	g) E_{thr} if required		N/A
	h) symbol for built-in modules		P
	i) heat transfer temperature t_d		N/A
	j) power for heat-conduction P_d		N/A



IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
	k) working voltage for insulation		P
6.3	Location of marking for built-in LED modules		P
	- marking of a) and b) in 6.2 on the modules		P
	- marking of other applicable items in 6.2 on the modules or in data sheet, leaflet or website		N/A
6.4	Location of marking for independent LED modules		N/A
	- marking of a), b), c) and f) in 6.2 on the modules		N/A
	- marking of other applicable items in 6.2 on the modules or in data sheet, leaflet or website		N/A
6.5	Marking of integral LED modules		P
	- information in 6.2 a) to g) in data sheet, leaflet or website		P
6.6	Durable and legibility of marking		P
	- marking on the LED module legible after test with water		P
	- marking not on the LED module legible		P

7	TERMINALS		—
7.1	Integral terminals		N/A
	Screw terminals comply with section 14 of IEC 60598-1	(see Annex 3)	N/A
	Screwless terminals comply with section 15 of IEC 60598-1	(see Annex 4)	N/A
7.2	Terminals other than integral terminals		N/A
	Separately approved; component list	(see Annex 2)	N/A
	Ratings suit the conditions		N/A
	Satisfy additional relevant requirements of this standard		N/A

8 (9)	EARTHING		—
- (9.1)	Provisions for protective earthing		N/A
	Terminal complying with clause 8		N/A
	Locked against loosening and not possible to loosen by hand		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Not possible to loosen clamping means unintentionally on screwless terminals		N/A
	Earthing via means of fixing		N/A
	Earthing terminal only used for the earthing of the control gear		N/A
	All parts of material minimizing the danger of electrolytic corrosion		N/A
	Made of brass or equivalent material		N/A
	Contact surface bare metal		N/A
	Test according 7.2.3 of IEC 60598-1		N/A
-(9.2)	Provision for functional earthing		N/A
	Comply with clause 8 and 9.1		N/A
	Functional earth insulated from live parts by double or reinforced insulation		N/A
-(9.3)	Lamp controlgear with conductors for protective earthing by tracks on printed circuit board		N/A
	Test with a current of 25 A between earthing terminal and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$		N/A
-(9.4)	Earthing of built-in lamp controlgear		P
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N/A
	Earthing terminal only for earthing the built-in controlgear		N/A
-(9.5)	Earthing via independent controlgear		N/A
-(9.5.1)	Earth connection to other equipment		N/A
	Looping or through connection, conductor min. 1,5 mm ² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7		N/A
-(9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A
9 (10)	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS		—
- (10.1)	Controlgear protected against accidental contact with live parts		P
- (A2)	Voltage measured with 50 kΩ	(see Annex A)	P
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impedance device	(see Annex A)	N/A
- (10.1)	Lacquer or enamel not used for protection or insulation		P
	Adequate mechanical strength on parts providing protection		P
- (10.2)	Capacitors > 0,5 μF: voltage after 1 min (V): < 50 V :		N/A
- (10.3)	Controlgear providing SELV		N/A
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		N/A
	No connection between output circuit and the body or protective earthing circuit		N/A
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		N/A
	SELV outputs separated from earth by at least basic insulation		N/A
	ELV conductive parts insulated as live parts		N/A
	Tests according Annex L of IEC 61347-1		N/A
- (10.4)	Accessible conductive parts in SELV circuits		P
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		N/A
	If output voltage > 25 V r.m.s. or > 60 V d.c. ; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. :		N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A

10 (11)	MOISTURE RESISTANCE AND INSULATION		—
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ):		P
	For basic insulation ≥ 2 MΩ	More than 100 MΩ	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		P

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		N/A
-(11.1)	For double or reinforced insulation ≥ 4 MΩ	100 MΩ	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		N/A

11 (12)	ELECTRIC STRENGTH		—
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		N/A
	Working voltage ≤ 50 V, test voltage 500 V		N/A
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		N/A
	Basic insulation, 2U + 1000 V		P
	Supplementary insulation, 2U + 1000 V		N/A
	Double or reinforced insulation, 4U + 2000 V		N/A



IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
	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

12 (14)	FAULT CONDITIONS		—
- (14.1)	When operated under fault conditions the controlgear:		N/A
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	Short capacitor / resistor / output, No risk	P
- (14.2)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (after any reduction in 14.2 - 14.5)	(see appended table)	P
- (14.3)	Short-circuit or interruption of semiconductor devices	(see appended table)	N/A
- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N/A
- (14.5)	Short-circuit across electrolytic capacitors	(see appended table)	N/A
	Short-circuit or interruption of SPDs	(see appended table)	N/A
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance $\geq 1 \text{ M}\Omega$		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		N/A
- (14.7)	Relevant fault condition tests with high-power a.c. supply and in turn to a d.c. supply		—
12.2	Overpower condition		P
	Module withstands overpower condition >15 min.		P



IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		N/A
	No fire, smoke or flammable gas is produced		P
	Molten material does not ignite tissue paper, spread below the module		P

14	CONSTRUCTION		N/A
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		N/A

15 (16)	CREEPAGE DISTANCES AND CLEARANCES		—
- (16.1)	General		—
	Creepage distances and clearances according to 16.2 and 16.3		P
	Controlgears providing SELV comply with additional requirements in Annex L		N/A
	Insulating lining of metallic enclosures		P
	Controlgear protected against pollution comply with Annex P		P
- (16.2)	Creepage distances		P
- (16.2.2)	Minimum creepage distances for working voltages		P
	Creepage distances according to Table 7	(see appended table)	P
- (16.2.3)	Creepage distances for working voltages with frequencies above 30 kHz		N/A
	Creepage distances according to Table 8	(see appended table)	N/A
- (16.3)	Clearances		P
- (16.3.2)	Clearances for working voltages		P
	Clearances distances according to Table 9	(see appended table)	P
- (16.3.3)	Clearances for ignition voltages and working voltages with higher frequencies		N/A
	Clearances distances for basic or supplementary insulation according to Table 10		N/A
	Clearances distances for reinforced insulation according to Table 11		N/A



IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
16 (17)	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS		—
	Cl. 17 refer to Cl. 17 of IEC 61347-1 which refer to Cl. 4.11 and 4.12 of IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		—
(4.11)	Electrical connections		N/A
(4.11.1)	Contact pressure		N/A
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	Mechanical connections and glands		N/A
(4.12.1)	Screws not made of soft metal		N/A
	Screws of insulating material		N/A
	Torque test: torque (Nm); part		N/A
	Torque test: torque (Nm); part		N/A
	Torque test: torque (Nm); part		N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
(4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm)		N/A
	- lampholder; torque (Nm)		N/A
	- push-button switches; torque 0,8 Nm		N/A
(4.12.5)	Screwed glands; force (Nm)		N/A
17 (18)	RESISTANCE TO HEAT, FIRE AND TRACKING		N/A
- (18.1)	Ball-pressure test	See Test Table 18 (18.1)	N/A
- (18.3)	Glow-wire test (650°C)	See Test Table 18 (18.3)	N/A
- (18.4)	Needle-flame test (10 s)	See Test Table 18 (18.4)	N/A
- (18.5)	Proof tracking test	See Test Table 18 (18.5)	N/A



IEC 62031

Clause	Requirement + Test	Result - Remark	Verdict
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18	RESISTANCE TO CORROSION		P
	- test according 4.18.1 of IEC 60598-1		P
	- adequate varnish on the outer surface		P

20	HEAT MANAGEMENT		—
20.1	General		—
	Fulfil clause 20 if replaceable LED module and when heat conducting thermal interface is needed.		P
20.2	Thermal interface material		P
	Thermal interface material delivered with the module if necessary		N/A
20.3	Heat protection		N/A
	Not impair safety when operated under poor heat-conduction conditions according Annex D		N/A

22	PHOTOBIOLOGICAL SAFETY		—
22.1	UV radiation		N/A
	Luminous radiation not exceed 2mW/klm		N/A
22.2	Blue light hazard		P
	Assessed according to IEC TR 62778		P
22.3	Infrared radiation		N/A
	Requirements for infrared radiation when required		N/A

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



EN 62493				
Clause	Requirement + Test	Result - Remark	Verdict	

Attachment 2: EN 62493: 2015

4.2	APPLICATION OF LIMITS (Test summary)			—	
	Specific absorption rate (SAR)			—	
a)	CISPR 15 clause 4.3.1 Disturbance voltage mains terminals 20 kHz – 30 MHz	*)		P	
b)	CISPR 15 clause 4.4 Radiated electromagnetic disturbances 100 kHz – 30 MHz	*)		P	
c)	CISPR 15 clause 4.4.2 Radiated electromagnetic disturbances 30 MHz – 300 MHz	*)		P	
*)	<input checked="" type="checkbox"/> See separate Test Report for measurements of a), b) and c) above <input type="checkbox"/> Only measurement of d) below. See measurement results below. In this case this test report does not show compliance with IEC 62493.			—	
	Induced current density			P	
d)	Induced current density 20 kHz – 10 MHz	See measurement results below		P	
4.2.d	INDUCED CURRENT DENSITY			—	
	Power supply system utilised:			—	
	Voltage	230VAC		—	
	Frequency			—	
	Environmental conditions:			—	
	Temperature	25°C		—	
	Humidity	59% R.H.		—	
	EuT operation mode:			—	
	<input checked="" type="checkbox"/> Normal operation			—	
	<input type="checkbox"/> Other operation:			—	
4.2.d	MEASUREMENT RESULTS			—	
	Measuring with "Van der Hoofden" test head			—	
	Location of EuT	Measuring distance	Result (F)	Limit (F)	Verdict
	Front of EuT	50 cm	--	0,85	N/A
	Rear of EuT	50 cm	--	0,85	N/A



EN 62493				
Clause	Requirement + Test		Result - Remark	Verdict
Side of EuT	50 cm	--	0,85	N/A

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IEC TR 62778

Clause	Requirement + Test	Result - Remark	Verdict
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IEC TR 62778:2014

Clause	Requirement + Test	Result – Remark	Verdict
5	Spectrum, colour temperature, and blue light hazard		P
5.1	Calculation of blue light hazard quantities and photometric quantities from emission spectra		P
5.2	Luminance and illuminance regimes that give rise to tmax values below 100s		P
7	MEASUREMENT INFORMATION FLOW		P
7.1	Basic flow		P
	'Law of conservation of luminance' applied		P
	Use of only true luminance/radiance values		P
	In case of luminaire: The light source is operated in the luminaire under similar conditions as when tested as a component		P
	In case E _{thr} value for RG2 was established the peak value was derived from angular light distribution		P
7.2	Conditions for the radiance measurement		P
	Standard condition applied (200mm distance, 0,011rad field of view)		P
	Non-standard condition applied		N/A
7.3	Special cases (I): Replacement by a lamp or LED module of another type		N/A
	Light source is a white light source		N/A
	Evaluation done based on highest luminance		N/A
	Evaluation done based on CCT value		N/A
7.4	Special cases (II): Arrays and clusters of primary light sources		N/A
	LED package is evaluated as.....: <input checked="" type="checkbox"/> RG0 unlimited <input type="checkbox"/> RG1 unlimited		P
	E _{thr} of LED package applies to array		N/A
8	RISK GROUP CLASSIFICATION		P



IEC TR 62778

Clause	Requirement + Test	Result - Remark	Verdict
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IEC TR 62778:2014

Clause	Requirement + Test	Result – Remark	Verdict
5	Spectrum, colour temperature, and blue light hazard		P
5.1	Calculation of blue light hazard quantities and photometric quantities from emission spectra		P
5.2	Luminance and illuminance regimes that give rise to t _{max} values below 100s		P
	Risk group achieved:		P
	- .. Risk Group 0 unlimited		P
	- .. Risk Group 1 unlimited		N/A
	- E _{thr} (lx): Distance to reach RG1..... (m):		N/A

Risk Group Number	Risk Group Name	Corresponding t _{max} range (s)	Blue light hazard L _B (W/m ² .sr)
RG0	Exempt	>10000	<100
RG1	Low Risk	100-10000	100-10000
RG2	Moderate Risk	0.25-100	10000-4000000
RG3	High Risk	<0.25	>4000000

IEC TR 62778:2014

Clause	Requirement + Test	Result – Remark	Verdict
TABLE	SPECTRORADIOMETRIC MEASUREMENT		P
	Tested model number.....:	6012-15W	
	Tested voltage.....:	230VAC	
	Tested current.....:	0.12A	
	Tested frequency.....:	--	
	Ambient temperature.....:	24.5°C	



IEC TR 62778			
Clause	Requirement + Test	Result - Remark	Verdict

IEC TR 62778:2014			
Clause	Requirement + Test	Result - Remark	Verdict
	Measurement distance.....	100mm	
	Source size.....	<input checked="" type="checkbox"/> Non-small source <input type="checkbox"/> Small source	
	Field of view	<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1.7 mrad	
	Blue light hazard radiance (L _B).....	2.94e+01W/(m ² •sr)	
	Blue light hazard irradiance (E _B)	--W/m ²	
	Luminance (L).....	--cd/m ²	
	Illuminance (E _{thr}).....	--lx	
	Calculate distance (d _{min}).....	--m	

Measurement Uncertainty Statement:

EB, Urel=2.52% (k=2)
LB, Urel=2.84% (k=2)
LR, Urel=2.84% (k=2)



Attachment 4: Photo Documentation



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8

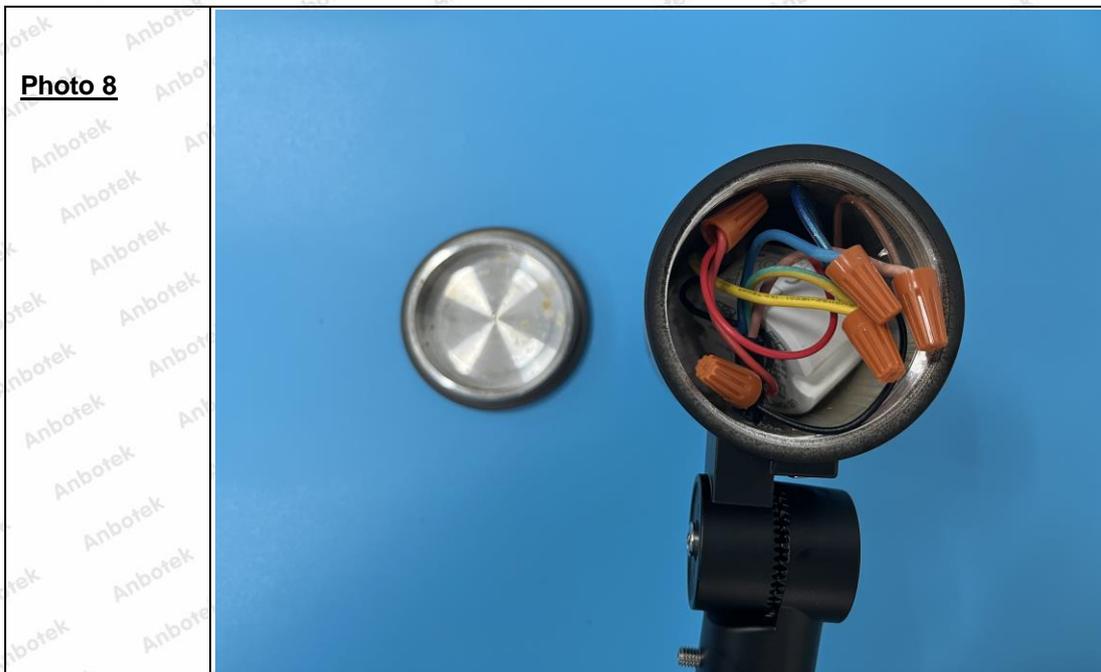
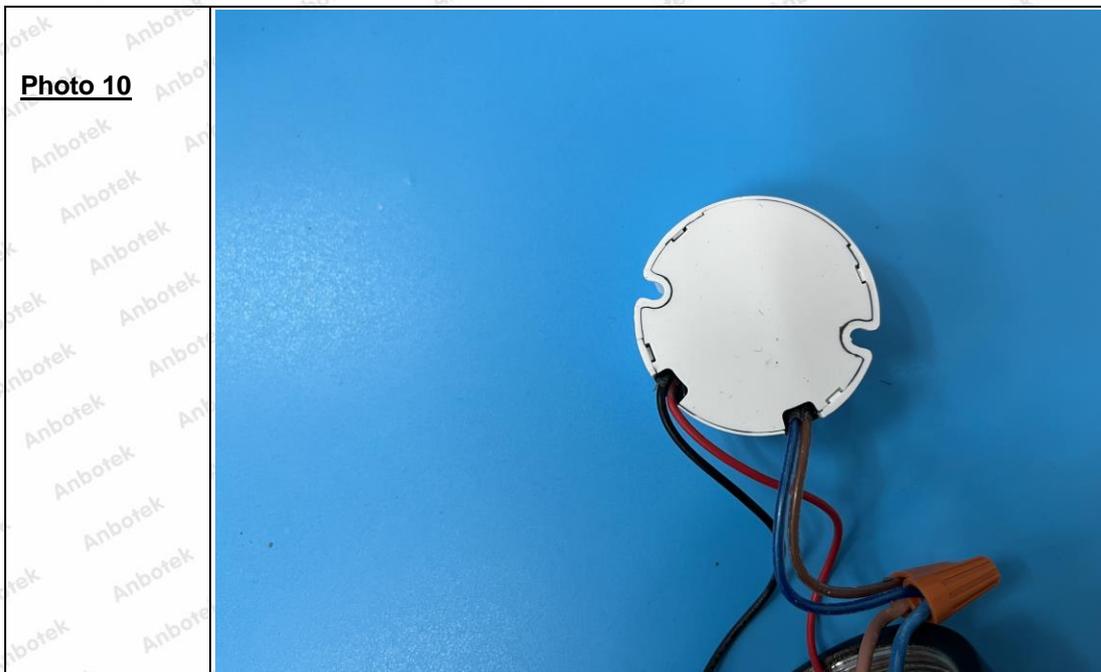


Photo 9



Photo 10



---End of report---

