



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Reference No...... : WTA25F08229869L
Applicant..... : ONOK LIGHTING, SL
Address..... : Pol. Ind. 3 Parcela B 46800 Xàtiva (Valencia) SPAIN
Manufacturer : The same as above
Address..... : The same as above
Product Name..... : LED Downlight
Model No..... : See model list on page 4
Test specification..... : Luminaires
Part 2-2: Recessed luminaires
IEC 60598-2-2:2011
IEC 60598-1:2020
Date of Receipt sample : 2026-01-16
Date of Test : 2026-01-17 to 2026-01-27
Date of Issue..... : 2026-01-28
Test Report Form No...... : WSL-6059822G-01B
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 approver.

Prepared By:

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Tested by:

Approved by:

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Test item description..... : Recessed downlight
Trade Mark..... : --
Model/Type reference..... : See model list on page 4
Ratings..... : See model list on page 4

Copy of marking plate:

Model No.: Bruno 15W
 220-240V~ 50/60Hz
 LED 15W
 IP20 (above ceiling)
 IP44 (outside the ceiling)



ONOK LIGHTING, SL

On the luminaries packaging or on the non-replaceable cable

Model No.: Bruno 15W
 SELV 59VDC LED 15W
 IP20 (above ceiling)
 IP44 (outside the ceiling)



ONOK LIGHTING, SL

On the luminaire surface

Remark

The height of graphical symbols shall not be less than 5 mm.

The height of letters and numerals either shown separately or with or as part of symbols shall not be less than 2 mm.

Summary of testing:

1. Unless otherwise specified, the model Bruno frameless 15W and Bruno tilt New 20W were chosen as representative model to perform all tests, the tests results complied with the requirements of the standards mentioned on page one.
2. EN deviation to IEC 60598-1:2020 and IEC 60598-2-2:2011 were considered and found to comply with the requirement.
3. Integral LED module was assessed according to EN IEC 62031:2020+A11:2021 and found to comply with the requirement.
4. Retinal blue light hazard was assessed according to IEC/TR 62778:2014, lamp classification group: RG1 unlimited.
5. Assessment of lighting equipment related to human exposure to electromagnetic fields was evaluated and fulfilled the requirements of EN 62493:2015+A1:2022 and found to comply with the requirement.
6. Only the most unfavorable results are recorded in this report.

**Test items particulars:**

Classification of installation and use: Recessed mounting

Supply Connection: Power cord

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 point is used as the decimal separator.

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

No decision rule is specified by the standard, when comparing the measurement result with the applicable limit according to the specification in that standard.

The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

General product information:

1. Only lamp body is suitable for covering with thermally insulating material, for indoor use only.

2. All models have the same construction, except for driver and appearance.

3. 220-240VAC, 50/60Hz; Class II for whole lamp, Class III for lamp part, IP20 (above ceiling), IP44 (outside the ceiling); other detail see below model list:



Model list

Item	Model	Rated power input (W)	Driver	Alternative driver	LED	Difference
1	Bruno tilt 15W	15W	LS-12-350 SI2 E	LS-15-350 LI1 EXC	COB1	Tiltable
2	Bruno 15W	15W	LS-12-350 SI2 E	LS-15-350 LI1 EXC	COB1	Fixed
3	Bruno tilt frameless 15W	15W	LS-12-350 SI2 E	LS-15-350 LI1 EXC	COB1	Tiltable
4	Bruno tilt framed 15W	15W	LS-12-350 SI2 E	LS-15-350 LI1 EXC	COB1	Tiltable
5	Bruno frameless 15W	15W	LS-12-350 SI2 E	LS-15-350 LI1 EXC	COB1	Fixed
6	Bruno framed 15W	15W	LS-12-350 SI2 E	LS-15-350 LI1 EXC	COB1	Fixed
7	Ringo New 15W	15W	LS-12-350 SI2 E	LS-15-350 LI1 EXC	COB1	Fixed
8	Bruno tilt 20W	20W	LS-21-500 SI1 E	LS-21-500 LI1 EXC	COB2	Tiltable
9	Bruno 20W	20W	LS-21-500 SI1 E	LS-21-500 LI1 EXC	COB2	Fixed
10	Bruno tilt frameless 20W	20W	LS-21-500 SI1 E	LS-21-500 LI1 EXC	COB2	Tiltable
11	Bruno tilt framed 20W	20W	LS-21-500 SI1 E	LS-21-500 LI1 EXC	COB2	Tiltable
12	Bruno frameless 20W	20W	LS-21-500 SI1 E	LS-21-500 LI1 EXC	COB2	Fixed
13	Bruno framed 20W	20W	LS-21-500 SI1 E	LS-21-500 LI1 EXC	COB2	Fixed
14	Bruno tilt New 20W	20W	LS-21-500 SI1 E	LS-21-500 LI1 EXC	COB2	Tiltable
15	Ringo New 20W	20W	LS-21-500 SI1 E	LS-21-500 LI1 EXC	COB2	Fixed



IEC 60598-2-2

Clause	Requirement + Test	Result - Remark	Verdict
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2.3 (0)	GENERAL TEST REQUIREMENTS		P
2.3 (0.3)	More sections applicable	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Section/s:	—
2.3 (0.5)	Components	(see Annex 1)	—
2.3 (0.7)	Information for luminaire design in light sources standards		—
2.3 (0.7.2)	Light source safety standard	EN IEC 62031	—
	Luminaire design in the light source safety standard		P

2.4 (2)	CLASSIFICATION		P
2.5 (2.2)	Type of protection	Class II for whole lamp Class III for lamp part	—
2.5 (2.3)	Degree of protection.....	IP20 (above ceiling) IP44 (outside the ceiling)	—
2.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
2.5 (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"/>	—

2.6 (3)	MARKING		P
2.6 (3.2)	Mandatory markings	See "Copy of marking plate"	P
	Position of the marking		P
	Format of symbols/text		P
2.6 (3.3)	Additional information		P
	Language of instructions	In English	P
2.6 (3.3.1)	Combination luminaires		N
2.6 (3.3.2)	Nominal frequency in Hz	50/60 Hz	P
2.6 (3.3.3)	Operating temperature		N
2.6 (3.3.5)	Wiring diagram		N
2.6 (3.3.6)	Special conditions		N
2.6 (3.3.7)	Metal halide lamp luminaire – warning		N
2.6 (3.3.8)	Limitation for semi-luminaires		N
2.6 (3.3.9)	Power factor and supply current		N
2.6 (3.3.10)	Suitability for use indoors		N
2.6 (3.3.11)	Luminaires with remote control		N
2.6 (3.3.12)	Clip-mounted luminaire – warning		N



IEC 60598-2-2

Clause	Requirement + Test	Result - Remark	Verdict
2.6 (3.3.13)	Specifications of protective shields		N
2.6 (3.3.14)	Symbol for nature of supply	~	P
2.6 (3.3.15)	Rated current of socket outlet		N
2.6 (3.3.16)	Rough service luminaire		N
2.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Y	P
2.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N
2.6 (3.3.19)	Protective conductor current in instruction if applicable		N
2.6 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		P
2.6 (3.3.21)	Non replaceable and non-user replaceable light sources information provided		P
2.6 (3.3.22)	Controllable luminaires, classification of insulation provided		N
2.6 (3.3.23)	Luminaire without controlgear provided with necessary information for selection of appropriate component		N
2.6 (3.3.24)	If not supplied with terminal block, information on the packaging		P
2.6 (3.3.25)	Luminaires employing light sources emitting UV on mains wiring, information provided		N
2.6 (3.3.26)	Wall mounted luminaire using external flexible cable or cord longer than 0.3 m, information provided		N
2.6 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P

2.7 (4)	CONSTRUCTION		P
2.7 (4.2)	Components replaceable without difficulty		N
2.7 (4.3)	Wireways smooth and free from sharp edges		P
2.7 (4.4)	Lampholders		N
2.7 (4.4.1)	Integral lampholder		N
2.7 (4.4.2)	Wiring connection		N
2.7 (4.4.3)	Lampholder for end-to-end mounting		N
2.7 (4.4.4)	Positioning		N
	- pressure test (N)		—



IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	After test the lampholder comply with relevant standard sheets and show no damage		N
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N
	- bending test (N)		—
	After test the lampholder have not moved from its position and show no permanent deformation		N
2.7 (4.4.5)	Peak pulse voltage		N
2.7 (4.4.6)	Centre contact		N
2.7 (4.4.7)	Parts in rough service luminaires resistant to tracking		N
2.7 (4.4.8)	Lamp connectors		N
2.7 (4.4.9)	Caps and bases correctly used		N
2.7 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N
2.7 (4.5)	Starter holders		N
	Starter holder in luminaires other than class II		N
	Starter holder class II construction		N
2.7 (4.6)	Terminal blocks		P
	Tails		P
	Unsecured blocks		N
2.7 (4.7)	Terminals and supply connections		P
2.7 (4.7.1)	Contact to metal parts		N
2.7 (4.7.2)	Test 8 mm live conductor		N
	Test 8 mm earth conductor		N
2.7 (4.7.3)	Terminals for supply conductors		N
2.7 (4.7.3.1)	Welded method and material		N
	- stranded or solid conductor		N
	- spot welding		N
	- welding between wires		N
	- Type Z attachment		N
	- mechanical test according to 15.6.2		N
	- electrical test according to 15.6.3		N
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N
2.7 (4.7.4)	Terminals other than supply connection		N



IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.7 (4.7.5)	Heat-resistant wiring/sleeves		P
2.7 (4.7.6)	Multi-pole plug		N
	- test at 30 N		N
2.7 (4.8)	Switches		N
	- adequate rating		N
	- adequate fixing		N
	- polarized supply		N
	- compliance with IEC 61058-1 for electronic switches		N
2.7 (4.9)	Insulating lining and sleeves		P
2.7 (4.9.1)	Retainment		P
	Method of fixing	Heat shrinkable	—
2.7 (4.9.2)	Insulated linings and sleeves:		P
	Resistant to a temperature > 20 °C to the wire temperature or		P
	a) & c) Insulation resistance and electric strength		N
	b) Ageing test. Temperature (°C)	--	N
2.7 (4.10)	Double or reinforced insulation		P
2.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		P
	Safe installation fixed luminaires		P
	Capacitors and switches		N
2.7 (4.10.2)	Assembly gaps:		N
	- not coincidental		N
	- no straight access with test probe		N
2.7 (4.10.3)	Retainment of insulation:		P
	- fixed		P
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		P
	- lining in lampholder		N
2.7 (4.10.4)	Protective impedance device		N
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N
	Y1 or Y2 capacitors comply with IEC 60384-14		N
	Resistors comply with test (a) in 14.1 of		N



IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.7 (4.11)	Electrical connections and current-carrying parts		P
2.7 (4.11.1)	Contact pressure		P
2.7 (4.11.2)	Screws:		N
	- self-tapping screws		N
	- thread-cutting screws		N
2.7 (4.11.3)	Screw locking:		N
	- spring washer		N
	- rivets		N
2.7 (4.11.4)	Material of current-carrying parts		P
2.7 (4.11.5)	No contact to wood or mounting surface		P
2.7 (4.11.6)	Electro-mechanical contact systems		P
2.7 (4.12)	Screws and connections (mechanical) and glands		P
2.7 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N
	Torque test: torque (Nm); part.....	Screw use for fixing COB cover: 0.5Nm	P
	Torque test: torque (Nm); part.....	--	N
2.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N
2.7 (4.12.4)	Locked connections:		N
	- fixed arms; torque (Nm)	--	N
	- lampholder; torque (Nm)	--	N
	- push-button switches; torque 0,8 Nm	--	N
2.7 (4.12.5)	Screwed glands; force (Nm).....	--	N
2.7 (4.13)	Mechanical strength		P
2.7 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm)	--	N
	- other parts; energy (Nm).....	All enclosure and cover: 0.35 Nm	P
	1) live parts		P
	2) linings		N
	3) protection		P
	4) covers		P
2.7 (4.13.2)	Metal parts have adequate mechanical strength		P
2.7 (4.13.3)	Straight test finger	30N	P
2.7 (4.13.4)	Rough service luminaires		N
	- IP54 or higher		N



IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	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
2.7 (4.13.6)	Tumbling barrel		N
2.7 (4.14)	Suspensions, fixings and means of adjusting		P
2.7 (4.14.1)	Mechanical load:		P
	A) four times the weight		P
	B) torque 2,5 Nm	--	N
	C) bracket arm; bending moment (Nm).....	--	N
	D) load track-mounted luminaires	--	N
	E) clip-mounted luminaires, glass-shelve. Thickness (mm)	--	N
	Metal rod. diameter (mm)	--	N
	Fixed luminaire or independent control gear without fixing devices		N
2.7 (4.14.2)	Load to flexible cables		N
	Mass (kg)	--	—
	Stress in conductors (N/mm ²)	--	N
	Mass (kg) of semi-luminaire	--	—
	Bending moment (Nm) of semi-luminaire	--	N
2.7 (4.14.3)	Adjusting devices:		P
	- flexing test; number of cycles.....	150 cycles	P
	- strands broken	0	P
	- electric strength test afterwards		N
2.7 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N
2.7 (4.14.5)	Guide pulleys		N
2.7 (4.14.6)	Strain on socket-outlets		N
2.7 (4.15)	Flammable materials		P
	- glow-wire test 650°C	See Test Table 2.16 (13.3.2)	P
	- spacing ≥30 mm		N
	- screen withstanding test of 13.3.1		N
	- screen dimensions		N
	- no fiercely burning material		P



IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- thermal protection		N
	- electronic circuits exempted		N
2.7 (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
2.7 (4.16)	Luminaires for mounting on normally flammable surfaces		P
	No lamp control gear.....		N
2.7 (4.16.1)	Lamp control gear spacing:		N
	- spacing 35 mm		N
	- spacing 10 mm		N
2.7 (4.16.2)	Thermal protection:		N
	- in lamp control gear		N
	- external		N
	- fixed position		N
	- temperature marked lamp control gear		N
2.7 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N
2.7 (4.17)	Drain holes		N
	Clearance at least 5 mm		N
2.7 (4.18)	Resistance to corrosion		P
2.7 (4.18.1)	- rust-resistance		P
2.7 (4.18.2)	- season cracking in copper		P
2.7 (4.18.3)	- corrosion of aluminium		P
2.7 (4.19)	Igniters compatible with ballast		N
2.7 (4.20)	Rough service vibration		N
2.7 (4.21)	Protective shield		N
2.7 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N
	Shield of glass if tungsten halogen lamps		N
2.7 (4.21.2)	Particles from a shattering lamp not impair safety		N
2.7 (4.21.3)	No direct path		N
2.7 (4.21.4)	Impact test on shield		N
	Glow-wire test on lamp compartment.....		N
2.7 (4.22)	Attachments to lamps not cause overheating or damage		N



IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.7 (4.23)	Semi-luminaires comply Class II		N
2.7 (4.24)	Photobiological hazards		P
2.7 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N
2.7 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778	RG1 unlimited	—
	Luminaires with E_{thr} :		N
	a) Fixed luminaires		N
	- distance x m, borderline between RG1 and RG2		N
	- marking and instruction according 3.2.23		N
	b) Portable and handheld luminaires		N
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N
2.7 (4.25)	Mechanical hazard		P
	No sharp point or edges		P
2.7 (4.26)	Short-circuit protection		N
2.7 (4.26.1)	Adequate means of uninsulated accessible SELV / PELV parts		N
2.7 (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
2.7 (4.27)	Terminal blocks with integrated screwless protective 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
2.7 (4.28)	Fixing of thermal sensing control		N
	Not plug-in or easily replaceable type		N
	Reliably kept in position		N



IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	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
2.7 (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
2.7 (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:		N
	At least one fixing means requiring use of tool	SELV max.59VDC	N
2.7 (4.31)	Insulation between circuits		P
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N
2.7 (4.31.1)	SELV or PELV circuits		P
	Used SELV/PELV source		P
	Voltage ≤ ELV		P
	Insulating of SELV/PELV circuits from LV supply		P
	Insulating of SELV/PELV circuits from other non SELV/PELV circuits		N
	Insulating of SELV/PELV circuits from FELV		N
	Insulating of SELV/PELV circuits from other SELV/PELV circuits		N
	SELV/PELV circuits insulated from accessible parts according Table X.1		P
	Plugs not able to make any electrical contact with 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
2.7 (4.31.2)	FELV circuits		N



IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	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
2.7 (4.31.3)	Other circuits		P
	Other circuits insulated from accessible parts according Table X.1		P
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N
	- 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
	- slave luminaire constructed as class I		N
2.7 (4.32)	Overvoltage protective devices		N
	Comply with IEC 61643-11		N
	External to controlgear and connected to earth:		N
	- only in fixed luminaires		N
	- only connected to protective earth		N
2.7(4.33)	Luminaire powered via information technology communication cabling		N
	Luminaire shall fulfil the requirement for Class III		N
	Rated voltage of luminaire shall be within range of ES1, not exceed maximum voltage rated to used connector		N
	The luminaire shall be designed in line with the limits of the electrical parameters of a PSE.		N
	No hazard with 130% rated input voltage minimum 7.5VDC for circuit greater than 5VDC		N



IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	No hazard with 150% rated input voltage for circuit equal to or less than 5VDC		N
2.7(4.34)	Electromagnetic field (EMF)		P
	Compliance to IEC 62493:2015		P
2.7(4.35)	Protection against moving fan blades		N
	Fan blades not accessible when installed and wired as in normal use and replacing light sources or components		N
	This test is not necessary for fans have leading edges and tips rounded with a radius of not less than 0,5mm and:		N
	Hardness less than D60 Shore, or		N
	Peripheral speed less than 15m/s supplied with rated voltage, or		N
	Fan has input power not exceeding 2W supplied with rated voltage.		N
2.7(4.36)	Track-mounted luminaires		N
	Tested according to Annex A of IEC 60570		N

2.8 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
2.8 (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
2.8 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 2.8 (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 2.8 (11.2) II	N
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 2.8 (11.2) II	N
2.8 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 2.8 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N
	- Controlgear marked with U_P	See Test Table 2.8 (11.2) II	N
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 2.8 (11.2) II	N

2.9 (7)	PROVISION FOR EARTHING		N
2.9 (7.2.1 + 7.2.3)	Accessible metal parts		N



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Clause	Requirement + Test	Result - Remark	Verdict
	Metal parts in contact with supporting surface		N
	Resistance < 0,5 Ω		N
	Self-tapping screws used		N
	Thread-forming screws		N
	Thread-forming screw used in a groove		N
	Earth makes contact first		N
	Terminal blocks with integrated screwless protective earthing contacts tested according Annex V		N
	Protective earthing of the luminaire not via built-in control gear		N
2.9 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N
2.9 (7.2.4)	Locking of clamping means		N
	Compliance with 4.7.3		N
2.9 (7.2.5)	Earth terminal integral part of connector socket		N
2.9 (7.2.6)	Earth terminal adjacent to mains terminals		N
2.9 (7.2.7)	Electrolytic corrosion of the earth terminal		N
2.9 (7.2.8)	Material of earth terminal		N
	Contact surface bare metal		N
2.9 (7.2.10)	Class II luminaire for looping-in		N
	Double or reinforced insulation to functional earth		N
2.9 (7.2.11)	Earthing core coloured green-yellow		N
	Length of earth conductor		N
2.9 (7.2.12)	PELV circuit connected to protective earth for functional purpose		N

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

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



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Clause	Requirement + Test	Result - Remark	Verdict
2.11 (5)	EXTERNAL AND INTERNAL WIRING		P
2.11 (5.2)	Supply connection and external wiring		P
2.11 (5.2.1)	Means of connection	Power cord	P
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c./25V peak interrupted DC voltage with frequency between 10Hz and 200Hz or protected from outdoor environment		N
2.11 (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
2.11 (5.2.3)	Type of attachment, X, Y or Z	Type Y	P
2.11 (5.2.5)	Type Z not connected to screws		N
2.11 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
2.11 (5.2.7)	Cable entries through rigid material have rounded edges		N
2.11 (5.2.8)	Insulating bushings:		N
	- suitably fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- tubes or guards made of insulating material		N
2.11 (5.2.9)	Locking of screwed bushings		N
2.11 (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
2.11 (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



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Clause	Requirement + Test	Result - Remark	Verdict
	g) replacement without special tool		N
	Glands not used as anchorage		N
	Labyrinth type anchorages		N
2.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	Type Y	P
2.11 (5.2.10.3)	Tests:		N
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N).....	60N	P
	- torque test: torque (Nm).....	0.15 Nm	P
	- displacement \leq 2 mm		P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
2.11 (5.2.10.4)	Exemption from cord anchorage test in 5.2.10.3 if maximum current 2A, including short circuit current.		N
	Prior to the operation of an overcurrent limiting device and the following conditions and test requirements are met		N
	Ordinary SELV Class III luminaire at voltage not exceeding 25Vrms or 60VDC		N
	Ordinary PELV Class III luminaire at voltage not exceeding 12Vrms or 30VDC		N
	Other than ordinary Class III luminaire at voltage not exceeding 12Vrms or 30VDC		N
	Pull test 30N for 1min		N
2.11 (5.2.11)	External wiring passing into luminaire		P
2.11 (5.2.12)	Looping-in terminals		N
2.11 (5.2.13)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N
2.11 (5.2.14)	Mains plug same protection		N
	Class III luminaire plug		N
	No unsafe compatibility		N
2.11 (5.2.15)	Connectors for Class III luminaires (IEC 60603 or IEC 62680)		N
2.11 (5.2.16)	Appliance inlets (IEC 60320)		N
	Installation couplers (IEC 61535)		N



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Clause	Requirement + Test	Result - Remark	Verdict
	Appliance inlet or connector systems (IEC 61984)		N
2.11 (5.2.17)	No standardized interconnecting cables properly assembled		N
2.11 (5.2.18)	Used plug in accordance with		N
	- IEC 60083		N
	- other standard		N
2.11 (5.3)	Internal wiring		P
2.11 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		N
	- not delivered/ mounting instruction		N
	- factory assembled		N
	- socket outlet loaded (A)	--	N
	- temperatures	--	N
	Green-yellow for earth only		N
2.11 (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
2.11 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P
	Cross-sectional area (mm ²).....	See Annex 1	P
2.11 (5.3.1.3)	Double or reinforced insulation for class II		P
2.11 (5.3.1.4)	Conductors without insulation		N
2.11 (5.3.1.5)	SELV/PELV current-carrying parts		P
2.11 (5.3.1.6)	Insulation thickness other than PVC or rubber		N
2.11 (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
2.11 (5.3.3)	Insulating bushings:		P
	- suitable fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- cables with protective sheath		P
2.11 (5.3.4)	Joints and junctions effectively insulated		N



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Clause	Requirement + Test	Result - Remark	Verdict
2.11 (5.3.5)	Strain on internal wiring		N
2.11 (5.3.6)	Wire carriers		N
2.11 (5.3.7)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		P
2.11 (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		P
	No damage to luminaire wiring after test		P

2.12 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
2.12 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		P
	Basic insulated parts not accessible with \varnothing 50 mm probe from outside, within arms reach, on wall-mounted luminaires		P
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		P
	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
2.12 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N
2.12 (8.2.3.a)	Class II luminaire:		P
	- basic insulated metal parts not accessible during starter or lamp replacement		N
	- basic insulation not accessible other than during starter or lamp replacement		P
	- glass protective shields not used as supplementary insulation		N



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Clause	Requirement + Test	Result - Remark	Verdict
2.12 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N
2.12 (8.2.3.c)	SELV circuits with exposed current carrying parts:		P
	Ordinary luminaire:		P
	- voltage under load (V).....		N
	- no-load voltage (V).....	Max.59VDC	P
	- touch current if applicable (mA)		N
	One conductive part insulated if required		N
	Other than ordinary luminaire:		N
	- nominal voltage (V)		N
	Class III luminaire only for connection to SELV		N
	Class III luminaire not provided with means for protective earthing		N
2.12 (8.2.4)	Portable luminaire have protection independent of supporting surface		N
2.12 (8.2.5)	Compliance with the standard test finger or relevant probe		P
2.12 (8.2.6)	Covers reliably secured		P
2.12 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$		P
	Portable plug connected luminaire with capacitor		N
	Other plug connected luminaire with capacitor		N
	Discharge device on or within capacitor		N
	Discharge device mounted separately		N
2.12 (-)	Parts within the ceiling space provide same degree of protection against electric shock as parts below the ceiling space		P

2.13 (12)	ENDURANCE TEST AND THERMAL TEST		P
2.13.1 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 2.14		—
2.13 (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)	—
2.13 (12.3)	Endurance test		P
	a) mounting-position	As user manual	—
	b) test temperature (°C)	35°C	—



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Clause	Requirement + Test	Result - Remark	Verdict
	c) total duration (h)	240h	—
	d) supply voltage (V)	1.1Un	—
	d) if not equipped with controlgear, constant voltage/current (V) or (A)	--	—
	e) luminaire ceases to operate		—
2.13 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N
	- marking legible		P
	- no cracks, deformation etc.		P
1.13 (12.3.1d)	d) Class III luminaires powered via information technology communication cable:		N
	- voltage under normal operation (V).....		—
	- voltage under abnormal operation (V).....		—
	e) luminaire ceases to operate		—
	f) luminaire with constant light output function		N
2.13 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
2.13 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	N
2.13 (12.6)	Thermal test (failed lamp control gear condition):		N
2.13 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		—
	- case of abnormal conditions		—
	- electronic lamp control gear		N
	- 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
2.13 (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
2.13 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N



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Clause	Requirement + Test	Result - Remark	Verdict
2.13 (12.7.1)	Luminaire without temperature sensing control		N
2.13 (12.7.1.1)	Luminaire with fluorescent lamp $\leq 70W$		N
	Test method 12.7.1.1 or Annex W		—
	Test according to 12.7.1.1:		N
	- case of abnormal conditions		—
	- Ballast failure at supply voltage (V)		—
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
	Test according to Annex W:		N
	- case of abnormal conditions		—
	- measured winding temperature ($^{\circ}C$): at 1,1 Un ..		—
	- measured temperature of fixing point/exposed part ($^{\circ}C$): at 1,1 Un		—
	- calculated temperature of fixing point/exposed part ($^{\circ}C$)		—
	Ball-pressure test		N
2.13 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp $> 70W$, transformer $> 10 VA$		N
	- case of abnormal conditions		—
	- measured winding temperature ($^{\circ}C$): at 1,1 Un ..	--	—
	- measured temperature of fixing point/exposed part ($^{\circ}C$): at 1,1 Un	--	—
	- calculated temperature of fixing point/exposed part ($^{\circ}C$)	--	—
	Ball-pressure test	--	N
2.13 (12.7.1.3)	Luminaire with short circuit proof transformers $\leq 10 VA$		N
	- case of abnormal conditions		—
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
2.13 (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 ($^{\circ}C$):		—



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Clause	Requirement + Test	Result - Remark	Verdict
	Ball-pressure test:	--	N
2.13.1 (-)	Wiring, for connection to the supply, not reach unsafe temperature		P
	- measured temperature of the cable (°C)	(See ANNEX 2)	P

2.14 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
2.14 (-)	If IP > IP 20 the order of tests as specified in clause 2.13		P
2.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		—
	- classification according to IP	IP20 (above ceiling) IP44 (outside the ceiling)	—
	- mounting position during test	Acc. to user manual	—
	- fixing screws tightened; torque (Nm)	2/3 torque for Cl.4.12.1	—
	- tests according to clauses	9.2.0 & 9.2.5	—
	- 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 on insulation where it could become a hazard		P
	d) i) For luminaires without drain holes – no water entry		P
	d) ii) For luminaires with drain holes – no hazardous water entry		N
	e) no water in watertight luminaire		N
	f) no contact with live parts (IP 2X)	IP20 (above ceiling)	P
	f) no entry into enclosure (IP 3X and IP 4X)	IP44 (outside the ceiling)	P
	f) no contact with live parts (IP3X and IP4X)		N
	g) no trace of water on part of lamp requiring protection from splashing water		P
	h) no damage of protective shield or glass envelope		N
2.14 (9.3)	Humidity test 48 h	25°C, 93%RH	P

2.15 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
2.15 (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/PELV:		P



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Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts of different polarity	--	N
	- between current-carrying parts and mounting surface	100 MΩ	P
	- between current-carrying parts and metal parts of the luminaire	100 MΩ	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts	--	N
	- Insulation bushings as described in Section 5 ...	--	N
	Other than SELV/PELV:		P
	- between live parts of different polarity	100 MΩ	P
	- between live parts and mounting surface	100 MΩ	P
	- between live parts and metal parts	100 MΩ	P
	- between live parts of different polarity through action of a switch	--	N
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts	--	N
	- Insulation bushings as described in Section 5 ...	--	N
2.15 (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/PELV:		N
	- between current-carrying parts of different polarity	--	N
	- between current-carrying parts and mounting surface	500V	P
	- between current-carrying parts and metal parts of the luminaire	500V	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts	--	N
	- Insulation bushings as described in Section 5 ...	--	N
	Other than SELV/PELV:		P
	- between live parts of different polarity	1480V	P
	- between live parts and mounting surface	2960V	P
	- between live parts and metal parts	2960V	P



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Clause	Requirement + Test	Result - Remark	Verdict
	- between live parts of different polarity through action of a switch.....	--	N
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....	--	N
	- Insulation bushings as described in Section 5 ...	--	N
2.15 (10.3)	Touch current (mA)	0.021mA	P
	Protective conductor current (mA)	--	N

2.16 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
2.16 (13.2.1)	Ball-pressure test	See Test Table 2.16 (13.2.1)	P
2.16 (13.3.1)	Needle-flame test (10 s).....	See Test Table 2.16 (13.3.1)	P
2.16 (13.3.2)	Glow-wire test (650°C).....	See Test Table 2.16 (13.3.2)	P
2.16 (13.4)	Proof tracking test (IEC 60112).....	See Test Table 2.16 (13.4)	P

2.8 (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	3.0	1.5	11.1	3.0	2.5	11.1	
Working voltage (V).....					Max. 240Vac		—	
PTI					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—	
Pulse voltage if applicable (kV)					--		—	
Supplementary information: Live parts of different polarity								
Distance 2:	R	5.1	3.0	11.1	5.1	5.0	11.1	
Working voltage (V).....					Max. 240Vac		—	
PTI					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—	
Pulse voltage if applicable (kV)					--		—	
Supplementary information: Live parts and mounting surface								
Distance 3:	R	5.0	3.0	11.1	5.0	5.0	11.1	
Working voltage (V).....					Max. 240Vac		—	
PTI					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—	
Pulse voltage if applicable (kV)					--		—	
Supplementary information: Live parts and metal parts								



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Clause	Requirement + Test	Result - Remark	Verdict

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

2.8 (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)								—
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:								

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

2.16 (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)		
Quick connector	See annex 1	125	1.42		
--	--	--	--		
Supplementary information:					

2.16 (13.3.1)		TABLE: Needle-flame test (IEC 60695-11-5)				P
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict	
Quick connector	See Annex 1	10	N	0	P	
--	--	--	--	--	--	
Supplementary information:						



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Clause	Requirement + Test	Result - Remark	Verdict

2.16 (13.3.2) TABLE: Glow-wire test (IEC 60695-2-11)					P	
Glow wire temperature					650°C	—
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict	
Lens	See Annex 1	30	No	0	P	
Lamp cover	See Annex 1	30	No	0	P	
COB cover	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:						

2.16 (13.4) TABLE: Proof tracking test (IEC 60112)					P	
Test voltage PTI					175V	—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict	
COB cover	See annex 1	50	50	50	P	
Supplementary information:						



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Clause	Requirement + Test	Result - Remark			Verdict
ANNEX 1	Components				P
object/part No.	manufacturer/ trademark	type/model	technical data	Standard	mark(s) of conformity
Lead wire to driver	Guangdong Detong Electric Wire & Cable Co., Ltd.	H03VVH2-F	2x0.75mm ²	EN 50525-2-11	VDE 40050872
Alternative	Jiangmen Tingjia Wire Co., Ltd	H03VVH2-F	2x0.75mm ²	EN 50525-2-11	VDE 40057277
Driver1	EAGLERISE ELECTRIC & ELECTRONIC (JI AN) CO., LTD	LS-12-250 SI2 E	Input: 220-240VAC; 50/60Hz; 0.15A; Output: 30-40VDC Uout: 59VDC; 250mA; Max.10W; ta:45°C; tc:80°C; Constant Current; Class II; Independent; SELV	EN 61347-1 EN 61347-2-13	Nemok: NO131177/M1
Driver2	EAGLERISE ELECTRIC & ELECTRONIC (JI AN) CO., LTD	LS-12-250 LI1 EXC	Input: 220-240VAC; 50/60Hz; 0.07A; Output: 27-42VDC Uout: 59VDC; 250mA; Max.10.5W; ta:45°C; tc:75°C; Constant Current; Class II; Independent; SELV	EN 61347-1 EN 61347-2-13	Nemok: NO132634
Driver3	EAGLERISE ELECTRIC & ELECTRONIC (JI AN) CO., LTD	LS-12-350 SI2 E	Input: 220-240VAC; 50/60Hz; 0.18A; Output: 30-40VDC Uout: 59VDC; 350mA; Max.14W; ta:45°C; tc:85°C; Constant Current; Class II; Independent; SELV	EN 61347-1 EN 61347-2-13	Nemok: NO131177/M1
Driver4	EAGLERISE ELECTRIC & ELECTRONIC (JI AN) CO., LTD	LS-15-350 LI1 EXC	Input: 220-240VAC; 50/60Hz; 0.095A; Output: 27-42VDC Uout: 59VDC; 350mA; Max.14.7W; ta:45°C; tc:80°C; Constant Current; Class II; Independent; SELV	EN 61347-1 EN 61347-2-13	Nemok: NO132634
Driver5	EAGLERISE ELECTRIC & ELECTRONIC (JI AN) CO., LTD	LS-21-500 SI1 E	Input: 220-240VAC; 50/60Hz; 0.3A; Output: 30-42VDC Uout: 59VDC; 500mA; Max.21W; ta:45°C; tc:80°C; Constant Current; Class II; Independent; SELV	EN 61347-1 EN 61347-2-13	Nemok: NO131177/M1



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Clause	Requirement + Test	Result - Remark		Verdict	
Driver6	EAGLERISE ELECTRIC & ELECTRONIC (JI AN) CO., LTD	LS-21-500 LI1 EXC	Input: 220-240VAC; 50/60Hz; 0.13A; Output: 27-42VDC Uout: 59VDC; 500mA; Max.21W; ta:45°C; tc:85°C; Constant Current; Class II; Independent; SELV	EN 61347-1 EN 61347-2- 13	Nemok: NO132634
Output wire of driver & Lead wire to COB board	Guangdong Hongpai Wire Products Co.,Ltd	2464	22AWG; 300V, 80°C	--	UL E508352
Quick connector	PINGDINGSHAN SHENMA ENGINEERING PLASTICS CO LTD	EPR27	PA66	--	UL E231964
COB1	Bridgelux	BXRH- **G100*-B-8*	I _F =600mA; V _F =36V; 2700K-5000K	IEC/TR 62778	Tested with appliance
COB2	Bridgelux	BXRE- **G100*-C-7*	I _F =720mA; V _F =36V; 2700K-5000K	IEC/TR 62778	Tested with appliance
COB board	Guangdong Huarui High-Tech Materials Co.,Ltd.	SPS-AL-01, HR-01	V-0; Al	--	UL E497857
COB cover	WANHUA CHEMICAL GROUP CO LTD	A1105	PC; V-2	--	UL E351523
Lens	GUANGDONG WAYLAM ENGINEERING PLASTICS Co., LTD	PC-F2805	PC; V-0	--	UL E257285
Lamp cover	FOSHAN NANHAI POLMA ENGINEERING PLASTICS CO LTD	PC-1025	PC; V-0	--	UL E241821
Heat shrinkable tube	SHENZHEN WOLIDA TRADING CO LTD	RSFR-H	600VAC; 125°C	--	UL E329530



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Clause	Requirement + Test	Result - Remark	Verdict
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ANNEX 2	Temperature measurements, thermal tests of Section 12	P
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ANNEX 2-1	Type reference	Bruno frameless 15W	—
	Lamp used	Integral LED	—
	Lamp control gear used	LS-12-350 SI2 E	—
	Mounting position of luminaire	Acc. to user manual	—
	Supply wattage (W).....	--	—
	Supply current (A)	--	—
	Calculated power factor	--	—
	Table: measured temperatures corrected for $t_a = 25 \text{ }^\circ\text{C}$:		P
	- abnormal operating mode	----	—
	- test 1: rated voltage	----	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	1.06 times rated voltage	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	----	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	----	—
	Through wiring or looping-in wiring loaded by a current of A during the test	----	—

temperature ($^\circ\text{C}$) of part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	test 1	test 2	test 3	limit	test 4	limit
Input wire of LED driver (Press)	--	40.5	--	75	--	--
Driver (T_c)	--	76.2	--	85	--	--
Output wire of LED driver (Press)	--	42.8	--	65	--	--
Quick connector	--	34.8	--	Ref.	--	--
Lead wire to COB board (with shrinkable tube)	--	81.8	--	120	--	--
COB board	--	92.0	--	Ref.	--	--
COB cover	--	95.3	--	Ref.	--	--
Lens	--	128.1	--	Ref.	--	--
Mounting surface (Hottest)	--	45.4	--	90	--	--
Illuminated surface (0.1m)	--	43.8	--	90	--	--



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Clause	Requirement + Test	Result - Remark	Verdict
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ANNEX 2-2	Type reference	Bruno frameless 15W	—			
	Lamp used	Integral LED	—			
	Lamp control gear used	LS-15-350 LI1 EXC	—			
	Mounting position of luminaire	Acc. to user manual	—			
	Supply wattage (W).....	--	—			
	Supply current (A)	--	—			
	Calculated power factor	--	—			
	Table: measured temperatures corrected for $t_a = 25\text{ }^\circ\text{C}$:		P			
	- abnormal operating mode	----	—			
	- test 1: rated voltage	----	—			
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	1.06 times rated voltage	—			
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	----	—			
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	----	—			
	Through wiring or looping-in wiring loaded by a current of A during the test	----	—			
temperature ($^\circ\text{C}$) of part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	test 1	test 2	test 3	limit	test 4	limit
Input wire of LED driver (Press)	--	36.3	--	75	--	--
Driver (T_c)	--	69.3	--	80	--	--
Output wire of LED driver (Press)	--	44.5	--	65	--	--
Quick connector	--	36.0	--	Ref.	--	--
Lead wire to COB board (with shrinkable tube)	--	82.7	--	120	--	--
COB board	--	92.8	--	Ref.	--	--
COB cover	--	96.8	--	Ref.	--	--
Lens	--	130.8	--	Ref.	--	--
Mounting surface (Hottest)	--	46.4	--	90	--	--
Illuminated surface (0.1m)	--	42.4	--	90	--	--



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Clause	Requirement + Test	Result - Remark	Verdict
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ANNEX 2-3	Type reference	Bruno tilt New 20W	—			
	Lamp used	Integral LED	—			
	Lamp control gear used	LS-21-500 S11 E	—			
	Mounting position of luminaire	Acc. to user manual	—			
	Supply wattage (W).....	--	—			
	Supply current (A)	--	—			
	Calculated power factor	--	—			
	Table: measured temperatures corrected for $t_a = 25\text{ }^\circ\text{C}$:		P			
	- abnormal operating mode	----	—			
	- test 1: rated voltage	----	—			
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	1.06 times rated voltage	—			
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	----	—			
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	----	—			
	Through wiring or looping-in wiring loaded by a current of A during the test	----	—			
temperature ($^\circ\text{C}$) of part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	test 1	test 2	test 3	limit	test 4	limit
Input wire of LED driver (Press)	--	42.0	--	75	--	--
Driver (T_c)	--	72.5	--	80	--	--
Output wire of LED driver (Press)	--	49.3	--	65	--	--
Quick connector	--	37.0	--	Ref.	--	--
Lead wire to COB board (with shrinkable tube)	--	86.9	--	120	--	--
COB board	--	95.8	--	Ref.	--	--
COB cover	--	109.5	--	Ref.	--	--
Lens	--	145.5	--	Ref.	--	--
Mounting surface (Hottest)	--	48.1	--	90	--	--
Illuminated surface (0.1m)	--	50.7	--	90	--	--



IEC 60598-2-2

Clause	Requirement + Test	Result - Remark	Verdict			
ANNEX 2-4	Type reference	Bruno tilt New 20W	—			
	Lamp used	Integral LED	—			
	Lamp control gear used	LS-21-500 LI1 EXC	—			
	Mounting position of luminaire	Acc. to user manual	—			
	Supply wattage (W).....	--	—			
	Supply current (A).....	--	—			
	Calculated power factor	--	—			
	Table: measured temperatures corrected for $t_a = 25\text{ }^\circ\text{C}$:		P			
	- abnormal operating mode.....	----	—			
	- test 1: rated voltage	----	—			
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	1.06 times rated voltage	—			
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	----	—			
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	----	—			
	Through wiring or looping-in wiring loaded by a current of A during the test	----	—			
temperature ($^\circ\text{C}$) of part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	test 1	test 2	test 3	limit	test 4	limit
Input wire of LED driver (Press)	--	38.5	--	75	--	--
Driver (T_c)	--	74.5	--	85	--	--
Output wire of LED driver (Press)	--	51.5	--	65	--	--
Quick connector	--	38.3	--	Ref.	--	--
Lead wire to COB board (with shrinkable tube)	--	89.8	--	120	--	--
COB board	--	98.2	--	Ref.	--	--
COB cover	--	110.8	--	Ref.	--	--
Lens	--	149.2	--	Ref.	--	--
Mounting surface (Hottest)	--	49.4	--	90	--	--
Illuminated surface (0.1m)	--	49.7	--	90	--	--



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

ANNEX 3	Screw terminals (part of the luminaire)		N
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(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)		N
(14.3.3)	Conductor space (mm)		N
(14.4)	Mechanical tests		N
(14.4.1)	Minimum distance		N
(14.4.2)	Cannot slip out		N
(14.4.3)	Special preparation		N
(14.4.4)	Nominal diameter of thread (metric ISO thread)...		N
	External wiring		N
	No soft metal		N
(14.4.5)	Corrosion		N
(14.4.6)	Nominal diameter of thread (mm)		N
	Torque (Nm).....		N
(14.4.7)	Between metal surfaces		N
	Lug terminal		N
	Mantle terminal		N
	Pull test; pull (N).....		N
(14.4.8)	Without undue damage		N



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Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 4	Screwless terminals (part of the luminaire)		N
(15)	SCREWLESS TERMINALS		—
(15.2)	Type of terminal	--	—
	Rated current (A)	--	—
(15.3.1)	Material		N
(15.3.2)	Clamping		N
(15.3.3)	Stop		N
(15.3.4)	Unprepared conductors		N
(15.3.5)	Pressure on insulating material		N
(15.3.6)	Clear connection method		N
(15.3.7)	Clamping independently		N
(15.3.8)	Fixed in position		N
(15.3.10)	Conductor size		N
	Type of conductor		N
(15.5.1)	Terminals internal wiring		N
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples).....	--	N
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples).....	--	N
	Insertion force not exceeding 50 N		N
(15.5.2)	Permanent connections: pull-off test (20 N)		N
(15.6)	Electrical tests		
	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
(15.7)	Terminals external wiring		N
	Terminal size and rating		N



IEC 60598-2-2											
Clause	Requirement + Test									Result - Remark	Verdict
(15.8.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N)									--	N
	Pull test pin or tab terminals (4 samples); pull (N)									--	N
(15.9)	Contact resistance test										N
	Voltage drop (mV) after 1 h										N
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)	---	---	---	---	---	---	---	---	---	---	



EN 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 5	National Differences for (country name) or Group Differences		P
	CENELEC COMMON MODIFICATIONS (EN)		P

ATTACHMENT TO TEST REPORT IEC 60598-2-2 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Luminaires Part 2: Particular Requirements: Section Two – Recessed luminaires	
Differences according to.....:	EN 60598-2-2:2012 used in conjunction with EN IEC 60598-1:2021+A11:2022
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 IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 6	LED modules for general lighting – Safety specifications EN IEC 62031:2020+A11:2021		P
4	GENERAL REQUIREMENTS		P
4.4	Integral modules treated as part of luminaires defined in clause 0.5 of IEC 60598-1		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 1)	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 1)	N
	Part of the luminaire	(see Annex 4)	N
	Connectors according IEC 60838-2-2:		N
	Separately approved; component list	(see Annex 1)	N
9 (9)	PROVISION FOR PROTECTIVE EARTHING		N
	Requirements not applicable to the evaluated product.		—



EN IEC 62031

Clause	Requirement + Test	Result - Remark	Verdict
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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		P
	Working voltage $\leq 50 \text{ V}$, test voltage 500 V		N
	Working voltage $> 50 \text{ V} \leq 1000 \text{ V}$, test voltage (V):		N
	Basic insulation, 2U + 1000 V		N
	Supplementary insulation, 2U + 1000 V		N
	Double or reinforced insulation, 4U + 2000 V		N
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N

13 (14)	FAULT CONDITIONS		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	(see appended table)	P



EN IEC 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	LED	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	N
- (14.5)	After the tests has been carried out on three samples:		N
	The insulation resistance $\geq 1 \text{ M}\Omega$	>20 M Ω	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		N
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		N
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
	- part tested; temperature ($^{\circ}\text{C}$).....	--	N



EN IEC 62031

Clause	Requirement + Test	Result - Remark	Verdict
(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	RG1 Unlimited	P
22.3	Infrared radiation		N



EN IEC 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 - SELV-operated LED modules		N
	SELV-operated LED modules in compliance with Annex I of IEC 61347-2-13		N

WALTEK



IEC TR 62778

Clause	Requirement + Test	Result - Remark	Verdict
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Annex 7	Retinal blue light hazard Of Lamps And Lamp Systems IEC TR 62778:2014	P
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Annex 7-1	TABLE: Spectroradiometric measurement			P	
	Measurement performed on:	<input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input checked="" type="checkbox"/> Luminaire		—	
	Model number.....:	Bruno frameless 15W		—	
	Test voltage (V)	240V		—	
	Test current (mA).....:	--		—	
	Test frequency (Hz).....:	--		—	
	Ambient, t (°C)	25.3		—	
	Measurement distance	<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm		—	
	Source size	<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small : mm		—	
	Field of view	<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)		—	
	Item	Symbol	Units	Result	Remark
	Correlated colour temperature	CCT	K	--	—
	x/y colour coordinates	---	---	--	—
	Blue light hazard radiance	L _B	W/(m ² •sr ¹)	4.526e+003	—
	Blue light hazard irradiance	E _B	W/m ²	--	—
	Luminance	L	cd/m ²	9.368e+006	—
	Illuminance	E	lx	--	—
Lamp classification group: RG1 unlimited.					



IEC TR 62778

Clause	Requirement + Test	Result - Remark	Verdict
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Annex 7-2	TABLE: Spectroradiometric measurement			P
	Measurement performed on:	<input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input checked="" type="checkbox"/> Luminaire		—
	Model number.....:	Bruno tilt New 20W		—
	Test voltage (V).....:	240V		—
	Test current (mA).....:	--		—
	Test frequency (Hz).....:	--		—
	Ambient, t (°C).....:	25.3		—
	Measurement distance.....:	<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm		—
	Source size.....:	<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small : mm		—
	Field of view.....:	<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1.7 mrad (for small sources)		—
Item	Symbol	Units	Result	Remark
Correlated colour temperature	CCT	K	--	—
x/y colour coordinates	---	---	--	—
Blue light hazard radiance	L _B	W/(m ² •sr ¹)	3.190e+003	—
Blue light hazard irradiance	E _B	W/m ²	--	—
Luminance	L	cd/m ²	6.381e+006	—
Illuminance	E	lx	--	—
Lamp classification group: RG1 unlimited.				



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+A1:2022		P
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 checked="" type="checkbox"/>	—
	2) incandescent-lamp technology	Yes <input type="checkbox"/> No <input checked="" 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 checked="" type="checkbox"/>	—
	5) high-pressure discharge lamp LED-light-source technologies	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	6) low-pressure discharge lamp technologies with exposure distance ≥ 50 cm	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	7) independent auxiliary	Yes <input type="checkbox"/> No <input checked="" 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 $P_{\text{int,rad}} < \text{exclusion level } P_{\text{max}}$		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 ≤ 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+A1:2022	--	--	--	≤ 1.0	N

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

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Photo Documentation

Model: Bruno frameless 15W



Photo 1

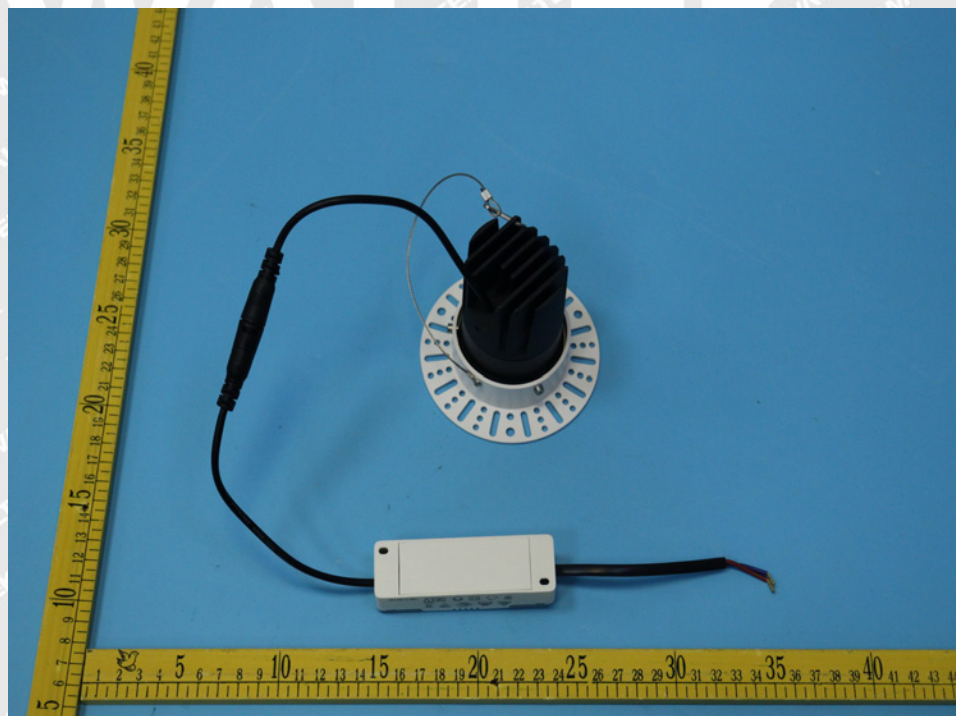


Photo 2



Photo Documentation



Photo 3



Photo 4 (Alternative driver)



Photo Documentation



Photo 5



Photo 6



Photo Documentation



Photo 7

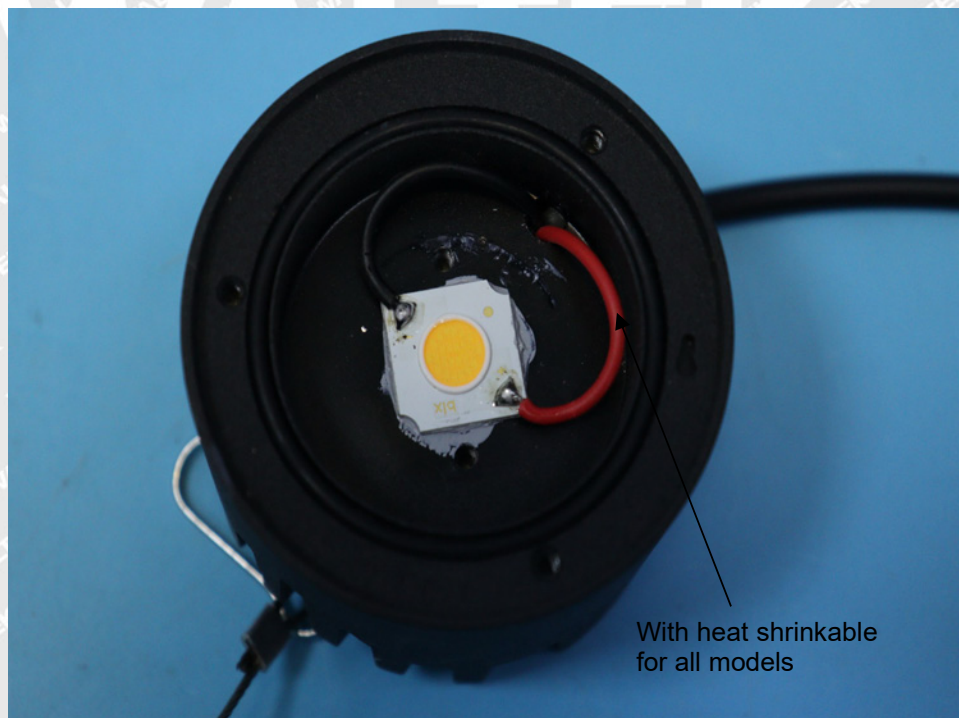


Photo 8



Photo Documentation

Model: Bruno tilt New 20W



Photo 9

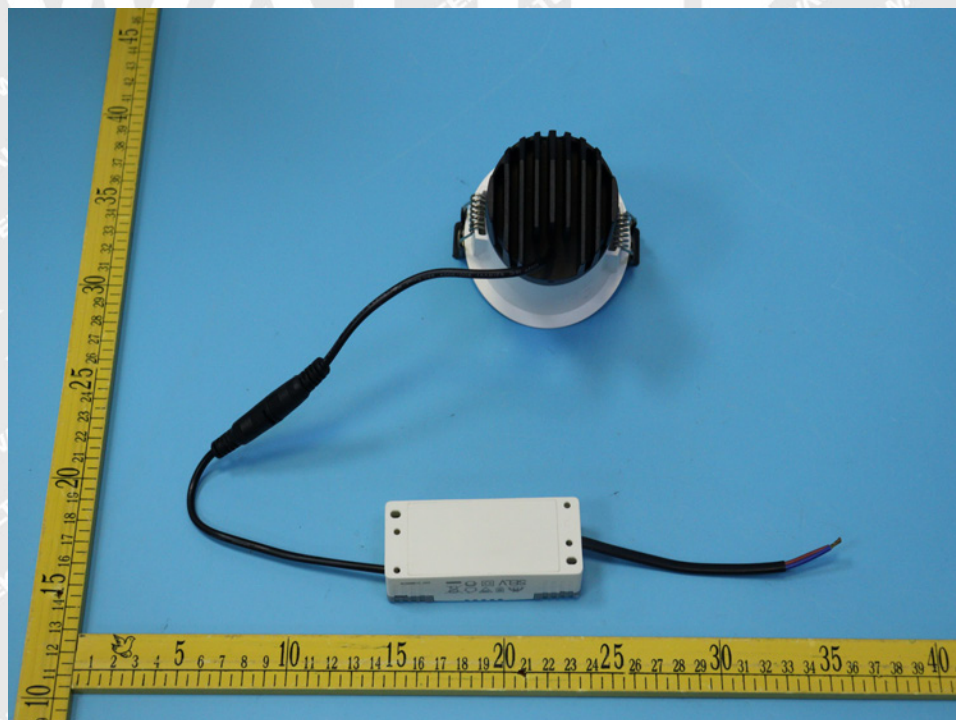


Photo 10



Photo Documentation



Photo 11



Photo 12 (Alternative driver)



Photo Documentation



Photo 13



Photo 14



Photo Documentation



Photo 15



Photo 16



Photo Documentation



Photo 17

Model: Bruno tilt 15W



Photo 18



Photo Documentation



Photo 19

Model: Bruno 15W



Photo 20



Photo Documentation



Photo 21

Model: Bruno tilt frameless 15W



Photo 22



Photo Documentation



Photo 23

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

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