TEST REPORT
EN 60598-2-20
Luminaires
Part 2: Particular requirements
Section 20: Lighting Chains

Report Number.....:	UNIA22032908SR-01
Tested by.....:	Park Chen
Approved by .....:	Liuze
Date of issue.....:	Apr. 13, 2022

Name of Testing Laboratory preparing the Report.....:	Shenzhen United Testing Technology Co., Ltd. 2F, Annex Bldg, Jiahuangyuan Tech Park, #365 Baotian 1 Rd, Tiegang Community, Xixiang Str, Bao'an District, Shenzhen, China
Testing location.....:	Same as above
Applicant's name.....:	LIGHTSTEC CO.,LIMITED
Address.....:	1 #901,Meicheng Creative Industrial Park,XiaoLan,Zhongshan, Guangdong, China
Test specification:	
Standard.....:	EN 60598-2-20:2015 used in conjunction with EN IEC 60598-1:2021
Test procedure.....:	LVD report
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC60598_2_20F
Test Report Form(s) Originator.....:	UNI
Master TRF.....:	Dated 2018-06

This test report is for the customer shown above and their specific product only. It may not be duplicated or used in part without prior written consent from UNI lab.

General disclaimer:

The test results presented in this report relate only to the object tested.

Test item description.....:	AC LED STRIP LIGHT
Trade Mark.....:	LIGHTSTEC
Manufacturer.....:	Same as applicant.
Model/Type reference.....:	LT-2835WW120R-AC220, LT-2835XX120R-AC220, "XX" for different CCT of LED chips.
Ratings.....:	220V~, 50/60Hz, 15W/MTR (MAX), Class II, IP65 (This is the rating of the model LT-2835WW120R-AC220)

Summary of testing:

Tests performed (name of test and test clause):
The submitted samples were found to comply with requirements of standards:
- EN 60598-2-20:2015;
- EN IEC 60598-1:2021

Copy of marking plate:
The artwork below may be only a draft.

AC LED STRIP LIGHT
Model NO.: LT-2835WW120R-AC220
Rating: 220V~, 50/60Hz, 15W/MTR (MAX)

LIGHTSTEC CO.,LIMITED

MADE IN CHINA

WARNING:
- Please read the instruction carefully before use.
- Rope light should not be connected to the supply while it is in the package or in accumulation.
- Should not be electrical connected to other rope light or electric equipment.
- Supply voltage should not be over 220V~.
- Rope light should not be used if don't be sealed fully, the LED lamp are not to be replaced
- The part of plug is only for indoor use.

Remark:
1. For whole product, the marking of other models are identical with the making of model LT-2835WW120R-AC220, except for model designation and rated power.
2. The above mark is the minimum requirements of the safety standard. For the final production, the additional marks which do not give rise to misunderstanding may be added.

Test item particulars..... :	
Classification of installation and use.....:	Class II and Fixed
Supply Connection.....:	Power lead cord
.....:	
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.....:	Mar. 25, 2022
Date (s) of performance of tests.....:	Mar. 25, 2022 Apr. 12, 2022

General remarks:

The test results presented in this report relate only to the object tested.

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The tested sample(s) and the sample information are provided by the client.

"(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 ☐ comma / ☒ point is used as the decimal separator.

Clause numbers between brackets refer to clauses in EN IEC 60598-1.

The test report only allows to be revised only within the report defined retention period unless standard or regulation was withdrawn or invalid.

When determining for test conclusion, measurement uncertainty of tests has been considered.

General product information:

- The product is LED lighting chain, connected to the power supply via plug with controller, It's classified Class II for LED driver according to protection against electric shock, IP65, suitable for direct mounting on normally flammable surfaces and indoor use only.
- Unless otherwise specified, tests carried out on model LT-2835WW120R-AC220 were considered representative.
- The tested sample complied with the requirements of the test specification. Series models are no other difference except for model no. and appearance, So all models complied with the requirements of the test specification.

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Clause	Requirement + Test	Result - Remark	Verdict
20.4	**GENERAL TEST REQUIREMENTS**		P
20.4 (0.3)	More sections applicable.....:	Yes ☐ No ☒	—
20.4 (0.5)	Components	(see Annex 1)	—
20.4 (0.7)	**Information for luminaire design in light sources standards**		—
20.4 (0.7.2)	Light source safety standard .....:		—
	Luminaire design in the light source safety standard		—
20.5 (2)	**CLASSIFICATION**		P
20.5 (2.2)	Type of protection .....:	Class II	P
20.5 (2.3)	Degree of protection.....:	IP 65	—
20.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces.....:	Yes ☒ No ☐	—
20.5 (2.5)	Luminaire for normal use .....:	Yes ☒ No ☐	—
	Luminaire for rough service .....:	Yes ☐ No ☐	—
20.5.2 (-)	Class II or Class III	Class II	P
20.5.3 (-)	Chain for outdoor use shall be IP44 or higher	IP 65	P
20.6 (3)	**MARKING**		P
20.6 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text	English	P
20.6 (3.3)	Additional information		P
	Language of instructions		P
20.6 (3.3.1)	Combination luminaires		P
20.6 (3.3.2)	Nominal frequency in Hz	50/60Hz	P
20.6 (3.3.3)	Operating temperature		N/A
20.6 (3.3.5)	Wiring diagram		N/A
20.6 (3.3.6)	Special conditions		N/A
20.6 (3.3.7)	Metal halide lamp luminaire – warning		N/A
20.6 (3.3.8)	Limitation for semi-luminaires		N/A
20.6 (3.3.9)	Power factor and supply current		P
20.6 (3.3.10)	Suitability for use indoors		N/A
20.6 (3.3.11)	Luminaires with remote control		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
20.6 (3.3.12)	Clip-mounted luminaire – warning		N/A
20.6 (3.3.13)	Specifications of protective shields		N/A
20.6 (3.3.14)	Symbol for nature of supply	~	P
20.6 (3.3.15)	Rated current of socket outlet		N/A
20.6 (3.3.16)	Rough service luminaire		N/A
20.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Y	P
20.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
20.6 (3.3.19)	Protective conductor current in instruction if applicable		N/A
20.6 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
20.6 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided		P
20.6 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
20.6 (3.3.23)	Luminaire without controlgear provided with necessary information for selection of appropriate component		N/A
20.6 (3.3.24)	If not supplied with terminal block, information on the packaging		N/A
20.6 (3.4)	Test with water	15s	P
	Test with hexane	15s	P
	Legible after test		P
	Label attached		P
20.6.2 (-)	**Lighting chain marking**		P
	Rated voltage and wattage marked on the chain		P
	Durable non-removable label if information on the cable		P
20.6.3 (-)	**Marking on the packing or instructions**		P
	Marking if only for indoor use		N/A
20.6.4 (-)	**Marking on the packing or instructions**		P
	Marking a) – l)		P

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Clause	Requirement + Test	Result - Remark	Verdict
20.7 (4)	**CONSTRUCTION**		P
20.7 (4.2)	Components replaceable without difficulty		P
20.7 (4.3)	Wireways smooth and free from sharp edges		P
20.7 (4.4)	**Lampholders**		**N/A**
20.7 (4.4.1)	Integral lampholder		N/A
20.7 (4.4.2)	Wiring connection		N/A
20.7 (4.4.3)	Lampholder for end-to-end mounting		N/A
20.7 (4.4.4)	Positioning		N/A
	- pressure test (N) ..... :		—
	After test the lampholder comply with relevant standard sheets and show no damage		N/A
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N/A
	- bending test (N) .....:		—
	After test the lampholder have not moved from its position and show no permanent deformation		N/A
20.7 (4.4.5)	Peak pulse voltage		N/A
20.7 (4.4.6)	Centre contact		N/A
20.7 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
20.7 (4.4.8)	Lamp connectors		N/A
20.7 (4.4.9)	Caps and bases correctly used		N/A
20.7 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
20.7 (4.5)	**Starter holders**		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
20.7 (4.6)	**Terminal blocks**		**N/A**
	Tails		N/A
	Unsecured blocks		N/A
20.7 (4.7)	**Terminals and supply connections**		**N/A**
20.7 (4.7.1)	Contact to metal parts		N/A
20.7 (4.7.2)	Test 8 mm live conductor		N/A
	Test 8 mm earth conductor		N/A
20.7 (4.7.3)	Terminals for supply conductors		N/A
20.7 (4.7.3.1)	Welded method and material		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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
20.7 (4.7.4)	Terminals other than supply connection		P
20.7 (4.7.5)	Heat-resistant wiring/sleeves		N/A
20.7 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
20.7 (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
20.7 (4.9)	**Insulating lining and sleeves**		N/A
20.7 (4.9.1)	Retainment		N/A
	Method of fixing.....:		N/A
20.7 (4.9.2)	Insulated linings and sleeves:		N/A
	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
20.7 (4.10)	**Double or reinforced insulation**		**P**
20.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		P
	Safe installation fixed luminaires		P
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
20.7 (4.10.2)	Assembly gaps:		P
	- not coincidental		P
	- no straight access with test probe		P

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Clause	Requirement + Test	Result - Remark	Verdict
20.7 (4.10.3)	Retainment of insulation:		P
	- fixed		P
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
20.7 (4.10.4)	Protective impedance device		N/A
	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
20.7 (4.11)	**Electrical connections and current-carrying parts**		**P**
20.7 (4.11.1)	Contact pressure		N/A
20.7 (4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread- cutting screws		N/A
20.7 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
20.7 (4.11.4)	Material of current-carrying parts		P
20.7 (4.11.5)	No contact to wood or mounting surface		P
20.7 (4.11.6)	Electro-mechanical contact systems		N/A
20.7 (4.12)	**Screws and connections (mechanical) and glands**		N/A
20.7 (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

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Clause	Requirement + Test	Result - Remark	Verdict
20.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
20.7 (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
20.7 (4.12.5)	Screwed glands; force (Nm)..... :		N/A
20.7 (4.13)	**Mechanical strength**		P
20.7 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm)..... :		N/A
	- other parts; energy (Nm)..... :	0.35Nm	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P
20.7 (4.13.2)	Metal parts have adequate mechanical strength		N/A
20.7 (4.13.3)	Straight test finger		P
20.7 (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
20.7 (4.13.6)	Tumbling barrel		N/A
20.7 (4.14)	**Suspensions, fixings and means of adjusting**		**P**
20.7 (4.14.1)	Mechanical load:		P
	A) four times the weight		P
	B) torque 2,5 Nm		N/A
	C) bracket arm; bending moment (Nm)..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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
20.7 (4.14.2)	Load to flexible cables		N/A
	Mass (kg) ..... :		—
	Stress in conductors (N/mm²) .....:		N/A
	Mass (kg) of semi-luminaire .....:		N/A
	Bending moment (Nm) of semi-luminaire .....:		N/A
20.7 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles..... :		N/A
	- strands broken..... :		N/A
	- electric strength test afterwards		N/A
20.7 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
20.7 (4.14.5)	Guide pulleys		N/A
20.7 (4.14.6)	Strain on socket-outlets		N/A
20.7 (4.15)	**Flammable materials**		**P**
	- glow- wire test 650°C..... :	See Test Table 20.16 (13.3.2)	P
	- spacing ≥30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		P
	- thermal protection		N/A
	- electronic circuits exempted		N/A
20.7 (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
20.7 (4.16)	**Luminaires for mounting on normally flammable surfaces**		**P**
	No lamp control gear.....:	(compliance with Section 12)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		N/A
20.7 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
20.7 (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
20.7 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
20.7 (4.17)	**Drain holes**		**N/A**
	Clearance at least 5 mm		N/A
20.7 (4.18)	**Resistance to corrosion**		**N/A**
20.7 (4.18.1)	- rust- resistance		N/A
20.7 (4.18.2)	- season cracking in copper		N/A
20.7 (4.18.3)	- corrosion of aluminium		N/A
20.7 (4.19)	Ignitors compatible with ballast		N/A
20.7 (4.20)	Rough service vibration		N/A
20.7 (4.21)	**Protective shield**		**N/A**
20.7 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
20.7 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
20.7 (4.21.3)	No direct path		N/A
20.7 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment.....:	See Test Table 20.16 (13.3.2)	N/A
20.7 (4.22)	Attachments to lamps not cause overheating or damage		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
20.7 (4.23)	Semi-luminaires comply Class II		N/A
20.7 (4.24)	**Photobiological hazards**		**P**
20.7 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
20.7 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778 .....:	RG0	—
	Luminaires with E_{thr} :		N/A
	a) Fixed luminaires		N/A
	- 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
20.7 (4.25)	**Mechanical hazard**		**P**
	No sharp point or edges		P
20.7 (4.26)	**Short-circuit protection**		**N/A**
20.7 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N/A
20.7 (4.26.2)	Short-circuit test with test chain according 4.26.3		N/A
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
20.7 (4.27)	**Terminal blocks with integrated screwless earthing contacts**		**N/A**
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A
	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
20.7 (4.28)	**Fixing of thermal sensing control**		**N/A**
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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
20.7 (4.29)	**Luminaires with non-replaceable light source**		**P**
	Not possible to replace light source		P
	Live part not accessible after parts have been opened by hand or tools		P
20.7 (4.30)	**Luminaires with non-user replaceable light source**		**N/A**
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N/A
	Minimum two fixing means		N/A
20.7 (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
20.7 (4.31.1)	SELV circuits		N/A
	Used SELV source		N/A
	Voltage ≤ ELV		N/A
	Insulating of SELV circuits from LV supply		N/A
	Insulating of SELV circuits from other non SELV circuits		N/A
	Insulating of SELV circuits from FELV		N/A
	Insulating of SELV circuits from other SELV circuits		N/A
	SELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to enter 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

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Clause	Requirement + Test	Result - Remark	Verdict
20.7 (4.31.2)	FELV circuits		N/A
	Used FELV source		N/A
	Voltage ≤ 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 enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Socket-outlets does not have protective conductor contact		N/A
20.7 (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/A
	- conductive parts are connected together		N/A
	- test according 7.2.3		N/A
	- 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
20.7 (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
20.7.2 (-)	**Lampholders**		N/A
	Tested as part of the lighting chain if non-standardised lampholders		N/A
	E5, E10, E14 and E27 according IEC 60238		N/A
	Bayonet according IEC 61184		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Insulating piercing terminals only if SELV circuit or permanent non-rewireable connections in class II chain		N/A
	Maximum voltage used for E5, E10 and small lampholders		N/A
	Body of insulating material		N/A
20.7.3 (-)	**Terminal blocks**		N/A
	Clause 4.6 of IEC 60598-1 referring to terminal blocks does not apply		—
20.7.4 (-)	**Terminals and supply connections**		N/A
	Comply with Annex A		N/A
20.7.5 (-)	**Gaskets**		P
	Gasket weather resistant if outdoor use		P
	Gasket remains in place and fit tightly		P
20.7.6 (-)	**Mechanical strength**		N/A
	Mechanical strength requirements of 4.13 of part 1 or 15 of IEC 61184		N/A
	Accessories comply with 4.13.6 of part 1		N/A
20.7.7 (-)	**Lamp bridging devices**		N/A
	Protection against electric shock and fire will not be impaired by bridging lamp filaments		N/A
20.7.8 (-)	**Control units**		P
	Forming an integral part enclosed in non-flammable insulating material tested according 20.16		P
	Securely fixed to the cable		P
	Electronic control device complies with IEC 61347-2-11		P
	LED driver complies with IEC 61347-2-13		N/A
20.7.9 (-)	**Lamp rotation**		N/A
	Bulb and lamp cap of push-in lamps will not rotate with a torque of 0,025 Nm		N/A
20.7.10 (-)	**Lamp insertion/withdrawal force**		N/A
	Pull force up to 3 N for push-in lamps		N/A
	Push-in force up to 3 N for push-in lamps		N/A
	Pull out force of between 3 N and 10 N for push-in lamps		N/A
20.7.11 (-)	**Lamp mechanical requirements**		N/A
	Impact test of 0,2 Nm on lamps of Class II chain:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- non-removable lamps		N/A
	- non-standardized lamps		N/A
20.8 (11)	**CREEPAGE DISTANCES AND CLEARANCES**		P
20.8 (11.2.1)	Impulse withstand category (Normal category II)	Category II ☒ Category III ☐	—
	Category III according Annex U		N/A
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N/A
20.8 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 20.8 (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 20.8 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 20.8 (11.2) II	N/A
20.8 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 20.8 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with U_P	See Test Table 20.8 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 20.8 (11.2) II	N/A
20.10 (14)	**SCREW TERMINALS**		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the luminaire	(see Annex 3)	N/A
20.10 (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
20.11 (5)	**EXTERNAL AND INTERNAL WIRING**		P
20.11 (5.2)	**Supply connection and external wiring**		**P**
20.11 (5.2.1)	Means of connection.....:	Power lead cord	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment		N/A
20.11 (5.2.2)	Type of cable.....:		P
	Nominal cross-sectional area (mm²)..... :		P
	Cables equal to IEC 60227 or IEC 60245		P
20.11 (5.2.3)	Type of attachment, X, Y or Z	Type Y	P
20.11 (5.2.5)	Type Z not connected to screws		N/A
20.11 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
20.11 (5.2.7)	Cable entries through rigid material have rounded edges		P
20.11 (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
20.11 (5.2.9)	Locking of screwed bushings		N/A
20.11 (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
20.11 (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

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Clause	Requirement + Test	Result - Remark	Verdict
	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
20.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N/A
20.11 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N)..... :	60N	P
	- torque test: torque (Nm)..... :	0.15Nm	P
	- displacement ≤ 2 mm	1.5mm	P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
20.11 (5.2.11)	External wiring passing into luminaire		P
20.11 (5.2.12)	Looping-in terminals		N/A
20.11 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		P
20.11 (5.2.14)	Mains plug same protection		P
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
20.11 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector according relevant IEC standard		N/A
20.11 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
20.11 (5.2.18)	Used plug in accordance with		P
	- IEC 60083		P
	- other standard		P
20.11 (5.3)	**Internal wiring**		**P**

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Clause	Requirement + Test	Result - Remark	Verdict
20.11 (5.3.1)	Internal wiring of suitable size and type		P
	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 earth only		N/A
20.11 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm²)		N/A
	Insulation thickness (mm)		N/A
	Extra insulation added where necessary		N/A
20.11 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Adequate cross-sectional area and insulation thickness		N/A
	Current limit rating according proven characteristics		N/A
20.11 (5.3.1.3)	Double or reinforced insulation for class II		P
20.11 (5.3.1.4)	Conductors without insulation		N/A
20.11 (5.3.1.5)	SELV current-carrying parts		N/A
20.11 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
20.11 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		P
20.11 (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

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Clause	Requirement + Test	Result - Remark	Verdict
20.11 (5.3.4)	Joints and junctions effectively insulated		N/A
20.11 (5.3.5)	Strain on internal wiring		P
20.11 (5.3.6)	Wire carriers		N/A
20.11 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
20.11 (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
20.11.2 (-)	**Cables for lighting chains**		P
	Type of cable.....:		P
	Cables not lighter than IEC 60227 or IEC 60245 for class II chain		P
	Cables not lighter than insulation according to 5.3.1 of part 1 for class III chain		N/A
	Nominal cross-sectional area (mm²)..... :		P
	Mechanical properties according 4.14.1 and 4.14.2 of part 1		P
20.11.3 (-)	**Cord anchorage test**		N/A
	Pull test 30 N 25 times on single-core cable		N/A
20.11.4 (-)	**Plugs and cable length**		P
	Splash-proof plug or permanent connection if for outdoor use		P
	Length of the cable between the plug and first lamp or lampholder not less than 1,5 m		N/A
20.11.5 (-)	**Maximum length of extendable class II lighting chains**		P
	Maximum length 100 m for 0,5 mm² cable		P
	Maximum length 150 m for 0,75 mm² cable		N/A
20.12 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		P
20.12 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N/A
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		N/A
	Lamp and starterholders 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
20.12 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
20.12 (8.2.3.a)	Class II luminaire:		P
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		N/A
	- glass protective shields not used as supplementary insulation		N/A
20.12 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N/A
20.12 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load (V).....:		N/A
	- no-load 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
	- nominal voltage (V) .....:		N/A
	Class III luminaire only for connection to SELV		N/A
	Class III luminaire not provided with means for protective earthing		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
20.12 (8.2.4)	Portable luminaire has protection independent of supporting surface		N/A
20.12 (8.2.5)	Compliance with the standard test finger or relevant probe		P
20.12 (8.2.6)	Covers reliably secured		P
20.12 (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
20.12.2 (-)	**Divisible plug**		N/A
	Divisible plug in compliance with Figure 1		N/A
	Parts of the connector do not separate with a pull force of 10 N		N/A
20.12.3 (-)	**Electrification of decorations**		N/A
	Test with flat probe		N/A
20.12.4 (-)	**Contact of push-in lampholders**		N/A
	Lampholder contacts in push-in lampholders is reliably secured		N/A
	Contacts move maximum 0,8 mm during the endurance test		N/A
20.12.5 (-)	**Blanking plugs**		N/A
	Blanking plugs provided if chain designed to be used without lamp in every lampholder		N/A
20.13 (12)	**ENDURANCE TEST AND THERMAL TEST**		P
20.13 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 20.14		—
20.13 (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)	—
20.13 (12.3)	**Endurance test** This section was tested by the laboratory with relevant qualifications (Refer to the report No. HK201023422-SR)		**P**
	a) mounting- position .....:	As in normal use	—
	b) test temperature (°C).....:	25+10℃	—

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Clause	Requirement + Test	Result - Remark	Verdict
	c) total duration (h) ..... :	240h	—
	d) supply voltage (V)..... :	1.1x220V~	—
	d) if not equipped with controlgear, constant voltage/current (V) or (A) .....:		—
	e) luminaire ceases to operate		—
20.13 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P
20.13 (12.4)	**Thermal test (normal operation)**	(see Annex 2)	**P**
20.13 (12.5)	**Thermal test (abnormal operation)**	(see Annex 2)	**N/A**
20.13 (12.6)	**Thermal test (failed lamp control gear condition):**		**N/A**
20.13 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A) ..... :		—
	- case of abnormal conditions.....:		—
	- electronic lamp control gear		N/A
	- 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
20.13 (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
20.13 (12.7)	**Thermal test (failed lamp control gear in plastic luminaires):**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
20.13 (12.7.1)	Luminaire without temperature sensing control		N/A
20.13 (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 20.16 (13.2.1)	N/A
20.13 (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 20.16 (13.2.1)	N/A
20.13 (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
20.13 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link.....:	Yes ☐ No ☐	—
	- manual reset cut-out.....:	Yes ☐ No ☐	—
	- auto reset cut-out..... :	Yes ☐ No ☐	—

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Clause	Requirement + Test	Result - Remark	Verdict
	- case of abnormal conditions.....:		—
	- highest measured temperature of fixing point/ exposed part (°C):..... :		—
	Ball-pressure test:.....:	See Test Table 20.16 (13.2.1)	N/A
20.13.2 (-)	**Test voltage**		N/A
	Provision of 12.3.1 d) of part 1 and if class III chain 1,1 x rated voltage of transformer/convertor		—
	Provision of 12.4.1 d) of part 1 and if class III chain 1,06 x rated voltage of transformer/convertor		—
20.13.3 (-)	**Lamp bridging devices**		N/A
	Lamp bridging not cause temperature which impair safety		N/A
	Temperature of lampholders and cables not exceed values in Table 12.1 when bridging device operate successively on each lamp		N/A
20.13.4 (-)	**Short-circuit test of rectifier**		N/A
	No emission of flames or molten material or production of flammable gases and no live parts accessible when short-circuit output of the rectifier		N/A
20.14 (9)	**RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE**		P
20.14.1 (-)	If IP > IP 20 the order of tests as specified in clause 20.13		P
20.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP..... :	IP 65	—
	- mounting position during test.....:	Normal use	—
	- fixing screws tightened; torque (Nm).....:		—
	- tests according to clauses.....:		—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		P
	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		N/A
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight or pressure watertight luminaire		P
	e) no contact with live parts (IP 2X)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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		P
	g) no damage of protective shield or glass envelope		P
20.14 (9.3)	Humidity test 48 h	25°C; 93%R.H.; 48h	P

20.15 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		P
20.15 (-)	Metal foil procedure		—
20.15 (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		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		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/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
20.15 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Luminaires with manual ignitors		N/A
	Test voltage (V)....:		N/A
	SELV		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		P
	- between live parts of different polarity....:	1440V	P
	- between live parts and mounting surface....:	2880V	P
	- between live parts and metal parts....:	2880V	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....:		N/A
	- Insulation bushings as described in Section 5 ....:		N/A
20.15 (10.3)	Touch current or protective conductor current (mA).:	0.053mA	P

20.16 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		P
20.16 (13.2.1)	Ball-pressure test....:	See Test Table 20.16 (13.2.1)	P
20.16 (13.3.1)	Needle-flame test (10 s)....:	See Test Table 20.16 (13.3.1)	P
20.16 (13.3.2)	Glow-wire test (650°C)....:	See Test Table 20.16 (13.3.2)	P
20.16 (13.4)	Proof tracking test (IEC 60112)....:	See Test Table 20.16 (13.4)	N/A
20.16 (-)	Edison lampholders according cl. 20 of IEC 60238		N/A
20.16 (-)	Bayonet lampholders according cl. 19 of IEC 61184		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

20.8 (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	>3	1.50	11.1.B*	>3	2.50	11.1.A*	
Working voltage (V)..... :					220V~			—
PTI..... :					< 600 ☒ ≥ 600 ☐			—
Pulse voltage or U_P if applicable (kV) ..... :					-			—
Supplementary information: live parts of different polarity								
Distance 2:	S	>6	2.50	11.1.B*	>6	5.0	11.1.A*	
Working voltage (V)..... :					220V~			—
PTI..... :					< 600 ☒ ≥ 600 ☐			—
Pulse voltage or U_P if applicable (kV) ..... :					-			—
Supplementary information: Current-carrying parts and accessible parts								
Distance 3:								
Working voltage (V)..... :								—
PTI..... :					< 600 ☐ ≥ 600 ☐			—
Pulse voltage or U_P if applicable (kV) ..... :								—
Supplementary information:								

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

20.8 (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:							
Working voltage (V)..... :							—
Frequency if applicable (kHz)..... :							—
PTI..... :					< 600 ☐ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :							—
Supplementary information:							

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Clause	Requirement + Test	Result - Remark	Verdict

Distance 2:							
Working voltage (V)..... :							—
Frequency if applicable (kHz)..... :							—
PTI..... :	< 600 ☐ ≥ 600 ☐						—
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 ☐ ≥ 600 ☐						—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :							—
Supplementary information:							

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

20.16 (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)
AC connect	-	125	1.3
LED PCB	-	125	0.9
LED cover	-	75	0.9
Supplementary information:			

1.15 (13.3.1)	**TABLE: Needle-flame test (IEC 60695-11-5)**				**P**
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
AC connect	-	10	No	0	PASS
LED PCB	-	10	No	0	PASS
Supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict

20.16 (13.3.2)	**TABLE: Glow-wire test (IEC 60695-2-11)**				**P**
Glow wire temperature .....:		650°C			—
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (tb) (s)		Verdict
LED cover	-	No	0s		PASS
Supplementary information:					

20.16 (13.4)	**TABLE: Proof tracking test (IEC 60112)**				**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

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	Various	H03VVH2-F	2×0.75mm^2 300/300V	EN 50525-2-21	Test with appliance
LED	B	Various	Various	220V, 100×10MM 2835-12LED CLX	IEC TR 62778	Test with appliance
LED PCB	B	Various	Various	V-0	EN IEC 62598-1 EN 60598-2-20	Test with appliance

Supplementary information:

[1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.

The codes above have the following meaning:

A - The component is replaceable with another one, also certified, with equivalent characteristics

B - The component is replaceable if authorised by the test house

C - Integrated component tested together with the appliance

D - Alternative component

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Thermal tests of Section 12		P
	Type reference.....:	LT-2835WW120R-AC220	—
	Lamp used.....:	LED module	—
	Lamp control gear used.....:	-	—
	Mounting position of luminaire.....:	Normal use	—
	Supply wattage (W).....:	-	—
	Supply current (A)..... :	-	—
	Calculated power factor.....:	-	
	Temperatures in test 1 - 4 below are corrected for ta (°C) .....:	25°C	—
	- abnormal operating mode.....:	-	—
1.12 (12.4)	- test 1: rated voltage .....:	-	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current .....:	1.06x220V~	—
	- 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
Input wire	25.1	-	28.7	-	80	-	-
AC connect	25.1	-	31.5	-	Ref.	-	-
LED	25.1	-	34.8	-	Ref.	-	-
LED PCB	25.1	-	33.6	-	Ref.	-	-
Mounting surface	25.1	-	31.4	-	90	-	-
Lighting object(0.1m)	25.1	-	29.2	-	90	-	-

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

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 (mm²).....:		—
(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
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 10th alt. 25th cycle (4 samples).....:		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples)..... :		N/A
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		N/A
	Terminal size and rating		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

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 10th alt. 25th cycle									
	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									
	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									
	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									
	Max. allowed voltage drop (mV).....:									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
Supplementary information:										

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Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 660598-20
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
Luminaires
Part 2: Particular Requirements
Section 20: Lighting chains

Differences according to.....:	EN 60598-2-20:2015 used in conjunction with EN IEC 60598-1:2021
Attachment Form No..... :	EU_GD_IEC60598_2_20E
Attachment Originator.....:	UNI
Master Attachment.....:	2016-10

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	CENELEC COMMON MODIFICATIONS (EN)		N/A
20.6 (3)	**MARKING**		N/A
20.6 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package		N/A
20.7 (4)	**CONSTRUCTION**		N/A
20.7 (4.11.6)	Electro-mechanical contact systems		N/A
20.11 (5)	**EXTERNAL AND INTERNAL WIRING**		N/A
20.11 (5.2.1)	Connecting leads		N/A
	- without a means for connection to the supply		N/A
	- terminal block specified		N/A
	- relevant information provided		N/A
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1		N/A
20.11 (5.2.2)	Cables equal to EN 50525		N/A
	Replace table 5.1 – Supply cord		N/A
20.13 (12)	**ENDURANCE TEST AND THERMAL TEST**		N/A
20.13 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		N/A

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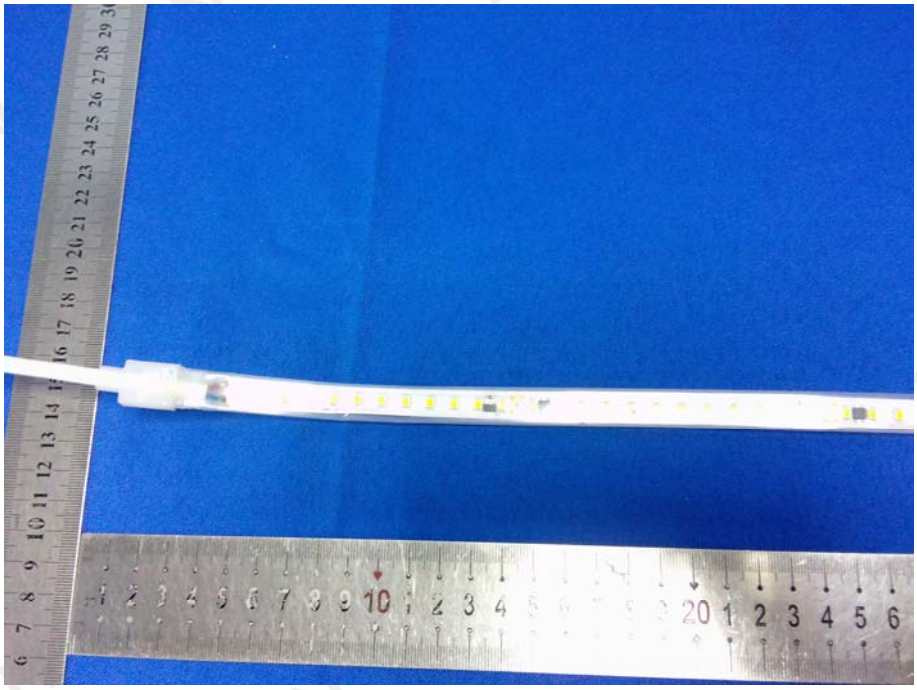
Clause	Requirement + Test	Result - Remark	Verdict

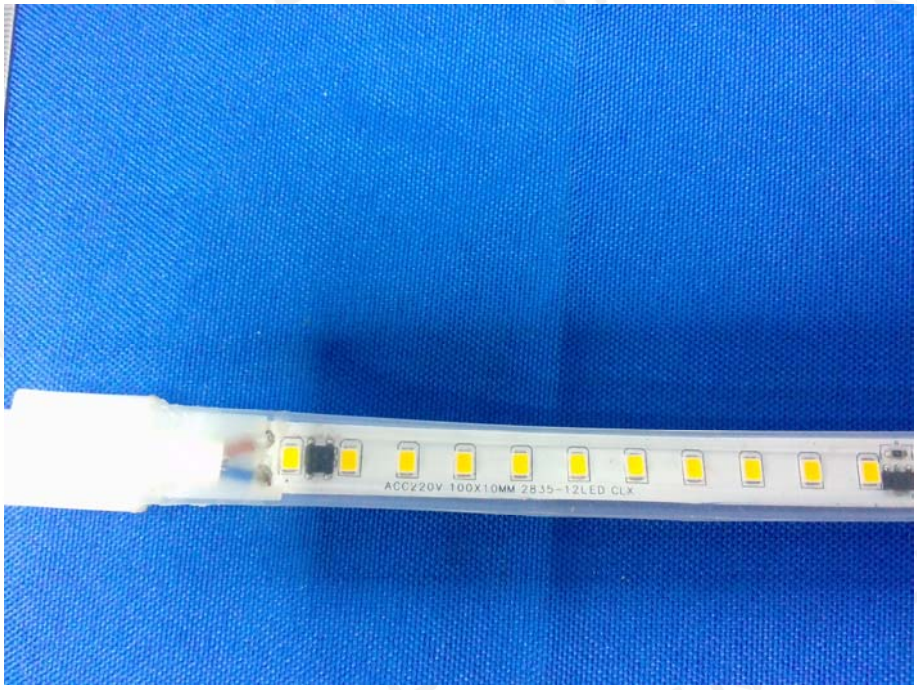
ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		N/A
(3.3)	DK: power supply cords of class I luminaires with label		N/A
(4.5.1)	DK: socket- outlets		N/A
(5.2.1)	CY, DK, FI, GB: type of plug		N/A

ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		N/A
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N/A
	GB: Requirements according to United Kingdom Building Regulation		N/A

Photo documentation	P

Photo documentation	P





End of report