

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

Report Number: EFSH16081318-IE-01-L01

Date of issue: 2016-11-23

Total number of pages..... 56 pages

Name of Testing Laboratory preparing the Report.....: Eurofins Product Testing Service (Shanghai) Co., Ltd.
No. 395 West Jiangchang Road, Jing'an District, Shanghai, China

Applicant's name.....: Taizhou City Yasheng Lamps Co., Ltd.

Address: Shaojia Industrial Zone, Lu'nan Street, Luqiao District, Taizhou City, Zhejiang Province, China.

Test specification:

Standard: IEC 60598-2-20:2014 (Fourth Edition) used in conjunction with IEC 60598-1:2014 (Eighth Edition)
 EN 60598-2-20:2015 used in conjunction with EN 60598-1:2015

Test procedure: GS approval + CE-LVD

Non-standard test method.....: N/A

Test Report Form No.....: IEC60598_2_20E

Test Report Form(s) Originator.....: Intertek Semko AB

Master TRF.....: 2015-06

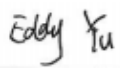
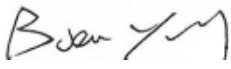
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Test item description :	LED Lighting Chain
Trade Mark :	BEST X MAS
Manufacturer	Same as applicant
Model/Type reference	YS-601W (75 LEDS WHITE, CASCADE TYPE) YS-601ML (75 LEDS MULTICOLORS, CASCADE TYPE) YS-702W (100 LEDS WHITE, RED TYPE) YS-702ML (100 LEDS MULTICOLORS, TYPE RED) YS-311-100L-ML (100 LEDS MULTICOLORS) YS-311-100L-W (100 LEDS WHITE) YS-311-100L-MX (100 LEDS VARIOUS COLORS) YS-311-50L-ML (50 LEDS MULTICOLOR) YS-311-50L-W (50 LEDS WHITE) YS-311-200L-ML (200 LEDS MULTICOLOR) YS-311-200L-W (200 LEDS WHITE) YS-592 (20 LEDS SHAPE OF BELL) YS-607 (90 LEDS WHITE, CASCADE TYPE) YS-608 (98 LEDS MULTICOLORS, CASCADE TYPE) “-dd” could be ‘-D’ which means with decorations, or blank means without decorations.
Ratings	110V, 60Hz, Class II, IP20, Max. 24 W

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	Testing Laboratory:	Eurofins Product Testing Service (Shanghai) Co., Ltd.
Testing location/ address		No. 395 West Jiangchang Road, Jing'an District, Shanghai, China
<input type="checkbox"/>	Associated CB Testing Laboratory:	
Testing location/ address		
Tested by (name, function, signature)		Eddy Yu Project Engineer 
Approved by (name, function, signature) ..		Boen Yang Reviewer 
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
Testing location/ address		
Tested by (name + signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) .. :		
<input type="checkbox"/>	Testing procedure: CTF Stage 3:	
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) .. :		
Supervised by (name, function, signature) :		

<p>List of Attachments (including a total number of pages in each attachment):</p> <p>Attachment I: ATTACHMENT TO TEST REPORT IEC 60598-2-20 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES (2 pages)</p> <p>Attachment II: additional requirement for the LED module according to EN 62031:2008 + A1:2013 + A2:2015 (2 pages)</p> <p>Attachment III: additional requirements according to EN 60598-2-4:1997 used in conjunction with EN 60598-1:2015 for the models with motifs(1 page)</p> <p>Photo documentation (11 pages)</p>	
<p>Summary of testing:</p> <p>The products covered by this report have been tested and complies with the applicable requirements of this standard.</p>	
<p>Tests performed (name of test and test clause):</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Clause 20.3 (0) GENERAL TEST REQUIREMENTS <input checked="" type="checkbox"/> Clause 20.5 (2) CLASSIFICATION <input checked="" type="checkbox"/> Clause 20.6 (3) MARKING <input checked="" type="checkbox"/> Clause 20.7 (4) CONSTRUCTION <input checked="" type="checkbox"/> Clause 20.8 (11) CREEPAGE DISTANCES AND CLEARANCES <input type="checkbox"/> Clause 20.10 (14) SCREW TERMINALS <input type="checkbox"/> Clause 20.10 (15) SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS <input checked="" type="checkbox"/> Clause 20.11 (5) EXTERNAL AND INTERNAL WIRING <input checked="" type="checkbox"/> Clause 20.12 (8) PROTECTION AGAINST ELECTRIC SHOCK <input checked="" type="checkbox"/> Clause 20.13 (12) ENDURANCE TEST AND THERMAL TEST <input checked="" type="checkbox"/> Clause 20.14 (9) RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE <input checked="" type="checkbox"/> Clause 20.15 (10) INSULATION RESISTANCE AND ELECTRIC STRENGTH <input checked="" type="checkbox"/> Clause 20.16 (13) RESISTANCE TO HEAT, FIRE AND TRACKING 	<p>Testing location:</p> <p>Eurofins Product Testing Service (Shanghai) Co., Ltd. No. 395 West Jiangchang Road, Jing'an District, Shanghai, China</p>
<p>Summary of compliance with National Differences:</p> <p>List of countries addressed</p> <p>Group Difference</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> The product fulfils the requirements of EN 60598-2-20:2015 used in conjunction with EN 60598-1:2015. 	

Test item particulars	LED lighting chain
Classification of installation and use	Portable luminaire for indoor use only
Supply Connection	Plug with non-detachable 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	2016-08-15
Date (s) of performance of tests	2016-08-15 to 2016-09-24
General remarks:	
<p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator. Determination of the test results includes consideration of measurement uncertainty from the test equipment and methods. The related applicable CTL & OSM decisions have been considered and the requirements found fulfilled. The related applicable EK decisions (including EK1 604-15e Rev1) have been considered and the requirements found fulfilled. Clause numbers between brackets refer to clauses in IEC 60598-1.</p>	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60598-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : Same as the applicant	
YS-601W (75 LEDS WHITE, CASCADE TYPE) YS-601ML (75 LEDS MULTICOLORS, CASCADE TYPE) YS-702W (100 LEDS WHITE, RED TYPE) YS-702ML (100 LEDS MULTICOLORS, TYPE RED) YS-311-100L-ML (100 LEDS MULTICOLORS) YS-311-100L-W (100 LEDS WHITE) YS-311-100L-MX (100 LEDS VARIOUS COLORS) YS-311-50L-ML (50 LEDS MULTICOLOR) YS-311-50L-W (50 LEDS WHITE) YS-311-200L-ML (200 LEDS MULTICOLOR) YS-311-200L-W (200 LEDS WHITE) YS-592 (20 LEDS SHAPE OF BELL) YS-607 (90 LEDS WHITE, CASCADE TYPE) YS-608 (98 LEDS MULTICOLORS, CASCADE TYPE)	

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
20.4 (0)	GENERAL TEST REQUIREMENTS		P
20.4 (0.1)	Information for luminaire design considered	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Lamp standard:	—
20.4 (0.3)	More sections applicable	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Section/s:	—

20.5 (2)	CLASSIFICATION		P
20.5 (2.2)	Type of protection	Class II	P
20.5 (2.3)	Degree of protection	IP20	P
20.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
20.5 (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"/>	—
20.5.2 (-)	Class II or Class III	Class II	P
20.5.3 (-)	Chain for outdoor use shall be IP44 or higher		N/A

20.6 (3)	MARKING		P
20.6 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
20.6 (3.3)	Additional information		P
	Language of instructions	English and Spanish	P
20.6 (3.3.1)	Combination luminaires		N/A
20.6 (3.3.2)	Nominal frequency in Hz	Refer to the marking plate	P
20.6 (3.3.3)	Operating temperature		N/A
20.6 (3.3.4)	Symbol or warning notice		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		N/A
20.6 (3.3.10)	Suitability for use indoors	Refer to the marking plate	P
20.6 (3.3.11)	Luminaires with remote control		N/A

IEC 60598-2-20			
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	Refer to the marking plate	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 Z	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	Non replaceable	P
	Cautionary symbol		N/A
20.6 (3.3.22)	Controllable luminaires, classification of insulation provided		P
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	Refer to the marking plate	P
	Durable non-removable label if information on the cable		P
20.6.3 (-)	Lighting chain and packing marking		P
	Marking if only for indoor use	Refer to the marking plate	P
20.6.4 (-)	Marking on the packing or instructions		P
	Marking a) – l)	Refer to the marking plate	P
20.7 (4)	CONSTRUCTION		P
20.7 (4.2)	Components replaceable without difficulty		N/A

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
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		P
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
	- stranded or solid conductor		N/A

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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 15.6.2.3 and 15.6.2.4		N/A
20.7 (4.7.4)	Terminals other than supply connection		N/A
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		P
20.7 (4.9.1)	Retainment		P
	Method of fixing : Heat shrinkable tube		P
20.7 (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		P
	b) Ageing test. Temperature (°C) : 52°C		P
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		N/A
	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

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
20.7 (4.10.3)	Retention of insulation:		P
	- fixed		P
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		P
	- lining in lampholder		N/A
20.7 (4.11)	Electrical connections and current-carrying parts		P
20.7 (4.11.1)	Contact pressure		P
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
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

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
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) :	LED bulb: 0,2Nm	P
	- other parts; energy (Nm) :	Rectifier enclosure: 0,5Nm	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P
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		N/A
20.7 (4.14.1)	Mechanical load:		N/A
	A) four times the weight		N/A
	B) torque 2,5 Nm		N/A
	C) bracket arm; bending moment (Nm)..... :		N/A
	D) load track-mounted luminaires		N/A
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) :		N/A
	Metal rod. diameter (mm) :		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
20.7 (4.14.2)	Load to flexible cables		N/A
	Mass (kg) :		—

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
	Stress in conductors (N/mm ²)		N/A
	Mass (kg) of semi-luminaire		N/A
	Bending moment (Nm) of semi-luminaire		N/A
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		P
	a) construction		P
	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
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

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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)	Igniters 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
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
	Luminaires with E_{thr} :		P
	a) Fixed luminaires		N/A
	- distance x m, borderline between RG1 and RG2 .. :		N/A
	- marking and instruction according 3.2.23		N/A

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
	b) Portable and handheld luminaires	Test report provided	P
	- 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
	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

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
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 \leq 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
20.7 (4.31.2)	FELV circuits		N/A
	Used FELV source		N/A
	Voltage \leq ELV		N/A
	Insulating of FELV circuits from LV supply		N/A
	FELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
	Socket-outlets does not have protective conductor contact		N/A
20.7 (4.31.3)	Other circuits		N/A
	Other circuits insulated from accessible parts according Table X.1		N/A
	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
	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		N/A

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
	Gasket weather resistant if outdoor use		N/A
	Gasket remains in place and fit tightly		N/A
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 comply with IEC 61347-2-11	Replaced by 20.13.4	P
	LED driver comply 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		P
	Pull force up to 3 N for push-in lamps	10N for non-replaceable lamp, Pass	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		P
	Impact test of 0,2 Nm on lamps of Class II chain:		P
	- non-removable lamps		P
	- non-standardized lamps		N/A

20.8 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
20.8 (11.2)	Creepage distances and clearances..... :	See Table 20.8 (11.2)	P
	Working voltage (V)..... :	110V	—
	Rated pulse voltage (kV)..... :	2,5	—
	Voltage form..... :	Sinusoidal <input checked="" type="checkbox"/> Non-sinusoidal <input type="checkbox"/>	—
	PTI..... :	< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>	—

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II <input checked="" type="checkbox"/> Category III <input type="checkbox"/>	—
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	Plug with non-detachable cord	P
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment		N/A
20.11 (5.2.2)	Type of cable	H03VH7-H	P
	Nominal cross-sectional area (mm ²)	1 x 0,5mm ²	P
	Cables equal to IEC 60227 or IEC 60245		P
20.11 (5.2.3)	Type of attachment, X, Y or Z	Type Z	P
20.11 (5.2.5)	Type Z not connected to screws		P
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

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
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
	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	Type Z	P
20.11 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		N/A
	- pull test: 25 times; pull (N) :	Replaced by 20.11.3	P
	- torque test: torque (Nm) :		N/A
	- displacement ≤ 2 mm		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		N/A
20.11 (5.2.12)	Looping-in terminals		N/A
20.11 (5.2.13)	Wire ends not tinned		P

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
	Wire ends tinned: no cold flow		N/A
20.11 (5.2.14)	Mains plug same protection		P
	Class III luminaire plug		N/A
	No unsafe compatibility		P
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		N/A
	- other standard	EN 50075	P
20.11 (5.3)	Internal wiring		P
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 (mm ²)		N/A
	Insulation thickness		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
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

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
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
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		P
	Wire ends tinned: no cold flow		N/A
20.11.2 (-)	Cables for lighting chains		P
	Type of cable	H03VH7-H	P
	Cables not lighter than IEC 60227 or IEC 60245 for class II chain		N/A
	Cables not lighter than insulation according to 5.3.1 of part 1 for class III chain		N/A
	Nominal cross-sectional area (mm ²)	1x0,5mm ²	P
	Mechanical properties according 4.14.1 and 4.14.2 of part 1		N/A
20.11.3 (-)	Cord anchorage test		P
	Pull test 30 N 25 times on single-core cable		P
20.11.4 (-)	Plugs and cable length		P

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
	Splash-proof plug or permanent connection if for outdoor use		N/A
	Length of the cable between the plug and first lamp or lampholder not less than 1,5 m		P
20.11.5 (-)	Maximum length of extendable class II lighting chains		N/A
	Maximum length 100 m for 0,5 mm ² cable		N/A
	Maximum length 150 m for 0,75 mm ² 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
	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		P
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

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
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
	- touch current		N/A
	- no-load voltage.....		N/A
	Other than ordinary luminaire:		N/A
	- nominal voltage		N/A
20.12 (8.2.4)	Portable luminaire have protection independent of supporting surface		P
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)	Discharging of capacitors $\geq 0,5 \mu\text{F}$		N/A
	Portable plug connected luminaire with capacitor		N/A
	Other plug connected luminaire with capacitor		N/A
	Discharge device on or within capacitor		N/A
	Discharge device mounted separately		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		P
	Test with flat probe	No metallic decorations	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

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
20.13 (12)	ENDURANCE TEST AND THERMAL TEST		P
20.13.1 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 20.14		P
20.13 (12.3)	Endurance test:		P
	- mounting-position..... :	Normal Position	—
	- test temperature (°C)	35°C	—
	- total duration (h)	240h	—
	- supply voltage: Un factor; calculated voltage (V).... :	264V	—
	- lamp used..... :	LED	—
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)	P
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

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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
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 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 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

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
20.13 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link..... : Yes <input type="checkbox"/> No <input type="checkbox"/>		—
	- manual reset cut-out : Yes <input type="checkbox"/> No <input type="checkbox"/>		—
	- auto reset cut-out : Yes <input type="checkbox"/> No <input type="checkbox"/>		—
	- case of abnormal conditions :		—
	- highest measured temperature of fixing point/ exposed part (°C): :		—
	Ball-pressure test: :	See 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		P
	No emission of flames or molten material or production of flammable gases and no live parts accessible when short-circuit output of the rectifier		P
20.14 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
20.14 (-)	If IP > IP 20 the order of tests as specified in clause 20.13		—
20.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP..... : IP20		—
	- mounting position during test..... : Normal		—
	- fixing screws tightened; torque (Nm) : N/A		—
	- tests according to clauses..... : 9.2.0		—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		N/A
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		N/A

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
	d) i) For luminaires without drain holes – no water entry		N/A
	d) ii) For luminaires with drain holes – no hazardous water entry		N/A
	e) no water in watertight luminaire		N/A
	f) no contact with live parts (IP 2X)		P
	f) no entry into enclosure (IP 3X and IP 4X)		N/A
	f) no contact with live parts (IP3X and IP4X)		N/A
	g) no trace of water on part of lamp requiring protection from splashing water		N/A
	h) no damage of protective shield or glass envelope		N/A
20.14 (9.3)	Humidity test 48 h		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	By metal foil	—
	Insulation resistance (MΩ)	See below	—
	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	10 MΩ	P
	- between live parts and mounting surface	1999 MΩ	P
	- between live parts and metal parts	1999 MΩ	P
	- between live parts of different polarity through action of a switch..... :		N/A

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :	1999 MΩ	P
	- 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
	Luminaires with manual ignitors		N/A
	Test voltage (V) :		P
	SELV		N/A
	- between current-carrying parts of different polarity :	See below	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 :	1480V	P
	- between live parts and mounting surface :	2960V	P
	- between live parts and metal parts :	2960V	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..... :	2960V	P
	- Insulation bushings as described in Section 5 :		N/A
20.15 (10.3)	Touch current or protective conductor current (mA) :	Max.0,06	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

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
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

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict

20.8 (11.2)	TABLES: Creepage distances and clearances						P
Table 11.1	Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages						P
RMS working voltage (V) not exceeding	50	150	250	500	750	1000	
Creepage distances							
Required basic insulation, PTI \geq 600	0,6	0,8	1,5	3	4	5,5	
Measured	-	-	-	-	-	-	
Required basic insulation, PTI $<$ 600	1,2	1,6	2,5	5	8	10	
Measured	-	-	3,0	-	-	-	
Required supplementary insulation PTI \geq 600	-	0,8	1,5	3	4	5,5	
Measured	-	-	-	-	-	-	
Required supplementary insulation PTI $<$ 600	-	1,6	2,5	5	8	10	
Measured	-	-	3,0	-	-	-	
Required reinforced insulation	-	3,2	5	6	8	11	
Measured	-	-	6,6	-	-	-	
Clearances							
Required basic insulation	0,2	0,8	1,5	3	4	5,5	
Measured	-	-	3,0	-	-	-	
Required supplementary insulation	-	0,8	1,5	3	4	5,5	
Measured	-	-	3,0	-	-	-	
Required reinforced insulation	-	1,6	3	6	8	11	
Measured	-	-	6,6	-	-	-	
Table 11.2	Minimum distances (mm) for non-sinusoidal pulse voltages						N/A
Rated pulse voltage (peak kV)	2,0	2,5	3,0	4,0	5,0	6,0	8,0
Required clearances	1,0	1,5	2	3	4	5,5	8
Measured							
Rated pulse voltage (peak kV)	10	12	15	20	25	30	40
Required clearances	11	14	18	25	33	40	60
Measured							
Rated pulse voltage (peak kV)	50	60	80	100	-	-	-
Required clearances	75	90	130	170	-	-	-
Measured							

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict

20.16 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm)		2 mm	—	
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Rectifier enclosure	Refer to Annex1	125	0,7	
Lamp support	Refer to Annex1	125	0,5	
PCB	Refer to Annex1	125	0,2	
Supplementary information:				

20.16 (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
Rectifier enclosure	Refer to Annex1	10	No	5,6	P
Lamp support	Refer to Annex1	10	No	NI	P
PCB	Refer to Annex1	10	No	5,2	P
Supplementary information:					

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	
Rectifier enclosure	Refer to Annex1	No	NI	P	
Lamp support	Refer to Annex1	No	NI	P	
PCB	Refer to Annex1	No	NI	P	
Decorations	Refer to Annex1	No	NI	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)				No	
Supplementary information:					

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict

20.16 (13.4)	TABLE: Proof tracking test (IEC 60112)			N/A
Test voltage PTI				—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens		Verdict
Supplementary information:				

ANNEX A	Requirements for interconnecting connectors for use in lighting chains			N/A
	This Annex A consist relevant requirements and modifications of IEC 61984			N/A
5.2	Classification according to protection against electric shock			N/A
	Only enclosed connectors			N/A
5.3	Classification according to the style of connector			N/A
	Only free connectors			N/A
5.4	Classification according to additional characteristics of connectors			N/A
	According b), d), e), f), h), and j)			N/A
6.2.1	Identification			N/A
	According a) and b)			N/A
6.4.1	Non accessibility of live parts			N/A
	Test with test finger on class II chain			N/A
6.9.1	Polarisation			N/A
	Improper connection of mating parts is prevented			N/A
	No unsafe compatibility between connectors for class II and class III chains of the same manufacturer			N/A
	Male part of class III chains not make contact in the female contact of low voltage connectors (e.g. IEC 60320)			N/A
	Manufacturer designed connectors, no unsafe compatibility with systems according IEC 60320 and IEC 60906 and national domestic plug and socket-outlet systems in the country where the chain is placed on the market			N/A
6.9.3	Connection of conductors			N/A

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
	Cross sectional area of the contact making part of the interconnecting coupler not less than the corresponding conductor in the interconnected cable		N/A
6.10	Design of a CBC		N/A
	Adequate breaking capacity		N/A
	Female part at the end of the chain, other than ordinary, provided with sealing device securely fixed to the coupler		N/A
6.13	Dielectric strength		N/A
	Test according clause 20.15 of this standard		N/A
6.14.2	Electrical endurance (CBC)		N/A
	Meet the specified breaking capacity		N/A
	Number of cycles 50		—
	Test according 7.3.8		N/A
6.14.3	Bendings (non-rewirable connectors)		N/A
	Meet the specified number of bendings		N/A
	Number of cycles 1000		—
	Test according 7.3.9		N/A
6.17	Cable clamp		N/A
	Test according clause 20.11.3 of this standard		N/A

IEC 60598-2-20			
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⁾	
The test report is only valid in conjunction with the current valid version of the Constructional Data Form (EFSH16081318-IE-01-CDF).							
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							

IEC 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12						P
	Type reference	YS-601W					—
	Lamp used.....	LED					—
	Lamp control gear used.....	Rectifier					—
	Mounting position of luminaire	Normal position					—
	Supply wattage (W)	36,12					—
	Supply current (A)	0,173					—
	Calculated power factor.....	0,821					—
	Table: measured temperatures corrected for $t_a = 25\text{ }^\circ\text{C}$:						P
	- abnormal operating mode	Short circuit the output of rectifier					—
	- test 1: rated voltage.....	N/A					—
	- 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	N/A					—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	1,1 times rated voltage					—
	Through wiring or looping-in wiring loaded by a current of A during the test	N/A					—
Temperature measurements, ($^\circ\text{C}$)							
Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Plug	25	-	27,3	-	-	-	-
Supply cord	25	-	28,5	-	90	-	-
Rectifier enclosure	25	-	31,2	-	75	37,5	75
PCB	25	-	37,1	-	130	37,3	130
Internal wire	25	-	32,4	-	90	-	-
Heat shrinkable tube	25	-	33,6	-	90	-	-
Lamp support	25	-	29,5	-	85	-	-
LED	25	-	28,3	-	-	-	-
Mounting surface	25	-	26,2	-	90	27,6	130
Supplementary information:							

IEC 60598-2-20							
Clause	Requirement + Test				Result - Remark		Verdict
ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12						P
	Type reference	YS-311-100L-ML-W-MX				—	
	Lamp used.....	LED				—	
	Lamp control gear used.....	Controller				—	
	Mounting position of luminaire	Normal position				—	
	Supply wattage (W)	34,96				—	
	Supply current (A)	0,165				—	
	Calculated power factor.....	0,833				—	
	Table: measured temperatures corrected for $t_a = 25\text{ }^\circ\text{C}$:						P
	- abnormal operating mode	Short circuit output of controller				—	
	- test 1: rated voltage.....	N/A				—	
	- 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	N/A				—	
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	1,1 times rated voltage				—	
	Through wiring or looping-in wiring loaded by a current of A during the test	N/A				—	
Temperature measurements, ($^\circ\text{C}$)							
Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Plug	25	-	27,4	-	-	-	-
Supply cord	25	-	28,5	-	90	-	-
Controller enclosure	25	-	39,1	-	75	40,3	75
Controller button	25	-	38,6	-	75	39,2	75
Internal wire	25	-	32,8	-	90	-	-
Heat shrinkable tube	25	-	31,9	-	90	-	-
Lamp support	25	-	29,8	-	85	-	-
LED	25	-	28,3	-	-	-	-
Mounting surface	25	-	27,5	-	90	29,5	130
Supplementary information:							

IEC 60598-2-20			
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 (mm ²)..... :		—
(14.3.3)	Conductor space (mm)..... :		N/A
(14.4)	Mechanical tests		N/A
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread) :	M	N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm) :		N/A
	Torque (Nm) :		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N) :		N/A
(14.4.8)	Without undue damage		N/A

IEC 60598-2-20			
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

IEC 60598-2-20											
Clause	Requirement + Test									Result - Remark	Verdict
	Terminal size and rating										N/A
15.6.2	Mechanical tests										N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N)										N/A
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N)										N/A
(15.6.3)	Electrical tests										N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1										N/A
(15.6.3.1) (15.6.3.2)	TABLE: Contact resistance test / Heating tests										N/A
	Voltage drop (mV) after 1 h										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop of two inseparable joints										N/A
	Voltage drop after 10th alt. 25th cycle										N/A
	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/A
	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/A
	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/A
	Max. allowed voltage drop (mV)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
Supplementary information:											

EN 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment I: ATTACHMENT TO TEST REPORT IEC 60598-2-20 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

ATTACHMENT TO TEST REPORT IEC 60598-2-20 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 60598-1:2015
Annex Form No.....	EU_GD_IEC60598_2_20A
Annex Form Originator	Eurofins
Master Annex Form.....	2016-03

	CENELEC COMMON MODIFICATIONS (EN)	P
20.6 (3)	MARKING	P
20.6 (3.3.101)	Adequate warning on the package	N/A
20.7 (4)	CONSTRUCTION	P
20.6 (4.11.6)	Electro-mechanical contact systems	N/A
20.11 (5)	EXTERNAL AND INTERNAL WIRING	P
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	P
	Replace table 5.1 – Supply cord	P

EN 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
20.13 (12)	ENDURANCE TESTS AND THERMAL TESTS		P
20.13 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		P
ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		P
(3.3)	DK: power supply cord with label		Not check
	IT: warning label on Class 0 luminaire		Not check
(4.5.1)	DK: socket-outlets		Not check
(5.2.1)	CY, DK, FI, SE, GB: type of plug		Not check
ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		P
(4 & 5)	FR: Shuttered socket-outlets 10/16A		Not check
	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:		Not check
	- 850°C for luminaires in stairways and horizontal travel paths		Not check
	- 650°C for indoor luminaires		Not check
	GB: Requirements according to United Kingdom Building Regulation		Not check

EN 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment II: additional requirement for the LED module according to EN 62031:2008 + A1:2013 + A2:2015

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/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P
- (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)	P
	Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3		N/A
- (14.2)	Short-circuit or interruption of semiconductor devices	(see appended table)	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N/A
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	N/A
- (14.5)	After the tests has been carried out on three samples:		P
	The insulation resistance $\geq 1 \text{ M}\Omega$	10 $\text{M}\Omega$	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.6)	Relevant fault condition tests with high-power supply		P
13.2	Overpower condition		P
	Module withstands overpower condition >15 min.		P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		P
	No fire, smoke or flammable gas is produced		P
	Molten material does not ignite tissue paper, spread below the module		P

EN 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
15	CONSTRUCTION		P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P

14	TABLE: tests of fault conditions		P
Part	Simulated fault		Hazard
LED	Short-circuit, appliance worked as normal except the short-circuited LED		NO

EN 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment III: additional requirements according to EN 60598-2-4:1997 used in conjunction with EN 60598-1:2015 for the models with decorations.

4.6.1 (-)	Insulation not damaged when placing on support		P
4.6.2 (-)	Wiring fixed, to avoid rubbing		P
4.6.3 (-)	Stability 6°		P
4.6.4 (-)	Candlestick luminaires with switch		N/A
4.6.5 (-)	E5 lampholders		N/A

Photo documentation:

Photo 1.
Overall view of YS-6001W



Photo 2.
Plug



Photo 3.
Rectifier



Photo 4.
Inside view of rectifier



Photo 5.
PCB

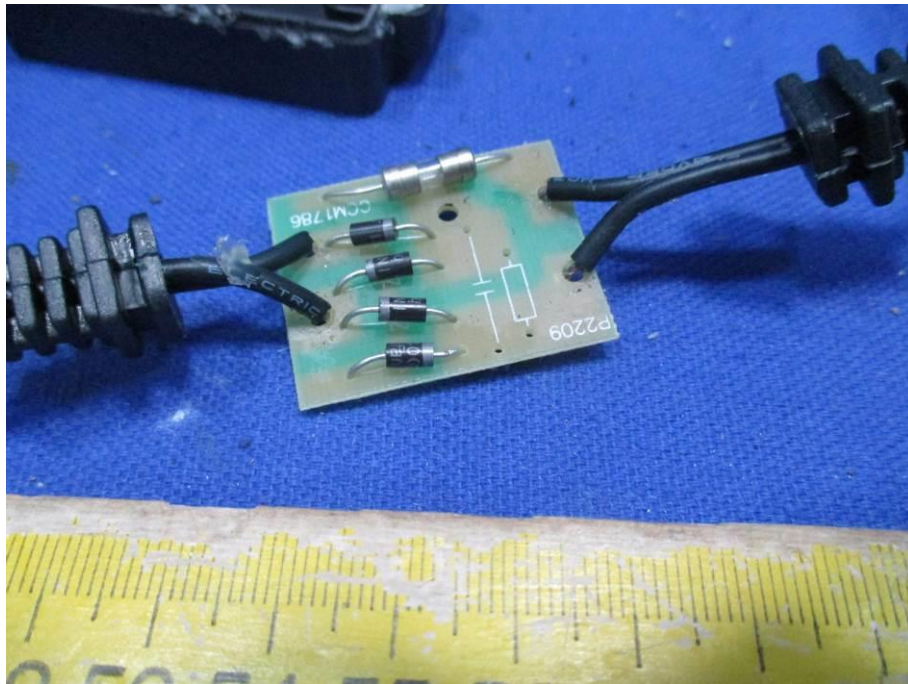


Photo 6.
Lamp view



Photo 7.
LED



Photo 8.
Overall view of YS-601ML



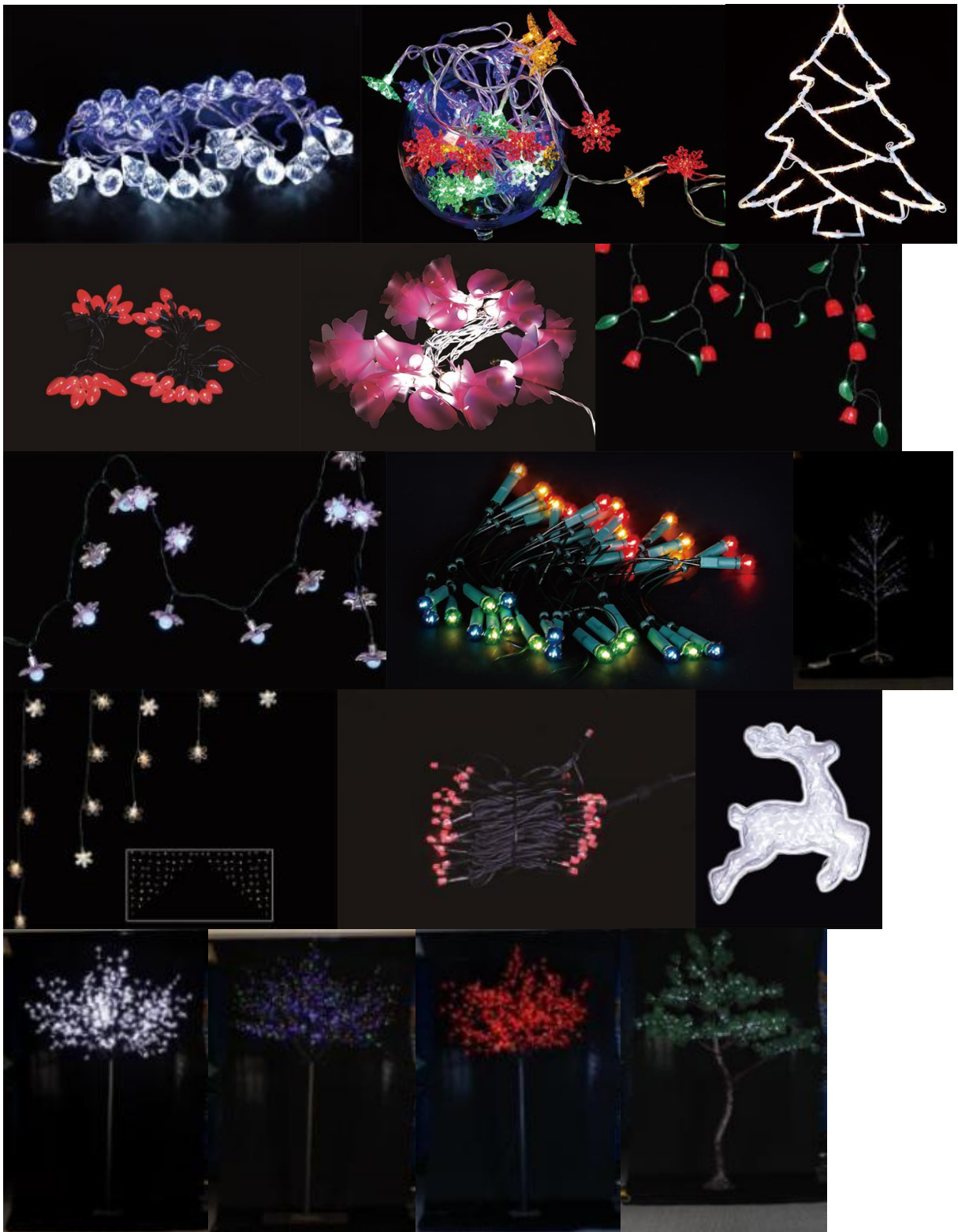
Photo 9.
Controller view

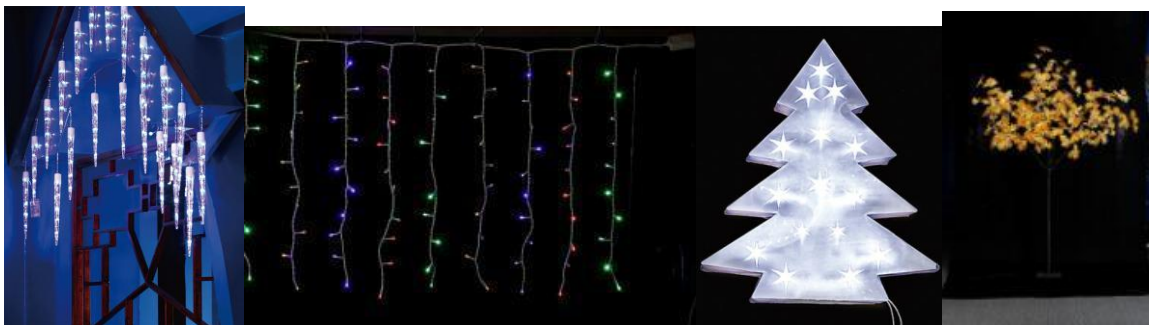
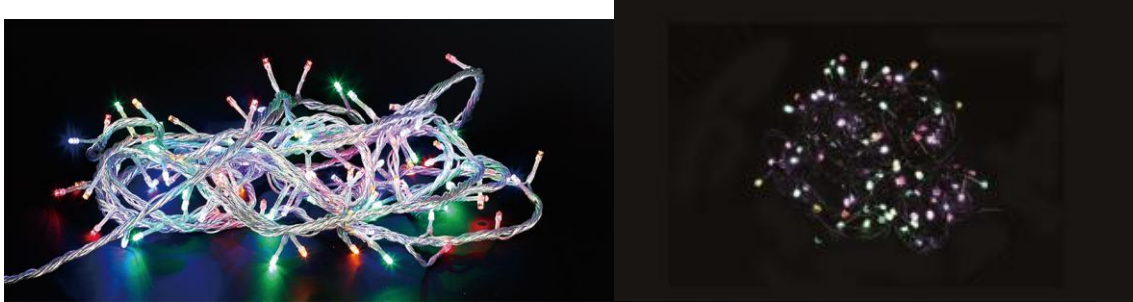
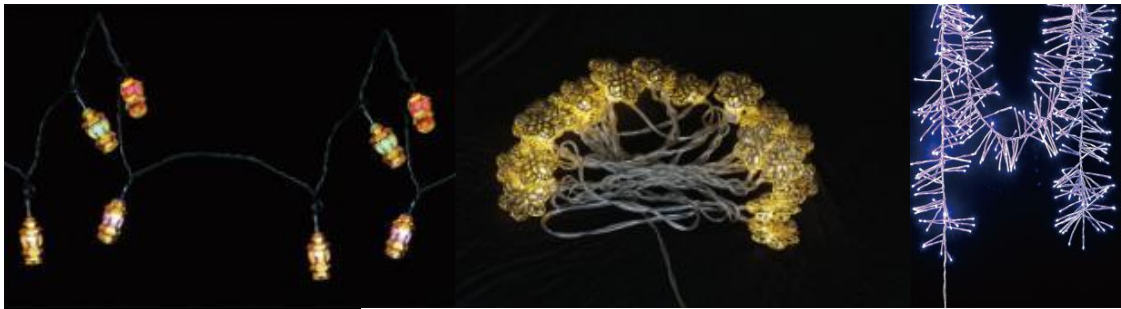


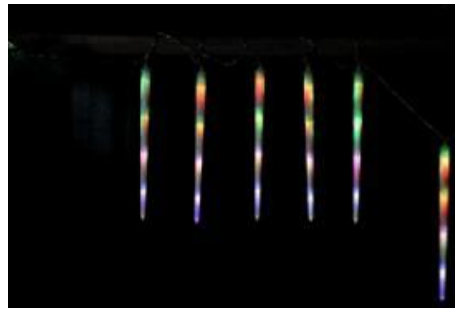
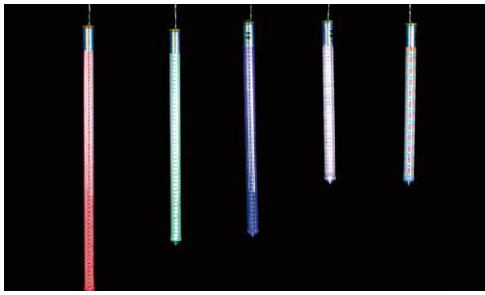
Photo 10.
Controller view



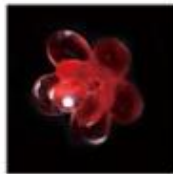
Decorations:



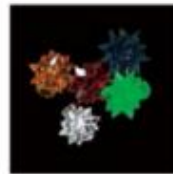




A151



A152



A153



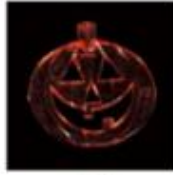
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A155



A156



A157



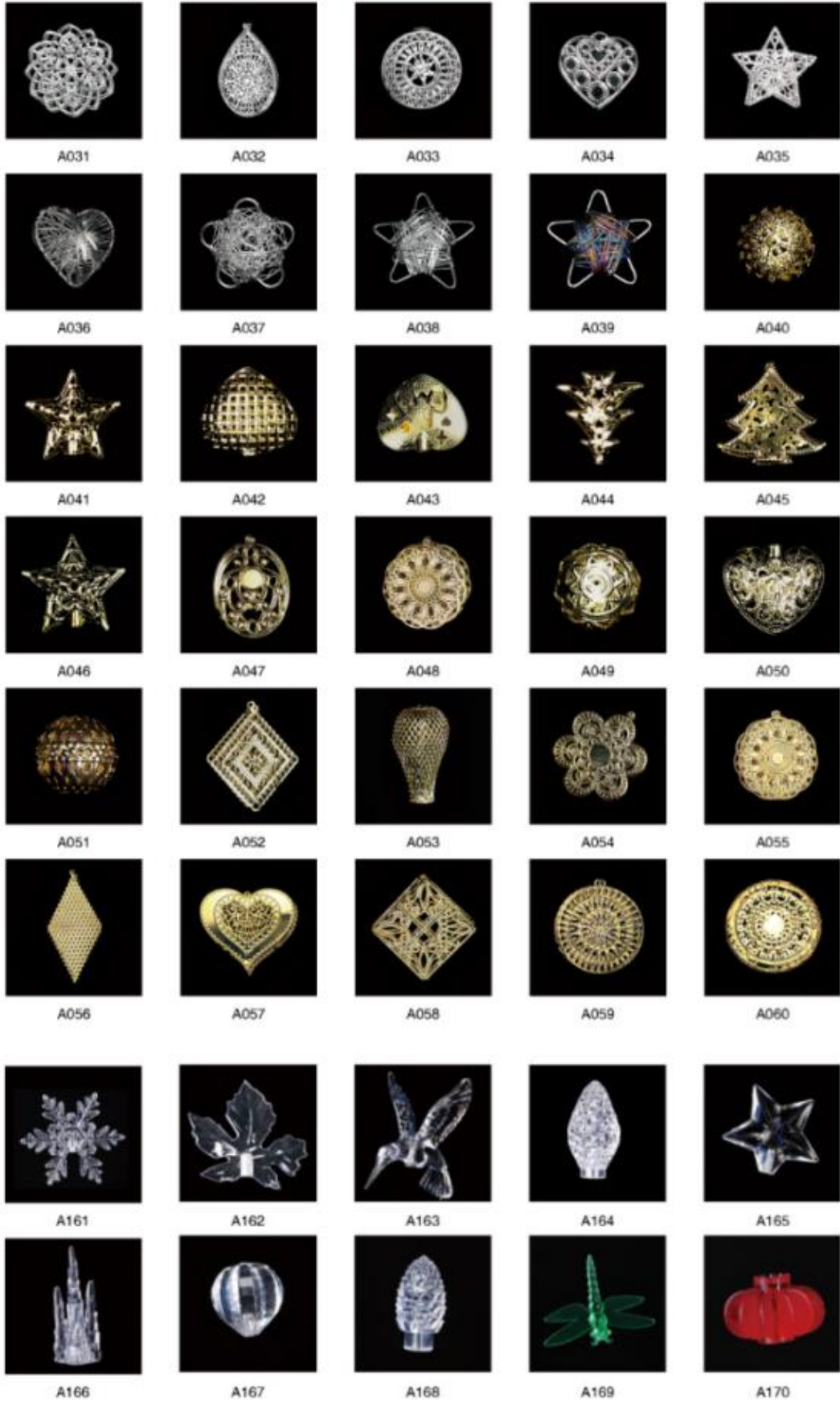
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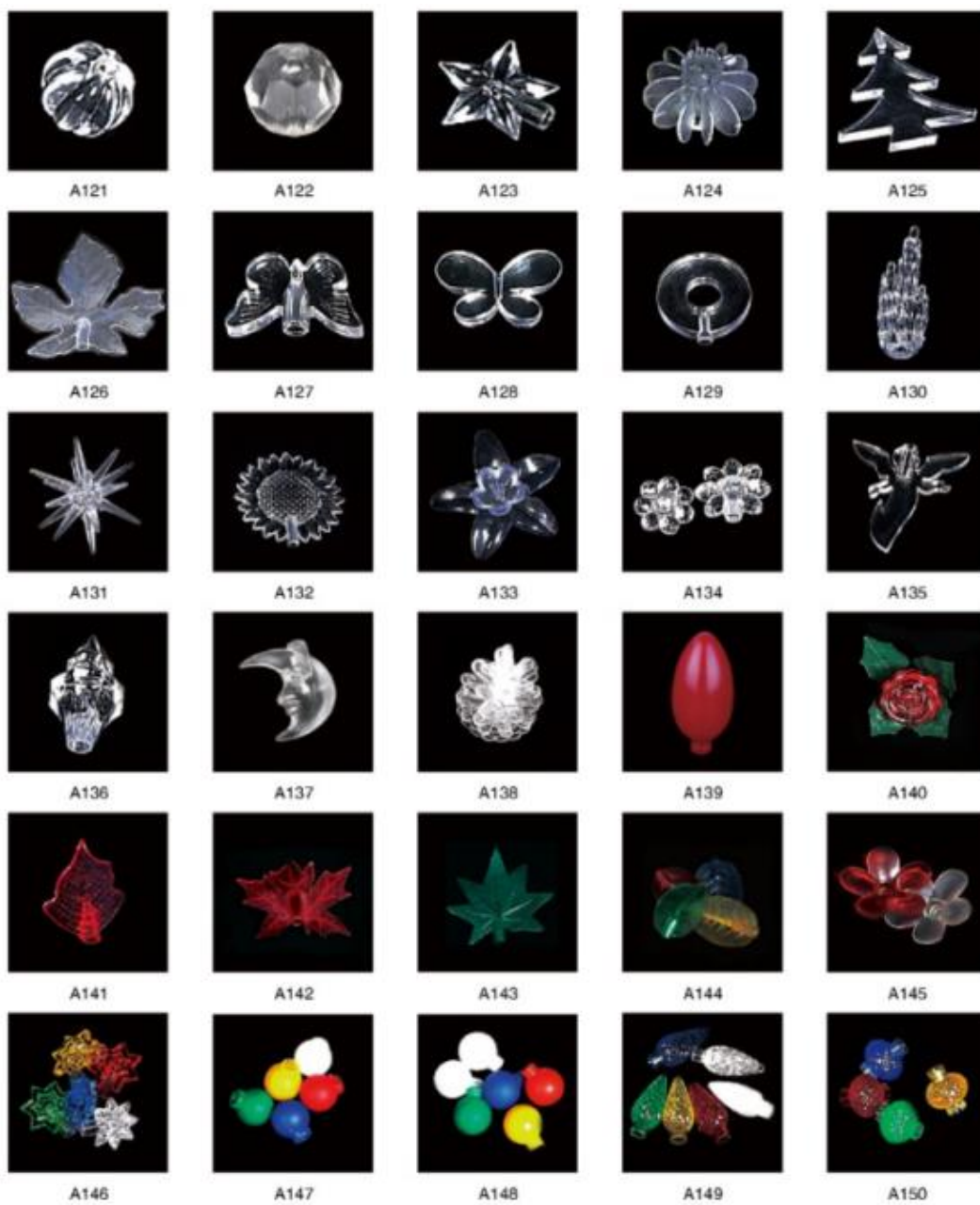


A159



A160







Photos of reference:

			
YS-311-50L-ML	YS-311-50L-W	YS-311-100L-ML	YS-311-100L-MX BLUE
			
YS-311-100L-MX PURPLE	YS-311-100L-MX RED	YS-311-100L-MX YELLOW	YS-311-100L-W
			
YS-311-200L-ML	YS-311-200L-W	YS-540	YS-592
			
YS-598	YS-601ML	YS-601W	YS-607

----- END OF REPORT -----