



Safety Test Report

Report No.: HB-091E-0549/18

Product : Fixed Luminaires
Model/Type : See model list
Brand Name : Normann Copenhagen
Applicant : Normann Copenhagen Aps
Application No. : 2018082303
Date of Issue : 2018.09.21
Standards : EN 60598-2-1:1989
EN 60598-1:2015

Zhongshan Bontek Compliance Testing Laboratory Co., Ltd.

Tongyi Industrial Zone Dongxing East Road, Guzhen Town
Zhongshan City, Guangdong Province, China

<p align="center">TEST REPORT IEC 60598-2-1 Luminaires Part 2: Particular requirements Section One – Fixed general purpose luminaires</p>	
Report No.	HB-091E-0549/18
Application No.	2018082303
Testing Laboratory	Zhongshan Bontek Compliance Testing Laboratory Co., Ltd.
Address	Tongyi Industrial Zone Dongxing East Road, Guzhen Town, Zhongshan City, Guangdong Province, China
Applicant's name	Normann Copenhagen Aps
Address	Osterbrogade 70, 2100 Copenhagen, Demark
Test specification:	
Standards	EN 60598-2-1:1989 used in conjunction with EN 60598-1:2015
Test procedure	CE-LVD
Non-standard test method ..	--
Test Report Form No.	HB-4M-091E-1
TRF Originator	LTS
Master TRF	2015-10
Test item description	Fixed Luminaires
Trade Mark	--
Model/Type reference	See model list
Ratings	220-240V~, 50/60Hz, Class II, IP20

Summary of testing:

The submitted samples are found to comply with the requirements of:

- EN 60598-2-1:1989
- EN 60598-1:2015

Tested by (signature) : Zhaoyi Deng

Reviewed by (signature) : Lechun Guan

Approved by (signature) : Zhaofu Peng

Date of issue : 2018.09.21


General remarks:

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

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Appendix #)" refers to additional information appended to the report.

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

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

Clause numbers between brackets of main report refer to clauses in IEC 60598-1.

Main report:

Page 1 to 29 for IEC 60598-2-1

Attachment 1:

Page 30 to 38 for Photo documentation

Test item particulars:

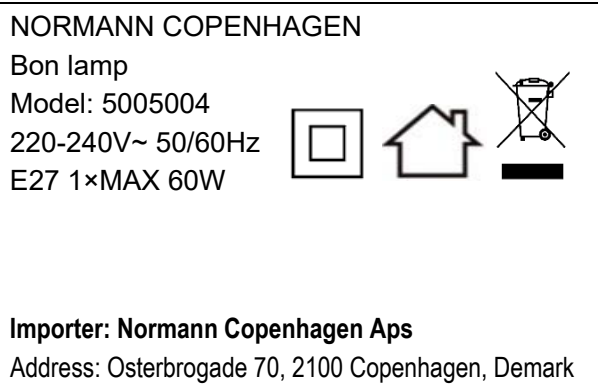
Equipment mobility : Fixed
 Operating condition : 25°C
 Class of equipment..... : Class II
 Degree of protection..... : IP20
 Mass of equipment..... : Max 1.32kg
 Supply connect..... : Supply cord or plug

Possible test case verdicts:

-test case does not apply to the test object : N (not applicable)
 -test object does meet the requirement..... : P (Pass)
 -test object does not meet the requirement : F (Fail)

Testing:

Date of receipt of test item : 2018.08.30
 Date (s) of performance of tests : 2018.08.30 to 2018.09.21

Copy of marking plate:


Attached on outer surface of the lamp body

220-240V~ 50/60Hz E27 Max.60W

Attached near lampholder

Remark:

1. The art work above may be only a draft.
2. The height of WEEE mark is not less than 7mm and the height of other symbols is not less than 5mm.
3. The height of letters is not less than 2mm.

General product information:

1. The products are fixed luminaires, IP20, Class II, suitable for indoor used only.
2. All models have similar construction, only different with appearance, lampholder and power. Therefore full test was performed on 5005004 and 5005026, construction check was performed on all models.
3. Input: 220-240V~, 50/60Hz, E27, 1xMax.60W.

Model list:

No.	Model	Series name	Lampholder	Suitable load	Remark	Weight	Photo
1	5005003	Bon Lamp	1xE27	Max 60W incandescent	Grey	0.49kg	
2	5005004				Green		
3	5005005				Black		
4	5005006	Bon Lamp			Grey	0.68kg	
5	5005007				Green		
6	5005008				Black		
7	5005012	Plate Wall Lamp			Gold	0.77kg	
8	5005013				Black		
9	5005020	Balloon Lamp Large		Max 40W incandescent	Blue	0.97kg	
10	5005021				Grey		
11	5005029	Toli Lamp			Grey	1.81kg	
12	5005030				Brown		
13	5005031				Green		
14	502177	Local Lamp			White	1.25kg	
15	502178				Grey		
16	502179				Black		
17	502180				Green		
18	503010	Bau Lamp			Small multi	1.32kg	
19	503011				Large multi		
20	503012				Small nature		
21	503013				Large nature		
22	5005018	Balloon Lamp Small	1xE14	Max 40W incandescent	Rose	0.74kg	
23	5005019				Yellow		
24	5005026	Toli Lamp			Grey	0.88kg	
25	5005027				Brown		
26	5005028				Green		

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

1.2 (0)	GIECERAL INTRODUCTION		P
1.2 (0.3.1)	Information for luminaire design considered	Standard Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
1.2 (0.3.2)	More sections applicable	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
1.4 (2)	CLASSIFICATION		P
1.4 (2.2)	Type of protection (Class 0 excluded)	Class I	—
1.4 (2.3)	Degree of protection	IP20	—
1.4 (2.4)	Luminaire suitable for non-combustible surfaces:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Luminaire suitable for normally flammable surfaces	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire suitable to be covered by insulating material	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
1.4 (2.5)	Luminaire for normal use	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

1.5 (3)	MARKING		P
1.5 (3.2)	Marking shall be visible on the outside of the luminaire or behind a cover.	On the body	P
	Marking shall be visible during installation.		P
	Marking shall be visible after the installation.		P
1.5 (3.3)	Additional information		P
	Language of instructions	English	P
1.5 (3.3.1)	Combination luminaires		N
1.5 (3.3.2)	Nominal frequency in Hz	50/60Hz	P
1.5 (3.3.3)	Operating temperature		N
1.5 (3.3.4)	Symbol or warning notice		N
1.5 (3.3.5)	Wiring diagram		N
1.5 (3.3.6)	Special conditions		N
1.5 (3.3.7)	Metal halide lamp luminaire - warming		N
1.5 (3.3.8)	Limitation for semi-luminaires		N
1.5 (3.3.9)	Power factor and the supply current		N
1.5 (3.3.10)	Suitability for use "indoors"		P
1.5 (3.3.11)	Luminaires with remote control gear		N
1.5 (3.3.12)	A warning for clip-mounted luminaire		N
1.5 (3.3.13)	The specifications of all protective shields		N
1.5 (3.3.14)	Symbol for nature of supply	~	P
1.5 (3.3.15)	The rated current of socket outlet		N

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5 (3.3.16)	The information about rough service luminaire		N
1.5 (3.3.17)	The mounting instructions for type Y, type Z and some type X attachments	Type Y	P
1.5 (3.3.18)	Information about non-ordinary luminaires with PVC supply cord		N
1.5 (3.3.19)	Protective conductor current in instruction if applicable		N
1.5 (3.3.20)	Information to advise the correct installation for wall mounted and adjustable luminaires.		N
1.5 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided		N
	Cautionary symbol		N
1.5 (3.3.22)	Controllable luminaires, classification of insulation provided		N
1.5 (3.4)	Test of marking		P
	Test with water	Rubbing with water for 15s	P
	Test with hexane	Rubbing with petroleum spirit for 15s	P
	Legible after test	Still legible	P
	Label attached	No curling	P

1.6 (4)	CONSTRUCTION		P
1.6 (4.2)	Components replaceable without difficulty		P
1.6 (4.3)	Wireways smooth and free from sharp edges		P
1.6 (4.4)	Lampholders		P
1.6 (4.4.1)	Integral lampholder		P
1.6 (4.4.2)	Wiring connection		P
1.6 (4.4.3)	Lampholder for end-to-end mounting		N
1.6 (4.4.4)	Positioning		N
	- pressure test (N)		N
	- bending test (N)		N
1.6 (4.4.5)	Peak pulse voltage		N
1.6 (4.4.6)	Centre contact point		N
1.6 (4.4.7)	Parts incorporated in rough service luminaires resistance to tracking		N
1.6 (4.4.8)	Lamp connectors		N
1.6 (4.4.9)	Caps and bases shall be correctly used		N
1.6 (4.4.10)	Light source for lampholder or connection according to IEC 60061 not connected another way		N

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.5)	Starter holders		N
	Starter holder in luminaires other than class II		N
	Starter holder of class II construction		N
1.6 (4.6)	Terminal blocks		P
	Connecting leads (tails)		P
	Unsecured terminal blocks		P
1.6 (4.7)	Terminals and supply connections		N
1.6 (4.7.1)	Contact to metal parts		N
1.6 (4.7.2)	Test 8mm live conductor		N
	Test 8mm earth conductor		N
1.6 (4.7.3)	Terminals for supply conductor.		N
1.6 (4.7.3.1)	Welding method and material		N
	- stranded or solid conductor		N
	- spot welding		N
	- Welding between wires		N
	- Type Z attachment		N
	- mechanical test according to 15.6.2		N
	- electrical test according to 15.6.3		N
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N
1.6 (4.7.4)	Terminals other than supply connection		N
1.6 (4.7.5)	Heat-resisting wiring/sleeves		N
1.6 (4.7.6)	Multi-pole plug and socket		N
	- test at 30 N		N
1.6 (4.8)	Switches:		P
	- adequate rating and fixing		P
	- Switches in flexible cables or cords and switched lampholders shall not be used in non-ordinary luminaires.		N
	- polarized supply		P
	- compliance with 61058-1 for electronic switches		N
1.6 (4.9)	Insulating lining and sleeves		P
1.6 (4.9.1)	Retainment	Fixed by construction	P
1.6 (4.9.2)	Insulated linings and sleeves		P
	a) & c) Insulation resistance and electric strength		P
	b) Ageing test. Temperature (°C) :		N
1.6 (4.10)	Double and reinforced insulation		P
1.6 (4.10.1)	For metal encased class II luminaires, contact between:		P

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- mounting surfaces and parts with basic insulation only, - accessible metal parts and basic insulation shall be prevented.		
	The wiring includes internal and external wiring of the luminaire, and fixing wiring of the installation.		P
	Degree of protection against electric shock of class II shall not be impaired.		P
	The interference suppression capacitors shall comply with the requirements according to IEC 60384-14 and the method of their connection shall be in accordance with 8.6 of IEC 60065.		N
1.6 (4.10.2)	Assembly gaps greater than 0.3 mm:		P
	- neither be coincidental with any gap in basic insulation, nor be straight access to live parts		P
	- Openings larger than 0.3 mm in double or in reinforced insulation shall be so designed that live parts cannot be touched with the conical pin of test probe 13.		P
	The required degree of protection against electric shock shall be in accordance with the IP classification of the luminaire.		P
1.6 (4.10.3)	Retainment of insulation		P
	- either be fixed so that they cannot be removed without being seriously damaged;		P
	- or be unable to be replaced in an incorrect position		P
	The sleeving and lining shall be retained in position by positive means		P
1.6 (4.10.4)	Protective impedance device		N
	Accessible conductive parts bridge by resistors or capacitors		N
1.6 (4.11)	Electrical connections and current-carrying parts		P
1.6 (4.11.1)	Contact pressure		P
1.6 (4.11.2)	Screws:		N
	- self-tapping screws		N
	- thread-cutting screws		N
	- at least two self-tapping screws		N
1.6 (4.11.3)	Screws and rivets shall be locked against loosening		P
	- Spring washers		P
	- rivets		N
1.6 (4.11.4)	Material of current-carrying parts	Copper	P

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.11.5)	No direct contact with the mounting surface or wood.	No wood used	P
1.6 (4.11.6)	Electro-mechanical contact systems		N
	After the test, the samples shall show		N
	- no wear impairing their further use;		N
	- no deterioration of enclosures or barriers		N
	- no loosening of electrical or mechanical connections		N
1.6 (4.12)	Screws and connections (mechanical) and glands		P
1.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material	0.5Nm	P
	Torque test: torque (Nm); part :		N
	Torque test: torque (Nm); part :		N
1.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N
1.6 (4.12.4)	Locked connections		P
	- fixed arms: torque (Nm) :	2.5Nm	P
	- lampholder: torque (Nm); :	E27: 2.0Nm; E14: 1.2Nm	P
	- push-button switches: torque 0.8 Nm :		N
1.6 (4.12.5)	Torque test of screwed glands, and after the test, the luminaire and glands shall show no damage.		N
1.6 (4.13)	Mechanical strength		P
1.6 (4.13.1)	Impact test:		P
	- fragile parts: energy (Nm); :		N
	- other parts: energy (Nm); :	Enclosure: 0.35Nm	P
	a) live parts		P
	b) linings		N
	c) protection		P
	d) covers		N
1.6 (4.13.3)	Straight test finger.	30N	P
1.6 (4.13.4)	Rough service luminaires		N
	- IP54 or higher		N
	a) fixed		N
	b) hand-held		N
	c) delivered with a stand		N
	d) for temporary installations and suitable for mounting on a stand		N
1.6 (4.13.6)	Tumbling barrel		N
1.6 (4.14)	Suspensions and means of adjustment		P

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.14.1)	Mechanical suspension shall have adequate factors of safety.		P
	A) suspended luminaires: four times the weight:	4×1.32Kg=5.28kg	P
	B) rigid suspension luminaires: torque 2.5 Nm:		N
	C) rigid suspension brackets: bracket arm; bending moment(Nm)		N
	D) load track-mounted luminaires:		N
	E) clip-mounted luminaires, glass-shelve. Thickness(mm)		N
1.6 (4.14.2)	Load to flexible cables		P
	Mass (kg)	Max. 1.1kg	P
	Stress in conductors (N/mm ²)	Max. 7.2N/mm ²	P
	Semi-luminaire – mass (kg)		N
	Semi-luminaire – bending moment (Nm).....		N
1.6 (4.14.3)	Adjusting devices:		N
	- flexing test; number of cycles.....		N
	- strands broken		N
	- electric strength test afterwards		N
1.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N
1.6 (4.14.5)	Guide pulleys		N
1.6 (4.14.6)	Strain on socket-outlets		N
1.6 (4.15)	Flammable materials		P
1.6 (4.15.1)	- glow-wire test 650 °C		P
	- spacing ≥ 30 mm		N
	- screen withstanding test of 13.3.1		N
	- screen dimensions		N
	- no fiercely burning material		P
	- thermal protection		N
	- electronic circuits exempted		N
1.6 (4.15.2)	Luminaires made of thermoplastic material shall withstand temperature rises.		N
	a) construction		N
	b) temperature sensing control		N
	c) surface temperature.		N
1.6 (4.16)	Luminaires for mounting on normally flammable surfaces		P
	Luminaires classified as suitable for mounting on a normally flammable surface shall comply with one of the following requirements of 4.16.1, 4.16.2, or 4.16.3.		N
1.6 (4.16.1)	Lamp control gear spacing:		N

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- spacing 10 mm		N
	- spacing 35 mm		N
1.6 (4.16.2)	Thermal protection:		N
	- in lamp control gear		N
	- external		N
	- fixed position		N
	- temperature marked lamp control gear		N
1.6 (4.16.3)	"F" curve measured	(see 12.6)	N
1.6 (4.17)	Drain holes		N
	Clearance at least 5mm		N
1.6 (4.18)	Resistance to corrosion:		N
1.6 (4.18.1)	- resistant to rust		N
1.6 (4.18.2)	- resistant to stress corrosion		N
1.6 (4.18.3)	- resistant to corrosion		N
1.6 (4.19)	Ignitors compatible with ballast		N
1.6 (4.20)	Rough service vibration		N
1.6 (4.21)	Protective shield:		N
1.6 (4.21.1)	Shield fitted		N
1.6 (4.21.2)	Particles from a shattering lamp cannot impair safety		N
1.6 (4.21.3)	No direct path		N
1.6 (4.21.4)	Impact test on shield		N
1.6 (4.22)	Attachments to lamps		N
1.6 (4.23)	Semi-luminaires comply class II		N
1.6 (4.24)	Photobiological hazards		N
1.6 (4.24.1)	UV radiation for tungsten halogen lamps and metal halide lamps (Annex P)		N
1.6 (4.24.2)	Retinal blue light hazard		N
	Luminaires with Ethr		N
	a) fixed luminaires		N
	- distance xm, borderline between RG1 and RG2		N
	- marking and instruction according 3.2.23		N
	b) portable and handheld luminaires		N
	- marking according to 3.2.23 if TG1 exceeded at 200mm according to IEC/TR 62778		N
	Portable luminaires for children IEC 60598-2-10 and mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200mm according to IEC/TR 62778		N

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.25)	No sharp point or edges		P
1.6 (4.26)	Short-circuit protection:		N
1.6 (4.26.1)	Uninsulated accessible SELV parts		N
1.6 (4.26.2)	Short-circuit test		N
1.6 (4.26.3)	Test chain according to Figure 29		N
1.6 (4.27)	Terminal blocks with integrated screwless earthing contacts		N
	Test according Annex V		N
	Pull test of terminal fixing (20 N)		N
	After test, resistance < 0,05 Ω		N
	Pull test of mechanical connection (50 N)		N
	After test, resistance < 0,05 Ω		N
	Voltage drop test, resistance < 0,05 Ω		N
1.6 (4.28)	Fixing of thermal sensing control		N
	Non plug-in or easily replaceable type		N
	Reliably kept in position		N
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N
	Not outside the luminaire enclosure		N
	Test of adhesive fixing		N
1.6 (4.29)	Luminaires with non-replaceable light source		N
	Not possible after parts have been opened by hand or tools		N
1.6 (4.30)	Luminaires with non-user replaceable light source		N
	If protective cover provide protection against electric shock and marked with "caution, electric shock risk" symbol, minimum two fixing means		N
1.6 (4.31)	Insulation between circuits		P
	Circuits insulated from LV supply fulfil 4.31.1-4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil 4.31.1-4.31.3		N
1.6 (4.31.1)	SELV circuits		N
	Sources used to supply SELV circuits		N
	Voltage not higher the limits of ELV		N
	Insulation from LV supply, non SELV circuits, FELV circuits, SELV circuits and accessible		N

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	conductive parts		
	Plugs and socket-outlets in SELV systems		N
1.6 (4.31.2)	FELV circuits		N
	Sources used to supply FELV circuits		N
	Voltage not higher the limits of ELV		N
	Insulation from LV supply, FELV circuits, SELV circuits and accessible conductive parts		N
	Plugs and socket-outlets in FELV systems		N
1.6 (4.31.3)	Other circuits		P
	Insulation between circuits in accordance with the requirements in table X.1		P
	Equipotential bonding used in class II construction to protect against indirect contacts with live parts:		N
	- all conductive parts are connected together		N
	- test in 7.2.3 to check reliability		N
	- accessible conductive parts cannot cause electric shock in case of insulation fault		N
	- for master/slave applications, equipotential bonding used to prevent dangerous voltages		N
1.6 (4.32)	Overvoltage protective devices		N
	Comply with IEC 61643-11		N
	External to controlgear and connected to earth:		N
	- only in fixed luminaires, and		N
	- only connected to protective earth		N

1.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
	Working voltage (V)..... :	240V	—
	Voltage form	Sinusoidal <input checked="" type="checkbox"/> Non-sinusoidal <input type="checkbox"/>	—
	PTI	< 600 <input checked="" type="checkbox"/> > 600 <input type="checkbox"/>	—
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II <input checked="" type="checkbox"/> Category III <input type="checkbox"/>	—
	Rated pulse voltage (kV)..... :	--	—
	(1) Live parts of different polarity: cr: 2.5 (mm); cl: 1.5 (mm)..... :	cr : >3.0mm; cl: > 3.0 mm	P
	(2) Live parts and accessible metal parts: cr: 5.0 (mm); cl: 3.0 (mm)..... :	cr : >5.0mm; cl: > 5.0 mm	P
	(3) Parts becoming live due to the breakdown of		N

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	basic insulation and metal parts: cr (mm); cl (mm)		
	(4) Outer surface of a flexible cord or cable and an accessible metal part: cr (mm); cl (mm)		N
	(5) Not used		—
	(6) Current-carrying parts and supporting surface: cr: 5.0 (mm); cl: 3.0 (mm)	cr : >6.0mm; cl: > 6.0 mm	P

1.8 (7.2)	PROVISION FOR EARTHING		N
1.8 (7.2.1 + 7.2.3)	Accessible metal parts		N
	Metal parts in contact with supporting surface		N
	Resistance < 0.5 Ω		N
	Two self-tapping screws used		N
	Thread-forming screws		N
	Thread forming screw used in a grove		N
	Earth makes contact first		N
	Build-in controlgear earthing by fixing		N
	Luminaire not earthing by build-in control gear		N
1.8 (7.2.2 + 7.2.3)	Earth continuity in joints etc.		N
1.8 (7.2.4)	Locking of clamping means		N
	Compliance with 4.7.3		N
1.8 (7.2.5)	Earth terminal integral part of connector socket.		N
1.8 (7.2.6)	Earth terminal adjacent to mains terminals		N
1.8 (7.2.7)	Electrolytic corrosion of the earth terminal		N
1.8 (7.2.8)	Material of earth terminal and the screw.		N
	Contact surface shall be bare metal.		N
1.8 (7.2.10)	Class II luminaire for looping-in		N
	Double and reinforced insulation to functional earth		N
1.8 (7.2.11)	Earthing core coloured green-yellow.		N
	Length of earth conductor		N

1.9 (14)	SCREW TERMINALS		N
	Separately approved; component list		N
	Part of the luminaire		N
1.9 (15)	SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS		N

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Separately approved; component list		N
	Part of the luminaire		N
1.10 (5)	EXTERNAL AND INTERNAL WIRING		P
1.10 (5.2)	Supply connection and other external wiring		P
1.10 (5.2.1)	Means of connection : Supply cord or plug		P
	Connecting leads (EN)		P
	- without a means for connection to the supply		P
	- terminal block specified		P
	- relevant information provided		P
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of part 1		P
1.10 (5.2.2)	Type of cable : H03VV-F		P
	Cable equal to HD21 S2 or HD22 S2 (EN)		P
	Nominal cross-sectional area (mm ²) : 2x0.75mm ²		P
1.10 (5.2.3)	Type of attachment, X, Y, or Z	Type Y	P
1.10 (5.2.5)	Type Z not connected to screws		N
1.10 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
1.10 (5.2.7)	Cable entries through rigid material shall have smoothly rounded edges		N
1.10 (5.2.8)	Insulating bushings:		P
	- suitably fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- tubes or guards made of insulating material		P
1.10 (5.2.9)	Locking of screwed bushing		N
1.10 (5.2.10)	Cord anchorage:		P
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cable or cord into knots etc.		P
	- insulating material or lining		P
1.10 (5.2.10.1)	Cord anchorage for type X attachment:		N
	a) at least one part fixed		N
	b) types of cord		N

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	c) no damaging of the cable		N
	d) whole cable can be mounted		N
	e) no touching of clamping screws		N
	f) metal screw not directly on cable		N
	g) replacement without special tool		N
	Glands not used as anchorage		N
	Labyrinth type anchorages		N
1.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		P
1.10 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) : 60N		P
	- torque test: torque (Nm)..... : 0.15Nm		P
	- displacement ≤ 2 mm		P
	- no noticeable movement of conductors		P
	- no damage of cable or cord		P
1.10 (5.2.11)	External wiring passing into luminaire		N
1.10 (5.2.12)	Looping-in terminals		N
1.10 (5.2.13)	Wire ends not tinned		N
	Wire end tinned: no cold flow		N
1.10 (5.2.14)	Mains plug same protection		N
	Class III luminaire plug		N
1.10 (5.2.16)	Appliance inlets (IEC 60320)		N
	Appliance couplers of class II type		N
1.10 (5.2.17)	No standardized interconnecting cables properly assembled		N
1.10 (5.2.18)	Used plug in accordance with		N
	- IEC 60083		N
	- other standard		N
1.10 (5.3)	Internal wiring		P
1.10 (5.3.1)	Internal wiring of a suitable size and type	(see Annex 1)	P
	Through wiring		N
	- not delivered/ mounting instruction		N

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- factory assembled		N
	- socket outlet loaded (A) :		N
	- temperatures :		N
	Green-yellow for earth only		N
1.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N
	Cross-sectional area (mm ²)..... :		N
	Insulation thickness		N
	Extra insulation added where necessary		N
1.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N
	Adequate cross-sectional area and insulation thickness		N
1.10 (5.3.1.3)	Double or reinforced insulation for class II		P
1.10 (5.3.1.4)	Conductors without insulation		N
1.10 (5.3.1.5)	SELV current-carrying parts		N
1.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N
1.10 (5.3.2)	Sharp edges etc.;		P
	No moving parts of switches etc.;		N
	Joints, raising/lowering devices		N
	Telescopic tubes etc.		N
	No twisting over 360 °		P
1.10 (5.3.3)	Insulating bushing		P
	- suitable fixed		P
	- material in bushing		P
	- material not likely to deteriorate		P
	- cable with protective sheath		P
1.10 (5.3.4)	Joints and junctions effectively insulated		P
1.10 (5.3.5)	Strain on internal wiring.		N
1.10 (5.3.6)	Wire carriers		N
1.10 (5.3.7)	Wire end not tinned		P
	Wire end tinned: no cold flow		N
1.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
1.11 (8.2.1)	Live parts not accessible		P

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable and adjustable luminaires		N
	Basic insulated parts not accessible with Ø 50 mm probe from outside, within arm's reach, on wall-mounted luminaires		P
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N
	Basic insulation only accessible under lamp or starter replacement		P
	Protection in any position		P
	Double-ended tungsten filament lamp		N
	Insulation lacquer not reliable		P
	Double-ended high pressure discharge lamp		N
	Relevant warning according to 3.2.18 fitted to the luminaire		N
1.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N
1.11 (8.2.3a)	Class II luminaire:		P
	- basic insulated metal parts not accessible during starter or lamp replacement		P
	- basic insulation not accessible other than during starter or lamp replacement		P
	- glass protective shields not used as supplementary insulation		N
1.11 (8.2.3b)	BC lampholder of metal in class I luminaires shall be earthed		N
1.11 (8.2.3c)	SELV circuits with exposed current carrying parts:		N
	Ordinary luminaire:		N
	- voltage under load (V).....:		N
	- no-load voltage (V).....:		N
	- touch current if applicable (mA)		N
	One conductive part insulated if required		N
	Other than ordinary luminaire:		N
	- nominal voltage (V)		N
	Class III luminaire only for connection to SELV		N

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Class III luminaire not provided with means for protective earthing		N
1.11 (8.2.4)	Portable luminaire:		N
	- protection independent of supporting surface		N
	- terminal block completely covered		N
1.11 (8.2.5)	Compliance with standard test finger or relevant probe		P
1.11 (8.2.6)	Covers reliably secured		N
1.11 (8.2.7)	Discharging of capacitors $\geq 0.5\mu\text{F}$		N
	Portable plug connected luminaire with capacitor		N
	Other plug connected luminaire with capacitor		N
	Discharge device on or within capacitor		N
	Discharge device mounted separately		N

1.12 (12)	ENDURANCE TEST AND THERMAL TEST		P
1.12 (12.3)	Endurance test:		P
	- mounting-position	As in normal use	—
	- test temperature (°C)	35°C	—
	- total duration (h).....	240 h	—
	- supply voltage: Un factor; calculated voltage (V)	1.1Un	—
	- lamp used.....	E27 LED bulb	—
1.12 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N
	- marking legible		P
	- no cracks, deformation etc.		P
1.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
1.12 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	N
1.12 (12.6)	Thermal test (failed in lamp control gear):		N
1.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		N
	- case of abnormal conditions		N
	- electronic lamp control gear.....		N
	- measured mounting surface temperature (°C) at 1,1 times rated voltage.....		N
	- calculated mounting surface temperature (°C)		N

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
 :		
	- track-mounted luminaires		N
1.12 (12.6.2)	Temperature sensing control		N
	- case of abnormal conditions :		—
	- thermal link		N
	- manual reset cut-out		N
	- auto reset cut-out		N
	- measure mounting surface temperature (°C)		N
	- track-mounted luminaires		N
1.12 (12.7)	Thermal test in regard to fault conditions in lamp control gear or electronic device incorporated in thermoplastic luminaires		N
1.12 (12.7.1)	Test for luminaire without temperature sensing control		N
1.12(12.7.1.1)	Test for luminaire incorporating ballast(s) of fluorescent lamps with a lamp load $\leq 70W$		N
	Test method 12.7.1.1 or Annex W :		—
	Test according to 12.7.1.1:		N
	- The ballast under test shall be supplied directly at 1.1 times the rated supply voltage, in normal operation with the relevant lamp (s) in the circuit (up to the end of the test).		—
	- The supply voltage to the ballast under test shall be increased by 20 % of the rated supply voltage and left for a period of 15 min.		—
	- If no failure of the ballast occurs during the period, the supply voltage to the ballast under test shall be increased repeatedly in steps of 10 % of the rated supply voltage at 15 min intervals until ballast failure occurs.		N
	- After the ballast failure, the luminaire shall be allowed to cool to ambient temperature.		N
	Annex W provides an alternative method to the tests. The reference is given in 12.7.1.1		N
1.12 (12.7.1.2)	Test for luminaires incorporating discharge lamp, fluorescent lamps (> 70W), transformer of power > 10 VA		N
	- 20% of the lamp circuits in the luminaire and not less than one lamp circuit shall be subjected to abnormal conditions		—
	- The circuit which have the most thermal influence on the fixing point and exposed parts shall be chosen and other lamp circuits shall be operated at rated voltage under normal conditions.		—

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- The circuit subjected to abnormal conditions, shall be operated at 0, 9, 1, 0 and 1,1 times the rated voltage.		—
1.12 (12.7.1.3)	Test for luminaires with inherently short-circuit proof transformer of power ≤ 10 VA		N
	- The fault test shall be carried out to small transformers with power up to 10 VA; at the end of the first period of 4 h, the secondary winding shall be short circuited.		—
	- The short circuit shall be allowed to continue until transformer failure occurs;		N
1.12 (12.7.2)	Test for luminaires with temperature sensing control internal/external to the ballast or transformer		N
	- The circuits subjected to abnormal conditions shall be operated with a slowly and steadily increasing current through the windings, until the temperature sensing control operates.		—
	- Time intervals and increments in current shall be such that the thermal equilibrium between winding temperatures and temperature of fixing points and most thermally exposed parts is achieved as far as practicable.		—
	- For luminaires fitted out with manual-reset thermal cut-outs, the test shall be repeated six times, allowing 30 min intervals between tests. At the end of each 30 min interval, the cut-out shall be reset.		—

1.13 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
1.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP..... :	IP20	P
	- mounting position during test..... :	As normal use	—
	- fixing screws tightened; torque (Nm)	--	—
	- tests according to clauses..... :	9.2.0	—
	- electric strength test afterwards:		P
	a) no deposit in dust-proof luminaire		N
	b) no talcum in dust-tight luminaire		N
	c) no trace of water on current-carrying parts or SELV parts		N
	d) i) For luminaires without drain holes – no water entry		N
	d) ii) For luminaires with drain holes – can drain effectively, no hazardous water entry		N

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	e) no water in watertight luminaire		N
	f) i)no contact with live parts (IP 2X)		P
	f) ii)no entry into enclosure (IP 3X and IP 4X)		N
	f) iii)no contact with live parts (IP3X and IP4X)		N
	g) no trace of water on part of lamp requiring protection from splashing water		N
	h) no damage of a protective shield or glass envelope		N
1.13 (9.3)	Humidity test 48 h	25°C, 93%	P

1.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
1.14 (10.2.1)	Insulation resistance test		P
	SELV:		N
	- between current-carrying parts of different polarity		N
	- between current-carrying parts and the mounting surface		N
	- between current-carrying parts and metal parts of the luminaire		N
	- between outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....		N
	- insulation bushing as described in section 5..		N
	Other than SELV:		P
	- between live parts of different polarity.....	> 10MΩ	P
	- between live parts and mounting surface.....	> 10MΩ	P
	- between live parts and metal parts.....	> 10MΩ	P
	- between live parts of different polarity through action of a switch	> 10MΩ	P
	- between outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....		N
	- insulation bushing as described in section 5..	> 10MΩ	P
1.14 (10.2.2)	Electric strength test		P
	Dummy lamp		N
	Luminaires with ignitors after 24 h test		N
	Luminaires with manual ignitors		N
	Test voltage (V) of insulation of parts of SELV:		N

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts of different polarity		N
	- between current-carrying parts and the mounting surface		N
	- between current-carrying parts and metal parts of the luminaire		N
	- between outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....		N
	- insulation bushing as described in section 5..		N
	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	1480V	P
	- between outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....		N
	- insulation bushing as described in section 5..	1480V	P
1.14 (10.3)	Leakage current (mA)	0.011mA	P

1.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
1.15 (13.2.1)	Ball-pressure test:		P
	- part tested; temperature (°C)	Dome of lampholder: 84°C, 1.0mm	P
	- part tested; temperature (°C)		N
1.15 (13.3.1)	Needle flame test (10 s):		P
	- part tested	Plug, switch, no ignition	P
	- part tested	lampholder, no ignition	P
1.15 (13.3.2)	Glow-wire test (650 °C):		P
	- part tested	Dome of lampholder, no ignition	P
	- part tested		N
1.15 (13.4)	Resistance to tracking		N
1.15 (13.4.1)	- part tested		N

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

ANNEX 1: components						P
object/part No.	code	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
Plug for 5005012 and 5005013			KE-21	250V, 2.5A, IP20	EN 50075	VDE 097182
Supply cord	B		H03VV-F	2x0.75 mm ²	EN 50525-2-11	VDE 103853
	D		H03VV-F	2x0.75mm ²	EN 50525-2-11	VDE 40041865
Switch for 5005012 and 5005013			OJ-304	250V, 2A, 1E4	EN 61058-1 EN 61058-2-1	ENEC 2168735/01
E27 lampholder	B	Z	E27-L	250V, 4A, 210°C	EN 60238	VDE 40019138
			E27-A2	250V, 4A, 210°C	EN 60238	VDE 40028846

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

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

	ANNEX 2: temperature measurements, thermal tests of Section 12	P
--	---	---

	Type reference.....:	5005004				—	
	Lamp used	Incandescent bulb				—	
	Lamp control gear used	--				—	
	Mounting position of luminaire	Fixed on ceiling				—	
	Power (W)	63W				—	
	Current (A)	0.2699A				—	
	Power factor	1				—	
	Table: measured temperatures corrected for ta = 25 °C:					P	
	- abnormal operating mode.....:	--				—	
	- test 1: rated voltage	--				—	
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	1.05Pn U=233.4				—	
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	--				—	
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	--				—	
	Through wiring or looping-in wiring loaded by a current of A during the test	--				—	
temperature (°C) of part		Clause 12.4 – normal				Clause 12.5 – abnormal	
	test 1	test2	test 3	limit	test 4	limit	
Supply cord	--	26.8	--	90	--	--	
Rim of E27 lampholder	--	153.8	--	210	--	--	
Contact of E27 lampholder	--	160.5	--	210	--	--	
Bifurcation of wire in lampholder	--	69.2	--	120	--	--	
Dome	--	58.4	--	Ref.	--	--	
Mounting surface	--	26.4	--	90	--	--	

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

	Type reference.....:	5005026				—	
	Lamp used	Incandescent bulb				—	
	Lamp control gear used	--				—	
	Mounting position of luminaire	Fixed on ceiling				—	
	Power (W)	42W				—	
	Current (A)	0.1783A				—	
	Power factor	1				—	
	Table: measured temperatures corrected for ta = 25 °C:					P	
	- abnormal operating mode.....:	--				—	
	- test 1: rated voltage	--				—	
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	1.05Pn U=235.6				—	
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	--				—	
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	--				—	
	Through wiring or looping-in wiring loaded by a current of A during the test	--				—	
temperature (°C) of part		Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test2	test 3	limit	test 4	limit
Supply cord		--	26.8	--	90	--	--
Rim of E27 lampholder		--	153.8	--	210	--	--
Contact of E27 lampholder		--	160.5	--	210	--	--
Bifurcation of wire in lampholder		--	69.2	--	120	--	--
Dome		--	58.4	--	Ref.	--	--
Mounting surface		--	26.4	--	90	--	--

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

	ANNEX 2: screw terminals (part of the luminaire)		N
--	---	--	---

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

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

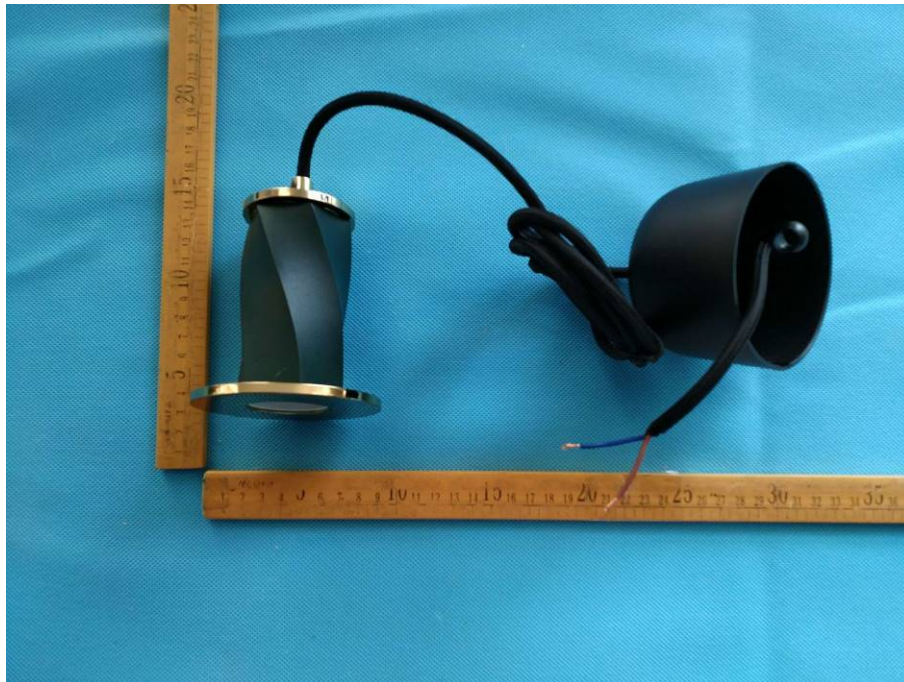
	ANNEX 3: screwless terminals (part of the luminaire)		N
--	---	--	---

(15)	SCREWLESS TERMINALS		N
(15.2)	Type of terminal		—
	Rated current (A)		—
(15.3.1)	Material		N
(15.3.2)	Clamping		N
(15.3.3)	Stop		N
(15.3.4)	Unprepared conductors		N
(15.3.5)	Pressure on insulating material		N
(15.3.6)	Clear connection method		N
(15.3.7)	Clamping independently		N
(15.3.8)	Fixed in position		N
(15.3.10)	Conductor size		N
	Type of conductor		N
(15.5.1)	Terminals internal wiring		N
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples).....		N
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples).....		N
	Insertion force not exceeding 50 N		N
	Permanent connections: pull-off test (20 N)		N
(15.5.2)	Electrical tests		N
	Voltage drop (mV) after 1 h (4 samples).....		N
	Voltage drop of two inseparable joints		N
	Number of cycles		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples)		N
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples)		N
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples)		N
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples)		N
(15.6)	Terminals external wiring		N
	Terminal size and rating		N
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N)		N
	Pull test pin or tab terminals (4 samples); pull (N)		N
(15.6.3)	Contact resistance test		N

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

	Voltage drop (mV) after 1 h									N
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop of two inseparable joints									N
	Voltage drop after 10th alt. 25th cycle									N
	Max. allowed voltage drop (mV)					--				—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop after 50th alt. 100th cycle									N
	Max. allowed voltage drop (mV)					--				—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 10th alt. 25th cycle									N
	Max. allowed voltage drop (mV)					--				—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 50th alt. 100th cycle									N
	Max. allowed voltage drop (mV)					--				—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										

Attachment 1: Photo Documentation



Picture 1: whole view of 5005004

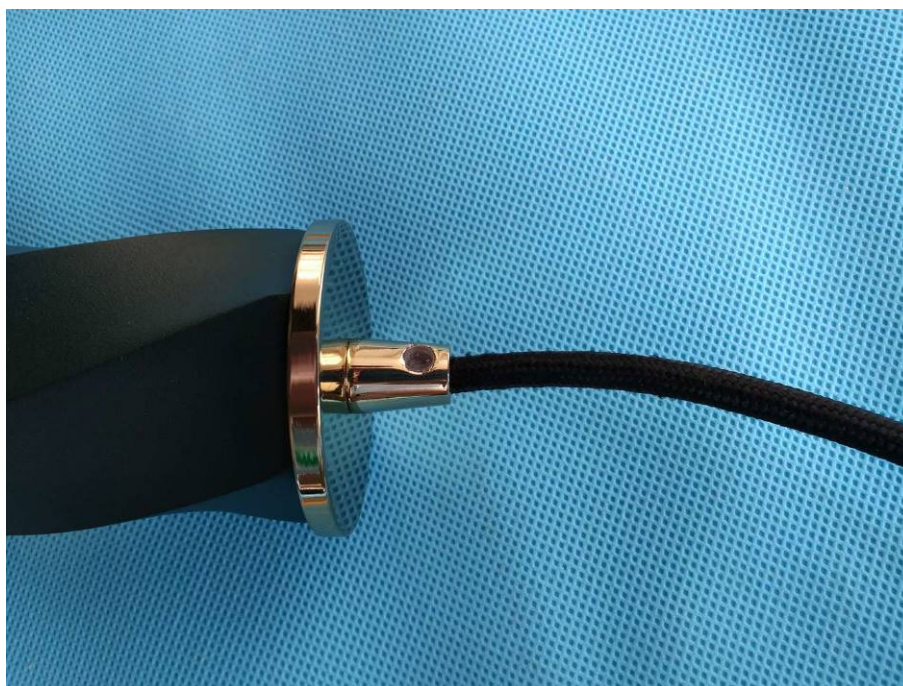


Picture 2: internal view of canopy

Attachment 1: Photo Documentation

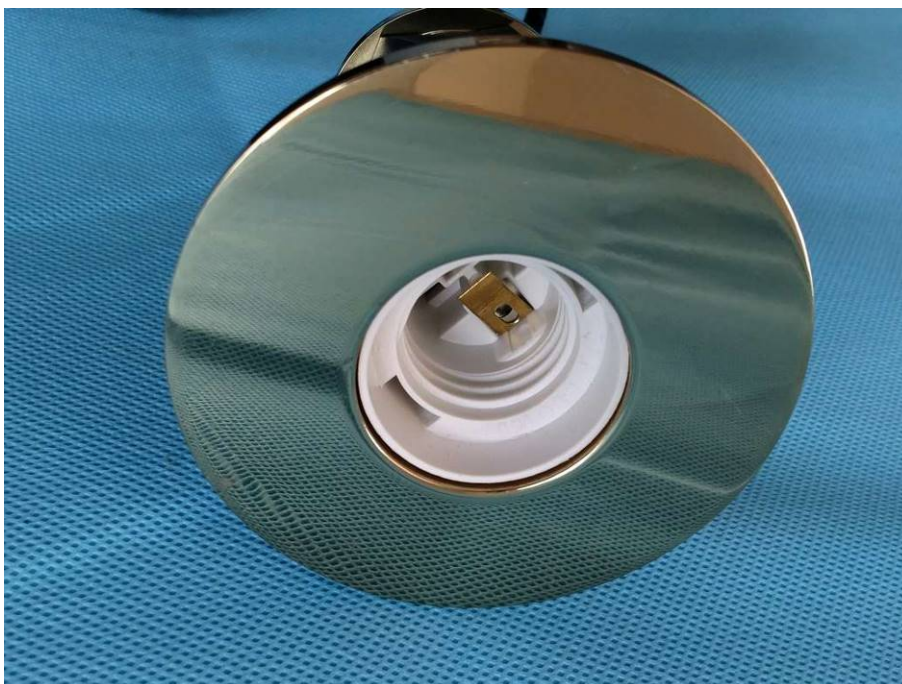


Picture 3: cord anchorage of canopy



Picture 4: cord anchorage of lamp part

Attachment 1: Photo Documentation

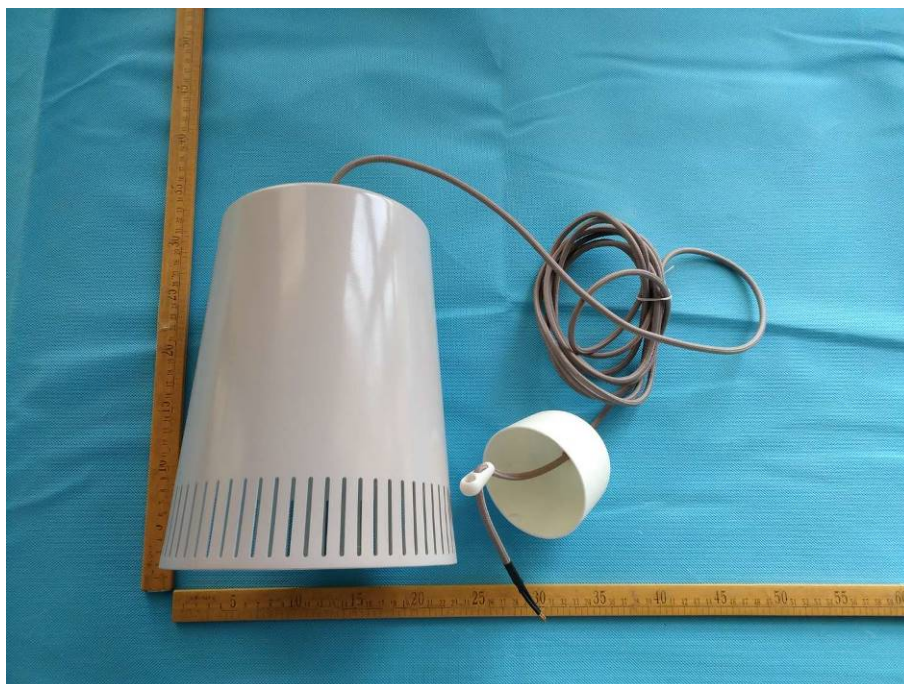


Picture 5: E27 lampholder



Picture 6: internal view of lampholder

Attachment 1: Photo Documentation



Picture 7: whole view of 5005026

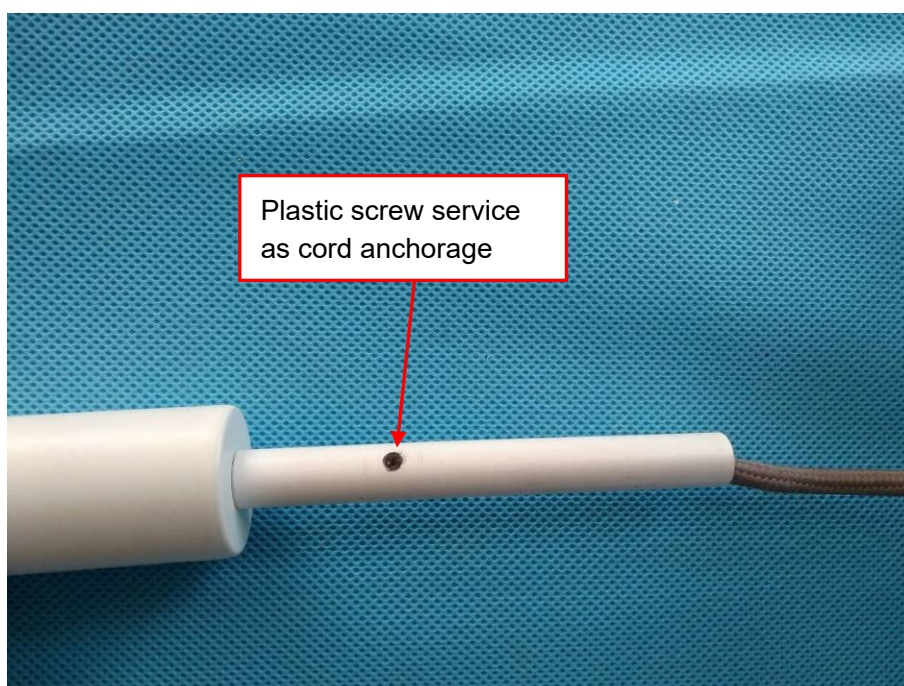


Picture 8: cord entrance of lamp part

Attachment 1: Photo Documentation

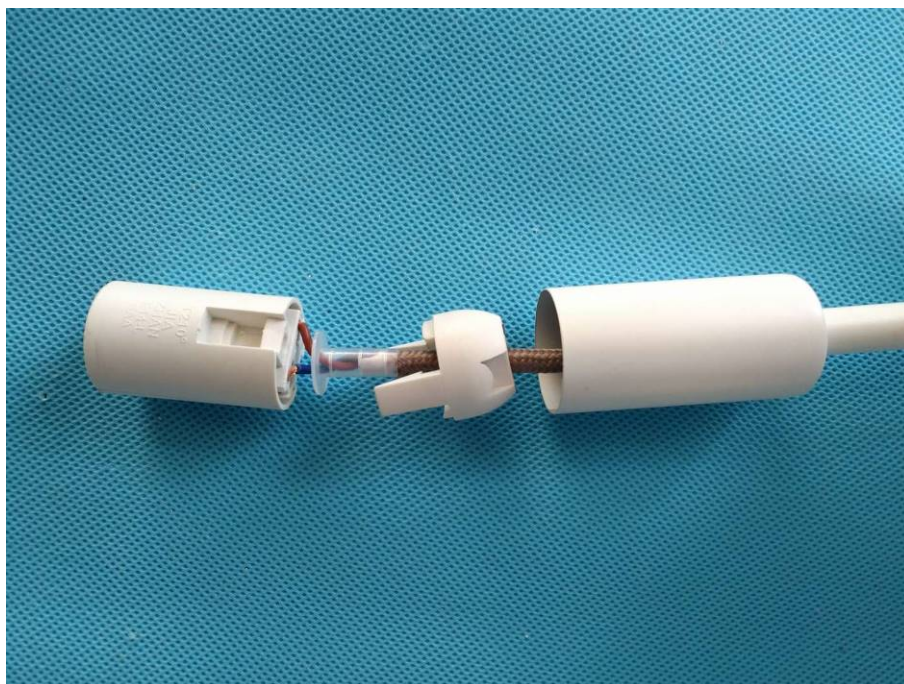


Picture 9: internal view of lamp part

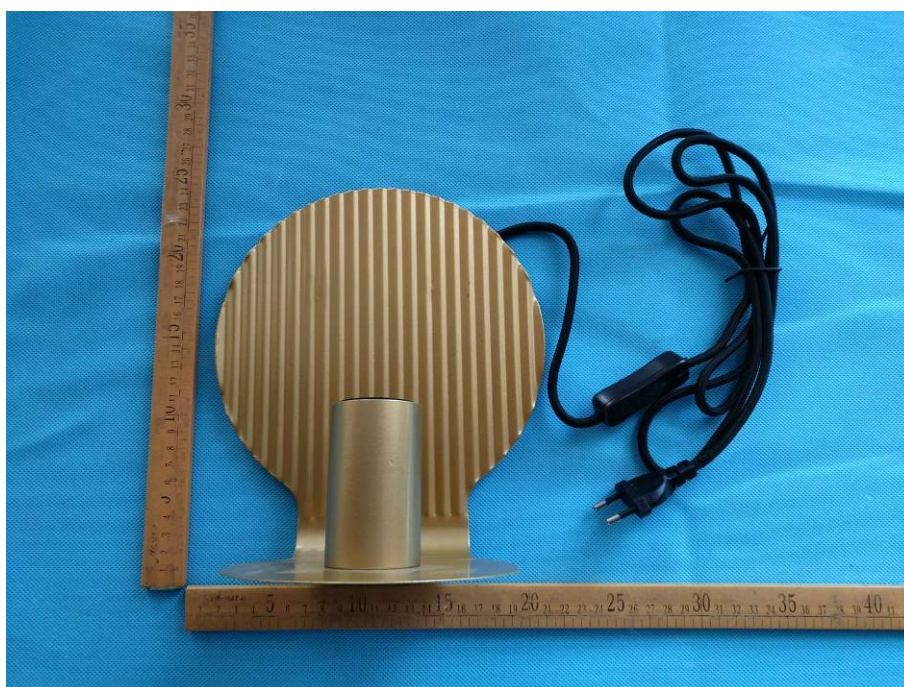


Picture 10: cord anchorage on lamp part

Attachment 1: Photo Documentation

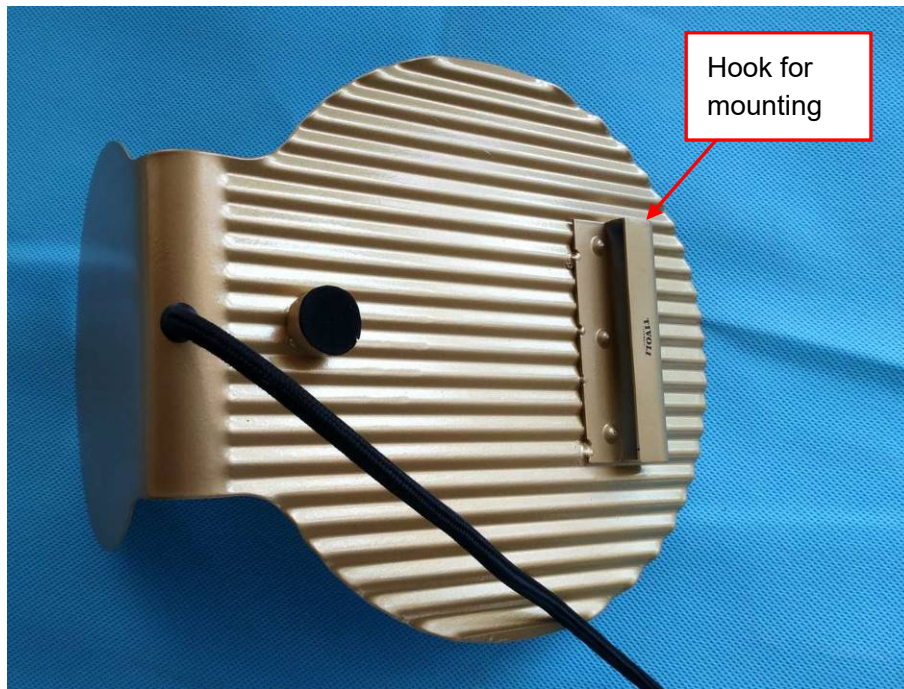


Picture 11: internal view of lampholder



Picture 12: whole view of 5005012

Attachment 1: Photo Documentation



Picture 13: cord entrance



Picture 14: whole view of 5005018

Attachment 1: Photo Documentation



Picture 15: whole view of 5005020



Picture 16: top view of 5005020

Attachment 1: Photo Documentation



Picture 17: whole view of 503010
(wood plate for accessory purpose did not mounted)



Picture 18: cord anchorage on lamp part

--- END OF TEST REPORT ---