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检测
TESTING
CNAS L6478

TEST REPORT

Reference No.	:	WTF23F10219599L
Applicant	:	Mid Ocean Brands B.V.
Address	:	7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer	:	118641
Address	:	/
Product Name	:	Wireless charging lamp speaker
Model No.	:	MO2124
Test specification	:	Luminaires Part 2-4: Portable general purpose luminaires IEC 60598-1:2020 IEC 60598-2-4:2017
Date of Receipt sample	:	2023-10-30
Date of Test	:	2023-10-30 to 2023-11-08
Date of Issue	:	2023-11-17
Test Report Form No.	:	WSL-6059824A-02A
Test Result	:	**Pass**

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:
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Tested by:

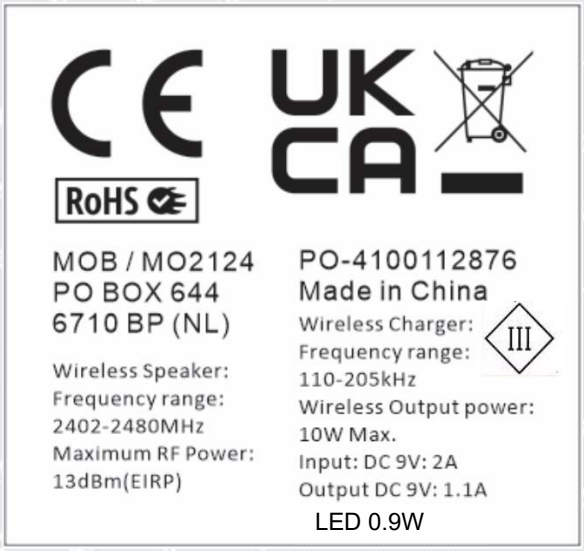
Nicole He

Approved by:

Jerry Mu

Test item description	:	Table light wireless charger
Trade Mark	:	MOB
Model/Type reference	:	MO2124
Ratings	:	SELV 9Vdc, LED 0.9W, Class III, IP20, wireless charger: Max. 10W

Copy of marking plate:



On the luminaires surface

Remark:
1. As declared by the applicant, the importer (and manufacturer, if it is different)'s name, registered trade name or registered trade mark and the postal address will be marked on the products before being place on the market. The contact details shall be in a language easily understood by end-users and market surveillance authorities.
2. Marking on the packaging or in a document accompanying the electrical equipment is only acceptable if it is not possible to place such markings on the product.

Summary of testing:

1. All tests were carried out on the representative model MO2124, and found to comply with the requirements of the standards mentioned in page one.
2. EN deviation for IEC 60598-2-4:2017 and IEC 60598-1:2020 was considered and found to comply with the requirement.
3. The touch switch were assessed acc. to EN 61347-2-11:2001+A1:2019, EN 61347-1:2015+A1:2021 and Australia deviation of AS/NZS 61347.1:2016+A1:2018, and the test result was found to comply with the requirement. And switch was tested with appliance for 10000 cycles operating test according to IEC 61058-1-1:2016 and found to comply with the requirement.
4. Integral LED module was assessed according to IEC 62031:2018 and found to comply with the requirement.
5. Retinal blue light hazard was assessed according to IEC/TR 62778:2014, lamp classification group: RG0 unlimited.
6. Photobiological safety was assessed according to EN 62471:2008, classification group: exempt ☒ risk 1☐ risk 2☐ risk 3☐.
7. Wireless charger was assessed according to EN IEC 62368-1:2020+A11:2020, see Waltek report WTF23D10219598Y.
8. Assessment of lighting equipment related to human exposure to electromagnetic fields was evaluated and fulfilled the requirements of EN 62493:2015 and found to comply with the requirement.
9. Only the most unfavorable results are recorded in this report.

Test items particulars:

Classification of installation and use .....: Portable

Supply Connection.....: DC inlet

Possible test case verdicts:

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

General remarks:

"(see remark #)" refers to a remark appended to the report.
"(see appended table)" refers to a table appended to the report.
Throughout this report a point is used as the decimal separator.

Use of uncertainty of measurement for decisions on conformity (decision rule) :
No decision rule is specified by the standard, when comparing the measurement result with the applicable limit according to the specification in that standard.
The decisions on conformity are made without applying the measurement uncertainty (“simple acceptance” decision rule, previously known as “accuracy method”).

General product information:

Portable general purpose luminaires. For indoor use only and suitable for mounting on the normally

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

4.4 (0)	**GENERAL TEST REQUIREMENTS**		P
4.4 (0.3)	More sections applicable.....	Yes ☐ No ☒ Section/s:	—
4.4 (0.5)	Components	(see Annex 1)	—
4.4 (0.7)	**Information for luminaire design in light sources standards**		—
4.4 (0.7.2)	Light source safety standard	IEC 62031	—
	Luminaire design in the light source safety standard		P

4.5 (2)	**CLASSIFICATION OF LUMINAIRES**		P
4.5 (2.2)	Type of protection	Class III	P
4.5 (2.3)	Degree of protection	IP20	—
4.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces.....	Yes ☒ No ☐	—
4.5 (2.5)	Luminaire for normal use	Yes ☒ No ☐	—
	Luminaire for rough service	Yes ☐ No ☒	—
4.5.1 (-)	Ordinary luminaire classified “for indoor use only”	Yes ☒ No ☐	—
	Luminaires other than ordinary classified “for indoor use only”.....	Yes ☐ No ☒	—
	Luminaires other than ordinary classified for “outdoor use” and “for indoor use”.....	Yes ☐ No ☒	—
4.5.2 (-)	Portable luminaire for outdoor use classified IPX4 or higher		N
4.5.3 (-)	Luminaires designed for standing on a floor or table classified as suitable for direct mounting on normally flammable surfaces		P

4.6 (3)	**MARKING**		P
4.6 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
4.6 (3.3)	Additional information		P
	Language of instructions	English	P
4.6 (3.3.1)	Combination luminaires		N
4.6 (3.3.2)	Nominal frequency in Hz		N
4.6 (3.3.3)	Operating temperature		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
4.6 (3.3.5)	Wiring diagram		N
4.6 (3.3.6)	Special conditions		N
4.6 (3.3.7)	Metal halide lamp luminaire – warning		N
4.6 (3.3.8)	Limitation for semi-luminaires		N
4.6 (3.3.9)	Power factor and supply current		N
4.6 (3.3.10)	Suitability for use indoors		N
4.6 (3.3.11)	Luminaires with remote control		N
4.6 (3.3.12)	Clip-mounted luminaire – warning		N
4.6 (3.3.13)	Specifications of protective shields		N
4.6 (3.3.14)	Symbol for nature of supply		N
4.6 (3.3.15)	Rated current of socket outlet		N
4.6 (3.3.16)	Rough service luminaire		N
4.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		N
4.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N
4.6 (3.3.19)	Protective conductor current in instruction if applicable		N
4.6 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N
4.6 (3.3.21)	Non replaceable and non-user replaceable light sources information provided		P
4.6 (3.3.22)	Controllable luminaires, classification of insulation provided		N
4.6 (3.3.23)	Luminaires without controlgear provided with necessary information for selection of appropriate component		N
4.6 (3.3.24)	If not supplied with terminal block, information on the packaging		N
4.6 (3.3.25)	Luminaires employing light sources emitting UV on mains wiring, information provided		N
4.6 (3.3.26)	Wall mounted luminaire using external flexible cable or cord longer than 0.3 m, information provided		N
4.6 (3.4)	Test with water	15s	P
	Test with hexane	15s	P
	Legible after test		P
	Label attached		P
4.6.1 (-)	Luminaire not suitable for outdoor application		P
	Required symbol		P

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	Information in the instructions		P
4.6.2 (-)	Outdoor use, socket outlet incorporated in the luminaire		N
	Maximum power rating marked		N
	Position of the marking		N
4.7 (4)	**CONSTRUCTION**		P
4.7 (4.2)	Components replaceable without difficulty		P
4.7 (4.3)	Wireways smooth and free from sharp edges		P
4.7 (4.4)	**Lampholders**		**N**
4.7 (4.4.1)	Integral lampholder		N
4.7 (4.4.2)	Wiring connection		N
4.7 (4.4.3)	Lampholder for end-to-end mounting		N
4.7 (4.4.4)	Positioning		N
	- pressure test (N)		—
	After test the lampholder comply with relevant standard sheets and show no damage		N
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N
	- bending test (N)		—
	After test the lampholder has not moved from its position and show no permanent deformation		N
4.7 (4.4.5)	Peak pulse voltage		N
4.7 (4.4.6)	Centre contact		N
4.7 (4.4.7)	Parts in rough service luminaires resistant to tracking		N
4.7 (4.4.8)	Lamp connectors		N
4.7 (4.4.9)	Caps and bases correctly used		N
4.7 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N
4.7 (4.5)	**Starter holders**		**N**
	Starter holder in luminaires other than class II		N
	Starter holder class II construction		N
4.7 (4.6)	**Terminal blocks**		**N**
	Tails		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	Unsecured blocks		N
4.7 (4.7)	**Terminals and supply connections**		**P**
4.7 (4.7.1)	Contact to metal parts		P
4.7 (4.7.2)	Test 8 mm live conductor		N
	Test 8 mm earth conductor		N
4.7 (4.7.3)	Terminals for supply conductors		N
4.7 (4.7.3.1)	Welded method and material		N
	- stranded or solid conductor		N
	- spot welding		N
	- welding between wires		N
	- Type Z attachment		N
	- mechanical test according to 15.6.2		N
	- electrical test according to 15.6.3		N
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N
4.7 (4.7.4)	Terminals other than supply connection		N
4.7 (4.7.5)	Heat-resistant wiring/sleeves		N
4.7 (4.7.6)	Multi-pole plug		N
	- test at 30 N		N
4.7 (4.8)	**Switches**		**P**
	- adequate rating		P
	- adequate fixing		P
	- polarized supply		N
	- compliance with IEC 61058-1 for electronic switches		P
4.7 (4.9)	**Insulating lining and sleeves**		**N**
4.7 (4.9.1)	Retainment		N
	Method of fixing		N
4.7 (4.9.2)	Insulated linings and sleeves:		N
	Resistant to a temperature > 20 °C to the wire temperature or		N
	a) & c) Insulation resistance and electric strength		N
	b) Ageing test. Temperature (°C)		N
4.7 (4.10)	**Double or reinforced insulation**		**N**

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
4.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N
	Safe installation fixed luminaires		N
	Capacitors and switches		N
4.7 (4.10.2)	Assembly gaps:		N
	- not coincidental		N
	- no straight access with test probe		N
4.7 (4.10.3)	Retainment of insulation:		N
	- fixed		N
	- unable to be replaced; luminaire inoperative		N
	- sleeves retained in position		N
	- lining in lampholder		N
4.7 (4.10.4)	Protective impedance device		N
	Basic and supplementary insulation bridged by resistor(s) or appropriate capacitor		N
	Double or reinforced insulation bridged by at least two separate resistors in series or appropriate capacitor(s)		N
	Capacitors comply with IEC 60384-14		N
	Resistors comply with test (a) in 14.2 of IEC 60065		N
4.7 (4.11)	**Electrical connections and current-carrying parts**		**P**
4.7 (4.11.1)	Contact pressure		P
4.7 (4.11.2)	Screws:		N
	- self-tapping screws		N
	- thread-cutting screws		N
4.7 (4.11.3)	Screw locking:		N
	- spring washer		N
	- rivets		N
4.7 (4.11.4)	Material of current-carrying parts		P
4.7 (4.14.7)	No contact to wood or mounting surface		P
4.7 (4.14.7)	Electro-mechanical contact systems		P
4.7 (4.12)	**Screws and connections (mechanical) and glands**		**P**
4.7 (4.12.1)	Screws not made of soft metal		N
	Screws of insulating material		P
	Torque test: torque (Nm); part	Screw fixed bottom enclosure: 0.4Nm	P

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	Torque test: torque (Nm); part		N
	Torque test: torque (Nm); part		N
4.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N
4.7 (4.12.4)	Locked connections:		N
	- fixed arms; torque (Nm).....	--	N
	- lampholder; torque (Nm)	--	N
	- push-button switches; torque 0,8 Nm.....	--	N
4.7 (4.12.5)	Screwed glands; force (Nm).....	--	N
4.7 (4.13)	**Mechanical strength**		**P**
4.7 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm).....	--	N
	- other parts; energy (Nm)	All enclosure and cover: 0.5Nm	P
	1) live parts		P
	2) linings		P
	3) protection		P
	4) covers		P
4.7 (4.13.2)	Metal parts have adequate mechanical strength		P
4.7 (4.13.3)	Straight test finger	30N	P
4.7 (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
4.7 (4.13.6)	Tumbling barrel		N
4.7 (4.14)	**Suspensions, fixings and means of adjusting**		**P**
4.7 (4.14.1)	Mechanical load:		N
	A) four times the weight		N
	B) torque 2,5 Nm		N
	C) bracket arm; bending moment (Nm).....		N
	D) load track-mounted luminaires		N
	E) clip-mounted luminaires, glass-shelve. Thickness (mm)		N
	Metal rod. diameter (mm)		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	Fixed luminaire or independent control gear without fixing devices		N
4.7 (4.14.2)	Load to flexible cables		N
	Mass (kg)		—
	Stress in conductors (N/mm²)		N
	Mass (kg) of semi-luminaire		N
	Bending moment (Nm) of semi-luminaire		N
4.7 (4.14.3)	Adjusting devices:		P
	- flexing test; number of cycles	1500	P
	- strands broken	0	P
	- electric strength test afterwards		P
4.7 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N
4.7 (4.14.5)	Guide pulleys		N
4.7 (4.14.6)	Strain on socket-outlets		N
4.7 (4.15)	**Flammable materials**		**P**
	- glow-wire test 650°C	See Test Table 1.15 (13.3.2)	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
4.7 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N
	a) construction		N
	b) temperature sensing control		N
	c) surface temperature		N
4.7 (4.16)	**Luminaires for mounting on normally flammable surfaces**		**P**
	No lamp control gear	(compliance with Section 12)	P
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		N
4.7 (4.16.1)	Lamp control gear spacing:		N
	- spacing 35 mm		N
	- spacing 10 mm		N
4.7 (4.16.2)	Thermal protection:		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	- in lamp control gear		N
	- external		N
	- fixed position		N
	- temperature marked lamp control gear		N
4.7 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N
4.7 (4.17)	**Drain holes**		**N**
	Clearance at least 5 mm		N
4.7 (4.18)	**Resistance to corrosion**		**N**
4.7 (4.18.1)	- rust-resistance		N
4.7 (4.18.2)	- season cracking in copper		N
4.7 (4.18.3)	- corrosion of aluminium		N
4.7 (4.19)	Ignitors compatible with ballast		N
4.7 (4.20)	Rough service vibration		N
4.7 (4.21)	**Protective shield**		**N**
4.7 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N
	Shield of glass if tungsten halogen lamps		N
4.7 (4.21.2)	Particles from a shattering lamp not impair safety		N
4.7 (4.21.3)	No direct path		N
4.7 (4.21.4)	Impact test on shield		N
	Glow-wire test on lamp compartment.....	See Test Table 1.15 (13.3.2)	N
4.7 (4.22)	Attachments to lamps not cause overheating or damage		N
4.7 (4.23)	Semi-luminaires comply Class II		N
4.7 (4.24)	**Photobiological hazards**		**P**
4.7 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N
4.7 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778	RG0 unlimited	—
	Luminaires with E_{thr} :		N
	a) Fixed luminaires		N
	- distance x m, borderline between RG1 and RG2		N
	- marking and instruction according 3.2.23		N
	b) Portable and handheld luminaires		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N
4.7 (4.25)	**Mechanical hazard**		**P**
	No sharp point or edges		P
4.7 (4.26)	**Short-circuit protection**		**N**
4.7 (4.26.1)	Adequate means of uninsulated accessible SELV or PELV parts		N
4.7 (4.26.2)	Short-circuit test with test chain according 4.26.3		N
	Supply source ES1 PSE		N
	Test chain not melt through		N
	Test sample not exceed values of Table 12.1 and 12.2		N
4.7 (4.27)	**Terminal blocks with integrated screwless protective earthing contacts**		**N**
	Test according Annex V		N
	Pull test of terminal fixing (20 N)		N
	After test, resistance < 0,05 Ω		N
	Pull test of mechanical connection (50 N)		N
	After test, resistance < 0,05 Ω		N
	Voltage drop test, resistance < 0,05 Ω		N
4.7 (4.28)	**Fixing of thermal sensing control**		**N**
	Not 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
	Max. temperature on adhesive material (°C)		—
	100 cycles between t_{min} and t_{max}		N
	Temperature sensing control still in position		N
4.7 (4.29)	**Luminaires with non-replaceable light source**		**N**
	Not possible to replace light source		N
	Live part not accessible after parts have been opened by hand or tools		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

4.7 (4.30)	**Luminaires with non-user replaceable light source**		**P**
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N
	At least one fixing means requiring use of tool	Class III	N
4.7 (4.31)	**Insulation between circuits**		**P**
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		N
	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
4.7 (4.31.1)	SELV or PELV circuits		P
	Used SELV or PELV source		P
	Voltage ≤ ELV		P
	Insulating of SELV or PELV circuits from LV supply		P
	Insulating of SELV or PELV circuits from other non SELV or PELV circuits		N
	Insulating of SELV or PELV circuits from FELV		N
	Insulating of SELV or PELV circuits from other SELV or PELV circuits		N
	SELV or PELV circuits insulated from accessible parts according Table X.1		P
	Plugs not able to make any electrical contact with socket-outlets of other voltage systems		N
	Socket outlets does not admit plugs of other voltage systems		N
	Plugs and socket-outlets does not have protective conductor contact		N
4.7 (4.31.2)	FELV circuits		N
	Used FELV source		N
	Voltage ≤ ELV		N
	Insulating of FELV circuits from LV supply		N
	FELV circuits insulated from accessible parts according Table X.1		N
	Plugs not able to make any electrical contact with socket-outlets of other voltage systems		N
	Socket outlets does not admit plugs of other voltage systems		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	Socket-outlets have protective conductor contact		N
4.7 (4.31.3)	Other circuits		P
	Other circuits insulated from accessible parts according Table X.1		P
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N
	- conductive parts are connected together		N
	- test according 7.2.3		N
	- conductive part does not cause an electric shock in case of an insulation fault		N
	- equipotential bonding in master/slave applications		N
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N
	- slave luminaire constructed as class I		N
4.7 (4.32)	**Overvoltage protective devices**		**N**
	Comply with IEC 61643-11		N
	External to controlgear and connected to earth:		N
	- only in fixed luminaires		N
	- only connected to protective earth		N
4.7 (4.33)	**Luminaire powered via information technology communication cabling**		**P**
	Requirements for Class III luminaire		P
	Rated voltage within the range of ES1 and does not exceed maximum voltage of used connector		P
	Luminaire does not create any hazard from overvoltage	(see Annex 2)	P
4.7 (4.34)	**Electromagnetic fields (EMF)**		**P**
	No harmful electromagnetic fields		P
4.7 (4.35)	**Protection against moving fan blades**		**N**
	Test with a standard test finger		N
	Test with test probe acc. to Figure 13 (IEC 61032) for portable luminaire		N
	Blades rounded with radius ≥ 0.5 mm and:		N
	- hardness less than D60 Shore		N
	- peripheral speed less than 15 m/s		N
	- input power of fan ≤ 2 W at rated voltage		N
4.7 (4.36)	**Track-mounted luminaires**		**N**

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	Test in accordance with Annex A of IEC60570:2003/AMD2:2019		N
4.7.1 (-)	Insulation not damaged when moving, adjusting or placing on support		P
4.7.2 (-)	Wiring fixed, to avoid rubbing		P
	Carrier or clips of insulation material or with insulating lining		P
4.7.3 (-)	Luminaire does not overturn:		P
	- at an angle of 6° for indoor use		P
	- at an angle 15° for outdoor use		N
4.7.4 (-)	Candlestick luminaires provided with switch		N
	Switch in candlestick luminaires with E5 or E10 lampholders switches all lamps on and off simultaneously		N
	Switch part of the luminaire or within 300 mm of the luminaire if with cord		N
4.7.5 (-)	Voltage not exceeding 25 V for E5 lampholders		N
	E10 lampholder voltage:		N
	- not exceeding 60 V for series connection		N
	- not exceeding 250 V for parallel connection		N
	Maximum rated wattage does not exceed 100 W		N
4.7.6 (-)	Tails not provided for luminaires for outdoor use		N
4.7.7 (-)	Not more than two cable entries for luminaires for outdoor use		N
4.7.8 (-)	Portable luminaires for outdoor use, socket-outlet degree of protection at least same as the luminaire but not less than IPX4.		N
	Degree of protection maintained with or without a plug inserted into the socket-outlet.		N
	Class II luminaires, mains socket-outlets comply with the standard and only allow connection to Class II luminaires		N
	Class I luminaires, mains socket-outlets comply with the standard and only allow connection to Class I or Class II luminaires		N
4.7.9 (-)	Lampholders and plugs resistant to tracking for luminaires for outdoor use	See Test Table 4.16 (13.4)	N
	Compliance to clause 13.4		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

4.8 (11)	**CREEPAGE DISTANCES AND CLEARANCES**		**P**
4.8 (11.2.1)	Impulse withstand category (Normal category II)	Category II ☒ Category III ☐	—
	Category III according Annex U		N
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N
4.8 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 4.8 (11.2) I	P
	Creepage distances for frequency over 30 kHz:		N
	- Controlgear marked with $\hat{U}_{OUT}$ and f_{UOUT} according IEC 61347-1, clause 7.1, item w	See Test Table 4.8 (11.2) II	N
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 4.8 (11.2) II	N
4.8 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 4.8 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N
	- Controlgear marked with U_P	See Test Table 4.8 (11.2) II	N
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 4.8 (11.2) II	N

4.9 (7)	**PROVISION FOR EARTHING**		**N**
4.9 (7.2.1 + 7.2.3)	Accessible metal parts		N
	Metal parts in contact with supporting surface		N
	Resistance < 0,5 Ω		N
	Self-tapping screws used		N
	Thread-forming screws		N
	Thread-forming screw used in a grove		N
	Protective earth makes contact first		N
	Terminal blocks with integrated screwless protective earthing contacts tested according Annex V		N
	Protective earthing of the luminaire not via built-in control gear		N
4.9 (7.2.2 + 7.2.3)	Protective earthing continuity in joints, etc.		N
4.9 (7.2.4)	Locking of clamping means		N
	Compliance with 4.7.3		N
4.9 (7.2.5)	Earth terminal integral part of connector socket		N
4.9 (7.2.6)	Earth terminal adjacent to mains terminals		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
4.9 (7.2.7)	Electrolytic corrosion of the protective earth terminal		N
4.9 (7.2.8)	Material of protective earth terminal		N
	Contact surface bare metal		N
4.9 (7.2.10)	Class II luminaire for looping-in		N
	Double or reinforced insulation to functional earth		N
4.9 (7.2.11)	Protective earthing core coloured green-yellow		N
	Length of protective earthing conductor		N
4.9 (7.2.12)	PELV circuit connected to protective earth for functional purpose		N
4.10 (14)	**SCREW TERMINALS**		**N**
	Separately approved; component list	(see Annex 1)	N
	Part of the luminaire.....	(see Annex 3)	N
4.10 (15)	**SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS**		**N**
	Separately approved; component list	(see Annex 1)	N
	Part of the luminaire.....	(see Annex 4)	N
4.11 (5)	**EXTERNAL AND INTERNAL WIRING**		**P**
4.11 (5.2)	**Supply connection and external wiring**		**P**
4.11 (5.2.1)	Means of connection	DC inlet	P
	Outdoor luminaire has not PVC insulated external wiring if not Class III or SELV/PELV circuits ≤ 25 V AC/60 V DC/25 V peak interrupted DC voltage with frequency 10Hz - 200 Hz or protected from outdoor environment		N
4.11 (5.2.2)	Type of cable	see Annex 1	N
	Nominal cross-sectional area (mm²).....	see Annex 1	N
	Cables equal to IEC 60227 or IEC 60245		N
4.11 (5.2.3)	Type of attachment, X, Y or Z		N
4.11 (5.2.5)	Type Z not connected to screws		N
4.11 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
4.11 (5.2.7)	Cable entries through rigid material have rounded edges		P
4.11 (5.2.8)	Insulating bushings:		N
	- suitably fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- tubes or guards made of insulating material		N
4.11 (5.2.9)	Locking of screwed bushings		N
4.11 (5.2.10)	Cord anchorage:		N
	- covering protected from abrasion		N
	- clear how to be effective		N
	- no mechanical or thermal stress		N
	- no tying of cables into knots etc.		N
	- insulating material or lining		N
4.11 (5.2.10.1)	Cord anchorage for type X attachment:		N
	a) at least one part fixed		N
	b) types of cable		N
	c) no damaging of the cable		N
	d) whole cable can be mounted		N
	e) no touching of clamping screws		N
	f) metal screw not directly on cable		N
	g) replacement without special tool		N
	Glands not used as anchorage		N
	Labyrinth type anchorages		N
4.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N
4.11 (5.2.10.3)	Tests:		N
	- impossible to push cable; unsafe		N
	- pull test: 25 times; pull (N).....		N
	- torque test: torque (Nm)		N
	- displacement ≤ 2 mm		N
	- no movement of conductors		N
	- no damage of cable or cord		N
	- function independent of electrical connection		N
4.11 (5.2.10.4)	Luminaire with/designed for use with supply cord with maximum current of 2A:		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	- Ordinary Class III luminaire supplied with SELV ≤ 25V RMS/60V DC		N
	- Ordinary Class III luminaire supplied with PELV ≤ 12V RMS/30V DC		N
	- Other than ordinary Class III luminaire supplied with voltage ≤ 12V RMS/30V DC		N
	Pull test of 30 N		N
4.11 (5.2.11)	External wiring passing into luminaire		N
4.11 (5.2.12)	Looping-in terminals		N
4.11 (5.2.13)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N
4.11 (5.2.14)	Mains plug same protection		N
	Class III luminaire plug		N
	No unsafe compatibility		N
4.11 (5.2.15)	Connectors for Class III luminaires (IEC 60603 or IEC 62680)		N
4.11 (5.2.16)	Appliance inlets (IEC 60320)		N
	Installation couplers (IEC 61535)		N
	Appliance inlet or connector systems (IEC 61984)		N
4.11 (5.2.17)	No standardized interconnecting cables properly assembled		N
4.11 (5.2.18)	Used plug in accordance with		N
	- IEC 60083		N
	- other standard		N
4.11 (5.3)	**Internal wiring**		**P**
4.11 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		N
	- not delivered/ mounting instruction		N
	- factory assembled		N
	- socket outlet loaded (A).....		N
	- temperatures	(see Annex 2)	N
	Green-yellow for protective earth only		N
4.11 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N
	Cross-sectional area (mm²).....	see Annex 1	N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	Insulation thickness (mm)		N
	Extra insulation added where necessary		N
4.11 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P
	Cross-sectional area (mm²)	see Annex 1	P
4.11 (5.3.1.3)	Double or reinforced insulation for class II		N
4.11 (5.3.1.4)	Conductors without insulation		N
4.11 (5.3.1.5)	SELV or PELV current-carrying parts		P
4.11 (5.3.1.6)	Insulation thickness other than PVC or rubber		N
4.11 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N
	Joints, raising/lowering devices		N
	Telescopic tubes etc.		N
	No twisting over 360°		P
4.11 (5.3.3)	Insulating bushings:		P
	- suitable fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- cables with protective sheath		P
4.11 (5.3.4)	Joints and junctions effectively insulated		N
4.11 (5.3.5)	Strain on internal wiring		N
4.11 (5.3.6)	Wire carriers		N
4.11 (5.3.7)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N
4.11 (5.4)	**Test to determine suitability of conductors having a reduced cross-sectional area**		**P**
	Under test the temperature of the luminaire wiring insulation does not exceed the limits stated in Table 12.2		P
	No damage to luminaire wiring after test		P
4.11.1 (-)	Cord anchorage of luminaire for indoor use made of glass or ceramic not fixed or integral		N
4.11.2 (-)	For Class I and Class II luminaires for indoor use, if:		N
	- mass < 1 kg (kg)		N
	- rated current ≤ 2,5 A (A)		N
	- cable length ≤ 2 m (m)		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	- the nominal cross-sectional area of copper conductor ≥ 0,5 mm² (mm²)		N
4.11.3 (-)	Terminals, cord anchorage and inlet opening provided for luminaire for outdoor use delivered without a flexible cable or cord and a plug.		N
4.11.4 (-)	Non-detachable flexible cables or cords not lighter than type 245 IEC 57 for Class I and Class II luminaires for outdoor use.		N
4.12 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		**N**
4.12 (8.2.1)	Live parts not accessible	Class III	N
	Basic insulated parts not used on the outer surface without appropriate protection		N
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		N
	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		N
	Protection in any position		N
	Double-ended tungsten filament lamp		N
	Insulation lacquer not reliable		N
	Double-ended high-pressure discharge lamp		N
	Relevant warning according to 3.2.18 fitted to the luminaire		N
4.12 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N
4.12 (8.2.3.a)	Class II luminaire:		N
	- basic insulated metal parts not accessible		N
	- required insulation from live parts in compliance with Table X.1		N
	- glass protective shields not used as supplementary insulation		N
4.12 (8.2.3.b)	Metal BC lampholder in class I luminaires connected to protective earth		N
4.12 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	Ordinary luminaire:		N
	- voltage under load/ no-load AC (V).....		N
	- voltage under load/ no-load DC (V).....		N
	- interrupted DC voltage (V).....		N
	- touch current if applicable (mA)		N
	One conductive part insulated		N
	Other than ordinary luminaire:		N
	- voltage under load/ no-load AC (V).....		N
	- voltage under load/ no-load DC (V).....		N
	- interrupted DC voltage (V).....		N
4.12 (8.2.3.d)	PELV circuits with exposed current carrying parts:		N
	Ordinary luminaire:		N
	- voltage under load/ no-load AC (V).....		N
	- voltage under load/ no-load DC (V).....		N
	Other than ordinary luminaire:		N
	- voltage under load/ no-load AC (V).....		N
	- voltage under load/ no-load DC (V).....		N
	Pole not connected to earth insulated		N
	Class III luminaire only for connection to SELV or PELV		N
4.12 (8.2.4)	Portable luminaire has protection independent of supporting surface		N
4.12 (8.2.5)	Compliance with the standard test finger or relevant probe		N
4.12 (8.2.6)	Covers reliably secured		N
4.12 (8.2.7)	Luminaire other than below with capacitor > 0,5 μF not exceed 50 V 1 min after disconnection		N
	Portable luminaire with capacitor > 0,1 μF (0,25) not exceed 34 V 1 s after disconnection		N
	Other luminaires with capacitor > 0,1 μF (0,25) with plug and track adaptors not exceed 60 V 5 s after disconnection		N
4.12 (-)	Class I luminaire with bayonet lampholder:		N
	1) cap not accessible with test finger		N
	2) metal lampholder is earthed		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

4.13 (12)	**ENDURANCE TEST AND THERMAL TEST**		P
4.13 (-)	If IP > IP 20 relevant test of (12.4), (12.5), (12.6) and (12.7) after (9.2) but before (9.3) specified in 4.14		—
4.13 (12.2)	**Selection of lamps and ballasts**		**—**
	Lamp used according Annex B	(Lamp used see Annex 2)	—
	Controlgear if separate and not supplied	(Controlgear used see Annex 2)	—
4.13 (12.3)	**Endurance test**		**P**
	a) mounting-position	As in normal used	—
	b) test temperature (°C).....	35 °C	—
	c) total duration (h)	240 h	—
	d) supply voltage (V).....	--	—
	d) if not equipped with controlgear, constant voltage/current (V) or (A)	1.1 x 9V	—
1.13 (12.3.1d)	d) Class III luminaires powered via information technology communication cable:		—
	- voltage under normal operation (V).....	1.1 times rated voltage	—
	- voltage under abnormal operation (V).....	1.3 times rated voltage	—
	e) luminaire ceases to operate		—
	f) luminaire with a constant light output function		P
4.13 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N
	- marking legible		P
	- no cracks, deformation etc.		P
4.13 (12.4)	**Thermal test (normal operation)**	(Annex 2)	P
4.13 (12.5)	**Thermal test (abnormal operation)**	(Annex 2)	P
4.13 (12.6)	**Thermal test (failed lamp control gear condition):**		**N**
4.13 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		—
	- case of abnormal conditions.....		—
	- electronic lamp control gear		N
	- measured winding temperature (°C): at 1,1 Un .		—
	- measured mounting surface temperature (°C) at 1,1 Un		N
	- calculated mounting surface temperature (°C) ..		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	- track-mounted luminaires		N
4.13 (12.6.2)	Temperature sensing control		N
	- case of abnormal conditions.....		—
	- thermal link		N
	- manual reset cut-out		N
	- auto reset cut-out		N
	- measured mounting surface temperature (°C) ..		N
	- track-mounted luminaires		N
4.13 (12.7)	**Thermal test (failed lamp control gear in plastic luminaires):**		**N**
4.13 (12.7.1)	Luminaire without temperature sensing control		N
4.13 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N
	Test method 12.7.1.1 or Annex W		—
	Test according to 12.7.1.1:		N
	- case of abnormal conditions.....		—
	- Ballast failure at supply voltage (V)		—
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
	Test according to Annex W:		N
	- case of abnormal conditions.....		—
	- measured winding temperature (°C): at 1,1 Un..		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un		—
	- calculated temperature of fixing point/exposed part (°C)		—
	Ball-pressure test.....	See Test Table 1.15 (13.2.1)	N
4.13 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N
	- case of abnormal conditions.....		—
	- measured winding temperature (°C): at 1,1 Un..		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un		—
	- calculated temperature of fixing point/exposed part (°C)		—
	Ball-pressure test.....	See Test Table 1.15 (13.2.1)	N
4.13 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N
	- case of abnormal conditions.....		—

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
4.13 (12.7.2)	Luminaire with temperature sensing control		N
	- thermal link	Yes ☐ No ☐	—
	- manual reset cut-out.....	Yes ☐ No ☐	—
	- auto reset cut-out.....	Yes ☐ No ☐	—
	- case of abnormal conditions.....		—
	- highest measured temperature of fixing point/ exposed part (°C):		—
	Ball-pressure test:.....	See Test Table 4.15 (13.2.1)	N
4.13 (-)	Luminaire for indoor use tested in overturned position (overturns < 15°)	Overturned	P
4.14 (9)	**RESISTANCE TO DUST AND MOISTURE**		**P**
4.14 (-)	If IP > IP 20 the order of tests as specified in clause 4.13		N
4.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP	IP20	—
	- mounting position during test	As in normal used	—
	- 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 on insulation where it could become a hazard		N
	c.1) For luminaires without drain holes – no water entry		N
	c.2) For luminaires with drain holes – no hazardous water entry		N
	d) no water in watertight, pressure watertight, high pressure and temperature water jet-proof or high pressure and cold-water jet-proof luminaire		N
	e) no contact with live parts (IP 2X)		P
	e) no entry into enclosure (IP 3X and IP 4X)		N
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	f) no trace of water on part of lamp requiring protection from splashing water		N
	g) no damage of protective shield or glass envelope		N
4.14 (9.3)	Humidity test 48 h		P

4.15 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		**P**
4.15 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø :	Covered by metal foil	P
	Insulation resistance (MΩ):		P
	SELV or PELV:		P
	- between current-carrying parts of different polarity:		N
	- between current-carrying parts and mounting surface	100 MΩ	P
	- between current-carrying parts and metal parts of the luminaire	100 MΩ	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N
	- Insulation bushings as described in Section 5 ..		N
	Other than SELV or PELV:		N
	- between live parts of different polarity.....		N
	- between live parts and mounting surface.....		N
	- between live parts and metal parts.....		N
	- between live parts of different polarity through action of a switch		N
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N
	- Insulation bushings as described in Section 5 ..		N
4.15 (10.2.2)	Electric strength test		P
	Dummy lamp		N
	Luminaires with ignitors after 24 h test		N
	Luminaires with manual ignitors		N
	Luminaires with ignitors provided with ballasts conforming to IEC 61347-2-9		N
	SELV or PELV:		P

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts of different polarity		N
	- between current-carrying parts and mounting surface	500V	P
	- between current-carrying parts and metal parts of the luminaire	500V	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N
	- Insulation bushings as described in Section 5 ..		N
	Other than SELV/PELV:		N
	- between live parts of different polarity.....		N
	- between live parts and mounting surface.....		N
	- between live parts and metal parts.....		N
	- between live parts of different polarity through action of a switch		N
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N
	- Insulation bushings as described in Section 5 ..		N
4.15 (10.3)	Touch current (mA).....		N
	Protective conductor current (mA).....		N
4.16 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
4.16 (13.2.1)	Ball-pressure test.....	See Test Table 4.16 (13.2.1)	P
4.16 (13.3.1)	Needle-flame test (10 s)	See Test Table 4.16 (13.3.1)	P
4.16 (13.3.2)	Glow-wire test (650°C)	See Test Table 4.16 (13.3.2)	P
4.16 (13.4)	Proof tracking test (IEC 60112)	See Test Table 4.16 (13.4)	N

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

4.8 (11.2)	TABLE I: Creepage distances and clearances							P
	Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages							
	Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2* and Table U.1*							
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**		
			clearance	***Table**		**creepage**	***Table**	
Working voltage (V) ..... :								—
PTI ..... :					< 600 ☐	≥ 600 ☐		—
Pulse voltage or U_P if applicable (kV) ..... :					--			—
Supplementary information: Class III work light, Max. input 9VDC or 5VDC								
Working voltage (V) ..... :								—
PTI ..... :					< 600 ☐	≥ 600 ☐		—
Pulse voltage or U_P if applicable (kV) ..... :					--			—
Supplementary information:								
Working voltage (V) ..... :								—
PTI ..... :					< 600 ☐	≥ 600 ☐		—
Pulse voltage or U_P if applicable (kV) ..... :					--			—
Supplementary information:								
** Insulation type: B – Basic; S – Supplementary; R – Reinforced. See also IEC 60598-1 Annex M.								
Working voltage (V) ..... :								—
PTI ..... :					< 600 ☐	≥ 600 ☐		—
Pulse voltage or U_P if applicable (kV) ..... :					--			—
Supplementary information:								
** Insulation type: B – Basic; S – Supplementary; R – Reinforced. See also IEC 60598-1 Annex M.								

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

4.8 (11.2)	TABLE II: Creepage distances and clearances							N
	Minimum distances (mm) for a.c. higher than 30 kHz sinusoidal voltages							
	Applicable part of IEC 61347-1 Table 7 and 8* or IEC 60664-4 Table 1 and 2							
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**		
			clearance	***Table**		**creepage**	***Table**	
Distance 1:								
Working voltage (V) ..... :								—
Frequency if applicable (kHz) ..... :								—
PTI ..... :					< 600 ☐		≥ 600 ☐	—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :								—
Supplementary information:								
Distance 2:								
Working voltage (V) ..... :								—
Frequency if applicable (kHz) ..... :								—
PTI ..... :					< 600 ☐		≥ 600 ☐	—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :								—
Supplementary information:								
Distance 3:								
Working voltage (V) ..... :								—
Frequency if applicable (kHz) ..... :								—
PTI ..... :					< 600 ☐		≥ 600 ☐	—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :								—
Supplementary information:								
** Insulation type: B – Basic; S – Supplementary; R – Reinforced.								

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

4.16 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics		P
Allowed impression diameter (mm) .....:	**2**		—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
DC inlet	See Annex 1	125.0	1.4
Internal PCB	See Annex 1	125.0	1.4
Touch switch button	See Annex 1	125.0	1.3
LED board	See Annex 1	125.0	1.3
Supplementary information:			

4.16 (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
DC inlet	See Annex 1	10	No	0	P
Internal PCB	See Annex 1	10	No	0	P
Touch switch button	See Annex 1	10	No	0	P
LED board	See Annex 1	10	No	0	P
Supplementary information:					

4.16 (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
Lamp cover(Cl.4.15)	See Annex 1	No	0	P
Lamp cover	See Annex 1	No	0	P
Plastic enclosure of lamp part	See Annex 1	No	0	P
Plastic enclosure of bottom	See Annex 1	No	0	P
Plastic cover of bottom	See Annex 1	No	0	P
Supplementary information:				

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

4.16 (13.4)	**TABLE: Proof tracking test (IEC 60112)**				**N**
Test voltage PTI .....:					—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Supplementary information:					

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

	ANNEX 1 components				**P**
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
DC inlet	Guangdong Shuo Yu Industry Co. , Ltd.	TC02-016FG202BT1L	LCP	--	Tested with appliance
Internal wire	SHENZHEN SHUNJIA ELECTRICAL TECHNOLOGY CO LTD	1007	300VAC; 80°C; 22AWG	--	UL E490463
Internal PCB	GOLDENMAX INTERNATIONAL TECHNOLOGY (ZHUHAI) LTD	GDM-R1	V-0; 130°C	--	UL E330731
Wireless module	Mid Ocean Brands B.V.	MO2124	Input: 9Vdc, 2A; Wireless output power: 10W Max.	EN IEC 62368	WTF23D10219598Y
LED 1	Shenzhen XGM Technology Co., Ltd.	XGM-2835SAW-O360	I_F=60mA; 6000-6500K	IEC/TR 62778	Tested with appliance
LED 2	Shenzhen XGM Technology Co., Ltd.	XGM-2835SANW-O603	I_F=60mA; 2800-3200K	IEC/TR 62778	Tested with appliance
LED board	GOLDENMAX INTERNATIONAL TECHNOLOGY (ZHUHAI) LTD	GDM-R1	V-0; 130°C; Al.	--	UL E330731
Lamp cover	CHI MEI CORPORATION	PC-110	PC; V-2	--	UL E56070
Plastic enclosure	FORMOSA CHEMICALS & FIBRE CORP PLASTICS DIV	AG15E1	ABS; HB	--	UL E162823

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	**TABLE: Temperature measurements, thermal tests of Section 12**	P

	Type reference ..... :	MO2124	—
	Lamp used ..... :	LED	—
	Lamp control gear used ..... :	--	—
	Mounting position of luminaire ..... :	Acc. to user manual	—
	Supply wattage (W) ..... :	--	—
	Supply current (A) ..... :	--	—
	Calculated power factor ..... :	--	—
	Table: measured temperatures corrected for ta = 25 °C:		P
	- abnormal operating mode ..... :	Overturned position under 15°	P
	- test 1: rated voltage ..... :	--	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage ..... :	1.06 times rated voltage	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :	--	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage ..... :	1.1 times rated voltage	—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	--	—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
DC inlet	25.0	--	30.3	--	Ref.	--	--
Touch switch button	25.0	--	31.5	--	55	--	--
Ambient of touch switch	25.0	--	30.0	--	55	--	--
Internal wire of touch switch	25.0	--	35.9	--	80	--	--
Internal wire of wireless charger	25.0	--	35.5	--	80	--	--
Lead wire of LED	25.0	--	31.8	--	80	--	--
Lamp cover	25.0	--	38.6	--	Ref.	--	--
Plastic enclosure of lamp part	25.0	--	36.6	--	Ref.	--	--
Plastic enclosure of bottom	25.0	--	32.7	--	Ref.	--	--

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

Plastic cover of bottom	25.0	--	35.8	--	Ref.	--	--
Adjustment non-metal part (and 5cm around)	25.0	--	34.1	--	75	--	--
Internal PCB	25.0	--	37.0	--	Ref.	--	--
L winding	25.0	--	44.5	--	130	--	--
LED board	25.0	--	47.5	--	Ref.	--	--
Mounting surface	25.0	--	30.1	--	90	31.5	130
Illuminated surface (0.1m)	25.0	--	25.2	--	90	30.4	175

IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 3	**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 (mm²).....		—
(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) ...	M	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 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 4	**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)	Terminals and connections for internal wiring		N
(15.5.1)	Mechanical tests		N
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples) .....:		N
	Insertion force not exceeding 50 N		N
(15.5.1.2)	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 and connections for external wiring		N
(15.6.1)	Conductors		N
	Terminal size and rating		N
15.6.2	Mechanical tests		N

EN 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....:		N
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N) .....:		N
(15.6.3)	Electrical tests		N
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N

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

EN 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 5	**National Differences for (country name) or Group Differences**	**P**
	CENELEC COMMON MODIFICATIONS (EN)	P

ATTACHMENT TO TEST REPORT IEC 60598-2-4
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
Luminaires
Part 2: Particular Requirements:
SECTION 4: PORTABLE GENERAL PURPOSE LUMINAIRES

Differences according to.....: EN 60598-2-4:2018 used in conjunction with EN IEC 60598-1:2021

Annex Form No.....: --

Annex Form Originator.....: --

Master Annex Form.....: --

	CENELEC COMMON MODIFICATIONS (EN)	P

4.5 (3)	**MARKING**		**N**
4.5 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package		N

4.6 (4)	**CONSTRUCTION**		**P**
4.6 (4.11.6)	Electro-mechanical contact systems		P

4.10 (5)	**EXTERNAL AND INTERNAL WIRING**		**P**
4.10 (5.2.1)	Connecting leads		N
	- without a means for connection to the supply		N
	- terminal block specified		N
	- relevant information provided		N
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1		N
4.10 (5.2.2)	Cables equal to EN 50525		N
	Replace table 5.1 – Supply cord		N

EN 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict

4.12 (12)	**ENDURANCE TESTS AND THERMAL TESTS**		N
4.12 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		N

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

ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		**N**
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N
	FR: Safety requirements for high buildings (Arrêté du 30 décembre 2011 portant règlement de sécurité pour la construction des immeubles de grande hauteur et leur protection contre les risques d'incendie et de panique; Section VIII; Article GH 48, Eclairage) Glow-wire test for outer parts of luminaires:		N
	- 850°C for luminaires in stairways and horizontal travel paths		N
	- 650°C for indoor luminaires		N
(13.3)	GB: Requirements according to United Kingdom Building Regulation		N

EN 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 6	**The requirements for dimmer switch according to standard EN 61347-2-11**		**P**
4 (4)	**GENERAL REQUIREMENTS**		**P**
- (4)	Insulation materials for double or reinforced insulation according requirements in Annex N of IEC 61347-1	(see Annex N)	N
- (4)	Compliance of independent controlgear enclosure with IEC 60 598-1		N
- (4)	Built-in magnetic ballast with double or reinforced insulation comply with Annex I of IEC 61347-1		N
- (4)	Built-in electronic controlgear with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N
- (4)	SELV controlgear comply with Annex L of IEC 61347-1	(see Annex L)	N
6 (6)	**CLASSIFICATION**		**P**
	Independent controlgear:	Yes ☐ No ☒	—
	Built-in controlgear:	Yes ☐ No ☒	—
	Integral controlgear:	Yes ☒ No ☐	—
7	**MARKING**		**N**
	Requirements not applicable to the evaluated product		—
8 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**		**N**
- (10.1)	Controlgear protected against accidental contact with live parts	Class III	N
- (A2)	Voltage measured with 50 kΩ	(see Annex A)	N
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impendance device	(see Annex A)	N
- (10.1)	Lacquer or enamel not used for protection or insulation		N
	Adequate mechanical strength on parts providing protection		N
- (10.2)	Capacitors > 0,5 μF: voltage after 1 min (V): < 50 V .....:		N
- (10.3)	Controlgear providing SELV		N

EN 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		N
	No connection between output circuit and the body or protective earthing curcuit		N
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		N
	SELV outputs separated by at least basic insulation		N
	ELV conductive parts insulated as live parts		N
	Tests according Annex L of IEC 61347-1		N
- (10.4)	Accessible conductive parts in SELV circuits		N
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		N
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. .....:		N
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N
	Y1 or Y2 capacitors comply with IEC 60384-14		N
	Resistors comply with test (a) in 14.1 of IEC 60065		N
9 (8)	**TERMINALS**		**N**
- (8)	Screw terminals according section 14 of IEC 60598-1:		**N**
	Separately approved; component list	(see Annex 1)	N
	Part of the controlgear	(see Annex 2)	N
	Screwless terminals according section 15 of IEC 60598-1:		**N**
	Separately approved; component list	(see Annex 1)	N
	Part of the controlgear	(see Annex 3)	N
10 (9)	**PROVISION FOR PROTECTIVE EARTHING**		**N**
- (9.1)	Provisions for protective earthing		N

EN 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
	Terminal complying with clause 9		N
	Locked against loosening and not possible to loosen by hand		N
	Not possible to loosen clamping means unintentionally on screwless terminals		N
	Earthing via means of fixing		N
	Earthing terminal only used for the earthing of the control gear		N
	All parts of material minimizing the danger of electrolytic corrosion		N
	Made of brass or equivalent material		N
	Contact surface bare metal		N
- (9.2)	Provision for functional earthing		N
	Comply with clause 8 and 9.1		N
- (9.3)	Earth contact via the track on the printed board		N
	Test with a current of 25 A between earthing terminal and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω .....:		N
- (9.4)	Earthing of built-in lamp controlgear		N
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N
	Earthing terminal only for earthing the built-in controlgear		N
- (9.5)	Earthing via independent controlgear		N
- (9.5.1)	Earth connection to other equipment		N
	Looping or through connection, conductor min. 1,5 mm² and of copper or equivalent		N
	Protective earthing wires in line with 5.3.1.1 and clause 7		N
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω .....:		N
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N

EN 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict

11 (11)	**MOISTURE RESISTANCE AND INSULATION**		**P**
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ):		P
	For basic insulation ≥ 2 MΩ .....:	100 MΩ	P
	For double or reinforced insulation ≥ 4 MΩ .....:	--	N
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		N

12 (12)	**ELECTRIC STRENGTH**		**P**
- (12)	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		P
	Working voltage ≤ 50 V, test voltage 500 V		N
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		N
	Basic insulation, 2U + 1000 V		N
	Supplementary insulation, 2U + 1000 V		N
	Double or reinforced insulation, 4U + 2000 V		N
	No flashover or breakdown		N
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N

14 (14)	**FAULT CONDITIONS**		**P**
- (14)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P
- (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

EN 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
	Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3		N
- (14.2)	Short-circuit or interruption of semiconductor devices	(see appended table)	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	P
- (14.5)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 MΩ .....:	100 MΩ	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		—

15 (15)	**CONSTRUCTION**		**P**
- (15.1)	Wood, cotton, silk, paper and similar fibrous material		P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	Printed circuits		P
	Printed circuits used as internal connections complies with clause 14		P
- (15.3)	Plugs and socket-outlets used in SELV or ELV circuits		N
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N
	Plugs and socket-outlets for SELV ≤ 3 A, ≤ 25 V r.m.s. or ≤ 60 V d.c. and ≤ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:		N
	- plugs not able to enter socket-outlets of other standardised system		N
	- socket-outlets not admit plugs of other standardised system		N
	- socket-outlets without protective earth		N

EN 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict

16 (16)	**CREEPAGE DISTANCES AND CLEARANCES**		**P**
- (16)	Creepage distances and clearances according to Table 3 and 4, as appropriate	(see appended table)	P
	Controlgears providing SELV comply with L.1 in Annex L		N
	Insulating lining of metallic enclosures		N
	Basic insulation on printed boards tested according to clause 14		P
	Distances subjected to both sinusoidal voltage as non-sinusoidal pulses not less than value in either Table 3 or 4		P
	Creepage distances not less than minimum clearance		P

17 (17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		**P**
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
(4.11)	Electrical connections		P
(4.11.1)	Contact pressure		P
(4.11.2)	Screws:		N
	- self-tapping screws		N
	- thread-cutting screws		N
(4.11.3)	Screw locking:		N
	- spring washer		N
	- rivets		N
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N
(4.12)	Mechanical connections and glands		N
(4.12.1)	Screws not made of soft metal		N
	Screws of insulating material		N
	Torque test: torque (Nm); part ..... :	--	N
	Torque test: torque (Nm); part ..... :	--	N
	Torque test: torque (Nm); part ..... :	--	N
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N

EN 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict

(4.12.4)	Locked connections:		N
	- fixed arms; torque (Nm)..... :		N
	- lampholder; torque (Nm)..... :		N
	- push-button switches; torque 0,8 Nm..... :		N
(4.12.5)	Screwed glands; force (Nm) ..... :		N

18 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
- (18.1)	Ball-pressure test:		P
	- part tested; temperature (°C)..... :	PCB, 125°C	P
- (18.2)	Test of printed boards:		P
	- part tested..... :	PCB	P
- (18.3)	Glow-wire test (650°C):		N
	- part tested..... :	--	N
- (18.4)	Needle flame test (10 s):		P
	- part tested..... :	PCB	P
	- part tested..... :	--	N
- (18.5)	Tracking test:		N
	- part tested..... :	--	N
	- part tested..... :	--	N

19 (19)	**RESISTANCE TO CORROSION**		**N**
	- test according 4.18.1 of IEC 60598-1		N
	- adequate varnish on the outer surface		N

20 (-)	**ANNEXES**		**P**
	Comply with appropriate annexes of IEC 61347-1	(see Annexes)	P

14	**TABLE: tests of fault conditions** **Touch switch**	**P**
Part	Simulated fault	Hazard
Q1	Test voltage: 9Vdc, Short circuit: unit shut down, recoverable	No
Q2	Test voltage: 9Vdc, Short circuit: unit shut down, recoverable	No

EN 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict

U1	Test voltage: 9Vdc, Short circuit: unit shut down, recoverable	No
U2	Test voltage: 9Vdc, Short circuit: unit shut down, recoverable	No

14	**TABLE: tests of fault conditions** **Wireless charger**	**P**
Part	Simulated fault	Hazard
Q1	Test voltage: 9Vdc, Short circuit: unit shut down, recoverable	No
Q2	Test voltage: 9Vdc, Short circuit: unit shut down, recoverable	No
U1	Test voltage: 9Vdc, Short circuit: unit shut down, recoverable	No
U2	Test voltage: 9Vdc, Short circuit: unit shut down, recoverable	No

16 (16)	**TABLE: clearance and creepage distance measurements (mm)**					P
Applicable part of IEC 61347-1 Table 7 – 11*						
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**
			clearance	***Table**		**creepage** / ***Table**
Working voltage (V) ..... :						—
Frequency if applicable (kHz) ..... :					--	—
PTI ..... :					< 600 ☐ ≥ 600 ☐	—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					--	—
Pulse voltage if applicable (kV) ..... :					--	—
Supplementary information: Max. 7.4VDC input						

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

A	**ANNEX A, TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK**		**N**
A.1	Comply with A.2 or A.3		N
A.2	Voltage ≤ 35 V peak or ≤ 60 V d.c ..... :	--	N

EN 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
A.3	If voltage > 35 V r.m.s. or > 60 V d.c. or protective impendance device; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. ..... :	--	N
	Comply with Annex G of IEC 60598-1		N
C	**ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING**		**N**
C3	GENERAL REQUIREMENTS		N
C3.1	Thermal protection means integral with the controlgear, protected against mechanical damage		N
	Renewable only by means of a tool		N
	If function depending on polarity, for cord-connected equipment protection means in both leads		N
	Thermal links comply with IEC 60691		N
	Electrical controls comply with IEC 60730-2-3		N
C3.2	No risk of fire by breaking (clause C7)		N
C5	CLASSIFICATION		N
	a) automatic resetting type		N
	b) manual resetting type		N
	c) non-renewable, non-resetting type		N
	d) renewable, non-resetting type		N
	e) other type of thermal protection; description :		N
C6	MARKING		N
C6.1	Symbol for temperature declared thermally protected ballasts		N
C6.2	Declaration of the type of protection provided		N
C7	LIMITATION OF HEATING		N
C7.1	Preselection test		N
	Test sample placed for at least 12 h in an oven having temperature (t_c - 5) K		N
	No operation of the protection device		N
C7.2	Functioning of protection means		N
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (t_c +0; -5) °C is obtained		N

EN 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
	No operation of the protection device		N
	Introducing of the most onerous test condition determined during test of clause 14		N
	Output of windings connected to the mains supply short-circuited, and other part of the controlgear operated under normal conditions		N
	Increasing of the current through the windings continuously until operation of the protection means		N
	Continuous measuring of the highest surface temperature		N
	Controlgear according to C5 a) or C5 e) operated until stable conditions are achieved		N
	Automatic-resetting thermal protectors working 3 times		N
	Controlgear according to C5 b) working 6 times		N
	Controlgear according to C5 c) and C5) d) working once		N
	Highest temperature does not exceed the marked value		N
	Any overshoot of 10% over the marked value within 15 min		N
D	**ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR**		N
	Tests in C7 performed in accordance with Annex D, if applicable		N
E	**ANNEX E – USE OF CONSTANT S OTHER THAN 4500 IN t_w TESTS**		N
	Comply with tests according Annex E, if applicable		N
F	**ANNEX F - DRAUGHT-PROOF ENCLOSURE**		P
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P
	Other design; description		N
H	**ANNEX H - TESTS**		P
	All tests performed in accordance with the advise given in Annex H, if applicable		P

EN 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict

I	**ANNEX I - PARTICULAR ADDITIONAL REQUIREMENTS FOR INDEPENDENT SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR LED MODULES**	**N**
	Requirements not applicable to the evaluated product	—

L	**ANNEX L: PARTICULAR ADDITIONAL REQUIREMENTS FOR CONTROLGEARS PROVIDING SELV** (IEC 61347-1)	**N**
	Requirements not applicable to the evaluated product	—

M	**ANNEX M: DIELECTRIC STRENGTH TEST VOLTAGES FOR CONTROLGEAR INTENDED FOR USE IN IMPULSE WITHSTAND CATEGORY III**		N
	Comply with tests according Annex M, if applicable		N

N	**ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION** (IEC 61347-1)	**N**
	Requirements not applicable to the evaluated product	—

O	**ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION (IEC 61347-1)**	**N**
	Requirements not applicable to the evaluated product	**—**

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 7	**LED modules for general lighting – Safety specifications** **EN IEC 62031:2020**	**P**

4	**GENERAL REQUIREMENTS**		P
4.4	Integral modules treated as part of luminaires defined in clause 0.5 of IEC 60598-1		P
4.5	Independent modules complies with requirements in IEC 60598-1		N

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

6	**CLASSIFICATION**		—
	Built-in module ..... :	Yes ☐ No ☒	—
	Independent module ..... :	Yes ☐ No ☒	—
	Integral module ..... :	Yes ☒ No ☐	—
	For Integral module; Note to 1.2.1 in IEC 60598-1 applies.		—

7	**MARKING**	**N**
	Requirements not applicable to the evaluated product.	—

8	**TERMINALS**		**N**
	Screw terminals according section 14 of IEC 60598-1:		N
	Separately approved; component list	(see Annex 2)	N
	Part of the luminaire	(see Annex 3)	N
	Screwless terminals according section 15 of IEC 60598-1:		N
	Separately approved; component list	(see Annex 2)	N
	Part of the luminaire	(see Annex 4)	N
	Connectors according IEC 60838-2-2:		N
	Separately approved; component list	(see Annex 2)	N

9 (9)	**PROVISION FOR PROTECTIVE EARTHING**	**N**
	Requirements not applicable to the evaluated product.	—

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

10 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**	**N**
	Requirements not applicable to the evaluated product.	—

11 (11)	**MOISTURE RESISTANCE AND INSULATION**		**P**
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ):		P
	For basic insulation ≥ 2 MΩ .....:	100MΩ	P
	For double or reinforced insulation ≥ 4 MΩ .....:		N
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		P

12 (12)	**ELECTRIC STRENGTH**		**P**
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		P
	Working voltage ≤ 50 V, test voltage 500 V		N
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		N
	Basic insulation, 2U + 1000 V		N
	Supplementary insulation, 2U + 1000 V		N
	Double or reinforced insulation, 4U + 2000 V		N
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N

13 (14)	**FAULT CONDITIONS**		**P**
- (14)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected		P

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)		N
	Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3		N
- (14.2)	Short-circuit or interruption of semiconductor devices	LED	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	N
- (14.5)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 MΩ .....:	100 MΩ	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.6)	Relevant fault condition tests with high-power supply		—
13.2	Module withstands overpower condition >15 min.		P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		N
	During the tests, tissue paper, spread below module, does not ignite		P
15	**CONSTRUCTION**		**P**
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
16	**CREEPAGE DISTANCES AND CLEARANCES**		**P**
	Creepage and distances and clearances in compliance with IEC 60598-1		P
17 (17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		**P**
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
18 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**N**
	Resistance to Heat, Fire and Tracking in compliance with IEC 61347-1 (clause numbers between parentheses refer to IEC 61347-1)		N

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
(18.1)	Ball-pressure test:		N
	- part tested; temperature (°C)..... :	--	N
(18.2)	Test of printed boards		N
	- part tested..... :	--	N
(18.3)	Glow-wire test (650°C):		N
	- part tested..... :	--	N
(18.4)	Needle flame test (10 s):		N
	- part tested..... :	--	N
(18.5)	Tracking test:		N
	- part tested..... :	--	N
19 (19)	**RESISTANCE TO CORROSION**		**N**
	Rust protection:		N
	- test according 4.18.1 of IEC 60598-1		N
	- adequate varnish on the outer surface		N
20	**INFORMATION FOR LUMINAIRE DESIGN**		**N**
	Information in Annex D		—
21	**HEAT MANAGEMENT**		**N**
21.1	General		N
	Exchangeability is safeguarded by cap or base		N
21.2	Heat-conducting foil and paste		N
	Heat-conducting foil delivered with the module if necessary		N
21.4	Construction		N
	Electrical connection and mechanical holding are separate		N
22	**Photobiological safety**		**P**
22.1	UV radiation		N
22.2	Blue light hazard		P
	RG at 200 mm according to IEC/TR 62778		P
22.3	Infrared radiation		N

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

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

	ANNEX 1 - SELV-operated LED modules	**N**
	SELV-operated LED modules in compliance with Annex I of IEC 61347-2-13	N

IEC/TR 62778			
Clause	Requirement + Test	Result - Remark	Verdict

Annex 8	**Retinal blue light hazard Of Lamps And Lamp Systems IEC/TR 62778:2014**	**P**

	TABLE: Spectroradiometric measurement		**P**
	Measurement performed on:	☐ **LED package** ☐ **LED module** ☐ **Lamp** ☒ **Luminaire**	—
	Model number.....:	MO2124	—
	Test voltage (V) .....:	9V	—
	Test current (mA) .....:	--	—
	Test frequency (Hz).....:	--	—
	Ambient, t (°C) .....:	25.3	—
	Measurement distance.....:	☒ 20 cm ☐ ... cm	—
	Source size .....:	☒ Non-small ☐ Small : .... mm	—
	Field of view .....:	☐ 100 mrad ☒ 11 mrad ☐ 1,7 mrad (for small sources)	—

Item	Symbol	Units	Result	Remark
Correlated colour temperature	CCT	K	/	—
x/y colour coordinates	---	---	/	—
Blue light hazard radiance	L_B	$W/(m^2 \cdot sr^1)$	1.823e+001	—
Blue light hazard irradiance	E_B	W/m^2	/	—
Luminance	L	cd/m^2	3.026e+004	—
Illuminance	E	lx	/	—
Lamp classification group: RG0				

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict

Annex 9	**Photobiological safety**	**P**

Emission limits for risk groups of continuous wave lamps
α=0.1rad — P

Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	$S_{UV}(\lambda)$	E_S	$W \cdot m^{-2}$	0.001	6.530e-8	0.003	-	-	-
Near UV		E_{uvA}	$W \cdot m^{-2}$	0.33	5.580e-4	33	-	-	-
Blue light	B(λ)	L_B	$W \cdot m^{-2} \cdot sr^{-1}$	100	6.435e0	10000	-	4000000	-
Bluelight, small source	B(λ)	E_B	$W \cdot m^{-2}$	0.01*	-	1.0	-	400	-
Retinal thermal	R(λ)	L_R	$W \cdot m^{-2} \cdot sr^{-1}$	28000/α	5.381e2	28000/α	--	71000/α	-
Retinal thermal, weak visual stimulus**	R(λ)	L_{IR}	$W \cdot m^{-2} \cdot sr^{-1}$	545000 0.0017≤ α≤0.011	-				
				6000/α 0.011≤α ≤0.1	-				
IR radiation, eye		E_{IR}	$W \cdot m^{-2}$	100	3.048e-3	570	--	3200	-

* Small source defined as one with α<0.011 radian. Averaging field of view at 10000 s is 0.1 radian.
** Involves evaluation of non-GLS source.

Assessment:

Lamp classification group..... exempt☒ risk 1☐ risk 2☐ risk 3☐

EN 62493			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 10	**Assessment Of Lighting Equipment Related To Human Exposure To Electromagnetic Fields according to standard EN 62493:2015**		**P**
4	**LIMITS**		**P**
4.1	**General**		**P**
	Comply with Van der Hoofden test limit in 4.2.3 or inherently compliant in 4.2.2 and pass assessment procedure for intentional radiators in 4.3		P
4.2	**Unintentional radiating part of lighting equipment**		**P**
4.2.2	Lighting equipment deemed to comply with the Van der Hoofden test without testing		P
	1) electronic controlgear	Yes ☐ No ☐	—
	2) incandescent-lamp technology	Yes ☐ No ☐	—
	3) LED-light-source technology	Yes ☒ No ☐	—
	4) OLED-light-source technology	Yes ☐ No ☐	—
	5) high-pressure discharge lamp LED-light-source technologies	Yes ☐ No ☐	—
	6) low-pressure discharge lamp technologies with exposure distance ≥ 50 cm	Yes ☐ No ☐	—
	7) independent auxiliary	Yes ☐ No ☐	—
	Not fulfil any of 1-7 above subject to 4.2.3		—
4.2.3	Applications of limits		N
	Not fulfil any of 1-7 in 4.2.2 but the compliance factor F is ≤ 1		N
4.3	**Intentional radiating part of lighting equipment**		**N**
	Comply with one of methods in Clause 7 if intentional radiator		N
6	**MEASUREMENT PROCEDURE FOR THE VAN DER HOOFDEN TEST**		**N**
6.1	**General**		**N**
	Measurements carried out under conditions according Clause 6.1 – 6.6	See Table 6	N
7	**ASSESSMENT PROCEDURE INTENTIONAL RADIATORS**		**N**
7.2	**Low-power exclusion method**		**N**
7.2.1	Input $P_{int,rad}$		—
	Exclusion level P_{max}.....		—

EN 62493			
Clause	Requirement + Test	Result - Remark	Verdict
	Input power $P_{int,rad}$ < exclusion level P_{max}		N
7.3	**Application of the EMF product standard for body worn-equipment**		**N**
	If not Clause 7.2 is met and expose distance ≤ 0.05 m, comply with IEC 62209-2		N
7.4	**Application of the EMF product standard for base stations**		**N**
	If not Clause 7.2 is met and if intentional radiator is base station, comply with IEC 62232		N
7.5	**Application of another EMF standard**		**N**
	If not Clause 7.2 is met and if intentional radiator cannot be considered as in Clause 7.3 or 7.4, comply with IEC 62311		N

6	**TABLE: Measurement results with Van der Hoofden test head**				**N**
Location of EUT	Test model	Measuring distance	Result(F)	Limit(F)	Verdict
Reference Annex B of EN 62493:2015	--	--	--	≤1.0	N

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

Photo Documentation

Model: MO2124

Photo 1

Photo 2

Photo Documentation

Photo 3

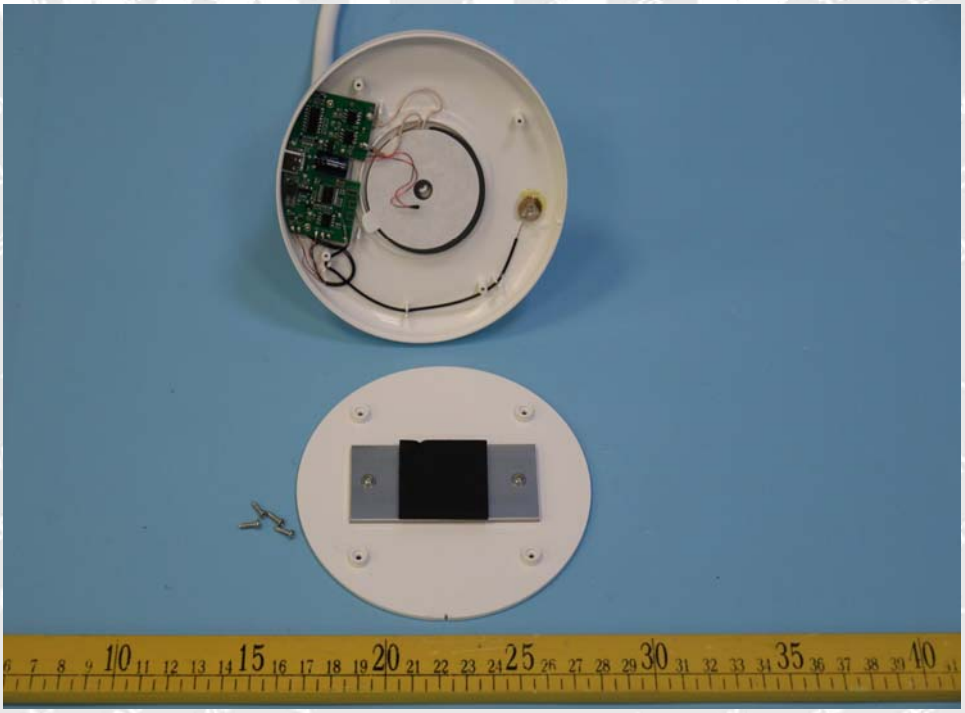
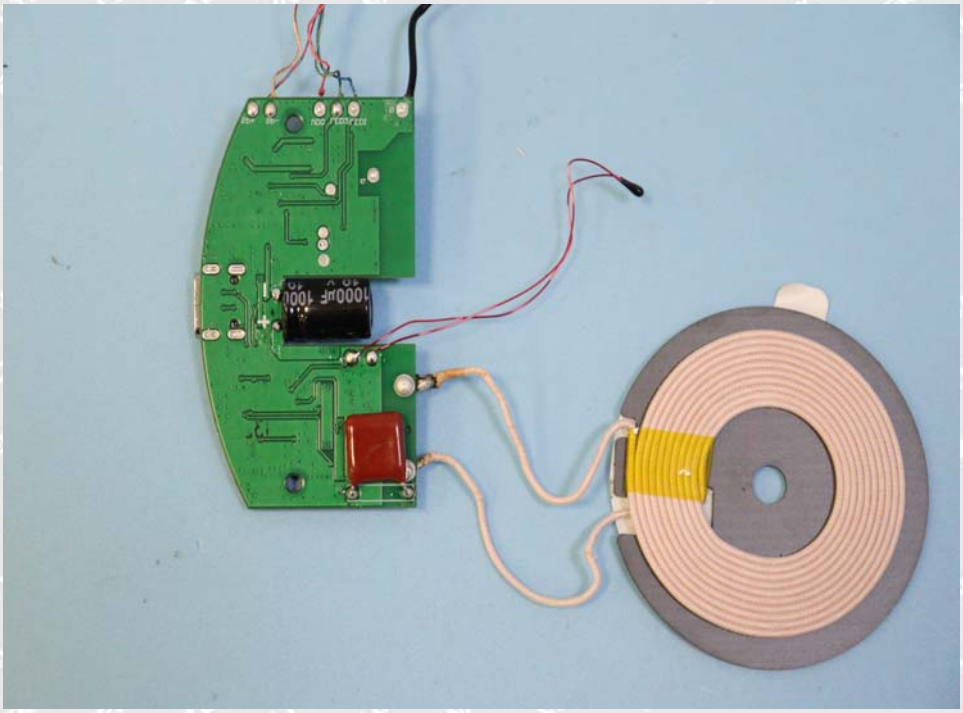


Photo 4

Photo Documentation



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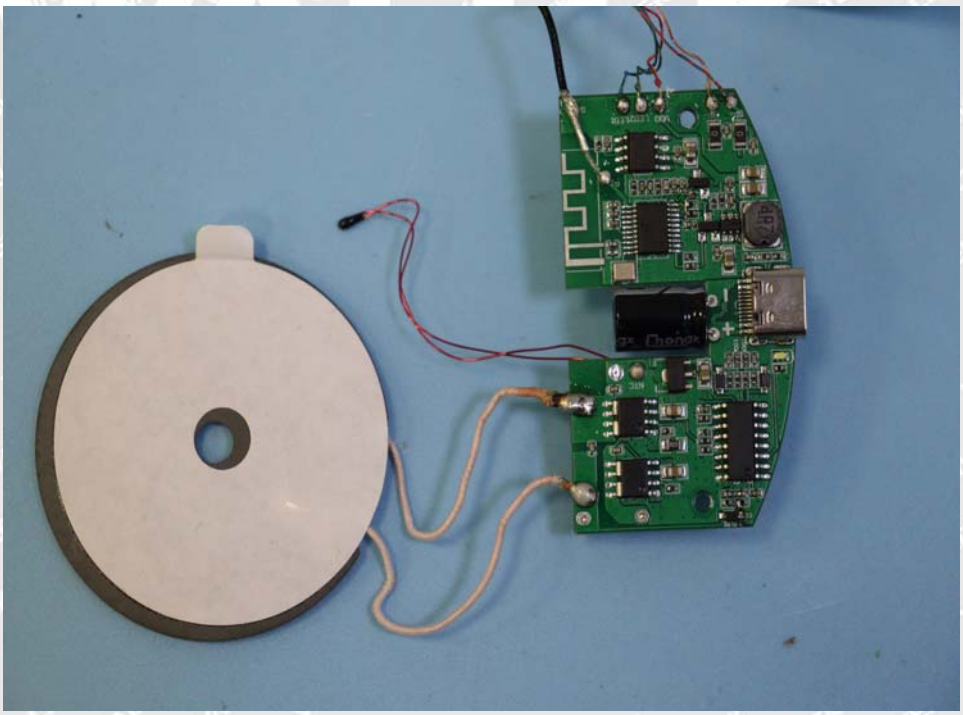

Photo 6

Photo Documentation

Photo 7

Photo 8

Photo Documentation

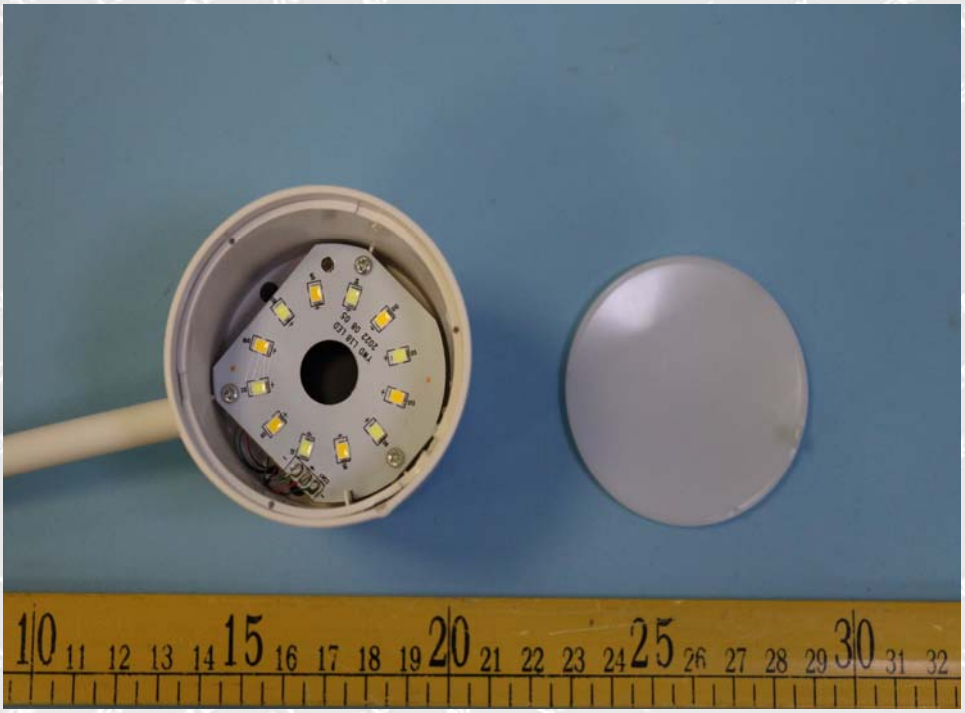

Photo 9

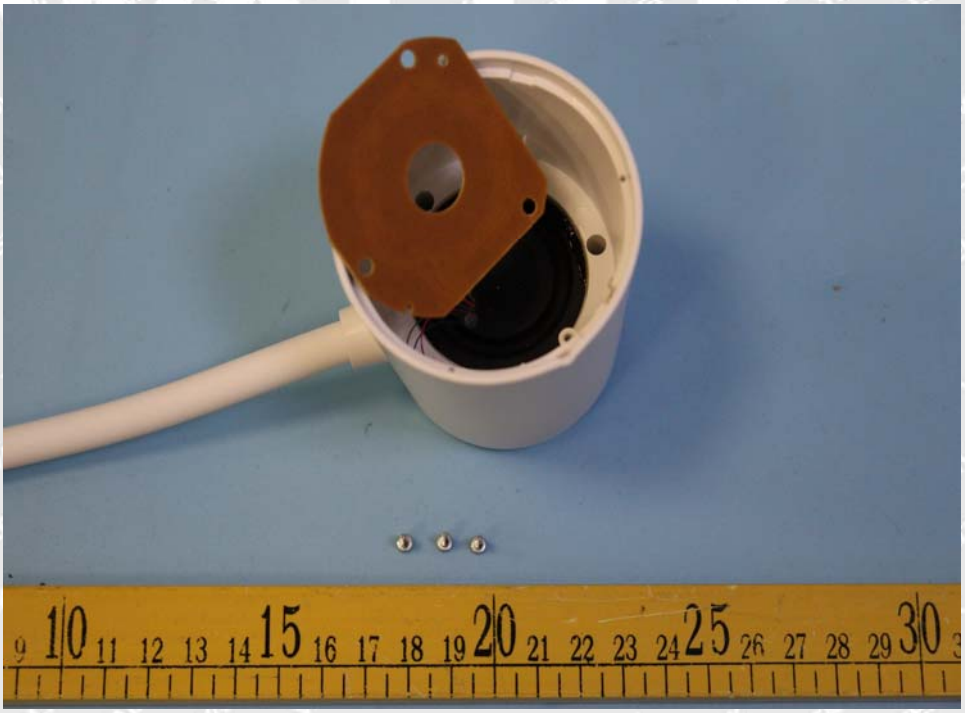

Photo 10

Photo Documentation

Photo 11

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