



<b>TEST REPORT</b> <b>IEC 60598-2-4</b> <b>Luminaires</b>  <b>Part 2: Particular requirements –</b> <b>Section 4: Portable general purpose luminaires</b>	
<b>Report Number</b> .....	LCS190618019BS
<b>Date of issue</b> .....	July 08, 2019
<b>Total number of pages</b> .....	45 pages
<b>Name of Testing Laboratory preparing the Report</b> .....	<b>Shenzhen Southern LCS Compliance Testing Laboratory Ltd.</b>
<b>Applicant's name</b> .....	<b>Mid Ocean Brands B.V.</b>
<b>Address</b> .....	7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
<b>Test specification:</b>	
<b>Standard</b> .....	IEC 60598-2-4:2017 used in conjunction with IEC 60598-1:2014+A1:2017
<b>Test procedure</b> .....	CE-LVD
<b>Non-standard test method</b> .....	N/A
<b>Test Report Form No</b> .....	IEC60598_2_4G
<b>Test Report Form(s) Originator</b> .....	UL (US)
<b>Master TRF</b> .....	2018-04
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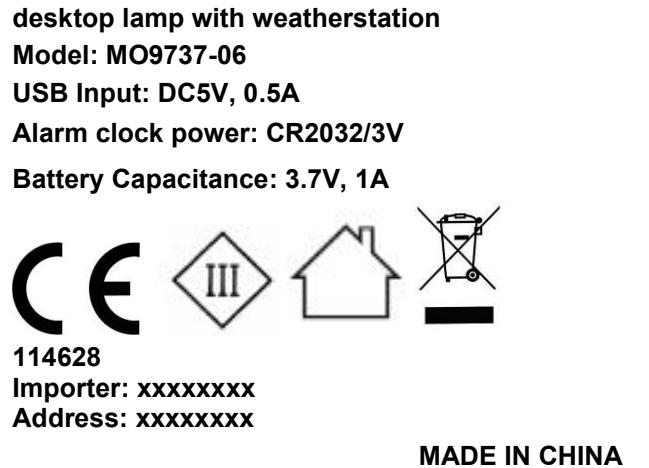
<b>Test item description</b> .....:	desktop lamp with weatherstation	
<b>Trade Mark</b> .....:	N/A	
<b>Manufacturer</b> .....:	114628	
<b>Address</b> .....:	/	
<b>Model/Type reference</b> .....:	MO9737-06	
<b>Ratings</b> .....:	USB Input: DC5V, 0.5A Alarm clock power: CR2032/3V Battery Capacitance: 3.7V, 1A	
<input checked="" type="checkbox"/> <b>Testing Laboratory:</b>		
<b>Testing location/ address</b> .....:	Shenzhen Southern LCS Compliance Testing Laboratory Ltd. B Area, 1-2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, China	
<b>Tested by</b> .....:	Lisa Zeng (Engineer)	
<b>Check by</b> .....:	Eko Yang (Director)	
<b>Approved by</b> .....:	Jesse Liu (Manager)	
<b>List of Attachments (including a total number of pages in each attachment):</b>		
Attachment No. 1: 2 pages of European group differences and national differences according to EN 60598-2-4:2018 used in conjunction with EN 60598-1:2015+A1:2018		
Attachment No. 2: 1 pages of report IEC/EN 62031.		
Attachment No. 3: 3 pages of report IEC/EN 62471.		
Attachment No. 4: 5 pages of photo documentation.		
<b>Summary of testing:</b>		
<b>Tests performed (name of test and test clause):</b>	<b>Testing location:</b>	
IEC 60598-2-4:2017	Shenzhen Southern LCS Compliance Testing Laboratory Ltd.	
IEC 60598-1:2014+A1:2017	B Area, 1-2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, China	
IEC 62471:2006		
IEC TR 62778:2014		
IEC 62031:2008+A1:2012+A2:2014		
<b>Summary of compliance with National Differences:</b>		
<b>List of countries addressed</b>		
<input type="checkbox"/> The product fulfils the requirements of Germany and European Group differences		
EN 60598-2-4:2018; EN 60598-1:2015+A1:2018; EN 62471:2008; EN 62493:2015;		
EN 62031:2008+A1:2013+A2:2015		

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**Remarks:**

Height of CE mark at least 5mm, height of WEEE symbol should not less than 7mm, height of other marks at least 5mm, height of letters and numerals at least 2mm.



<b>Test item particulars..... :</b>									
<b>Classification of installation and use.....:</b>	Portable general purpose luminaires								
<b>Supply Connection.....:</b>	DC Inlet								
<b>Protection Class.....:</b>	Class III								
<b>Degree of Protection..... :</b>	IP20								
<b>Possible test case verdicts:</b>									
- test case does not apply to the test object..... : N/A									
- test object does meet the requirement..... : P (Pass)									
- test object does not meet the requirement..... : F (Fail)									
<b>Testing..... :</b>									
<b>Date of receipt of test item..... :</b>	June 18, 2019								
<b>Date (s) of performance of tests..... :</b>	June 18, 2019 - June 30, 2019								
<b>General remarks:</b>									
<p>This report shall not be reproduced except in full without the written approval of the testing laboratory.  The test results presented in this report relate only to the item tested.  "(See Enclosure #)" refers to additional information appended to the report.  "(See appended table)" refers to a table appended to the report.  Clause numbers between brackets refer to clauses in IEC/EN 60598-1.</p> <p><b>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</b></p> <p>According to the EU directives which have been aligned with EU NLF (new legislative framework), both of manufacturer and importer's name and address shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on the EU market.</p> <p style="text-align: center;">Modified Information</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Version</th> <th style="text-align: center;">Report No.</th> <th style="text-align: center;">Revision Date</th> <th style="text-align: center;">Summary</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">V1.0</td> <td style="text-align: center;">LCS190618019BS</td> <td style="text-align: center;">/</td> <td style="text-align: center;">Original Version</td> </tr> </tbody> </table>		Version	Report No.	Revision Date	Summary	V1.0	LCS190618019BS	/	Original Version
Version	Report No.	Revision Date	Summary						
V1.0	LCS190618019BS	/	Original Version						
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC/EN 60598-1:</b>									
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	<input type="checkbox"/> <b>Yes</b> <input checked="" type="checkbox"/> <b>Not applicable</b>								
<b>When differences exist; they shall be identified in the General product information section.</b>									
<b>Name and address of factory (ies)..... :</b> Same as manufacturer									

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

<b>4.2 (0)</b>	<b>GENERAL TEST REQUIREMENTS</b>		<b>P</b>
4.2 (0.1)	Information for luminaire design considered..... :	Standard Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
4.2 (0.3)	More sections applicable..... :	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
<b>4.4 (0.7)</b>	<b>Information for luminaire design in light sources standards</b>		—
4.4 (0.7.2)	Light source safety standard .....		—
	Luminaire design in the light source safety standard		N/A

<b>4.5 (2)</b>	<b>CLASSIFICATION</b>		<b>P</b>
4.5 (2.2)	Type of protection .....	Class III	—
4.5 (2.3)	Degree of protection..... :	IP20	—
4.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces..... :	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
4.5 (2.5)	Luminaire for normal use .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
4.5.1 (-)	Ordinary luminaire..... :	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
4.5.2 (-)	Portable luminaire for outdoor use..... :	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

<b>4.6 (3)</b>	<b>MARKING</b>		<b>P</b>
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/A
4.6 (3.3.2)	Nominal frequency in Hz		N/A
4.6 (3.3.3)	Operating temperature		N/A
4.6 (3.3.4)	Symbol or warning notice		N/A
4.6 (3.3.5)	Wiring diagram		N/A
4.6 (3.3.6)	Special conditions		N/A
4.6 (3.3.7)	Metal halide lamp luminaire – warning		N/A
4.6 (3.3.8)	Limitation for semi-luminaires		N/A
4.6 (3.3.9)	Power factor and supply current		P

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<b>IEC 60598-2-4</b>			
Clause	Requirement + Test	Result - Remark	Verdict
4.6 (3.3.10)	Suitability for use indoors		P
4.6 (3.3.11)	Luminaires with remote control		N/A
4.6 (3.3.12)	Clip-mounted luminaire – warning		N/A
4.6 (3.3.13)	Specifications of protective shields		N/A
4.6 (3.3.14)	Symbol for nature of supply	DC	P
4.6 (3.3.15)	Rated current of socket outlet		N/A
4.6 (3.3.16)	Rough service luminaire		N/A
4.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		N/A
4.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
4.6 (3.3.19)	Protective conductor current in instruction if applicable		N/A
4.6 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
4.6 (3.3.21)	Non replaceable and non-user replaceable light sources information provided	Non replaceable	P
4.6 (3.3.22)	Controllable luminaires, insulation		N/A
4.6 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
4.6 (3.3.23)	Luminaire without controlgear provided with necessary information for selection of appropriate component		N/A
4.6 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
4.6.1 (-)	Luminaire not suitable for outdoor application		N/A
	Required symbol		N/A
	Information in the instructions		N/A
4.6.2 (-)	Outdoor use, socket outlet incorporated in the luminaire		N/A
	Maximum current rating marked		N/A
	Position of the marking		N/A
<b>4.7 (4)</b>	<b>CONSTRUCTION</b>		<b>P</b>
4.7 (4.2)	Components replaceable without difficulty		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
4.7 (4.3)	Wireways smooth and free from sharp edges		P
4.7 (4.4)	Lampholders		N/A
4.7 (4.4.1)	Integral lampholder		N/A
4.7 (4.4.2)	Wiring connection		N/A
4.7 (4.4.3)	Lampholder for end-to-end mounting		N/A
*4.7 (4.4.4)	Positioning		N/A
	- pressure test (N) .....		—
	After test the lampholder comply with relevant standard sheets and show no damage		N/A
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N/A
	- bending test (N) .....		—
	After test the lampholder have not moved from its position and show no permanent deformation		N/A
4.7 (4.4.5)	Peak pulse voltage		N/A
4.7 (4.4.6)	Centre contact		N/A
4.7 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
4.7 (4.4.8)	Lamp connectors		N/A
4.7 (4.4.9)	Caps and bases correctly used		N/A
4.7 (4.5)	Starter holders		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
4.7 (4.6)	Terminal blocks		N/A
	Tails		N/A
	Unsecured blocks		N/A
4.7 (4.7)	Terminals and supply connections		P
4.7 (4.7.1)	Contact to metal parts		N/A
4.7 (4.7.2)	Test 8 mm live conductor		N/A
	Test 8 mm earth conductor		N/A
4.7 (4.7.3)	Terminals for supply conductors		N/A
4.7 (4.7.3.1)	Welded connections:		N/A
	- stranded or solid conductor		N/A
	- spot welding		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.8.2		N/A
	- electrical test according to 15.9		N/A
	- heat test according to 15.9.2.3 and 15.9.2.4		N/A
4.7 (4.7.4)	Terminals other than supply connection		N/A
4.7 (4.7.5)	Heat-resistant wiring/sleeves		N/A
4.7 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
4.7 (4.8)	Switches:		P
	- adequate rating		P
	- adequate fixing		P
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
4.7 (4.9)	Insulating lining and sleeves		N/A
4.7 (4.9.1)	Retainment		N/A
	Method of fixing.....:		—
4.7 (4.9.2)	Insulated linings and sleeves		N/A
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C).....:		N/A
4.7 (4.10)	Insulation of Class II luminaires		N/A
4.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N/A
	Safe installation fixed luminaires		N/A
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
4.7 (4.10.2)	Assembly gaps:		N/A
	- not coincidental		N/A
	- no straight access with test probe		N/A
4.7 (4.10.3)	Retainment of insulation:		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
4.7 (4.11)	Electrical connections		P
4.7 (4.11.1)	Contact pressure		P
4.7 (4.11.2)	Screws:		P
	- self-tapping screws		P
	- thread-cutting screws		N/A
4.7 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
4.7 (4.11.4)	Material of current-carrying parts		P
4.7 (4.11.5)	No contact to wood or mounting surface		P
4.7 (4.11.6)	Electro-mechanical contact systems		N/A
4.7 (4.12)	Mechanical connections and glands		P
4.7 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part.....:	Fixed enclosure; 0.6Nm	P
	Torque test: torque (Nm); part.....:	Fixed PCB; 0.6Nm	P
	Torque test: torque (Nm); part.....:		N/A
4.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
*4.7 (4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm).....:		N/A
	- lampholder; torque (Nm).....:		N/A
	- push-button switches; torque 0,8 Nm.....:		N/A
4.7 (4.12.5)	Screwed glands; force (Nm).....:		N/A
4.7 (4.13)	Mechanical strength		P
4.7 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm).....:		N/A
	- other parts; energy (Nm).....:	0.5Nm, no damage	P
	1) live parts		P

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	2) linings		P
	3) protection		P
	4) covers		P
4.7 (4.13.3)	Straight test finger		N/A
4.7 (4.13.4)	Rough service luminaires		N/A
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A
	d) for temporary installations and suitable for mounting on a stand		N/A
4.7 (4.13.6)	Tumbling barrel		N/A
4.7 (4.14)	Suspensions and adjusting devices		N/A
4.7 (4.14.1)	Mechanical load:		N/A
	A) four times the weight		N/A
	B) torque 2,5 Nm		N/A
	C) bracket arm; bending moment (Nm)..... :		N/A
	D) load track- mounted luminaires		N/A
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) .....		N/A
	Metal rod. diameter (mm) .....		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
4.7 (4.14.2)	Load to flexible cables		N/A
	Mass (kg) .....		—
	Stress in conductors (N/mm <sup>2</sup> ) .....		N/A
	Mass (kg) of semi-luminaire .....		—
	Bending moment (Nm) of semi-luminaire .....		N/A
4.7 (4.14.3)	Adjusting devices:		P
	- flexing test; number of cycles..... :	1500 cycles	P
	- strands broken..... :		P
	- electric strength test afterwards		P
4.7 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A

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4.7 (4.14.5)	Guide pulleys		N/A
4.7 (4.14.6)	Strain on socket-outlets		N/A
4.7 (4.15)	Flammable materials:		P
	- glow-wire test 650°C..... :	See Test Table 4.16 (13.3.2)	P
	- spacing ≥30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		N/A
	- thermal protection		N/A
	- electronic circuits exempted		N/A
4.7 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N/A
	a) construction		N/A
	b) temperature sensing control		N/A
	c) surface temperature		N/A
4.7 (4.16)	Luminaires for mounting on normally flammable surfaces		P
	No lamp control gear..... :	(compliance with Section 12)	P
4.7 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
4.7 (4.16.2)	Thermal protection:		N/A
	- in lamp control gear		N/A
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear		N/A
4.7 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
4.7 (4.17)	Drain holes		N/A
	Clearance at least 5 mm		N/A
4.7 (4.18)	Resistance to corrosion:		N/A
4.7 (4.18.1)	- rust-resistance		N/A
*4.7 (4.18.2)	- season cracking in copper		N/A
4.7 (4.18.3)	- corrosion of aluminium		N/A
4.7 (4.19)	Igniters compatible with ballast		N/A

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*4.7 (4.20)	Rough service vibration		N/A
4.7 (4.21)	Protective shield:		N/A
4.7 (4.21.1)	Shield fitted		N/A
	Shield of glass if tungsten halogen lamps		N/A
4.7 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
4.7 (4.21.3)	No direct path		N/A
4.7 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment.....:	See Test Table 4.16 (13.3.2)	N/A
4.7 (4.22)	Attachments to lamps		N/A
4.7 (4.23)	Semi-luminaires comply Class II		N/A
<b>4.7 (4.24)</b>	<b>Photobiological hazards</b>	See Test Table 4.7 (4.24)	P
*4.7 (4.24.1)	UV radiation for tungsten halogen lamps and metal halide lamps (Annex P)		N/A
4.7 (4.24.2)	Retinal blue light hazard	Exempt: RG0	P
	Luminaires with $E_{thr}$		N/A
	a) Fixed luminaires		N/A
	Distance x m, borderline between RG1 and RG2.....:		N/A
	Marking and instruction		N/A
	b) Portable and handheld luminaires		N/A
	RG1 exceeded at 200 mm according to IEC/TR 62778		N/A
	Marking		N/A
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12		N/A
	RG at 200 mm according to IEC/62778		N/A
4.7 (4.25)	No sharp point or edges		P
*4.7 (4.26)	Short-circuit protection:		N/A
*4.7 (4.26.1)	Uninsulated accessible SELV parts		N/A
*4.7 (4.26.2)	Short-circuit test		N/A
*4.7 (4.26.3)	Test chain according to Figure 29		N/A
4.7 (4.27)	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
4.7 (4.28)	Fixing of thermal sensing control		N/A
	External to lamp control gear		N/A
	Plug-in or easily replaceable type		N/A
	Adhesive fixing		N/A
	Positioning		N/A
	Temperature (°C).....:		N/A
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
4.7 (4.29)	Luminaires with non-replaceable light source		P
	Replacement not possible		P
	Live part not accessible		P
	Breaking of the luminaire or its parts		P
	Removal of parts		P
	Compliance with test probe		P
	Access to live parts		N/A
4.7 (4.30)	Luminaires with non-user replaceable light source		N/A
	Protective cover		N/A
	Fixing means		N/A
	Cautionary symbol		N/A
4.7 (4.31)	Insulation between circuits		P
	Transformer or control gears		N/A
	Insulation between circuits		P
	Circuits insulated from LV supply		P
	Insulation provided		N/A
	Controllable luminaires		N/A
	Control terminals		N/A
	Insulation		N/A
	Control gear U-OUT		N/A
4.7 (4.31.1)	SELV circuits		P

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	Source		P
	Insulation between circuits		P
	Control gear U-OUT		N/A
	Plug and socket outlet		N/A
4.7 (4.31.2)	FELV circuits		N/A
	Source		N/A
	Insulation between circuits		N/A
	Plug and socket outlet		N/A
4.7 (4.31.3)	Other circuits		N/A
	CI II		N/A
	Equipotential bonding		N/A
	All conductive part connected		N/A
	Resistance < 0,5 Ω.....:		N/A
	Insulation fault: accessible part cause electric shock		N/A
	Master/slave applications		N/A
4.7 (4.32)	Overvoltage protective devices		N/A
	External to lamp control gear, connected to earth		N/A
	Fixed luminaires connected to a protective earth		N/A
4.7.1 (-)	Insulation not damaged when placing on support		P
4.7.2 (-)	Wiring fixed, to avoid rubbing		N/A
4.7.3 (-)	Stability (6°)		P
	Outdoor use luminaire not overturn at an angle 15°		N/A
4.7.4 (-)	Candlestick luminaires with E5 or E10 lampholders provided with a switch		N/A
	Switch part of the luminaire or within 300 mm of the luminaire if with cord		N/A
4.7.5 (-)	Voltage not exceed 25 V for E5 lampholders		N/A
	E10 lampholder voltage not exceed as noted		N/A
	60 V for series connection) or		N/A
	250 V for parallel connections		N/A
	Maximum rated wattage not exceed 100 W		N/A
4.7.6 (-)	Portable luminaires for outdoor use tails not provided		N/A
4.7.7 (-)	Portable luminaires for outdoor use, cable entries		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.8 (-)	Portable luminaires for outdoor use, socket-outlet degree of protection at least IPX4.		N/A
	Degree of protection maintained with or without a plug inserted into the socket-outlet.		N/A
	Class II luminaires, mains socket-outlets, connection only to Class II luminaires.		N/A
	Class I luminaires, mains socket-outlets, connection only to Class I luminaires.		N/A
4.7.9 (-)	Portable luminaires for outdoor use, lampholders and plugs are of material resistant to tracking		N/A
	Compliance to clause 13.4		N/A

<b>4.8 (11)</b>	<b>CREEPAGE DISTANCES AND CLEARANCES</b>		N/A
4.8 (11.2)	Creepage distances and clearances..... :	See Table 4.8 (11.2)	N/A
	Working voltage (V)..... :		—
	Rated pulse voltage (kV)..... :		—
	Voltage form..... :	Sinusoidal <input type="checkbox"/> Non-sinusoidal <input checked="" type="checkbox"/>	—
	PTI..... :	< 600 <input type="checkbox"/> ≥ 600 <input checked="" type="checkbox"/>	—
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II <input checked="" type="checkbox"/> Category III <input type="checkbox"/>	—
4.8 (11.2.1)	Category III according Annex U		N/A
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N/A
4.8 (11.2.2)	Creepage distances for frequency up to 30 kHz... :		N/A
	Creepage distances for frequency over 30 kHz:		N/A
	- Controlgear marked with $\hat{U}_{OUT}$ and $f_{UOUT}$ according IEC 61347-1, clause 7.1, item w)..... :		N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347..... :		N/A
4.8 (11.2.3)	Clearances for frequency up to 30 kHz..... :		N/A
	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with $U_P$ ..... :		N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347..... :		N/A

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

4.9 (7)	PROVISION FOR EARTHING		N/A
4.9 (7.2.1 + 7.2.3)	Accessible metal parts		N/A
	Metal parts in contact with supporting surface		N/A
	Resistance < 0,5 Ω.....:		N/A
	Self-tapping screws used		N/A
	Thread-forming screws		N/A
	Thread-forming screw used in a groove		N/A
	Earth makes contact first		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
	Built-in control gear		N/A
4.9 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N/A
4.9 (7.2.4)	Locking of clamping means		N/A
	Compliance with 4.7.3		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
4.9 (7.2.5)	Earth terminal integral part of connector socket		N/A
4.9 (7.2.6)	Earth terminal adjacent to mains terminals		N/A
4.9 (7.2.7)	Electrolytic corrosion of the earth terminal		N/A
4.9 (7.2.8)	Material of earth terminal		N/A
	Contact surface bare metal		N/A
4.9 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
4.9 (7.2.11)	Earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A

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

4.10 (15)	SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS		N/A
	Separately approved; component list.....:	(see Annex 1)	N/A





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

	Part of the luminaire..... :	(see Annex 4)	N/A
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<b>4.11 (5)</b>	<b>EXTERNAL AND INTERNAL WIRING</b>		<b>P</b>
4.11 (5.2)	Supply connection and external wiring		P
4.11 (5.2.1)	Means of connection..... :		N/A
4.11 (5.2.2)	Type of cable..... :		N/A
	Nominal cross-sectional area (mm <sup>2</sup> )..... :		N/A
	Cables equal to IEC 60227 or IEC 60245		N/A
4.11 (5.2.3)	Type of attachment, X, Y or Z		N/A
4.11 (5.2.5)	Type Z not connected to screws		N/A
4.11 (5.2.6)	Cable entries:		N/A
	- suitable for introduction		N/A
	- adequate degree of protection		N/A
4.11 (5.2.7)	Cable entries through rigid material have rounded edges		N/A
4.11 (5.2.8)	Insulating bushings:		N/A
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
4.11 (5.2.9)	Locking of screwed bushings		N/A
4.11 (5.2.10)	Cord anchorage:		N/A
	- covering protected from abrasion		N/A
	- clear how to be effective		N/A
	- no mechanical or thermal stress		N/A
	- no tying of cables into knots etc.		N/A
	- insulating material or lining		N/A
4.11 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
4.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N/A
4.11 (5.2.10.3)	Tests:		N/A
	- impossible to push cable; unsafe		N/A
	- pull test: 25 times; pull (N)..... :		N/A
	- torque test: torque (Nm)..... :		N/A
	- displacement ≤ 2 mm		N/A
	- no movement of conductors		N/A
	- no damage of cable or cord		N/A
4.11 (5.2.11)	External wiring passing into luminaire		N/A
4.11 (5.2.12)	Looping-in terminals		N/A
4.11 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
4.11 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
4.11 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector		N/A
	Relevant IEC standard		N/A
4.11 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
4.11 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	- other standard		N/A
4.11 (5.3)	Internal wiring		P
4.11 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		N/A
	- not delivered/ mounting instruction		N/A
	- factory assembled		N/A
	- socket outlet loaded (A)..... :		N/A
	- temperatures..... :	(see Annex 2)	N/A
	Green- yellow for earth only		N/A
4.11 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm <sup>2</sup> )..... :		N/A
	Insulation thickness		N/A
	Extra insulation added where necessary		N/A
4.11 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Adequate cross-sectional area and insulation thickness		N/A
4.11 (5.3.1.3)	Double or reinforced insulation for class II		N/A
4.11 (5.3.1.4)	Conductors without insulation		N/A
4.11 (5.3.1.5)	SELV current-carrying parts		P
4.11 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
4.11 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		P
4.11 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	- cables with protective sheath		N/A
4.11 (5.3.4)	Joints and junctions effectively insulated		N/A
4.11 (5.3.5)	Strain on internal wiring		N/A
4.11 (5.3.6)	Wire carriers		N/A
4.11 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
4.11 (5.4)	Test to determine suitability of conductors having a reduced cross-sectional area		N/A
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2		N/A
	No damage to luminaire wiring after test		N/A
4.11.1 (-)	Indoor use luminaire The requirement of one part of cord anchorage to be fixed to the luminaire not applied for table lamps of glass or ceramic		N/A
4.11.2 (-)	Class I and class II indoor use Luminaire with a mass less than 1 kg the current $\leq 2,5$ A and cable $\leq 2$ m and conductor $\geq 0,5$ mm <sup>2</sup>		N/A
4.11.3 (-)	Portable luminaire for outdoor use delivered without a flexible cable or cord and a plug		N/A
	Terminals, a cord anchorage and an inlet opening for the proper connection of the flexible cable or cord.		N/A
4.11.4 (-)	Portable luminaires for outdoor use Insulation class I and class II, non-detachable flexible cables or cords at least type 245 IEC 57.		N/A

<b>4.12 (8)</b>	<b>PROTECTION AGAINST ELECTRIC SHOCK</b>		<b>P</b>
4.12 (8.2.1)	Live parts not accessible		N/A
	Basic insulated parts not used on the outer surface without appropriate protection		N/A
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N/A
	Basic insulated parts not accessible with $\varnothing 50$ mm probe from outside, other types of luminaires		N/A
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		N/A
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		N/A
	Double-ended high pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
4.12 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
4.12 (8.2.3.a)	Class II luminaire:		N/A
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		N/A
	- glass protective shields not used as supplementary insulation		N/A
4.12 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N/A
4.12 (8.2.3.c)	Class III luminaires with exposed SELV parts:		P
	Ordinary luminaire:		P
	- touch current .....		P
	- no-load voltage.....		P
	Other than ordinary luminaire:		N/A
	- nominal voltage .....		N/A
4.12 (8.2.4)	Portable luminaire have protection independent of supporting surface		P
4.12 (8.2.5)	Compliance with the standard test finger or relevant probe		N/A
4.12 (8.2.6)	Covers reliably secured		P
4.12 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$		N/A
	Portable plug connected luminaire with capacitor		N/A
	Other plug connected luminaire with capacitor		N/A
	Discharge device on or within capacitor		N/A
	Discharge device mounted separately		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
4.12.1 (-)	Class I luminaire with bayonet lampholder:		N/A
	- cap not accessible with test finger		N/A
	- metal lampholder is earthed		N/A
<b>4.13 (12)</b>	<b>ENDURANCE TEST AND THERMAL TEST</b>		<b>P</b>
4.13 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 4.13		—
4.13 (12.3)	Endurance test:		<b>P</b>
	- mounting- position..... :	As normal used	—
	- test temperature (°C)..... :	35°C	—
	- total duration (h)..... :	240h	—
	- supply voltage: Un factor; calculated voltage (V)... :	1.1*DC5V	—
	- lamp used..... :		—
4.13 (12.3.2)	After endurance test:		<b>P</b>
	- no part unserviceable		<b>P</b>
	- luminaire not unsafe		<b>P</b>
	- no damage to track system		N/A
	- marking legible		<b>P</b>
	- no cracks, deformation etc.		<b>P</b>
4.13 (12.4)	Thermal test (normal operation)	(see Annex 2)	<b>P</b>
4.13 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	N/A
4.13 (12.6)	Thermal test (failed lamp control gear condition):		N/A
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/A
	- measured winding temperature (°C): at 1,1 Un .....		—
	- measured mounting surface temperature (°C) at 1,1 Un..... :		N/A
	- calculated mounting surface temperature (°C) .....		N/A
	- track-mounted luminaires		N/A
4.13 (12.6.2)	Temperature sensing control		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	- case of abnormal conditions..... :		—
	- thermal link		N/A
	- manual reset cut- out		N/A
	- auto reset cut- out		N/A
	- measured mounting surface temperature (°C)..... :		N/A
	- track- mounted luminaires		N/A
4.13 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N/A
4.13 (12.7.1)	Luminaire without temperature sensing control		N/A
4.13 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N/A
	Test method 12.7.1.1 or Annex W .....		—
	Test according to 12.7.1.1:		N/A
	- case of abnormal conditions..... :		—
	- Ballast failure at supply voltage (V) .....		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex W:		N/A
	- case of abnormal conditions..... :		—
	- measured winding temperature (°C): at 1,1 Un..... :		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un..... :		—
	- calculated temperature of fixing point/exposed part (°C)..... :		—
	Ball-pressure test..... :	See Table 4.16 (13.2.1)	N/A
4.13 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A
	- case of abnormal conditions..... :		—
	- measured winding temperature (°C): at 1,1 Un..... :		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un..... :		—
	- calculated temperature of fixing point/exposed part (°C)..... :		—
	Ball-pressure test..... :	See Table 4.16 (13.2.1)	N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
4.13 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions.....:		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
4.13 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link.....:	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- manual reset cut-out.....:	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- auto reset cut-out.....:	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- case of abnormal conditions.....:		—
	- highest measured temperature of fixing point/ exposed part (°C):.....:		—
	Ball-pressure test:.....:	See Table 4.16 (13.2.1)	N/A
4.13 (-)	Test overturned position (overturns < 15°)		N/A

<b>4.14 (9)</b>	<b>RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE</b>		<b>P</b>
4.14 (-)	If IP > IP 20 the order of tests as specified in clause 4.12		P
4.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		—
	- classification according to IP.....:	IP20	—
	- mounting position during test.....:		—
	- fixing screws tightened; torque (Nm).....:		—
	- tests according to clauses.....:		—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		N/A
	c) no trace of water on current-carrying parts or SELV parts or where it could become a hazard		N/A
	d) i) For luminaires without drain holes – no water entry		N/A
	d) ii) For luminaires with drain holes – no hazardous water entry		N/A
	e) no water in watertight luminaire		N/A
	f) no contact with live parts (IP 2X)		P
	f) no entry into enclosure (IP 3X and IP 4X)		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	f) no contact with live parts (IP3X and IP4X)		N/A
	g) no trace of water on part of lamp requiring protection from splashing water		N/A
	h) no damage of protective shield or glass envelope		N/A
4.14 (9.3)	Humidity test 48 h	25°C, 93%RH	P
4.14 (-)	Portable luminaire for outdoor use tested in the most unfavourable of the overturned positions likely to occur		N/A

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 .....		—
	Insulation resistance (MΩ).....		—
	SELV		N/A
	- between current-carrying parts of different polarity:		N/A
	- between current-carrying parts and mounting surface.....		N/A
	- between current-carrying parts and metal parts of the luminaire.....		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....		N/A
	- Insulation bushings as described in Section 5 .....		N/A
	Other than SELV		N/A
	- between live parts of different polarity.....		N/A
	- between live parts and mounting surface.....		N/A
	- between live parts and metal parts.....		N/A
	- between live parts of different polarity through action of a switch.....		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....		N/A
	- Insulation bushings as described in Section 5 .....		N/A
4.15 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
	Luminaires with ignitors after 24 h test		N/A
	Luminaires with manual ignitors		N/A
	Test voltage (V)..... :		N/A
	SELV		N/A
	- between current-carrying parts of different polarity:		N/A
	- between current-carrying parts and mounting surface..... :		N/A
	- between current-carrying parts and metal parts of the luminaire..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N/A
	- Insulation bushings as described in Section 5 ..... :		N/A
	Other than SELV		N/A
	- between live parts of different polarity..... :		N/A
	- between live parts and mounting surface..... :		N/A
	- between live parts and metal parts..... :		N/A
	- between live parts of different polarity through action of a switch..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N/A
	- Insulation bushings as described in Section 5 ..... :		N/A
4.15 (10.3)	Touch current or protective conductor current (mA):		N/A

<b>4.16 (13)</b>	<b>RESISTANCE TO HEAT, FIRE AND TRACKING</b>		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 (13.4.1)	Proof tracking test (IEC 60112)..... :		N/A
	- part tested..... :		N/A

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

<b>4.8 (11.2)</b>	<b>TABLES: Creepage distances and clearances</b>						N/A
<b>Table 11.1</b>	<b>Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages</b>						N/A
RMS working voltage (V) not exceeding	50	150	250	500	750	1000	
<b>Creepage distances</b>							
Required basic insulation, PTI ≥ 600	0,6	0,8	1,5	3	4	5,5	
Measured							
Required basic insulation, PTI < 600	1,2	1,6	2,5	5	8	10	
Measured							
Required supplementary insulation PTI ≥ 600	-	0,8	1,5	3	4	5,5	
Measured							
Required supplementary insulation PTI < 600	-	1,6	2,5	5	8	10	
Measured							
Required reinforced insulation	-	3,2	5	6	8	11	
Measured							
<b>Clearances</b>							
Required basic insulation	0,2	0,8	1,5	3	4	5,5	
Measured							
Required supplementary insulation	-	0,8	1,5	3	4	5,5	
Measured							
Required reinforced insulation	-	1,6	3	6	8	11	
Measured							
<b>Table 11.2</b>	<b>Minimum distances (mm) for non-sinusoidal pulse voltages</b>						<b>N/A</b>
Rated pulse voltage (peak kV)	2,0	2,5	3,0	4,0	5,0	6,0	8,0
Required clearances	1,0	1,5	2	3	4	5,5	8
Measured							
Rated pulse voltage (peak kV)	10	12	15	20	25	30	40
Required clearances	11	14	18	25	33	40	60
Measured							
Rated pulse voltage (peak kV)	50	60	80	100	-	-	-
Required clearances	75	90	130	170	-	-	-
Measured							

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

4.8 (11.2)	TABLES: Creepage distances and clearances					N/A
Test Location	Working voltage	Measured cl (mm)	Required cl (mm)	Measured cr (mm)	Required cr (mm)	Verdict
--	--	--	--	--	--	--

4.16 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics				P
Allowed impression diameter (mm) .....		2,0mm		—	
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)		Impression diameter (mm)	
Plastic enclosure	--	75°C		1.0mm	
LED cover	--	75°C		1.2mm	
PCB	--	125°C		0.5mm	
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
PCB	--	10s	No	3.0s	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	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Plastic enclosure	--	30s	No	0s	P
LED cover	--	30s	No	0s	P
Any flame or glowing of the sample extinguished within 30 s of withdrawing the glow-wire, and any burning or molten drop did not ignite the underlying parts (Yes/No).....:					Yes
Supplementary information:--					

*4.16 (13.4)	TABLE: Proof tracking test (IEC 60112)		N/A
Test voltage PTI .....		175 V	—

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IEC 60598-2-4					
Clause	Requirement + Test	Result - Remark			Verdict
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
--	--	--	--	--	--
Supplementary information:--					

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

ANNEX 1 TABLE: Critical components information						--
Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
PCB	B	XIAMEN LED BOARD ELECTRON-TECH CO LTD	LDB-1~10	V-0, 130°C	EN 60598-2-4	UL E347474 Test with appliance
Internal wire	B	NIZING ELECTRIC CO LTD	3239	24AWG, 150°C, 60000Vdc	EN 60598-2-4	UL E215834 Test with appliance
LED cover	B	Chang Chun Sb(Changshu) Co Ltd	EME-5051	V-0, 130°C	EN 60598-2-4	UL E223871 Test with appliance
LED PCB	B	XIAMEN LED BOARD ELECTRON-TECH CO LTD	LDB-1~10	V-0, 130°C	EN 60598-2-4	UL E347474 Test with appliance
Plastic enclosure	B	SABIC INNOVATIVE PLASTICS B V	500ECR(GG) (f2)	PC, 80°C	EN 60598-2-4	UL E45329 Test with appliance
LED	C	Shandong caiting zhaoming	2835	VF: 3.1-3.2V IF: 60mA	--	Test with appliance
Battery	C	Mid Ocean Brands B.V.	523450	3.7V, 1A	--	Test with appliance

Supplementary information:

<sup>1)</sup> Provided evidence ensures the agreed level of compliance. See OD-CB2039.

The codes above have the following meaning:

- A - The component is replaceable with another one, also certified, with equivalent characteristics
- B - The component is replaceable if authorised by the test house
- C - Integrated component tested together with the appliance
- D - Alternative component

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

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12						P
	Type reference.....	:	MO9737-06				—
	Lamp used.....	:	LED lamp				—
	Lamp control gear used.....	:					—
	Mounting position of luminaire.....	:	See product manual				—
	Supply wattage (W).....	:	2.5W				—
	Supply current (A).....	:					—
	Calculated power factor.....	:					—
	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.....	:	1.1*DC5V				—
	- 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 .....	:					—
<b>Temperature measurements, (°C)</b>							
Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
LED PCB	25°C	--	52.7	--	130	--	--
LED cover	25°C	--	46.1	--	Ref.	--	--
Plastic enclosure	25°C	--	38.1	--	Ref.	--	--
PCB	25°C	--	58.2	--	130	--	--
Internal wire	25°C	--	43.6	--	150	--	--
Battery	25°C	--	30.1	--	55	--	--
Support surface	25°C	--	28.2	--	90	--	--
Supplementary information:							

ANNEX 3	Screw terminals (part of the luminaire)	N/A
---------	---	-----



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

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

<b>ANNEX 4</b>	<b>Screwless terminals (part of the luminaire)</b>		N/A
<b>(15)</b>	<b>SCREWLESS TERMINALS</b>		N/A
(15.2)	Type of terminal..... :		—
	Rated current (A)..... :		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A

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IEC 60598-2-4			
Clause	Requirement + Test	Result - Remark	Verdict
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5.1)	Terminals internal wiring		N/A
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N/A
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples).....:		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples).....:		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples).....:		N/A
(15.6)	Terminals external wiring		N/A
	Terminal size and rating		N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....		N/A
	Pull test pin or tab terminals (4 samples); pull (N) .....		N/A

<b>(15.6.3.1)</b>	<b>TABLE: Contact resistance test</b>										N/A
	Voltage drop (mV) after 1 h										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop of two inseparable joints										
	Voltage drop after 10th alt. 25th cycle										

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

	<b>ANNEX 5: EMF test result according to IEC/EN 62493</b>				P
4.2.d	<b>MEASUREMENT RESULTS</b>				P
	Measuring with “Van der Hoofden” test head				P
	EUT operation model: <input checked="" type="checkbox"/> Normal operation <input type="checkbox"/> Other operation:				P
	Voltage:	DC5V	Frequency:	N/A	--
	Temperature:	25°C	Humidity:	55% R.H.	--
	Location of EuT	Measuring distance (cm)	Result (F)	Limit (F)	Verdict
	MO9737-06	50	0.06215	0,85	P

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## Attachment No.1

IEC 60598_2_4C-ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<p><b>ATTACHMENT TO TEST REPORT IEC 60598-2-4</b>  <b>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b>  <b>LUMINAIRES</b>  <b>PART 2: PARTICULAR REQUIREMENTS</b>  <b>SECTION 4: PORTABLE GENERAL PURPOSE LUMINAIRES</b></p>
<p><b>Differences according to.....</b> : EN 60598-2-4:2018 used in conjunction with EN 60598-1:2015+A1:2018</p>
<p><b>Annex Form No.....</b> : EU_GD_IEC60598_2_4C</p>
<p><b>Annex Form Originator.....</b> : OVE</p>
<p><b>Master Annex Form.....</b> : 2015-04</p>
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	<b>CENELEC COMMON MODIFICATIONS (EN)</b>	<b>P</b>
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<b>4.6 (3)</b>	<b>MARKING</b>	<b>P</b>
4.6 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package	P

<b>4.7 (4)</b>	<b>CONSTRUCTION</b>	<b>P</b>
4.7 (4.11.6)	Electro-mechanical contact systems	P

<b>4.11 (5)</b>	<b>EXTERNAL AND INTERNAL WIRING</b>	<b>P</b>
4.11 (5.2.1)	Connecting leads	N/A
	- without a means for connection to the supply	N/A
	- terminal block specified	N/A
	- relevant information provided	N/A
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1	N/A
4.11 (5.2.2)	Cables equal to EN 50525	N/A
	Replace table 5.1 – Supply cord	P



## Attachment No.1

IEC 60598_2_4C-ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

4.13 (12) ENDURANCE TESTS AND THERMAL TESTS			
4.13 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		P
ZB ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)			
(3.3)	DK: power supply cords of class I luminaires with label		N/A
(4.5.1)	DK: socket-outlets		N/A
(5.2.1)	CY, DK, FI, GB: type of plug		P

ZC ANNEX ZC, NATIONAL DEVIATIONS (EN)			
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N/A
	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/A
	- 850°C for luminaires in stairways and horizontal travel paths		N/A
	- 650°C for indoor luminaires		N/A
(13.3)	GB: Requirements according to United Kingdom Building Regulation		N/A

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## Attachment No.2

<b>IEC/EN 62031</b>			
<b>LED modules for general lighting - Safety specifications</b>			
Clause	Requirement + Test	Result - Remark	Verdict
6	Classification		---
	Built-in.....:		N/A
	Independent.....:		N/A
	Integral.....:		P
7	Marking		N/A
7.1	Mandatory marking for built-in or independent modules		N/A
7.2	Location of marking		N/A
7.3	Durability and legibility of marking		N/A
8	Terminals		N/A
9	Provisions for protective earthing		N/A
10	Protection against accidental contact with live parts		N/A
11	Moisture resistance and insulation		P
12	Electric strength		P
13	Fault conditions		P
13.1	Fault conditions according to IEC 61347-1, Clause 14		P
13.2	Overpower condition	No damage	P
14	Conformity testing during manufacture		N/A
15	Construction		P
	Non Wood, cotton, silk, paper and similar fibrous material used as insulation.		P
16	Creepage distances and clearances		N/A
17	Screws, current-carrying parts and connections		N/A
18	Resistance to heat, fire and tracking		N/A
19	Resistance to corrosion		N/A
20	Information for luminaire design		N/A
21	Heat management		N/A
22	Photobiological safety		P
22.1	UV radiation		N/A
22.2	Blue light hazard		P
22.3	Infrared radiation		N/A
Annex A	Test		--
Annex C	Conformity testing during manufacture		--
Annex D	Information for luminaire design		--

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## Attachment No.3

IEC/EN 62471			
Photobiological safety of lamps and lamp systems			
Clause	Requirement + Test	Result - Remark	Verdict
<b>4</b>	<b>EXPOSURE LIMITS (EL'S)</b>		<b>---</b>
4.2	Specific factors involved in the determination and application of retinal exposure limits		P
4.2.1	Pupil diameter		P
4.2.2	Angular subtense of source and measurement field-of-view		P
4.3	Hazard exposure limits		P
4.3.1	Actinic UV hazard exposure limit for the skin and eye		N/A
4.3.2	Near-UV hazard exposure limit for the eye		N/A
4.3.3	Retinal blue light hazard exposure limit		P
4.3.4	Retinal blue light hazard exposure limit - small source		P
4.3.5	Retinal thermal hazard exposure limit		N/A
4.3.6	Retinal thermal hazard exposure limit – weak visual stimulus		P
4.3.7	Infrared radiation hazard exposure limits for the eye		N/A
4.3.8	Thermal hazard exposure limit for the skin		P
<b>5</b>	<b>MEASUREMENT OF LAMPS AND LAMP SYSTEMS</b>		<b>P</b>
5.1	Measurement conditions		P
5.1.1	Lamp ageing (seasoning)		P
5.1.2	Test environment		P
5.1.3	Extraneous radiation		P
5.1.4	Lamp operation		P
5.1.5	Lamp system operation		P
5.2	Measurement procedure		P
5.2.1	Irradiance measurements		P
5.2.2	Radiance measurements		P
5.2.3	Measurement of source size		P
5.2.4	Pulse width measurement for pulsed sources		N/A
5.3	Analysis methods		P
5.3.1	Weighting curve interpolations		P
5.3.2	Calculations		P
5.3.3	Measurement uncertainty		P
<b>6</b>	<b>LAMP CLASSIFICATION</b>		<b>N/A</b>
6.1	Continuous wave lamps		N/A
6.1.1	Exempt group		N/A
6.1.2	Risk Group 1 (Low-Risk)		N/A
6.1.3	Risk Group 2 (Moderate-Risk)		N/A

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IEC/EN 62471 Photobiological safety of lamps and lamp systems			
Clause	Requirement + Test	Result - Remark	Verdict
6.1.4	Risk Group 3 (High-Risk)		N/A
6.2	Pulsed lamps		N/A
<b>Annex A</b>	<b>SUMMARY OF BIOLOGICAL EFFECTS</b>		--
<b>Annex B</b>	<b>MEASUREMENT METHOD</b>		--
<b>Annex C</b>	<b>UNCERTAINTY ANALYSIS</b>		--
<b>Annex D</b>	<b>GENERAL REFERENCES</b>		--

Table 6.1	Emission limits for risk groups of continuous wave lamps								N/A
Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	SUV(λ)	E <sub>s</sub>	W•m <sup>-2</sup>	0,001	-	-	-	-	-
Near UV		E <sub>UVA</sub>	W•m <sup>-2</sup>	0,33	-	-	-	-	-
Blue light	B(λ)	L <sub>B</sub>	W•m <sup>-2</sup> •sr <sup>-1</sup>	100	-	10000	-	4000000	-
Blue light, small source	B(λ)	E <sub>B</sub>	W•m <sup>-2</sup>	0,01*	-	1,0	-	400	-
Retinal thermal	R(λ)	L <sub>R</sub>	W•m <sup>-2</sup> •sr <sup>-1</sup>	28000/α	-	28000/α	-	71000/α	-
Retinal thermal, weak visual stimulus**	R(λ)	L <sub>IR</sub>	W•m <sup>-2</sup> •sr <sup>-1</sup>	545000	-	-	-	-	-
				0,0017 ≤ α ≤ 0,011	-	-	-	-	-
				6000/α	-	-	-	-	-
				0,011 ≤ α ≤ 0.1	-	-	-	-	-
IR radiation, eye		E <sub>IR</sub>	W•m <sup>-2</sup>	100	-	570	-	3200	-

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IEC/EN 62471			
Photobiological safety of lamps and lamp systems			
Clause	Requirement + Test	Result - Remark	Verdict

Table 6.1	Emission limits for risk groups of continuous wave lamps	N/A
* Small source defined as one with $\alpha < 0,011$ radian. Averaging field of view at 10000 s is 0,1 radian. ** Involves evaluation of non-GLS source Note: The action functions: see Table 4.1 and Table 4.2 The applicable aperture diameters: see 4.2.1 The limitations for the angular subtenses: see 4.2.2 The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5		

Table 4.7 (4.24)	Spectroradiometric measurement				--
	Measurement performed on:		Luminaire		--
	Model number.....		MO9737-06		--
	Test voltage (V).....		DC5V		--
	Test current (mA).....		--		--
	Test frequency (Hz).....		--		--
	Ambient, t (°C).....		25.0		--
	Measurement distance.....		<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm		--
	Source size .....		<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small : .... mm		--
	Field of view .....		<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)		--
Item	Symbol	Units	Result	Risk Group	
Correlated colour temperature	CCT	K	--	--	
x/y colour coordinates	--	--	--	--	
Blue light hazard radiance	L <sub>B</sub>	W/(m <sup>2</sup> •sr <sup>1</sup> )	6	<input checked="" type="checkbox"/> RG0: <100 <input type="checkbox"/> RG1: <10000 <input type="checkbox"/> RG2: <4000000	
Blue light hazard irradiance	E <sub>B</sub>	W/m <sup>2</sup>	--	--	
Luminance	L	cd/m <sup>2</sup>	--	--	
Illuminance	E	lx	--	--	
Supplementary information:					

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# Attachment No.4

## Photo Documentation

View:  
Model:  
MO9737-06

- General
- Front
- Rear
- Internal
- Top
- Bottom
- PWB



Figure 1

View:

- General
- Front
- Rear
- Internal
- Top
- Bottom
- PWB

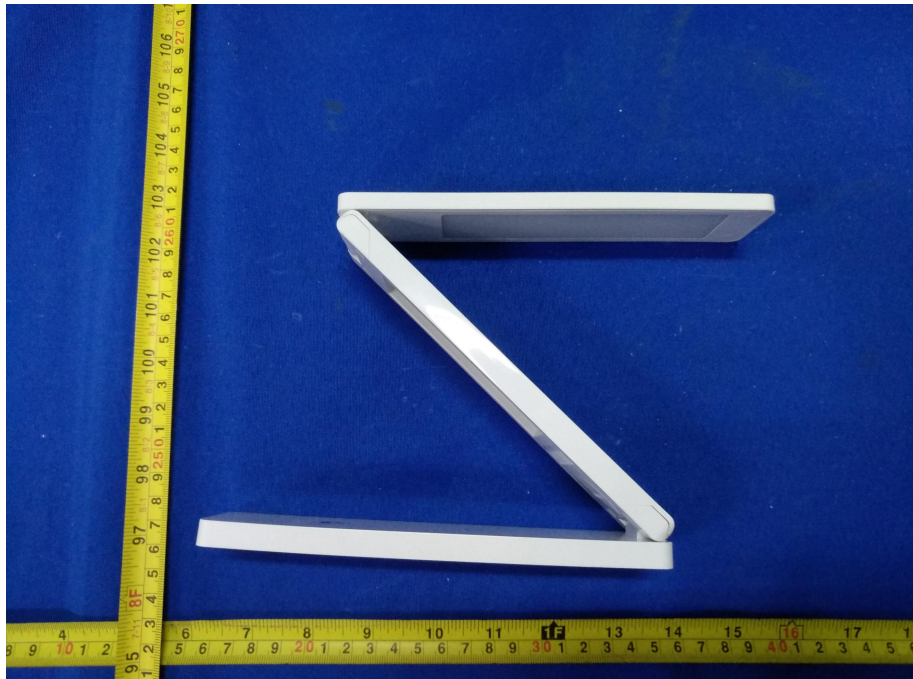


Figure 2

LCSTRF-S-004-A-1

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## Attachment No.4

## Photo Documentation

View:

- General
- Front
- Rear
- Internal
- Top
- Bottom
- PWB



Figure 3

View:

- General
- Front
- Rear
- Internal
- Top
- Bottom
- PWB

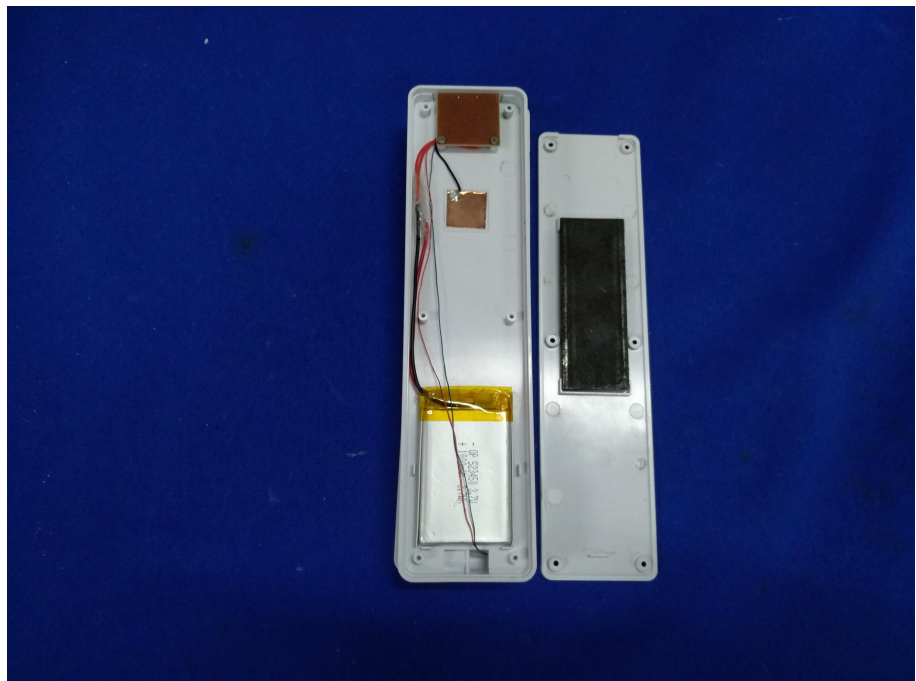


Figure 4

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## Attachment No.4

### Photo Documentation

View:

- General
- Front
- Rear
- Internal
- Top
- Bottom
- PWB

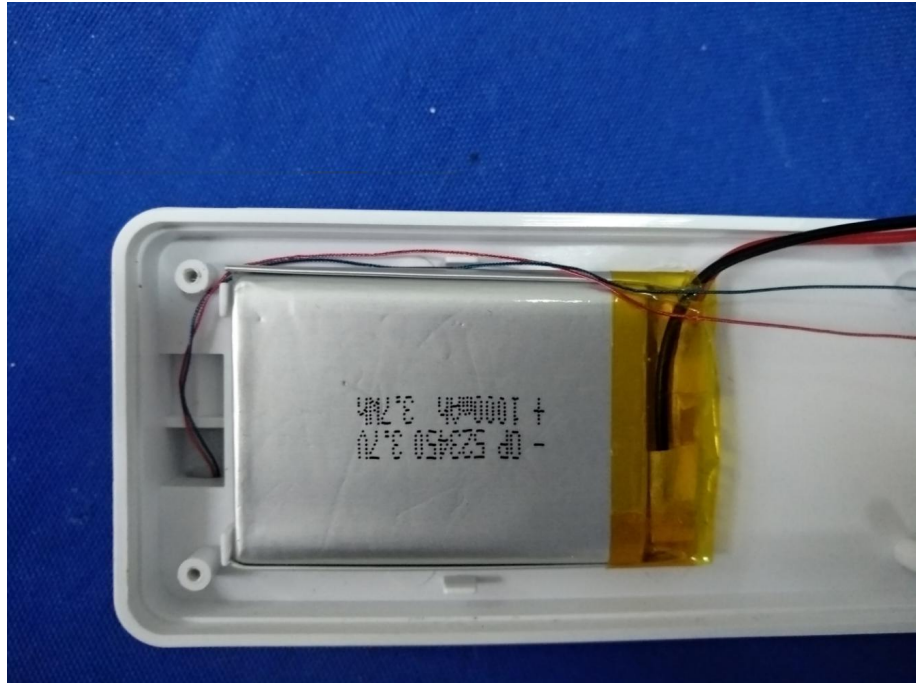


Figure 5

View:

- General
- Front
- Rear
- Internal
- Top
- Bottom
- PWB

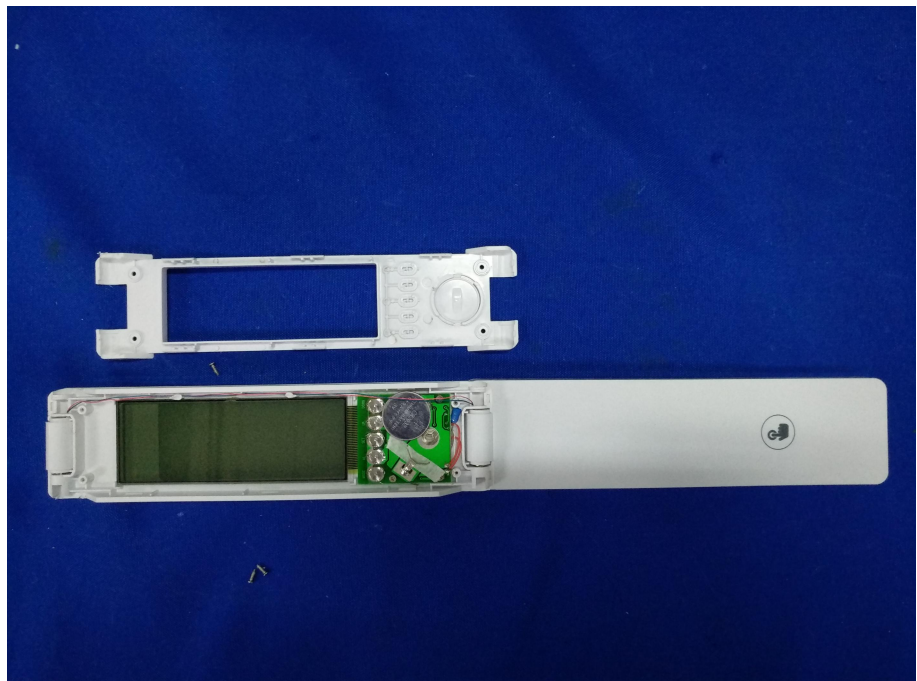


Figure 6

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## Attachment No.4

### Photo Documentation

View:

- General
- Front
- Rear
- Internal
- Top
- Bottom
- PWB



Figure 7

View:

- General
- Front
- Rear
- Internal
- Top
- Bottom
- PWB

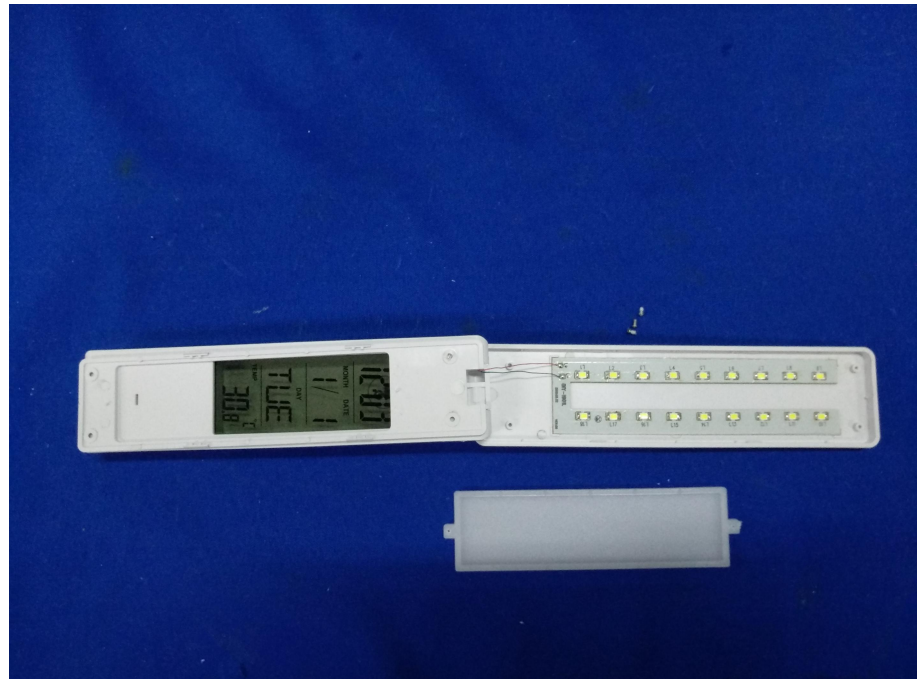


Figure 8

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## Attachment No.4

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View:

- General
- Front
- Rear
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- Top
- Bottom
- PWB

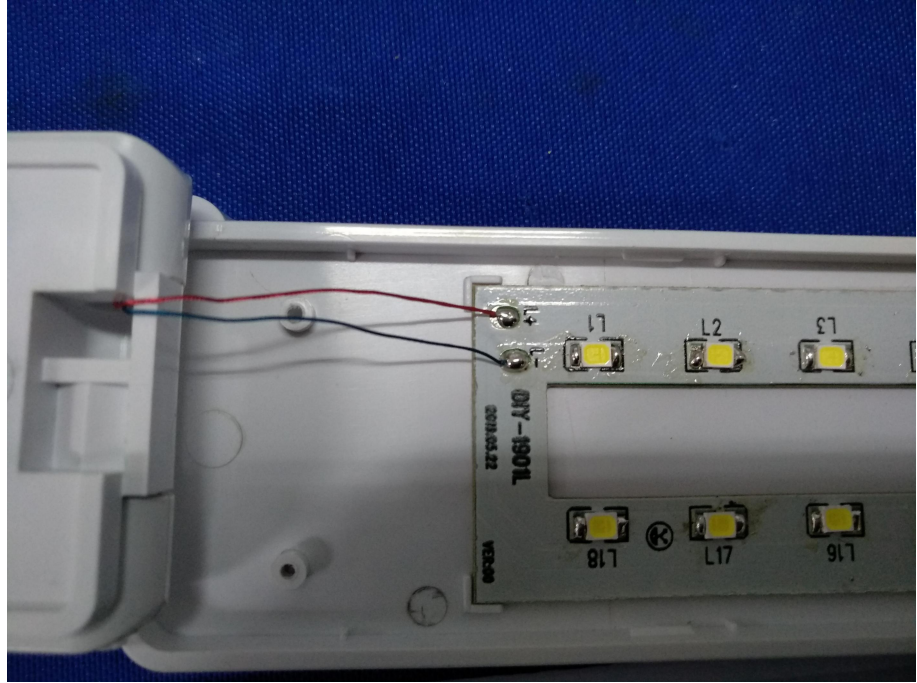


Figure 9

-----End of Test Report-----

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