

Test Report

Applicant: Yuyao Four Star Lamps Co.,Ltd.
Address: CN6,Far East Industrial Park Yuyao ,Zhejiang P.R. China

Product: Garden LAMP

Trademark: N/A

Model No: 1615 (more model see page 7)

Test report form no.: IEC60598-2-1D
Rev: No.0/201512

Test laboratory: Most Technology Service Co., Limited
No.5, 2nd Langshan Road, North District, Hi-tech Industry Park,
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The safety testing has been performed on the submitted samples and found in compliance with the council LVD directive 2014/35/EU.

TEST REPORT EN 60598-2-1 Luminaires Part 2: Particular requirements Section 1: Fixed general purpose luminaires	
Report Number..... : MTS/TRC/B17060550 Date of issue..... : 2017-06-09 Total number of pages 52 pages	
Name of Testing Laboratory preparing the Report Most Technology Service Co., Limited	
Applicant's name Yuyao Four Star Lamps Co.,Ltd. Address..... : CN6,Far East Industrial Park Yuyao ,Zhejiang P.R.China	
Test specification: Standard EN 60598-2-1:1989 used in conjunction with EN 60598-1:2015 EN 62471:2008 Test procedure Test Report Non-standard test method N/A	
Test Report Form No. : IEC60598_2_1D Test Report Form(s) Originator : Intertek Semko AB Master TRF 2014-08 Copyright © 2014 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System). All rights reserved. This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.	
Test item description..... : Trade Mark..... : Manufacturer Model/Type reference Ratings	Garden LAMP N/A Yuyao Four Star Lamps Co.,Ltd. CN6,Far East Industrial Park Yuyao ,Zhejiang P.R.China 1615 (more model see page 7) 230V~, 50Hz, Max.60W (more informationsee page 7)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒	Testing Laboratory:	Most Technology Service Co., Limited
Testing location/ address.....:		No.5, 2nd Langshan Road, North District, Hi-tech Industry Park, Nanshan, Shenzhen, Guangdong, China
☐	Associated Testing Laboratory:	
Testing location/ address.....:		
Tested by (name, function, signature)		Tiger chen
Approved by (name, function, signature)....:		Jack Cheng
☐	Testing procedure: TMP/CTF Stage 1:	
Testing location/ address.....:		
Tested by (name, function, signature)		
Approved by (name, function, signature)....:		
☐	Testing procedure: WMT/CTF Stage 2:	
Testing location/ address.....:		
Tested by (name + signature)		
Witnessed by (name, function, signature)..:		
Approved by (name, function, signature)....:		
☐	Testing procedure: SMT/CTF Stage 3 or 4:	
Testing location/ address.....:		
Tested by (name, function, signature)		
Witnessed by (name, function, signature)..:		
Approved by (name, function, signature)....:		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment):

1. Photos (5 pages)
2. Differences of European Group (2 pages)

Summary of testing:

From the result of our tests on the submitted samples, we conclude they comply with the requirements of the standards

Tests performed (name of test and test clause):

Clauses	Item(s)
1.5	Marking
1.6	Construction
1.7	Creepage distance and clearances
1.8	Provision for earthing
1.9	Terminals
1.10	External and internal wiring
1.11	Protection against electric shock
1.12	Endurance tests and thermal tests
1.14	Insulation resistance and electric strength
1.15	Resistance to heat, fire and tracking

Testing location:

No.5, 2nd Langshan Road, North District, Hi-tech Industry Park, Nanshan, Shenzhen, Guangdong, China

Summary of compliance with National Differences:

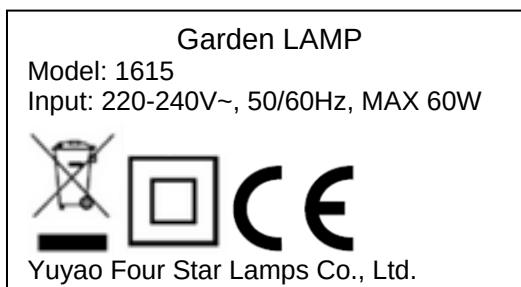
List of countries addressed

European Group

☒ The product fulfils the requirements of EN 60598-2-1:1989 used in conjunction with EN 60598-1:2015.

Copy of marking plate:

The artwork below may be only a draft.



Test item particulars: Garden LAMP			
Classification of installation and use: Fixed			
Supply Connection: Directly connected to the power supply:			
Possible test case verdicts: - test case does not apply to the test object.....: N/A - test object does meet the requirement.....: P (Pass) - test object does not meet the requirement.....: F (Fail)			
Testing:			
Date of receipt of test item: 2017-05-25			
Date (s) of performance of tests: 2017-05-25 to 2017-06-06			
General remarks: "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a ☐ comma / ☒ point is used as the decimal separator.			
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60529:			
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:	☐ Yes ☒ Not applicable		
When differences exist; they shall be identified in the General product information section.			
Name and address of factory (ies): Yuyao Four Star Lamps Co.,Ltd. CN6,Far East Industrial Park Yuyao ,Zhejiang P.R.China			
General product information: 1. The equipment is Garden LAMP. 2. The maximum operation temperature: 25°C. 3. All the models of electrical principle is the same, in addition to the model name and appearance. All test were conducted on model 1615.more model See the table below			
Model	Technical Data	Model	Technical Data
1458	220V-240V~ 50Hz E27xMax 60W	16214	220V-240V~ 50Hz E27xMax 100W
1458A	220V-240V~ 50Hz E27xMax 60W	16215	220V-240V~ 50Hz E27xMax 2*100W
1459	220V-240V~ 50Hz E27xMax 60W	16216	220V-240V~ 50Hz E27xMax 2*100W

1459A	220V-240V~ 50Hz E27xMax 60W	16217	220V-240V~ 50Hz E27xMax 100W
1468	220V-240V~ 50Hz E27xMax 60W	16218	220V-240V~ 50Hz E27xMax 100W
1468A	220V-240V~ 50Hz E27xMax 60W	16219	220V-240V~ 50Hz E27xMax 2*100W
1469	220V-240V~ 50Hz E27xMax 60W	1631	220V-240V~ 50Hz E27xMax 100W
1469A	220V-240V~ 50Hz E27xMax 60W	1634	220V-240V~ 50Hz E27xMax 100W
1478	220V-240V~ 50Hz E27xMax 60W	1635	220V-240V~ 50Hz E27xMax 100W
1478A	220V-240V~ 50Hz E27xMax 60W	1636	220V-240V~ 50Hz E27xMax 100W
1479	220V-240V~ 50Hz E27xMax 60W	1641	220V-240V~ 50Hz E27xMax 60W
1479A	220V-240V~ 50Hz E27xMax 60W	1641A	220V-240V~ 50Hz E27xMax 60W
1488	220V-240V~ 50Hz E27xMax 60W	1651	220V-240V~ 50Hz E27xMax 100W
1488A	220V-240V~ 50Hz E27xMax 60W	1651A	220V-240V~ 50Hz E27xMax 100W
1489	220V-240V~ 50Hz E27xMax 60W	1644	220V-240V~ 50Hz E27xMax 60W
1489A	220V-240V~ 50Hz E27xMax 60W	1644A	220V-240V~ 50Hz E27xMax 60W
1611	220V-240V~ 50Hz E27xMax 60W	1654	220V-240V~ 50Hz E27xMax 100W
1611A	220V-240V~ 50Hz E27xMax 100W	1654A	220V-240V~ 50Hz E27xMax 100W
1614	220V-240V~ 50Hz E27xMax 60W	1645	220V-240V~ 50Hz E27xMax 60W
1614A	220V-240V~ 50Hz E27xMax 100W	1645A	220V-240V~ 50Hz E27xMax 60W
1615	220V-240V~ 50Hz E27xMax 60W	1655	220V-240V~ 50Hz E27xMax 100W
1615A	220V-240V~ 50Hz E27xMax 100W	1655A	220V-240V~ 50Hz E27xMax 100W
1616	220V-240V~ 50Hz E27xMax 60W	1646	220V-240V~ 50Hz E27xMax 60W
1616A	220V-240V~ 50Hz E27xMax 100W	1646A	220V-240V~ 50Hz E27xMax 60W
1621	220V-240V~ 50Hz E27xMax 100W	1656	220V-240V~ 50Hz E27xMax 100W
1623	220V-240V~ 50Hz E27xMax 100W	1656A	220V-240V~ 50Hz E27xMax 100W
1624	220V-240V~ 50Hz E27xMax 100W	1711	220V-240V~ 50Hz E27xMax 23W
1625	220V-240V~ 50Hz E27xMax 100W	1715	220V-240V~ 50Hz E27xMax 23W
1626	220V-240V~ 50Hz E27xMax 100W	1714	220V-240V~ 50Hz E27xMax 23W
1627	220V-240V~ 50Hz E27xMax 100W	1721	220V-240V~ 50Hz E27xMax 23W
1628	220V-240V~ 50Hz E27xMax 100W	1731	220V-240V~ 50Hz E27xMax 23W
1629	220V-240V~ 50Hz E27xMax 100W	1725	220V-240V~ 50Hz E27xMax 23W
16210	220V-240V~ 50Hz E27xMax 2*100W	1735	220V-240V~ 50Hz E27xMax 23W
16211	220V-240V~ 50Hz E27xMax 2*100W	1724	220V-240V~ 50Hz E27xMax 23W
16213	220V-240V~ 50Hz E27xMax 100W	1734	220V-240V~ 50Hz E27xMax 23W

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

1.2 (0)	GENERAL TEST REQUIREMENTS		P
1.2 (0.1)	Information for luminaire design considered	Standard Yes ☒ No ☐	—
1.2 (0.3)	More sections applicable.....	Yes ☒ No ☐	—

1.4 (2)	CLASSIFICATION		
1.4 (2.2)	Type of protection	Class I	—
1.4 (2.3)	Degree of protection.....	IPX0	—
1.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces	Yes ☒ No ☐	—
1.4 (2.5)	Luminaire for normal use	Yes ☒ No ☐	—
	Luminaire for rough service	Yes ☐ No ☒	—

1.5 (3)	MARKING		P
1.5 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
1.5 (3.3)	Additional information		P
	Language of instructions	English	P
1.5 (3.3.1)	Combination luminaires		N/A
1.5 (3.3.2)	Nominal frequency in Hz	50Hz	P
1.5 (3.3.3)	Operating temperature	35°C	P
1.5 (3.3.4)	Symbol or warning notice		N/A
1.5 (3.3.5)	Wiring diagram		P
1.5 (3.3.6)	Special conditions		N/A
1.5 (3.3.7)	Metal halide lamp luminaire – warning		N/A
1.5 (3.3.8)	Limitation for semi-luminaires		N/A
1.5 (3.3.9)	Power factor and supply current		N/A
1.5 (3.3.10)	Suitability for use indoors		P
1.5 (3.3.11)	Luminaires with remote control		N/A
1.5 (3.3.12)	Clip-mounted luminaire – warning		N/A
1.5 (3.3.13)	Specifications of protective shields		N/A
1.5 (3.3.14)	Symbol for nature of supply	~	P
1.5 (3.3.15)	Rated current of socket outlet		N/A

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5 (3.3.16)	Rough service luminaire		N/A
1.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		N/A
1.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
1.5 (3.3.19)	Protective conductor current in instruction if applicable		N/A
1.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		P
1.5 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided		P
	Cautionary symbol		P
1.5 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
1.5 (3.4)	Test with water	15s	P
	Test with hexane	15s	P
	Legible after test		P
	Label attached		P

1.6 (4)	CONSTRUCTION		P
1.6 (4.2)	Components replaceable without difficulty		N/A
P	Wireways smooth and free from sharp edges		P
1.6 (4.4)	Lampholders		P
1.6 (4.4.1)	Integral lampholde		P
1.6 (4.4.2)	Wiring connection		P
1.6 (4.4.3)	Lampholder for end-to-end mounting		N/A
1.6 (4.4.4)	Positioning		P
	- 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 (Nm)		—
	After test the lampholder have not moved from its position and show no permanent deformation	E27 2.0Nm	P
1.6 (4.4.5)	Peak pulse voltage		N/A
1.6 (4.4.6)	Centre contact		N/A
1.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.4.8)	Lamp connectors		P
1.6 (4.4.9)	Caps and bases correctly used		N/A
1.6 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
1.6 (4.5)	Starter holders		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
1.6 (4.6)	Terminal blocks		P
	Tails		P
	Unsecured blocks		N/A
1.6 (4.7)	Terminals and supply connections		P
1.6 (4.7.1)	Contact to metal parts		P
1.6 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		P
1.6 (4.7.3)	Terminals for supply conductors		P
1.6 (4.7.3.1)	Welded method and material		N/A
	- stranded or solid conductor		N/A
	- spot welding		N/A
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.8.2		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
1.6 (4.7.4)	Terminals other than supply connection		N/A
1.6 (4.7.5)	Heat-resistant wiring/sleeves		P
1.6 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
1.6 (4.8)	Switches		N/A
	- adequate rating		N/A
	- adequate fixing		N/A
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
1.6 (4.9)	Insulating lining and sleeves		P
1.6 (4.9.1)	Retainment		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Method of fixing		—
1.6 (4.9.2)	Insulated linings and sleeves:		P
	Resistant to a temperature > 20 °C to the wire temperature or		P
	a) & c) Insulation resistance and electric strength		P
	b) Ageing test. Temperature (°C)	45	P
1.6 (4.10)	Double or reinforced insulation		P
1.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N/A
	Safe installation fixed luminaires		P
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
1.6 (4.10.2)	Assembly gaps:		P
	- not coincidental		P
	- no straight access with test probe		P
1.6 (4.10.3)	Retention of insulation:		P
	- fixed		P
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
1.6 (4.11)	Electrical connections and current-carrying parts		P
1.6 (4.11.1)	Contact pressure		P
1.6 (4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
1.6 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
1.6 (4.11.4)	Material of current-carrying parts		P
1.6 (4.11.5)	No contact to wood or mounting surface		P
1.6 (4.11.6)	Electro-mechanical contact systems		N/A
1.6 (4.12)	Screws and connections (mechanical) and glands		P
1.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		P

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Torque test: torque (Nm); part..... :	0.4	P
	Torque test: torque (Nm); part..... :		N/A
	Torque test: torque (Nm); part..... :		N/A
1.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
1.6 (4.12.4)	Locked connections:		P
	- fixed arms; torque (Nm)	2.5	P
	- lampholder; torque (Nm)	E27 2.0Nm	P
	- push-button switches; torque 0,8 Nm		N/A
1.6 (4.12.5)	Screwed glands; force (Nm)..... :		N/A
1.6 (4.13)	Mechanical strength		N/A
1.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm)	0.20	P
	- other parts; energy (Nm)..... :	0.35	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P
1.6 (4.13.3)	Straight test finger		P
1.6 (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
1.6 (4.13.6)	Tumbling barrel		N/A
1.6 (4.14)	Suspensions, fixings and means of adjusting		P
1.6 (4.14.1)	Mechanical load:		P
	A) four times the weight	Model 1615 with biggest mass was Test: 4x1.5Kg=6.0Kg	P
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	Metal rod. diameter (mm)		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
1.6 (4.14.2)	Load to flexible cables		N/A
	Mass (kg)		—
	Stress in conductors (N/mm ²)		N/A
	Mass (kg) of semi-luminaire		—
	Bending moment (Nm) of semi-luminaire		N/A
1.6 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles.....		N/A
	- strands broken		N/A
	- electric strength test afterwards		N/A
1.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
1.6 (4.14.5)	Guide pulleys		N/A
1.6 (4.14.6)	Strain on socket-outlets		N/A
1.6 (4.15)	Flammable materials		P
	- glow-wire test 650°C	See Test Table 1.15 (13.3.2)	P
	- spacing ≥30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		P
	- thermal protection		N/A
	- electronic circuits exempted		N/A
1.6 (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
1.6 (4.16)	Luminaires for mounting on normally flammable surfaces		P
	No lamp control gear	(compliance with Section 12)	N/A
1.6 (4.16.1)	Lamp control gear spacing:		P
	- spacing 35 mm		P
	- spacing 10 mm		N/A
1.6 (4.16.2)	Thermal protection:		N/A
	- in lamp control gear		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- external		N/A
	- fixed position		P
	- temperature marked lamp control gear		N/A
1.6 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
1.6 (4.17)	Drain holes		N/A
	Clearance at least 5 mm		N/A
1.6 (4.18)	Resistance to corrosion		P
1.6 (4.18.1)	- rust-resistance		N/A
1.6 (4.18.2)	- season cracking in copper		P
1.6 (4.18.3)	- corrosion of aluminium		P
1.6 (4.19)	Igniters compatible with ballast		N/A
1.6 (4.20)	Rough service vibration		N/A
1.6 (4.21)	Protective shield		N/A
1.6 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
1.6 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
1.6 (4.21.3)	No direct path		N/A
1.6 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment	See Test Table 1.15 (13.3.2)	N/A
1.6 (4.22)	Attachments to lamps not cause overheating or damage		N/A
1.6 (4.23)	Semi-luminaires comply Class II		N/A
1.6 (4.24)	Photobiological hazards		N/A
1.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
1.6 (4.24.2)	Retinal blue light hazard		N/A
	Luminaires with E_{thr} :		N/A
	a) Fixed luminaires		N/A
	- distance x m, borderline between RG1 and RG2 .. :		N/A
	- marking and instruction according 3.2.23		N/A
	b) Portable and handheld luminaires		N/A
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N/A

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N/A
1.6 (4.25)	Mechanical hazard		P
	No sharp point or edges		P
1.6 (4.26)	Short-circuit protection		N/A
1.6 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N/A
1.6 (4.26.2)	Short-circuit test with test chain according 4.26.3		N/A
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
1.6 (4.27)	Terminal blocks with integrated screwless earthing contacts		N/A
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
1.6 (4.28)	Fixing of thermal sensing control		N/A
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A
	Test of adhesive fixing:		N/A
	Max. temperature on adhesive material ($^{\circ}\text{C}$) :		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
1.6 (4.29)	Luminaires with non-replaceable light source		P
	Not possible to replace light source		P
	Live part not accessible after parts have been opened by hand or tools		P
1.6 (4.30)	Luminaires with non-user replaceable light source		N/A
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N/A
	Minimum two fixing means		N/A

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.31)	Insulation between circuits		P
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N/A
1.6 (4.31.1)	SELV circuits		N/A
	Used SELV source		N/A
	Voltage $\leq$ ELV		N/A
	Insulating of SELV circuits from LV supply		N/A
	Insulating of SELV circuits from other non SELV circuits		N/A
	Insulating of SELV circuits from FELV		N/A
	Insulating of SELV circuits from other SELV circuits		N/A
	SELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Plugs and socket-outlets does not have protective conductor contact		N/A
1.6 (4.31.2)	FELV circuits		N/A
	Used FELV source		N/A
	Voltage $\leq$ ELV		N/A
	Insulating of FELV circuits from LV supply		N/A
	FELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Socket-outlets does not have protective conductor contact		N/A
1.6 (4.31.3)	Other circuits		P
	Other circuits insulated from accessible parts according Table X.1		P
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- conductive parts are connected together		P
	- test according 7.2.3 of above		P
	- conductive part not cause an electric shock in case of an insulation fault		P
	- equipotential bonding in master/slave applications		N/A
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N/A
	- slave luminaire constructed as class I		N/A
1.6 (4.32)	Overvoltage protective devices		N/A
	Comply with IEC 61643-11		N/A
	External to control gear and connected to earth:		N/A
	- only in fixed luminaires		N/A
	- only connected to protective earth		N/A

1.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
1.7 (11.2)	Creepage distances and clearances..... :	See Table 1.7 (11.2)	P
	Working voltage (V)..... :	AC 240V	—
	Rated pulse voltage (kV)..... :	2.5kV	—
	Voltage form..... :	Sinusoidal ☒ Non-sinusoidal ☐	—
	PTI..... :	< 600 ☒ ≥ 600 ☐	—
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II ☒ Category III ☐	—

1.8 (7)	PROVISION FOR EARTHING		P
1.8 (7.2.1 + 7.2.3)	Accessible metal parts		P
	Metal parts in contact with supporting surface		P
	Resistance < 0,5 Ω..... :	0.05Ω	P
	Self-tapping screws used		N/A
	Thread-forming screws		P
	Thread-forming screw used in a grove		N/A
	Earth makes contact first		P
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		P
	Protective earthing of the luminaire not via built-in control gear		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
1.8 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N/A
1.8 (7.2.4)	Locking of clamping means		P
	Compliance with 4.7.3		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
1.8 (7.2.5)	Earth terminal integral part of connector socket		N/A
1.8 (7.2.6)	Earth terminal adjacent to mains terminals		N/A
1.8 (7.2.7)	Electrolytic corrosion of the earth terminal		N/A
1.8 (7.2.8)	Material of earth terminal		N/A
	Contact surface bare metal		N/A
1.8 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
1.8 (7.2.11)	Earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A

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

1.9 (15)	SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS		N/A
	Separately approved; component list..... :	(see Annex 1)	N/A
	Part of the luminaire :	(see Annex 4)	N/A

1.10 (5)	EXTERNAL AND INTERNAL WIRING		P
1.10 (5.2)	Supply connection and external wiring		P
1.10 (5.2.1)	Means of connection :	Directly connected to the power supply	P
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment		N/A
1.10 (5.2.2)	Type of cable..... :		N/A
	Nominal cross-sectional area (mm ²) :		N/A
	Cables equal to IEC 60227 or IEC 60245		N/A
1.10 (5.2.3)	Type of attachment, X, Y or Z		N/A
1.10 (5.2.5)	Type Z not connected to screws		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
1.10 (5.2.6)	Cable entries:		N/A
	- suitable for introduction		N/A
	- adequate degree of protection		N/A
1.10 (5.2.7)	Cable entries through rigid material have rounded edges		N/A
1.10 (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
1.10 (5.2.9)	Locking of screwed bushings		N/A
1.10 (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
1.10 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
1.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N/A
1.10 (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

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Clause	Requirement + Test	Result - Remark	Verdict
	- displacement ≤ 2 mm		N/A
	- no movement of conductors		N/A
	- no damage of cable or cord		N/A
	- function independent of electrical connection		N/A
1.10 (5.2.11)	External wiring passing into luminaire		N/A
1.10 (5.2.12)	Looping-in terminals		N/A
1.10 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
1.10 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
1.10 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector according relevant IEC standard		N/A
1.10 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
1.10 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- other standard		N/A
1.10 (5.3)	Internal wiring		P
1.10 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		P
	- not delivered/ mounting instruction		P
	- factory assembled		P
	- socket outlet loaded (A)		N/A
	- temperatures	(see Annex 2)	P
	Green-yellow for earth only		N/A
1.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm ²).....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Insulation thickness		N/A
	Extra insulation added where necessary		N/A
1.10 (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
1.10 (5.3.1.3)	Double or reinforced insulation for class II		N/A
1.10 (5.3.1.4)	Conductors without insulation		N/A
1.10 (5.3.1.5)	SELV current-carrying parts		N/A
1.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		P
1.10 (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°		N/A
1.10 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
1.10 (5.3.4)	Joints and junctions effectively insulated		N/A
1.10 (5.3.5)	Strain on internal wiring		P
1.10 (5.3.6)	Wire carriers		P
1.10 (5.3.7)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		P
1.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
1.11 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		N/A
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		P
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		N/A
	Double-ended high pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
1.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
1.11 (8.2.3.a)	Class II luminaire:		P
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		N/A
	- glass protective shields not used as supplementary insulation		N/A
1.11 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N/A
1.11 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- touch current		N/A
	- no-load voltage.....		N/A
	Other than ordinary luminaire:		N/A
	- nominal voltage		N/A
1.11 (8.2.4)	Portable luminaire have protection independent of supporting surface		N/A
1.11 (8.2.5)	Compliance with the standard test finger or relevant probe		P
1.11 (8.2.6)	Covers reliably secured		P
1.11 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$		N/A
	Portable plug connected luminaire with capacitor		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Other plug connected luminaire with capacitor		N/A
	Discharge device on or within capacitor		N/A
	Discharge device mounted separately		N/A

1.12 (12)	ENDURANCE TEST AND THERMAL TEST		P
1.12 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 4.13		—
1.12 (12.3)	Endurance test:		N/A
	- mounting-position..... :	Normal position	—
	- test temperature (°C) :	35°C	—
	- total duration (h)..... :	240h	—
	- supply voltage: Un factor; calculated voltage (V)... :	264V	—
	- lamp used..... :	Filament lamp	—
1.12 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P
1.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
1.12 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	N/A
1.12 (12.6)	Thermal test (failed lamp control gear condition):		N/A
1.12 (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
1.12 (12.6.2)	Temperature sensing control		N/A
	- case of abnormal conditions :		—
	- thermal link		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C)		N/A
	- track-mounted luminaires		N/A
1.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N/A
1.12 (12.7.1)	Luminaire without temperature sensing control		N/A
1.12 (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 1.15 (13.2.1)	N/A
1.12 (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 1.15 (13.2.1)	N/A
1.12 (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

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Clause	Requirement + Test	Result - Remark	Verdict
1.12 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link..... :	Yes ☐ No ☐	—
	- manual reset cut-out :	Yes ☐ No ☐	—
	- auto reset cut-out :	Yes ☐ No ☐	—
	- case of abnormal conditions :		—
	- highest measured temperature of fixing point/ exposed part (°C): :		—
	Ball-pressure test: :	See Table 1.15 (13.2.1)	N/A

1.13 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
1.13 (-)	If IP > IP 20 the order of tests as specified in clause 1.12		N/A
1.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		—
	- classification according to IP..... :		—
	- mounting position during test..... :	As normal use	—
	- fixing screws tightened; torque (Nm) :		—
	- tests according to clauses..... :	Clause 9.2	—
	- electric strength test afterwards		N/A
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		N/A
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		N/A
	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)		N/A
	f) no entry into enclosure (IP 3X and IP 4X)		N/A
	f) no contact with live parts (IP3X and IP4X)		N/A
	g) no trace of water on part of lamp requiring protection from splashing water		N/A
	h) no damage of protective shield or glass envelope		N/A
1.13 (9.3)	Humidity test 48 h		P

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Clause	Requirement + Test	Result - Remark	Verdict
1.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
1.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø		—
	Insulation resistance (MΩ)		—
	SELV		N/A
	- between current-carrying parts of different polarity:		N/A
	- between current-carrying parts and mounting surface.....		N/A
	- between current-carrying parts and metal parts of the luminaire.....		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....		N/A
	- Insulation bushings as described in Section 5		N/A
	Other than SELV		P
	- between live parts of different polarity	>100MΩ	P
	- between live parts and mounting surface	>100MΩ	P
	- between live parts and metal parts	>100MΩ	P
	- between live parts of different polarity through action of a switch.....		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....		N/A
	- Insulation bushings as described in Section 5		N/A
1.14 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test		N/A
	Luminaires with manual ignitors		N/A
	Test voltage (V)		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

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Clause	Requirement + Test	Result - Remark	Verdict
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N/A
	- Insulation bushings as described in Section 5 :		N/A
	Other than SELV		P
	- between live parts of different polarity :	1460V	P
	- between live parts and mounting surface :	1460V	P
	- between live parts and metal parts :	1460V	P
	- between live parts of different polarity through action of a switch..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N/A
	- Insulation bushings as described in Section 5 :		N/A
1.14 (10.3)	Touch current or protective conductor current (mA) :	0.04mA	P

1.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
1.15 (13.2.1)	Ball-pressure test :	See Test Table 1.15 (13.2.1)	P
1.15 (13.3.1)	Needle-flame test (10 s)..... :	See Test Table 1.15 (13.3.1)	P
1.15 (13.3.2)	Glow-wire test (650°C) :	See Test Table 1.15 (13.3.2)	P
1.15 (13.4)	Proof tracking test (IEC 60112)..... :	See Test Table 1.15 (13.4)	N/A

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Clause	Requirement + Test				Result - Remark		Verdict
1.7 (11.2)	TABLES: Creepage distances and clearances						P
Table 11.1	Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages						
RMS working voltage (V) not exceeding		50	150	250	500	750	1000
Creepage distances							
Required basic insulation, PTI ≥ 600		0,6	0,8	1,5	3	4	5,5
Measured		-	-	>3.0	-	-	-
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	2.7	5	8	10
Measured		-	-	-	-	-	-
Required reinforced insulation		-	3,2	5	6	8	11
Measured		-	-	>6.0	--	-	-
Clearances							
Required basic insulation		0,2	0,8	1,5	3	4	5,5
Measured		-	-	>3.0	--	-	-
Required supplementary insulation		-	0,8	1,5	3	4	5,5
Measured		-	-	-	-	-	-
Required reinforced insulation		-	1,6	3	6	8	11
Measured		-	-	>6.0	--	-	-
Table 11.2	Minimum distances (mm) for non-sinusoidal pulse voltages						N/A
Rated pulse voltage (peak kV)		2,0	2,5	3,0	4,0	5,0	6,0
Required clearances		1,0	1,5	2	3	4	5,5
Measured		-	-	-	-	-	-
Rated pulse voltage (peak kV)		10	12	15	20	25	30
Required clearances		11	14	18	25	33	40
Measured		-	-	-	-	-	-
Rated pulse voltage (peak kV)		50	60	80	100	-	-
Required clearances		75	90	130	170	-	-
Measured		-	-	-	-	-	-

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Clause	Requirement + Test	Result - Remark	Verdict

1.15 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm) :		2.0 mm		—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Plastic enclosure of Lamp holders	Same as ANNEX 1	125	1.1mm	
Supplementary information:--				

1.15 (13.3.1)	TABLE: Needle-flame test (IEC 60695-11-5)				P
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Plastic enclosure of Lamp holders	Same as ANNEX 1	30	No	0	P
Supplementary information:					

1.15 (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 of Lamp holders	Same as ANNEX 1	30	No	0	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:--					

1.15 (13.4)	TABLE: Proof tracking test (IEC 60112)				N/A
Test voltage PTI		175 V	—		
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
--	--	--	--	--	--
Supplementary information:--					

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1		P			
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	standard	Mark(s) of conformity ¹⁾
Lampholder	Fujian Mingqing Mcwong Ceramics & Electronic Co. Ltd.	F519	500V, 4A, T180	DIN EN 60238	VDE/121802
(Alternative)	Kangrong Fine Ceramic Co., Ltd.	K327A	250V, 4A, T230	DIN EN 60238	VDE/40026630
(Alternative)	Yuyao Ming Cheng Lightings Co., Ltd.	PA200	250V, 4A, T210	DIN EN 60238	VDE/40031040
Terminal	Heavy Power Co., Ltd.	PA9	450V, 24A, 1,0 ... 2,5mm ² T110°C	DIN EN 60998-2-1	VDE/40016425
(Alternative)	Heavy Power Co., Ltd.	PA7	450V, 17,5A, 0,75...1,5mm ² T110°C	DIN EN 60998-2-1	VDE/40019839
(Alternative)	Yuyao Ming Cheng Lightings Co., Ltd.	PA8	450V, 17,5A, 0,75...1,5mm ² T110°C	DIN EN 60998-2-1	VDE/40019113
(Alternative)	JiangXi Kimbetter Electrical Co.,Ltd.	PA10 PA10DS	450V, 24A, 1,0 ...2,5mm ² T110°C	DIN EN 60998-2-1	VDE/40025212
(Alternative)	Yuyao Ming Cheng Lightings Co., Ltd.	PA10	450V, 32A, 1,0 ...4,0mm ² T110°C	DIN EN 60998-2-1	VDE/40018352
(Alternative)	Heavy Power Co., Ltd.	PA12	500V, 41A, 2,5...6,0mm ² T85°C	DIN EN 60998-2-1	VDE/40016433
(Alternative)	Yuyao Ming Cheng Lightings Co., Ltd.	PA 12	500V, 41A, 1,0...6,0mm ² T110°C	DIN EN 60998-2-1	VDE/40022463
Flexible Cable	Yuyao Gochn Electric Appliance Co. Ltd.	H03VVH2-F	2 x 0,75mm ²	DIN VDE 0281-5	VDE/128569
(Alternative)	Shangyu Jintao Electron Co., Ltd.	H03VVH2-F	2 x 0,75mm ²	DIN EN 50525-2-11	VDE/40013419
(Alternative)	Ningbo Yuxin Electrical Appliance Co., Ltd.	H05VV-F	2 x 0,75mm ²	DIN VDE 0281-5	VDE/40010786
(Alternative)	Ningbo Haoguang Electric Appliance Co.,Ltd.	H03VV-F, H05VV-F	2...3 x 0,75mm ²	DIN EN 50525-2-11	VDE/126109

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Clause	Requirement + Test			Result - Remark	Verdict
(Alternative)	Ningbo Qiaopu Electric Co., Ltd. 宁波乔普	H03VV-F	3 x 0,75mm ²	DIN EN 50525-2-11	VDE/40035976
(Alternative)	Shangyu Jintao Electron Co., Ltd.	H05RN-F	3 x 1,0mm ²	DIN EN 50525-2-21	VDE/40018106
(Alternative)	Ningbo Huashun Electronics Co., Ltd.	H05RN-F	3 x 1,0mm ²	DIN VDE 0282-4	VDE/40014082
(Alternative)	Ningbo Qiaopu Electric Co., Ltd.	H05RN-F	3 x 1,0mm ²	DIN EN 50525-2-11	VDE/40035531
(Alternative)	Shangyu Jintao Electron Co., Ltd.	H05V-K	1 x 0,75mm ²	DIN VDE 0281-3	VDE/40033762
(Alternative)	Ningbo Haoguang Electric Appliance Co., Ltd.	H05V-K	1 x 0,75mm ²	DIN VDE 0281-3	VDE/126062
Terminal box	Yuyao Mazhu Chenming Lighting Parts Factory	-	PE Thickness>1mm	EN 60598-1	Test with appliance
Material of terminal box	Ningbo Yuyao Hangbo Plastic Trading Company	-	PE	EN 60598-1	Test with appliance
Heat Shrinkable Sleeve	SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD	RSFR-H	600V,125°C (UL/E203950)	EN 60598-1	Test with appliance
Lampshade	Yuyao Jiming Hardware Factory	-	PC Thickness>2mm	EN 60598-1	Test with appliance
Material of lampshade	Yuyao Baiyun Plastic Co., Ltd.	-	PC	EN 60598-1	Test with appliance
Base cover of lampholder	Yuyao Qiongjie Electrical Accessory Factory	-	PC Thickness>1,3mm	EN 60598-1	Test with appliance
Material of base cover of lampholder	Yuyao Shunjie Plastic Co., Ltd.	-	PC	EN 60598-1	Test with appliance
Gasket	Yuyao Jiming Hardware Factory	-	Rubber	EN 60598-1	Test with appliance
Material of gasket	Yuyao Shenghui Rubber Factory	-	Rubber	EN 60598-1	Test with appliance

EN 60598-2-1

Clause	Requirement + Test	Result - Remark	Verdict
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ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12			P			
	Type reference	1615		—			
	Lamp used.....	Filament lamp		—			
	Lamp control gear used.....			—			
	Mounting position of luminaire	As in normal use		—			
	Supply wattage (W)	61.2W		—			
	Supply current (A)	0.24A		—			
	Calculated power factor.....	0.99		—			
	Table: measured temperatures corrected for ta = 25 °C:			P			
	- abnormal operating mode			—			
	- test 1: rated voltage.....	N/A		—			
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	1.06x240=254V		—			
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	N/A		—			
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	N/A		—			
	Through wiring or looping-in wiring loaded by a current of A during the test	N/A		—			
Temperature measurements, (°C)							
Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Internal wire	24.3	-	29.1	-	105	-	-
Lamp holders Enclosure	24.3	-	59.7	-	180	-	-
Mounted surface	24.3	-	33.6	-	For reference	-	-
Metal enclosure	24.3	-	31.7	-	80	-	-
Supplementary information:--							

ANNEX 3	Screw terminals (part of the luminaire)		N/A
(14)	SCREW TERMINALS		N/A
(14.2)	Type of terminal.....		—
	Rated current (A).....		—
(14.3.2.1)	One or more conductors		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm ²)..... :		—
(14.3.3)	Conductor space (mm)..... :		N/A
(14.4)	Mechanical tests		N/A
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread) :	M	N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm) :		N/A
	Torque (Nm) :		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N) :		N/A
(14.4.8)	Without undue damage		N/A

ANNEX 4	Screwless terminals (part of the luminaire)		N/A
(15)	SCREWLESS TERMINALS		N/A
(15.2)	Type of terminal..... :		—
	Rated current (A)..... :		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
(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

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

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Clause	Requirement + Test									Result - Remark	Verdict
	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:											

ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES LUMINAIRES PART 2: PARTICULAR REQUIREMENTS SECTION 1: FIXED GENERAL PURPOSE LUMINAIRES			
Differences according to: EN 60598-2-1:1989 used in conjunction with EN 60598-1:2015			
Annex Form No.: EU_GD_IEC60598_2_1D Annex Form Originator: OVE Master Annex Form: 2015-04			
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	CENELEC COMMON MODIFICATIONS (EN)	
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1.5 (3)	MARKING		P
1.5 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package		P

1.6 (4)	CONSTRUCTION		N/A
1.6 (4.11.6)	Electro-mechanical contact systems		N/A

1.10 (5)	EXTERNAL AND INTERNAL WIRING		N/A
1.10 (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
1.10 (5.2.2)	Cables equal to EN 50525		N/A
	Replace table 5.1 – Supply cord		N/A

1.12 (12)	ENDURANCE TESTS AND THERMAL TESTS		N/A
1.12 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		N/A

ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

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

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

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict
4	EXPOSURE LIMITS		P
	Contents of the whole Clause 4 of EN 62471:2008 moved into a new informative Annex ZB		P
	Limits of the Artificial Optical Radiation Directive (2006/25/EC) have been applied instead of those fixed in EN 62471: 2008		P
4.1	General		P
4.3	Hazard exposure limits		P
4.3.1	Actinic UV hazard exposure limit for the skin and eye		P
	The exposure limit for effective radiant exposure is 30 JM-2 within any 8-hour period		P
	To protect against injury of eye or skin from ultraviolet radiation exposure produced by a broad-band source, the effective integrated spectral irradiance, Es, of yhe light source shall not exceed the levels defined by:		P
	$E_s \cdot t = \sum_{200}^{400} \sum_t E_\lambda(\lambda, t) \cdot S_{UV}(\lambda) \cdot \Delta t \cdot \Delta \lambda \leq 30 \quad \text{J} \cdot \text{m}^{-2}$		P
	The permissible time for exposure to ultraviolet radiation incident upon the unprotrcted eye or skin shall be computed by :		P
	$t_{\max} = \frac{30}{E_s}$		P
4.3.2	Near-UN hazard exposure limit for eye		P
	For the speatral region 315nm to 40nm(UV-A) the total radiant exposure to the eye shall not exceed 10000 J.m-2 for exposure times greater than 1000s(approximmetely 16 minutes) the UV-A irradiance for the unprotected eye, EUVA, shall not exceed 10 W.m-2		P
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye for time less than 1000s, shall be computed by:		P
	$t_{\max} \leq \frac{10000}{E_{UVA}}$		P
4.3.3	Retinal blue light hazard exposure limit		P
	To protct against retinal photochemical injury from chronic blue-light exposure, the integrated spectral radiance of the light soure weighted against the blue-light hazard function, B(λ), i.e., the blue-light weighted radiance, LB, shall not exceed the levels defined by:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	$L_B \cdot t = \sum_{300}^{700} \sum_t L_{\lambda}(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \leq 10^6 \text{ J} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$		P
	$L_B = \sum_{300}^{700} L_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda \leq 100$		P
4.3.4	Retinal blue light hazard exposure limit-small source		N/A
	Thus the spectral irradiance at the eye E_{λ} , weighted against the blue-light hazard function $B(\lambda)$ shall not exceed the levels defined by:		N/A
	$E_B \cdot t = \sum_{300}^{700} \sum_t E_{\lambda}(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \leq 100 \text{ J} \cdot \text{m}^{-2}$		N/A
	$E_B = \sum_{300}^{700} E_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda \leq 1$		N/A
4.3.5	Retinal thermal hazard exposure limit		P
	To protect against retinal thermal injury, the integrated spectral radiance of the light source, L_{λ} , weighted by the burn hazard weighting function $R(\lambda)$ (from Figure 4.2 and Table 4.2), i.e., the burn hazard weighted radiance, shall not exceed the levels defined by:		P
	$L_R = \sum_{380}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda \leq \frac{50000}{\alpha \cdot t^{0.25}} \text{ W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$		P
4.3.6	Retinal thermal hazard exposure limit—weak visual stimulus		P
	The avoid thermal injury of the cornea and possible delayed effects upon the lens of the eye (cataractogenesis), ocular exposure to infrared radiation, EIR, over the wavelength range 780 nm to 3000nm, for times less than 1000s, shall not exceed:		P
	$L_{IR} = \sum_{780}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda \leq \frac{6000}{\alpha} \text{ W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$		P
	For times greater than 1000s the limit becomes:		P
	$E_{IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta \lambda \leq 100 \text{ W} \cdot \text{m}^{-2}$		P
4.3.7	Infrared radiation hazard exposure limits for the eye		P
	The avoid thermal injury of the cornea and possible delayed effects upon the lens of the eye (cataractogenesis), ocular exposure to infrared radiation, EIR, over the wavelength range 780 nm		P

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Clause	Requirement + Test	Result - Remark	Verdict
	to 3000 nm, for times less than 1000 s, shall not exceed:		
	$E_{IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta\lambda \leq 18\,000 \cdot t^{-0.75} \quad W \cdot m^{-2}$	$t \leq 1000 \text{ s}$	P
	For times greater than 1000 s the limit becomes:		P
	$E_{IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta\lambda \leq 100 \quad W \cdot m^{-2}$	$t > 1000 \text{ s}$	P
4.3.8	Thermal hazard exposure limit for the skin		P
	Visible and infrared radiant exposure (380 nm to 3000nm) of the skin shall be limited to:		P
	$E_H \cdot t = \sum_{380}^{3000} \sum_t E_{\lambda}(\lambda, t) \cdot \Delta t \cdot \Delta\lambda \leq 20\,000 \cdot t^{0.25} \quad J \cdot m^{-2}$		P

5	MEASURE OF LAMPS AND LAMP SYSTEMS		--
5.1	Measurement conditions		P
	Measurement conditions shall be reported as part of the evaluation against the exposure limits and the assignment of risk classification.		P
5.1.1	Lamp ageing (seasoning)		N/A
	Seasoning of lamps shall be done stated in the appropriate IEC lamp standard.		N/A
5.1.2	Test environment		P
	For specific test conditions, see the appropriate IEC lamp standard or in absence of such standards, the appropriate national standards, the appropriate national standards or manufacturer's recommendations.		P
5.1.3	Extraneous radiation		P
	Careful checks should be made to ensure that extraneous sources of radiation and reflections do not add significantly to the measurement results.		P
5.1.4	Lamp operation		P
	Operation of the test lamp shall be provided in accordance with:		P
	--the appropriate IEC lamp standard, or		N/A
	--the manufacture's recommendation		P
5.1.5	Lamp system operation		P
	The power source for operation of the test lamp shall be provided in accordance with:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	--the appropriate IEC standard, or		N/A
	--the manufacture's recommendation		P
5.2	Measurement procedure		P
5.2.1	Irradiance measures		P
	Minimum aperture diameter 7 mm		P
	Maximum aperture diameter 50mm.		P
	The measurement shall be made in that position of that beam giving that maximum reading.		P
	The measurement instrument is adequate calibrated.		P
5.2.1	Radiance measurements		P
5.2.2.1	Standard method		N/A
	The measurements made with an optical system		N/A
	The instrument shall be calibrated to read in absolute radiance power per unit receiving area and per unit solid angle to acceptance averaged over the field of view of the instrument		N/A
5.2.2.2	Alternative method		P
	Alternatively to an imaging radiance set-up, an irradiance measurement set-up with a circular field stop placed at the source can be used to perform radiance measurements		P
5.2.3	Measurement of source size		P
	The determination of α , the angle subtended by a source, requires the determination of 50% emission points of the source.		P
5.2.4	Pulse width measurement for pulsed sources		N/A
	The determination of t , the nominal pulse duration of a source, requires the determination of the time during which the emission is > 50% of its peak value.		N/A
5.3	Analysis methods		P
5.3.1	Weighting curve interpolations		P
	To standardize interpolated values, use linear interpolation on the log of given values to obtain intermediate points at the wavelength intervals desired		P
5.3.2	Calculations		P
	The calculation of source hazard values shall be performed by weighting the spectral scan by the appropriate function and calculating the total		P

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Clause	Requirement + Test	Result - Remark	Verdict
	weighted energy.		
5.3.3	Measurement uncertainty		P
	The quality of all measurement results must be quantified by an analysis of the uncertainty	See Annex C in the norm	P

6	LAMP CLASSIFICATION		--
	For the purpose of this standard it was decided that the values shall be reported as follows:		P
	--for lamps intended for general lighting service, the hazard values shall be reported as either irradiance or radiance values at a distance which produces an illuminance of 500 lux, but not at a distance less than 200mm	r=500 lux	P
	--for all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200mm		N/A
6.1	Continuous wave lamps		P
6.1.1	Exempt Group		P
	In the exempt group are lamps, which does not pose any photobiological hazard. The requirement is met by any lamp that does not pose:		P
	--an actinic ultraviolet hazard (Es) within 8-hours exposure (30000s), nor		P
	--a near-UV hazard(EUVA) within 1000s, (about 16 min), nor		P
	--a retinal blue-light hazard (LB) within 1000s (about 2.8 h), nor		P
	--a retinal thermal hazard(LR) within 10s, nor		P
	--an infrared radiation hazard for the eye (EIR) within 1000s		P
6.1.2	Risk Group (Low-Risk)		N/A
	In this group are lamp, which exceed the limits for the exempt group but that does not pose:		N/A
	--an actinic ultraviolet hazard(ES) within 10000s, nor		N/A
	--a near ultraviolet hazard (EUVA) within 300s,nor		N/A
	--a retinal blue-light hazard (LB) within 100s, nor		N/A
	--a retinal thermal hazard (LR) within 10s, nor		N/A
	--an infrared radiation hazard for the eye(EIR) within 100s		N/A
	Lamps that emit infrared radiation without a strong		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	visual stimulus and do not pose a near-infrared retinal hazard (LIR), within 100s are in Risk Group 1.		
6.1.3	Risk Group 2 (Moderate-Risk)		N/A
	This requirement is met by any lamp that exceeds the limits for Risk Group 1, but that does not pose		N/A
	--an actinic ultraviolet hazard(ES) within 10000s, nor		N/A
	--a near ultraviolet hazard (EUVA) within 100s,nor		N/A
	--a retinal blue-light hazard (LB) within 0.25s, nor		N/A
	--a retinal thermal hazard (LR) within 0.25s(aversion response), nor		N/A
	--an infrared radiation hazard for the eye(EIR) within 10s		N/A
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (LIR), within 100s are in Risk Group 2.		N/A
6.1.4	Risk Group (High-Risk)		N/A
	Lamps which exceed the limits for Risk Group 2 are in Group 3.		N/A
6.2	Pulsed lamps		N/A
	Pulse lamp criteria shall apply to a single pulse and to any group of pulses within 0.25s.		N/A
	A pulsed lamp shall be evaluated at the highest nominal energy loading as specified by the manufacturer.		N/A
	The risk group determination of the lamp being tested shall be made as follows:		N/A
	--A lamp that exceeds the exposure limit shall be classified as belonging to Risk Group 3 (High-Risk)		N/A
	--for single pulsed lamp, a lamp whose weighted radiant exposure or weighted radiance does is below the EL shall be classified as belonging to the Exempt Group.		N/A
	-- for repetitively pulsed lamps, a lamp whose weighted radiant exposure or weighted radiance does is below the EL, shall be evaluated using the continuous wave risk criteria discussed in clause 6.1, using time averaged values of the pulsed emission		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

Table 4.1	Spectral weighting function for assessing ultraviolet hazards for skin and eye			P
Wavelength λ , nm	UV hazard function SUV (λ)	Wavelength λ , nm	UV hazard function SUV (λ)	
200	0.030	313	0.0060	
205	0.051	315	0.0035	
210	0.075	316	0.0025	
215	0.095	317	0.0025	
220	0.120	318	0.0015	
225	0.150	319	0.0010	
230	0.190	320	0.0010	
235	0.240	322	0.00065	
240	0.300	323	0.00055	
245	0.360	325	0.00050	
250	0.430	328	0.00045	
254	0.500	330	0.00040	
255	0.520	333	0.00038	
260	0.650	335	0.00035	
265	0.810	340	0.00026	
270	1.000	345	0.00024	
275	0.960	350	0.00020	
280	0.880	355	0.00018	
285	0.770	360	0.00015	
290	0.640	365	0.00015	
295	0.540	370	0.000093	
297	0.460	375	0.000078	
300	0.300	380	0.000068	
303	0.120	385	0.000050	
305	0.060	390	0.000044	
308	0.026	395	0.000035	
310	0.015	400	0.000030	
Table 4.2	Special weighting functions for assessing retinal hazards from broadband optical sources			N/A
Wavelength nm	Blue-light hazard function B (λ)	Burn hazard function R (λ)		
300	0,01	--		

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Clause	Requirement + Test	Result - Remark	Verdict
305	0,01	--	
310	0,01	--	
315	0,01	--	
320	0,01	--	
325	0,01	--	
330	0,01	--	
335	0,01	--	
340	0,01	--	
350	0,01	--	
360	0,01	--	
365	0,01	--	
370	0,01	--	
375	0,01	--	
380	0,01	0,1	
385	0,013	0,13	
390	0,025	0,25	
395	0,05	0,5	
400	0,10	1,0	
405	0,20	2,0	
410	0,40	4,0	
415	0,80	8,0	
420	0,90	9,0	
425	0,95	9,5	
430	0,98	9,8	
435	1,00	10,0	
440	1,00	10,0	
445	0,97	9,7	
450	0,94	9,4	
455	0,90	9,0	
460	0,80	8,0	
465	0,70	7,0	
470	0,62	6,2	
475	0,55	5,5	
480	0,45	4,5	

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Clause	Requirement + Test	Result - Remark	Verdict
485	0,40	4,0	
490	0,22	2,2	
495	0,16	1,6	
500-600	$10[(450-\lambda)/50]$	1,0	
600-700	0,001	1,0	
700-1050	--	$10[(700-\lambda)/500]$	
1050-1150	--	0,2	
1150-1200	--	$0,2 \cdot 100,02(1150-\lambda)$	
1200-1400	--	0,02	

Table 5.4	Summary of the ELs for the surface of surface of the skin or cornea (irradiance based values)				P
Hazard Name	Relevant equation	Wavelength range nm	Exposure Duration sec	Limiting Aperture Rad (deg)	EL in terms of constant irradiance W.m-2
Actinic UV skin & eye	$E_s = \sum E_\lambda \cdot S(\lambda) \cdot \Delta\lambda$	200-400	<30000	1,4(80)	30/t
Eye UV-A	$E_s = \sum E_\lambda \cdot S(\lambda) \cdot \Delta\lambda$	315-400	<1000 >1000	1,4(80)	10000/t 10
Blue-light small source	$E_B = \sum E_\lambda \cdot B(\lambda) \cdot \Delta\lambda$	300-700	<100 >100	<0,011	100/t 1,0
Eye IR	$E_{IR} = \sum E_\lambda \cdot \Delta\lambda$	780-3000	<1000 >1000	1,4(80)	18000/t0,75
Skin thermal	$E_H = \sum E_\lambda \cdot \Delta\lambda$	380-3000	<10	2π sr	20000/t0,75

Table 5.5	Summary of the ELs for the retina (radiance based values)				N/A
Hazard Name	Relevant equation	Wavelength range nm	Exposure duration sec	Field of view radians	EL interms of constant radiance W.m-2.sr-1
Blue light	$L_B = \sum L_\lambda \cdot B(\lambda) \cdot \Delta\lambda$	300-700	0,25-10 10-100 100-10000 >10000	$0,011 \cdot \sqrt{(t/10)}$ 0,011 $0,0011 \cdot \sqrt{t}$ 0,1	106/t 106/t 106/t 100

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Clause	Requirement + Test		Result - Remark		Verdict
Retinal thermal	$L_R = \sum L_{\lambda} \cdot R(\lambda) \cdot \Delta\lambda$	380-1400	<0,25 0,25-10	0,0017 0,011 · √ (t/10)	50000/(α · t 0,25) 50000/(α · t 0,25)
Retinal thermal (weak visual stimulus)	$L_{IR} = \sum L_{\lambda} \cdot R(\lambda) \cdot \Delta\lambda$	780-1400	>10	0,011	6000/α

Table 6.1 Emission limits for risk groups of continuous wave lamps (Base on directive: 2006/25/EC)									P
Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	SUV(λ)	Es	W•m-2	0,001	1.44E-07	--	--	--	--
Near UV		EUVA	W•m-2	0,33	3.46E-07	--	--	--	--
Blue light	B(λ)	LB	W•m-2•sr-1	100	5.29E+00	10000	7.12E+00	4000000	7.12E+00
Blue light, small source	B(λ)	EB	W•m-2	--	--	--	--	--	--
Retinal thermal	R(λ)	LR	W•m-2•sr-1	28000/α	1.33E+02	28000/α	1.20E+02	71000/α	1.31E+02
Retinal thermal, weak visual stimulus**	R(λ)	LIR	W•m-2•sr-1	545000 0,0017 ≤ α ≤ 0,011	--				
				6000/α 0,011 ≤ α ≤ 0,1	0.00E+00				
IR radiation, eye		EIR	W•m-2	100	0.00E+00	570	0.00E+00	3200	0.00E+00

Remark:

Angular subtense of apparent source, α= 13.6mrad

* 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

Attachment: Photos of the product:

Photo 1

Description: Overview for 1615



Photo 2

Description: Overview for 1615



Photo 3

Description: Overview for 1615



Photo 4

Description: Overview for 1615



Photo 5

Description: Overview for 1631



Photo 6

Description: Overview for 1631



Photo 7

Description: Overview for 1631



Photo 8

Description: Overview for 1631



--End of report--