



Ref. Certif. No.

DE 2-020523

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST
CERTIFICATES FOR ELECTRICAL EQUIPMENT
(IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE
CERTIFICATS D'ESSAIS DES EQUIPEMENTS
ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product
Produit

LED DOWNLIGHT

Name and address of the applicant
Nom et adresse du demandeur

Berdis Lighting Co.,LTD.
Floor 6,NO 1.,Huatai East Road
Caosan Industrial Park,Guzhen Town, Zhongshan City, 528421
Guangdong, China

Name and address of the manufacturer
Nom et adresse du fabricant

Berdis Lighting Co.,LTD.
Floor 6,NO 1.,Huatai East Road
Caosan Industrial Park,Guzhen Town, Zhongshan City, 528421
Guangdong, China

Name and address of the factory
Nom et adresse de l'usine

Berdis Lighting Co.,LTD.
Floor 6,NO 1.,Huatai East Road
Caosan Industrial Park,Guzhen Town, Zhongshan City, 528421
Guangdong, China

Note: When more than one factory, please report on page 2
Note: Lorsque il y a plus d'une usine, veuillez utiliser la 2^{ème} page

Ratings and principal characteristics
Valeurs nominales et caractéristiques principales

AC 110-120V/ AC 200-240V, 50/60Hz; Class II
1)5W; 2)12W; 3)15W; 4)24W

Trade mark (if any)
Marque de fabrique (si elle existe)

BERDIS, refer to the test report.

Model/type Ref.
Ref. de type

1) B0104-05-Y-1-Z 2) B0104-12-Y-1-Z, B0104-12-Y-3-Z
3) B0104-15-Y-1-Z, B0104-15-Y-3-Z
4) B0104-24-Y-1-Z, B0104-24-Y-3-Z

Additional information (if necessary may also be
reported on page 2)
Les Informations complémentaires (si nécessaire,
peuvent être indiqués sur la 2^{ème} page)

For model differences, refer to the test report.

A sample of the product was tested and found
to be in conformity with
Un échantillon de ce produit a été essayé et a été
considéré conforme à la

PUBLICATION IEC 60598-2-2:2011
EDITION IEC 60598-1:2014
National differences see test report

As shown in the Test Report Ref. No. which forms part
of this Certificate
Comme indiqué dans le Rapport d'essais numéro de
référence qui constitue une partie de ce Certificat

16072754 001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification



TÜV Rheinland LGA Products GmbH
Tillystraße 2 · 90431 Nürnberg, Germany
Phone + 49 221 806-1371
Fax + 49 221 806-3935
Mail: cert-validity@de.tuv.com
Web: www.tuv.com



Date: 28.06.2016

Signature:

Eileen Feng

**Business Stream Products
Certification Department**



TÜV Rheinland LGA Products GmbH · 90431 Nürnberg

Berdis Lighting Co.,LTD.
Floor 6,NO 1.,Huatai East Road
Caosan Industrial Park,Guzhen Town
528421 ZHONGSHAN CITY
CHINA

Contact

Tel. +49 911 655-5225
Mail service@de.tuv.com

Date June 28, 2016

Application for : **CB-Zertifikat**
Certificate No. : DE 02020523
Device : Lamp
LED DOWNLIGHT
Type : see Certificate
Test requirement : IEC 60598-2-2:2011
IEC 60598-1:2014
National differences see test report

Dear Madame or Sir,

The submitted sample of the product has been tested and in this configuration found to be in accordance with the above mentioned requirements.
Enclosed please find the certificate No. DE 02020523.

Kind regards

Certification body


Eileen Feng

Test sample: no, documentation available

TÜV Rheinland
LGA Products GmbH

Tillystraße 2
90431 Nürnberg

Tel. +49 911 655-5225
Fax +49 911 655-5226
Mail service@de.tuv.com
Web www.tuv.com/safety

Board of Management

Dipl.-Ing.
Jörg Mähler, Spokesman

Dipl.-Kfm.
Dr. Jörg Schlösser

Chairman of the
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Dipl.-Ing.
Ralf Scheller

Nuremberg HRB 26013
VAT No.: DE 811835490



Test Report issued under the responsibility of:



TEST REPORT
IEC 60598-2-2
Luminaires
Part 2: Particular requirements
Section 2: Recessed luminaires

Report Number..... : 16072754 001

Date of issue..... : 2016.06.20

Total number of pages 55

Name of Testing Laboratory
preparing the Report TÜV Rheinland (GuangDong) Ltd.

Applicant's name Berdis Lighting Co., LTD.

Address..... : Floor 6, NO 1., Huatai East Road, Caosan Industrial Park,
Guzhen Town, Zhongshan City, 528421 Guangdong, China

Test specification:

Standard IEC 60598-2-2 (ed.3) used in conjunction with IEC 60598-1 (ed.8)

Test procedure CB Scheme

Non-standard test method N/A

Test Report Form No. : IEC60598_2_2E

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

Master TRF 2016-04

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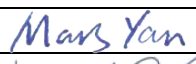
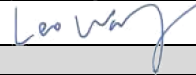
If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

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

This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description	LED DOWNLIGHT	
Trade Mark	--	
Manufacturer	Same as applicant	
Model/Type reference	See 'General product information'	
Ratings	See 'General product information'	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒ CB Testing Laboratory:	TÜV Rheinland (GuangDong) Ltd.	
Testing location/ address.....	No.199 Kezhu Road, GZ Science City, Guangzhou 510663, P.R.China	
☐ Associated CB Testing Laboratory:		
Testing location/ address.....		
Tested by (name, function, signature)	Mars Yan	
Approved by (name, function, signature)...	Leo Wang	
Testing procedure: CTF Stage 1:		
Testing location/ address.....		
Tested by (name, function, signature)		
Approved by (name, function, signature)...		
Testing procedure: CTF Stage 2:		
Testing location/ address.....		
Tested by (name + signature)		
Witnessed by (name, function, signature) .:		
Approved by (name, function, signature)...		
Testing procedure: CTF Stage 3:		
Testing procedure: CTF Stage 4:		
Testing location/ address.....		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) .:		
Approved by (name, function, signature)...		
Supervised by (name, function, signature) :		

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

1. Attachment 1: European Group Differences and National Differences, see page 43-44.
2. Attachment 2: Requirements of IEC 61347-2-13:2014, see page 45-49;
3. Attachment 3: Requirements of IEC 62031:2008+A1:2012+A2:2014, see page 50-51;
4. Attachment 4: Photobiological Safety Of Lamps And Lamp Systems IEC 62471:2006, see page 52-55.

Summary of testing:

The tested samples fulfilled the requirements of specified standards.

Tests performed (name of test and test clause):

1. The model B0104-24-6500-3 is chosen for full tests.
2. The models B0104-24-6500-1, B0104-12-6500-3 and B0104-12-6500-1 are chosen for tests of cl 8, 9, 10, 11, 12.
3. Integral LED driver of above models are chosen for test of cl 14 of IEC 61347-2-13.
4. Construction tests are performed on all models.

Testing location:

TÜV Rheinland (GuangDong) Ltd.
No.199 Kezhu Road, GZ Science City, Guangzhou
510663, P.R.China

Summary of compliance with National Differences:

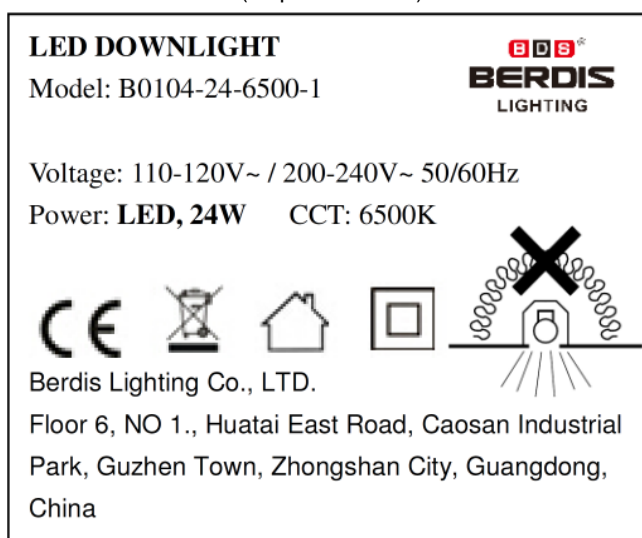
DE=Germany

☒ The product fulfils the requirements of EN 60598-2-2:2012 and EN 60598-1:2015.

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

(Representative)



Stamped on the enclosure exterior surface

Remark: The marking labels for other models are identical as above expect the model no. and some relevant parameters.

Test item particulars.....: LED DOWNLIGHT	
Classification of installation and use.....: Class II, for indoor use	
Supply Connection.....: Lead wire	
Possible test case verdicts: - test case does not apply to the test object.....: N/A - test object does meet the requirement.....: P (Pass) - test object does not meet the requirement.....: F (Fail)	
Testing.....:	
Date of receipt of test item 2016.04.10	
Date (s) of performance of tests 2016.04.10 to 2016.06.16	
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. Clause numbers between brackets refer to clauses in IEC 60598-1	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 02:	
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).....: Same as applicant	

General product information:

1. The products covered by this report are class II LED recessed luminaires for indoor use only.
2. The products can be divided to two groups, one is dimmable and another is non-dimmable. Each group has two kinds of LED driver according to different diagram and PCB layout. Please see the model list as below for details.
3. Input ratings: 110-120V~ / 200-240V~, 50/60Hz.

Model list

Model no.	Power	LED driver output	LED driver PCB	LED module	Type	Size
B0104-05-Y-1-Z	5W	A03-003-0130-101, DC25-35V, 130mA	1	SMD5730, 6pcs	Non-dimmable	Φ80*H45 mm
B0104-12-Y-1-Z	12W	A03-003-0130-102, DC54-78V, 130mA		SMD5730, 18pcs		Φ110*H55 mm
B0104-15-Y-1-Z	15W	A03-003-0260-101, DC36-55V, 260mA	2	SMD5730, 26pcs		Φ140*H65 mm
B0104-24-Y-1-Z	24W	A03-003-0260-102, DC54-78V, 260mA		SMD5730, 48pcs		Φ190*H70 mm
B0104-12-Y-3-Z	12W	A03-003-0130-302, DC54-78V, 130mA	3	SMD5730, 18pcs	Dimmable	Φ110*H55 mm
B0104-15-Y-3-Z	15W	A03-003-0260-301, DC36-55V, 260mA	4	SMD5730, 26pcs		Φ140*H65 mm
B0104-24-Y-3-Z	24W	A03-003-0260-302, DC54-78V, 260mA		SMD5730, 48pcs		Φ190*H70 mm

Remark: As the model no., 'Y' = 2700-6500, which indicates the colour temperature of LED module.
 'Z' = 01-99, which indicates the serial number, i.e. B0104-24-6500-1-01 is identical as B0104-24-6500-1-99 except the model no..

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

2.3 (0)	GENERAL TEST REQUIREMENTS		P
2.3 (0.1)	Information for luminaire design considered :	Yes ☒ No ☐ Lamp standard: IEC 62471	—
2.3 (0.3)	More sections applicable..... :	Yes ☐ No ☒ Section/s:	—

2.5 (2)	CLASSIFICATION OF LUMINAIRES		P
2.5 (2.2)	Type of protection :	Class II	P
2.5 (2.3)	Degree of protection..... :	IP20	P
2.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces :	Yes ☒ No ☐	—
2.5 (2.5)	Luminaire for normal use :	Yes ☒ No ☐	—
	Luminaire for rough service :	Yes ☐ No ☒	—

2.6 (3)	MARKING		P
2.6 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
2.6 (3.3)	Additional information		P
	Language of instructions	English	P
2.6 (3.3.1)	Combination luminaires		N/A
2.6 (3.3.2)	Nominal frequency in Hz	50/60Hz	P
2.6 (3.3.3)	Operating temperature		N/A
2.6 (3.3.4)	Symbol or warning notice		N/A
2.6 (3.3.5)	Wiring diagram		N/A
2.6 (3.3.6)	Special conditions		N/A
2.6 (3.3.7)	Metal halide lamp luminaire – warning		N/A
2.6 (3.3.8)	Limitation for semi-luminaires		N/A
2.6 (3.3.9)	Power factor and supply current		N/A
2.6 (3.3.10)	Suitability for use indoors		P
2.6 (3.3.11)	Luminaires with remote control		N/A
2.6 (3.3.12)	Clip-mounted luminaire – warning		N/A
2.6 (3.3.13)	Specifications of protective shields		N/A
2.6 (3.3.14)	Symbol for nature of supply	~	P
2.6 (3.3.15)	Rated current of socket outlet		N/A

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.6 (3.3.16)	Rough service luminaire		N/A
2.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Y	P
2.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
2.6 (3.3.19)	Protective conductor current in instruction if applicable		N/A
2.6 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
2.6 (3.3.21)	Non replaceable and non-user replaceable light sources information provided	Non replaceable	P
	Cautionary symbol		N/A
2.6 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
2.6 (3.4)	Test with water	15s	P
	Test with hexane	15s	P
	Legible after test		P
	Label attached		P

2.7 (4)	CONSTRUCTION		P
2.7 (4.2)	Components replaceable without difficulty		N/A
2.7 (4.3)	Wireways smooth and free from sharp edges		P
2.7 (4.4)	Lampholders		N/A
2.7 (4.4.1)	Integral lampholder		N/A
2.7 (4.4.2)	Wiring connection		N/A
2.7 (4.4.3)	Lampholder for end-to-end mounting		N/A
2.7 (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
2.7 (4.4.5)	Peak pulse voltage		N/A
2.7 (4.4.6)	Centre contact		N/A

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.7 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
2.7 (4.4.8)	Lamp connectors		N/A
2.7 (4.4.9)	Caps and bases correctly used		N/A
2.7 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
2.7 (4.5)	Starter holders		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
2.7 (4.6)	Terminal blocks		N/A
	Tails		N/A
	Unsecured blocks		N/A
2.7 (4.7)	Terminals and supply connections		P
2.7 (4.7.1)	Contact to metal parts		P
2.7 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		N/A
2.7 (4.7.3)	Terminals for supply conductors		P
2.7 (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 15.6.2		N/A
	- electrical test according to 15.6.3		N/A
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N/A
2.7 (4.7.4)	Terminals other than supply connection		N/A
2.7 (4.7.5)	Heat-resistant wiring/sleeves		N/A
2.7 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
2.7 (4.8)	Switches		N/A
	- adequate rating		N/A
	- adequate fixing		N/A
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
2.7 (4.9)	Insulating lining and sleeves		N/A

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.7 (4.9.1)	Retainment		N/A
	Method of fixing :		N/A
2.7 (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
2.7 (4.10)	Double or reinforced insulation		P
2.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		P
	Safe installation fixed luminaires		P
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
2.7 (4.10.2)	Assembly gaps:		P
	- not coincidental		P
	- no straight access with test probe		P
2.7 (4.10.3)	Retainment of insulation:		P
	- fixed		P
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
2.7 (4.10.4)	Protective impedance device		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
2.7 (4.11)	Electrical connections and current-carrying parts		P
2.7 (4.11.1)	Contact pressure		P
2.7 (4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
2.7 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- rivets		N/A
2.7 (4.11.4)	Material of current-carrying parts		P
2.7 (4.11.5)	No contact to wood or mounting surface		P
2.7 (4.11.6)	Electro-mechanical contact systems		N/A
2.7 (4.12)	Screws and connections (mechanical) and glands		P
2.7 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part..... :	Screw fixed cord anchorage: 0.5Nm	P
	Torque test: torque (Nm); part..... :	Screw of terminal block: 0.5Nm	P
	Torque test: torque (Nm); part..... :	Screw fixed LED driver PCB: 0.5Nm	P
	Torque test: torque (Nm); part..... :	Screw fixed LED module PCB: 0.4Nm	P
2.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
2.7 (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
2.7 (4.12.5)	Screwed glands; force (Nm)..... :		N/A
2.7 (4.13)	Mechanical strength		P
2.7 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm)		N/A
	- other parts; energy (Nm)	Plastic enclosure and plastic cover: 0.35Nm	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P
2.7 (4.13.3)	Straight test finger		P
2.7 (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

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	d) for temporary installations and suitable for mounting on a stand		N/A
2.7 (4.13.6)	Tumbling barrel		N/A
2.7 (4.14)	Suspensions, fixings and means of adjusting		P
2.7 (4.14.1)	Mechanical load:		P
	A) four times the weight	Model: B0104-24-6500-3 4x0.467Kg=1.868Kg	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
	Metal rod. diameter (mm)		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
2.7 (4.14.2)	Load to flexible cables		N/A
	Mass (kg)		—
	Stress in conductors (N/mm ²)		N/A
	Mass (kg) of semi-luminaire		N/A
	Bending moment (Nm) of semi-luminaire		N/A
2.7 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles..... :		N/A
	- strands broken		N/A
	- electric strength test afterwards		N/A
2.7 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
2.7 (4.14.5)	Guide pulleys		N/A
2.7 (4.14.6)	Strain on socket-outlets		N/A
2.7 (4.15)	Flammable materials		P
	- glow-wire test 650°C	See Test Table 2.16 (13.3.2)	P
	- spacing ≥30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		P
	- thermal protection		N/A
	- electronic circuits exempted		N/A

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.7 (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
2.7 (4.16)	Luminaires for mounting on normally flammable surfaces		P
	No lamp control gear :	(compliance with Section 12)	N/A
2.7 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
2.7 (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
2.7 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
2.7 (4.17)	Drain holes		N/A
	Clearance at least 5 mm		N/A
2.7 (4.18)	Resistance to corrosion		N/A
2.7 (4.18.1)	- rust-resistance		N/A
2.7 (4.18.2)	- season cracking in copper		N/A
2.7 (4.18.3)	- corrosion of aluminium		N/A
2.7 (4.19)	Igniters compatible with ballast		N/A
2.7 (4.20)	Rough service vibration		N/A
2.7 (4.21)	Protective shield		N/A
2.7 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
2.7 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
2.7 (4.21.3)	No direct path		N/A
2.7 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment..... :	See Test Table 2.16 (13.3.2)	N/A
2.7 (4.22)	Attachments to lamps not cause overheating or damage		N/A
2.7 (4.23)	Semi-luminaires comply Class II		N/A
2.7 (4.24)	Photobiological hazards		P

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Clause	Requirement + Test	Result - Remark	Verdict
2.7 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
2.7 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778	Exempt Group	—
	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
	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
2.7 (4.25)	Mechanical hazard		P
	No sharp point or edges		P
2.7 (4.26)	Short-circuit protection		N/A
2.7 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N/A
2.7 (4.26.2)	Short-circuit test with test chain according 4.26.3		N/A
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
2.7 (4.27)	Terminal blocks with integrated screwless earthing contacts		N/A
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
2.7 (4.28)	Fixing of thermal sensing control		N/A
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test of adhesive fixing:		N/A
	Max. temperature on adhesive material (°C) :		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
2.7 (4.29)	Luminaires with non-replaceable light source		P
	Not possible to replace light source		P
	Live part not accessible after parts have been opened by hand or tools		N/A
2.7 (4.30)	Luminaires with non-user replaceable light source		N/A
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N/A
	Minimum two fixing means		N/A
2.7 (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
2.7 (4.31.1)	SELV circuits		N/A
	Used SELV source		N/A
	Voltage ≤ 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
2.7 (4.31.2)	FELV circuits		N/A
	Used FELV source		N/A
	Voltage ≤ ELV		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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
2.7 (4.31.3)	Other circuits		P
	Other circuits insulated from accessible parts according Table X.1		P
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N/A
	- conductive parts are connected together		N/A
	- test according 7.2.3		N/A
	- conductive part not cause an electric shock in case of an insulation fault		N/A
	- equipotential bonding in master/slave applications		N/A
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N/A
	- slave luminaire constructed as class I		N/A
2.7 (4.32)	Overvoltage protective devices		N/A
	Comply with IEC 61643-11		N/A
	External to controlgear and connected to earth:		N/A
	- only in fixed luminaires		N/A
	- only connected to protective earth		N/A
2.8 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
2.8 (11.2)	Creepage distances and clearances..... :	See Table 2.8 (11.2)	P
	Impulse withstand category (Normal category II) (Category III Annex U, Table U.1)	Category II ☒ Category III ☐	—
2.9 (7)	PROVISION FOR EARTHING		N/A
2.9 (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

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Clause	Requirement + Test	Result - Remark	Verdict
	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
	Protective earthing of the luminaire not via built-in control gear		N/A
2.9 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N/A
2.9 (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
2.9 (7.2.5)	Earth terminal integral part of connector socket		N/A
2.9 (7.2.6)	Earth terminal adjacent to mains terminals		N/A
2.9 (7.2.7)	Electrolytic corrosion of the earth terminal		N/A
2.9 (7.2.8)	Material of earth terminal		N/A
	Contact surface bare metal		N/A
2.9 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
2.9 (7.2.11)	Earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A

2.10 (14)	SCREW TERMINALS		P
	Separately approved; component list	(see Annex 1)	N/A
	Part of the luminaire	Terminal block (see Annex 3)	P

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

2.11 (5)	EXTERNAL AND INTERNAL WIRING		P
2.11 (5.2)	Supply connection and external wiring		P
2.11 (5.2.1)	Means of connection :	Lead wire	P

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Clause	Requirement + Test	Result - Remark	Verdict
	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
2.11 (5.2.2)	Type of cable..... :	(see Annex 1)	P
	Nominal cross-sectional area (mm ²) :	(see Annex 1)	P
	Cables equal to IEC 60227 or IEC 60245	IEC 60227	P
2.11 (5.2.3)	Type of attachment, X, Y or Z	Type Y	P
2.11 (5.2.5)	Type Z not connected to screws		N/A
2.11 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
2.11 (5.2.7)	Cable entries through rigid material have rounded edges		N/A
2.11 (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
2.11 (5.2.9)	Locking of screwed bushings		N/A
2.11 (5.2.10)	Cord anchorage:		P
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		P
	- insulating material or lining		P
2.11 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Labyrinth type anchorages		N/A
2.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		P
2.11 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) :	60N	P
	- torque test: torque (Nm) :	0.15Nm	P
	- displacement ≤ 2 mm	0.8mm	P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
2.11 (5.2.11)	External wiring passing into luminaire		P
2.11 (5.2.12)	Looping-in terminals		N/A
2.11 (5.2.13)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N/A
2.11 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
2.11 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector according relevant IEC standard		N/A
2.11 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
2.11 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- other standard		N/A
2.11 (5.3)	Internal wiring		P
2.11 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		N/A
	- not delivered/ mounting instruction		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- factory assembled		N/A
	- socket outlet loaded (A) :		N/A
	- temperatures :	(see Annex 2)	N/A
	Green-yellow for earth only		N/A
2.11 (5.3.1.1)	Internal wiring connected directly to fixed wiring		P
	Cross-sectional area (mm ²) :	(see Annex 1)	P
	Insulation thickness		P
	Extra insulation added where necessary		N/A
2.11 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P
	Adequate cross-sectional area and insulation thickness		P
2.11 (5.3.1.3)	Double or reinforced insulation for class II		P
2.11 (5.3.1.4)	Conductors without insulation		N/A
2.11 (5.3.1.5)	SELV current-carrying parts		N/A
2.11 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
2.11 (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
2.11 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
2.11 (5.3.4)	Joints and junctions effectively insulated		N/A
2.11 (5.3.5)	Strain on internal wiring		N/A
2.11 (5.3.6)	Wire carriers		N/A
2.11 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		P

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Clause	Requirement + Test	Result - Remark	Verdict
2.12 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
2.12 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N/A
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	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		P
	Double-ended high pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
2.12 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
2.12 (8.2.3.a)	Class II luminaire:		P
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		N/A
	- glass protective shields not used as supplementary insulation		N/A
2.12 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N/A
2.12 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load (V)..... :		N/A
	- no-load voltage (V)..... :		N/A
	- touch current if applicable (mA)		N/A
	One conductive part insulated if required		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Other than ordinary luminaire:		N/A
	- nominal voltage (V) :		N/A
	Class III luminaire only for connection to SELV		N/A
	Class III luminaire not provided with means for protective earthing		N/A
2.12 (8.2.4)	Portable luminaire have protection independent of supporting surface		N/A
2.12 (8.2.5)	Compliance with the standard test finger or relevant probe		P
2.12 (8.2.6)	Covers reliably secured		P
2.12 (8.2.7)	Luminaire other than below with capacitor > 0,5 μ F not exceed 50 V 1 min after disconnection		P
	Portable luminaire with capacitor > 0,1 μ F (0.25) not exceed 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor > 0,1 μ F (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection		N/A
2.12 (-)	Parts within the ceiling space provide same degree of protection against electric shock as parts below the ceiling space		P

2.13 (12)	ENDURANCE TEST AND THERMAL TEST		P
2.13 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 2.14		—
2.13 (12.3)	Endurance test:		P
	- mounting-position..... :	As normal use	—
	- test temperature (°C) :	35°C	—
	- total duration (h) :	240h	—
	- supply voltage: Un factor; calculated voltage (V)... :	1.1Un	—
	- lamp used..... :	LED module	—
2.13 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P
2.13 (12.4)	Thermal test (normal operation)	(see Annex 2)	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.13 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	N/A
2.13 (12.6)	Thermal test (failed lamp control gear condition):		N/A
2.13 (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
2.13 (12.6.2)	Temperature sensing control		N/A
	- 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
2.13 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N/A
2.13 (12.7.1)	Luminaire without temperature sensing control		N/A
2.13 (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		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- calculated temperature of fixing point/exposed part (°C)		—
	Ball-pressure test	See Table 2.16 (13.2.1)	N/A
2.13 (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 2.16 (13.2.1)	N/A
2.13 (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
2.13 (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 2.16 (13.2.1)	N/A
2.13.1 (-)	Wiring, for connection to the supply, not reach unsafe temperature		P
	- measured temperature of the cable (°C)	(see Annex 2)	P

2.14 (9)	RESISTANCE TO DUST AND MOISTURE		P
2.14 (-)	If IP > IP 20 the order of tests as specified in clause 2.13		N/A
2.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP.....	IP20	—
	- mounting position during test	As normal use	—
	- fixing screws tightened; torque (Nm)	0.27Nm, 0.33Nm	—
	- tests according to clauses.....	9.2.0	—

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Clause	Requirement + Test	Result - Remark	Verdict
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		N/A
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		N/A
	c.1) For luminaires without drain holes – no water entry		N/A
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight or pressure watertight luminaire		N/A
	e) no contact with live parts (IP 2X)		P
	e) no entry into enclosure (IP 3X and IP 4X)		N/A
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N/A
	f) no trace of water on part of lamp requiring protection from splashing water		N/A
	g) no damage of protective shield or glass envelope		N/A
2.14 (9.3)	Humidity test 48 h	24°C, 93%	P

2.15 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
2.15 (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		P
	- between live parts of different polarity		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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
2.15 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test		N/A
	Luminaires with manual ignitors		N/A
	Test voltage (V) :		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		P
	- between live parts of different polarity :		N/A
	- between live parts and mounting surface :	2960V	P
	- between live parts and metal parts :	2960V	P
	- between live parts of different polarity through action of a switch..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N/A
	- Insulation bushings as described in Section 5 :		N/A
2.15 (10.3)	Touch current or protective conductor current (mA):	Max.0.13mA	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.16 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
2.16 (13.2.1)	Ball-pressure test	See Test Table 2.16 (13.2.1)	P
2.16 (13.3.1)	Needle-flame test (10 s)	See Test Table 2.16 (13.3.1)	P
2.16 (13.3.2)	Glow-wire test (650°C)	See Test Table 2.16 (13.3.2)	P
2.16 (13.4)	Proof tracking test (IEC 60112)	See Test Table 2.16 (13.4)	N/A

2.8 (11.2)	TABLE: Creepage distances and clearances							P
	Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages							P
	Applicable part of IEC 60598-1 Table 11.1* and 11.2*							P
	Insulation type **	Measured clearance	Required		Measured creepage	Required		
			clearance	*Table		creepage	*Table	
Distance 1:	B	2.7	1.5	11.1	2.7	2.5	11.1	
Working voltage (V)					240V		—	
PTI					< 600 ☒ ≥ 600 ☐		—	
Pulse voltage if applicable (kV)					--		—	
Supplementary information: between L and N								
Distance 2:	B	3.0	1.5	11.1	3.0	2.5	11.1	
Working voltage (V)					240V		—	
PTI					< 600 ☒ ≥ 600 ☐		—	
Pulse voltage if applicable (kV)					--		—	
Supplementary information: between two pins of fuse								
Distance 3:	R	7.0	3.0	11.1	7.0	5.0	11.1	
Working voltage (V)					240V		—	
PTI					< 600 ☒ ≥ 600 ☐		—	
Pulse voltage if applicable (kV)					--		—	
Supplementary information: between live parts to outer accessible surface								

** Insulation type: B – Basic; S – Supplementary; R – Reinforced. See also IEC 60598-1 Annex M.

IEC 60598-2-2				
Clause	Requirement + Test		Result - Remark	Verdict
2.16 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm) :		2.0		—
Object/ Part No./ Material		Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
Plastic enclosure		See Annex 1	102	1.3
Plastic cover		See Annex 1	83	1.0
LED driver PCB		See Annex 1	125	0.6
Bobbin		See Annex 1	125	0.8
Supplementary information: N/A				

2.16 (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
LED driver PCB	See Annex 1	10	No	0	Pass
Bobbin	See Annex 1	10	No	0	Pass
Supplementary information: N/A					

2.16 (13.3.2)	TABLE: Glow-wire test (IEC 60695-2-11)				P
Glow wire temperature		650°C			—
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict	
Plastic enclosure	See Annex 1	No	0	Pass	
Plastic cover	See Annex 1	No	0	Pass	
Plastic reflector	See Annex 1	No	0	Pass	
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: N/A					

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

2.16 (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: N/A					

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

ANNEX 1	TABLE: Critical components information						P
Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
Supply cord	B	Ningbo Qiaopu Electric Co., Ltd.	H03VVH2-F	2x0.75mm ²	EN 50525-2-11	VDE 40035976	
Plastic enclosure	B	GUANGDONG SHUNDE SHUNYAN NEW MATERIALS CO LTD	FRPA6S15-30	PA6 material, min. thickness 1.5mm	IEC 60598-2-2 IEC 60598-1	UL E324156	
Plastic cover	B	Entire Technology Co., Ltd.	Diffusion Sheet EDS	PMMA material, min. thickness 1.5mm	IEC 60598-2-2 IEC 60598-1	UL E242870	
Plastic reflector	B	Berdis Lighting Co., LTD.	--	PET material, min. thickness 0.2mm	IEC 60598-2-2 IEC 60598-1	Test with appliance	
LED driver for B0104-05-Y-1-Z	B	Jiangmen HUARUI Technology Co., Ltd.	A03-003-0130-101	Input: AC110-120V/ 200-240V, 50/60Hz, Output: DC25-35V, 130mA	IEC 61347-2-13 IEC 61347-1	Test with appliance	
LED driver for B0104-12-Y-1-Z	B	Jiangmen HUARUI Technology Co., Ltd.	A03-003-0130-102	Input: AC110-120V/ 200-240V, 50/60Hz, Output: DC54-78V, 130mA	IEC 61347-2-13 IEC 61347-1	Test with appliance	
LED driver for B0104-15-Y-1-Z	B	Jiangmen HUARUI Technology Co., Ltd.	A03-003-0260-101	Input: AC110-120V/ 200-240V, 50/60Hz, Output: DC36-55V, 260mA	IEC 61347-2-13 IEC 61347-1	Test with appliance	
LED driver for B0104-24-Y-1-Z	B	Jiangmen HUARUI Technology Co., Ltd.	A03-003-0260-102	Input: AC110-120V/ 200-240V, 50/60Hz, Output: DC54-78V, 260mA	IEC 61347-2-13 IEC 61347-1	Test with appliance	
LED driver for B0104-12-Y-3-Z	B	Jiangmen HUARUI Technology Co., Ltd.	A03-003-0130-302	Input: AC110-120V/ 200-240V, 50/60Hz, Output: DC54-78V, 130mA	IEC 61347-2-13 IEC 61347-1	Test with appliance	
LED driver for B0104-15-Y-3-Z	B	Jiangmen HUARUI Technology Co., Ltd.	A03-003-0260-301	Input: AC110-120V/ 200-240V, 50/60Hz, Output: DC36-55V, 260mA	IEC 61347-2-13 IEC 61347-1	Test with appliance	

IEC 60598-2-2						
Clause	Requirement + Test			Result - Remark		Verdict
LED driver for B0104-24-Y-3-Z	B	Jiangmen HUARUI Technology Co., Ltd.	A03-003-0260-302	Input: AC110-120V/ 200-240V, 50/60Hz, Output: DC54-78V, 260mA	IEC 61347-2-13 IEC 61347-1	Test with appliance
Output wire of LED driver	B	Zhuhai Hengwang Electronics Co., Ltd.	H05S-K	300/500V, 180°C, 0.3mm ²	VDE 0282-3	VDE 40025629
LED chip	B	Jiangmen Hongxing Lighting Equipment Co., Ltd.	HX-5730-150mA	Vf: 2.8-3.4V, If: 150mA, Size: 5.7x3.0x 0.8mm, CCT: 2700-6500K, Exempt Group	IEC 62471	Tested with appliance
LED module PCB	B	INTERNATIONAL LAMINATE MATERIAL LTD	GL12	Metal base, 90°C, V-0, min. thickness 1.2mm	--	UL E134893
Components for LED driver						
Screw terminal	B	Jiangmen HUARUI Technology Co., Ltd.	M4x6x6x7	Copper material, 0.75-1.5mm ²	IEC 60598-2-2 IEC 60598-1	Test with appliance
PCB	B	INTERNATIONAL LAMINATE MATERIAL LTD	DL-C3	130°C, V-0, min. thickness 1.2mm	--	UL E134893
Fuse resistor (FR1)	B	Dongguan Hongda Electronic Technology Co., Ltd.	RXF series	2W, 4.7Ω	EN 60065	VDE 40036858
Varistor (RV1)	B	Hongzhi Enterprises Ltd.	HEL-7D471K	AC470V, 85°C	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE 40037512
For model: A03-003-0130-101, A03-003-0130-102, A03-003-0260-101, A03-003-0260-102						
Varistor (RV2)	B	Hongzhi Enterprises Ltd.	HEL-7D471K	AC470V 85°C	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE 40037512
Inductor (L1)	B	Berdis Lighting Co., LTD	PK0810-472K-S0	4.7mH	IEC 60598-2-2 IEC 60598-1	Test with appliance
- winding	B	DONG GUAN YIDA INDUSTRIAL CO LTD	UEW/130	130°C	--	UL E344055

IEC 60598-2-2						
Clause	Requirement + Test			Result - Remark		Verdict
Transformer (L2)	B	Jiangmen Huarui Technology Co., Ltd	TREE13-013HR	Φ0.31mmx1Px 140Ts, 0.46mH	IEC 61347-2-13 IEC 62347-1	Test with appliance
- winding	B	DONG GUAN YIDA INDUSTRIAL CO LTD	UEW/155	155°C	--	UL E344055
- bobbin	B	CHANG CHUN PLASTICS CO LTD	T375J	150°C, V-0	--	UL E59481
- tape	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT-280B	130°C	--	UL E165111
For model: A03-003-0130-302, A03-003-0260-301, A03-003-0260-302						
Inductor (L1, L2)	B	Berdis Lighting Co., LTD	RLB9012-472KL	4.7mH	IEC 60598-2-2 IEC 60598-1	Test with appliance
- winding	B	DONG GUAN YIDA INDUSTRIAL CO LTD	UEW/130	130°C	--	UL E344055
Transformer (L3)	B	Jiangmen Huarui Technology Co., Ltd	TREFD20-017HR	Φ0.4mmx1Px 90Ts, 0.65mH	IEC 61347-2-13 IEC 62347-1	Test with appliance
- winding	B	DONG GUAN YIDA INDUSTRIAL CO LTD	UEW/155	155°C	--	UL E344055
- bobbin	B	CHANG CHUN PLASTICS CO LTD	T375J	150°C, V-0	--	UL E59481
- tape	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT-280B	130°C	--	UL E165111
Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039. The codes above have the following meaning: A - The component is replaceable with another one, also certified, with equivalent characteristics B - The component is replaceable if authorised by the test house C - Integrated component tested together with the appliance D - Alternative component						

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

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference	B0104-12-6500-1	—
	Lamp used.....	LED module	—
	Lamp control gear used.....	LED driver: A03-003-0130-102	—
	Mounting position of luminaire	As normal use	—
	Supply wattage (W)	See below	—
	Supply current (A)	See below	—
	Calculated power factor.....	See below	—
	Table: measured temperatures corrected for $t_a = 25\text{ }^{\circ}\text{C}$:		P
	- abnormal operating mode	a) short circuit one LED b) open circuit one LED	—
	- test 1: rated voltage.....	--	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	1.06x110V = 116.6V: 0.084A, 9.51W, PF: 0.971 1.06x240V = 254.4V 0.043A, 9.77W, PF: 0.893	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	--	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	1.1x110V = 121V: a) 0.076A, 9.08W; b) -- 1.1x240V = 264V a) -- b) 0.044A, 10.2W	—
	Through wiring or looping-in wiring loaded by a current of A during the test	--	—

Temperature measurements, ($^{\circ}\text{C}$)

Part	Ambient	Clause 12.4 – normal					Clause 12.5 – abnormal		
		test 1	test 2 (116.6V)	test 2 (254.4V)	test 3	limit	test 4a	test 4b	limit
LED surface	25	--	84.6	86.8	--	Ref.	83.3	87.0	--
LED module PCB	25	--	57.6	72.0	--	Ref.	50.1	53.6	--
Lead wire of LED module PCB	25	--	64.4	67.0	--	180	63.2	65.9	--
Plastic reflector around LED module	25	--	61.3	63.4	--	Ref.	58.4	64.5	--

IEC 60598-2-2									
Clause	Requirement + Test					Result - Remark			Verdict
Internal surface of plastic cover	25	--	51.6	54.0	--	Ref.	49.6	53.9	--
External surface of plastic cover	25	--	44.7	46.3	--	Ref.	44.1	43.8	--
External surface of plastic trim	25	--	38.0	38.8	--	Ref.	35.8	37.9	--
Supply cord clamped by cord anchorage	25	--	42.9	44.6	--	75	41.4	50.9	--
Input wire of LED driver	25	--	47.2	49.2	--	90	45.8	57.4	--
RV1	25	--	56.9	59.1	--	85	55.0	78.5	--
LF1 winding	25	--	59.1	61.2	--	120	57.1	79.0	175
L1 winding	25	--	70.1	72.2	--	120	67.1	89.1	175
RV2	25	--	63.9	69.8	--	85	61.6	89.2	--
L2 winding	25	--	74.5	86.4	--	140	72.7	104.2	175
L2 bobbin	25	--	66.8	76.1	--	Ref.	65.3	86.4	--
E1	25	--	61.7	68.6	--	105	60.0	77.2	115
Output wire of LED driver	25	--	56.8	61.7	--	180	55.4	66.7	--
Internal surface of plastic enclosure (under transformer)	25	--	62.2	65.3	--	Ref.	60.3	69.0	--
External surface of plastic enclosure (above transformer)	25	--	38.3	39.6	--	Ref.	36.1	51.8	--
Lighted objects (10cm)	25	--	35.7	37	--	90	33.0	34.3	175
Mounting surface of luminaire (front)	25	--	34.6	34.4	--	90	33.9	42.1	130
Mounting surface of luminaire (behind)	25	--	34.0	34.1	--	90	33.3	41.0	130
Supplementary information: N/A									

	Type reference	B0104-24-6500-1	—
	Lamp used.....	LED module	—
	Lamp control gear used.....	LED driver: A03-003-0260-102	—

IEC 60598-2-2									
Clause	Requirement + Test					Result - Remark		Verdict	
	Mounting position of luminaire :					As normal use		—	
	Supply wattage (W) :					See below		—	
	Supply current (A) :					See below		—	
	Calculated power factor..... :					See below		—	
	Table: measured temperatures corrected for ta = 25 °C:							P	
	- abnormal operating mode :					a) short circuit one LED b) open circuit one LED		—	
	- test 1: rated voltage..... :					--		—	
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage :					1.06x110V = 116.6V: 0.183A, 20.2W, PF: 0.947 1.06x240V = 254.4V 0.099A, 22.2W, PF: 0.881		—	
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage :					--		—	
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage :					1.1x110V = 121V: a) 0.181A, 21.5W; b) -- 1.1x240V = 264V a) -- b) 0.100A, 22.6W		—	
	Through wiring or looping-in wiring loaded by a current of A during the test :					--		—	
Temperature measurements, (°C)									
Part	Ambient	Clause 12.4 – normal					Clause 12.5 – abnormal		
		test 1	test 2 (116.6V)	test 2 (254.4V)	test 3	limit	test 4a	test 4b	limit
LED surface	25	--	82.8	86.1	--	Ref.	52.0	59.1	--
LED module PCB	25	--	56.1	57.0	--	Ref.	49.8	51.6	--
Lead wire of LED module PCB	25	--	61.2	64.9	--	180	44.6	48.8	--
Plastic reflector around LED module	25	--	57.0	59.5	--	Ref.	43.8	42.3	--
Internal surface of plastic cover	25	--	50.1	51.8	--	Ref.	46.3	57.0	--
External surface of plastic cover	25	--	45.8	48.3	--	Ref.	56.6	69.9	--
External surface of plastic trim	25	--	39.5	41.3	--	Ref.	72.3	97.6	--

IEC 60598-2-2									
Clause	Requirement + Test					Result - Remark			Verdict
Supply cord clamped by cord anchorage	25	--	48.1	55.6	--	75	76.4	104.5	--
Input wire of LED driver	25	--	56.2	66.7	--	90	76.9	101.0	--
RV1	25	--	72.5	79.4	--	85	79.3	110.1	--
LF1 winding	25	--	77.1	101.7	--	120	86.8	125.5	175
L1 winding	25	--	78.4	99.7	--	120	78.0	117.7	175
RV2	25	--	80.6	81.3	--	85	68.7	92.5	--
L2 winding	25	--	88.1	116.6	--	140	64.6	83.4	175
L2 bobbin	25	--	81.1	111.1	--	Ref.	59.9	74.3	--
E1	25	--	69.4	89.3	--	105	63.6	77.6	115
LF2 winding	25	--	64.5	79.5	--	120	44.6	53.7	175
Output wire of LED driver	25	--	60.3	71.6	--	180	35.2	39.9	--
Internal surface of plastic enclosure (under transformer)	25	--	64.4	75.3	--	Ref.	35.6	38.7	--
External surface of plastic enclosure (above transformer)	25	--	44.1	51.4	--	Ref.	34.6	37.2	--
Lighted objects (10cm)	25	--	34.2	35.4	--	90	52.0	59.1	175
Mounting surface of luminaire (front)	25	--	36.6	38.8	--	90	49.8	51.6	130
Mounting surface of luminaire (behind)	25	--	34.6	36.6	--	90	44.6	48.8	130
Supplementary information: N/A									

	Type reference	B0104-12-6500-3	—
	Lamp used.....	LED module	—
	Lamp control gear used.....	LED driver: A03-003-0130-302	—
	Mounting position of luminaire	As normal use	—
	Supply wattage (W)	See below	—
	Supply current (A)	See below	—

IEC 60598-2-2									
Clause	Requirement + Test					Result - Remark			Verdict
	Calculated power factor..... :					See below			—
	Table: measured temperatures corrected for ta = 25 °C:								P
	- abnormal operating mode :					a) short circuit one LED b) open circuit one LED			—
	- test 1: rated voltage..... :					--			—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage :					1.06x110V = 116.6V: 0.086A, 9.83W, PF: 0.980 1.06x240V = 254.4V 0.041A, 9.36W, PF: 0.897			—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage :					--			—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage :					1.1x110V = 121V: a) 0.076A, 9.08W; b) 0.082A, 9.36W 1.1x240V = 264V a) 0.038A, 9.34W b) 0.040A, 9.35W			—
	Through wiring or looping-in wiring loaded by a current of A during the test :					--			—
Temperature measurements, (°C)									
Part	Ambient	Clause 12.4 – normal					Clause 12.5 – abnormal		
		test 1	test 2 (116.6V)	test 2 (254.4V)	test 3	limit	test 4a	test 4b	limit
LED surface	25	--	91.3	91.8	--	Ref.	93.4	94.5	--
LED module PCB	25	--	66.2	67.7	--	Ref.	69.1	69.6	--
Lead wire of LED module PCB	25	--	67.6	66.0	--	180	68.0	68.5	--
Plastic reflector around LED module	25	--	62.6	60.4	--	Ref.	62.3	62.7	--
Internal surface of plastic cover	25	--	53.3	50.8	--	Ref.	53.1	53.3	--
External surface of plastic cover	25	--	50.2	48.1	--	Ref.	49.9	50.0	--
External surface of plastic trim	25	--	40.9	35.3	--	Ref.	40.5	39.0	--
Supply cord clamped by cord anchorage	25	--	43.8	40.7	--	75	43.5	43.6	--
Input wire of LED driver	25	--	48.5	45.5	--	90	48.1	48.2	--
LF1 winding	25	--	56.1	50.8	--	120	55.3	54.0	175

IEC 60598-2-2									
Clause	Requirement + Test					Result - Remark			Verdict
L1 winding	25	--	69.9	58.6	--	120	68.2	66.8	175
RV1	25	--	69.2	63.4	--	85	67.8	65.0	--
L2 winding	25	--	79.3	73.1	--	120	77.2	74.6	175
E2	25	--	67	66.3	--	105	67.9	68.4	115
L3 winding	25	--	78.2	78.4	--	140	82.2	82.9	175
L3 bobbin	25	--	77.4	77.7	--	Ref.	78.9	79.6	--
E1	25	--	60.9	62.2	--	105	67.2	67.6	115
Output wire of LED driver	25	--	59.5	59.5	--	180	63.5	63.9	--
Internal surface of plastic enclosure (under transformer)	25	--	66.3	64.1	--	Ref.	65.4	65.9	--
External surface of plastic enclosure (above transformer)	25	--	44.8	42.0	--	Ref.	44.4	43.8	--
Lighted objects (10cm)	25	--	39.4	33.1	--	90	38.1	36.2	175
Mounting surface of luminaire (front)	25	--	41.3	36.9	--	90	41.0	40.9	130
Mounting surface of luminaire (behind)	25	--	40.6	35.5	--	90	39.8	39.7	130
Supplementary information: N/A									

	Type reference	B0104-24-6500-3	—
	Lamp used.....	LED module	—
	Lamp control gear used.....	LED driver: A03-003-0260-302	—
	Mounting position of luminaire	As normal use	—
	Supply wattage (W)	See below	—
	Supply current (A)	See below	—
	Calculated power factor.....	See below	—
	Table: measured temperatures corrected for $t_a = 25\text{ }^{\circ}\text{C}$:		P
	- abnormal operating mode	a) short circuit one LED b) open circuit one LED	—

IEC 60598-2-2									
Clause	Requirement + Test					Result - Remark		Verdict	
	- test 1: rated voltage..... :					--		—	
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage :					1.06x110V = 116.6V: 0.180A, 20.6W, PF: 0.982 1.06x240V = 254.4V 0.096A, 23.1W, PF: 0.946		—	
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage :					--		—	
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage :					1.1x110V = 121V: a) 0.175A, 20.7 W; b) 0.183A, 21.6W 1.1x240V = 264V a) 0.090A, 22.3W b) 0.093A, 23.2W		—	
	Through wiring or looping-in wiring loaded by a current of A during the test :					--		—	
Temperature measurements, (°C)									
Part	Ambient	Clause 12.4 – normal					Clause 12.5 – abnormal		
		test 1	test 2 (116.6V)	test 2 (254.4V)	test 3	limit	test 4a	test 4b	limit
LED surface	25	--	92.2	96.2	--	Ref.	96.2	92.7	--
LED module PCB	25	--	64.5	73.3	--	Ref.	75.0	69.0	--
Lead wire of LED module PCB	25	--	66.0	76.1	--	180	76.6	72.9	--
Plastic reflector around LED module	25	--	61.4	67.2	--	Ref.	73.8	69.0	--
Internal surface of plastic cover	25	--	52.4	57.1	--	Ref.	58.9	53.2	--
External surface of plastic cover	25	--	45.5	51.5	--	Ref.	53.3	48.2	--
External surface of plastic trim	25	--	38.0	38.6	--	Ref.	40.3	33.9	--
Supply cord clamped by cord anchorage	25	--	48.6	56.9	--	75	49.1	51.1	--
Input wire of LED driver	25	--	56.6	63.3	--	90	55.6	57.7	--
LF1 winding	25	--	67.5	72.6	--	120	72.1	68.1	175
L1 winding	25	--	71.7	79.3	--	120	78.9	74.5	175
RV1	25	--	79.1	83.3	--	85	83.4	80.4	--
L2 winding	25	--	82.7	90.1	--	120	90.8	86.4	175
E2	25	--	80.0	88.4	--	105	89.1	85.3	115

IEC 60598-2-2									
Clause	Requirement + Test					Result - Remark			Verdict
L3 winding	25	--	94.0	104.8	--	140	107.9	106.5	175
L3 bobbin	25	--	92.1	104.3	--	Ref.	107.7	106.2	--
E1	25	--	83.9	89.1	--	105	90.4	88.9	115
LF2 winding	25	--	78.0	87.8	--	120	89.4	89.7	175
Output wire of LED driver	25	--	83.6	83.2	--	180	84.8	86.1	--
Internal surface of plastic enclosure (under transformer)	25	--	72.5	76.2	--	Ref.	77.2	73.5	--
External surface of plastic enclosure (above transformer)	25	--	57.6	55.0	--	Ref.	58.1	57.6	--
Lighted objects (10cm)	25	--	41.3	40.4	--	90	40.3	35.1	175
Mounting surface of luminaire (front)	25	--	34.9	36.7	--	90	42.9	40.9	130
Mounting surface of luminaire (behind)	25	--	34.9	36.0	--	90	39.4	39.3	130
Supplementary information: N/A									

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

ANNEX 3	Screw terminals (part of the luminaire)		P
(14)	SCREW TERMINALS		P
(14.2)	Type of terminal..... :	Pillar terminal	—
	Rated current (A)..... :	Tested with appliance	—
(14.3.2.1)	One or more conductors		P
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		P
	Cross-sectional area (mm ²)..... :	0.75	—
(14.3.3)	Conductor space (mm)..... :	3.20	P
(14.4)	Mechanical tests		P
(14.4.1)	Minimum distance		P
(14.4.2)	Cannot slip out		P
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread) :	M3	P
	External wiring		P
	No soft metal		P
(14.4.5)	Corrosion		P
(14.4.6)	Nominal diameter of thread (mm) :	2.9	P
	Torque (Nm) :	0.5	P
(14.4.7)	Between metal surfaces		P
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N) :	30	P
(14.4.8)	Without undue damage		P

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

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

IEC 60598-2-2											
Clause	Requirement + Test						Result - Remark				Verdict
	Terminal size and rating										N/A
15.6.2	Mechanical tests										N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) :										N/A
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N) :										N/A
(15.6.3)	Electrical tests										N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1										N/A
(15.6.3.1) (15.6.3.2)	TABLE: Contact resistance test / Heating tests										N/A
	Voltage drop (mV) after 1 h										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop of two inseparable joints										
	Voltage drop after 10th alt. 25th cycle										
	Max. allowed voltage drop (mV) :										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop after 50th alt. 100th cycle										
	Max. allowed voltage drop (mV) :										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 10th alt. 25th cycle										
	Max. allowed voltage drop (mV) :										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 50th alt. 100th cycle										
	Max. allowed voltage drop (mV) :										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
Supplementary information:											

IEC60598_2_2E – ATTACHMENT 1			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60598-2-2 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES LUMINAIRES PART 2: PARTICULAR REQUIREMENTS SECTION 2: RECESSED LUMINAIRES			
Differences according to: EN 60598-2-2:2012 used in conjunction with EN 60598-1:2015			
Annex Form No.: EU_GD_IEC60598_2_2E Annex Form Originator: OVE Master Annex Form: 2015-04			
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ANNEX 5	CENELEC COMMON MODIFICATIONS (EN)	P
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2.6 (3)	MARKING	P
2.6 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package	P

2.7 (4)	CONSTRUCTION	P
2.7 (4.11.6)	Electro-mechanical contact systems	N/A

2.11 (5)	EXTERNAL AND INTERNAL WIRING	P
2.11 (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
2.11 (5.2.2)	Cables equal to EN 50525	P
	Replace table 5.1 – Supply cord	P

2.13 (12)	ENDURANCE TESTS AND THERMAL TESTS	P
2.13 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring	P

IEC60598_2_2E – ATTACHMENT 1			
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

IEC60598_2_2E – ATTACHMENT 2			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 6	Requirements of IEC 61347-2-13		P
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4 (4)	GENERAL REQUIREMENTS		P
- (4)	<u>Insulation materials</u> according requirements in Annex N of IEC 61347-1	(see Annex N)	N/A
- (4)	Compliance of <u>independent controlgear enclosure</u> with IEC 60598-1		N/A
- (4)	<u>Built-in magnetic ballast</u> with double or reinforced insulation comply with Annex I of IEC 61347-1		N/A
- (4)	<u>Built-in electronic controlgear</u> with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
4 (4)	<u>SELV controlgear</u> comply with Annex I of this part 2 and Annex L of IEC 61347-1	(see Annex L)	N/A
4 (-)	Transformer comply with IEC 61558		N/A
	Dielectric strength test of insulated winding wires is limited to 3 kV if input voltage $\leq$ 300 V		N/A

6 (6)	CLASSIFICATION		P
	Built-in controlgear	Yes ☐ No ☒	—
	Independent controlgear.....	Yes ☐ No ☒	—
	Integral controlgear	Yes ☒ No ☐	—
6 (-)	Auto-wound controlgear	Yes ☒ No ☐	—
	Separating controlgear	Yes ☐ No ☒	—
	Isolating controlgear	Yes ☐ No ☒	—
	SELV controlgear	Yes ☐ No ☒	—

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

IEC60598_2_2E – ATTACHMENT 2			
Clause	Requirement + Test	Result - Remark	Verdict
11 (-)	Adequate insulation between input and output terminals not bounded together in SELV-equivalent controlgear		N/A

12 (12)	ELECTRIC STRENGTH		P
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		N/A
	Working voltage ≤ 50 V, test voltage 500 V		N/A
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, 2U + 1000 V	Between L and N after removing fuse: 1480V	P
	Supplementary insulation, 2U + 1000 V		N/A
	Double or reinforced insulation, 4U + 2000 V		N/A
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N/A

14 (14)	FAULT CONDITIONS		P
- (14)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)	(see appended table)	P
	Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3		N/A
- (14.2)	Short-circuit or interruption of semiconductor devices	(see appended table)	P

IEC60598_2_2E – ATTACHMENT 2			
Clause	Requirement + Test	Result - Remark	Verdict
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N/A
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	P
- (14.5)	After the tests has been carried out on three samples:		P
	The insulation resistance $\geq 1 \text{ M}\Omega$: $>100\text{M}\Omega$		P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.6)	Relevant fault condition tests with high-power supply		—
14 (-)	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C		N/A

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

IEC60598_2_2E – ATTACHMENT 2			
Clause	Requirement + Test	Result - Remark	Verdict
14	TABLE: Tests of fault conditions		P
Part	Simulated fault	Result	Hazard
For model: A03-003-0130-102			
BR1 (2-4)	Short circuit	Fuse opened	NO
D1	Short circuit	Fuse opened	NO
E1	Short circuit	Unit shut down, 0.006A, 1.26W	NO
LED driver output terminal	Short circuit	Unit shut down, 0.006A, 1.26W	NO
For model: A03-003-0260-101			
D2	Short circuit	Fuse opened	NO
E1	Short circuit	Unit shut down, 0.008A, 1.15W	NO
LED driver output terminal	Short circuit	Unit shut down, 0.006A, 1.07W	NO
For model: A03-003-0260-102			
D1	Short circuit	Unit shut down, 0 A, 0W, recoverable	NO
D2	Short circuit	Fuse opened	NO
E1	Short circuit	Unit shut down, 0.008A, 0.71W	NO
LED driver output terminal	Short circuit	Unit shut down, 0.008A, 0.65W	NO
For model: A03-003-0130-302			
BR1 (2-4)	Short circuit	Fuse opened	NO
E1	Short circuit	Unit shut down, 0.006A, 0.17W	NO
E2	Short circuit	Unit shut down, 0.006A, 0.17W	NO
D1	Short circuit	Unit shut down, 0A, 0W, unrecoverable	NO
LED driver output terminal	Short circuit	Unit shut down, 0.006A, 0.17W	NO
For model: A03-003-0260-301			
BR1 (2-4)	Short circuit	Fuse opened	NO
Q1 (D-S)	Short circuit	Fuse opened	NO
E2	Short circuit	Unit shut down, 0.117A, 0.17W	NO
E1	Short circuit	Unit shut down, 0.117A, 0.17W	NO
D1	Short circuit	Unit shut down, 0A, 0W, unrecoverable	NO

IEC60598_2_2E – ATTACHMENT 2			
Clause	Requirement + Test	Result - Remark	Verdict
LED driver output terminal	Short circuit	Unit shut down, 0.005A, 0.78W	NO
For model: A03-003-0260-302			
BR1 (2-4)	Short circuit	Fuse opened	NO
Q1 (D-S)	Short circuit	Fuse opened	NO
E2	Short circuit	Unit shut down, 0.007A, 0.18W	NO
E1	Short circuit	Unit shut down, 0.006A, 0.17W	NO
D1	Short circuit	Unit shut down, 0A, 0W, unrecoverable	NO
LED driver output terminal	Short circuit	Unit shut down, 0.007A, 0.18W	NO

IEC60598_2_2E – ATTACHMENT 3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 7	LED modules for general lighting – Safety specifications IEC 62031:2008+A1:2012+A2:2014		P
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13	FAULT CONDITIONS		P
13.1	In compliance with EN 61347-1 (clause numbers between parentheses refer to EN 61347-1)		P
	When operated under fault conditions the LED-module:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected		N/A
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)		N/A
	Distances on printed boards provided with coating according to IEC 60664-3		N/A
- (14.2)	Short-circuit or interruption of semiconductor devices		N/A
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile		N/A
- (14.4)	Short-circuit across electrolytic capacitors		N/A
- (14.5)	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
	After the tests the insulation resistance with d.c. 500 V (MΩ) are $\geq 1 \text{ M}\Omega$	>100MΩ	P
	Temperature declared thermally protected LED-modules fulfil the requirements in Annex C of IEC 61437-1		N/A
13.2	Module withstands overpower condition >15 min.	(see appended table)	P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		N/A
	During the tests, tissue paper, spread below module, does not ignite		P

IEC60598_2_2E – ATTACHMENT 3			
Clause	Requirement + Test	Result - Remark	Verdict

Clause 13.2 overpower condition (IEC62031)	Position: Appliance positioned on the test corner.		
	Duration: Until stable		
	Operation: 150% of normal output wattage		
	Wattage: 1.5x24W = 36W		
	Thermocouple point	Measured temperature	Limited
	LED surface	132.9°C	Ref.
Model: B0104-24-6500-1	LED module PCB	110.3°C	Ref.
	Observation: 87.8VDC, 0.41A, 36W. No fire, smoke or flammable gas is produced		

Clause 13.2 overpower condition (IEC62031)	Position: Appliance positioned on the test corner.		
	Duration: Until stable		
	Operation: 150% of normal output wattage		
	Wattage: 1.5x24W = 36W		
	Thermocouple point	Measured temperature	Limited
	LED surface	130.2°C	Ref.
Model: B0104-24-6500-3	LED module PCB	108.0°C	Ref.
	Observation: 90.1VDC, 0.40A, 36W. No fire, smoke or flammable gas is produced		

IEC60598_2_2E – ATTACHMENT 4			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 8	Photobiological Safety Of Lamps And Lamp Systems IEC 62471:2006	P
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Conditions

1. Tests performed on B0104-24-6500-3 (6500K). Supply by 240V~, 50Hz.
2. Ambient temperature: 23±2°C, Humidity: 56±10%.
3. Measurement distance: 1.23m.
4. Angular subtense of whole lamp: 94.58mrad

Calculation of the Hazard exposure limits for the Exempt group Lamp

The philosophical basis for the exempt group classification is that the lamp does not pose any photobiological hazard for the end points in this standard. This requirement is met by any lamp that does not pose

1. An actinic ultraviolet hazard (Es) within 8-hours exposure (30000 s), nor
2. A near-UV hazard (EUVA) within 1000 s, (about 16 min), nor
3. A retinal blue-light hazard (LB) within 10000 s (about 2.8 h), nor
4. A retinal thermal hazard (LR) within 10 s, nor
5. An infrared radiation hazard for the eye (EIR) within 1000 s.

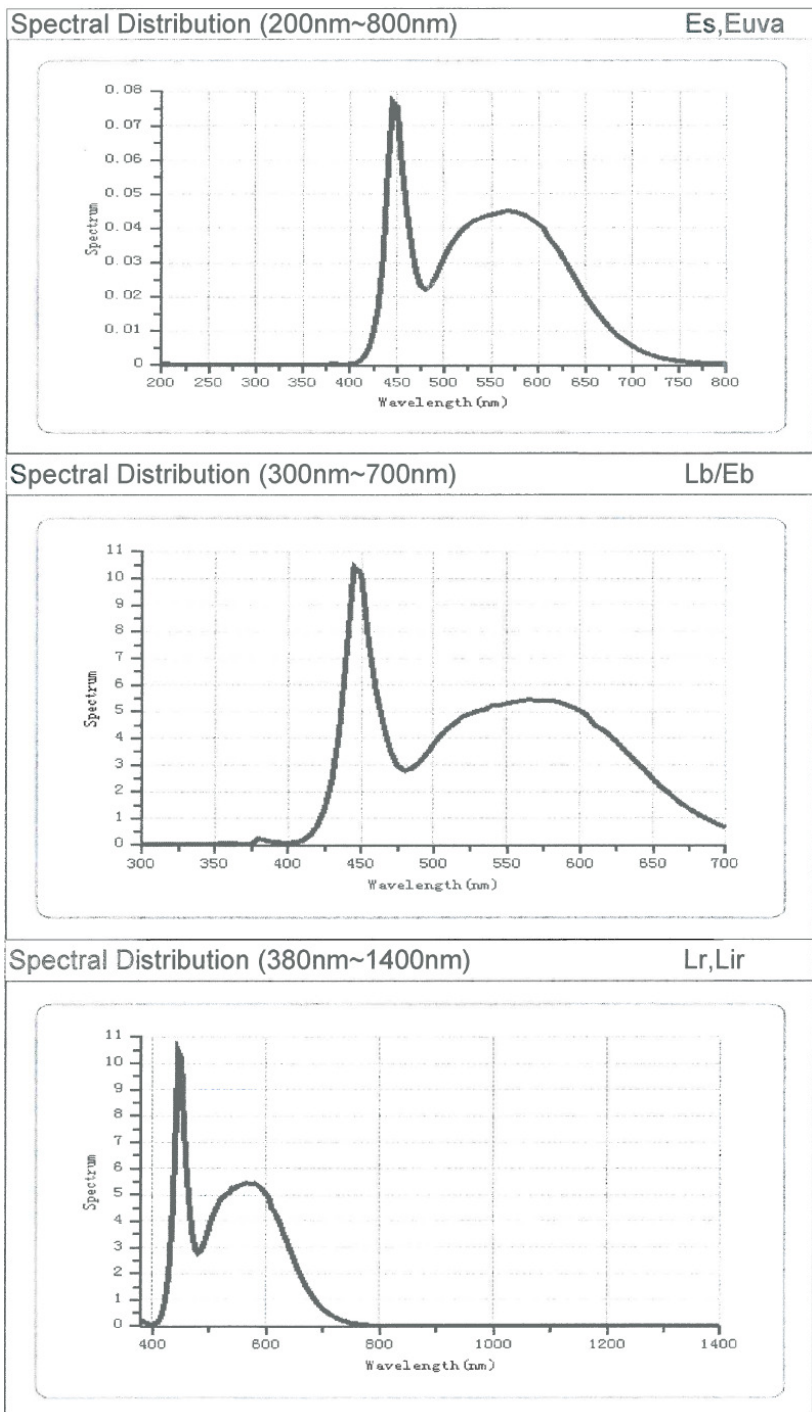
These lamps are in the Exempt Group.

Also, lamps that emit infrared radiation without a strong visual stimulus (i.e., less than 10 cd·m⁻²) and do not pose a near-infrared retinal hazard (LIR) within 1000 s are in the Exempt Group.

See the test data.

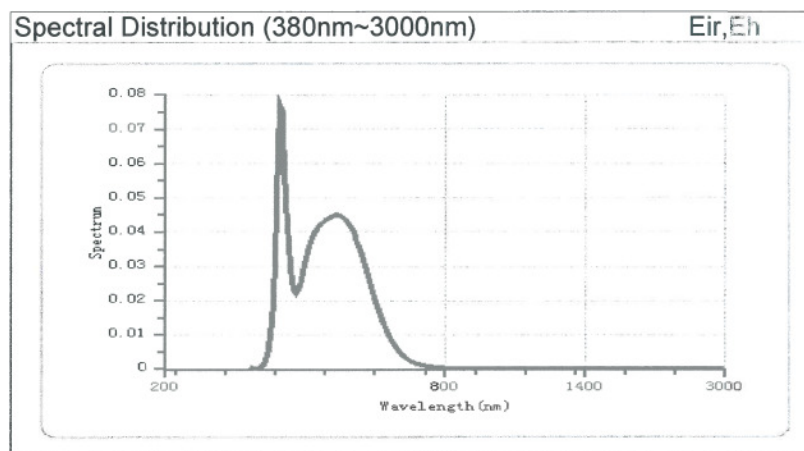
IEC60598_2_2E – ATTACHMENT 4

Clause	Requirement + Test	Result - Remark	Verdict
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IEC60598_2_2E – ATTACHMENT 4

Clause	Requirement + Test	Result - Remark	Verdict
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Test data:

Optical hazard	Test result	Used hazard exposure limit		Ref.
1. E_s	2.030E-04 W/ m ²	0.001 W/m ²	200-800 nm	P
2. E_{UVA}	3.165E-03 W/ m ²	10 W/m ²	200-800 nm	P
3. L_B	6.132E+01 W/ m ² sr	100 W/m ² sr	300-700 nm	P
4. $E_{B(\text{small source})}$	--	--	--	N/A
5. L_R	9.769E+02 W/ m ² sr	2.960E+05 W/m ² sr	380-1400 nm	P
6. L_{IR}	1.402E-01 W/ m ² sr	6.344E+04 W/m ² sr	780-1400 nm	P
7. E_{IR}	2.067E-03 W/ m ²	100 W/m ²	780-3000 nm	P
8. E_H	1.887E+00 W/ m ²	3556.56 W/m ²	380-3000 nm	P

IEC60598_2_2E – ATTACHMENT 4

Clause	Requirement + Test	Result - Remark	Verdict
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	Blue light hazard		P
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Conditions

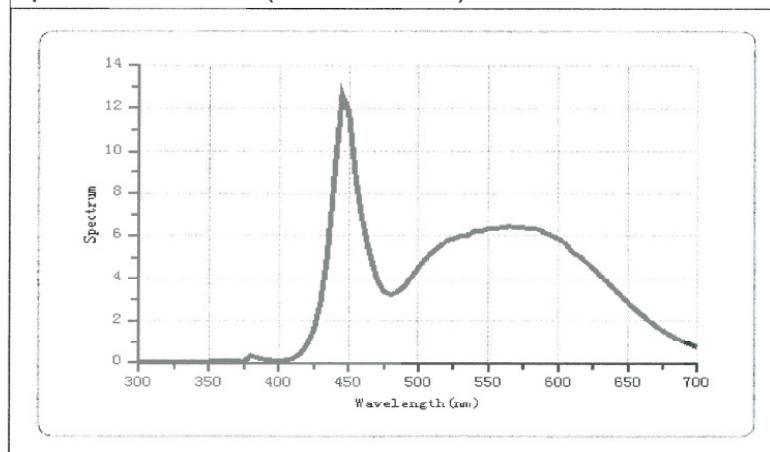
1. Tests performed on B0104-24-6500-3 (6500K), Supply by 240V~, 50Hz.
2. Ambient temperature: 25±1°C, Humidity: 64±10%.
3. Measurement distance: 20cm

Lamp classification group: Exempt group**Test Results**

Symbol	Units	Results
Lb (11mrad)	W·m ⁻² ·sr ⁻¹	7.718E+01
Lb (100mrad)	W·m ⁻² ·sr ⁻¹	7.266E+01
L(11mrad)	cd·m ⁻²	9.113E+04
E _{thr}	lx	—
d _{min}	m	—

Spectral Distribution (300nm~700nm)

Lb/Eb



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