



Ref. Certif. No.

DE 2-019210

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST
CERTIFICATES FOR ELECTRICAL EQUIPMENT
(IECEE) CB SCHEMESYSTEME CEI D'ACCEPTATION MUTUELLE DE
CERTIFICATS D'ESSAIS DES EQUIPEMENTS
ELECTRIQUES (IECEE) METHODE OCCB TEST CERTIFICATE
CERTIFICAT D'ESSAI OCProduct
Produit

LED Down Light

Name and address of the applicant
Nom et adresse du demandeurZhongshan PNY Lighting Tech. CO., LTD
Yongxing Industrial, Henglan Town
Zhongshan, 528421 Guangdong, ChinaName and address of the manufacturer
Nom et adresse du fabricantZhongshan PNY Lighting Tech. CO., LTD
Yongxing Industrial, Henglan Town
Zhongshan, 528421 Guangdong, ChinaName and address of the factory
Nom et adresse de l'usineZhongshan PNY Lighting Tech. CO., LTD
Yongxing Industrial, Henglan Town
Zhongshan, 528421 Guangdong, ChinaNote: When more than one factory, please report on page 2
Note: Lorsque il y plus d'une usine, veuillez utiliser la 2^{ème} pageRatings and principal characteristics
Valeurs nominales et caractéristiques principalesClass III; IP20
For input voltage and rated power ,refer to the test report.Trade mark (if any)
Marque de fabrique (si elle existe)

PNY(Logo)

Model/type Ref.
Ref. de type

Type designation refer to the test report

Additional information (if necessary may also be
reported on page 2)
Les Information complémentaire (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	EDITION
IEC 60598-2-2:2011	
IEC 60598-1:2008	
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

16068802 001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de CertificationTÜV Rheinland LGA Products GmbH
Tillystraße 2 · 90431 Nürnberg, Germany
Phone + 49 221 806-1371
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Mail: cert-validity@de.tuv.com
Web: www.tuv.com

Date: 07.08.2015

Signature:

Eileen Feng



Test Report issued under the responsibility of:



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

Report Number: 16068802 001
Date of issue: 2015-07-28
Total number of pages: 41

Applicant's name.....: Zhongshan PNY Lighting Tech. CO., LTD
Address: Yongxing Industrial, Henglan Town, Zhongshan, 528421
Guangdong, China

Test specification:

Standard: IEC 60598-2-2(ed.3):2011 used in conjunction with
IEC 60598-1(ed.7):2008
Test procedure: CB Scheme
Non-standard test method.....: N/A

Test Report Form No......: IEC60598_2_2C
Test Report Form(s) Originator.....: Intertek Semko AB
Master TRF.....: 2013-02


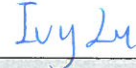
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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

Test item description: LED Down Light
Trade Mark:  PNY
品益照明
Manufacturer.....: Same as applicant
Model/Type reference: See 'General product information'
Ratings: See 'General product information'

Testing procedure and testing location:	
<input checked="" type="checkbox"/> CB Testing Laboratory:	TÜV Rheinland (GuangDong) Ltd.
Testing location/ address	No.199 Kezhu Road, GZ Science City, Guangzhou 510663, P.R.China
<input type="checkbox"/> Associated CB Laboratory:	
Testing location/ address	
Tested by (name + signature)	Leo Wang 
Approved by (+ signature)	Ivy Lu 
<hr/>	
<input type="checkbox"/> Testing procedure: TMP	
Testing location/ address	
Tested by (name + signature)	
Approved by (+ signature)	
<hr/>	
<input type="checkbox"/> Testing procedure: WMT	
Testing location/ address	
Tested by (name + signature)	
Witnessed by (+ signature)	
Approved by (+ signature)	
<hr/>	
<input type="checkbox"/> Testing procedure: SMT	
Testing location/ address	
Tested by (name + signature)	
Approved by (+ signature)	
Supervised by (+ signature)	

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

1. The complete report consists of 41 pages plus a photo documentation of 14 pages;
2. Attachment 1: European Group Differences and National Differences, totally 2 pages;
3. Attachment 2: The requirements of IEC 62031, totally 3 pages;
4. Attachment 3: Photobiological Safety Of Lamps And Lamp Systems IEC 62471:2006, totally 4 pages.

Summary of testing:**Tests performed (name of test and test clause):**

1. Unless otherwise specified, the models LTH0643A-1*9W, LTD0287-30W-Y were chosen as representative models to perform all tests.
2. The model LTH0638A-5W-F, LTH0586A-1*30W-Y, was tested for 62031, the model LTH0586A-1*30W-Y was tested for 62471, the model LTH0656A-1*30W was tested for cl. 4, cl. 12.4 and IEC62031, and the tests results complied with the requirements of the standards mentioned in page one.

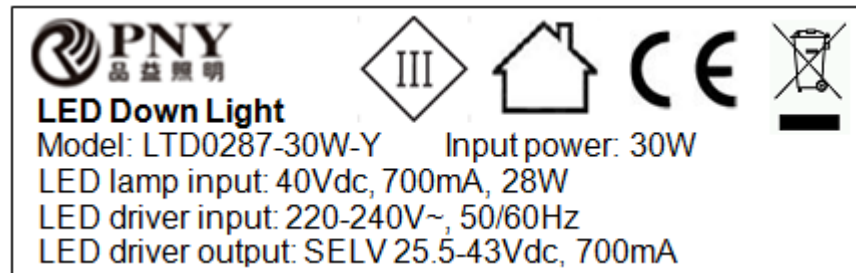
Testing location:**TÜV Rheinland (GuangDong) Ltd.**

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 60598-1:2008+A11:2009, EN 60598-2-2:2012.

Copy of marking plate



20mmx66mm

On the lead wire between DC connector and LED module

Remark: The marking labels for other models are identical as above, except the model name, input power, LED lamp input, LED driver information. Details see 'General product information'

Test item particulars	LED Down Light
Classification of installation and use	IP20
Supply Connection	Connection lead
.....	
.....	
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	2015-06-04
Date (s) of performance of tests.....	2015-06-09 to 2015-07-08

General remarks:	
<p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator. Clause numbers between brackets refer to clauses in IEC 60598-1</p>	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60598-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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 are class III recessed luminaires for indoor use only, with approved class II SELV LED driver.
2. There are 3 kinds of SELV (maximum output voltage does not exceed 60Vdc) LED drivers. Please see the model list below for details.
3. LED driver input: 220-240VAC; 50/60Hz; IP20.

For more details see model list below:

Model list

No.	Model	Power	Size(mm)	LED module	LED driver
1	LTH0586A-1*9W-Y	9W	Φ110*105	CREE COB CXA1507 200mA, 37V, 7.4W	EIP008C0200LHS
2	LTH0586A-1*9W-F	9W	102*102*105		EIP008C0200LHS
3	LTH0590A-1*9W	9W	Φ87*75		EIP008C0200LHS
4	LTH0607A-9W	9W	Φ110*85		EIP008C0200LHS
5	LTH0638A-5W-Y	5W	Φ50*50	CREE COB CXA1304 500mA, 9V, 4.5W	EIP008C0500LHS
6	LTH0638A-5W-F	5W	50*50*50		EIP008C0500LHS
7	LTH0642A-5W	5W	Φ70*52		EIP008C0500LHS
8	LTD0253-5W	5W	70*70*24	SMD 2835*28 (pcs) 200mA, 22V, 4.4W	EIP008C0200LHS
9	LTD0260-5W-Y	5W	Φ80*40		EIP008C0200LHS
10	LTD0260-5W-F	5W	80*80*40		EIP008C0200LHS
11	LTD0260-9W-Y	9W	Φ95*40	SMD 2835*48 (pcs) 200mA, 37V, 7.4W	EIP008C0200LHS
12	LTD0260-9W-F	9W	95*95*40		EIP008C0200LHS
13	LPB0030-9W-Y	9W	Φ120*25		EIP008C0200LHS
14	LPB0030-9W-F	9W	120*120*25		EIP008C0200LHS
15	LTD0278A-9W	9W	Φ90*75	CREE COB CXA1507 200mA, 37V, 7.4W	EIP008C0200LHS
16	LTH0653A-1*9W-Y	9W	Φ90*90		EIP008C0200LHS
17	LTH0653A-1*9W-F	9W	90*90*75		EIP008C0200LHS
18	LDB0165A-1*9W	9W	Φ49.6*90		EIP008C0200LHS
19	LTH0643A-1*9W	9W	Φ75*125		EIP008C0200LHS
20	LTD0277A-9W	9W	Φ85*75		EIP008C0200LHS
21	LTD0282A-9W	9W	Φ105*50		EIP008C0200LHS
22	LTD0289A-30W	30W	Φ220*56	CREE COB CXA2520 700mA, 37V, 25.9W	EIP030C0700L1
23	LTH0586A-1*30W-Y	30W	Φ163*120		EIP030C0700L1
24	LTH0586A-1*30W-F	30W	155*155*120		EIP030C0700L1
25	LTH0590A-1*30W-Y	30W	Φ140*80		EIP030C0700L1
26	LTH0590A-1*30W-F	30W	139*139*80		EIP030C0700L1
27	LTH0600A-1*30W	30W	Φ155*100		EIP030C0700L1
28	LTD0278A-30W	30W	Φ165*110		EIP030C0700L1

29	LTD0277A-30W-Y	30W	Φ148*100	CREE COB CXA1520 700mA, 37V, 25.9W	EIP030C0700L1
30	LTD0277A-30W-F	30W	142*142*76		EIP030C0700L1
31	LTD0273-30W	30W	180*180*108		EIP030C0700L1
32	LTD0251-30W	30W	Φ235*90	SMD 2835*156 (pcs) 700mA, 40V, 28W	EIP030C0700L1
33	LTD0248-26W	26W	Φ220*85	SMD 2835*144 (pcs) 700mA, 32V, 22.4W	EIP030C0700L1
34	LTH0650A-1*25W	25W	Φ170*108	CREE COB CXA1816 700mA, 30V, 21W	EIP030C0700L1
35	LTD0279A-30W	30W	Φ158*150	CREE COB CXA2520 700mA, 37V, 25.9W	EIP030C0700L1
36	LTD0282A-25W	25W	Φ190*70	CREE COB CXA1816 700mA, 30V, 21W	EIP030C0700L1
37	LTH0656A-1*30W	30W	175*175*120	CREE COB CXA1820 700mA, 37V, 25.9W	EIP030C0700L1
38	LTD0280A-30W	30W	Φ165*109	CREE COB CXA2520 700mA, 37V, 25.9W	EIP030C0700L1
39	LTD0281-30W	30W	Φ155*82.5	SMD 2835*156 (pcs) 700mA, 40V, 28W	EIP030C0700L1
40	LTD0285-30W	30W	Φ150*90.5	CREE COB CXA2520 700mA, 37V, 25.9W	EIP030C0700L1
41	LTD0287-30W-Y	30W	Φ230*30	SMD 2835*156 (pcs) 700mA, 40V, 28W	EIP030C0700L1
42	LTD0287-30W-F	30W	230*230*30		EIP030C0700L1

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	Standard Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
2.3 (0.3)	More sections applicable	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

2.5 (2)	CLASSIFICATION		P
2.5 (2.2)	Type of protection	Class III	—
2.5 (2.3)	Degree of protection	IP20	—
2.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
2.5 (2.5)	Luminaire for normal use	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

2.6 (3)	MARKING		P
2.6 (3.2)	Mandatory markings		P
	Position of the marking	Lead wire between DC connector and LED module	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		P
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

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.6 (3.3.15)	Rated current of socket outlet		N/A
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 (3.4)	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)	--	N/A
	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)	--	N/A
	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
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

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
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		N/A
2.7 (4.7.2)	Test 8 mm live conductor		N/A
	Test 8 mm earth conductor		N/A
2.7 (4.7.3)	Terminals for supply conductors		N/A
2.7 (4.7.3.1)	Welded connections:		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
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 61058-1 for electronic switches		N/A
2.7 (4.9)	Insulating lining and sleeves		N/A
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

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	b) Ageing test. Temperature (°C)	--	N/A
2.7 (4.10)	Insulation of Class II luminaires		N/A
2.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N/A
	Safe installation fixed luminaires		N/A
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
2.7 (4.10.2)	Assembly gaps:		N/A
	- not coincidental		N/A
	- no straight access with test probe		N/A
2.7 (4.10.3)	Retention of insulation:		N/A
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
2.7 (4.11)	Electrical connections		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
	- 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	The maximum voltage drop is 38 mV	P
2.7 (4.12)	Mechanical connections 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 for fixing enclosure: 3.0mm; 0,5 Nm	P
	Torque test: torque (Nm); part	Screw for fixing enclosure: 3.7mm; 1,2 Nm	P

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Torque test: torque (Nm); part	Screw for fixing cord anchorage: 2.8mm; 0,4 Nm	P
2.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal		P
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)	Metal enclosure, plastic cover: 0,35 Nm	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P
2.7 (4.13.3)	Straight test finger	Metal enclosure: 30 N	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
	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 and adjusting devices		P
2.7 (4.14.1)	Mechanical load:		P
	A) four times the weight	0,34 kg x 4=1,36 kg for LTH0643A-1*9W 1,18 kg x 4=4,72 kg for LTH0656A-1*30W 0,65 kg x 4= 2.60kg for LTD0287-30W-Y	P
	B) torque 2,5 Nm		N/A
	C) bracket arm; bending moment (Nm)	--	N/A

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	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)	--	N/A
	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	Lamp cover, plastic cover on LED module, reflective paper	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
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	Electronic lamp control gear	N/A
2.7 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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 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		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		N/A
2.7 (4.22)	Attachments to lamps		N/A
2.7 (4.23)	Semi-luminaires comply Class II		N/A
2.7 (4.24)	UV radiation for tungsten halogen lamps and metal halide lamps (Annex P)		N/A
2.7 (4.25)	No sharp point or edges		P
2.7 (4.26)	Short-circuit protection:		N/A
2.7 (4.26.1)	Uninsulated accessible SELV parts		N/A
2.7 (4.26.2)	Short-circuit test		N/A
2.7 (4.26.3)	Test chain according to Figure 29		N/A
2.7 (4.27)	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A
	After test, resistance < 0,05 Ω		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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

2.8 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
	Working voltage (V)	For LED module, maximum input voltage < 60Vdc	—
	Voltage form	Sinusoidal <input type="checkbox"/> Non-sinusoidal <input checked="" type="checkbox"/>	—
	PTI	< 600 <input checked="" type="checkbox"/> \geq 600 <input type="checkbox"/>	—
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II <input checked="" type="checkbox"/> Category III <input type="checkbox"/>	—
	Rated pulse voltage (kV)	--	—
	(1) Current-carrying parts of different polarity: cr (mm); cl (mm)	Approved LED driver	N/A
	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm)	Approved LED driver	N/A
	(3) Parts becoming live due to breakdown of basic insulation and metal parts: cr (mm); cl (mm)	--	N/A
	(4) Outer surface of cable where it is clamped and metal parts: cr (mm); cl (mm).....	--	N/A
	(6) Current-carrying parts and supporting surface: cr (mm); cl (mm)	Approved LED driver	N/A

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
	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
2.9 (7.2.2 + 7.2.3)	Earth continuity in joints etc.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the luminaire	(see Annex 3)	N/A

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..... :	Connection lead	P
2.11 (5.2.2)	Type of cable	H03VVH2-F	P
	Nominal cross-sectional area (mm ²)..... :	0,75mm ²	P
	Cables equal to IEC 60227 or IEC 60245		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		P

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Clause	Requirement + Test	Result - Remark	Verdict
2.11 (5.2.8)	Insulating bushings:		P
	- suitably fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- tubes or guards made of insulating material		P
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
	Labyrinth type anchorages		N/A
2.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	Type Y	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	Max. 0,9mm	P
	- no movement of conductors		P
	- no damage of cable or cord		P
2.11 (5.2.11)	External wiring passing into luminaire		P
2.11 (5.2.12)	Looping-in terminals		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.11 (5.2.13)	Wire ends not tinned		N/A
	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
2.11 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Appliance couplers of class II type		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	(see Annex 1)	P
	Through wiring		N/A
	- not delivered/ mounting instruction		N/A
	- factory assembled		N/A
	- socket outlet loaded (A)..... : --		N/A
	- temperatures : --		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		N/A
2.11 (5.3.1.4)	Conductors without insulation		N/A
2.11 (5.3.1.5)	SELV current-carrying parts		P
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

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Clause	Requirement + Test	Result - Remark	Verdict
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

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 and adjustable luminaires		N/A
	Basic insulated parts not accessible with Ø 50 mm probe from outside, within arm's reach, on wall-mounted luminaires	Not wall-mounted luminaires	N/A
	Lampholder 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:		N/A
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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)	Class III luminaires with exposed SELV 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
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)	Discharging of capacitors $\geq 0,5 \mu\text{F}$		P
	Portable plug connected luminaire with capacitor		N/A
	Other plug connected luminaire with capacitor		N/A
	Discharge device on or within capacitor		N/A
	Discharge device mounted separately		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 in normal use	—
	- test temperature (°C)	35°C	—
	- total duration (h)	240h	—
	- supply voltage: Un factor; calculated voltage (V):	LTH0643A-1*9W: 264V; 0,077A; 8,52W; 0,42PF; LTD0287-30W-Y: 264V; 0,123A; 29,83W; 0,92PF	—
	- lamp used	Integral 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

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Clause	Requirement + Test	Result - Remark	Verdict
	- marking legible		P
	- no cracks, deformation etc.		P
2.13 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
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..		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un..... :		—
	- calculated temperature of fixing point/exposed part (°C)		—
	Ball-pressure test:		N/A
	- part tested; temperature (°C)..... :		N/A
	- part tested; temperature (°C)..... :		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:		N/A
	- part tested; temperature (°C)..... :		N/A
	- part tested; temperature (°C)..... :		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 <input type="checkbox"/> No <input type="checkbox"/>	—
	- manual reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- auto reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- case of abnormal conditions		—
	- highest measured temperature of fixing point/exposed part (°C):..... :		—
	Ball-pressure test:		N/A
	- part tested; temperature (°C)..... :		N/A
	- part tested; temperature (°C)..... :		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

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Clause	Requirement + Test	Result - Remark	Verdict

2.14 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
2.14 (-)	If IP > IP 20 the order of the test specified in clause 2.13		—
2.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP	IP20	—
	- mounting position during test	As in normal use	—
	- fixing screws tightened; torque (Nm).....	--	—
	- tests according to clauses	9.2.0	—
	- 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 SELV parts or where it could become a hazard		N/A
	d) i) For luminaires without drain holes – no water entry		N/A
	d) ii) For luminaires with drain holes – no hazardous water entry		N/A
	e) no water in watertight luminaire		N/A
	f) no contact with live parts (IP 2X)	IP20	P
	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
2.14 (9.3)	Humidity test 48 h	25°C, 93%RH	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:		P
	- between current-carrying parts of different polarity	--	N/A
	- between current-carrying parts and mounting surface	100MΩ	P
	- between current-carrying parts and metal parts of the luminaire	100MΩ	P

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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.....	Approved LED driver	N/A
	- between live parts and mounting surface.....	Approved LED driver	N/A
	- between live parts and metal parts.....	Approved LED driver	N/A
	- between live parts of different polarity through action of a switch	--	N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts	--	N/A
	- Insulation bushings as described in Section 5 ..	--	N/A
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):		P
	SELV:		P
	- between current-carrying parts of different polarity	--	N/A
	- between current-carrying parts and mounting surface	500V	P
	- between current-carrying parts and metal parts of the luminaire	500V	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts	--	N/A
	- Insulation bushings as described in Section 5 ..	--	N/A
	Other than SELV:		P
	- between live parts of different polarity.....	Approved LED driver	N/A
	- between live parts and mounting surface.....	Approved LED driver	N/A
	- between live parts and metal parts.....	Approved LED driver	N/A
	- between live parts of different polarity through action of a switch	--	N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts	--	N/A
	- Insulation bushings as described in Section 5 ..	--	N/A
2.15 (10.3)	Touch current or protective conductor current (mA)	Max. 0,02mA	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:		P
	- part tested; temperature (°C)..... :	DC connector (KL 7.731.015): 125°C; 1,3 mm	P
	- part tested; temperature (°C)..... :	DC connector (L-200MM): 125°C; 1,2 mm	P
2.16 (13.3.1)	Needle flame test (10 s):		P
	- part tested..... :	DC connector (KL 7.731.015): No ignition	P
	- part tested..... :	DC connector (L-200MM): No ignition	P
2.16 (13.3.2)	Glow-wire test (650°C):		P
	- part tested..... :	Plastic cover on LED module, No ignition	P
	- part tested..... :	Lamp cover, Reflective paper, No ignition	P
2.16 (13.4.1)	Tracking test:		N/A
	- part tested..... :	--	N/A
	- part tested..... :	--	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1: components			P
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object/part No.	code	manufacturer/ trademark	type/mod el	technical data	standard	mark(s) of conformity
Input wire, output wire for LED driver	B	Zhongshan Henglan Boyi Electrical Appliance Factory	H03VVH 2-F	2 x 0,75mm ²	EN 50525-2-11	VDE 40036714
DC connector	B,C	Zhejiang KuaiLi Electronic Co., Ltd.	KL 7.731. 015	2A, 250V	IEC 60598-1 IEC 60598-2-2	Test with appliance
- output wire from driver to lamp	B	Zhongshan Henglan Boyi Electrical Appliance Factory	H05V-K	1 x 0,5mm ²	VDE 0281-5	VDE 40036731
DC connector (Alternative)	B,C	Shenzhen Sunxing Technology Co., Ltd.	L-200MM	2A, 250V; black or white	IEC 60598-1 IEC 60598-2-2	Test with appliance
- output wire from driver to lamp (Alternative)	D	Zhongshan Luoka Electric Co., Ltd.	H03VVH 2-F	2 x 0,5mm ²	EN 50525-2-11	VDE 40034861
For model: LTH0586A-1*9W-Y, LTH0586A-1*9W-F, LTH0590A-1*9W, LTH0607A-9W, LTD0253-5W, LTD0260-5W-Y, LTD0260-5W-F, LTD0260-9W-Y, LTD0260-9W-F, LPB0030-9W-Y, LPB0030-9W-F, LTD0278A-9W, LTH0653A-1*9W-Y, LTH0653A-1*9W-F, LDB0165A-1*9W, LTH0643A-1*9W, LTD0277A-9W, LTD0282A-9W						
LED Driver	B	Eaglerise Electric & Electronic (China) Co., Ltd. Beijiao Branch	EIP008C 0200LHS	Input: 100-240V, 50/60Hz; Output: 200mA, Max 48V; SELV ta/tc: 50/75°C	EN 61347-1 EN 61347-2-13	TUV R 50297083
For model: LTH0638A-5W-Y, LTH0638A-5W-F, LTH0642A-5W						
LED Driver	B	Eaglerise Electric & Electronic (China) Co., Ltd. Beijiao Branch	EIP008C 0500LHS	Input: 100-240V, 50/60Hz; Output: 500mA, Max 21V; SELV ta/tc: 50/75°C	EN 61347-1 EN 61347-2-13	TUV R 50297083
For model: LTD0289A-30W, LTH0586A-1*30W-Y, LTH0586A-1*30W-F, LTH0590A-1*30W-Y, LTH0590A-1*30W-F, LTH0600A-1*30W, LTD0278A-30W, LTD0277A-30W-Y, LTD0277A-30W-F, LTD0273-30W, LTD0251-30W, LTD0248-26W, LTH0650A-1*25W, LTD0279A-30W, LTD0282A-25W, LTH0656A-1*30W, LTD0280A-30W, LTD0281-30W, LTD0285-30W, LTD0287-30W-Y, LTD0287-30W-F						
LED Driver	B	Eaglerise Electric & Electronic (China) Co., Ltd. Beijiao Branch	EIP030C 0700L1	Input: 220-240V, 50/60Hz; Output: 700mA, Max 52V; SELV ta/tc: 50/85°C	EN 61347-1 EN 61347-2-13	TUV R 50304249

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

For model: LTD0253-5W, LTD0260-5W-Y, LTD0260-5W-F, LTD0260-9W-Y, LTD0260-9W-F, LPB0030-9W-Y, LPB0030-9W-F, LTD0251-30W, LTD0248-26W, LTD0281-30W, LTD0287-30W-Y, LTD0287-30W-F

LED chip	B,C	Everlight	SMD 2835	I _F : 60mA, V _F : 2,9-3,6V, 3000K-5000K	IEC 62471	Test with appliance
PCB of LED module	B,C	FOSHAN TIAN QI CIRCUIT BOARD CO LTD	TQM-2	130°C, V-0	--	UL E469500

For model: LTH0638A-5W-Y, LTH0638A-5W-F, LTH0642A-5W

LED module	B,C	CREE	COB CXA1304	I _F : 400-1000mA V _F : 9V, 3000K- 5000K	IEC 62471	Test with appliance
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For model: LTH0586A-1*9W-Y, LTH0586A-1*9W-F, LTH0590A-1*9W, LTH0607A-9W, LTD0278A-9W, LTH0653A-1*9W-Y, LTH0653A-1*9W-F, LDB0165A-1*9W, LTH0643A-1*9W, LTD0277A-9W, LTD0282A-9W

LED module	B,C	CREE	COB CXA1507	I _F : 200-375mA V _F : 37V, 3000K- 5000K	IEC 62471	Test with appliance
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For model: LTD0277A-30W-Y, LTD0277A-30W-F, LTD0273-30W

LED module	B,C	CREE	COB CXA1520	I _F : 500-900mA V _F : 37V, 3000K- 5000K	IEC 62471	Test with appliance
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For model: LTH0650A-1*25W, LTD0282A-25W

LED module	B,C	CREE	COB CXA1816	I _F : 450-900mA V _F : 37V, 3000K- 5000K	IEC 62471	Test with appliance
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For model: LTH0656A-1*30W

LED module	B,C	CREE	COB CXA1820	I _F : 550-1050mA V _F : 37V, 3000K- 5000K	IEC 62471	Test with appliance
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For model: LTD0289A-30W, LTH0586A-1*30W-Y, LTH0586A-1*30W-F, LTH0590A-1*30W-Y, LTH0590A-1*30W-F, LTH0600A-1*30W, LTD0278A-30W, LTD0279A-30W, LTD0280A-30W, LTD0285-30W

LED module	B,C	CREE	COB CXA2520	I _F : 550-1250mA V _F : 37V, 3000K- 5000K	IEC 62471	Test with appliance
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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: temperature measurements, thermal tests of Section 12	P
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1.12(12.4)	ANNEX 2-1: temperature measurements, thermal tests of Section 12		P				
	Type reference.....:	LTH0643A-1*9W	—				
	Lamp used.....:	LED	—				
	Lamp control gear used.....:	EIP008C0200LHS	—				
	Mounting position of luminaire.....:	Recess on wooden box	—				
	Supply wattage (W).....:	--	—				
	Supply current (A).....:	--	—				
	Calculated power factor.....:	--	—				
	Table: measured temperatures corrected for $t_a = 25\text{ }^\circ\text{C}$:		N/A				
	- abnormal operating mode.....:	--	—				
	- test 1: rated voltage.....:	--	—				
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....:	At 1,06Xrated voltage U= 254,4V, I= 0,046 A, P= 9,56W	—				
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage...:	--	—				
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage.....:	--	—				
	Through wiring or lopping-in wiring loaded by a current of A during the tests.....:	--	—				
temperature ($^\circ\text{C}$) of part		clause 12.4 - normal		clause 12.5 - abnormal			
		test 1	test 2	test 3	limit	test 4	limit
	Power cord which can touch the metal enclosure of LED luminaire	-	31,1	-	90	-	-
	Tc of LED driver	-	47,8	-	75	-	-
	Output wire of LED driver which clamped by cord anchorage	-	40,0	-	75	-	-
	Internal wire near LED module	-	52,0	-	90	-	-
	Metal enclosure	-	39,7	-	60	-	-
	PCB of LED module	-	56,7	-	Ref.	-	-
	Lamp cover, inside	-	41,5	-	Ref.	-	-
	DC connector (KL 7.731.015)	-	40,2	-	Ref	-	-
	Mounting surface	-	39,3	-	90	-	-
	Lighting object (10cm)	-	29,0	-	90	-	-

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

1.12(12.4)	ANNEX 2-2: temperature measurements, thermal tests of Section 12		P			
	Type reference.....:	LTH0656A-1*30W	—			
	Lamp used.....:	LED	—			
	Lamp control gear used.....:	EIP030C0700L1	—			
	Mounting position of luminaire.....:	Recess on wooden box	—			
	Supply wattage (W).....:	--	—			
	Supply current (A).....:	--	—			
	Calculated power factor.....:	--	—			
	Table: measured temperatures corrected for $t_a = 25^\circ\text{C}$:		N/A			
	- abnormal operating mode.....:	--	—			
	- test 1: rated voltage.....:	--	—			
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....:	At 1,06Xrated voltage U= 254,4V, I= 0,121A, P= 29,45W	—			
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage...:	--	—			
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage.....:	--	—			
	Through wiring or lopping-in wiring loaded by a current of A during the tests.....:	--	—			
temperature ($^\circ\text{C}$) of part	clause 12.4 - normal				clause 12.5 - abnormal	
	test 1	test 2	test 3	limit	test 4	limit
Power cord which can touch the metal enclosure of LED luminaire	-	32,5	-	90	-	-
Tc of LED driver	-	51,1	-	85	-	-
Output wire of LED driver which clamped by cord anchorage	-	43,7	-	75	-	-
Internal wire near LED module	-	58,9	-	90	-	-
Metal enclosure	-	51,3	-	60	-	-
PCB of LED module	-	66,8	-	Ref.	-	-
Lamp cover, inside	-	57,0	-	Ref.	-	-
DC connector (L-200MM)	-	52,7	-	Ref	-	-
Mounting surface	-	55,1	-	90	-	-
Lighting object (10cm)	-	29,0	-	90	-	-

IEC 60598-2-2						
Clause	Requirement + Test				Result - Remark	Verdict
1.12(12.4)	ANNEX 2-3: temperature measurements, thermal tests of Section 12					P
	Type reference.....:	LTD0287-30W-Y			---	
	Lamp used.....:	LED			---	
	Lamp control gear used.....:	EIP030C0700L1			---	
	Mounting position of luminaire.....:	Recess on wooden box			---	
	Supply wattage (W).....:	--			---	
	Supply current (A).....:	--			---	
	Calculated power factor.....:	--			---	
	Table: measured temperatures corrected for $t_a = 25\text{ }^\circ\text{C}$:					N/A
	- abnormal operating mode.....:	--			---	
	- test 1: rated voltage.....:	--			---	
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....:	At 1,06Xrated voltage U= 254,4V, I= 0,129A, P=29,99W			---	
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage....:	--			---	
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage.....:	--			---	
	Through wiring or lopping-in wiring loaded by a current of A during the tests.....:	--			---	
temperature ($^\circ\text{C}$) of part		clause 12.4 - normal			clause 12.5 - abnormal	
		test 1	test 2	test 3	limits	test 4
						limit
	Power cord which can touch the metal enclosure of LED luminaire	-	38,8	-	90	-
	Tc of LED driver	-	45,6	-	85	-
	Output wire of LED driver which clamped by cord anchorage	-	41,6	-	75	-
	Internal wire near LED module	-	55,5	-	90	-
	Metal enclosure	-	51,5	-	60	-
	PCB of LED module	-	61,0	-	Ref.	-
	Lamp cover, inside	-	54,1	-	Ref.	-
	DC connector (L-200MM)	-	39,2	-	Ref	-
	Mounting surface	-	45,0	-	90	-
	Lighting object (10cm)	-	34,9	-	90	-

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

	ANNEX 3: screw terminals (part of the luminaire)		N/A
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(14)	SCREW TERMINALS		N/A
(14.2)	Type of terminal		—
	Rated current (A)		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm ²)		N/A
(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) .		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

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

	ANNEX 4: screwless terminals (part of the luminaire)		N/A
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(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
(15.5.1)	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
(15.5.2)	Permanent connections: pull-off test (20 N)		N/A
(15.6)	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
(15.7)	Terminals external wiring		N/A
	Terminal size and rating		N/A
(15.8.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N)		N/A

IEC 60598-2-2										
Clause	Requirement + Test									Verdict
	Pull test pin or tab terminals (4 samples); pull (N)									N/A
(15.9)	Contact resistance test									N/A
	Voltage drop (mV) after 1 h									N/A
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop of two inseparable joints									N/A
	Voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV)									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV)									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV)									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV)									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										

IEC60598_2_2C – 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 Two – Recessed luminaires			
Differences according: EN 60598-2-2:2012 used in conjunction with EN 60598-1:2008 + A11:2009			
Annex Form No: EU_GD_IEC60598_2_2C			
Annex Form Originator: IMQ S.p.A.			
Master Annex Form.....: 2013-02			
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ANNEX 5:	CENELEC COMMON MODIFICATIONS (EN)	P
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2.5 (3)	MARKING	P
2.5 (3.3.101)	Adequate warning on the package	P

2.6 (4)	CONSTRUCTION	P
2.6 (4.11.6)	Electro-mechanical contact systems	P

2.10 (5)	EXTERNAL AND INTERNAL WIRING	P
2.10 (5.2.1)	Connecting leads	P
	- without a means for connection to the supply	N/A
	- terminal block specified	N/A
	- relevant information provided	P
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1	P
2.10 (5.2.2)	Cables equal to HD21 S2 or HD22 S2	P

2.12 (12)	ENDURANCE TEST AND THERMAL TEST	P
2.12 (12.4.2c)	Thermal test (normal operation)	P

ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)	N/A
(3.3)	DK: power supply cord with label	N/A
	IT: warning label on Class 0 luminaire	N/A

IEC60598_2_2C – ATTACHMENT 1			
Clause	Requirement + Test	Result - Remark	Verdict

(4.5.1)	DK: socket-outlets		N/A
(5.2.1)	CY, DK, FI, SE, GB: type of plug		N/A

ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)	N/A
(4 & 5)	FR: Shuttered socket-outlets 10/16A	N/A
(13.3)	FR: Glow-wire test 850°C alt. 750°C for luminaires in premises open to public or 960°C for luminaires in emergency exits	N/A
(13.3)	GB: Requirements according to United Kingdom Building Regulation	N/A

IEC60598_2_2C – ATTACHMENT 2			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 6	LED modules for general lighting – Safety specifications IEC 62031: 2008		P
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 $\geq 1 \text{ M}\Omega$	100 MΩ	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_2C – ATTACHMENT 2				
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			
LTH0643A-1*9W	test voltage: 37,8V		Setting: wattage: 10,96W current: 0,29A	
	Thermocouple point	channel	Measured temperature	Limited
	LED	1	71,6	Ref.
	PCB of LED module	2	70,4	Ref.
	Observation: 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			
LTH0638A-5W-F	test voltage: 10,0V		Setting: wattage:6,80W current:0,68A	
	Thermocouple point	channel	Measured temperature	Limited
	LED	1	62,7	Ref.
	PCB of LED module	2	61,9	Ref.
	Observation: 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			
LTH0586A-1*30W- Y	test voltage: 37,3V		Setting: wattage: 38,42W current: 1,03A	
	Thermocouple point	channel	Measured temperature	Limited
	LED	1	82,0	Ref.
	PCB of LED module	2	81,6	Ref.
	Observation: 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			
LTH0656A-1*30W	test voltage: 39,4V		Setting: wattage: 39,40W current: 1,00A	

IEC60598_2_2C – ATTACHMENT 2			
Clause	Requirement + Test	Result - Remark	Verdict

	Thermocouple point	channel	Measured temperature	Limited
	LED	1	90,1	Ref.
	PCB of LED module	2	87,4	Ref.
Observation: 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			
LTD0287-30W-Y	test voltage: 39,6V	Setting: wattage: 41,98W current: 1,06A		
	Thermocouple point	channel	Measured temperature	Limited
	LED	1	88,5	Ref.
	PCB of LED module	2	82,0	Ref.
	Observation: no fire, smoke or flammable gas is produced			

IEC60598_2_2C – ATTACHMENT 3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 7	Photobiological Safety Of Lamps And Lamp Systems IEC 62471:2006		P
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Conditions

1. Tests performed on LTH0643A-1*9W (5000K), LTH0586A-1*30W-Y (5000K). LTD0287-30W-Y (5000K) supplied by 240VAC.

2. Ambient temperature: $23 \pm 2^\circ\text{C}$, Humidity: $56 \pm 10\%$.

3. Measurement distance:

LTH0643A-1*9W (5000K): 0,66m

LTH0586A-1*30W-Y (5000K): 5,57m

LTD0287-30W-Y (5000K): 1,55m

All models: at a distance of the point of 500lx (5000K)

4. Angular subtense of whole lamp:

LTH0643A-1*9W: 92,04mrad (5000K)

LTH0586A-1*30W-Y: 94,48mrad (5000K)

LTD0287-30W-Y: 93,53mrad (5000K)

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 $10 \text{ cd} \cdot \text{m}^{-2}$) and do not pose a near-infrared retinal hazard (LIR) within 1000 s are in the Exempt Group.

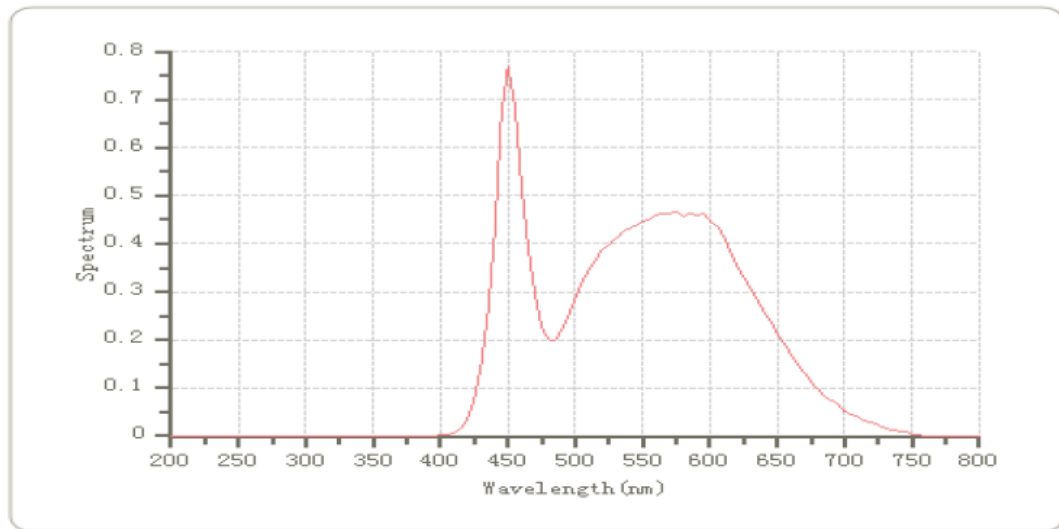
See the test data.

IEC60598_2_2C – ATTACHMENT 3			
Clause	Requirement + Test	Result - Remark	Verdict

Model LTH0643A-1*9W (5000K) is in Exempt group.

Spectral Distribution (200nm~800nm)

Es, Euva



Test data:

Optical hazard	Test result	Used hazard exposure limit		Ref.
1. E_s	6,058E-08 W/ m ²	0,001 W/m ²	200-800 nm	P
2. E_{UVA}	1,244E-03 W/ m ²	10 W/m ²	200-800 nm	P
3. L_B	4,658E+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	1,543E+03 W/ m ² sr	3,042E+05 W/m ² sr	380-1400 nm	P
6. L_{IR}	2,433E-01 W/ m ² sr	6,354E+04 W/m ² sr	780-1400 nm	P
7. E_{IR}	5,477E-03 W/ m ²	100 W/m ²	780-3000 nm	P
8. E_H	1,626E+00 W/ m ²	3556,56 W/m ²	380-3000 nm	P

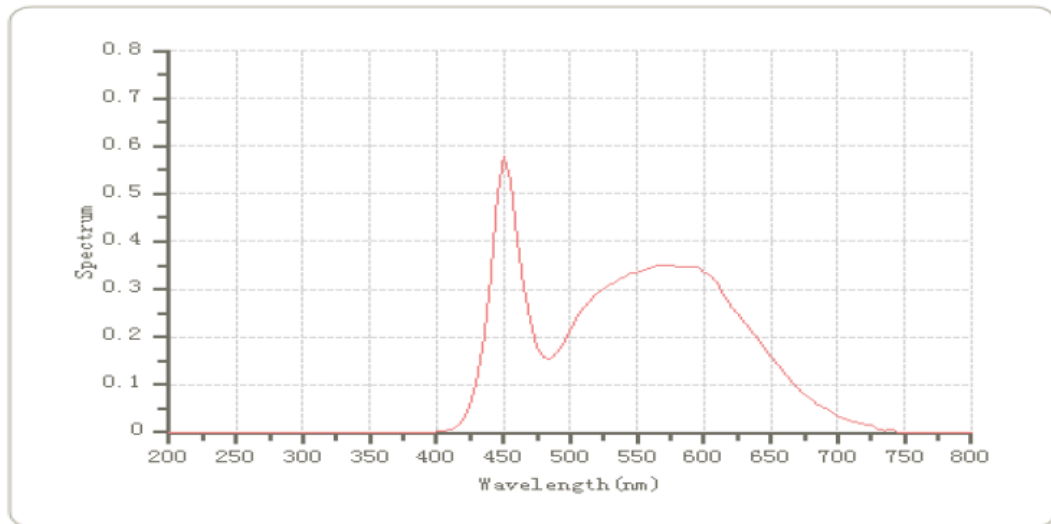
IEC60598_2_2C – ATTACHMENT 3

Clause	Requirement + Test	Result - Remark	Verdict
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Model LTH0586A-1*30W-Y (5000K) is in Exempt group.

Spectral Distribution (200nm~800nm)

Es, Euva



Test data:

Optical hazard	Test result	Used hazard exposure limit		Ref.
1. E_s	5,316E-08 W/ m ²	0,001 W/m ²	200-800 nm	P
2. E_{UVA}	1,049E-03 W/ m ²	10 W/m ²	200-800 nm	P
3. L_B	4,543E+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	1,376E+03 W/ m ² sr	2,963E+05 W/m ² sr	380-1400 nm	P
6. L_{IR}	4,486E-01 W/ m ² sr	6,349E+04 W/m ² sr	780-1400 nm	P
7. E_{IR}	4,573E-03 W/ m ²	100 W/m ²	780-3000 nm	P
8. E_H	1,582E+00 W/ m ²	3556,56 W/m ²	380-3000 nm	P

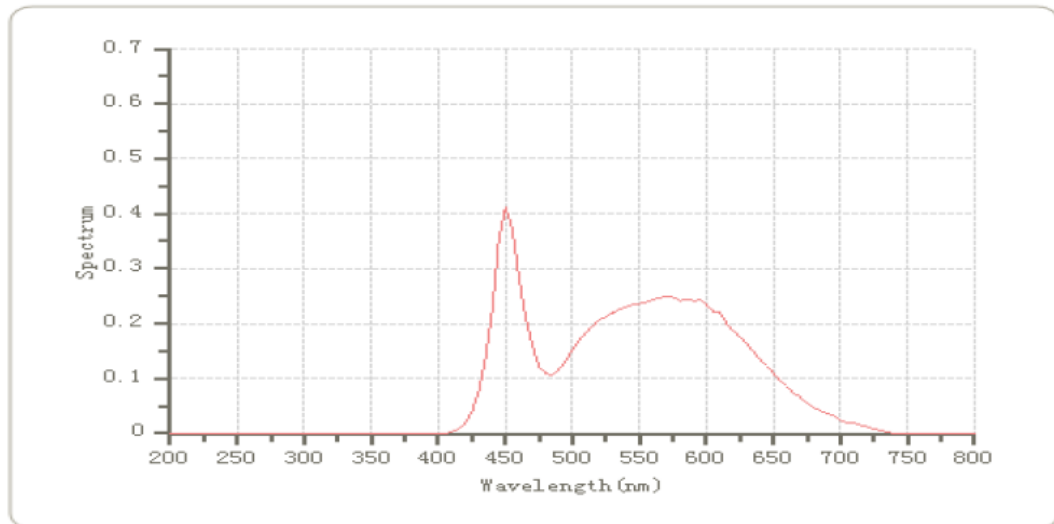
IEC60598_2_2C – ATTACHMENT 3

Clause	Requirement + Test	Result - Remark	Verdict
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Model LTD0287-30W-Y (5000K) is in Exempt group.

Spectral Distribution (200nm~800nm)

Es, Euva



Test data:

Optical hazard	Test result	Used hazard exposure limit		Ref.
1. E_s	5,758E-08 W/ m ²	0,001 W/m ²	200-800 nm	P
2. E_{UVA}	1,284E-03 W/ m ²	10 W/m ²	200-800 nm	P
3. L_B	4,552E+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	1,483E+03 W/ m ² sr	2,994E+05 W/m ² sr	380-1400 nm	P
6. L_{IR}	9,844E-02 W/ m ² sr	6,416E+04 W/m ² sr	780-1400 nm	P
7. E_{IR}	3,637E-03 W/ m ²	100 W/m ²	780-3000 nm	P
8. E_H	1,574E+00 W/ m ²	3556,56 W/m ²	380-3000 nm	P

---End of Report ---