CENTRE OF TESTING SERVICE INTERNATIONAL

OPERATE ACCORDING TO ISO/IEC 17025

LVD TEST REPORT

TEST REPORT NUMBER : CGZ3150304-00458-L

CTS (Guangzhou) Testing Service Technology Co., Ltd.
GZ test site: A101, No.65, Zhuji Road, Tianhe District,
Guangzhou, Guangdong, China

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1 General Information

1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.
The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.
Furthermore, there is no guarantee that a test sample which has Passed all the relevant tests conforms to a specification (only telecommunication products).
Neither is there any guarantee that such a test sample will interwork with other genuinely open systems.
The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that its performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.
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1.2 Tester

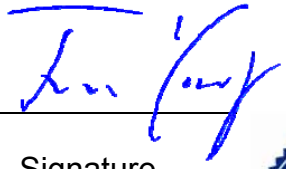
Tested by:

25 March 2015	**Kate Zhang**	
Date	Name	Signature

Reviewed by:

25 March 2015	**Rock Weng**	
Date	Name	Signature

Approved by:

25 March 2015	**Jun Yang**	
Date	Name	Signature



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1.3 Testing laboratory

1.3.1 Location

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Telephone: +86-20-85543113
Telefax : +86-20-38780406

1.3.2 Test location, where different from CTS:

Name: ./.
Street: ./.
Town: ./.
Country: ./.
Telephone: ./.
Fax: ./.
Teletex: ./.

1.4 Client details

1.4.1 Details of applicant

Name : ZHONGSHAN PHOTON LIGHTING FACTORY
Street : NO.37 DONGCHENG ROAD,
Town : DONGSHENG TOWN, ZHONGSHAN CITY, GUANGDONG PRO.,
Country : CHINA
Telephone : +86- 760-22828268
Fax : +86- 760-22828262
Teletex : ./.

Contact : Sabrina Suen
Telephone : ./.

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1.4.2 Details of manufacturer

Name	: ZHONGSHAN PHOTON LIGHTING FACTORY
Street	: NO.37 DONGCHENG ROAD,
Town	: DONGSHENG TOWN, ZHONGSHAN CITY, GUANGDONG PRO.,
Country	: CHINA
Telephone	: +86- 760-22828268
Fax	: +86- 760-22828262
Teletex	: ./.
Contact	: Sabrina Suen
Telephone	: ./.

1.4.3 Details of factory

Name	: ZHONGSHAN PHOTON LIGHTING FACTORY
Street	: NO.37 DONGCHENG ROAD,
Town	: DONGSHENG TOWN, ZHONGSHAN CITY, GUANGDONG PRO.,
Country	: CHINA

1.4.4 Dates of application

Date of receipt of application	: 04 March 2015
Date of receipt of test item	: 04 March 2015
Date of test	: 04 March - 25 March 2015

1.5 Test item Description

1.5.1 Description of test item

Type of product	: led ceiling light
Model/Type reference	: PT-LED 436/9
Serial number	: ---

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1.5.2 Test item particulars

Test item ..... :	led ceiling light
Trade Mark ..... :	---
Protection Class..... :	☐ Class I; ☒ Class II; ☐ Class III.
Rated Voltage(Range) ..... :	220-240V~
Rated Frequency ..... :	☒ 50Hz; ☐ 60Hz; ☐ 50/60Hz; ☐ DC; ☐ Other:
Rated Wattage ..... :	9 x 4W
IP Number..... :	☒ IP20; ☐ IP24; ☐ IP65; ☐ Other:
Supply Connection..... :	☐ Type X; ☐ Type Y; ☐ Type Z; ☐ Pins; ☐ Appliance inlet; ☒ Terminals; ☐ connecting leads (tails); ☐ Adaptors; ☐ connectors; ☐ Other:
Lamp(s) type..... :	☐ Tungsten filament lamps；☐ Tungsten halogen lamps； ☐ Discharge lamps；☐ Metal halide lamps； ☐ High-pressure sodium vapour lamps； ☐ Single-capped fluorescent lamps ； ☐ Double-capped fluorescent lamps； ☐ Self-ballasted lamps；☒ Other: LED Lamp
Luminaire Mobility..... :	☒ Fixed Luminaires; ☐ Portable Luminaries; ☐ Recessed Luminaire; ☐ Track-mounted Luminaires; ☐ Semi-luminaires; ☐ Other:
Mass of Equipment ..... :	4,7 kg.
Instructions language..... :	☒ English; ☐ French; ☐ Other:
Mounting condition..... :	☒ Luminaires suitable for direct mounting on normally flammable surfaces; ☐  ; ☐  ; ☐ 
Ambient Temperature ..... :	t_a = 25 ˚C

(all informations was provided by the applicant or detected at the sample)
Please see also attachment

1.6 Test standards

EN 60598-1: 2008 + A11: 2009
Luminaires — Part 1: General requirements and tests
(IEC 60598-1: 2008 (Modified))

EN 60598-2-1: 1989
Luminaires-Part 2: Particular requirements-
section 1:Fixed general purpose luminaries
(IEC 60598-2-1: 1979 + A1: 1987)

EN 62031: 2008
LED modules for general lighting - Safety specifications
(IEC 60231: 2008)

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2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed. ☒

2.2 Test environment

Temperature:	18 ... 25 °C
Relative humidity content:	20 ... 75 %
Air pressure:	86 ... 103 kPa
Details of power supply:	220 ... 280 V, AC
Other parameters:	---

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2.3 Conformity verification - Summary of inspection

Clause	Summary of inspection	Test result		
		N.A.	Pass	Fail
3	Marking	☐	☒	☐
4	Construction	☐	☒	☐
5	External and internal wiring	☐	☒	☐
7	Provisions for earthing	☒	☐	☐
8	Protection against electric shock	☐	☒	☐
9	Resistance to dust and moisture	☐	☒	☐
10	Insulation resistance and electric strength	☐	☒	☐
11	Creepage distances and clearances	☐	☒	☐
12	Endurance tests and thermal tests	☐	☒	☐
13	Resistance to heat, fire and tracking	☐	☒	☐
14	Terminals	☒	☐	☐
15	Screwless terminals and electrical connections	☒	☐	☐
Annexes		☐	☒	☐

Test case verdicts
N.A.: Test case does not apply to the test object
Pass: Test item does meet the requirement
Fail: Test item does not meet the requirement

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3 Test results basic standard(s)

3.1 Particulars: test item vs. Test requirements

IEC 60598-2-1 and/or EN 60598-2-1 Part 2: Particular requirements Section one –Fixed general purpose luminaries EN 62031 LED modules for general lighting - Safety specifications	
Possible test case verdicts:	
- test case does not apply to the test object	: N(N/A)
- test object does meet the requirement	: P(Pass)
- test object does not meet the requirement	: F(Fail)
Test specification:	
Standard	: ☐ IEC 60598-2-1: 1979 + A1:1987 used in conjunction with IEC 60598-1: 2008 ☒ EN 60598-2-1: 1989 used in conjunction with EN 60598-1: 2008 + A11: 2009 ☒ EN 62031: 2008
Test procedure	: LVD DOC approval.
Non-standard test method	: N/A
Test Report Form No	: IEC60598_2_1E
Test Report Form(s) Originator	: Centre of Testing Service
Master TRF	: Dated Nov 2009
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General remarks:

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

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

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General product information:

The test report covers the models : PT-LED 436/9, PT-LED 417/5 , PT-LED 437/4 , PT-LED 444/4, PT-LED 444/5.

All models have the same electrical construction, shape and lamp type. The difference is the quantity of lamps.

All test on PT-LED 436/9.

Copy of marking plate:

led ceiling light
Model No.: PT-LED 436/9
220-240V~ 50Hz
LED 9×4W



ZHONGSHAN PHOTON LIGHTING FACTORY

RISK GROUP 1
Caution: UV emitted from this product.
Minimise exposure to eyes or skin.
Invisible radiation emitted from this product.
IR emitted from the product.

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3.2 General requirements and results

IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
1.2 (0)	**GENERAL TEST REQUIREMENTS**		**P**
1.2 (0.1)	Information for luminaire design considered	Standard Yes ☒ No ☐	—
1.2 (0.3)	More sections applicable .....:	Yes ☐ No ☒	—
1.4 (2)	**CLASSIFICATION**		**P**
1.4 (2.2)	Type of protection .....:	Class II	—
1.4 (2.3)	Degree of protection.....:	IP20	—
1.4 (2.4)	Luminaires suitable for direct mounting on normally flammable surfaces .....:	Yes ☒ No ☐	—
	Luminaires not suitable for direct mounting on normally flammable surfaces .....:	Yes ☐ No ☒	—
1.4 (2.5)	Luminaire for normal use .....:	Yes ☒ No ☐	—
	Luminaire for rough service .....:	Yes ☐ No ☒	—
1.5 (3)	**MARKING**		**P**
1.5 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text	Text=2mm, symbol=5mm	P
1.5 (3.3)	Additional information		P
	Language of instructions	English	P
1.5 (3.3.1)	Combination luminaires		N
1.5 (3.3.2)	Nominal frequency in Hz	50Hz	P
1.5 (3.3.3)	Operating temperature		N
1.5 (3.3.4)	Symbol or warning notice		N
1.5 (3.3.5)	Wiring diagram		N
1.5 (3.3.6)	Special conditions		N
1.5 (3.3.7)	Metal halide lamp luminaire – warning		N
1.5 (3.3.8)	Limitation for semi-luminaires		N
1.5 (3.3.9)	Power factor and supply current		N
1.5 (3.3.10)	Suitability for use indoors		P
1.5 (3.3.11)	Luminaires with remote control		N
1.5 (3.3.12)	Clip-mounted luminaire – warning		N

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
1.5 (3.3.13)	Specifications of protective shields		N
1.5 (3.3.14)	Symbol for nature of supply	~	P
1.5 (3.3.15)	Rated current of socket outlet		N
1.5 (3.3.16)	Rough service luminaire		N
1.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		N
1.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N
1.5 (3.3.19)	For luminaires which generate a protective conductor current greater than 10 mA and intended for permanent connection		N
1.5 (3.3.20)	Wall mounted and adjustable luminaires not intended to be mounted within arms reach		N
1.5 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
1.6 (4)	**CONSTRUCTION**		**P**
1.6 (4.2)	Components replaceable without difficulty		P
1.6 (4.3)	Wireways smooth and free from sharp edges		P
1.6 (4.4)	Lampholders		N
1.6 (4.4.1)	Integral lampholder		N
1.6 (4.4.2)	Wiring connection		N
1.6 (4.4.3)	Lampholder for end-to-end mounting		N
1.6 (4.4.4)	Positioning		N
	- pressure test (N) .....:		N
	- bending test (Nm) .....:		N
1.6 (4.4.5)	Peak pulse voltage		N
1.6 (4.4.6)	Centre contact		N
1.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N
1.6 (4.4.8)	Lamp connectors	LED lamp	N
1.6 (4.4.9)	Caps and bases correctly used		N
1.6 (4.5)	Starter holders		N
	Starter holder in luminaires other than class II	No such parts	N
	Starter holder class II construction		N

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
1.6 (4.6)	Terminal blocks		N
	Tails		N
	Unsecured blocks		N
1.6 (4.7)	Terminals and supply connections		P
1.6 (4.7.1)	Contact to metal parts		P
1.6 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		N
1.6 (4.7.3)	Terminals for supply conductors		P
1.6 (4.7.3.1)	Welded connections:		N
	- stranded or solid conductor	No such parts	N
	- spot welding		N
	- welding between wires		N
	- Type Z attachment		N
	- mechanical test according to 15.8.2		N
	- electrical test according to 15.9		N
	- heat test according to 15.9.2.3 and 15.9.2.4		N
1.6 (4.7.4)	Terminals other than supply connection		P
1.6 (4.7.5)	Heat-resistant wiring/sleeves		N
1.6 (4.7.6)	Multi-pole plug		N
	- test at 30 N		N
1.6 (4.8)	Switches:		N
	- adequate rating		N
	- adequate fixing		N
	- polarized supply		N
1.6 (4.9)	Insulating lining and sleeves		P
1.6 (4.9.1)	Retainment		P
	Method of fixing.....:	Reliably retained in position	P
1.6 (4.9.2)	Insulated linings and sleeves		N
	a) & c) Insulation resistance and electric strength		N
	b) Ageing test. Temperature (°C).....:		N
1.6 (4.10)	Insulation of Class II luminaires		P
1.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		P
	Safe installation fixed luminaires		P
	Capacitors and switches		N

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
	Interference suppression capacitors according to IEC 60384-14		N
1.6 (4.10.2)	Assembly gaps:		P
	- not coincidental		P
	- no straight access with test probe		P
1.6 (4.10.3)	Retainment of insulation:		P
	- fixed		P
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		P
	- lining in lampholder		N
1.6 (4.11)	Electrical connections		P
1.6 (4.11.1)	Contact pressure		P
1.6 (4.11.2)	Screws:		N
	- self-tapping screws		N
	- thread-cutting screws		N
	- at least two self-tapping screws		N
1.6 (4.11.3)	Screw locking:		N
	- spring washer		N
	- rivets		N
1.6 (4.11.4)	Material of current-carrying parts		P
1.6 (4.11.5)	No contact to wood		P
1.6 (4.11.6)	Electro-mechanical contact systems		N
1.6 (4.12)	Mechanical connections and glands		P
1.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N
	Torque test: torque (Nm); part .....:	Fixing screws for mounting; 0,8Nm	P
	Torque test: torque (Nm); part .....:		N
	Torque test: torque (Nm); part .....:		N
1.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N
1.6 (4.12.4)	Locked connections:		N
	- fixed arms; torque (Nm) .....:		N
	- lampholder; torque (Nm).....:		N
	- push-button switches; torque 0,8 Nm .....:		N
1.6 (4.12.5)	Screwed glands; force (N) .....:		N
1.6 (4.13)	Mechanical strength		P

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
1.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm) .....:		N
	- other parts; energy (Nm).....:	Body, 0,35Nm	P
	1) live parts		P
	2) linings		N
	3) protection		P
	4) covers		P
1.6 (4.13.3)	Straight test finger		P
1.6 (4.13.4)	Rough service luminaires		N
	- IP54 or higher		N
	a) fixed		N
	b) hand-held		N
	c) delivered with a stand		N
	d) for temporary installations and suitable for mounting on a stand		N
1.6 (4.13.6)	Tumbling barrel		N
1.6 (4.14)	Suspensions and adjusting devices		P
1.6 (4.14.1)	Mechanical load:		P
(-)	A) Four times the weight	4 x 4,7kg=18,8kg	P
	B) torque 2,5 Nm		P
	C) bracket arm; bending moment (Nm) .....:		N
	D) load track-mounted luminaires		N
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) .....:		N
	metal rod. diameter (mm) .....:		N
1.6 (4.14.2)	Load to flexible cable		N
	Mass (kg) .....:		N
	Stress in conductors (N/mm²) .....:		N
	Mass (kg) of semi-luminaire .....:		N
	Bending moment (Nm) of semi-luminaire .....:		N
1.6 (4.14.3. a)	Adjusting devices:		N
	- flexing test; number of cycles .....:		N
	- strands broken		N
	- electric strength test afterwards		N

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
1.6 (4.14.3 b)	Luminaires with a means of adjustment intended to be installed within arms reach, shall allow the operation of its intended function without impairing the stability of the luminaire or causing deformation of any part of the construction, nor cause injury due to temperatures above those specified in Table 12.1.		N
1.6 (4.14.3 c)	For luminaires intended to be mounted within arms reach, the space surrounding any means of adjustment, except the light beam aperture, up to 5 cm away from the means of adjustment in any direction, shall comply with the temperature limits for the means of adjustment, as specified in Table 12.1.		N
1.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N
1.6 (4.14.5)	Guide pulleys		N
1.6 (4.14.6)	Strain on socket-outlets		N
1.6 (4.15)	Flammable materials:		P
	- glow-wire test 650 °C		N
	- spacing ≥ 30 mm		N
	- screen withstanding test of 13.3.1		N
	- screen dimensions		N
	- no fiercely burning material		P
	- thermal protection		N
	- electronic circuits exempted		N
1.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N
	a) construction		N
	b) temperature sensing control		N
	c) surface temperature		N
1.6 (4.16)	Luminaires for mounting on normally flammable surfaces		P
	No lamp control gear	(compliance with Section 12)	N
1.6 (4.16.1)	Lamp control gear spacing:		N
	- spacing 35 mm		N
	- spacing 10 mm		N
1.6 (4.16.2)	Thermal protection:		N
	- in lamp control gear		N
	- external		N
	- fixed position		N

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
	- temperature marked lamp control gear		N
1.6 (4.16.3)	be so designed that it satisfies the test of 12.6	(see 12.6)	N
1.6 (4.17)	Drain holes		N
	Clearance at least 5 mm		N
1.6 (4.18)	Resistance to corrosion:		N
1.6 (4.18.1)	- rust-resistance		N
1.6 (4.18.2)	- season cracking in copper		N
1.6 (4.18.3)	- corrosion of aluminium		N
1.6 (4.19)	Ignitors compatible with ballast		N
1.6 (4.20)	Rough service vibration		N
1.6 (4.21)	Protective shield:		N
1.6 (4.21.1)	Shield fitted		N
1.6 (4.21.2)	Particles from a shattering lamp not impair safety		N
1.6 (4.21.3)	No direct path		N
1.6 (4.21.4)	Impact test on shield		N
	Glow-wire test on lamp compartment		N
1.6 (4.22)	Attachments to lamps		N
1.6 (4.23)	Semi-luminaires comply Class II		N
1.6 (4.24)	UV radiation, metal halide lamps		N
1.6 (4.25)	No sharp point or edges		P
1.6 (4.26)	Short-circuit protection:		N
1.6 (4.26.1)	Uninsulated accessible SELV parts		N
1.6 (4.26.2)	Short-circuit test		N
1.6 (4.26.3)	Test chain according to Figure 29		N
1.6 (4.27)	Terminal blocks with integrated screwless earthing contacts		N

1.7 (11)	**CREEPAGE DISTANCES AND CLEARANCES**		**P**
	Working voltage (V).....:	240V~	—
	Voltage form	Sinusoidal ☒ Non-sinusoidal ☐	—
	PTI	< 600 ☒ ≥ 600 ☐	—
	Rated pulse voltage (kV).....:	---	—
	(1) Current-carrying parts of different polarity: cr (mm); cl (mm).....:	Cr>2,5mm,Cl>1,5mm (limit:Cr/Cl:2,5/1,5mm)	P

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm).....:	Cr>5mm,Cl>3mm (limit:Cr/Cl:5/3mm)	P
	(3) Parts becoming live due to breakdown of basic insulation and metal parts: cr (mm); cl (mm).....:		N
	(4) Outer surface of cable where it is clamped and metal parts: cr (mm); cl (mm).....:		N
	(5) Not used		—
	(6) Current-carrying parts and supporting surface: cr (mm); cl (mm).....:	Cr>5mm,Cl>3mm (limit:Cr/Cl:5/3mm)	P
1.8 (7)	**PROVISION FOR EARTHING**		**N**
1.8 (7.2.1 + 7.2.3)	Accessible metal parts	Class II luminaire	N
	Metal parts in contact with supporting surface		N
	Resistance < 0,5 Ω		N
	Two self-tapping screws used		N
	Thread-forming screws		N
	Thread-forming screw used in a grove		N
	Earth makes contact first		N
1.8 (7.2.2 + 7.2.3)	Earth continuity in joints etc.		N
1.8 (7.2.4)	Locking of clamping means		N
	Compliance with 4.7.3		N
1.8 (7.2.5)	Earth terminal integral part of connector socket		N
1.8 (7.2.6)	Earth terminal adjacent to mains terminals		N
1.8 (7.2.7)	Electrolytic corrosion of the earth terminal		N
1.8 (7.2.8)	Material of earth terminal		N
	Contact surface bare metal		N
1.8 (7.2.10)	Class II luminaire for looping-in		N
	Double or reinforced insulation to functional earth		N
1.8 (7.2.11)	Earthing core coloured green-yellow		N
	Length of earth conductor		N
1.9 (14)	**SCREW TERMINALS**		**N**
	Separately approved; component list	(see Annex 1)	P

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
	Part of the luminaire	(see Annex 3)	N
1.9 (15)	**SCREWLESS TERMINALS**		**N**
	Separately approved; component list	(see Annex 1)	N
	Part of the luminaire	(see Annex 4)	N
(-)	Springtype screwless terminals of the Type b shall not be used		N
1.10 (5)	**EXTERNAL AND INTERNAL WIRING**		**P**
1.10 (5.2)	Supply connection and external wiring		P
1.10 (5.2.1)	Means of connection.....:	Terminal	P
	- devices for the connection of luminaires		N
	- plugs for engagement with socket-outlets		N
	- terminal block specified		P
	- connecting leads and elevant information provided (EN)		N
	- supply cords		N
	- adapters		N
	- appliance inlets		N
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1		N
1.10 (5.2.2)	Type of cable.....:		N
	Cables equal to HD 21 S2 or HD22 S2 (EN)		N
	Nominal cross-sectional area (mm²).....:		N
1.10 (5.2.3)	Type of attachment, X, Y or Z		N
1.10 (5.2.5)	Type Z not connected to screws		N
1.10 (5.2.6)	Cable entries:		N
	- suitable for introduction		N
	- adequate degree of protection		N
1.10 (5.2.7)	Cable entries through rigid material have rounded edges		N
1.10 (5.2.8)	Insulating bushings:		N
	- suitably fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- tubes or guards made of insulating material		N

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
1.10 (5.2.9)	Locking of screwed bushings		N
1.10 (5.2.10)	Cord anchorage:		N
	- covering protected from abrasion		N
	- clear how to be effective		N
	- no mechanical or thermal stress		N
	- no tying of cables into knots etc.		N
	- insulating material or lining		N
1.10 (5.2.10.1)	Cord anchorage for type X attachment:		N
	a) at least one part fixed		N
	b) types of cable		N
	c) no damaging of the cable		N
	d) whole cable can be mounted		N
	e) no touching of clamping screws		N
	f) metal screw not directly on cable		N
	g) replacement without special tool		N
	Glands not used as anchorage		N
	Labyrinth type anchorages		N
1.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N
1.10 (5.2.10.3)	Tests:		N
	- impossible to push cable; unsafe		N
	- pull test: 25 times; pull (N) .....:		N
	- torque test: torque (Nm).....:		N
	- displacement ≤ 2 mm		N
	- no movement of conductors		N
	- no damage of cable or cord		N
1.10 (5.2.11)	External wiring passing into luminaire		N
1.10 (5.2.12)	Looping-in terminals		N
1.10 (5.2.13)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		N
1.10 (5.2.14)	Mains plug same protection		N
	Class III luminaire plug		N
1.10 (5.2.16)	Appliance inlets (IEC 60320)		N
	Appliance couplers of class II type		N

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
1.10 (5.2.17)	Non standardized interconnecting cables properly assembled		N
1.10 (5.2.18)	Used plug in accordance with:		N
	- IEC 60083		N
	- other standard		N
1.10 (5.3)	Internal wiring		P
1.10 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		N
	- not delivered/ mounting instruction		N
	- factory assembled		N
	- socket outlet loaded (A) .....:		N
	- temperatures .....:	(see Annex 2)	N
	Green-yellow for earth only		N
1.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		P
	Cross-sectional area (mm²) .....:	0,75 mm²	P
	Insulation thickness		P
	Extra insulation added where necessary		N
1.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P
	Adequate cross-sectional area and insulation thickness	SELV circuit	P
1.10 (5.3.1.3)	Double or reinforced insulation for class II		P
1.10 (5.3.1.4)	Conductors without insulation		N
1.10 (5.3.1.5)	SELV current-carrying parts		N
1.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N
1.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		P
	Joints, raising/lowering devices		N
	Telescopic tubes etc.		N
	No twisting over 360°		P
1.10 (5.3.3)	Insulating bushings:		N
	- suitable fixed		N

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
	- material in bushings		N
	- material not likely to deteriorate		N
	- cables with protective sheath		N
1.10 (5.3.4)	Joints and junctions effectively insulated		P
1.10 (5.3.5)	Strain on internal wiring		N
1.10 (5.3.6)	Wire carriers		N
1.10 (5.3.7)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N
1.11 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		**P**
1.11 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	No access to live parts with the standard test finger is permitted		P
	Lampholders and starterholders shall comply to the electrical strength test and creepage distance and clearance requirements for double or reinforced insulation		N
	Basic insulation may be accessible when the luminaire is opened for lamp or starter replacement		N
	Component comply with the relevant requirements applied to an independent component		P
	Double-ended tungsten filament lamp		N
	Insulation lacquer not reliable		N
	Double-ended high pressure discharge lamp		N
	Relevant warning according to 3.2.18 fitted to the luminaire		N
1.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N
1.11 (8.2.3 a)	For protection against electric shock:		N
	- basic insulated metal parts not accessible during starter or lamp replacement		N
	- basic insulation not accessible other than during starter or lamp replacement		N
	- glass protective shields not used as supplementary insulation		N
1.11 (8.2.3 b)	Class I luminaire with BC lampholder		N

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
1.11 (8.2.3 c)	Class III luminaires may have exposed current carrying parts in the SELV circuit under the following conditions		N
	Class III luminaires are accepted only for connection to a SELV source		N
1.11 (8.2.4)	Portable luminaire:		N
	- protection independent of supporting surface		N
	- terminal block completely covered		N
1.11 (8.2.5)	Compliance with the standard test finger or relevant probe		P
1.11 (8.2.6)	Covers reliably secured		P
1.11 (8.2.7)	Discharging of capacitors ≥ 0,5 μF		N
	Portable plug connected luminaire with capacitor		N
	Other plug connected luminaire with capacitor		N
	Discharge device on or within capacitor		N
	Discharge device mounted separately		N
1.12 (12)	**ENDURANCE TEST AND THERMAL TEST**		**P**
1.12.1 (-)	The housing temperatures shall not exceed		P
1.12 (12.3)	Endurance test:		P
	- mounting-position.....:	As in normal used	—
	- test temperature (°C) .....:	35°C	—
	- total duration (h).....:	240h	—
	- supply voltage: Un factor; calculated voltage (V) .....:	264V	—
	- lamp used.....:	See data sheet	—
1.12 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N
	- marking legible		P
	- no cracks, deformation etc.		P
1.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
1.12 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	P
1.12 (12.6)	Thermal test (failed lamp control gear condition):		N

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
1.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A) .....:		—
	- case of abnormal conditions .....:		—
	- electronic lamp control gear		N
	- measured winding temperature (°C): at 1,1 Un		—
	- measured mounting surface temperature (°C) at 1,1 Un.....:		N
	- calculated mounting surface temperature (°C) .....:		N
	- track-mounted luminaires		N
1.12 (12.6.2)	Temperature sensing control		N
	- case of abnormal conditions .....:		—
	- thermal link		N
	- manual reset cut-out		N
	- auto reset cut-out		N
	- measured mounting surface temperature (°C) ....:		N
	- track-mounted luminaires		N
1.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N
1.12 (12.7.1.1)	Test for luminaires incorporating fluorescent lamps≦70 W		N
1.12 (12.7.1.1)	Through wiring or looping-in wiring loaded by a current of (A) .....:		—
	- case of abnormal conditions……:		—
	- test for 4h at 1.1 Un .....:		N
	If more than one ballast is used inside the luminaire		N
	- only one in fault condition, until ballast failure occurs, test voltage……..:		N
	Following the test		—
	- the components have been retained in place		N
	- Parts of the luminaire enclosure continue to protect live parts against access with the standard test finger		N
1.12 (12.7.1.2)	Test for luminaires with discharge lamps, fluorescent lamps >70 W, transformers >10 VA		—
1.12 (12.7.1.2)	Through wiring or looping-in wiring loaded by a current of (A) .....:		—

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
	- case of abnormal conditions……:		—
1.12 (12.7.1.2)	- measured winding temperature (°C): at 1,1 Un...:		—
	- measured temperature of fixing point/ exposed part (°C): at 1,1 Un .....:		N
	- calculated temperature of fixing point/ exposed part (°C).....:		N
	The thermoplastic material is then subjected to the ball pressure test as described in 13.2.1 at the estimated temperature determined by linear regression, but not less than 75 °C.		—
	- part tested; temperature (°C) .....:		N
	- part tested; temperature (°C) .....:		N
1.12 (12.7.1.3)	Test for luminaires with short circuit proof transformers ≦10 VA		N
1.12 (12.7.1.3)	Through wiring or looping-in wiring loaded by a current of (A) .....:		—
	- case of abnormal conditions……:		—
	Following the test		—
	- Parts of the luminaire enclosure continue to protect live parts against access with the standard test finger		N
1.12 (12.7.2)	Temperature sensing control		N
	- thermal link		N
	- manual reset cut-out		N
	- auto reset cut-out		N
	- measured temperature of fixing point/ exposed part (°C): .....:		N

1.13 (9)	**RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE**		**P**
1.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP .....:	IP 20	—
	- mounting position during test.....:	As in normal used	—
	- fixing screws tightened; torque (Nm) .....:	---	—
	- tests according to clauses .....:	Clause 9.2.0 of EN 60598-1	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N
	b) no talcum in dust-tight luminaire		N

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
	c) no trace of water on current-carrying parts or where it could become a hazard		N
	d) i) For luminaires without drain holes – no water entry		N
	d) ii) For luminaires with drain holes – no hazardous water entry		N
	e) no water in watertight luminaire		N
	f) no contact with live parts (IP 2X)		P
	f) no entry into enclosure (IP 3X and IP 4X)		N
	f) no contact with live parts (IP 3X and IP 4X)		N
	g) no trace of water on any part of a lamp		N
	h) no damage		N
1.13 (9.3)	Humidity test 48 h	25℃, 95% R.H.	P
1.14 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		**P**
1.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø .....:		—
	Insulation resistance (MΩ)		—
	SELV:		N
	- between current-carrying parts of different polarity .....:		N
	- between current-carrying parts and mounting surface.....:		N
	- between current-carrying parts and metal parts of the luminaire.....:		N
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....:		N
	- insulating bushings as described in Section 5.....:		N
	Other than SELV:		P
	- between live parts of different polarity .....:	>50 MΩ	P
	- between live parts and mounting surface .....:	>50 MΩ	P
	- between live parts and metal parts .....:	>50 MΩ	P
	- between live parts of different polarity through action of a switch.....:		N

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Clause	Requirement - Test	Result	Verdict
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....:		N
	- insulating bushings as described in Section 5.....:		N
1.14 (10.2.2)	Electric strength test		P
	Dummy lamp		N
	Luminaires with ignitors after 24 h test		N
	Luminaires with manual ignitors		N
	Test voltage (V):		P
	SELV:		N
	- between current-carrying parts of different polarity .....:		N
	- between current-carrying parts and mounting surface.....:		N
	- between current-carrying parts and metal parts of the luminaire.....:		N
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....:		N
	- insulating bushings as described in Section 5.....:		N
	Other than SELV:		P
	- between live parts of different polarity .....:	1480V/MIN	P
	- between live parts and mounting surface .....:	2960V/MIN	P
	- between live parts and metal parts .....:	2960V/MIN	P
	- between live parts of different polarity through action of a switch.....:		N
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....:		N
	- insulating bushings as described in Section 5.....:		N
1.14 (10.3.1)	Touch current or protective conductor current and electric burn (mA).....:	Touch current: 0,09mA	P

1.15 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
1.15 (13.2.1)	Ball-pressure test:		P
	- part tested; temperature (°C) ..... :	Closed-end terminal; 125°C; 1,1mm	P
	- part tested; temperature (°C) ..... :	Terminal; 125°C; 1,0mm	P

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
1.15 (13.3.1)	Needle flame test (10 s):		P
	- part tested .....:	Terminal	P
	- part tested .....:		N
1.15 (13.3.2)	Glow-wire test (650°C):		P
	- part tested .....:	Closed-end terminal	P
	- part tested .....:		N
1.15 (13.4.1)	Tracking test: part tested.....:		N

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3.3 Annex as stated in the standards

IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict

V	**ANNEX V, Alternative thermal test for thermoplastic luminaires**		**N**
V.1	Thermal test in regard to fault conditions in lamp controlgear or electronic devices without temperature sensing controls in thermoplastic luminaires for fluorescent lamps ≤ 70W		—
	Thermal test (failed lamp control gear in plastic luminaires):		N
	Through wiring or looping-in wiring loaded by a current of (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..... :		N
	- calculated temperature of fixing point/ exposed part (°C) ..... :		N

ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		**P**
(2.2)	Class 0 not accepted		P
(3.3)	DK: power supply cord with label		N
	IT: warning label on Class 0 luminaire		N
(4.5.1)	DK: socket-outlets		N
(5.2.1)	CY, DK, FI, SE, GB: type of plug		N

ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		**N**
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N
(13.3)	DK: Needle flame test during 30 s		N
(13.3)	GB: Requirements according to United Kingdom Building Regulation		N
(13.3.2)	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

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3.4 Tables

IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict

	ANNEX 1: components	**P**

object/part No.	code	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
Terminal	B	Zhongshan Lianjin Metal & Electrical Appliances Co., Ltd.	EJE-2215	10A 250V	---	VDE 40030009
Internal wire 1	B	Top Resources Co. Ltd.	H03VVH2-F	2×0,75mm^2	---	VDE 096273
Internal wire 2	B	Zhongshan Yiying Wire & Cable Co., Ltd.	FEP YY-101	300/500V 0,3mm^2 180℃	---	VDE 40022722
LED driver	B	EAGLERISE	EIP040C0600 LS	PRI;220-240VAC 50/60Hz 0.32A SEC;DC600mA 40-67VDC Ta;50 ℃, Tc;85℃	---	CE Mark
Closed-end terminal	C	Heavy Power Co., Ltd.	CE5 CE2	---	---	UL E113650 Tested with appliance
Heat-shrinkable tube	C	DONGGUAN SALIPT CO LTD	SALIPT S-901-300	600 V; 125 ºC; VW-1	---	UL E209436 Tested with appliance
LED module	C	---	PT28355B2C	6V	---	Tested with appliance

The codes above have the following meaning:

A - The component is replaceable with another one, also certified, with equivalent characteristics

B - The component is replaceable if authorised by the test house

C - Integrated component tested together with the appliance

D - Alternative component

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict

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

	Type reference ..... :	PT-LED 436/9	—
	Lamp used ..... :	LED 9 X 4W	—
	Lamp control gear used ..... :	EIP040C0600LS	—
	Mounting position of luminaire ..... :	As in normal used	—
	Supply wattage (W) ..... :	35,0W	—
	Supply current (A) ..... :	0,147A	—
	Calculated power factor ..... :	0,931	—
	Table: measured temperatures corrected for ta = 25 °C:		P
	- abnormal operating mode ..... :	Short-circuit of the LED Lamp	—
	- test 1: rated voltage ..... :	240V	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage ..... :	254,4V (1,06 times rated voltage)	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :	---	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage ..... :	264V(1,1 times rated voltage)	—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	---	—

temperature (°C) of part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	test 1	test 2	test 3	limit	test 4	limit
Mounting surface	---	34,8	---	90	35,1	130
Internal wiring 1	---	46,3	---	90	---	---
Internal wiring 2	---	51,4	---	180	---	---
LED driver	46,5	---	---	85	---	---
Terminal	---	35,7	---	For cl. 13	---	---
Closed-end terminal	---	40,2	---	For cl. 13	---	---

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
	ANNEX 3: screw terminals (part of the luminaire)		**N**
(14)	**SCREW TERMINALS**		**N**
(14.2)	Type of terminal .....:		—
	Rated current (A) .....:		—
(14.3.2.1)	One or more conductors		N
(14.3.2.2)	Special preparation		N
(14.3.2.3)	Terminal size		N
	Cross-sectional area (mm²) .....:		N
(14.3.3)	Conductor space (mm) .....:		N
(14.4)	Mechanical tests		N
(14.4.1)	Minimum distance		N
(14.4.2)	Cannot slip out		N
(14.4.3)	Special preparation		N
(14.4.4)	Nominal diameter of thread (metric ISO thread) .....:		N
	External wiring		N
	No soft metal		N
(14.4.5)	Corrosion		N
(14.4.6)	Nominal diameter of thread (mm).....:		N
	Torque (Nm) .....:		N
(14.4.7)	Between metal surfaces		N
	Lug terminal		N
	Mantle terminal		N
	Pull test; pull (N) .....:		N
(14.4.8)	Without undue damage		N

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict
	ANNEX 4: screwless terminals (part of the luminaire)		**N**
(15)	**SCREWLESS TERMINALS**		**N**
(15.2)	Type of terminal ..... :		—
	Rated current (A) ..... :		—
(15.3.1)	Material		N
(15.3.2)	Clamping		N
(15.3.3)	Stop		N
(15.3.4)	Unprepared conductors		N
(15.3.5)	Pressure on insulating material		N
(15.3.6)	Clear connection method		N
(15.3.7)	Clamping independently		N
(15.3.8)	Fixed in position		N
(15.3.10)	Conductor size		N
	Type of conductor		N
(15.5.1)	Terminals internal wiring		N
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples)….:		N
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples)……:		N
	Insertion force not exceeding 50 N		N
(15.5.2)	Permanent connections: pull-off test (20 N)		N
(15.6)	Electrical tests		N
	Voltage drop (mV) after 1 h (4 samples) ..... :		N
	Voltage drop of two inseparable joints		N
	Number of cycles ..... :		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples) ..... :		N
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples) ..... :		N
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples)..... :		N
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples)..... :		N
(15.7)	Terminals external wiring		N
	Terminal size and rating		N

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IEC 60598-2-1 and/or EN 60598-2-1			
Clause	Requirement - Test	Result	Verdict

(15.8.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....:		N
	Pull test pin or tab terminals (4 samples); pull (N) .....:		N
(15.9)	Contact resistance test		N
	Voltage drop (mV) after 1 h		N

terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)	---	---	---	---	---	---	---	---	---	---
	Voltage drop of two inseparable joints									N
	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									N
	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
	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
	Max. allowed voltage drop (mV).....:									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)	---	---	---	---	---	---	---	---	---	---

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3.5 Appendix

EN 62031			
Clause	Requirement - Test	Result	Verdict
4	**GENERAL REQUIREMENTS**		**P**
4.4	Integral modules treated as part of luminaires defined in clause 0.5 of IEC 60598-1		P
4.5	Independent modules complies with requirements in IEC 60598-1		N
5	**GENERAL TEST REQUIREMENTS**		**P**
5.5	SELV-operated LED modules comply with Annex I of IEC 61347-2-13	(see Annex B)	N
6	**SELV-operated LED modules comply with Annex I of IEC 61347-2-13**		**N**
	CLASSIFICATION		—
	Built-in module .....:	Yes ☐ No ☒	—
	Independent module.....:	Yes ☐ No ☒	—
	Integral module .....:	Yes ☒ No ☐	—
	For Integral module; Note to 1.2.1 in IEC 60598-1 applies.		N
7	**MARKING**		**N**
7.1	Mandatory markings:	Integral modules	N
	- mark of origin		N
	- model number, type reference .....:		N
	- rated supply voltage (V) .....:		N
	- rated supply current (A) .....:		N
	- rated input power (V) .....:		N
	- nominal power		N
	- indication of connections, wiring diagram		N
	- value of tc		N
	- eye protection		N
	- marking of built-in modules only		N
7.2	- location of marking		N
7.3	Marking durable and legible		N

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EN 62031			
Clause	Requirement - Test	Result	Verdict
	Rubbing 15 s water, marking legible		N
8	**SCREW TERMINALS**		**N**
	Compliance with section 14 of IEC 60598-1		N
	SCREWLESS TERMINALS		N
	Compliance with section 15 of IEC 60598-1		N
	CONNECTORS		N
	Compliance with IEC 60838-2-2		N
9	**PROVISION FOR PROTECTIVE EARTHING**	Class III	**N**
	External metal parts connected to the earth terminal:		N
	- compliance with 7.2.1 in IEC 60598-1		N
	Test with a current of 10 A between earthing terminal and each of the accessible metal parts; measured resistance (Ω): < 0,5 Ω .....:		N
	Protective earth, symbol		N
	Terminal complying with clause 8 in Part 1		N
	Locked against loosening and not possible to loosen by hand		N
	Not possible to loosen clamping means unintentionally on screwless terminals		N
	Earthing via means of fixing		N
	Earthing terminal only used for the earthing of the control gear		N
	All parts of material minimizing the danger of electrolytic corrosion		N
	Made of brass or equivalent material		N
	Contact surface bare metal		N
	Conductors by tracks on printed circuit boards:		N
	- a.c. current of 25 A for 1 min between earthing terminal and accessible metal parts		N
	- compliance with clause 7.2.1 in IEC 60598-1		N

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EN 62031			
Clause	Requirement - Test	Result	Verdict
8 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**	See EN 60598-1 Cl. 8	**N**
	Protection against accidental contact with live parts in compliance with IEC 61347-1 (clause numbers between parentheses refer to IEC 61347-1)		N
- (10.1)	Controlgear protected against accidental contact with live parts		N
- (A1)	Current measured according to IEC 60990, figure 4 and clause 7.1: max. 0,7 mA (peak) or 2,0 mA d.c., for f ≥ 1000 Hz max. 70 mA .....:		N
- (A2)	Voltage at 50 kΩ (V): max. 34 V (peak) .....:		N
	Lacquer or enamel not used for protection or insulation		N
	Adequate mechanical strength on parts providing protection		N
- (10.2)	Capacitors > 0,5 μF: voltage after 1 min (V): < 50 V .....:		N
8.1 (-)	SELV-equivalent controlgear accessible parts are insulated from live parts by double or reinforced insulation according 8.6 and 13.1 in IEC 60065		N
8.2 (-)	Exposed terminals of SELV or SELV-equivalent controlgear are allowed if: - the rated or maximum output voltage does not exceeding 25 V r.m.s. - the no-load output voltage does not exceed 30 V r.m.s. or 33 √2 V peak		N
	Insulated terminals if rated output voltage >25 V		N
	- Other components bridging the separating transformer complying with EN 60065, clause 14		N
11	**MOISTURE RESISTANCE AND INSULATION**		**N**
	Protection against moisture and insulation in compliance with Clause 11, IEC 61347-1		N
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ): ≥ 2 MΩ .....:	See EN 60598-1 Cl. 10	N
	Adequate insulation between input and output terminals not bounded together in SELV-equivalent controlgear		N

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EN 62031			
Clause	Requirement - Test	Result	Verdict
	For double or reinforced insulation the resistance exceeds 4 MΩ		N
12	**ELECTRIC STRENGTH**		**N**
	Electric strength in compliance with Clause 12 of IEC 61347-1		N
	Immediately after clause 11 electric strength test for 1 min		N
	Working voltage ≤ 42 V, test voltage 500 V	See EN 60598-1 Cl. 10	N
	Working voltage > 42 V, test voltage (V): 2U + 1000 V .....:		N
	Reinforced insulation, test voltage (V): .....:		N
	No flashover or breakdown		N
	Windings in separating transformers in SELV-equivalent control gear according to 14.3.2 of EN 60065		N
13	**FAULT CONDITIONS**		**P**
13.1	In compliance with IEC 61347-1 (clause numbers between parentheses refer to IEC 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
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected		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)		N
	Distances on printed boards provided with coating according to IEC 60664-3		N
- (14.2)	Short-circuit or interruption of semiconductor devices		P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile		N

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EN 62031			
Clause	Requirement - Test	Result	Verdict
- (14.4)	Short-circuit across electrolytic capacitors		N
- (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 ≥ 1 MΩ .....:		P
	Temperature declared thermally protected LED-modules fulfil the requirements in Annex C of IEC 61437-1		P
13.2	Module withstands overpower condition >15 min.		P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		P
	During the tests, tissue paper, spread below module, does not ignite		P
15	**CONSTRUCTION**		**P**
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
16	**CREEPAGE DISTANCES AND CLEARANCES**		**N**
	Creepage and distances and clearances in compliance with IEC 60598-1		N
	Class of protection .....:		N
	Working voltage (V) .....:		N
	Voltage form .....:		N
	PTI .....:	< 600 ☐ ≥ 600 ☐	N
	Rated pulse voltage (kV) .....:	---	N
	(1) Live parts of different polarity: cr (mm); cl (mm) .....:		N
	(2) Live parts and accessible parts: cr (mm); cl (mm) .....:		N
	(3) Parts becoming live: cr (mm); cl (mm) .....:		N
	(4) Outer surface of cable: cr (mm); cl (mm) .....:		N
	(5) Live parts of switches: cr (mm); cl (mm) .....:		N
	(6) Live parts and supporting surface: cr (mm); cl (mm) .....:		N

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EN 62031			
Clause	Requirement - Test	Result	Verdict
17(17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		**N**
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		N
(4.11)	Electrical connections:		N
(4.11.1)	Contact pressure		N
(4.11.2)	Screws:		N
	- self-tapping screws		N
	- thread-cutting screws		N
	- at least two self-tapping screws		N
(4.11.3)	Screw locking:		N
	- spring washer		N
	- rivets		N
(4.11.4)	Material of current-carrying parts		N
(4.11.5)	No contact to wood		N
(4.12)	Mechanical connections and glands:		N
(4.12.1)	Mechanical stress		N
	Screws not made of soft metal		N
	Screws of insulating material		N
	Torque test: part; torque (Nm) .....:		N
	Torque test: part; torque (Nm) .....:		N
	Torque test: part; torque (Nm) .....:		N
(4.12.2)	Screw diameter < 3 mm screwed into metal		N
(4.12.3)	Void		N
(4.12.4)	Locked connections		N
(4.12.5)	Screwed glands: force (N) .....:		N

18 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**N**
	Resistance to Heat, Fire and Tracking in compliance with IEC 61347-1 (clause numbers between parentheses refer to IEC 61347-1)		N
(18.1)	Parts of insulating material retaining live parts in position, ball-pressure test:		N
	- part; test temperature (°C) .....:	Integral modules no insulating material	N
	- part; test temperature (°C) .....:		N

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CTS (Guangzhou) Testing Service Technology Co., Ltd.
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EN 62031			
Clause	Requirement - Test	Result	Verdict
(18.2)	Printed boards in accordance with IEC 60249-1, 4.3		N
(18.3)	External parts of insulating material preventing electric shock glow-wire test 650 °C		N
(18.4)	Parts of insulating material retaining live parts in position, needle-flame test 10 s:		N
	- flame extinguished within 30 s		N
	- no flaming drops igniting tissue paper		N
(18.5)	Tracking test		N
19	**RESISTANCE TO CORROSION**		**N**
	Resistance to corrosion in compliance with IEC 61347-1		N
	Rust protection:		N
	- test according 4.18.1 of IEC 60598-1		N
	- adequate varnish on the outer surface		N

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Manufacturer/ Approval holder Declaration

The following identical model(s):

PT-LED 417/5,
PT-LED 437/4,
PT-LED 444/4,
PT-LED 444/5.

belong to the tested device:

Product description: **led ceiling light**
Model name: **PT-LED 436/9**

No additional models were tested.

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Attachments

☒ Photo document

☐ BOM

☐ CDF (critical data form)

☐ Copies of certificates of certified components

☐ Instruction manual

☐ Circuit diagram

☐ Explosion block

☐ Other if necessary

----------end of report----------

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Attachment Page 1 of 6

Type Designation: **led ceiling light, PT-LED 436/9**
Report Number: **CGZ3150304-00458-L**

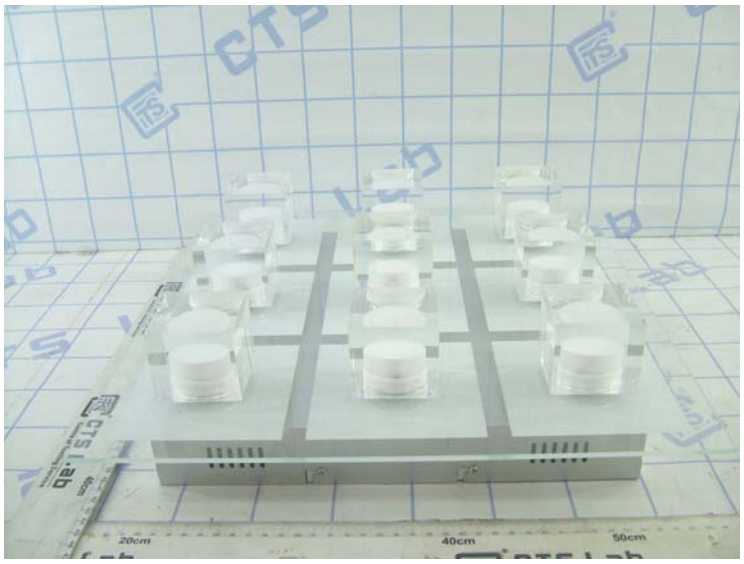


Figure 1 （PT-LED 436/9, External view - top）

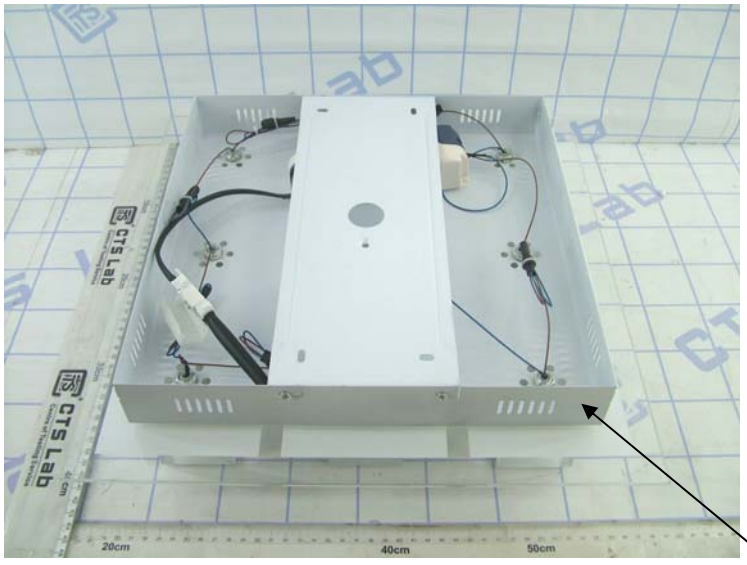


Figure 2 （External view -base）

Attachment Page 2 of 6

Type Designation: **led ceiling light, PT-LED 436/9**
Report Number: **CGZ3150304-00458-L**



Figure 3 （Internal construction 1）

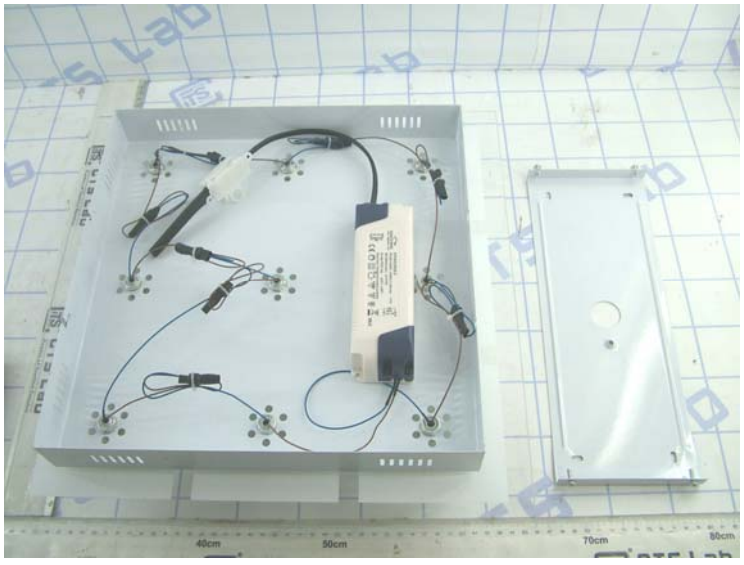


Figure 4 （Internal construction 2）

Attachment Page 3 of 6

Type Designation: **led ceiling light, PT-LED 436/9**
Report Number: **CGZ3150304-00458-L**

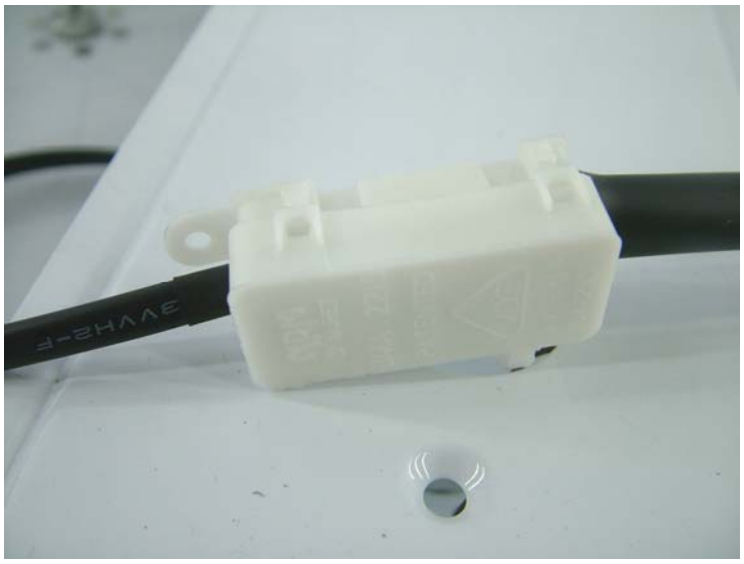


Figure 5 （Terminal）



Figure 6 （LED driver）

Type Designation: **led ceiling light, PT-LED 436/9**
Report Number: **CGZ3150304-00458-L**



Figure 7 （LED lamp）



Figure 8 (PT-LED 417/5, External view)

Type Designation: **led ceiling light, PT-LED 436/9**
Report Number: **CGZ3150304-00458-L**



Figure 9 (PT-LED 437/4, External view)



Figure 10 (PT-LED 444/4, External view)

Type Designation: **led ceiling light, PT-LED 436/9**
Report Number: **CGZ3150304-00458-L**



Figure 11 (PT-LED 444/5, External view)