



# TEST REPORT

**Reference No.**..... : WTS19D11076933L  
**Applicant**..... : Guangdong Cosio Lighting Co., Ltd  
**Address**..... : Room 3,4,9,10, Floor 15, Unit D, Foshan torch innovation pioneering park, No.13 Huabao Nan Road, Chancheng, Foshan, Guangdong, China  
**Manufacturer**..... : Foshan KaiChang Lighting Electrical Appliance co., Ltd.  
**Address**..... : 2nd building from south, the 2nd row of Xilian Dong Cun Development Area, Danzao Town, Nanhai District, Foshan.  
**Product**..... : LED Zoomable Light  
**Model(s)**..... : See model list on page 3 to 9  
**Standards**..... : Luminaires –  
Part 1: General Requirements And Tests  
Part 2: Particular Requirements - Section 1: Fixed General Purpose Luminaires  
EN 60598-2-1: 1989  
EN 60598-1: 2015+A1:2018  
**Date of Receipt sample**..... : 2019-11-08  
**Date of Test**..... : 2019-11-08 to 2019-12-05  
**Date of Issue**..... : 2019-12-26  
**Test Report Form No.**..... : WSL-6059821A-01A  
**Test Result**..... : **Pass**

**Remarks:**

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

**Prepared By:**

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Compiled by:

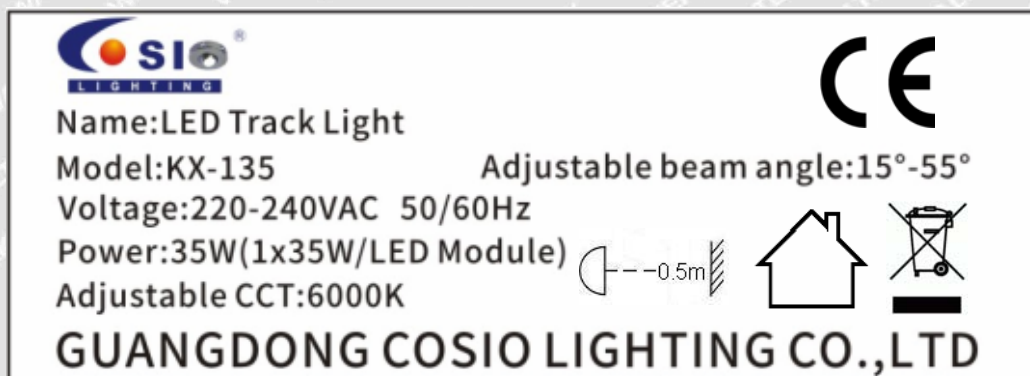
Run Huang / Project Engineer

Approved by:



Jackson Zhong / Manager

<b>Test item description</b> .....	LED Zoomable Light
<b>Trade Mark</b> .....	See rating label
<b>Model/Type reference</b> .....	See model list on page 3 to 9
<b>Ratings</b> .....	220-240V~, 50/60Hz; Class I, IP20; More information see model list on page 3 to 9.

**Copy of marking plate:**


On the luminaries enclosure

Note: The height of WEEE at least 7mm, height of graphical symbol at least 5mm, height of letters and numerals at least 2mm.

Remark: the marking label for other models are identical as above, except the model No and some parameter.

1. As declared by the applicant, the importer (and manufacturer, if it is different)'s name, registered trade name or registered trade mark and the postal address will be marked on the products before being place on the market. The contact details shall be in a language easily understood by end-users and market surveillance authorities.
2. Marking on the packaging or in a document accompanying the electrical equipment is only acceptable if it is not possible to place such markings on the product.

**Summary of testing:**

1. All the test on models KX-135 and KX-134AD, and all test results complies with the requirements of the standard mentioned on first page.
2. Assessment of lighting equipment related to human exposure to electromagnetic fields was evaluated and fulfilled the requirements of EN 62493:2015 and found to comply with the requirement.
3. Integral LED module was assessed according to EN 62031:2008+A1:2013+A2:2015.
4. The Retinal blue light hazard according to IEC/TR 62778:2014.
5. Only the most unfavorable results are recorded in this report.



**Test items particulars:**

Classification of installation and use.....: Fixed

Supply Connection.....: Adaptors

**Possible test case verdicts:**

- test case does not apply to the test object.....: N (Not applicable)

- test object does meet the requirement.....: P (Pass)

- test object does not meet the requirement.....: F (Fail)

**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 point is used as the decimal separator.

**General product information:**

1. Connected to supply via terminal block used. For indoor used only.
2. All models are the same construction, more different information see model list on below and photo documentation.

Model list						
For all models: 220-240V~, 50/60Hz, IP20.						
Item No.	Product names	Power wattage (W)	LED driver	LED used	CCT	Lamp size (mm)
1	KX-130, KX-136, GM-101, GM-130K, MZ-108, MZ-130Y, KX-008, KX-009, KX-010, KX-011, KX-012, KX-013, KX-014, KX-015, KX-141, KX-305, KX-306, KX-201, GM-201, MZ-201, KX-101, MZ-101	10	LF-GIF015YA0250H	GA13H-12W12C2B300	2700K-6000K	D60
2	KX-131, KX-137, KX-140Q, GM-102, MZ-109, KX-202, GM-202, MZ-202, KX-102,	15	LF-GIF022YA0400H	GA13H-18W12C3B450	2700K-6000K	D60



3	MZ-102 KX-132, KX-138, KX-118N, KX-121-20, KX-30PA-20, KX-30PB-20, KX-30PC-20, GM-103, GM-131K, MZ-110, MZ-131Y, KX-142, KX-144-M, KX-203, GM-203, MZ-203, KX-103, MZ-103	20	LF-GIF022YA0500H	GA19H- 24W12C4B600	2700K- 6000K	D70
4	KX-133 , KX-118C, KX-118B, KX-118C-B, GM-104, MZ-116-A, KX-307, KX-104, MZ-104	25	LF- GIF030YA(H)0600H	GA19H- 30W12C5B750	2700K- 6000K	D70
5	KX-134, KX-139, KX-119N, KX-105, KX-120, KX-121-30, KX-143, KX-30PA-30, KX-30PB-30, KX-30PC-30, GM-105, GM-132K, MZ-105, MZ-116, MZ-117, MZ-132Y	30	LF- GIF030YA(H)0750H	GA19H- 36W12C8B900	2700K- 6000K	D80
6	KX-135, KX-119C, KX-119B, KX-119C-B, KX-106, GM-106, MZ-106, GM-108	35	LF- GIF040YA(H)0850H	GA19H- 36W12C8B900	2700K- 6000K	D80
7	KX-130A, KX-136A, GM-101A, GM-130KA, MZ-108A, MZ-130YA, KX-	10	LF-GIF015YA0250H	GF13HQ- 12W12C4B300A27A57	2700K or 6000K	D60



	008A, KX-009A, KX-010A, KX-011A, KX-012A, KX-013A, KX-014A, KX-015A, KX-101A, MZ-101A, KX-141A, KX-305A, KX-306A, KX-201A, GM-201A, MZ-201A					
8	KX-131A, KX-137A, KX-140QA, GM-102A, KX-102A, MZ-102A, MZ-109A, KX-202A, GM-202A, MZ-202A	15	LF-GIF022YA0400H	GF19HQ- 18W12C6B450A27A57	2700K or 6000K	D60
9	KX-132A, KX-138A, KX-30PA-20A, KX-30PB-20A, KX-30PC-20A, KX-118NA, KX-121-20A, GM-103A, GM-131KA, MZ-109-AA, MZ-110A, MZ-131YA, KX-103A, MZ-103A, KX=142A, KX-144-MA, KX-203A, GM-203A, MZ-203A	20	LF-GIF022YA0500H	GF19HQ- 18W12C6B450A27A57	2700K or 6000K	D70
10	KX-133A, KX-118BA, KX-118CA, GM-104A, MZ-116-AA, KX-104A, MZ-104A, KX-307A	25	LF- GIF030YA(H)0600H	GF19H- 24W12C8B600A27A57	2700K or 6000K	D70
11	KX-134A, KX-135A, KX-139A, KX-119NA, KX-105A,	30	LF- GIF030YA(H)0750H	GF19H- 24W12C8B600A27A57	2700K or 6000K	D80





	KX-120A, KX-121-30A, KX-30PA30A, KX-30PB-30A, KX-30PC-30A, GM-106A, GM-132KA, MZ-105A, MZ-116A, MZ-117A, MZ-132YA, GM-105A, KX-106A, MZ-106A					
12	KX-130D, KX-136D, GM-101D, GM-130KD, MZ-108D, MZ-130YD, KX-008D, KX-009D, KX-010D, KX-011D, KX-012D, KX-013D, KX-014D, KX-015D, KX-101D, MZ-101D, KX-141D, KX-305D, KX-306D, KX-201D, GM-201D, MZ-201D	10	LF-GDE014YG	GA13H-12W12C2B300	2700K-6000K	D60
13	KX-131D, KX-137D, KX-140QD, GM-102D, MZ-109D, KX-102D, MZ-102D, KX-202D, GM-202D, MZ-202D	15	LF-GDE020YG	GA13H-18W12C3B450	2700K-6000K	D60
14	KX-132D, KX-138D, KX-118ND, KX-121-20D, KX-30PA-20D, KX-30PB-20D, KX-30PC-20D, GM-103D, GM-131KD, MZ-110D, MZ-131YD, KX-103D,	20	LF-GDE020YG	GA19H-24W12C4B600	2700K-6000K	D70



	MZ-103D, KX-203D, GM-203D, MZ-203D, KX-142D, KX-144-MD					
15	KX-133D, KX-118BD, KX-118CD, GM-104D, MZ-116-AD, KX-104D, MZ-104D, KX-307D, KX-118C-BD	25	LF-GDE030YG	GA19H- 30W12C5B750	2700K- 6000K	D70
16	KX-134D, KX-135D , KX-139D, KX-119ND, KX-105D, KX-120D, KX-121-30D, KX-30PA-30D, KX-30PB-30D, KX-30PC-30D , GM-106D, GM-132KD, MZ-105D, MZ-116D, MZ-117D, MZ-132YD, GM-105D, KX-106D, MZ-106D, KX-143D	30	LF-GDE030YG	GA19H- 36W12C8B900	2700K- 6000K	D80
17	KX-130AD, KX-136AD, GM-101AD, GM-130KAD, MZ-108AD, MZ-130YAD, KX-008AD, KX- 009AD, KX- 010AD, KX- 011AD, KX- 012AD, KX- 013AD, KX- 014AD, KX- 015AD, KX- 101AD, MZ- 101AD, KX- 141AD, KX- 305AD, KX- 306AD, KX- 201AD, GM- 201AD, MZ- 201AD	10	LF-GDE014YG	GF13HQ- 12W12C4B300A27A57	2700K or 6000K	D60
18	KX-131AD,	15	LF-GDE020YG	GF19HQ-	2700K	D60



	KX-137AD, KX-140QAD, GM-102AD, MZ-109AD, KX-102AD, MZ-102AD, KX-202AD, GM-202AD, MZ-202AD			18W12C6B450A27A57	or 6000K	
19	KX-132AD, KX-138AD, KX-118NAD, KX-121-20AD, KX-30PA-20AD, KX-30PB-20AD, KX-30PC-20AD GM-103AD, GM-131KAD, MZ-110AD, MZ-131YAD, KX-103AD, MZ-103AD, KX-203AD, GM-203AD, MZ-203AD, KX-142AD, KX-144-MAD	20	LF-GDE020YG	GF19HQ- 18W12C6B450A27A57	2700K or 6000K	D70
20	KX-133AD, KX-118BAD, KX-118CAD, GM-104AD, MZ-116-AAD, KX-104AD, MZ- 104AD, KX- 307AD, KX- 118C-BAD	25	LF-GDE030YG	GF19H- 24W12C8B600A27A57	2700K or 6000K	D70
21	KX-134AD, KX-135AD, KX-139AD, KX-119NAD, KX-105AD, KX-120AD, KX-121-30AD, KX-30PA-30AD, KX-30PB-30AD, KX-30PC-30AD, GM-106AD, GM-132KAD, MZ-105AD, MZ-116AD, MZ-117AD, MZ-132YAD, GM-105AD, KX-106AD, MZ-106AD, KX-143AD	30	LF-GDE030YG	GF19H- 24W12C8B600A27A57	2700K or 6000K	D80





Remark: Product model code:

1. Product model representation method: such as KX-xxxAD, "KX" in front of the product model indicates that the first letter of the brand is capitalized, and there are "KX", "GM", and "MZ"; the 3-digit code behind the connection symbol "-" "001-999" is the model code of the product, and the suffix letters and numbers after the number code are expressed as follows (2)-(5).
2. Product model number suffix plus letter "A" indicates the product's Adjustable CCT.
3. Product model number suffix plus letter "D" indicates that the product is dimmable.
4. Product model number suffix plus letter "N" indicates that the product has Anti Dazzle Net.
5. The suffix of the same model number of the product plus "-10", "-20", "-30" or "-A", "-B", "-C", etc. indicates the difference of different power.



# WALTEK



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict

<b>1.2 (0)</b>	<b>GENERAL TEST REQUIREMENTS</b>		<b>P</b>
1.2 (0.1)	Information for luminaire design considered.....:	Standard Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
1.2 (0.3)	More sections applicable .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

<b>1.4 (2)</b>	<b>CLASSIFICATION</b>		<b>P</b>
1.4 (2.2)	Type of protection .....	Class I	—
1.4 (2.3)	Degree of protection .....	IP20	—
1.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces.....:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
1.4 (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"/>	—

<b>1.5 (3)</b>	<b>MARKING</b>		<b>P</b>
1.5 (3.2)	Mandatory markings		P
	Position of the marking	See rating label	P
	Format of symbols/text	See rating label	P
1.5 (3.3)	Additional information		P
	Language of instructions	In English	P
1.5 (3.3.1)	Combination luminaires		N
1.5 (3.3.2)	Nominal frequency in Hz	50/60Hz	P
1.5 (3.3.3)	Operating temperature		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		N
1.5 (3.3.11)	Luminaires with remote control		N
1.5 (3.3.12)	Clip-mounted luminaire – warning		N
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





EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
1.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N
1.5 (3.3.19)	Protective conductor current in instruction if applicable		N
1.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N
1.5 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided	Non-user replaceable	P
1.5 (3.3.22)	Controllable luminaires, classification of insulation provided		N
1.5 (3.3.23)	Luminaire without controlgear provided with necessary information for selection of appropriate component		N
1.5 (3.3.24)	If not supplied with terminal block, information on the packaging		N
1.5 (3.4)	Test with water	15s	P
	Test with hexane	15s	P
	Legible after test		P
	Label attached		P

<b>1.6 (4)</b>	<b>CONSTRUCTION</b>		P
1.6 (4.2)	Components replaceable without difficulty		P
1.6 (4.3)	Wireways smooth and free from sharp edges		P
<b>1.6 (4.4)</b>	<b>Lampholders</b>		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
	After test the lampholder comply with relevant standard sheets and show no damage		N
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N
	- bending test (Nm) .....		N
	After test the lampholder have not moved from its position and show no permanent deformation		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		N



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
1.6 (4.4.9)	Caps and bases correctly used		N
1.6 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N
<b>1.6 (4.5)</b>	<b>Starter holders</b>		<b>N</b>
	Starter holder in luminaires other than class II		N
	Starter holder class II construction		N
<b>1.6 (4.6)</b>	<b>Terminal blocks</b>		<b>N</b>
	Tails		N
	Unsecured blocks		N
<b>1.6 (4.7)</b>	<b>Terminals and supply connections</b>		<b>P</b>
1.6 (4.7.1)	Contact to metal parts		N
1.6 (4.7.2)	Test 8 mm live conductor		N
	Test 8 mm earth conductor		N
1.6 (4.7.3)	Terminals for supply conductors		P
1.6 (4.7.3.1)	Welded method and material		N
	- stranded or solid conductor		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		N
1.6 (4.7.5)	Heat-resistant wiring/sleeves		N
1.6 (4.7.6)	Multi-pole plug		N
	- test at 30 N		N
<b>1.6 (4.8)</b>	<b>Switches</b>		<b>N</b>
	- adequate rating		N
	- adequate fixing		N
	- polarized supply		N
	- compliance with IEC 61058-1 for electronic switches		N
<b>1.6 (4.9)</b>	<b>Insulating lining and sleeves</b>		<b>P</b>
1.6 (4.9.1)	Retainment		P
	Method of fixing .....		P
1.6 (4.9.2)	Insulated linings and sleeves:		P





EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	Resistant to a temperature > 20 °C to the wire temperature or		N
	a) & c) Insulation resistance and electric strength		N
	b) Ageing test. Temperature (°C) .....		N
<b>1.6 (4.10)</b>	<b>Double or reinforced insulation</b>		<b>N</b>
1.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N
	Safe installation fixed luminaires		N
	Capacitors and switches		N
	Interference suppression capacitors according to IEC 60384-14		N
1.6 (4.10.2)	Assembly gaps:		N
	- not coincidental		N
	- no straight access with test probe		N
1.6 (4.10.3)	Retainment of insulation:		N
	- fixed		N
	- unable to be replaced; luminaire inoperative		N
	- sleeves retained in position		N
	- lining in lampholder		N
<b>1.6 (4.11)</b>	<b>Electrical connections and current-carrying parts</b>		<b>P</b>
1.6 (4.11.1)	Contact pressure		P
1.6 (4.11.2)	Screws:		N
	- self-tapping screws		N
	- thread-cutting screws		N
1.6 (4.11.3)	Screw locking:		P
	- spring washer		P
	- rivets		N
1.6 (4.11.4)	Material of current-carrying parts		P
1.6 (4.11.5)	No contact to wood or mounting surface		P
1.6 (4.11.6)	Electro-mechanical contact systems		N
<b>1.6 (4.12)</b>	<b>Screws and connections (mechanical) and glands</b>		<b>P</b>
1.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N
	Torque test: torque (Nm); part .....	Screws for fixing plastic enclosure, 0.5Nm	P
	Torque test: torque (Nm); part .....	Screws for fixing adaptors, 0.4Nm	P



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	Torque test: torque (Nm); part .....	Screws for fixing 3C switch, 0.4Nm	P
	Torque test: torque (Nm); part .....	Screws for fixing earthing cord, 0.4Nm	P
	Torque test: torque (Nm); part .....	Screws for fixing LED, 0.4Nm	P
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 (Nm) .....	--	N
<b>1.6 (4.13)</b>	<b>Mechanical strength</b>		<b>P</b>
1.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm).....		N
	- other parts; energy (Nm) .....	Enclosure, 0.35Nm, 3 times	P
	1) live parts		P
	2) linings		N
	3) protection		P
	4) covers		P
1.6 (4.13.3)	Straight test finger	30N	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
<b>1.6 (4.14)</b>	<b>Suspensions, fixings and means of adjusting</b>		<b>P</b>
1.6 (4.14.1)	Mechanical load:		P
	A) four times the weight	Max. 4×0.806kg for model KX-135	P
	B) torque 2,5 Nm		N
	C) bracket arm; bending moment (Nm) .....		N
	D) load track-mounted luminaires		N
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) .....	--	N





EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	Metal rod. diameter (mm) .....	--	N
	Fixed luminaire or independent control gear without fixing devices		N
1.6 (4.14.2)	Load to flexible cables		N
	Mass (kg) .....		N
	Stress in conductors (N/mm <sup>2</sup> ) .....		N
	Mass (kg) of semi-luminaire .....		—
	Bending moment (Nm) of semi-luminaire .....	--	N
1.6 (4.14.3)	Adjusting devices:		N
	- flexing test; number of cycles .....		N
	- strands broken.....		N
	- electric strength test afterwards		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
<b>1.6 (4.15)</b>	<b>Flammable materials</b>		<b>N</b>
	- 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		N
	- 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
<b>1.6 (4.16)</b>	<b>Luminaires for mounting on normally flammable surfaces</b>		<b>P</b>
	No lamp control gear .....		P
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



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	- fixed position		N
	- temperature marked lamp control gear		N
1.6 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N
<b>1.6 (4.17)</b>	<b>Drain holes</b>		<b>N</b>
	Clearance at least 5 mm		N
<b>1.6 (4.18)</b>	<b>Resistance to corrosion</b>		<b>P</b>
1.6 (4.18.1)	- rust-resistance		N
1.6 (4.18.2)	- season cracking in copper		P
1.6 (4.18.3)	- corrosion of aluminium		N
1.6 (4.19)	Igniters compatible with ballast		N
1.6 (4.20)	Rough service vibration		N
<b>1.6 (4.21)</b>	<b>Protective shield</b>		<b>N</b>
1.6 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N
	Shield of glass if tungsten halogen lamps		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 not cause overheating or damage		N
1.6 (4.23)	Semi-luminaires comply Class II		N
<b>1.6 (4.24)</b>	<b>Photobiological hazards</b>		<b>P</b>
1.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N
1.6 (4.24.2)	Retinal blue light hazard		P
	Luminaires with $E_{thr}$ :		N
	a) Fixed luminaires		P
	- distance x m, borderline between RG1 and RG2....:	RG1, distance at 0.222m only for 35W models	P
	- marking and instruction according 3.2.23		N
	b) Portable and handheld luminaires		N
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N
<b>1.6 (4.25)</b>	<b>Mechanical hazard</b>		<b>P</b>





EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	No sharp point or edges		P
<b>1.6 (4.26)</b>	<b>Short-circuit protection</b>		<b>N</b>
1.6 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N
1.6 (4.26.2)	Short-circuit test with test chain according 4.26.3		N
	Test chain not melt through		N
	Test sample not exceed values of Table 12.1 and 12.2		N
<b>1.6 (4.27)</b>	<b>Terminal blocks with integrated screwless earthing contacts</b>		<b>N</b>
	Test according Annex V		N
	Pull test of terminal fixing (20 N)		N
	After test, resistance < 0,05 $\Omega$		N
	Pull test of mechanical connection (50 N)		N
	After test, resistance < 0,05 $\Omega$		N
	Voltage drop test, resistance < 0,05 $\Omega$		N
<b>1.6 (4.28)</b>	<b>Fixing of thermal sensing control</b>		<b>N</b>
	Not plug-in or easily replaceable type		N
	Reliably kept in position		N
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N
	Not outside the luminaire enclosure		N
	Test of adhesive fixing:		N
	Max. temperature on adhesive material (°C).....:		—
	100 cycles between t min and t max		N
	Temperature sensing control still in position		N
<b>1.6 (4.29)</b>	<b>Luminaires with non-replaceable light source</b>		<b>N</b>
	Not possible to replace light source		N
	Live part not accessible after parts have been opened by hand or tools		N
<b>1.6 (4.30)</b>	<b>Luminaires with non-user replaceable light source</b>		<b>P</b>
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N
	Minimum two fixing means		N
<b>1.6 (4.31)</b>	<b>Insulation between circuits</b>		<b>N</b>
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		N



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N
1.6 (4.31.1)	SELV circuits		P
	Used SELV source		P
	Voltage $\leq$ ELV		P
	Insulating of SELV circuits from LV supply		P
	Insulating of SELV circuits from other non SELV circuits		P
	Insulating of SELV circuits from FELV		N
	Insulating of SELV circuits from other SELV circuits		N
	SELV circuits insulated from accessible parts according Table X.1		N
	Plugs not able to enter socket-outlets of other voltage systems		N
	Socket outlets does not admit plugs of other voltage systems		N
	Plugs and socket-outlets does not have protective conductor contact		N
1.6 (4.31.2)	FELV circuits		N
	Used FELV source		N
	Voltage $\leq$ ELV		N
	Insulating of FELV circuits from LV supply		N
	FELV circuits insulated from accessible parts according Table X.1		N
	Plugs not able to enter socket-outlets of other voltage systems		N
	Socket outlets does not admit plugs of other voltage systems		N
	Socket-outlets does not have protective conductor contact		N
1.6 (4.31.3)	Other circuits		N
	Other circuits insulated from accessible parts according Table X.1		N
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N
	- conductive parts are connected together		N
	- test according 7.2.3 of above		N
	- conductive part not cause an electric shock in case of an insulation fault		N



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	- equipotential bonding in master/slave applications		N
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N
	- slave luminaire constructed as class I		N
<b>1.6 (4.32)</b>	<b>Overvoltage protective devices</b>		<b>N</b>
	Comply with IEC 61643-11		N
	External to control gear and connected to earth:		N
	- only in fixed luminaires		N
	- only connected to protective earth		N
<b>1.7 (11)</b>	<b>CREEPAGE DISTANCES AND CLEARANCES</b>		<b>P</b>
1.7 (11.2)	Creepage distances and clearances .....	See Table 1.7 (11.2)	P
	Working voltage (V) .....	220-240V~	—
	Rated pulse voltage (kV) .....	--	—
	Voltage form .....	Sinusoidal <input checked="" type="checkbox"/> Non-sinusoidal <input type="checkbox"/>	—
	PTI .....	< 600 <input checked="" type="checkbox"/> ≥ 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"/>	—
<b>1.8 (7)</b>	<b>PROVISION FOR EARTHING</b>		<b>P</b>
1.8 (7.2.1 + 7.2.3)	Accessible metal parts		P
	Metal parts in contact with supporting surface		P
	Resistance < 0,5 Ω .....	Max. 0.068Ω	P
	Self-tapping screws used		N
	Thread-forming screws		N
	Thread-forming screw used in a groove		N
	Earth makes contact first		P
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N
	Protective earthing of the luminaire not via built-in control gear		N
1.8 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		P
1.8 (7.2.4)	Locking of clamping means		P
	Compliance with 4.7.3		P
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N





## EN 60598-2-1

Cl.	Requirement – Test	Result - Remark	Verdict
1.8 (7.2.5)	Earth terminal integral part of connector socket		N
1.8 (7.2.6)	Earth terminal adjacent to mains terminals		P
1.8 (7.2.7)	Electrolytic corrosion of the earth terminal		N
1.8 (7.2.8)	Material of earth terminal		P
	Contact surface bare metal		P
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		P
	Length of earth conductor		P
<b>1.9 (14)</b>	<b>SCREW TERMINALS</b>		P
	Separately approved; component list .....	(see Annex 1)	P
	Part of the luminaire .....	(see Annex 3)	N

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

<b>1.10 (5)</b>	<b>EXTERNAL AND INTERNAL WIRING</b>		P
<b>1.10 (5.2)</b>	<b>Supply connection and external wiring</b>		P
1.10 (5.2.1)	Means of connection .....	Adaptors	P
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV $\leq 25$ V a.c./60 V d.c. or protected from outdoor environment		N
1.10 (5.2.2)	Type of cable .....		P
	Nominal cross-sectional area (mm <sup>2</sup> ) .....		P
	Cables equal to IEC 60227 or IEC 60245		P
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:		P
	- suitable for introduction		P
	- adequate degree of protection		P



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
1.10 (5.2.7)	Cable entries through rigid material have rounded edges		P
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
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 $\leq 2$ mm		N
	- no movement of conductors		N
	- no damage of cable or cord		N



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	- function independent of electrical connection		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
	No unsafe compatibility		N
1.10 (5.2.16)	Appliance inlets (IEC 60320)		N
	Installation couplers (IEC 61535)		N
	Other appliance inlet or connector according relevant IEC standard		N
1.10 (5.2.17)	No standardized interconnecting cables properly assembled		N
1.10 (5.2.18)	Used plug in accordance with		N
	- IEC 60083		N
	- other standard		N
<b>1.10 (5.3)</b>	<b>Internal wiring</b>		<b>P</b>
1.10 (5.3.1)	Internal wiring of suitable size and type	(see Annex 1)	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		P
1.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N
	Cross-sectional area (mm <sup>2</sup> ).....:	(see Annex 1)	N
	Insulation thickness		N
	Extra insulation added where necessary		N
1.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P





EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	Adequate cross-sectional area and insulation thickness		P
1.10 (5.3.1.3)	Double or reinforced insulation for class II		N
1.10 (5.3.1.4)	Conductors without insulation		N
1.10 (5.3.1.5)	SELV current-carrying parts		P
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.		N
	Joints, raising/lowering devices		N
	Telescopic tubes etc.		N
	No twisting over 360°		P
1.10 (5.3.3)	Insulating bushings:		P
	- suitable fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- cables with protective sheath		P
1.10 (5.3.4)	Joints and junctions effectively insulated		N
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		N
	Wire ends tinned: no cold flow		P
<b>1.10 (5.4)</b>	<b>Test to determine suitability of conductors having a reduced cross-sectional area</b>		N
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	(see Annex 2)	N
	No damage to luminaire wiring after test		N
<b>1.11 (8)</b>	<b>PROTECTION AGAINST ELECTRIC SHOCK</b>		P
1.11 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	Lampholder and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N
	Basic insulation only accessible under lamp or starter replacement		N
	Protection in any position		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)	Class II luminaire:		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)	BC lampholder of metal in class I luminaires shall be earthed		N
1.11 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N
	Ordinary luminaire:		N
	- touch current .....		N
	- no-load voltage .....		N
	Other than ordinary luminaire:		N
	- nominal voltage .....		N
1.11 (8.2.4)	Portable luminaire have protection independent of supporting surface		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



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
1.11 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$	Max. 12V after 1 min.	P
	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		P

<b>1.12 (12)</b>	<b>ENDURANCE TEST AND THERMAL TEST</b>		P
1.12 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 4.13		—
1.12 (12.2)	Selection of lamps and ballasts		—
	Lamp used according Annex B	(Lamp used see Annex 2)	—
	Controlgear if separate and not supplied	(Controlgear used see Annex 2)	—
1.12 (12.3)	Endurance test:		P
	a) mounting-position .....	As user manual	—
	b) test temperature ( $^{\circ}\text{C}$ ).....	35 $^{\circ}\text{C}$	—
	c) total duration (h) .....	240h	—
	d) supply voltage (V).....	1.1Un	—
	d) if not equipped with controlgear, constant voltage/current (V) or (A) .....	--	—
	e) luminaire ceases to operate		—
1.12 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		P
	- 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)		N
1.12 (12.6)	Thermal test (failed lamp control gear condition):		N
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 ( $^{\circ}\text{C}$ ): at 1,1 Un .....	--	—





EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	- 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)	Luminaire without temperature sensing control		N
1.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N
	Test method 12.7.1.1 or Annex W .....	--	—
	Test according to 12.7.1.1:		N
	- case of abnormal conditions .....	--	—
	- Ballast failure at supply voltage (V) .....	--	—
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
	Test according to Annex W:		N
	- case of abnormal conditions .....	--	—
	- measured winding temperature (°C): at 1,1 Un .....	--	—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un.....	--	—
	- calculated temperature of fixing point/exposed part (°C) .....	--	—
	Ball-pressure test.....	See Table 1.15 (13.2.1)	N
1.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N
	- case of abnormal conditions .....	--	—
	- measured winding temperature (°C): at 1,1 Un .....	--	—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un.....	--	—



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	- calculated temperature of fixing point/exposed part (°C) .....	--	—
	Ball-pressure test.....	See Table 1.15 (13.2.1)	N
1.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N
	- case of abnormal conditions .....	--	—
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
1.12 (12.7.2)	Luminaire with temperature sensing control		N
	- thermal link .....	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- manual reset cut-out.....	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- auto reset cut-out .....	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- case of abnormal conditions .....	--	—
	- highest measured temperature of fixing point/ exposed part (°C): .....	--	—
	Ball-pressure test:.....	See Table 1.15 (13.2.1)	N

<b>1.13 (9)</b>	<b>RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE</b>		P
1.13 (-)	If IP > IP 20 the order of tests as specified in clause 1.12		P
1.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP .....	IP20	P
	- mounting position during test .....	Acc. to user manual	P
	- fixing screws tightened; torque (Nm).....	--	P
	- tests according to clauses .....	Clause 9.2.0	P
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N
	b) no talcum in dust-tight luminaire		N
	c) no trace of water on current-carrying parts or on insulation 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 (IP3X and IP4X)		N



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	g) no trace of water on part of lamp requiring protection from splashing water		N
	h) no damage of protective shield or glass envelope		N
1.13 (9.3)	Humidity test 48 h	25°C, 93%RH	P

<b>1.14 (10)</b>	<b>INSULATION RESISTANCE AND ELECTRIC STRENGTH</b>		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 .....	Covered by metal foil	—
	Insulation resistance (MΩ).....		—
	SELV		P
	- between current-carrying parts of different polarity :	--	N
	- between current-carrying parts and mounting surface .....	>100MΩ	P
	- between current-carrying parts and metal parts of the luminaire .....	>100MΩ	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....	--	N
	- Insulation bushings as described in Section 5 .....	--	N
	Other than SELV		P
	- between live parts of different polarity.....	>100MΩ	P
	- between live parts and mounting surface.....	>100MΩ	P
	- between live parts and metal parts .....	>100MΩ	P
	- between live parts of different polarity through action of a switch .....	--	N
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....	--	N
	- Insulation 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		P
	- between current-carrying parts of different polarity :	--	N





EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
	- 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
	- Insulation bushings as described in Section 5 .....	--	N
	Other than SELV		P
	- between live parts of different polarity .....	1480V	P
	- between live parts and mounting surface .....	1480V	P
	- between live parts and metal parts .....	1480V	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
	- Insulation bushings as described in Section 5 .....	--	N
1.14 (10.3)	Touch current or protective conductor current (mA) :	Protective conductor current: 0.203mA.	P

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

<b>1.7 (11.2)</b>	<b>TABLE: Creepage distances and clearances</b>						<b>P</b>
	<b>Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages</b>						<b>P</b>
	<b>Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*</b>						<b>P</b>
	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	B	>3.0	1.5	11.1	>3.0	2.5	11.1
Distance 2:	R	>8.0	3.0	11.1	>8.0	5.0	11.1
Working voltage (V) .....					--	—	
PTI .....					< 600 <input type="checkbox"/>	≥ 600 <input type="checkbox"/>	—
Pulse voltage or $U_p$ if applicable (kV) .....					--	—	



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict

Supplementary information:

Distance 1:  $Cr=Cl>3.0\text{mm}$ , Between pins of live parts (L, N) on adaptors;

Distance 2:  $Cr=Cl>8.0\text{ mm}$ , Between live parts (L, N) of the adaptors and accessible parts.

Remark: approved independent SELV LED driver and terminal block used, max. output voltage is 55VDC.

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

<b>1.7 (11.2)</b>	<b>TABLE: Creepage distances and clearances</b>						<b>P</b>
	<b>Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages</b>						<b>P</b>
	<b>Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*</b>						<b>P</b>
	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	B	>3.0	1.5	11.1	>3.0	2.5	11.1
Distance 2:	B	1.3	3.0	11.1	1.3	5.0	11.1
Distance 3:	R	>8.0	3.0	11.1	>8.0	5.0	11.1
Working voltage (V).....:					240V~		—
PTI.....:					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or $U_P$ if applicable (kV) .....					--		—

Supplementary information:

Distance 1:  $Cr=Cl>3.0\text{mm}$ , Between pins of live parts (L, N) on adaptors;

Distance 2:  $Cr=Cl=1.3\text{ mm}$ , Between LED board part and accessible parts only for models use LED driver models No. LF-GDE014YG, LF-GDE020YG, LF-GDE030YG.

Distance 3:  $Cr=Cl>8.0\text{ mm}$ , Between live parts (L, N) of the adaptors and accessible parts.

Remark: approved independent SELV LED driver and terminal block used, max. output voltage is 70VDC.

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

<b>1.7 (11.2)</b>	<b>TABLE II: Creepage distances and clearances</b>						<b>N</b>
	<b>Minimum distances (mm) for a.c. higher than 30 kHz sinusoidal voltages</b>						
	<b>Applicable part of IEC 61347-1 Table 7 and 8* or IEC 60664-4 Table 1 and 2</b>						
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	--	--	--	--	--	--	--
Working voltage (V).....:					--		—
Frequency if applicable (kHz).....:					--		—
PTI.....:					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....							—

Supplementary information:

\*\* Insulation type: B – Basic; S – Supplementary; R – Reinforced.





EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
1.15 (13.2.1)	<b>TABLE: Ball Pressure Test of Thermoplastics</b>		<b>N</b>
<b>Allowed impression diameter (mm) .....</b>		2.0mm	—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
Adaptors enclosure	See annex 1	125	1.0
Plastic material fixing LED	See annex 1	125	1.0
Supplementary information:			

1.15 (13.3.1)	<b>TABLE: Needle-flame test (IEC 60695-11-5)</b>				<b>N</b>
Object/ Part No./ Material	Manufacturer/trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Adaptors enclosure	See annex 1	10	No	0	P
Plastic material fixing LED	See annex 1	10	No	0	P
Supplementary information: no molten drop.					

1.15 (13.3.2)	<b>TABLE: Glow-wire test (IEC 60695-2-11)</b>				<b>P</b>
<b>Glow wire temperature .....</b>		650°C			—
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Plastic lamp cover	See annex 1	30	No	0	P
Plastic enclosure	See annex 1	30	No	0	P
Any flame or glowing of the sample extinguished within 30 s of withdrawing the glow-wire, and any burning or molten drop did not ignite the underlying parts (Yes/No) .....					Yes
Supplementary information: no molten drop.					

1.15 (13.4)	<b>TABLE: Proof tracking test (IEC 60112)</b>				<b>P</b>
<b>Test voltage PTI .....</b>		175 V			—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Adaptors	See annex 1	P	P	P	P
Supplementary information:--					





EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict

Annex 1		Components					P
object/part No.	code	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity	
Lighting tracks (adaptor)	B	DongGuan XinRui Lighting Co., Ltd.	XR-402	220-250V, 50Hz; Class I; IP20; 6A, load Max. 50N	EN 60570 EN 60598-1	TUV Z1 17 09 87598 005	
Lighting tracks (adaptor)	B	Foshan Haotai Lighting Accessories Co., Ltd.	401, 402, 403	220-240V, 50Hz; Class I; IP20; 6A, load Max. 100N	EN 60570 EN 60598-1	TUV: R 50320806 0001	
Plastics enclosure	B	Foshan Haotai Lighting Accessories Co., Ltd.	--	PC	--	Test with appliance	
Lamp cover (lens)	B	ShenZhen OSYS-ALL Shine Optic.CO., Ltd.	L-1250U(#)(f1), L-1250V(#)(f1), L-1250Z(#)(f1)	PC, HB, 115°C	--	UL E50075	
Fibreglass sleeving	B	LAOHEKOU CITY WEIJIE ELECTRONIC MATERIAL CO LTD	WJ-3MM	Flame Retardant Silicone Resin Coated Braided Fiberglass Sleeving	--	UL E487439	
Alt.	D	various	various	Flame Retardant Silicone Resin Coated Braided Fiberglass Sleeving	--	UL	
LED driver 1(apply to 10W)	B	Lifud Technology Co., Ltd.	LF-GIF015YA0250H	Input: 220-240V~ 50/60Hz, Max. 0.1A; Class II; IP20; Independent SELV constant current type; Output: 250mA, 25-40Vdc, Max. 55Vdc; Rated: 10W; ta=50°C, tc=80°C	EN 61347-1/-2-13	TUV N8A 004006 0058	



EN 60598-2-1						
Cl.	Requirement – Test			Result - Remark		Verdict
LED driver 2(apply to 15W)	B	Lifud Technology Co., Ltd.	LF-GIF022YA0400H	Input: 220-240V~ 50/60Hz, Max. 0.2A; Class II; IP20; Independent SELV constant current type; Output: 400mA, 25-40Vdc, Max. 55Vdc; Rated: 16W; ta=50°C, tc=85°C	EN 61347-1/-2-13	TUV N8A 004006 0058
LED driver 3(apply to 20W)	B	Lifud Technology Co., Ltd.	LF-GIF022YA0500H	Input: 220-240V~ 50/60Hz, Max. 0.2A; Class II; IP20; Independent SELV constant current type; Output: 500mA, 25-40Vdc, Max.: 55Vdc; Rated: 20W; ta=50°C, tc=85°C	EN 61347-1/-2-13	TUV N8A 004006 0058
LED driver 4(apply to 25W)	B	Lifud Technology Co., Ltd.	LF-GIF030YA(H)0600H	Input: 220-240V~ 50/60Hz, Max. 0.25A; Class II; IP20; Independent SELV constant current type; Output: 600mA, 33-40Vdc, Max. 55Vdc Rated 24W. ta=50°C, tc=80°C	EN 61347-1/-2-13	TUV N8A 004006 0058



EN 60598-2-1						
Cl.	Requirement – Test			Result - Remark		Verdict
LED driver 5(apply to 30W)	B	Lifud Technology Co., Ltd.	LF-GIF030YA(H)075 0H	Input: 220-240V~ 50/60Hz, Max. 0.25A; Class II; IP20; Independent SELV constant current type; Output: 750mA, 33-40Vdc, Max. 55Vdc Rated 30W. ta=50°C, tc=80°C	EN 61347-1/-2-13	TUV N8A 004006 0058
LED driver 6(apply to 35W)	B	Lifud Technology Co., Ltd.	LF-GIF040YA(H)085 0H	Input: 220-240V~ 50/60Hz, Max. 0.35A; Class II; IP20; Independent SELV constant current type; Output: 850mA, 33-40Vdc, Max. 55Vdc; Rated 34W; ta=50°C, tc=90°C	EN 61347-1/-2-13	TUV N8A 004006 0058
LED driver 7(Be suitable for Dimming 10W)	B	Lifud Technology Co., Ltd.	LF-GDE014YG	Input: 220-240V~ 50/60Hz, Max. 0.12A; Class II; IP20; Independent SELV constant current type; Output: 250mA, 25-40Vdc, Max. 70Vdc; Rated 10W; ta=50°C, tc=90°C	EN 61347-1/-2-13	TUV N8A 004006 0085 Rev.01





EN 60598-2-1						
Cl.	Requirement – Test			Result - Remark		Verdict
LED driver 8(Be suitable for Dimming 15W)	B	Lifud Technology Co., Ltd.	LF-GDE020YG	Input: 220-240V~ 50/60Hz, Max. 0.14A; Class II; IP20; Independent SELV constant current type; Output: 400mA, 25-40Vdc, Max. 70Vdc; Rated 16W; ta=50°C, tc=90°C	EN 61347-1/-2-13	TUV N8A 004006 0085 Rev.01
LED driver 9(Be suitable for Dimming 20W)	B	Lifud Technology Co., Ltd.	LF-GDE020YG	Input: 220-240V~ 50/60Hz, Max. 0.14A; Class II; IP20; Independent SELV constant current type; Output: 500mA, 25-40Vdc, Max. 70Vdc; Rated 20W; ta=50°C, tc=90°C	EN 61347-1/-2-13	TUV N8A 004006 0085 Rev.01
LED driver 10(Be suitable for Dimming 25W)	B	Lifud Technology Co., Ltd.	LF-GDE030YG	Input: 220-240V~ 50/60Hz, Max. 0.18A; Class II; IP20; Independent SELV constant current type; Output: 650mA, 25-40Vdc, Max. 70Vdc; Rated 26W; ta=50°C, tc=90°C	EN 61347-1/-2-13	TUV N8A 004006 0085 Rev.01



EN 60598-2-1						
Cl.	Requirement – Test			Result - Remark		Verdict
LED driver 11(Be suitable for Dimming 30W)	B	Lifud Technology Co., Ltd.	LF-GDE030YG	Input: 220-240V~ 50/60Hz, Max. 0.18A; Class II; IP20; Independent SELV constant current type; Output: 700mA, 25-40Vdc, Max. 70Vdc; Rated 28W; ta=50°C, tc=90°C	EN 61347-1/-2-13	TUV N8A 004006 0085 Rev.01
Internal wire for LED driver input	B	Zhongshan Yiying Wire & Cable Co., Ltd.	YY-101	PEP, 1x0.75mm <sup>2</sup> , 300/500V, 180°C	VDE 0250	VDE 40022722
Alt.	D	various	various	1xMin. 0.75mm <sup>2</sup> , 300/500V, Min. 180°C	--	VDE or UL
Internal wire for LED driver output	B	Foshan City Nanhai Tengxiang Wire & Cable Co., Ltd.	F472	1x0.3mm <sup>2</sup> , 300/500V, 180°C	VDE 0250	VDE 40048740
Alt.	D	various	various	1xMin. 0.3mm <sup>2</sup> , 300/500V, Min. 180°C	--	VDE or UL
Earth wire	B	Yang Tai Wire & Cable Co., Ltd.	H05V-K	1x0.5mm <sup>2</sup>	EN 50525-2-31	VDE: 40027461
Alt.	D	various	various	1x0.5mm <sup>2</sup>	EN 50525-2-31	VDE
LED 1	B	Guo Cheng Optoelectronics	GA13H-12W12C2B300	IF=300mA, VF=40V, CCT=2700-6000K	IEC TR 62778	Test with appliance
LED 2	B	Guo Cheng Optoelectronics	GA13H-18W12C3B450	IF=450mA, VF=40V, CCT=2700-6000K	IEC TR 62778	Test with appliance
LED 3	B	Guo Cheng Optoelectronics	GA19H-24W12C4B600	IF=600mA, VF=40V, CCT=2700-6000K	IEC TR 62778	Test with appliance
LED 4	B	Guo Cheng Optoelectronics	GA19H-30W12C5B750	IF=750mA, VF=40V, CCT=2700-6000K	IEC TR 62778	Test with appliance
LED 5	B	Guo Cheng Optoelectronics	GA19H-36W12C8B900	IF=900mA, VF=40V, CCT=2700-6000K	IEC TR 62778	Test with appliance



EN 60598-2-1						
Cl.	Requirement – Test			Result - Remark		Verdict
LED 6	B	Guo Cheng Optoelectronics	GF13HQ-12W12C4B300A2 7A57	IF=300mA, VF=40V, CCT=2700K or 5700K	IEC TR 62778	Test with appliance
LED 7	B	Guo Cheng Optoelectronics	GF19HQ-18W12C6B450A2 7A57	IF=450mA, VF=40V, CCT=2700K or 5700K	IEC TR 62778	Test with appliance
LED 8	B	Guo Cheng Optoelectronics	GF19H-24W12C8B600A2 7A57	IF=600mA, VF=40V, CCT=2700K or 5700K	IEC TR 62778	Test 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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EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict

<b>ANNEX 2:</b>	<b>Temperature measurements, according to section 12 of IEC 60598-1</b>	<b>P</b>
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1/5	Type reference .....	KX-135	—					
	Lamp used .....	integar LED module	—					
	Lamp control gear used .....	Approved independent SELV LED driver: LF-GIF040YA(H)0850H	—					
	Mounting position of luminaire.....	Mounting acc. to user manual	—					
	Supply wattage (W) .....	34.4	—					
	Supply current (A).....	0.142	—					
	Calculated power factor .....	0.95	—					
	Table: measured temperatures corrected for ta =25°C:		P					
	- abnormal operating mode .....	--	—					
	- test 1: rated voltage .....	--	—					
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage .....	1.06 x 240V =254.4V	—					
	- test 3: 1,06 times rated voltage or 1,05 times rated wattage .....	--	—					
	- test 4: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....	--	—					
	- test 5: 1,1 times rated voltage or 1,05 times rated wattage .....	--	—					
temperature (C) of part		clause 12.4 – normal			clause 12.5 – abnormal			
		test 1	test 2	test 3	test 4	limits	test 5	Limit
Adaptors enclosure		--	28.2	--	--	Ref	--	--
Internal wire for LED driver input		--	31.2	--	--	180	--	--
tc of LED driver		--	57.0	--	--	90	--	--
Internal wire connected to LED module		--	80.3	--	--	180	--	--
Plastic material fixing LED		--	100.0	--	--	Ref	--	--
Metal enclosure		--	57.6	--	--	75	--	--
Lamp cover, output		--	75.9	--	--	90	--	--
Mounting surface		--	29.9	--	--	90	--	--
Luminaries object (0.1m)		--	50.3	--	--	90	--	--
Ambient		--	25.0	--	--	--	--	--



EN 60598-2-1								
Cl.	Requirement – Test				Result - Remark		Verdict	
2/5	Type reference .....:				KX-134AD		—	
	Lamp used.....:				integar LED module		—	
	Lamp control gear used.....:				Approved independent SELV LED driver: LF-GDE030YG		—	
	Mounting position of luminaire.....:				Mounting acc. to user manual		—	
	Supply wattage (W) .....:				31.1		—	
	Supply current (A).....:				0.129		—	
	Calculated power factor.....:				0.94		—	
	Table: measured temperatures corrected for ta =25°C:						P	
	- abnormal operating mode .....:				--		—	
	- test 1: rated voltage.....:				--		—	
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....:				1.06 x 240V =254.4V		—	
	- test 3: 1,06 times rated voltage or 1,05 times rated wattage.....:				--		—	
	- test 4: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....:				--		—	
	- test 5: 1,1 times rated voltage or 1,05 times rated wattage.....:				--		—	
temperature (C) of part		clause 12.4 – normal				clause 12.5 – abnormal		
		test 1	test 2	test 3	test 4	limits	test 5	Limit
Adaptors enclosure		--	30.9	--	--	Ref	--	--
Internal wire for LED driver input		--	36.3	--	--	180	--	--
tc of LED driver		--	65.9	--	--	90	--	--
Internal wire connected to LED module		--	84.0	--	--	180	--	--
Plastic material fixing LED		--	94.8	--	--	Ref	--	--
Metal enclosure		--	57.7	--	--	75	--	--
Lamp cover, output		--	70.9	--	--	90	--	--
Mounting surface		--	33.9	--	--	90	--	--
Luminaries object (0.1m)		--	54.7	--	--	90	--	--
Ambient		--	25.0	--	--	--	--	--



EN 60598-2-1								
Cl.	Requirement – Test				Result - Remark		Verdict	
3/5	Type reference .....:				KX-130		—	
	Lamp used.....:				integar LED module		—	
	Lamp control gear used.....:				Approved independent SELV LED driver: LF-GIF015YA0250H		—	
	Mounting position of luminaire.....:				Mounting acc. to user manual		—	
	Supply wattage (W) .....:				12.3		—	
	Supply current (A).....:				0.05		—	
	Calculated power factor.....:				0.96		—	
	Table: measured temperatures corrected for ta =25°C:						P	
	- abnormal operating mode .....:				--		—	
	- test 1: rated voltage.....:				--		—	
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....:				1.06 x 240V =254.4V		—	
	- test 3: 1,06 times rated voltage or 1,05 times rated wattage.....:				--		—	
	- test 4: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....:				--		—	
	- test 5: 1,1 times rated voltage or 1,05 times rated wattage.....:				--		—	
temperature (C) of part		clause 12.4 – normal				clause 12.5 – abnormal		
		test 1	test 2	test 3	test 4	limits	test 5	Limit
tc of LED driver		--	60.7	--	--	80	--	--
Ambient		--	25.0	--	--	--	--	--

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EN 60598-2-1								
Cl.	Requirement – Test				Result - Remark		Verdict	
4/5	Type reference .....:				KX-131A		—	
	Lamp used.....:				integar LED module		—	
	Lamp control gear used.....:				Approved independent SELV LED driver: LF-GIF022YA0400H		—	
	Mounting position of luminaire.....:				Mounting acc. to user manual		—	
	Supply wattage (W) .....:				16.9		—	
	Supply current (A).....:				0.071		—	
	Calculated power factor.....:				0.93		—	
	Table: measured temperatures corrected for ta =25°C:						P	
	- abnormal operating mode .....:				--		—	
	- test 1: rated voltage.....:				--		—	
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....:				1.06 x 240V =254.4V		—	
	- test 3: 1,06 times rated voltage or 1,05 times rated wattage.....:				--		—	
	- test 4: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....:				--		—	
	- test 5: 1,1 times rated voltage or 1,05 times rated wattage.....:				--		—	
temperature (C) of part		clause 12.4 – normal				clause 12.5 – abnormal		
		test 1	test 2	test 3	test 4	limits	test 5	Limit
tc of LED driver		--	50.4	--	--	85	--	--
Ambient		--	25.0	--	--	--	--	--

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EN 60598-2-1								
Cl.	Requirement – Test				Result - Remark		Verdict	
5/5	Type reference ..... :				KX-130AD		—	
	Lamp used ..... :				integrar LED module		—	
	Lamp control gear used ..... :				Approved independent SELV LED driver: LF-GDE014YG		—	
	Mounting position of luminaire..... :				Mounting acc. to user manual		—	
	Supply wattage (W) ..... :				11.3		—	
	Supply current (A)..... :				0.050		—	
	Calculated power factor ..... :				0.88		—	
	Table: measured temperatures corrected for ta =25°C:						P	
	- abnormal operating mode ..... :				--		—	
	- test 1: rated voltage ..... :				--		—	
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage ..... :				1.06 x 240V =254.4V		—	
	- test 3: 1,06 times rated voltage or 1,05 times rated wattage ..... :				--		—	
	- test 4: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage..... :				--		—	
	- test 5: 1,1 times rated voltage or 1,05 times rated wattage ..... :				--		—	
temperature (C) of part		clause 12.4 – normal				clause 12.5 – abnormal		
		test 1	test 2	test 3	test 4	limits	test 5	Limit
tc of LED driver		--	42.8	--	--	90	--	--
Ambient		--	25.0	--	--	--	--	--

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## EN 60598-2-1

Cl.	Requirement – Test	Result - Remark	Verdict
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<b>ANNEX 3</b>	<b>Screw terminals (part of the luminaire)</b>		N
<b>(14)</b>	<b>SCREW TERMINALS</b>		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 (mm <sup>2</sup> ) .....		—
(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

<b>ANNEX 4</b>	<b>Screwless terminals (part of the luminaire)</b>		N
<b>(15)</b>	<b>SCREWLESS TERMINALS</b>		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





EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict
(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
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N
(15.5.2)	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
(15.6)	Terminals external wiring		N
	Terminal size and rating		N
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....		N
	Pull test pin or tab terminals (4 samples); pull (N) .....		N



## EN 60598-2-1

Cl.	Requirement – Test	Result - Remark	Verdict
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<b>(15.6.3.1) TABLE: Contact resistance test</b>												N
Voltage drop (mV) after 1 h												—
terminal	1	2	3	4	5	6	7	8	9	10		
voltage drop (mV)												
Voltage drop of two inseparable joints												N
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)												
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)												
Supplementary information:												



EN 60598-2-1			
Cl.	Requirement – Test	Result - Remark	Verdict

**ATTACHMENT TO TEST REPORT IEC 60598-2-1  
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES**

Luminaires

Part 2: Particular Requirements:

Section One – Fixed general purpose luminaires

**Differences according to**.....: EN 60598-2-1:1989 used in conjunction with  
EN 60598-1:2015+A1:2018

**Annex Form No**.....: --

**Annex Form Originator**.....: --

**Master Annex Form**.....: --

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

<b>ZC</b>	<b>ANNEX ZC, NATIONAL DEVIATIONS (EN)</b>		<b>N</b>
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N
	FR: Safety requirements for high buildings  (Arrêté du 30 décembre 2011 portant règlement de sécurité pour la construction des immeubles de grande hauteur et leur protection contre les risques d'incendie et de panique; Section VIII; Article GH 48, Eclairage)  Glow-wire test for outer parts of luminaires:		N
	- 850°C for luminaires in stairways and horizontal travel paths		N
	- 650°C for indoor luminaires		N
	GB: Requirements according to United Kingdom Building Regulation		N





EN 62031			
Cl.	Requirement – Test	Result - Remark	Verdict
	<b>LED modules for general lighting – Safety specifications</b> <b>EN 62031:2008+A1:2013+A2:2015</b>		P
<b>4</b>	<b>GENERAL REQUIREMENTS</b>		P
4.4	Integral modules tested assembled in the luminaire		P
4.5	Independent modules complies with requirements in IEC 60598-1		N
<b>5</b>	<b>GENERAL TEST REQUIREMENTS</b>		P
5.5	SELV-operated LED modules comply with Annex I of IEC 61347-2-13	(see Annex 1)	N
	General conditions for tests in Annex A	(see Annex A)	P
<b>6</b>	<b>CLASSIFICATION</b>		P
	Built-in module .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Independent module .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Integral module .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	For Integral module; Note to 1.2.1 in IEC 60598-1 applies.		—
<b>7</b>	<b>MARKING</b>		N
<b>7.1</b>	<b>Mandatory markings for built-in or independent modules</b>		N
	a) mark of origin		N
	b) model number, type reference		N
	c1) constant voltage module; rated supply voltage and supply frequency		N
	c2) constant current module; rated supply current and supply frequency		N
	d) nominal power		N
	e) indication of connections, wiring diagram		N
	f) value of $t_c$ and place on the module		N
	g) $E_{thr}$ if required		N
	h) symbol for built-in modules		N
	i) heat transfer temperature $t_d$		N
	j) power for heat-conduction $P_d$		N
	k) working voltage for insulation		N
<b>7.2</b>	<b>Location of marking</b>		N
	- marking of a), b), c) and f) on the modules		N



EN 62031			
Cl.	Requirement – Test	Result - Remark	Verdict
	- marking of d), e), g), h), i) and j) on the modules or data sheet		N
	- marking of k) in manufactures literature		N
	- integral modules a) to g) in literature		N
<b>7.3</b>	<b>Durable and legibility of marking</b>		<b>N</b>
	- marking of a), b), c) and f) legible after test with water		N
	- marking of d) to j) inspection of compliance		N
<b>8</b>	<b>TERMINALS</b>		<b>N</b>
	Screw terminals according section 14 of IEC 60598-1:		N
	Separately approved; component list	(see Annex 2)	N
	Part of the luminaire	(see Annex 3)	N
	Screwless terminals according section 15 of IEC 60598-1:		N
	Separately approved; component list	(see Annex 2)	N
	Part of the luminaire	(see Annex 4)	N
	Connectors according IEC 60838-2-2:		N
	Separately approved; component list	(see Annex 2)	N
<b>9 (9)</b>	<b>PROVISION FOR PROTECTIVE EARTHING</b>		<b>N</b>
<b>- (9.1)</b>	<b>Provisions for protective earthing</b>		<b>N</b>
	Terminal complying with clause 8		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
<b>- (9.2)</b>	<b>Provision for functional earthing</b>		<b>N</b>
	Comply with clause 8 and 9.1		N
<b>- (9.3)</b>	<b>Earth contact via the track on the printed board</b>		<b>N</b>



EN 62031			
Cl.	Requirement – Test	Result - Remark	Verdict
	Test with a current of 25 A between earthing terminal and each of the accessible metal parts; measured resistance ( $\Omega$ ) at $\geq 10$ A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$ .....		N
- (9.4)	<b>Earthing of built-in lamp controlgear</b>		N
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N
	Earthing terminal only for earthing the built-in controlgear		N
- (9.5)	<b>Earthing via independent controlgear</b>		N
- (9.5.1)	Earth connection to other equipment		N
	Looping or through connection, conductor min. 1,5 mm <sup>2</sup> and of copper or equivalent		N
	Protective earthing wires in line with 5.3.1.1 and clause 7		N
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N
	Test with a current of 25 A between input and output earth terminals; measured resistance ( $\Omega$ ) between earthing terminal and each of the accessible metal parts at $\geq 10$ A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$ .....		N
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N

<b>10 (10)</b>	<b>PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS</b>		N
- (10.1)	Controlgear protected against accidental contact with live parts		N
- (A2)	The current flowing between the part concerned and earth is measured and does not exceed 0,7 mA (peak) or 2 mA d.c. ....		N
- (A2)	For frequencies above 1 kHz, the current does not exceed 0,7 mA (peak) multiplied by the value of the frequency in kilohertz or 70 mA (peak) .....		N
- (A3)	The voltage between the part concerned and any accessible part is measured and does not exceed 34 V (peak) .....		N
- (10.1)	Lacquer or enamel not used for protection or insulation		N
	Adequate mechanical strength on parts providing protection		N
- (10.2)	Capacitors $> 0,5 \mu\text{F}$ : voltage after 1 min (V): $< 50$ V .....		N
- (10.3)	Controlgear providing SELV		N





EN 62031			
Cl.	Requirement – Test	Result - Remark	Verdict
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		N
	No connection between output circuit and the body or protective earthing circuit		N
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		N
	SELV outputs separated by at least basic insulation		N
	ELV conductive parts insulated as live parts		N
	Tests according Annex L of IEC 61347-1		N
- (10.4)	Accessible conductive parts in SELV circuits		N
	Output voltage under load $\leq 25$ V r.m.s. or $\leq 60$ V d.c.		N
	If output voltage $> 25$ V r.m.s. or $> 60$ V d.c.; No load output $\leq 35$ V peak or $\leq 60$ V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. ....:		N
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N
	Y1 or Y2 capacitors comply with IEC 60384-14		N
	Resistors comply with test (a) in 14.1 of IEC 60065		N
<b>11 (11)</b>	<b>MOISTURE RESISTANCE AND INSULATION</b>		<b>P</b>
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (M $\Omega$ ):		P
	For basic insulation $\geq 2$ M $\Omega$ .....	$>100$ M $\Omega$	P
	For double or reinforced insulation $\geq 4$ M $\Omega$ .....		N
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		P
<b>12 (12)</b>	<b>ELECTRIC STRENGTH</b>		<b>P</b>
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V	500V	P
	Working voltage $\leq 50$ V, test voltage 500 V		N
	Working voltage $> 50$ V $\leq 1000$ V, test voltage (V):		P



EN 62031			
Cl.	Requirement – Test	Result - Remark	Verdict
	Basic insulation, 2U + 1000 V		N
	Supplementary insulation, 2U + 1000 V		N
	Double or reinforced insulation, 4U + 2000 V		N
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N
<b>13 (14)</b>	<b>FAULT CONDITIONS</b>		<b>P</b>
- (14)	When operated under fault conditions the controlgear:		N
	- does not emit flames or molten material		N
	- does not produce flammable gases		N
	- protection against accidental contact not impaired		N
	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	(see appended table)	N
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)	(see appended table)	N
	Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3		N
- (14.2)	Short-circuit or interruption of semiconductor devices	(see appended table)	N
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	N
- (14.5)	After the tests has been carried out on three samples:		N
	The insulation resistance $\geq 1 \text{ M}\Omega$ .....		N
	No flammable gases		N
	No accessible parts have become live		N
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		N
- (14.6)	Relevant fault condition tests with high-power supply		N
<b>13.2</b>	<b>Overpower condition</b>		<b>P</b>
	Module withstands overpower condition >15 min.		P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		N
	No fire, smoke or flammable gas is produced		P





EN 62031			
Cl.	Requirement – Test	Result - Remark	Verdict
	Molten material does not ignite tissue paper, spread below the module		P
<b>15</b>	<b>CONSTRUCTION</b>		<b>P</b>
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
<b>16 (16)</b>	<b>CREEPAGE DISTANCES AND CLEARANCES</b>		<b>N</b>
- (16)	Creepage and distances and clearances in compliance with IEC 61347-1	(see appended table)	N
	Insulating lining of metallic enclosures		N
	Basic insulation on printed boards tested according to clause 14		N
	Distances subjected to both sinusoidal voltage as non-sinusoidal pulses not less than value in Table 16		N
	Creepage distances not less than minimum clearance		N
16 (-)	Conductive accessible parts in compliance with applicable parts of IEC 60598-1		N
<b>17 (17)</b>	<b>SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS</b>		<b>P</b>
	Cl. 17 refer to Cl. 17 of IEC 61347-1 which refer to Cl. 4.11 and 4.12 of IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		—
<b>(4.11)</b>	<b>Electrical connections</b>		<b>P</b>
(4.11.1)	Contact pressure		P
(4.11.2)	Screws:		N
	- self-tapping screws		N
	- thread-cutting screws		N
(4.11.3)	Screw locking:		N
	- spring washer		N
	- rivets		N
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N
<b>(4.12)</b>	<b>Mechanical connections and glands</b>		<b>N</b>
(4.12.1)	Screws not made of soft metal		N
	Screws of insulating material		N
	Torque test: torque (Nm); part .....		N
	Torque test: torque (Nm); part .....		N
	Torque test: torque (Nm); part .....		N





EN 62031			
Cl.	Requirement – Test	Result - Remark	Verdict
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N
(4.12.4)	Locked connections:		N
	- fixed arms; torque (Nm).....:		N
	- lampholder; torque (Nm).....:		N
	- push-button switches; torque 0,8 Nm.....:		N
(4.12.5)	Screwed glands; force (Nm) .....		N
<b>18 (18)</b>	<b>RESISTANCE TO HEAT, FIRE AND TRACKING</b>		<b>N</b>
- (18.1)	Ball-pressure test .....		N
- (18.3)	Glow-wire test (650°C) .....		N
- (18.4)	Needle-flame test (10 s) .....		N
- (18.5)	Proof tracking test .....		N
<b>19 (19)</b>	<b>RESISTANCE TO CORROSION</b>		<b>N</b>
	- test according 4.18.1 of IEC 60598-1		N
	- adequate varnish on the outer surface		N
<b>20</b>	<b>INFORMATION FOR LUMINAIRE DESIGN</b>		<b>N</b>
	Information in Annex D (informative)		—
<b>21</b>	<b>HEAT MANAGEMENT</b>		<b>N</b>
<b>21.1</b>	<b>General</b>		<b>N</b>
	Exchangeability is safeguarded by cap or base		N
<b>21.2</b>	<b>Heat-conducting foil and paste</b>		<b>N</b>
	Heat-conducting foil delivered with the module if necessary		N
<b>22</b>	<b>PHOTOBIOLOGICAL SAFETY</b>		<b>P</b>
<b>22.1</b>	<b>UV radiation</b>		<b>N</b>
	Luminous radiation not exceed 2mW/klm		N
<b>22.2</b>	<b>Blue light hazard</b>		<b>P</b>
	Assessed according to IEC TR 62778	RG1	P
<b>22.3</b>	<b>Infrared radiation</b>		<b>N</b>
	Requirements for infrared radiation when required		N
<b>A</b>	<b>ANNEX A - TESTS</b>		<b>P</b>
	All tests performed in accordance with the advice given in Annex H of IEC 61347-1, if applicable		P



EN 62031			
Cl.	Requirement – Test	Result - Remark	Verdict

<b>13 (14)</b>	<b>TABLE: tests of fault conditions</b>	<b>P</b>
<b>Part</b>	<b>Simulated fault</b>	<b>Hazard</b>
<b>LED</b>	<b>Short-circuit</b>	<b>NO</b>

<b>16 (16)</b>	<b>TABLES: Creepage distances and clearances</b>						<b>N</b>
<b>Table 3</b>	<b>Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages</b>						<b>N</b>
RMS working voltage (V) not exceeding		50	150	250	500	750	1000
<b>Creepage distances</b>							
Required basic insulation, PTI $\geq$ 600		0,6	0,8	1,5	3	4	5,5
Measured							
Required basic insulation, PTI $<$ 600		1,2	1,6	2,5	5	8	10
Measured							
Required supplementary insulation PTI $\geq$ 600		-	0,8	1,5	3	4	5,5
Measured							
Required supplementary insulation PTI $<$ 600		-	1,6	2,5	5	8	10
Measured							
Required reinforced insulation		-	3,2	5	6	8	11
Measured							
<b>Clearances</b>							
Required basic insulation		0,2	0,8	1,5	3	4	5,5
Measured							
Required supplementary insulation		-	0,8	1,5	3	4	5,5
Measured							
Required reinforced insulation		-	1,6	3	6	8	11
Measured							
<b>Table 4</b>	<b>Minimum distances (mm) for non-sinusoidal pulse voltages</b>						



EN 62031							
Cl.	Requirement – Test			Result - Remark			Verdict
Rated pulse voltage (peak kV)	2,0	2,5	3,0	4,0	5,0	6,0	8,0
Required clearances	1,0	1,5	2	3	4	5,5	8
Measured							
Rated pulse voltage (peak kV)	10	12	15	20	25	30	40
Required clearances	11	14	18	25	33	40	60
Measured							
Rated pulse voltage (peak kV)	50	60	80	100	-	-	-
Required clearances	75	90	130	170	-	-	-
Measured							



# WALTEK





IEC TR 62778			
Cl.	Requirement – Test	Result - Remark	Verdict
	<b>Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires IEC TR 62778:2014 (Second Edition)</b>		<b>P</b>
<b>7</b>	<b>MEASUREMENT INFORMATION FLOW</b>		<b>P</b>
<b>7.1</b>	<b>Basic flow</b>		<b>P</b>
	'Law of conservation of luminance' applied		P
	Use of only true luminance/radiance values		P
	In case of luminaire: The light source is operated in the luminaire under similar conditions as when tested as a component		N
	In case $E_{thr}$ value for RG2 was established the peak value was derived from angular light distribution		N
<b>7.2</b>	<b>Conditions for the radiance measurement</b>		<b>P</b>
	Standard condition applied (200mm distance, 0,011rad field of view)		P
	Non-standard condition applied		N
<b>7.3</b>	<b>Special cases (I): Replacement by a lamp or LED module of another type</b>		<b>N</b>
	Light source is a white light source		N
	Evaluation done based on highest luminance		N
	Evaluation done based on CCT value		N
<b>7.4</b>	<b>Special cases (II): Arrays and clusters of primary light sources</b>		<b>N</b>
	LED package is evaluated as .....	<input type="checkbox"/> RG0 unlimited <input checked="" type="checkbox"/> RG1 unlimited	N
	$E_{thr}$ of LED package applies to array		N
<b>8</b>	<b>RISK GROUP CLASSIFICATION</b>		<b>P</b>
	Risk group achieved:		P
	- ... Risk Group 0 unlimited		N
	- ... Risk Group 1 unlimited		P
	- $E_{thr}$ ..... (lx) : Distance to reach RG1 ..... (m) :	1197lx 222mm only for model KX-135	P

	<b>TABLE: Spectroradiometric measurement</b>		<b>P</b>
	<b>Measurement performed on:</b>	<input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input checked="" type="checkbox"/> Luminaire	
	<b>Model number</b> ..... :	KX-135	
	<b>Test voltage (V)</b> ..... :	240V	—
	<b>Test current (mA)</b> ..... :	--	—



IEC TR 62778					
Cl.	Requirement – Test			Result - Remark	Verdict
	Test frequency (Hz).....:			50Hz	—
	Ambient, t (°C) .....			25.3	—
	Measurement distance .....			<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm	—
	Source size .....			<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small : .... mm	—
	Field of view .....			<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)	—
Item		Symbol	Units	Result	Remark
Correlated colour temperature		CCT	K	--	—
x/y colour coordinates		---	---	--	—
Blue light hazard radiance		L <sub>B</sub>	W/(m <sup>2</sup> •sr <sup>1</sup> )	--	—
Blue light hazard irradiance		E <sub>B</sub>	W/m <sup>2</sup>	--	—
Luminance		L	cd/m <sup>2</sup>	--	—
Illuminance		E	lx	1197	—
Supplementary information: RG1, distance at 0.222m only for 35W models					

TABLE: Spectroradiometric measurement					P
	<b>Measurement performed on:</b>		<input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input checked="" type="checkbox"/> Luminaire		
	<b>Model number.....:</b>		KX-134AD		
	<b>Test voltage (V) .....</b>		240V		—
	<b>Test current (mA) .....</b>		--		—
	<b>Test frequency (Hz).....:</b>		50Hz		—
	<b>Ambient, t (°C) .....</b>		25.3		—
	<b>Measurement distance .....</b>		<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm		—
	<b>Source size .....</b>		<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small : .... mm		—
	<b>Field of view .....</b>		<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)		—
Item		Symbol	Units	Result	Remark



IEC TR 62778				
Cl.	Requirement – Test		Result - Remark	Verdict
Correlated colour temperature	CCT	K	--	—
x/y colour coordinates	---	---	--	—
Blue light hazard radiance	$L_B$	$W/(m^2 \cdot sr^1)$	9.978e+003	—
Blue light hazard irradiance	$E_B$	$W/m^2$	--	—
Luminance	L	$cd/m^2$	4.399e+007	—
Illuminance	E	lx	--	—
Supplementary information: --				



# WALTEK





EN 62493			
Cl.	Requirement – Test	Result - Remark	Verdict

Assessment Of Lighting Equipment Related To Human Exposure To Electromagnetic Fields according to standard EN 62493			P
Procedure	Products are applications with	If No	If yes
a)	Non-electronic control gear?	<input type="checkbox"/> see Procedure b)	<input type="checkbox"/> Pass
b)	Incandescent-lamp technology or halogen?	<input type="checkbox"/> see Procedure c)	<input type="checkbox"/> see Procedure h)
c)	LED light-source technology?	<input type="checkbox"/> see Procedure d)	<input checked="" type="checkbox"/> see Procedure h)
d)	OLED light-source technology?	<input type="checkbox"/> see Procedure e)	<input type="checkbox"/> see Procedure h)
e)	High-pressure discharge lamp technology?	<input type="checkbox"/> see Procedure f)	<input type="checkbox"/> see Procedure h)
f)	Low-pressure discharge lamp technologies with a measurement distance $\geq 50\text{cm}$ (Distance for Hand lights, table lightings and Self-ballasted lamps is less than 50cm)	<input type="checkbox"/> see Procedure g)	<input type="checkbox"/> see Procedure h)
g)	Independent auxiliary?	<input type="checkbox"/> see Procedure i)	<input type="checkbox"/> see Procedure h)
h)	Non-wireless technology (exclude infra-red)?	<input type="checkbox"/> see Procedure i)	<input checked="" type="checkbox"/> Pass
i)	Additional test is performed and result is Pass Test Report with No.: .....	<input type="checkbox"/> see Procedure b)	<input type="checkbox"/> Pass

===== End of Report =====

  
**WALTEK**



## Photo Documentation

Reference No.: WTS19D11076933L

Model: KX-130



Photo 1



Photo 2





## Photo Documentation

Reference No.: WTS19D11076933L



Photo 3



Photo 4





## Photo Documentation

Reference No.: WTS19D11076933L



Photo 5

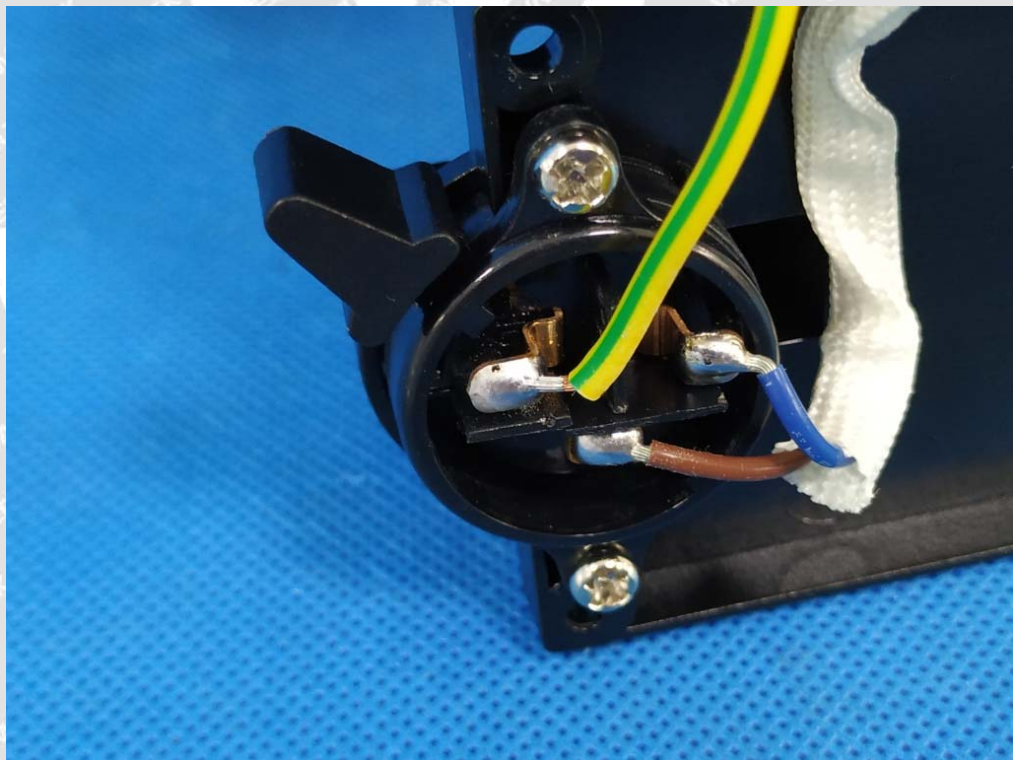


Photo 6



## Photo Documentation

Reference No.: WTS19D11076933L



Photo 7



Photo 8





## Photo Documentation

Reference No.: WTS19D11076933L

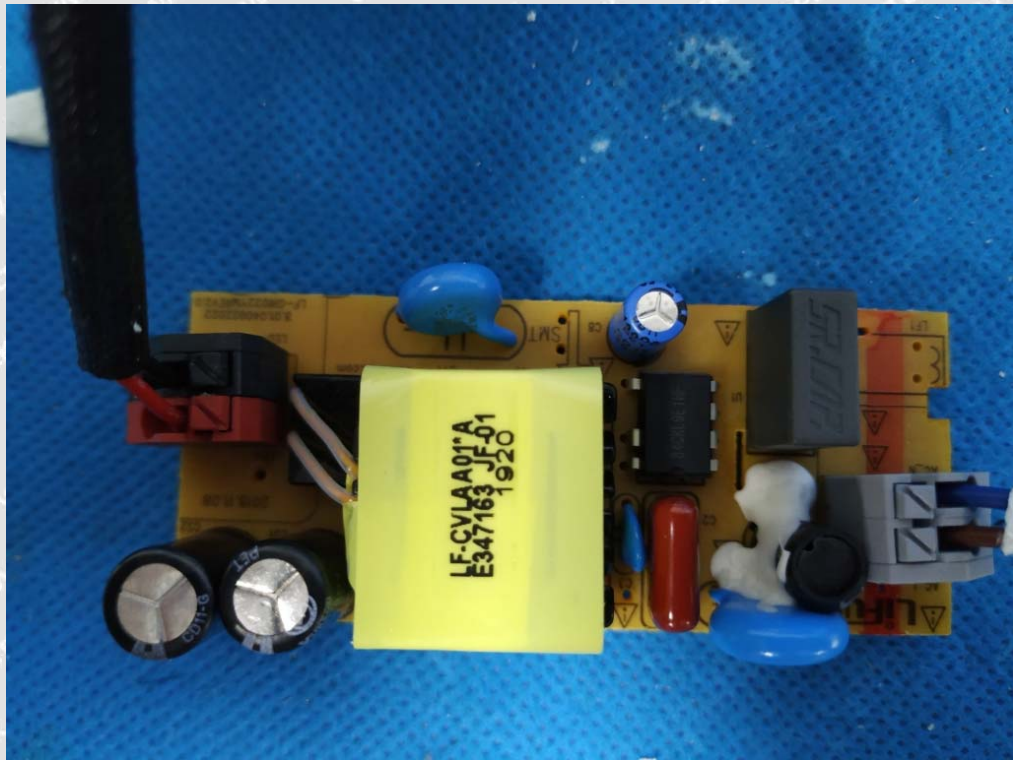


Photo 9

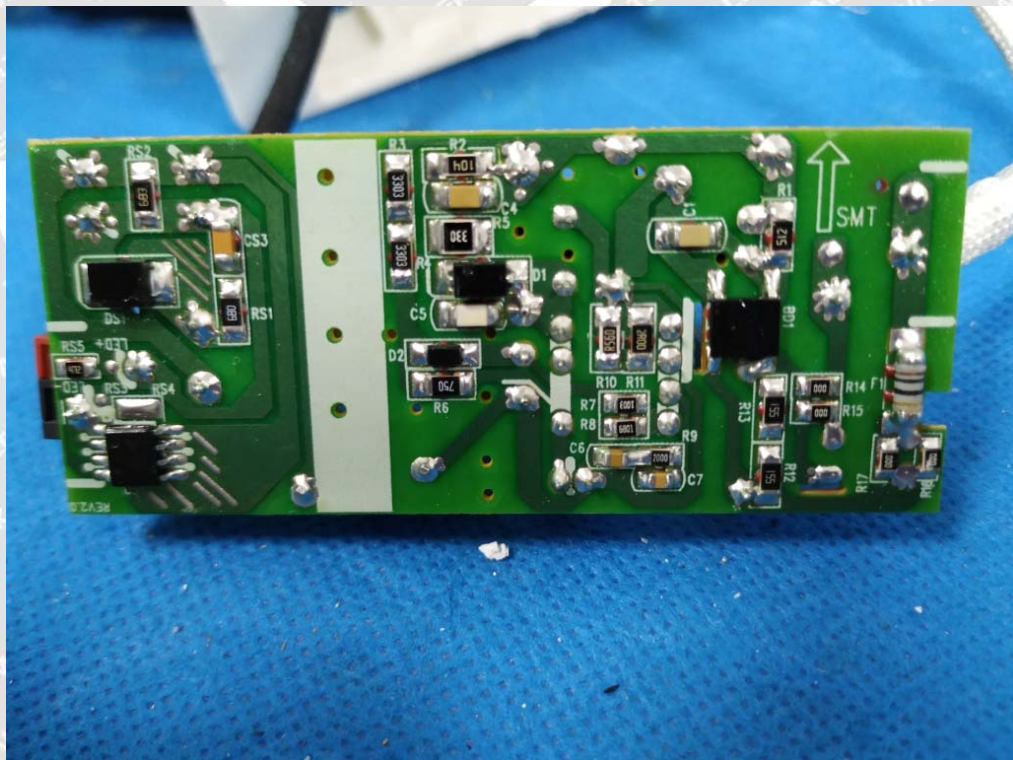


Photo 10





## Photo Documentation

Reference No.: WTS19D11076933L

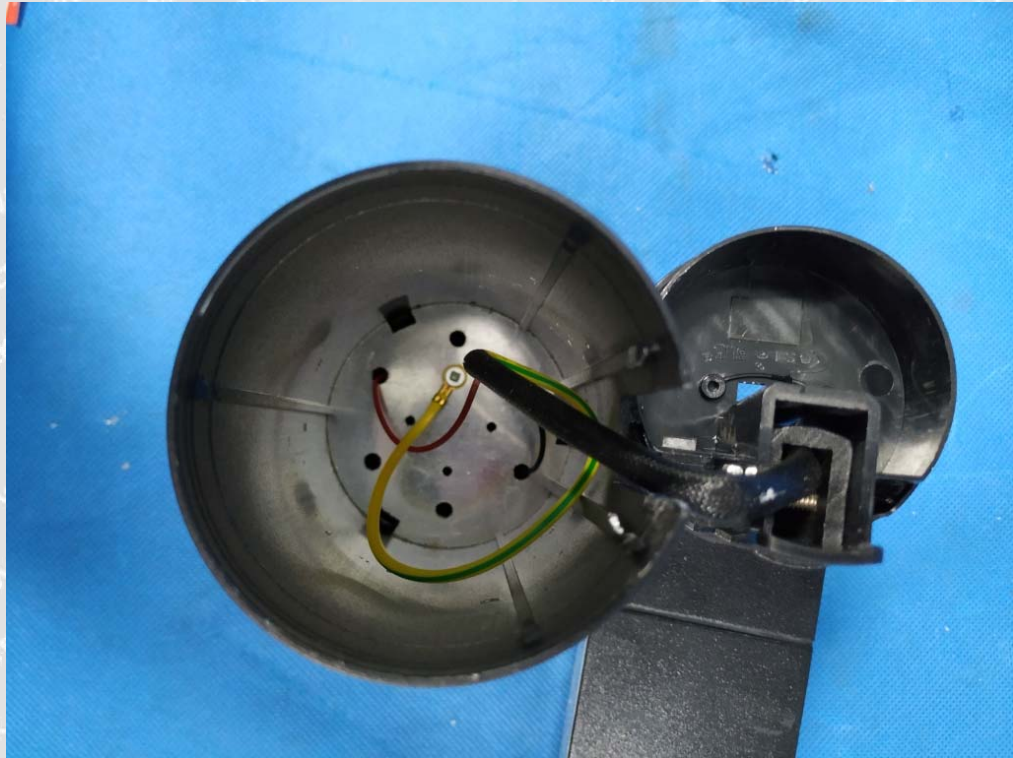


Photo 11



Photo 12



## Photo Documentation

Reference No.: WTS19D11076933L



Photo 13



Photo 14





## Photo Documentation

Reference No.: WTS19D11076933L

Model: KX-135



Photo 15







## Photo Documentation

Reference No.: WTS19D11076933L

Photo 16



Photo 17

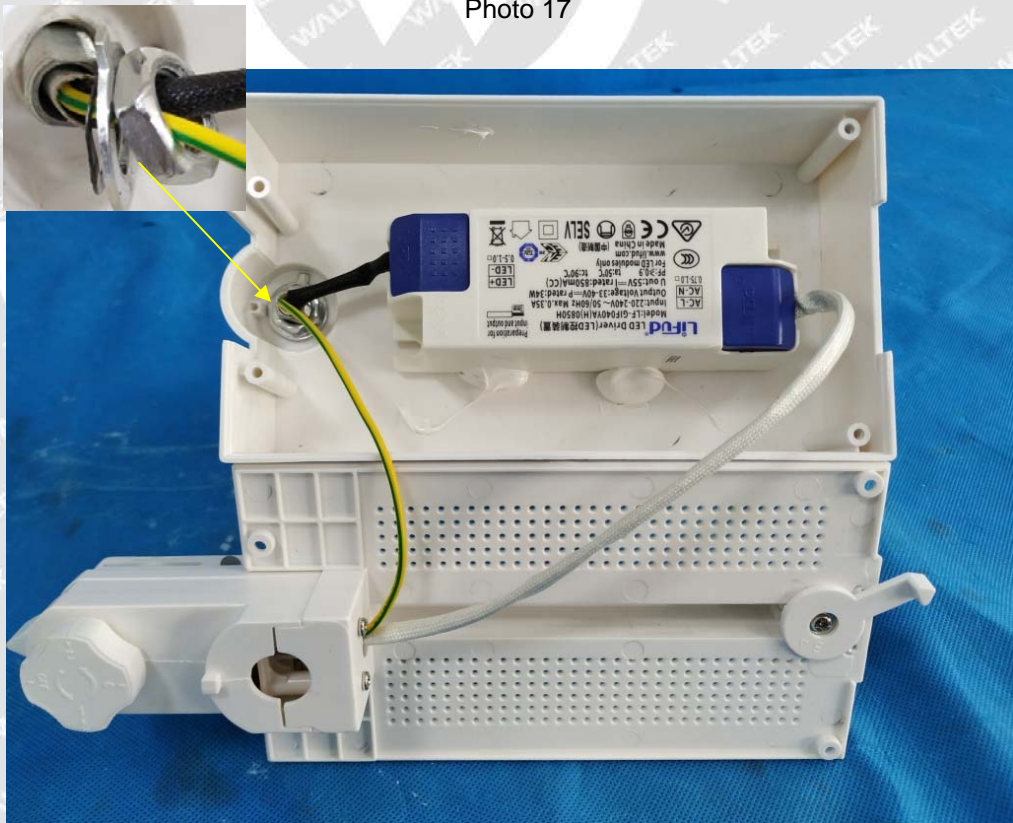


Photo 18



## Photo Documentation

Reference No.: WTS19D11076933L



Photo 19

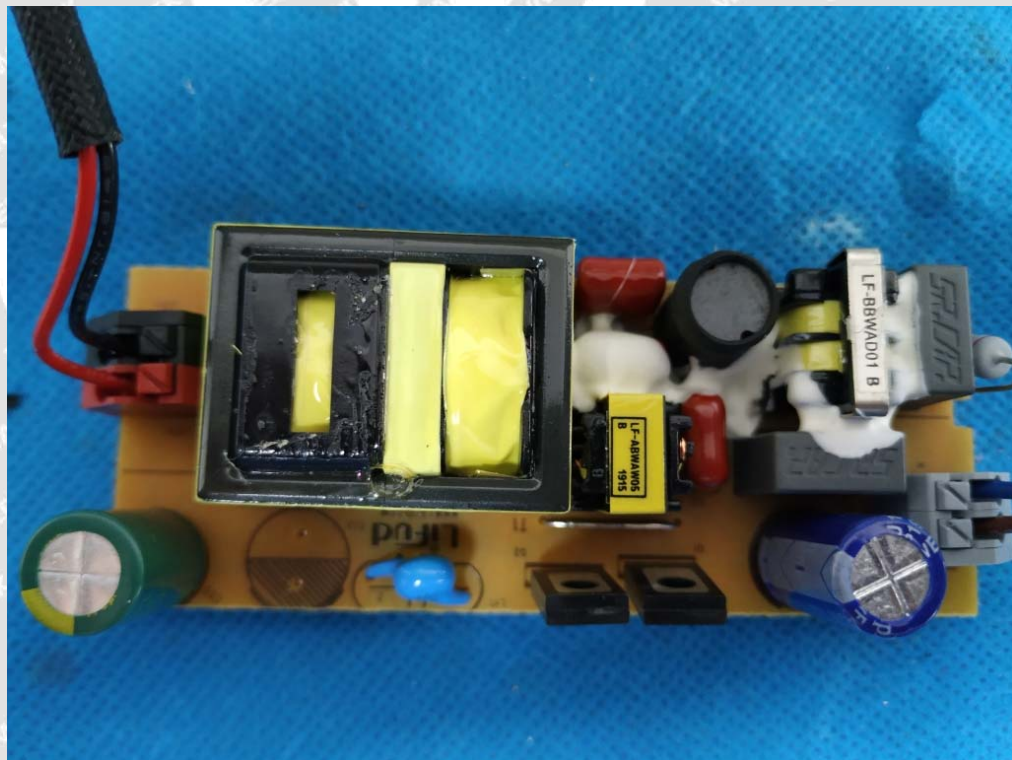


Photo 20





## Photo Documentation

Reference No.: WTS19D11076933L

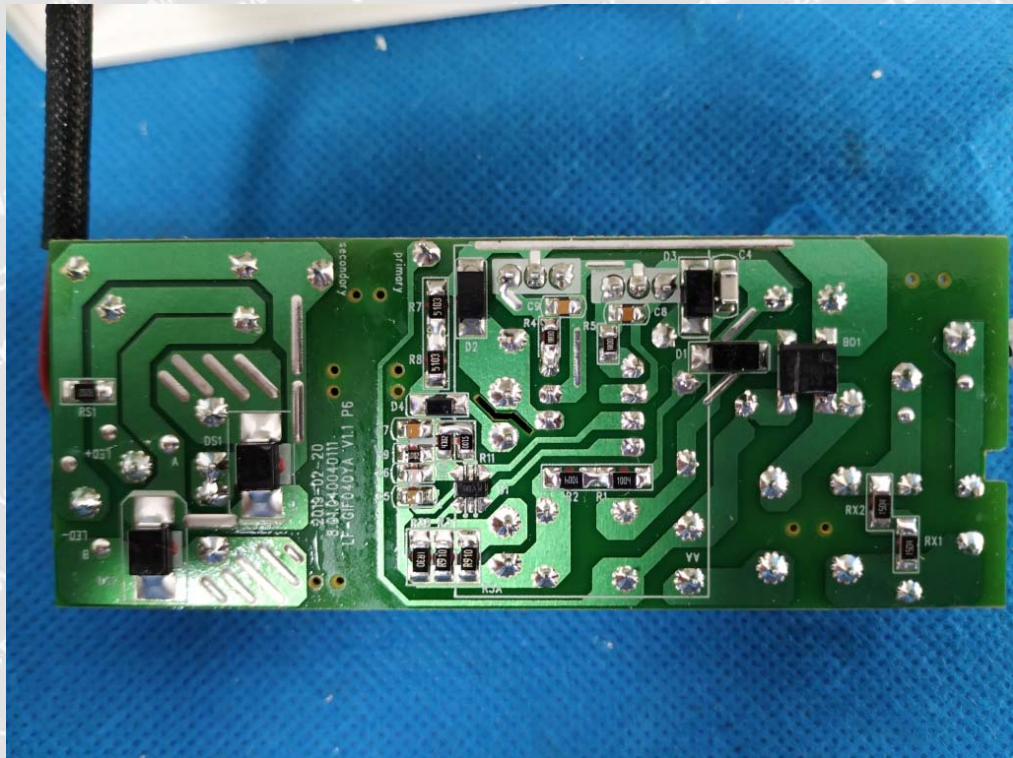


Photo 21



Photo 22





**Photo Documentation**

Reference No.: WTS19D11076933L



Photo 23

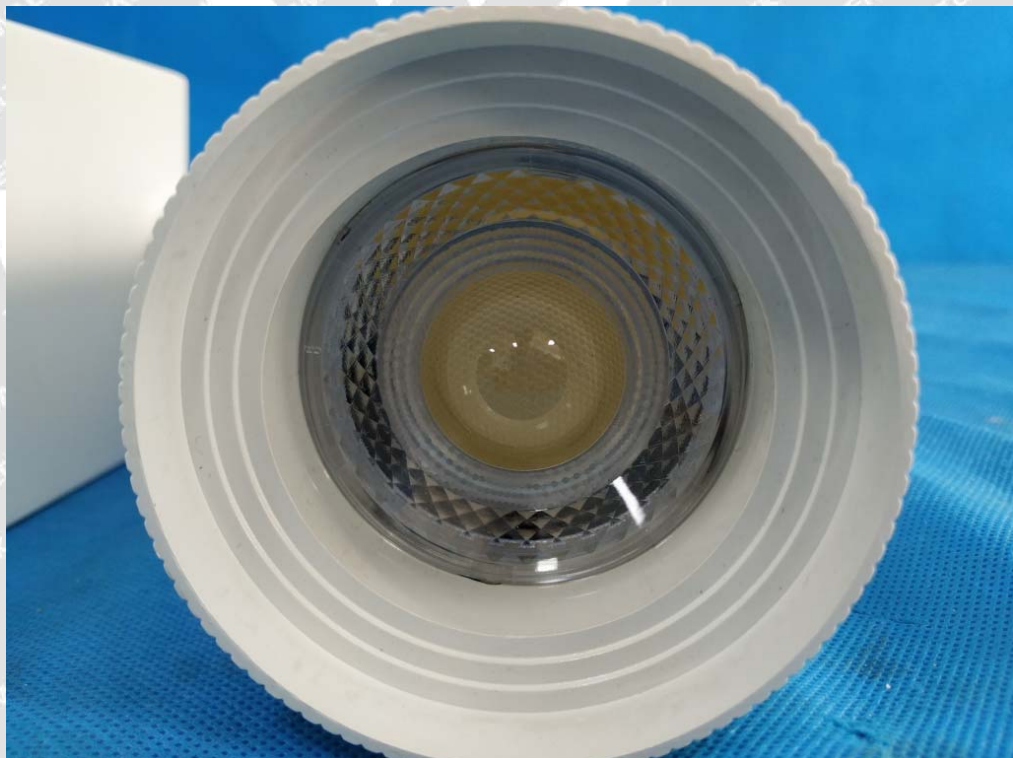


Photo 24





**Photo Documentation**

Reference No.: WTS19D11076933L

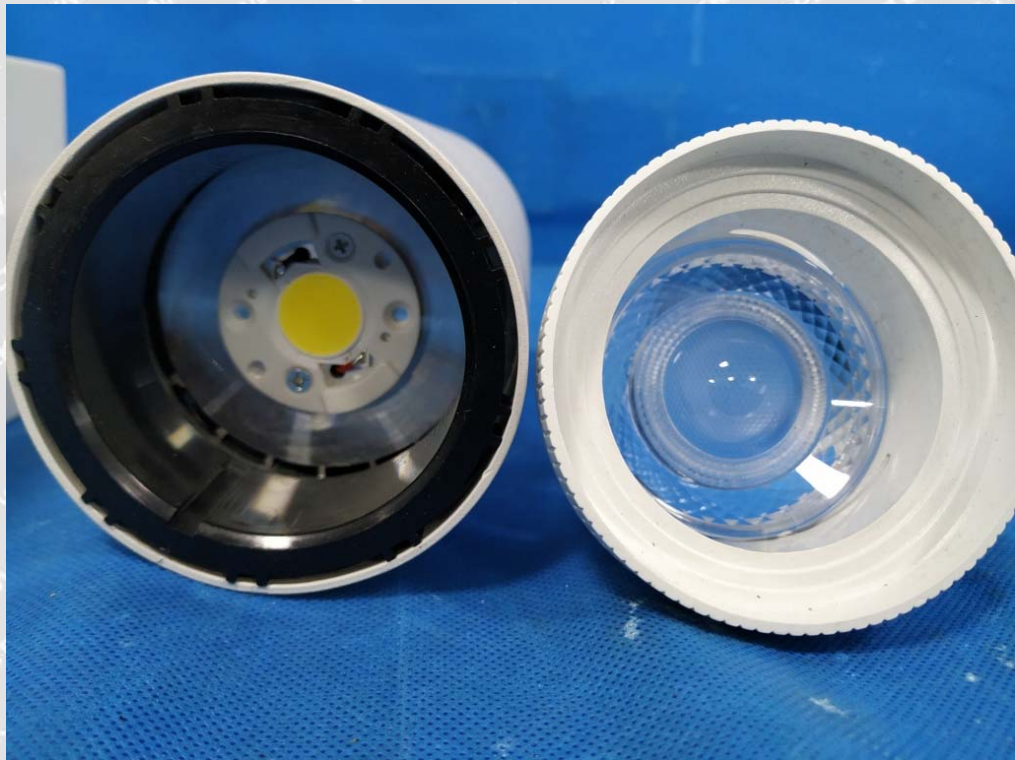


Photo 25



Photo 26





## Photo Documentation

Reference No.: WTS19D11076933L

Model: KX-130A



Photo 27



Photo 28





## Photo Documentation

Reference No.: WTS19D11076933L



Photo 29



Photo 30



## Photo Documentation

Reference No.: WTS19D11076933L

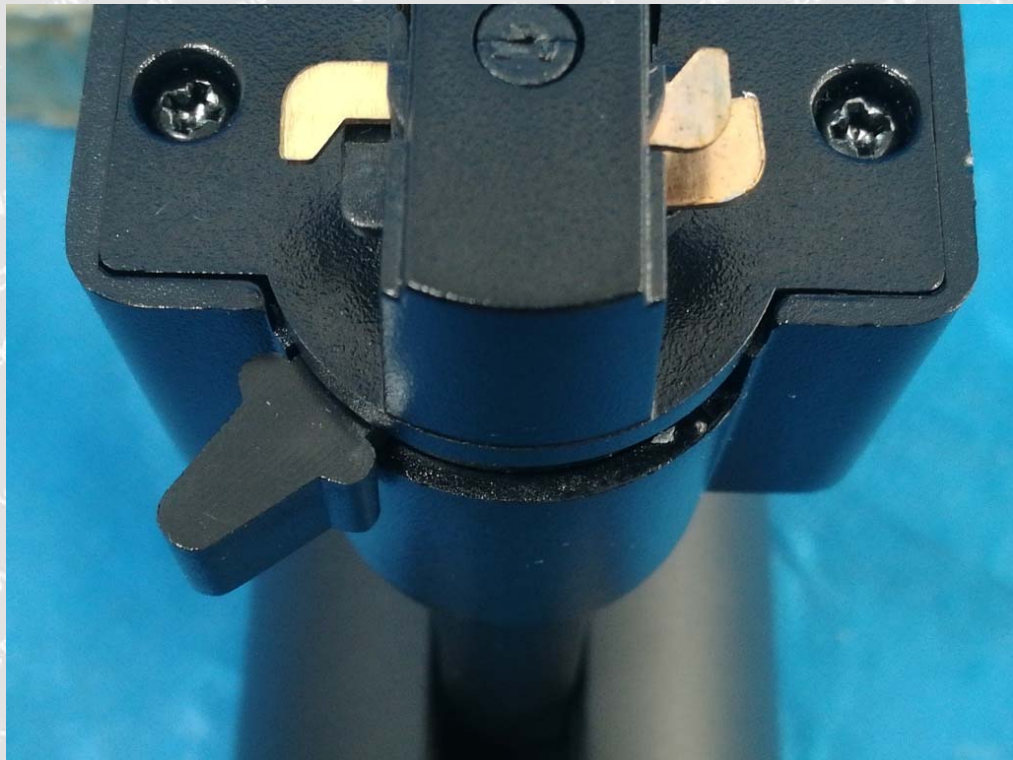


Photo 31



Photo 32





## Photo Documentation

Reference No.: WTS19D11076933L



Photo 33



Photo 34



## Photo Documentation

Reference No.: WTS19D11076933L



Photo 35



Photo 36





## Photo Documentation

Reference No.: WTS19D11076933L

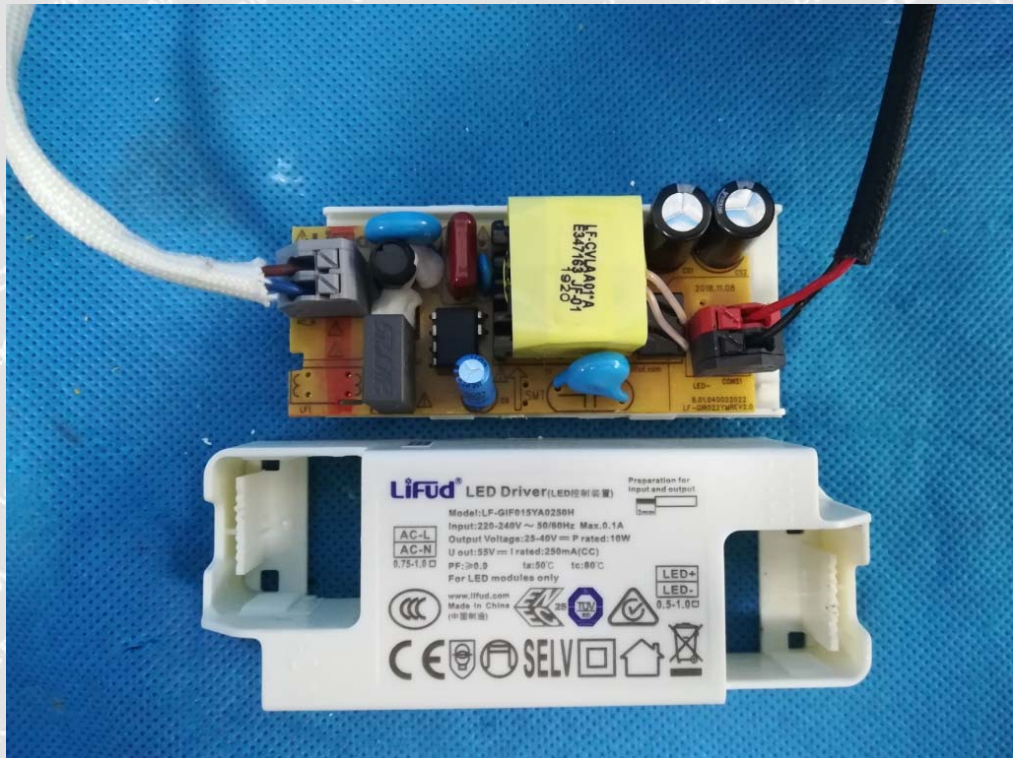


Photo 37

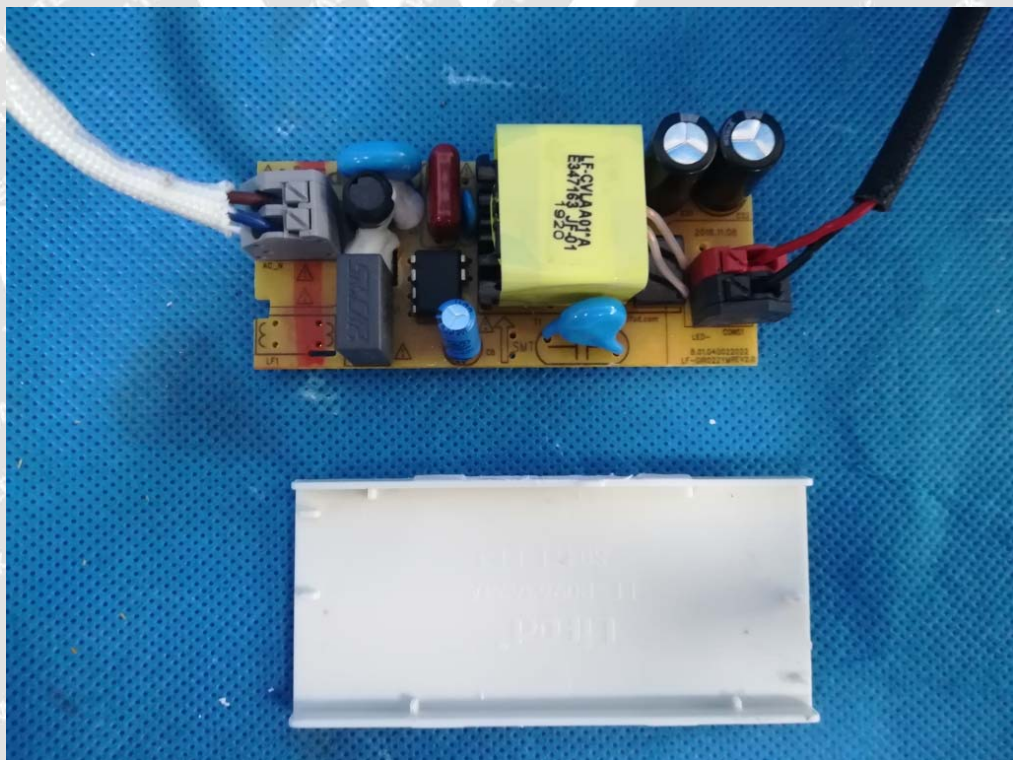


Photo 38





## Photo Documentation

Reference No.: WTS19D11076933L

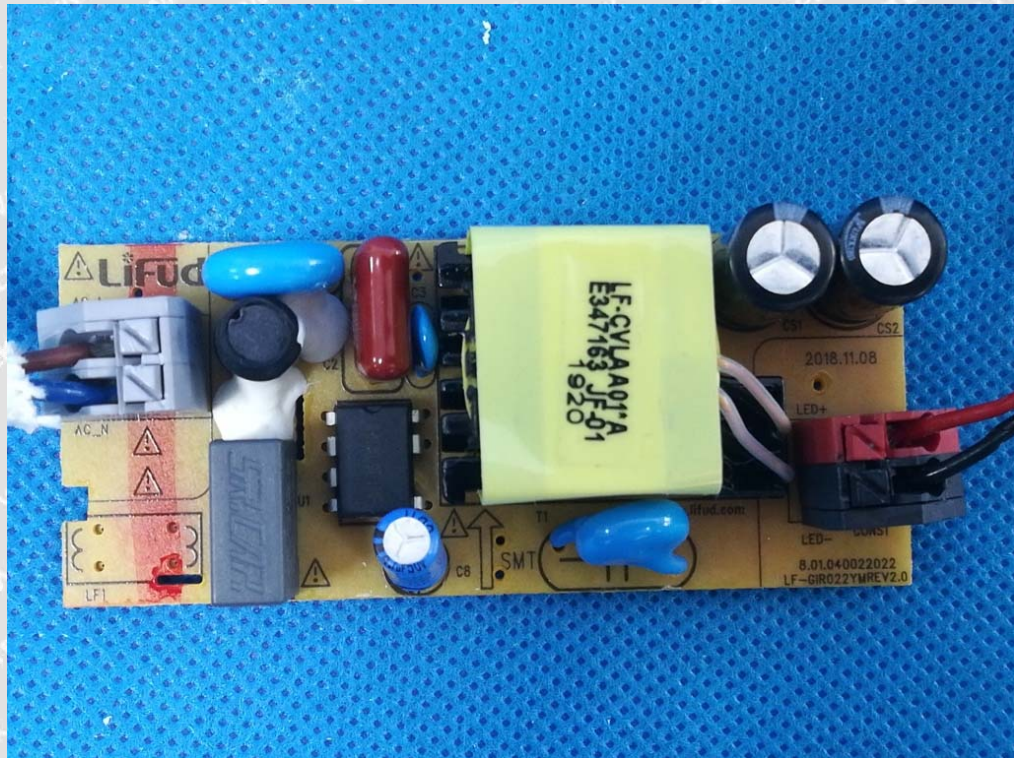


Photo 39

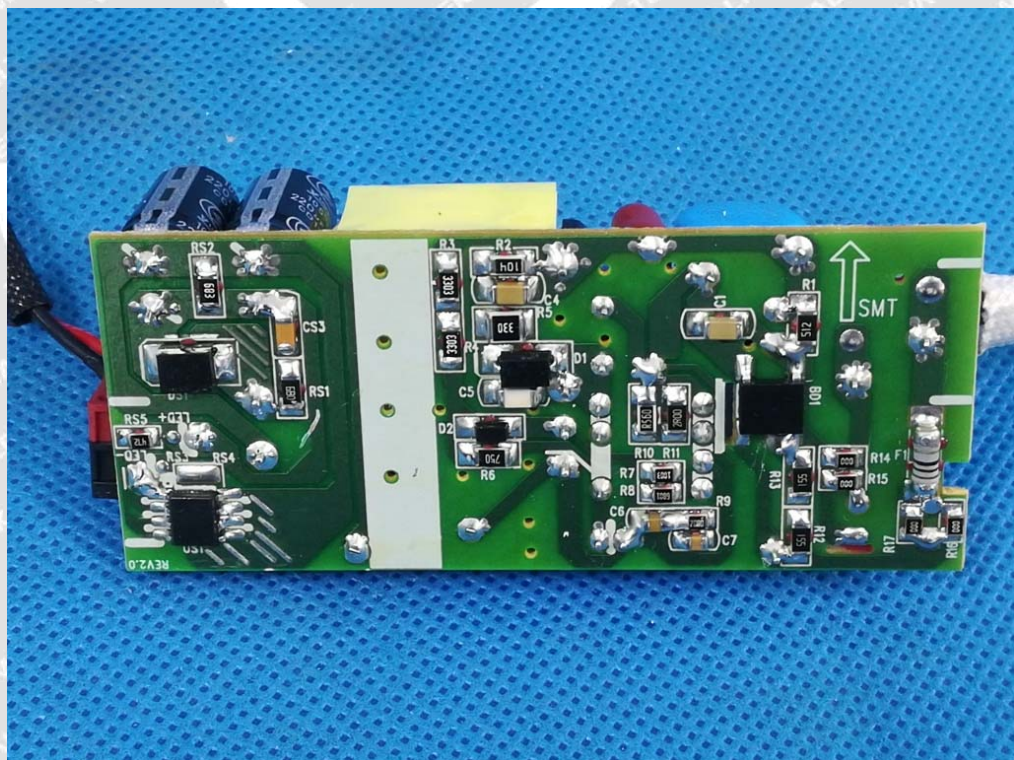


Photo 40





**Photo Documentation**

Reference No.: WTS19D11076933L

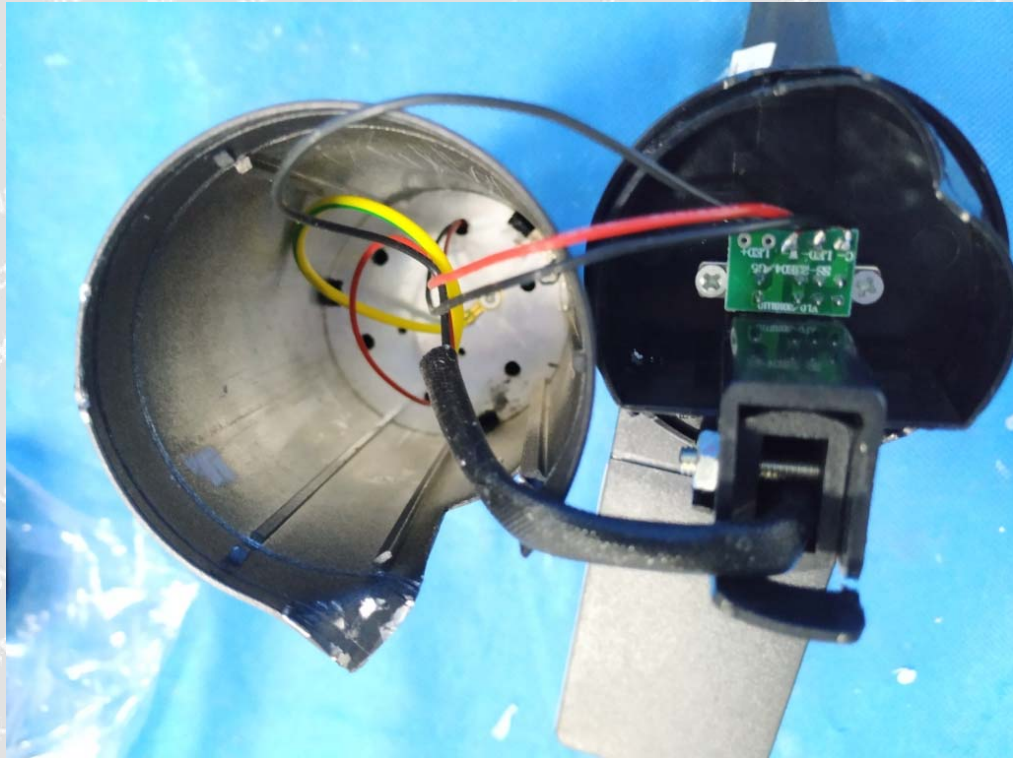


Photo 41



Photo 42



## Photo Documentation

Reference No.: WTS19D11076933L



Photo 43



Photo 44





**Photo Documentation**

Reference No.: WTS19D11076933L



Photo 45



Photo 46



## Photo Documentation

Reference No.: WTS19D11076933L

Model: KX-131A



Photo 47



Photo 48





## Photo Documentation

Reference No.: WTS19D11076933L



Photo 49



Photo 50



## Photo Documentation

Reference No.: WTS19D11076933L



Photo 51



Photo 52





## Photo Documentation

Reference No.: WTS19D11076933L

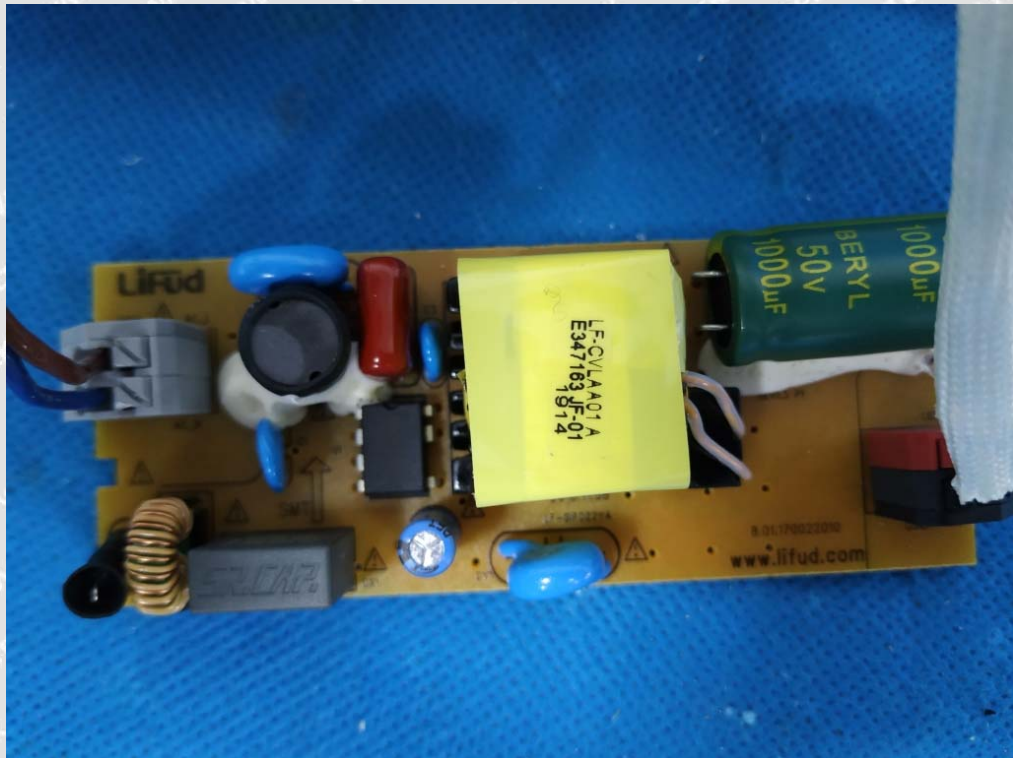


Photo 53

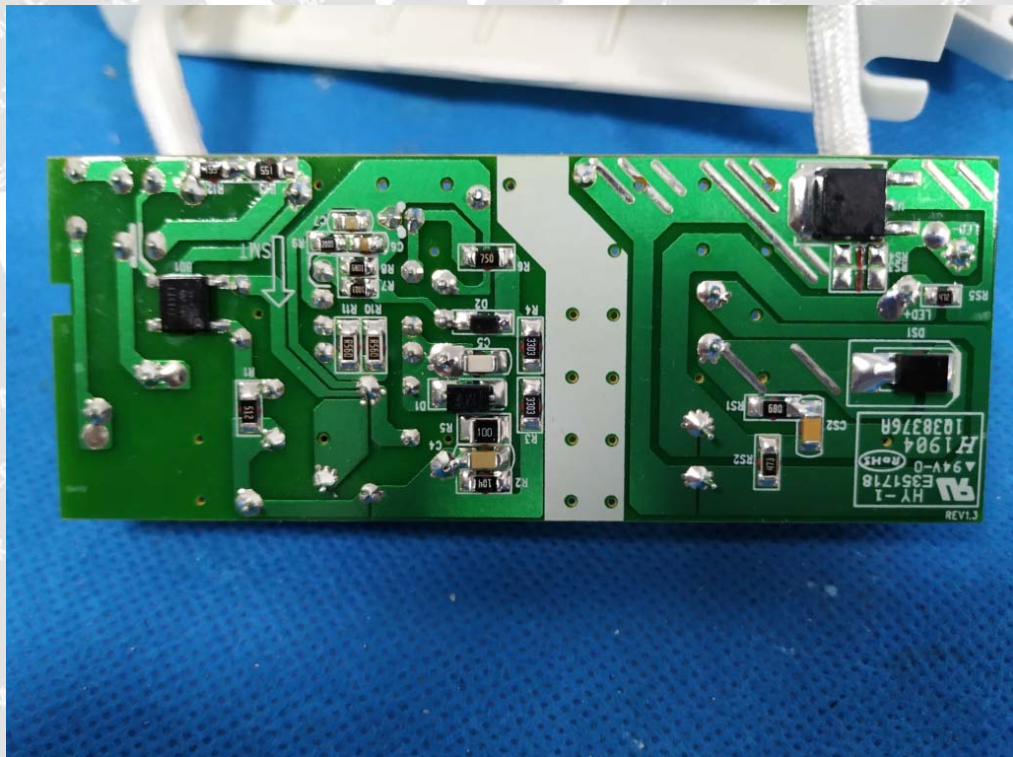


Photo 54



## Photo Documentation

Reference No.: WTS19D11076933L

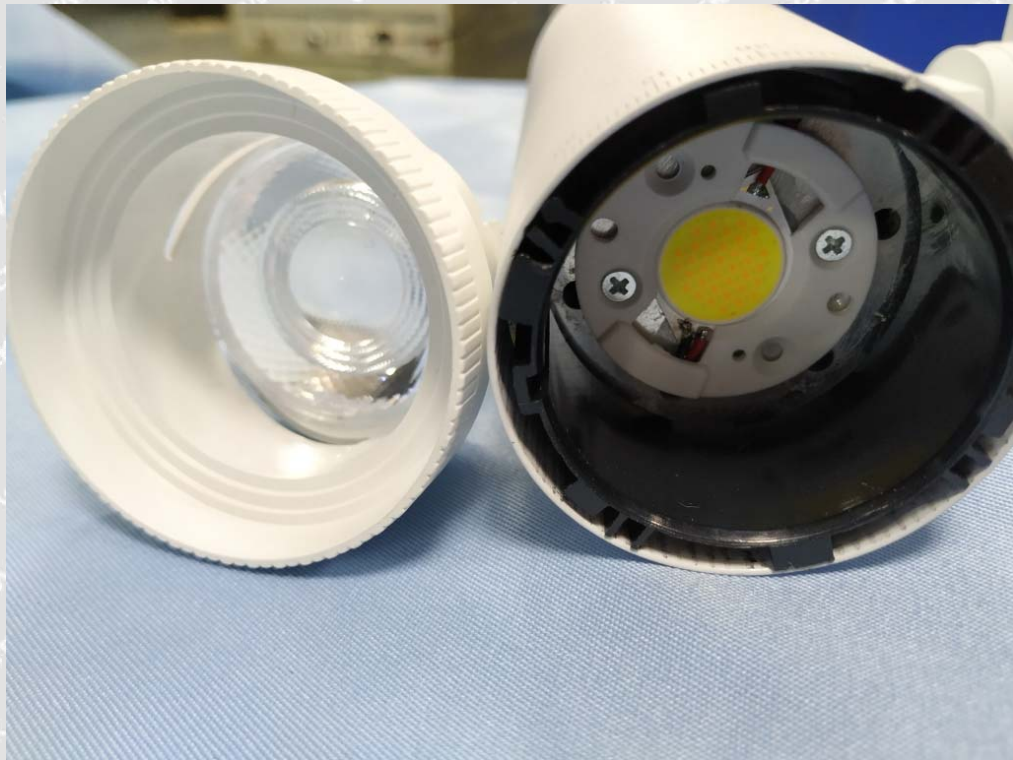


Photo 55



Photo 56





## Photo Documentation

Reference No.: WTS19D11076933L

Model: KX-130D

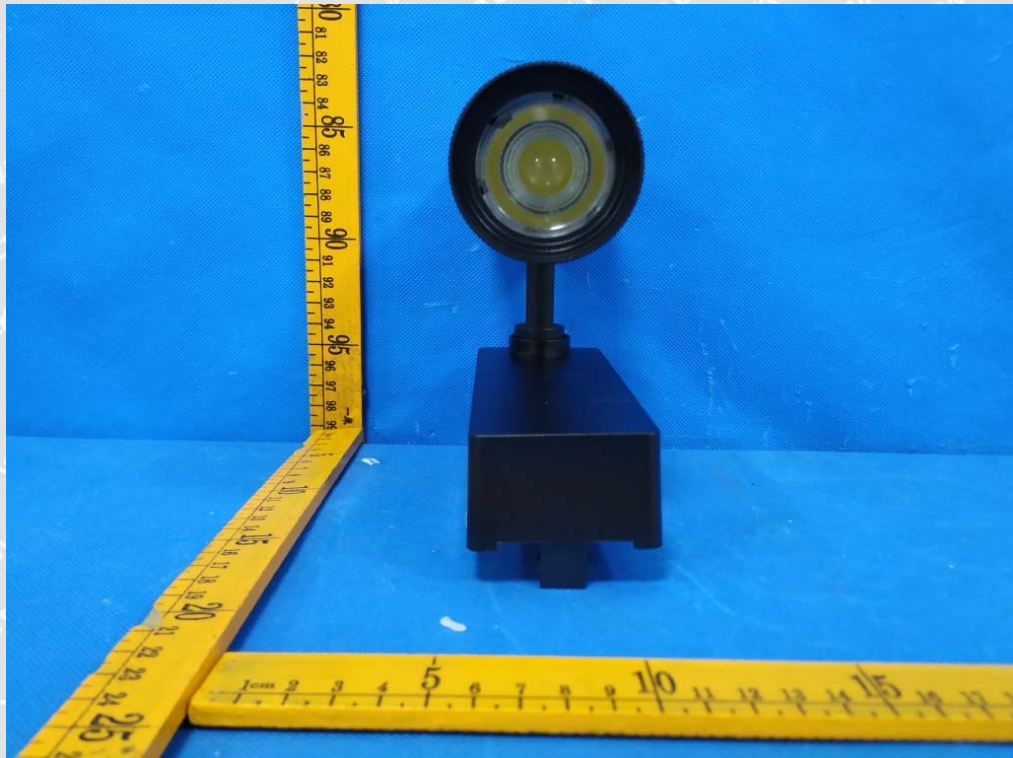


Photo 57



Photo 58



**Photo Documentation**

Reference No.: WTS19D11076933L



Photo 59



Photo 60





## Photo Documentation

Reference No.: WTS19D11076933L



Photo 61

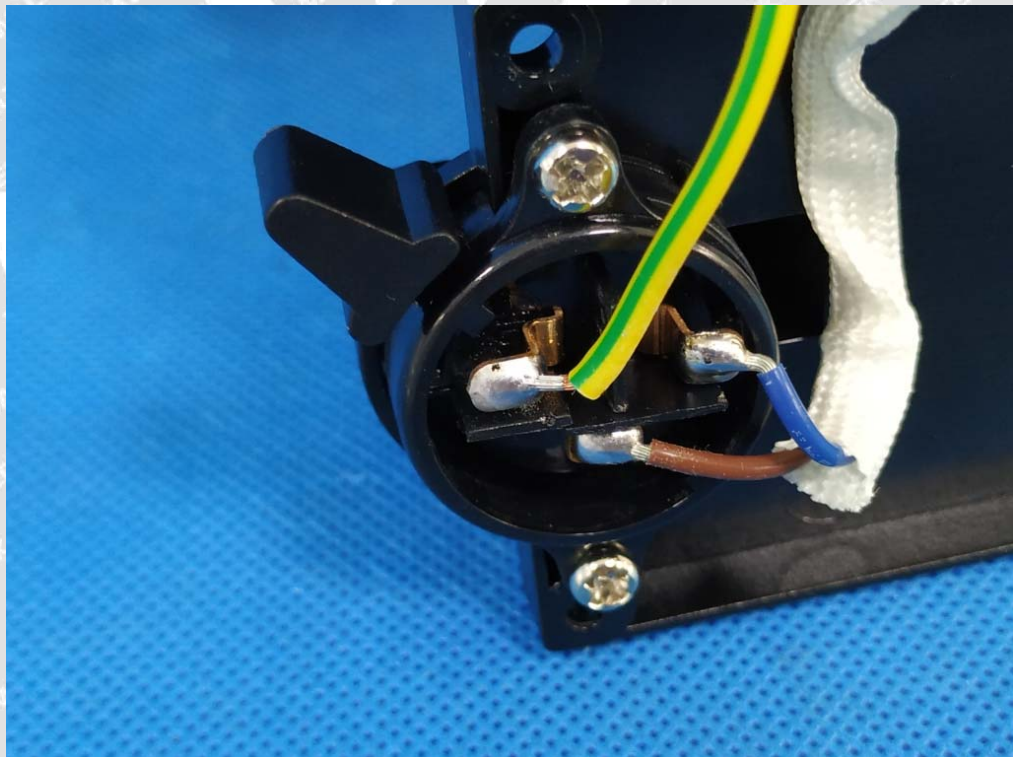


Photo 62



## Photo Documentation

Reference No.: WTS19D11076933L



Photo 63



Photo 64





## Photo Documentation

Reference No.: WTS19D11076933L

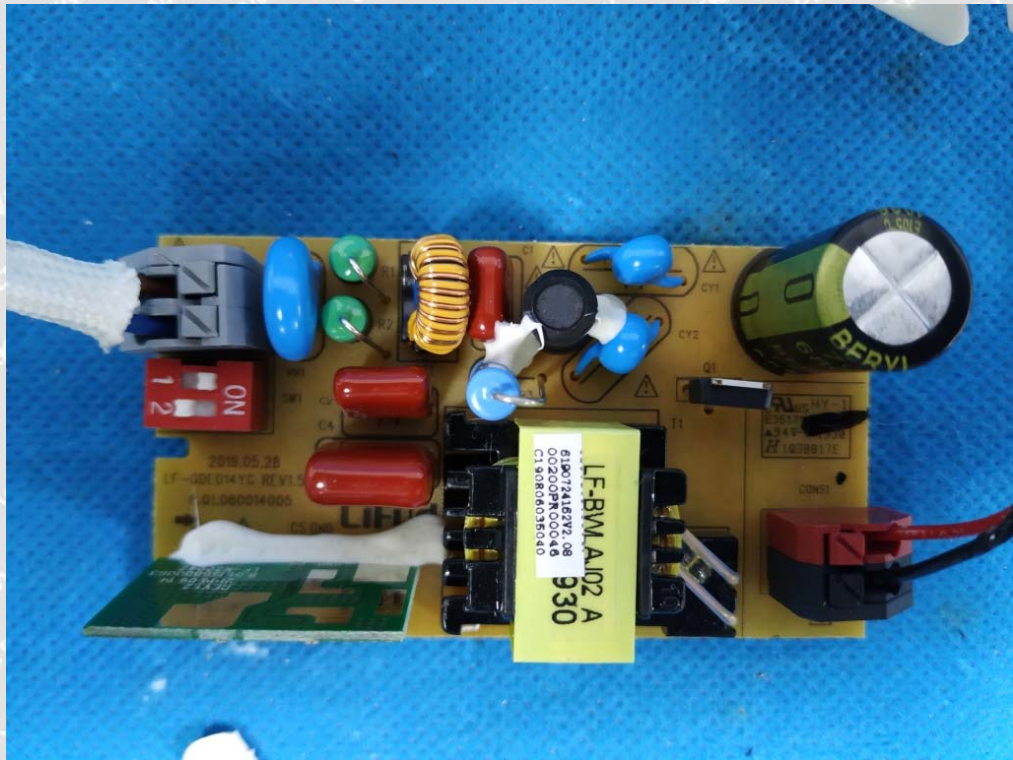


Photo 65

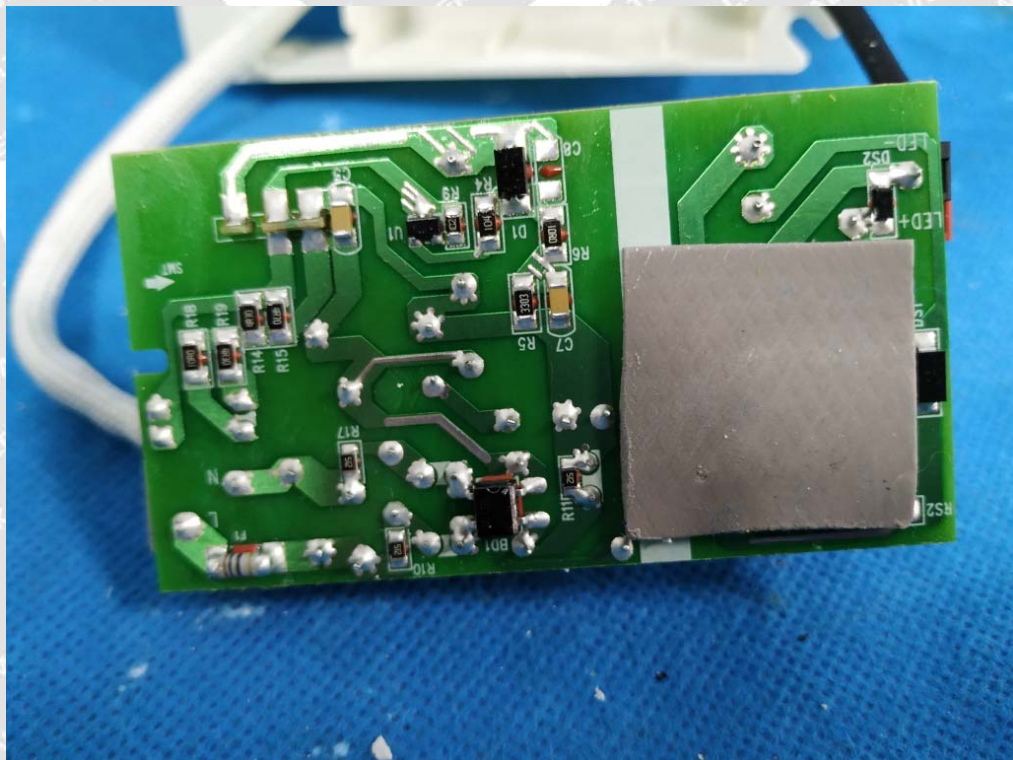


Photo 66





**Photo Documentation**

Reference No.: WTS19D11076933L



Photo 67

**Model: KX-130AD**



Photo 68





## Photo Documentation

Reference No.: WTS19D11076933L



Photo 69



Photo 70



## Photo Documentation

Reference No.: WTS19D11076933L



Photo 71



Photo 72





## Photo Documentation

Reference No.: WTS19D11076933L



Photo 73

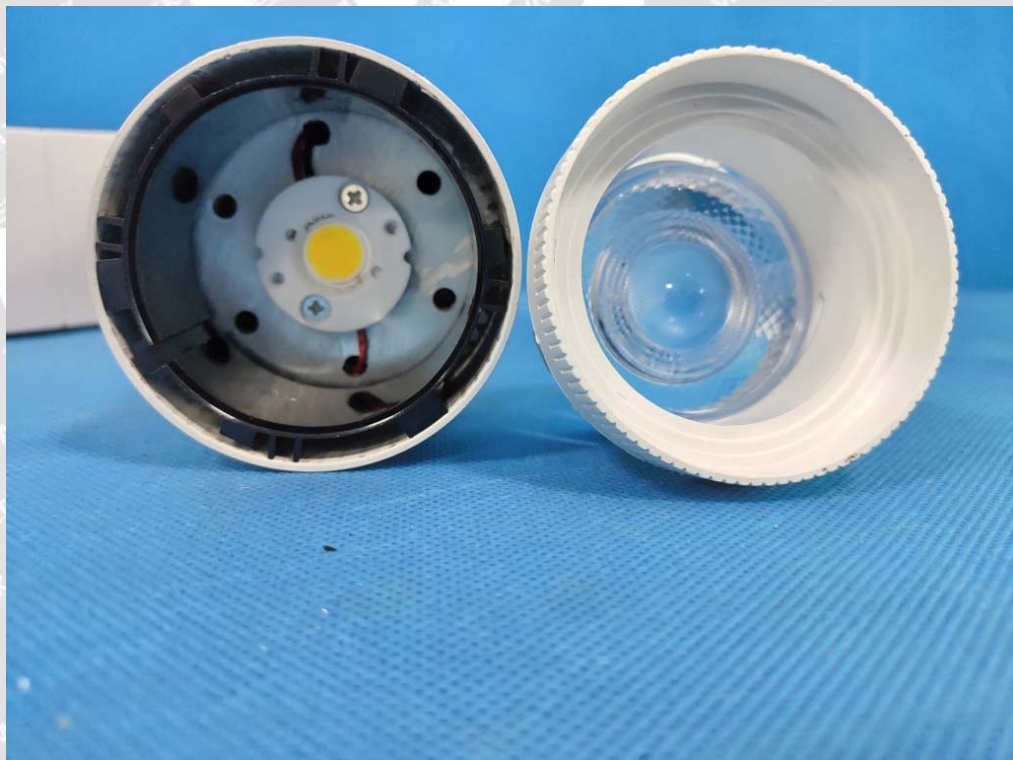


Photo 74





**Photo Documentation**

Reference No.: WTS19D11076933L



Photo 75

Model: KX-134AD

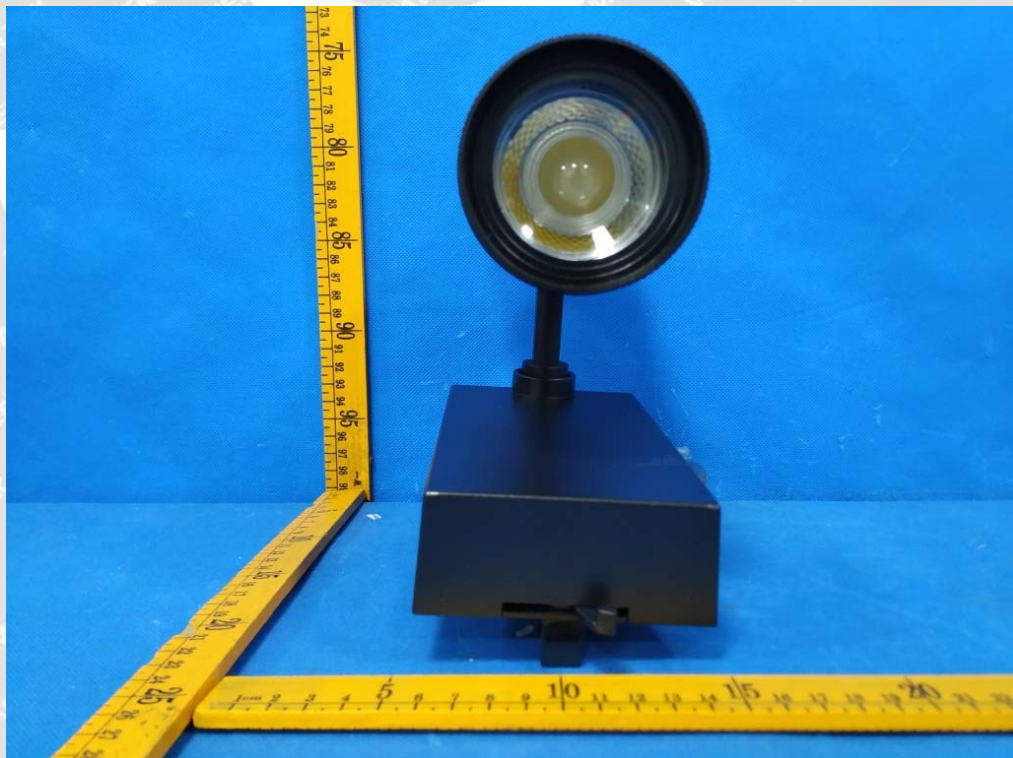


Photo 76





## Photo Documentation

Reference No.: WTS19D11076933L



Photo 77



Photo 78



## Photo Documentation

Reference No.: WTS19D11076933L



Photo 79



Photo 80





## Photo Documentation

Reference No.: WTS19D11076933L



Photo 81

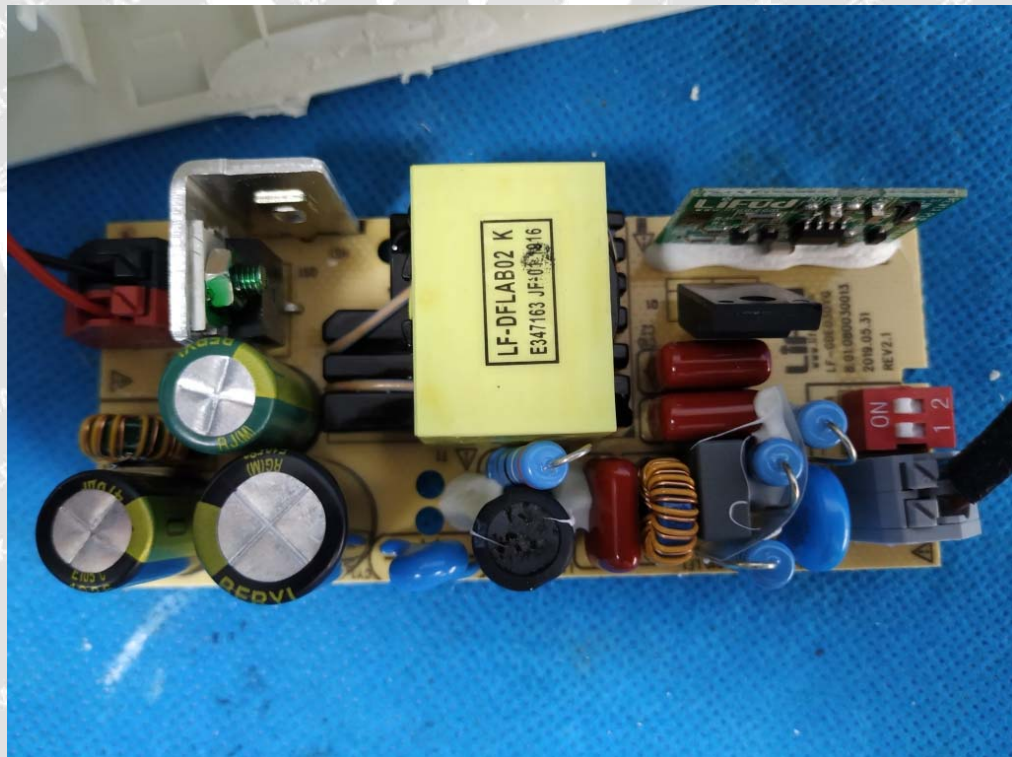


Photo 82





## Photo Documentation

Reference No.: WTS19D11076933L

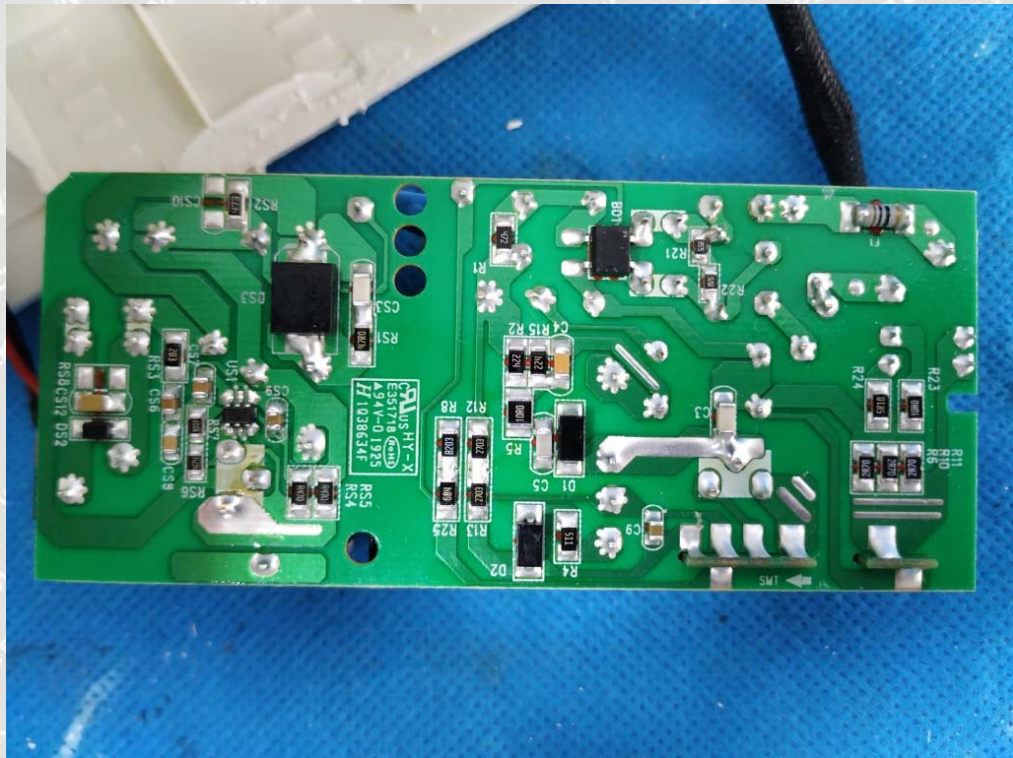


Photo 83

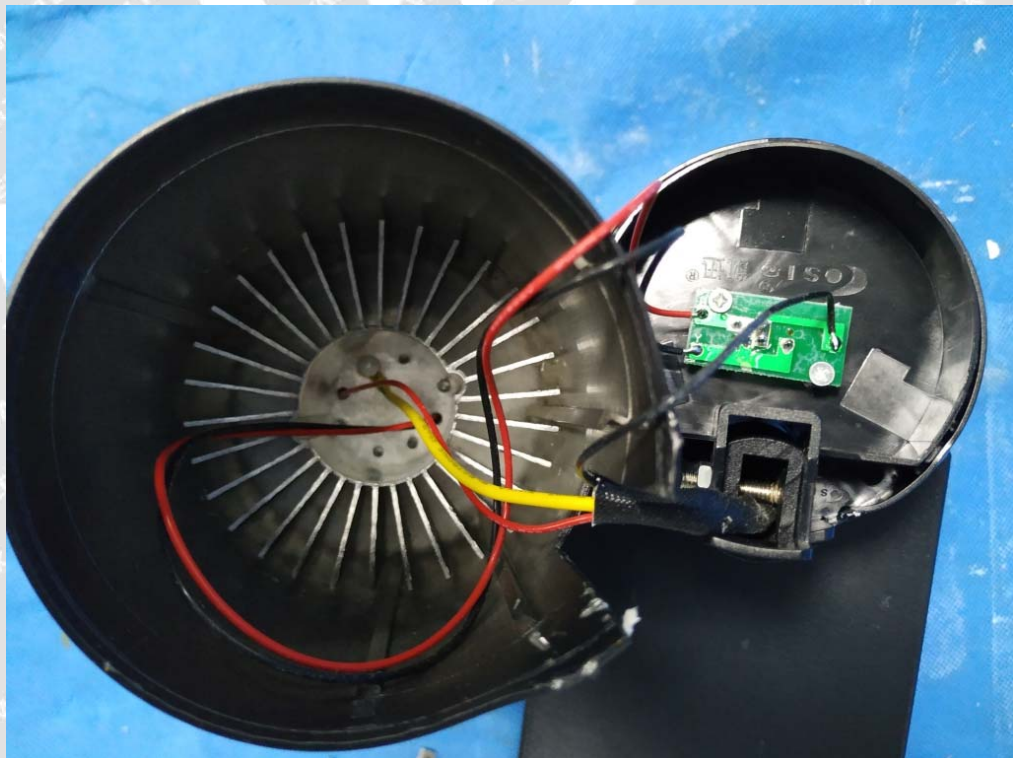


Photo 84





**Photo Documentation**

Reference No.: WTS19D11076933L

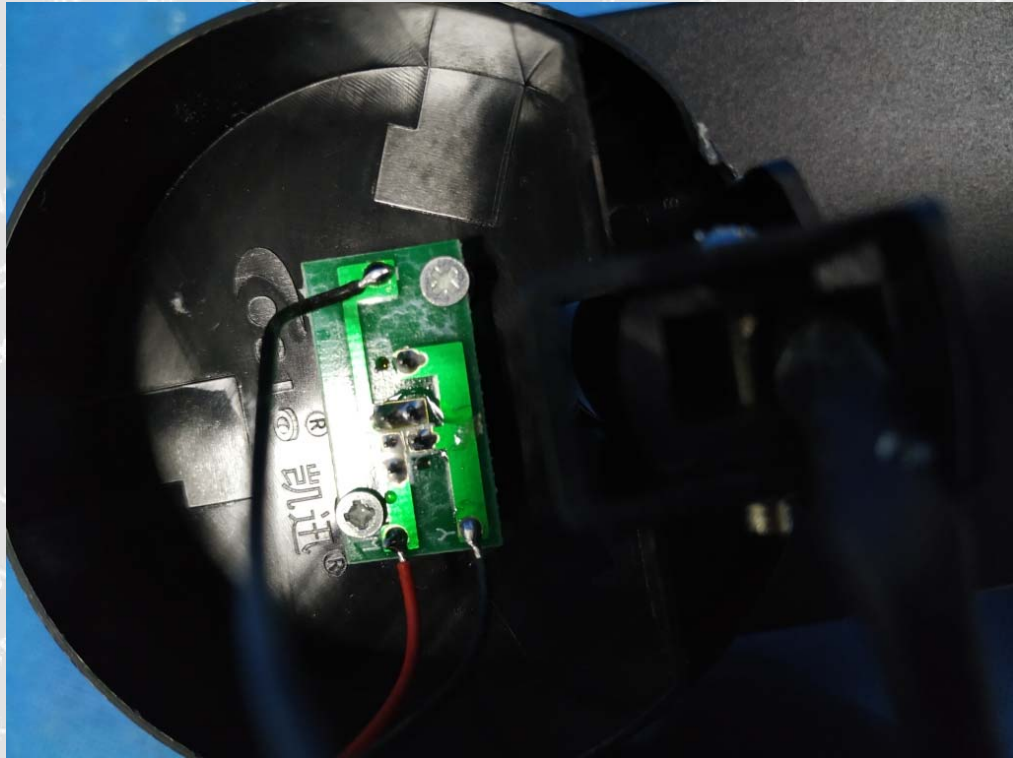


Photo 85

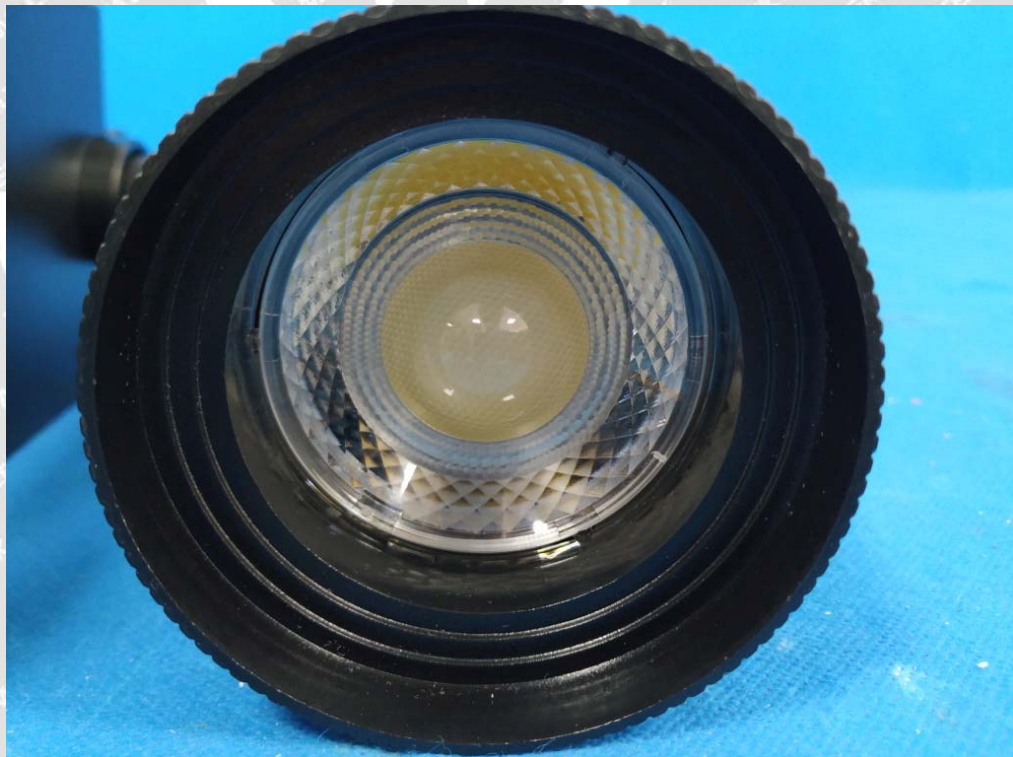


Photo 86



**Photo Documentation**

Reference No.: WTS19D11076933L



Photo 87

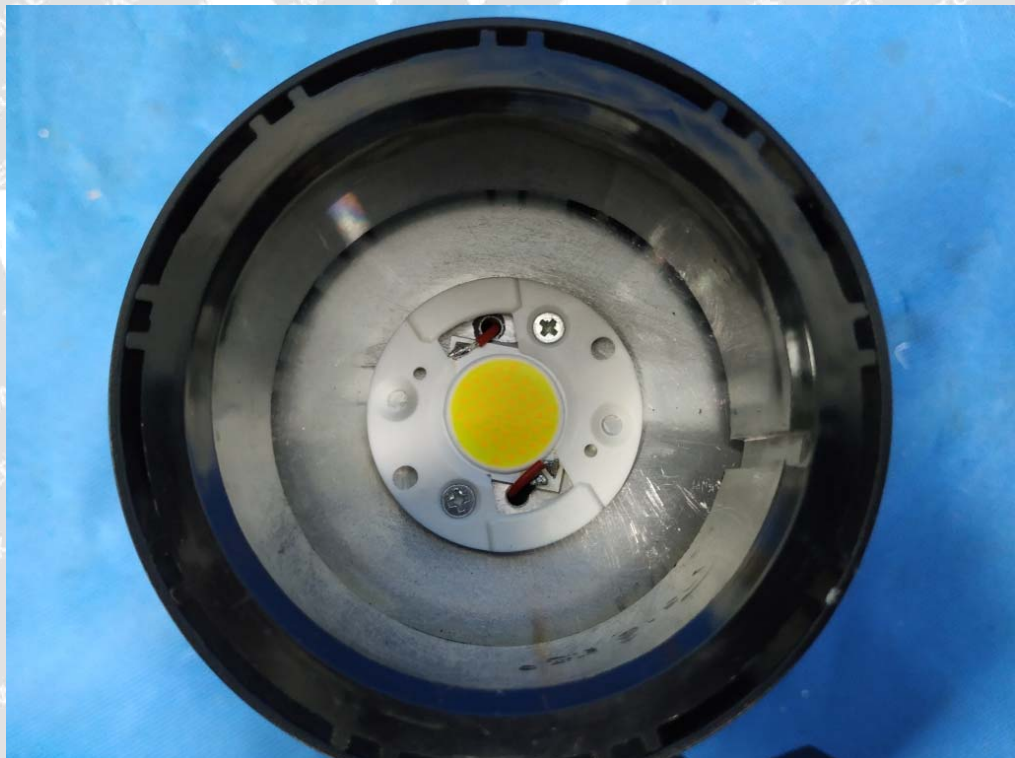


Photo 88





Page 45 of 45

## Photo Documentation

Reference No.: WTS19D11076933L

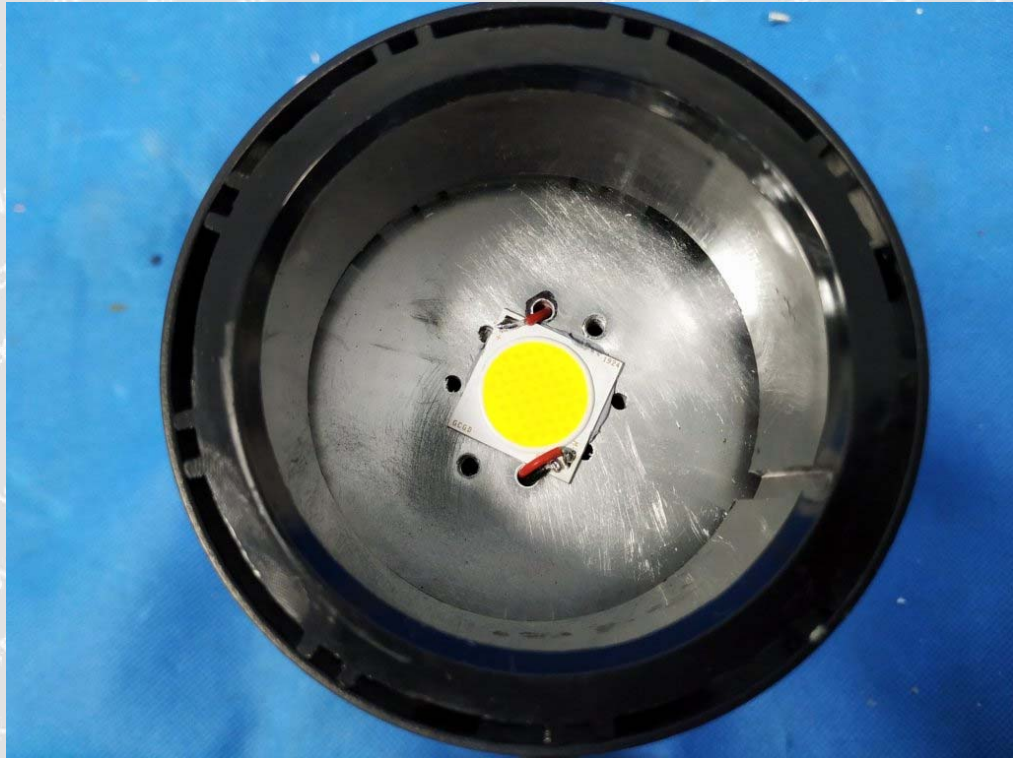


Photo 89

=====End of Photo=====

# WALTEK