



SAFETY TEST REPORT


MEASUREMENT AND TEST REPORT For

GuangZhou Topsun Lighting Science and Technology Co., Ltd.

3th Floor, No.10 Taipingli South Street, Jiaoxin, Shijing Town, Baiyun District, Guangzhou, China.

Models: See below

May 27, 2015

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: pattern beam light
Test Engineer:	<i>Shavin Liu</i>
Report Number:	CTB150520001S
Test Date:	May 20 - 27, 2015
Reviewed By:	
Prepared By:	Shenzhen CTB Testing Technology co., LTD. First floor, E building, Huayang Technology Industry Park, Gushu Village, Bao'an District, Shenzhen City, P.R.C Tel: +86-0755-61996588 Fax: +86-0755-23208027 Web: http://www.ctb-lab.com

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen CTB Testing Technology Co., Ltd.

TEST REPORT
EN 60598-2-17
Part 2: Particular requirements
Section Seventeen – Luminaires for stage lighting, television and film studios
(outdoor and indoor)

Report reference No. : CTB150520001S
 Tested by (+signature)..... : Shavin Liusee cover page.....
 Approved by (+ signature).. : Simon Leesee cover page.....
 Date of issue..... : May 27, 2014

Testing laboratory

Name..... : Shenzhen CTB Testing Technology co., LTD.
 Address..... : First floor, E building, Huayang Technology Industry Park, Gushu Village,
 Bao'an District, Shenzhen City, P.R.C
 Test location : (Same as above)

Client

Name..... : GuangZhou Topsun Lighting Science and Technology Co., Ltd.
 Address..... : 3th Floor, No.10 Taipingli South Street, Jiaoxin, Shijing Town, Baiyun District,
 Guangzhou, China

Test specification

Standard..... : EN 60598-1: 2008+ A11: 2009
 EN 60598-2-17: 1989+ A2: 1991
 EN 62493: 2010
 Test procedure..... : CE-LVD
 Procedure deviation..... : N.A.
 Non-standard test method.. : N.A.

Test Report Form No.....: EN60598_2_17A


TRF originator: SGS

Master TRF: Dated 2010

Copyright © 2006 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and

Test item

Description : pattern beam light
 Model No. : ZY-470A, ZY-230B, ZY-230G, ZY-120A, ZY-300A, ZY-300B, ZY-132A, ZY-132G, ZY-280S, ZY-280G, ZY-330A, ZY-330B, ZY-330G, ZY-350A, ZY-350F, ZY-470B, ZY-470D
 Trade Mark..... : 
 Manufacturer..... : GuangZhou Topsun Lighting Science and Technology Co., Ltd.
 Address..... : 3th Floor, No.10 Taipingli South Street, Jiaoxin, Shijing Town, Baiyun District,
 Guangzhou, China
 Rating(s)..... : 110V-240V~ 50-60Hz, 400W
 Note..... : N/A

Test item particulars

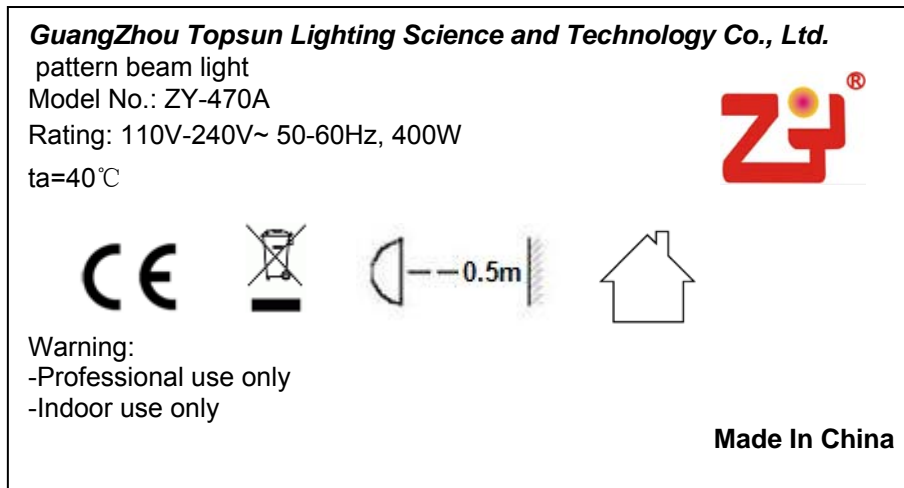
Possible test case verdicts:
 - test case does not apply to the test object..... : N (Not applicable)
 - test object does meet the requirement..... : P (Pass)
 - test object does not meet the requirement..... : F (Fail)

Testing
 Date of receipt of test item : May 27, 2014
 Date (s) of performance of tests..... : May 20 - 27, 2014

General remarks:
 The test results presented in this report relate only to the object tested.
 This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
 "(See Enclosure #)" refers to additional information appended to the report.
 "(See appended table)" refers to a table appended to the report.
 List of test equipment must be kept on file and available for review.
 Throughout this report a comma (point) is used as the decimal separator.
 Clause numbers between brackets refer to clauses in EN 60598-1.
 In this report requirements valid for EN only are marked with (EN).

General product information:
 The product under test is LED light source for lighting stage used.
 Series models listed as page 2 are identical except model name, appearance and rating power. All tests were performed on representative model ZY-470A

Marking label



Note:

1. The height of graphical symbols shall not be less than 5 mm;
2. The height of letters and numerals shall not be less than 2 mm;
3. The main rating label was attached in enclosure

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.2 (0)	GENERAL TEST REQUIREMENTS		P
17.2 (0.1)	Information for luminaire design considered	Standard Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
17.2 (0.3)	More sections applicable	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
17.4 (2)	CLASSIFICATION		P
17.4 (2.2)	Type of protection	Class I	—
17.4 (2.3)	Degree of protection	IP20	—
17.4 (2.4)	Luminaire only suitable for non-combustible surfaces	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire suitable for normally flammable surfaces	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Luminaire suitable to be covered by insulating material.....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
17.4 (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"/>	—
17.5 (3)	MARKING		P
17.5 (3.2)	Mandatory markings	(See page 2)	P
	Position of the marking	On the outside of main body	P
	Format of symbols/text	Symbols: 5.0mm min; Letter: 2.0 mm min.	P
17.5 (-)	Additional marking 17.5.1 to 17.5.7		P
17.5.2 (-)	Warning shall be clearly marked on the exterior of the luminaire: "Isolate electrically before re-lamping. CAUTION- Hot Lamp."	Marked on the marking plate	P
17.5.3 (-)	clearly marked ta	ta=40°C	P
17.5 (3.3)	Additional information		P
	Language of instructions	English and/or local language	P
17.5.8 (-)	Instruction leaflet		P
	Language of instructions	English and/or local language	P
17.5 (3.3.1)	Combination luminaires		N
17.5 (3.3.2)	Nominal frequency in Hz	50-60Hz	P
17.5 (3.3.3)	Operating temperature		N
17.5 (3.3.4)	Symbol or warning notice	See marking label	P
17.5 (3.3.5)	Wiring diagram	Direct connection to the supply	N
17.5 (3.3.6)	Special conditions		N

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.5 (3.3.7)	Metal halide lamp luminaire – warning		N
17.5 (3.3.8)	Limitation for semi-luminaires		N
17.5 (3.3.9)	Power factor and supply current		N
17.5 (3.3.10)	Suitability for use indoors	Suitability for use indoors	P
17.5 (3.3.11)	Luminaires with remote control	No remote control	N
17.5 (3.3.12)	Clip-mounted luminaire – warning		N
17.5 (3.3.13)	Specifications of protective shields	For manufacture provided	P
17.5 (3.3.14)	Symbol for nature of supply	Symbol: ~	P
17.5 (3.3.15)	Rated current of socket outlet	No socket outlet	N
17.5 (3.3.16)	Rough service luminaire	Luminaire for normal use	N
17.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Y	P
17.5 (3.3.18)	Non-ordinary luminaires with PVC cable	Ordinary luminaires	N
17.5 (3.3.101)	Adequate warning on the package (EN)		P
17.5 (3.4)	Test with water	15s with water	P
	Test with hexane	15s with hexane	P
	Legible after test	Yes	P
	Label attached	Label was not be easily removable and show no curling	P

1.6 (4)	CONSTRUCTION		P
17.6.1 (-)	Lamp replacement		N
17.6.2 (-)	Explosion risk	LED lamp	N
17.6.3 (-)	Protective shield		P
17.6.4 (-)	Hanger (stirrup)		N
17.6.5 (-)	Removable accessories	Fixed and seating	P
17.6.6 (-)	Secondary suspension	Station on floor	N
17.6.7 (-)	Handles	Insulation enclosure	P
17.6 (4.2)	Components replaceable without difficulty	The lamp can not replaceable by user	N
17.6 (4.3)	Wire ways smooth and free from sharp edges		P
17.6 (4.4)	Lampholders		N

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.6 (4.4.1)	Integral lampholder		N
17.6 (4.4.2)	Wiring connection		N
17.6 (4.4.3)	Lampholder for end-to-end mounting		N
17.6 (4.4.4)	Positioning		N
	- pressure test (N)		N
	- bending test (Nm)		N
17.6 (4.4.5)	Peak pulse voltage		N
17.6 (4.4.6)	Centre contact		N
17.6 (4.4.7)	Parts in rough service luminaires resistance to tracking	Not rough service luminaires	N
17.6 (4.4.8)	Lamp connectors		N
17.6 (4.4.9)	Caps and bases correctly used		N
17.6 (4.5)	Starter holders		N
	Starter holder in luminaires other than class II	No starter holders	N
	Starter holder class II construction		N
17.6 (4.6)	Terminal blocks		P
	Tails	Approved terminal blocks	P
	Unsecured blocks		N
17.6 (4.7)	Terminals and supply connections		P
17.6 (4.7.1)	Contact to metal parts		P
17.6 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		P
17.6 (4.7.3)	Terminals for supply conductors		P
17.6 (4.7.3.1)	Welded connections:		P
	- stranded or solid conductor		P
	- spot welding		P
	- welding between wires		N
	- Type Z attachment		N
	- mechanical test according to 15.8.2		N
	- electrical test according to 15.9		P
	- ageing test according to 15.9.2.3 and 15.9.2.4	See below	P
17.6 (4.7.4)	Terminals other than supply connection		N

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.6 (4.7.5)	Heat-resistant wiring/sleeves		P
17.6 (4.7.6)	Multi-pole plug	No multi-pole plug	N
	- test at 30 N		N
17.6 (4.8)	Switches:		N
	- adequate rating	No such switch used	N
	- adequate fixing		N
	- polarized supply		N
	- compliance with 61058-1 for electronic switches		N
17.6 (4.9)	Insulating lining and sleeves		P
17.6 (4.9.1)	Retainment		P
	Method of fixing.....:		N
17.6 (4.9.2)	Insulated linings and sleeves		—
	a) & c) Insulation resistance and electric strength		N
	b) Ageing test. Temperature (°C)		N
17.6 (4.10)	Insulation of Class II luminaires		P
17.6 (4.10.1)	No contact, mounting surface - accessible metal parts - wiring of basic insulation		P
	Safe installation fixed luminaires		N
	Capacitors and switches		N
	Interference suppression capacitors according to IEC 60384-14		P
17.6 (4.10.2)	Assembly gaps:		P
	- not coincidental		P
	- no straight access with test probe		P
17.6 (4.10.3)	Retainment of insulation:		—
	- fixed		P
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		P
	- lining in lampholder		N
17.6 (4.11)	Electrical connections		—
17.6 (4.11.1)	Contact pressure		P
17.6 (4.11.2)	Screws:		—
	- self-tapping screws		P
	- thread-cutting screws		N
	- at least two self-tapping screws		N

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.6 (4.11.3)	Screw locking:		—
	- spring washer	For fixed earth wire	P
	- rivets		N
17.6 (4.11.4)	Material of current-carrying parts	>50% copper	P
17.6 (4.11.5)	No contact to wood	No contact to wood	N
17.6 (4.11.6)	Electro-mechanical contact systems	No such systems	P
17.6 (4.12)	Mechanical connections and glands		—
17.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N
	Torque test: torque (Nm); part	Test on screw which fixed PCB Ø3.0mm test on 0.5Nm	P
	Torque test: torque (Nm); part	Test on screw which fixed enclosure Ø2.9mm test on 0.5Nm	P
	Torque test: torque (Nm); part		N
17.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		P
17.6 (4.12.4)	Locked connections:		—
	- fixed arms; torque (Nm).....	No fixed arms	N
	- lampholder; torque (Nm).....		N
	- push-button switches; torque 0,8 Nm		N
17.6 (4.12.5)	Screwed glands; force (N)		N
17.6 (4.13)	Mechanical strength		—
17.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm).....		N
	- other parts; energy (Nm).....	0.5Nm test on metal enclosure and plastic lens	P
	1) live parts	Not become accessible	P
	2) linings		P
	3) protection	Remain accordance against ingress of dust, sold objects and moisture classification	P
	4) covers		P
17.6 (4.13.3)	Straight test finger	30N	P

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.6 (4.13.4)	Rough service luminaires		—
	- IP54 or higher	Not rough service luminaires	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
17.6 (4.13.6)	Tumbling barrel	No such luminaires	N
17.6 (4.14)	Suspensions and adjusting devices		N
17.6 (4.14.1)	Mechanical load:		—
	A) four times the weight		N
	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
	metal rod. Diameter (mm)		N
	Fixed luminaire or independent control gear without fixing devices		N
17.6 (4.14.2)	Load to flexible cables		—
	Mass (kg)	Not load to flexible cables	N
	Stress in conductors (N/mm ²)		N
	Semi-luminaires – mass (kg)		N
	Semi-luminaires – bending moment (Nm)		N
17.6 (4.14.3)	Adjusting devices:		—
	- flexing test; number of cycles		N
	- strands broken		N
	- electric strength test afterwards		N
17.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N
17.6 (4.14.5)	Guide pulleys	No guide pulleys	N
17.6 (4.14.6)	Strain on socket-outlets	Not direct plug-in type	N
17.6 (4.15)	Flammable materials:		—
	- glow-wire test 650 °C		P
	- spacing ≥ 30 mm		P
	- screen withstanding test of 13.3.1		N
	- screen dimensions		N

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	- no fiercely burning material		N
	- thermal protection		N
	- electronic circuits exempted		N
17.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		—
	a) construction		N
	b) temperature sensing control		N
	c) surface temperature		N
17.6 (4.16)	Luminaires for mounting on normally flammable surfaces		N
	No lamp control gear		N
17.6 (4.16.1)	Lamp control gear spacing:		—
	- spacing 35 mm		N
	- spacing 10 mm		P
17.6 (4.16.2)	Thermal protection:		—
	- in lamp control gear		N
	- external		N
	- fixed position		N
	- temperature marked lamp control gear		N
17.6 (4.16.3)	"F" curve measured	(see 12.6)	N
17.6 (4.17)	Drain holes	No drain holes	N
	Clearance at least 5 mm		N
17.6 (4.18)	Resistance to corrosion:		—
17.6 (4.18.1)	- rust-resistance	Not water proof appliance	N
17.6 (4.18.2)	- season cracking in copper	No rolled copper used	N
17.6 (4.18.3)	- corrosion of aluminium		N
17.6 (4.19)	Ignitors compatible with ballast		N
17.6 (4.20)	Rough service vibration	Not rough service used	N
17.6 (4.21)	Protective shield:		—
17.6 (4.21.1)	Shield fitted	Not tungsten halogen lamp	N
17.6 (4.21.2)	Particles from a shattering lamp not impair safety		N
17.6 (4.21.3)	No direct path		N
17.6 (4.21.4)	Impact test on shield	(See 4.13.1)	N
	Glow-wire test on lamp compartment		N

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.6 (4.22)	Attachments to lamps	No attachments	N
17.6 (4.23)	Semi-luminaires comply class II		N
17.6 (4.24)	UV radiation, metal halide lamps		N
17.6 (4.25)	No sharp point or edges	No sharp edges	P
17.6 (4.26)	Short-circuit protection:		—
17.6 (4.26.1)	Uninsulated accessible SELV parts	No such parts	N
17.6 (4.26.2)	Short-circuit test		N
17.6 (4.26.3)	Test chain according to Figure 29		N

17.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
	Working voltage (V)	Rated voltage AC 110-240V,	—
	Voltage form	Sinusoidal <input checked="" type="checkbox"/> Non-sinusoidal <input type="checkbox"/>	—
	PTI	1) < 600 <input checked="" type="checkbox"/> 2) ≥ 600 <input type="checkbox"/>	—
	Rated pulse voltage (kV)		—
	1) Current-carrying parts of different polarity: cr (mm); cl (mm).....	Cr >2.5mm, Cl >1.5mm	P
	2) Current-carrying parts and accessible parts: cr (mm); cl (mm).....	Live parts to accessible live part: Cr >5.0mm, Cl >3.0mm.	P
	3) Parts becoming live due to breakdown of basic insulation and metal parts: cr (mm); cl (mm)		N
	4) Outer surface of cable where it is clamped and metal parts: cr (mm); cl (mm).....		N
	5) Not used		—
	6) Current-carrying parts and supporting surface: cr (mm); cl (mm).....		N

17.8 (7)	PROVISION FOR EARTHING		P
17.8 (7.2.1 + 7.2.3)	Accessible metal parts	Accessible metal parts are permanently and reliable connected to earthing terminal	P
	Metal parts in contact with supporting surface		P
	Resistance < 0,5 Ω	< 0.5Ω	P
	Two self-tapping screws used		N
	Thread-forming screws		N
	Thread-forming screw used in a groove		N
	Earth makes contact first		P

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.8 (7.2.2 + 7.2.3)	Earth continuity in joints etc.	No such parts	N
17.8 (7.2.4)	Locking of clamping means		—
	Compliance with 4.7.3	The earthing locking of screw	P
17.8 (7.2.5)	Earth terminal integral part of connector socket		N
17.8 (7.2.6)	Earth terminal adjacent to mains terminals		P
17.8 (7.2.7)	Electrolytic corrosion of the earth terminal	Ordinary luminaires	N
17.8 (7.2.8)	Material of earth terminal	The screw and earth terminal all made of stainless steel	P
	Contact surface bare metal	Bare metal	P
17.8 (7.2.10)	Class II luminaire for looping-in	Class I luminaires	N
	Double or reinforced insulation to functional earth		N
17.8 (7.2.11)	Earthing core coloured green-yellow		P
	Length of earth conductor		P
17.9 (14)	SCREW TERMINALS		N
	Separately approved; component list	Approved screw terminals	N
	Part of the luminaire	(see Annex 3)	N
17.9 (15)	SCREWLESS TERMINALS		N
	Separately approved; component list	Approved screwless terminals	N
17.9 (-)	Part of the luminaire (restriction)	(see Annex 4)	N
17.10 (5)	EXTERNAL AND INTERNAL WIRING		P
17.10 (5.2)	Supply connection and external wiring		P
17.10 (5.2.1)	Means of connection.....:	Type Y	P
	Connecting leads (EN)		—
	- without a means for connection to the supply		N
	- terminal block specified		N
	- relevant information provided		N
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1		N
17.10 (5.2.2)	Type of cable.....:	ZY-470A	P
	Cables equal to HD21 S2 or HD22 S2 (EN)		P
	Nominal cross-sectional area (mm ²).....:	3G 0.75mm ²	P
17.10.1 (-)	Nominal cross-sectional area (mm ²) (modification).....:		P

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.10 (5.2.3)	Type of attachment, X, Y or Z	Type Y	P
17.10 (5.2.5)	Type Z not connected to screws		N
17.10 (5.2.6)	Cable entries:		—
	- suitable for introduction		P
	- adequate degree of protection		P
17.10 (5.2.7)	Cable entries through rigid material have rounded edges		P
17.10 (5.2.8)	Insulating bushings:		—
	- suitably fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- tubes or guards made of insulating material		P
17.10 (5.2.9)	Locking of screwed bushings		N
17.10 (5.2.10)	Cord anchorage:		P
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		P
	- insulating material or lining		P
17.10 (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
17.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		P
17.10 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N)		P
	- torque test: torque (Nm).....		P
	- displacement ≤ 2 mm	1.02	P
	- no movement of conductors		P

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	- no damage of cable or cord		P
17.10 (5.2.11)	External wiring passing into luminaire		N
17.10 (5.2.12)	Looping-in terminals		N
17.10 (5.2.13)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		N
17.10 (5.2.14)	Mains plug same protection		P
	Class III luminaire plug		N
17.10 (5.2.15)	Colour code low voltage (EN)		N
17.10 (5.2.16)	Appliance inlets (IEC 60320)		P
	Appliance couplers of class II type		N
17.10.2 (-)	Plugs and sockets	No such plug and socket	N
17.10 (5.2.17)	No standardized interconnecting cables properly assembled		N
17.10 (5.2.18)	Used plug in accordance with		N
	- IEC 60083	Approved plug	N
	- other standard		N
17.10 (5.3)	Internal wiring		P
17.10 (5.3.1)	Internal wiring of suitable size and type	Suitable size and type	P
	Through wiring		N
	- not delivered/ mounting instruction	No through wiring	N
	- factory assembled		N
	- socket outlet loaded (A).....:		N
	- temperatures.....:		N
	Green-yellow for earth only		N
17.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		—
	Cross-sectional area (mm ²)	The internal wiring not direct connected to fixed wiring	N
	Insulation thickness		N
	Extra insulation added where necessary		N
17.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		—
	Adequate cross-sectional area and insulation thickness		N
17.10 (5.3.1.3)	Double or reinforced insulation for class II		P
17.10 (5.3.1.4)	Conductors without insulation		N

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.10 (5.3.1.5)	SELV current-carrying parts		P
17.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		P
17.10 (5.3.2)	Sharp edges etc.	No sharp edges	P
	No moving parts of switches etc.		P
	Joints, raising/lowering devices		P
	Telescopic tubes etc.	No telescopic tubes	N
	No twisting over 360°		P
17.10 (5.3.3)	Insulating bushings:		—
	- suitable fixed	No such luminaires	N
	- material in bushings		N
	- material not likely to deteriorate		N
	- cables with protective sheath		N
17.10 (5.3.4)	Joints and junctions effectively insulated		P
17.10 (5.3.5)	Strain on internal wiring	Internal wiring not passes out of the luminaires	N
17.10 (5.3.6)	Wire carriers		N
17.10 (5.3.7)	Wire ends not tinned	Not tinned	P
	Wire ends tinned: no cold flow		N

17.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
17.11 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Protection in any position		N
	Double-ended tungsten filament lamp	No double-ended tungsten filament lamp used	P
	Insulation lacquer not reliable		P
	Double-ended high pressure discharge lamp	No double-ended high pressure discharge lamp	N
	Relevant warning according to 3.2.18 fitted to the luminaire		N
17.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		P
17.11 (8.2.3)	Class II luminaire:		—
	- basic insulated metal parts not accessible during starter or lamp replacement		P

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	- basic insulation not accessible other than during starter or lamp replacement		P
	- glass protective shields not used as supplementary insulation		P
	Class I luminaire with BC lampholder		N
17.11 (8.2.4)	Portable luminaire:		—
	- protection independent of supporting surface		P
	- terminal block completely covered		P
17.11 (8.2.5)	Compliance with the standard test finger or relevant probe		P
17.11 (8.2.6)	Covers reliably secured		P
17.11 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$		N
	Portable plug connected luminaire with capacitor		N
	Other plug connected luminaire with capacitor	Less than 50V	P
	Discharge device on or within capacitor		P
	Discharge device mounted separately		N
17.12 (12)	ENDURANCE TEST AND THERMAL TEST		P
17.12 (12.3)	Endurance test:		P
	- mounting-position	Normal use, most unfavourable position	—
	- test temperature ($^{\circ}\text{C}$)	$+50^{\circ}\text{C} \pm 2^{\circ}\text{C}$	—
	- total duration (h).....	240h	—
	- supply voltage: U_n factor; calculated voltage (V) .	1.1times rated voltage	—
	- lamp used	LED lamp	—
17.12 (12.3.2)	After endurance test:		—
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system	No such luminaire	N
	- marking legible		P
	- no cracks, deformation etc.		P
17.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
17.12 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	P
17.12 (12.6)	Thermal test (failed lamp control gear condition):		N
17.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		—
	- case of abnormal conditions		—

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	- electronic lamp control gear		N
	- measured winding temperature (°C) at 1,1 Un..... :		—
	- measured mounting surface temperature (°C) at 1,1 Un..... :		N
	- calculated mounting surface temperature (°C)..... :		N
	- track-mounted luminaires		N
17.12 (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
17.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N
17.12 (12.7.1)	Luminaire without temperature sensing control		N
17.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N
	Test method 12.7.1.1 or Annex V :		—
	Test according to 12.7.1.1:		N
	- case of abnormal conditions		N
	- Ballast failure at supply voltage (V) :		N
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
	Test according to Annex V:		N
	- case of abnormal conditions		N
	- measured winding temperature (°C): at 1,1 Un :		N
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un :		N
	- calculated temperature of fixing point/exposed part (°C) :		N
	Ball-pressure test:		N
	- part tested; temperature (°C) :		N
	- part tested; temperature (°C) :		N
17.12 (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 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	- calculated temperature of fixing point/exposed part (°C) :		—
	Ball-pressure test:		N
	- part tested; temperature (°C) :		N
	- part tested; temperature (°C) :		N
17.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N
	- case of abnormal conditions		N
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
17.12 (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:		N
	- part tested; temperature (°C) :		N
	- part tested; temperature (°C) :		N
17.13 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
17.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP : IP20		—
	- mounting position during test..... : Normal use, most unfavourable position		—
	- fixing screws tightened; torque (Nm) : Two thirds of that specified in table 4		—
	- tests according to clauses : 9.2.0		—
	- electric strength test afterwards	See 10.2.2	P
	a) no deposit in dust-proof luminaire	Not dust-proof luminaire	N
	b) no talcum in dust-tight luminaire	Not dust-tight luminaire	N
	c) no trace of water on current-carrying parts or where it could become a hazard		N
	d) i) For luminaires without drain holes – no water entry		N
	d) ii) For luminaires with drain holes – no hazardous water entry		N
	e) no water in watertight luminaire		N
	f) no contact with live parts (IP 2X)	IP20, no contact with live part	P
	f) no entry into enclosure (IP 3X and IP 4X)		N
	f) no contact with live parts (IP3X and IP4X)		N
17.13 (9.3)	Humidity test 48 h	48h, 25°C, 93%	P

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
17.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mmØ		—
	Insulation resistance (MΩ):		—
	SELV:		N
	- between current-carrying parts of different polarity		N
	- between current-carrying parts and mounting surface		N
	- between current-carrying parts and metal parts of the luminaire		N
	Other than SELV:		P
	- between live parts of different polarity	>100MΩ, requirement 2MΩ	P
	- between live parts and mounting surface	>100MΩ, requirement 2MΩ	P
	- between live parts and metal parts	>100MΩ, requirement 2MΩ	P
	- between live parts and output parts		N
	- between live parts of different polarity through action of a switch		N
17.14 (10.2.2)	Electric strength test		P
	Dummy lamp	No such lamp	N
	Luminaires with ignitors after 24 h test		N
	Luminaires with manual ignitors	No manual ignitors	N
	Test voltage (V):		P
	SELV:		N
	- between current-carrying parts of different polarity		N
	- between current-carrying parts and mounting surface		N
	- between current-carrying parts and metal parts of the luminaire		N
	Other than SELV:		P
	- between live parts of different polarity	1480V/1min, no broken	P
	- between live parts and mounting surface	1480V/1min, no broken	P
	- between live parts and metal parts	1480V/1min, no broken	P
	- between live parts and output parts		N
	- between live parts of different polarity through action of a switch		N
17.14 (10.3.1)	Leakage current (mA)	The leakage current less than 0.7mA	P

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		—
17.15 (13.2.1)	Ball-pressure test:		—
	- part tested; temperature (°C)..... :	Transformer bobbin, 125°C	P
	- part tested; temperature (°C)..... :	Inductor coil bobbin, 125°C	P
	- part tested; temperature (°C)..... :	PCB, 125°C	P
	- part tested; temperature (°C)..... :	Terminal block, 125°C	P
	- part tested; temperature (°C)..... :		N
17.15 (13.3.1)	Needle flame test (10 s):		—
	- part tested..... :	Transformer bobbin, test and passed	P
	- part tested..... :	Inductor coil bobbin, test and passed	P
	- part tested..... :	PCB, test and passed	P
	- part tested..... :	Terminal block, test and passed	P
	- part tested..... :		N
17.15 (13.3.2)	Glow wire test (650 °C):		—
	- part tested, temperature (°C)..... :		N
	- part tested, temperature (°C)..... :		N
17.15 (13.4.1)	Tracking test: part tested	Ordinary luminaries	N

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1: components						P
object/part No.	code	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
Plug	A	(various)	(various)	250V~, 10A	DIN VDE 0620-1	VDE
Power cord	A	(various)	H05VV-F	3G 0.75mm ²	DIN VDE 0281	VDE
LED driver	A	RS	RSDZ-LLC400W-36V-24V	In: 100-240Vac, 50-60Hz, 4A Out: V1 +36Vdc 9.8A V2 +24Vdc 2A	IEC/EN 61347-2-13	CE/IEC standard approval
Internal wire	A	(various)	(various)	600V, 20AWG min. 105°C	UL 758	UL
Close-end connector	A	(various)	(various)	V-0	UL1059	UL
Terminals	A	(various)	(various)	AC300V, 15A,	UL1059	UL
PCB	A	(various)	(various)	130 °C, V-0	UL796	UL
Winding of transformer	C	Rated min. 130 degree C.	UL 1446	UL	Rated min. 130 degree C.	UL 1446
Bobbin of transformer	C	(various)	(various)	V-0, 130°C	UL 94	UL
Insulation tape	C	(various)	(various)	130°C	UL510	UL
Fan	A	CF	JS6015HS-24V	24Vdc 0.12A	EN 60950-1 EN 60598-2-1/17	CE and 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

EN 60598-2-17						
Clause	Requirement + Test	Result - Remark			Verdict	
ANNEX 2	temperature measurements, thermal tests of Section 12				P	
	Type reference.....:	ZY-470A			—	
	Lamp used.....:	LED lamp			—	
	Lamp control gear used.....:	LED control gear			—	
	Mounting position of luminaire.....:	Normal use, most unfavourable position			—	
	Table: measured temperatures corrected for $t_a=40^\circ\text{C}$:				P	
	- abnormal operating mode.....:				—	
	- test 2: 1.06 times rated voltage or 1,05 times rated wattage.....:	1.06 times rated voltage			—	
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....:	--			—	
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage.....:				—	
	Through wiring or lopping-in wiring loaded by a current of (A) during the tests.....:	--			—	
temperature ($^\circ\text{C}$) of part		clause 12.4 - normal		clause 12.5 - abnormal		
Test item	test 2	limits	Test 4			limits
			1	2	3	
Plug	46.9	70	--	--	--	--
Power cord	45.7	70	--	--	--	--
Operated panel	44.2	85	--	--	--	--
Knob	43.5	60	--	--	--	--
Irradiation surface	58.9	90	--	--	--	--
Winding of inductance (L1)	64.7	120	--	--	--	--
Bobbin of inductance (L1)	58.6	Ref.	--	--	--	--
E-capacitor (C1)	66.3	105	--	--	--	--
PCB	77.9	130	--	--	--	--
Winding of transformer (T1)	89.7	120	--	--	--	--
Bobbin of transformer (T1)	87.2	Ref.	--	--	--	--
Plastic lens	55.4	Ref.	--	--	--	--
Internal wire	52.6	105	--	--	--	--
Terminal	60.3	Ref.	--	--	--	--
Mouting surface	50.6	90	--	--	--	--
Ambient	40.0	--	--	--	--	--

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	ANNEX 3: screw terminals (part of the luminaire)		N
(14)	SCREW TERMINALS		N
(14.2)	Type of terminal		—
	Rated current (A)		—
(14.3.2.1)	One or more conductors		N
(14.3.2.2)	Special preparation		N
(14.3.2.3)	Terminal size		N
	Cross-sectional area (mm ²)		N
(14.3.3)	Conductor space (mm)		N
(14.4)	Mechanical tests		N
(14.4.1)	Minimum distance		N
(14.4.2)	Cannot slip out		N
(14.4.3)	Special preparation		N
(14.4.4)	Nominal diameter of thread (metric ISO thread)..... :		N
	External wiring		N
	No soft metal		N
(14.4.5)	Corrosion		N
(14.4.6)	Nominal diameter of thread (mm)		N
	Torque (Nm)..... :		N
(14.4.7)	Between metal surfaces		N
	Lug terminal		N
	Mantle terminal		N
	Pull test; pull (N)..... :		N
(14.4.8)	Without undue damage		N

EN 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict

	ANNEX 5: National Differences for (country name) or Group Differences		N
	CENELEC COMMON MODIFICATIONS (EN)		N
4.5 (3)	MARKING		N
4.5 (3.3.101)	Adequate warning on the package		N
4.10 (5)	EXTERNAL AND INTERNAL WIRING		N
4.10 (5.2.1)	Connecting leads		N
	- without a means for connection to the supply		N
	- terminal block specified		N
	- relevant information provided		N
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1		N
4.10 (5.2.2)	Cables equal to HD21 S2 or HD22 S2		N

ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		N
(3.3)	DK: power supply cord with label		N
	IT: warning label on Class 0 luminaire		N
(4.5.1)	DK: socket-outlets		N
(5.2.1)	CY, DK, FI, SE, GB: type of plug		N

ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N
(13.3)	DK: Needle flame test during 30 s		N
(13.3)	GB: Requirements according to United Kingdom Building Regulation		N
(13.3.2)	FR: Glow-wire test 850°C alt. 750°C for luminaires in premises open to public or 960°C for luminaires in emergency exits		N

EN 62493			
Clause	Requirement + Test	Result - Remark	Verdict

4.2	APPLICATION OF LIMITS (Test summary)		P
	Specific absorption rate (SAR)		P
a)	CISPR 15 clause 4.3.1 Disturbance voltage mains terminals 20 kHz – 30 MHz	*)	P
b)	CISPR 15 clause 4.4 Radiated electromagnetic disturbances 100 kHz – 30 MHz	*)	P
c)	CISPR 15 clause 4.4 Radiated electromagnetic disturbances 100 kHz – 30 MHz	*)	P
*)	See separate Test Report for measurements of a), b) and c) above Test Report with Ref. No.: Only measurement of d) below. See measurement results below. In this case this test report does not show compliance with IEC 62493.		-
	Induced current density		P
d)	Induced current density 20 kHz – 10 MHz		P

4.2.d	INDUCED CURRENT DENSITY		-
	Power supply system utilised:		-
	Voltage :	230V~	-
	Frequency	50Hz	-
	Environmental conditions		-
	Temperature	25.7°C	-
	Humidity	63.4%	-
	EUT operation mode:		-
	Normal operation		P
	Other operation:		-

4.2.d	MEASUREMENT RESULTS			P	
	Measuring with "Van der Hoofden" test head			-	
	Location of EUT	Measuring distance	Result (F)	Limit (F)	Verdict
	Right above the test head (1)	50cm	0.006	0.85	P
	Right above the test head (2)	50cm	0.003	0.85	P

Appendix
Photo documentation

Photo 1

- front
- rear
- right side
- left side
- top
- bottom
- internal



Photo 2

- front
- rear
- right side
- left side
- top
- bottom
- internal



Photo documentation

Photo 3

- front
- rear
- right side
- left side
- top
- bottom
- internal



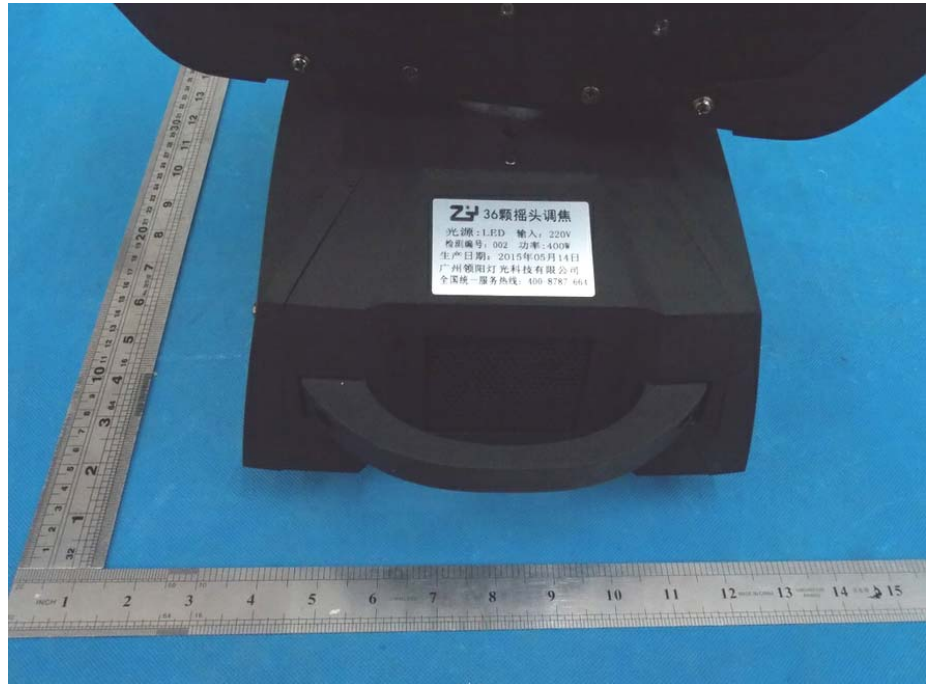
Photo 4

- front
- rear
- right side
- left side
- top
- bottom
- internal



Photo documentation**Photo 5**

- front
- rear
- right side
- left side
- top
- bottom
- internal

**Photo 6**

- front
- rear
- right side
- left side
- top
- bottom
- internal



Photo documentation

Photo 7

- front
- rear
- right side
- left side
- top
- bottom
- internal



Photo 8

- front
- rear
- right side
- left side
- top
- bottom
- internal



Photo documentation

Photo 9

- front
- rear
- right side
- left side
- top
- bottom
- internal

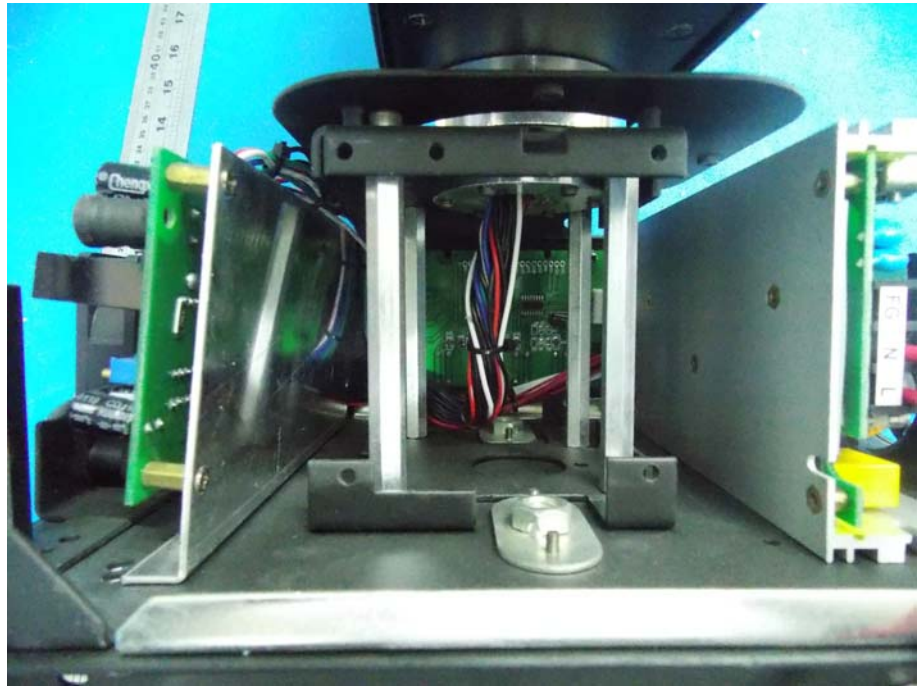


Photo 10

- front
- rear
- right side
- left side
- top
- bottom
- internal

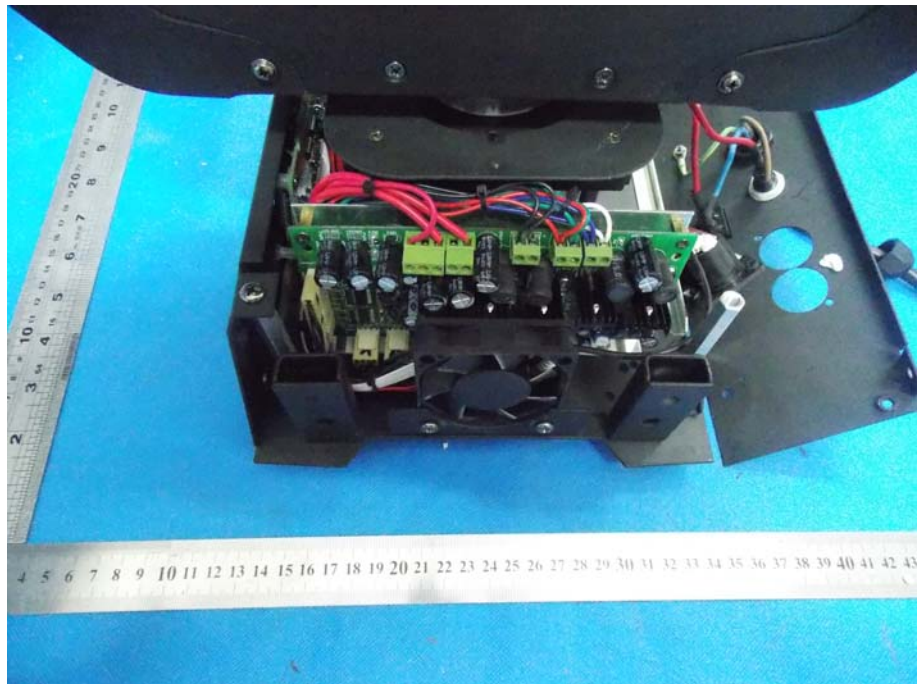


Photo documentation

Photo 11

- front
- rear
- right side
- left side
- top
- bottom
- internal

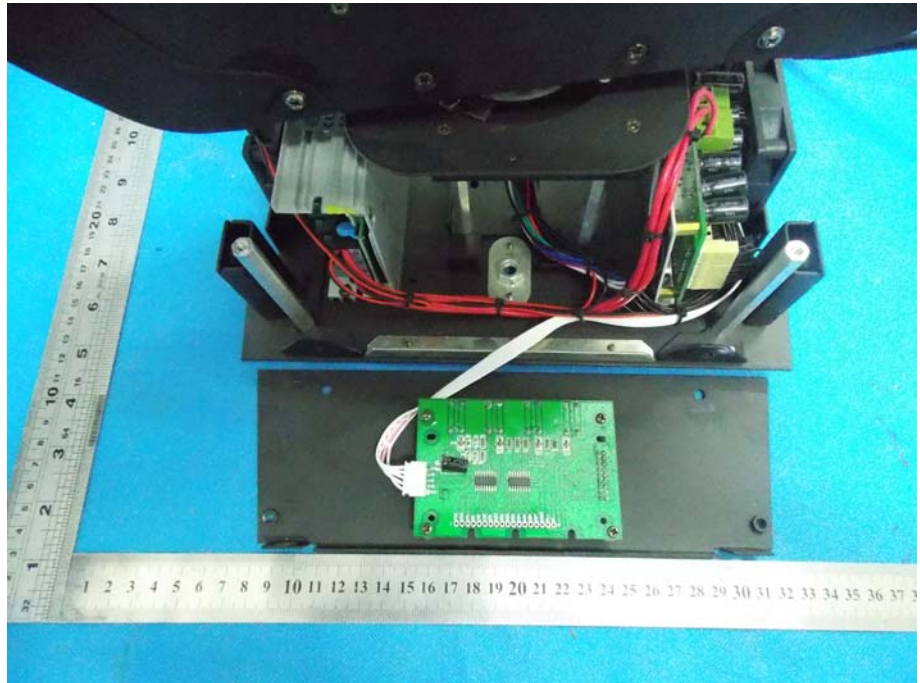


Photo 12

- front
- rear
- right side
- left side
- top
- bottom
- internal

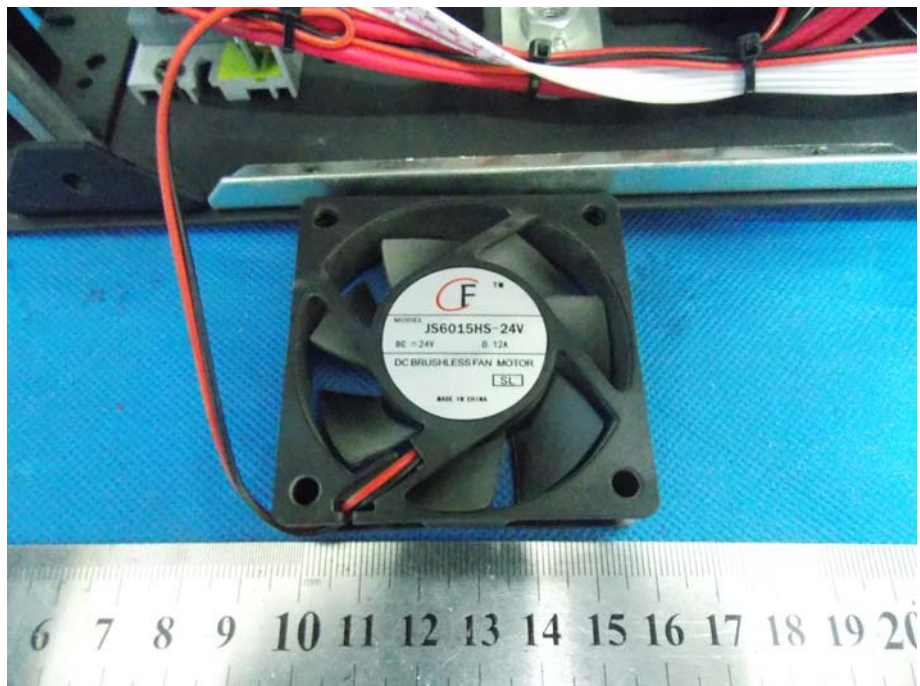


Photo documentation

Photo 13

- front
- rear
- right side
- left side
- top
- bottom
- internal

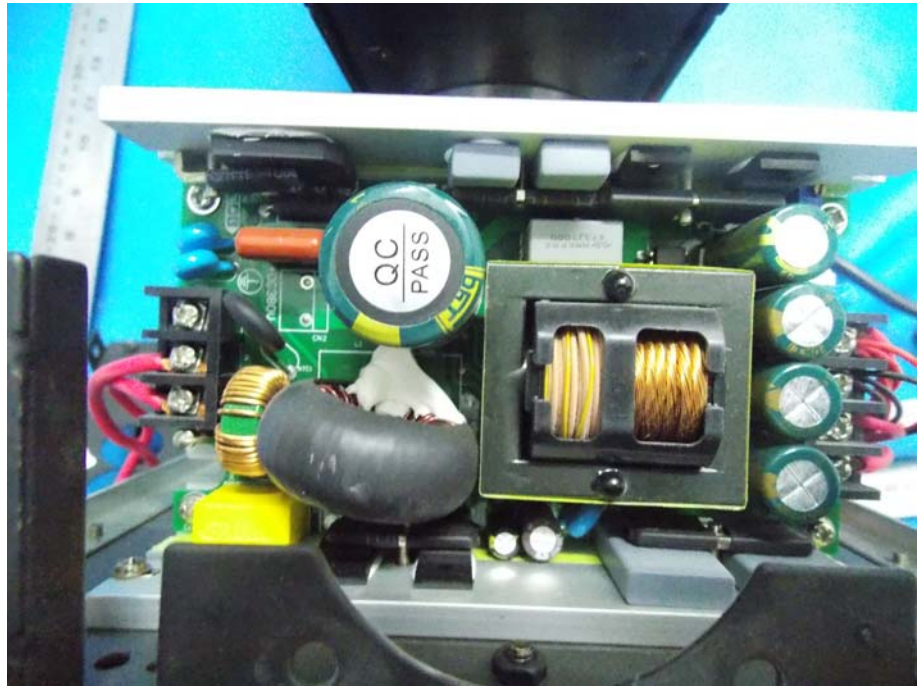


Photo 14

- front
- rear
- right side
- left side
- top
- bottom
- internal

