



# CE LVD TEST REPORT

For

**COB DOWNLIGHTS**

**Model No.:** VT-2-10, VT-2-20, VT-2-30

**Applicant :** V-TAC EXPORTS LIMITED

ROOM NO.301, KAM ON BUILDING 176A QUEENS ROAD  
CENTRAL, CENTRAL, HONGKONG

**Manufacturer :** V-TAC EXPORTS LIMITED

ROOM NO.301, KAM ON BUILDING 176A QUEENS ROAD  
CENTRAL, CENTRAL, HONGKONG

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**Report Number :** GST.190416.A005S

**Issued Date :** April 26, 2019

**Date of Report :** April 26, 2019

**Note:**

1. The test data and result is based on the tested sample only.
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<b>EN60598-1</b> <b>Luminaires—Part 1 :General requirements and tests</b> <b>EN60598-2-2</b> <b>Part 2-2:Particular requirments</b> <b>Section Two – Recessed luminaires</b>	
Report reference No. ....:	GST.190416.A005S
Testing laboratory .....	Global-Standard Testing Service Co., Ltd.
Location.....:	Room 1505, Building B, Chuangxin Plaza, Pingshan Avenue, Pingshan District, Shenzhen, China
Applicant.....:	V-TAC EXPORTS LIMITED
Address:.....:	ROOM NO.301, KAM ON BUILDING 176A QUEENS ROAD CENTRAL, CENTRAL, HONGKONG
Manufacturer.....:	V-TAC EXPORTS LIMITED
Address:.....:	ROOM NO.301, KAM ON BUILDING 176A QUEENS ROAD CENTRAL, CENTRAL, HONGKONG
Standards.....:	EN 60598-1:2015+A1: 2018 EN 60598-2-2:2012 EN 61347-1: 2015 EN 61347-2-13: 2014+A1:2017 EN 62031:2008+A1:2013+A2:2015 EN 62471:2008 EN 62493:2015
Procedure deviation.....:	N/A
Non-standard test method.....:	N/A
Type of test equipment .....	COB DOWNLIGHTS
Trade mark.....:	
Model/Type designation.....:	VT-2-10, VT-2-20, VT-2-30
Rating.....:	200-240V~, 50/60Hz, Max. 0.15A, Ma.30W
Copyright blank test report:	Global-Standard Testing Service Co., Ltd.
Test item particulars:	--
Operating Condition	Continuous
Tested for IT power systems	N/A.
IT testing, phase-phase voltage (V)	N/A.
Class of equipment	Class II equipment
Protection against ingress of water	IP20

Possible test case verdicts :

test case does not apply to the test object N(/A.)

test object does meet the requirement P(ass)

test object does not meet the requirement F(ail)

Name and address of the testing laboratory :

Global-Standard Testing Service Co., Ltd.  
Room 1505, Building B, Chuangxin Plaza, Pingshan Avenue,  
Pingshan District, Shenzhen, China

**Tested by :**

John Huang  
Signature

April 22, 2019  
Date

John Huang / Engineer  
Name/title

**Reviewed by :**

Gloria Wang  
Signature

April 26, 2019  
Date

Gloria Wang / Supervisor  
Name/title

**Approved by :**

  
Signature

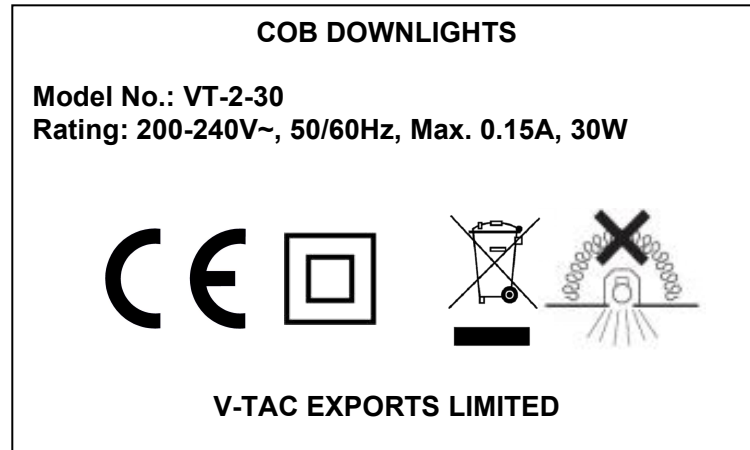
April 26, 2019  
Date

Nico Xie / Manager  
Name/title

<p><b>General remarks:</b></p>	
<p>Clause number between brackets refer to clauses in IEC 60598-1</p> <p>"(see remark #)" refers to a remark appended to the report.</p> <p>"(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma is used as the decimal separator.</p> <p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced except in full without the written approval of the testing laboratory.</p> <p>Unless otherwise specified, test are made under normal conditions at an ambient temperature within the range of 15°C to 35°C, RH45% to 75% and an air pressure of 860mbar of 1060mbar</p>	<p>Attachment with:</p> <p>1) Photo documentation</p>
<ol style="list-style-type: none"> <li>1. All the models are the similar construction except size, LED color, Wattage and LED numbers. The control gear matched lamp with different out voltage have different parameters of secondary componets.</li> <li>2. Model VT-2-30 was selected as representative sample.</li> <li>3. The European standard EN 62471 for LED laser product requirement has considered.</li> <li>4. The Safety specifications of LED modules for general lighting was evaluated with reference to EN 62031</li> <li>5. The test result presented in this report relate only to the object tested. The samples tested comply with the requirements of this standard.</li> <li>6. The European standard EN 62493 for requirement has considered.</li> </ol>	

**Label:**

( Representative marking)



Note: Due to similarity of the labels, only above label was listed.

- All labels have the same format except for model name and wattage.
- the height of WEEE directive mark is at least 7mm height.

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
2.1 (0)	SCOPE		P
2.2 (0.1)	Information for luminaire design concerned .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
2.2 (0.3)	More sections applicable.....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

2.4 (2)	CLASSIFICATION		P
2.4 (2.2)	Type of protection.....	Class II	—
2.4 (2.3)	Degree of protection.....	IP20	—
2.4 (2.4)	Luminaire only suitable for non-combustible surfaces .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Luminaire suitable for normally flammable surfaces.....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Luminaire suitable to be covered by insulating materials .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
2.4 (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"/>	—

2.5 (3)	MARKING		P
2.5.1 (-)	Warning notice, if not suitable for insulating ceiling		P
2.5 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
2.5 (3.3)	Additional information		P
	Language of instructions	English	N/A
2.5 (3.3.1)	Combination luminaires		P
2.5 (3.3.2)	Nominal frequency in Hz		N/A
2.5 (3.3.3)	Operating temperatures		N/A
2.5 (3.3.4)	Symbol or warning notice		N/A
2.5 (3.3.5)	Wiring diagram		N/A
2.5 (3.3.6)	Special conditions		N/A
2.5 (3.3.7)	Metal halide lamp luminaire – warning		N/A
2.5 (3.3.8)	Limitation for semi-luminaires		N/A
2.5 (3.3.9)	Power factor and supply current		P
2.5 (3.3.10)	Suitability for use indoor		p
2.5 (3.3.11)	Luminaires with remote control		N/A

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
2.5 (3.3.12)	Clip-mounted luminaire-warning		P
2.5 (3.3.13)	Specifications of protective shields		N/A
2.5 (3.3.14)	Symbol for nature of supply	~	P
2.5 (3.3.15)	Rated current of socket outlet		N/A
2.5 (3.3.16)	Rough service luminaire		N/A
2.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	type Y	P
2.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
2.5 (3.3.101)	Adequate warning on the package (EN)		P
2.5 (3.4)	Test with water	Legible	P
	Test with hexane	Legible	P
	Legible after test	Yes	P
	Label attached	Yes	P

2.6 (4)	CONSTRUCTION		<b>P</b>
2.6 (4.2)	Components replaceable without difficulty		N/A
2.6 (4.3)	Wireways smooth and free from sharp edges		P
2.6 (4.4)	Lampholders		N/A
2.6 (4.4.1)	Integral lampholder	Use LED light	N/A
2.6 (4.4.2)	Wiring connection		N/A
2.6 (4.4.3)	Lampholder for end-to-end mounting		N/A
2.6 (4.4.4)	Positioning	No lampholder	N/A
	- pressure test (N).....:		N/A
	- bending test (Nm).....:		N/A
2.6 (4.4.5)	Peak pulse voltage		N/A
2.6 (4.4.6)	Centre contact		N/A
2.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
2.6 (4.4.8)	Lamp connectors		N/A
2.6 (4.4.9)	Caps and bases correctly used		N/A
2.6 (4.5)	Starter holders		N/A

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
	Starter holders in luminaires other than class II		P
	Starter holder class II construction		P
2.6 (4.6)	Terminal blocks		N/A
	Tails		N/A
	Unsecured blocks		N/A
2.6 (4.7)	Terminals and supply connections		N/A
2.6 (4.7.1)	Contact to metal parts		N/A
2.6 (4.7.2)	Test 8 mm live conductor		N/A
	Test 8 mm earth conductor		N/A
2.6 (4.7.3)	Terminals for supply conductors		N/A
2.6 (4.7.3.1)	Welded connections:		N/A
	- stranded or solid conductor		N/A
	- spot welding		N/A
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.8.2		N/A
	- electrical test according to 15.9		N/A
	- heat test according to 15.9.2.3 and 15.9.2.4		N/A
2.6 (4.7.4)	Terminals other than supply connection		N/A
2.6 (4.7.5)	Heat-resistant wiring/sleeves		N/A
2.6 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
2.6 (4.8)	Switches:		N/A
	- adequate rating		N/A
	- adequate fixing		N/A
	- polarized supply		N/A
2.6 (4.9)	Insulating lining and sleeves		N/A
2.6 (4.9.1)	Retainment		N/A
	Method of fixing.....:		N/A
2.6 (4.9.2)	Insulated linings and sleeves		N/A
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C) .....		N/A
2.6 (4.10)	Insulation of Class II luminaires		P
2.6 (4.10.1)	No contact, mounting surface - accessible metal parts - wiring of basic insulation		N/A



EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
	Safe installation fixed luminaires		N/A
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
2.6 (4.10.2)	Assembly gaps:		N/A
	- not coincidental		N/A
	- no straight access with test probe		N/A
2.6 (4.10.3)	Retainment of insulation:		N/A
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
2.6 (4.11)	Electrical connections		N/A
2.6 (4.11.1)	Contact pressure		N/A
2.6 (4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
	- at least two self-tapping screws		N/A
2.6 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
2.6 (4.11.4)	Material of current-carrying parts		N/A
2.6 (4.11.5)	No contact to wood		N/A
2.6 (4.11.6)	Electro-mechanical contact systems		N/A
2.6 (4.12)	Mechanical connections and glands		N/A
2.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part.....: 0.80Nm; Fixed cover		P
	Torque test: torque (Nm); part.....: .....		N/A
	Torque test: torque (Nm); part.....: .....		N/A

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
2.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
2.6 (4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm)..... :		N/A
	- lampholder; torque (Nm)..... :		N/A
	- push-button switches; torque 0,8 Nm..... :		N/A
2.6 (4.12.5)	Screwed glands; force (N)..... :		N/A
2.6 (4.13)	Mechanical strength		P
2.6 (4.13.1)	Impact tests:		P
2.6.1 (-)	- recessed parts providing protection against electric shock; energy (Nm)..... :		P
	- other recessed parts; energy (Nm)..... :		N/A
2.6 (4.13.1)	- fragile parts; energy (Nm)..... :		N/A
	- other parts; energy (Nm)..... :	0.35Nm	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		N/A
2.6 (4.13.3)	Straight test finger	30N	P
2.6 (4.13.4)	Rough service luminaires		N/A
	- IP54 or higher		N/A
	a) fixed		P
	b) hand-held		P
	c) delivered with a stand		P
	d) for temporary installations and suitable for mounting on a stand		P
2.6 (4.13.6)	Tumbling barrel		N/A
2.6 (4.14)	Suspensions and adjusting devices		P
2.6 (4.14.1)	Mechanical load:		P
	A) four times the weight		P
	B) torque 2,5 Nm .....	1h	P

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
	C) bracket arm; bending moment (Nm)..... :		N/A
	D) load track-mounted luminaires		N/A
	E) clip-mounted luminaires, glass-shelve. Thickness (mm)..... :		P
	metal rod. Diameter (mm)..... :		P
	Fixed luminaire or independent control gear without fixing devices		N/A
2.6 (4.14.2)	Load to flexible cables		N/A
	Mass (kg):		N/A
	Stress in conductors (N/mm <sup>2</sup> ):		N/A
	Semi-luminaires - mass (kg):		N/A
	Semi-luminaires - bending moment (Nm):		N/A
2.6 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles..... :		N/A
	- strands broken		N/A
	- electric strength test afterwards		N/A
2.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
2.6 (4.14.5)	Guide pulleys		N/A
2.6 (4.14.6)	Strain on socket-outlets		N/A
2.6 (4.15)	Flammable materials:		N/A
	- glow-wire test 650 °C		N/A
	- spacing ≥ 30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		N/A
	- thermal protection		N/A
	- electronic circuits exempted		N/A
1.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N/A
	a) construction		N/A
	b) temperature sensing control		N/A
	c) surface temperature		N/A
2.6 (4.16)	Luminaires marked with F-symbol		P

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
	No lamp control gear		P
2.6 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
2.6 (4.16.2)	Thermal protection:		N/A
	- in lamp control gear		N/A
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear		N/A
2.6 (4.16.3)	"F" curve measured		P
2.6 (4.17)	Drain holes		N/A
	Clearance at least 5 mm		N/A
2.6 (4.18)	Resistance to corrosion:		N/A
2.6 (4.18.1)	- rust-resistance		N/A
2.6 (4.18.2)	- season cracking in copper		N/A
2.6 (4.18.3)	- corrosion of aluminium		N/A
2.6 (4.19)	Igniters compatible with ballast		N/A
2.6 (4.20)	Rough service vibration		N/A
2.6 (4.21)	Protective shield:		N/A
2.6 (4.21.1)	Shield fitted		N/A
2.6 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
2.6 (4.21.3)	No direct path		P
2.6 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment		N/A
2.6 (4.22)	Attachments to lamps		N/A
2.6 (4.23)	Semi-luminaires comply class II		P
2.6 (4.24)	UV radiation, metal halide lamps		P
2.6 (4.25)	No sharp point or edges		P
2.6 (4.26)	Short-circuit protection:		P

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
2.6 (4.26.1)	Uninsulated accessible SELV parts		N/A
2.6 (4.26.2)	Short-circuit test		P
2.6 (4.26.3)	Test chain according to Figure 29		P

2.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
	Working voltage (V).....:	AC200-240V	—
	Voltage form	Sinusoidal <input checked="" type="checkbox"/> Non-sinusoidal <input type="checkbox"/>	— —
	PTI	< 600 <input checked="" type="checkbox"/> > 600 <input type="checkbox"/>	—
	Rated pulse voltage (kV).....:		—
	(1) Current-carrying parts of different polarity: cr (mm); cl (mm).....:		P
	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm).....:	LED to accessible surface :1.2mm	P
	(3) Parts becoming live due to breakdown of basic insulation and metal parts: cr (mm); cl (mm).....:		N/A
	(4) Outer surface of cable where it is clamped and metal parts: cr (mm); cl (mm).....:		N/A
	(5) Not used		N/A
	(6) Current-carrying parts and supporting surface: cr (mm); cl (mm).....:		P

2.8 (7)	PROVISION FOR EARTHING		N/A
2.8 (7.2.1 + 7.2.3)	Accessible metal parts		N/A
	Metal parts in contact with supporting surface		N/A
	Resistance < 0,5 Ω		N/A
	Two self-tapping screws used		N/A
	Thread-forming screws		N/A
	Thread-forming screw used in a groove		N/A
	Earth makes contact first		N/A
2.8 (7.2.2 + 7.2.3)	Earth continuity in joints etc.		N/A
2.8 (7.2.4)	Locking of clamping means		N/A
	Compliance with 4.7.3		N/A
2.8 (7.2.5)	Earth terminal integral part of connector socket		N/A

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
2.8 (7.2.6)	Earth terminal adjacent to mains terminals		N/A
2.8 (7.2.7)	Electrolytic corrosion of the earth terminal		N/A
2.8 (7.2.8)	Material of earth terminal		N/A
	Contact surface bare metal		N/A
2.8 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
2.8 (7.2.11)	Earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A
2.9 (14)	SCREW TERMINALS		N/A
	Separately approved; component list		N/A
	Part of the luminaire		N/A
2.9 (15)	SCREWLESS TERMINALS		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the luminaire	(see Annex 4)	N/A
2.10 (5)	EXTERNAL AND INTERNAL WIRING		P
2.10 (5.2)	Supply connection and external wiring		P
2.10 (5.2.1)	Means of connection..... :		P
	Connecting leads (EN)		P
	- without a means for connection to the supply		N/A
	- terminal block specified		N/A
	- relevant information provided		N/A
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1		N/A
2.10 (5.2.2)	Type of cable..... :		N/A
	Cables equal to HD21 S2 or HD22 S2 (EN)		N/A
	Nominal cross-sectional area (mm <sup>2</sup> )..... :		N/A
2.10 (5.2.3)	Type of attachment, X, Y or Z	Type Y	P
2.10 (5.2.5)	Type Z not connected to screws		N/A
2.10 (5.2.6)	Cable entries:		P

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
	- suitable for introduction		P
	- adequate degree of protection		P
2.10 (5.2.7)	Cable entries through rigid material have rounded edges		N/A
2.10 (5.2.8)	Insulating bushings:		N/A
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
2.10 (5.2.9)	Locking of screwed bushings		N/A
2.10 (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
2.10 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
2.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		P
2.10 (5.2.10.3)	Tests:		N/A
	- impossible to push cable; unsafe		N/A
	- pull test: 25 times; pull (N).....:		N/A
	- torque test: torque (Nm)..... :		N/A
	- displacement $\leq$ 2 mm		N/A

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
	- no movement of conductors		N/A
	- no damage of cable or cord		N/A
2.10 (5.2.11)	External wiring passing into luminaire		N/A
2.10 (5.2.12)	Looping-in terminals		N/A
2.10 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
2.10 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
2.10 (5.2.15)	Colour code low voltage (EN)		N/A
2.10 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Appliance couplers of class II type		P
2.10 (5.2.17)	Non standardized interconnecting cables properly assembled		N/A
2.10 (5.2.18)	Used plug in accordance with:		N/A
	- IEC 60083		N/A
	- other standard		N/A
2.10 (5.3)	Internal wiring		P
2.10 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		P
	- not delivered/ mounting instruction		P
	- factory assembled		P
	- socket outlet loaded (A)..... :		N/A
	- temperatures..... : (see Annex 2)		P
	Green- yellow for earth only		N/A
2.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm <sup>2</sup> )..... :		N/A
	Insulation thickness		N/A
	Extra insulation added where necessary		N/A
2.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P



EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
	Adequate cross-sectional area and insulation thickness		P
2.10 (5.3.1.3)	Double or reinforced insulation for class II		P
2.10 (5.3.1.4)	Conductors without insulation		N/A
2.10 (5.3.1.5)	SELV current-carrying parts		P
2.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
2.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		P
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		P
2.10 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
2.10 (5.3.4)	Joints and junctions effectively insulated		N/A
2.10 (5.3.5)	Strain on internal wiring		N/A
2.10 (5.3.6)	Wire carriers		N/A
2.10 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A

2.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
2.11 (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		P
	Double-ended tungsten filament lamp		P
	Insulation lacquer not reliable		P

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
2.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
2.11 (8.2.3)	Class II luminaire:		P
	- basic insulation not accessible other than during starter or lamp replacement		N/A
	- glass protective shields not used as supplementary insulation		P
	Class I luminaire with BC lampholder		N/A
2.11 (8.2.4)	Portable luminaire:		N/A
	- protection independent of supporting surface		N/A
	- terminal block completely covered		N/A
2.11 (8.2.5)	Compliance with the standard test finger or relevant probe		P
2.11 (8.2.6)	Covers reliably secured		P
2.11 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$		N/A
	Portable plug connected luminaire with capacitor		N/A
	Other plug connected luminaire with capacitor		N/A
	Discharge device on or within capacitor		N/A
	Discharge device mounted separately		N/A

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
2.12 (12)	ENDURANCE TEST AND THERMAL TEST		P
2.12 (12.3)	Endurance test:		P
	- mounting- position.....:		—
	- test temperature (°C).....:	35°C	—
	- total duration (h).....:	240h	—
	- supply voltage: Un factor; calculated voltage (V)	254.4V	—
	- lamp used.....:	LED lamp	—
2.12 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P
2.12 (12.4)	Thermal test (normal operation)		P
2.12 (12.5)	Thermal test (abnormal operation)		P
2.12 (12.6)	Thermal test (failed lamp control gear condition):		N/A
2.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A) .....		—
	- case of abnormal conditions.....:		—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un...:		—
	- measured mounting surface temperature (°C): at 1,1 Un:		N/A
	- calculated mounting surface temperature (°C)....:		N/A
	- track- mounted luminaires		N/A
2.12 (12.6.2)	Temperature sensing control		N/A
	- case of abnormal conditions.....:		—
	- thermal link		N/A
	- manual reset cut- out		N/A
	- auto reset cut- out		N/A
	- measured mounting surface temperature (°C): ...:		N/A
	- track- mounted luminaires		N/A
2.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N/A

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
2.12 (12.7.1)	Through wiring or looping-in wiring loaded by a current of (A) .....		—
	- case of abnormal conditions.....		—
	- measured winding temperature (°C) at 1,1 Un....		—
	- measured temperature of fixing point/ exposed part (°C) at 1,1 Un.....		N/A
	- calculated temperature of fixing point/ exposed part (°C).....		N/A
2.12 (12.7.2)	Temperature sensing control		N/A
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured temperature of fixing point/ exposed part (°C) .....		N/A
2.13 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
2.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP.....	IP20	—
	- mounting position during test.....		—
	- fixing screws tightened; torque (Nm).....		—
	- tests according to clauses.....		—
	- electric strength test afterwards		N/A
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		N/A
	c) no trace of water on current-carrying parts or where it could become a hazard		N/A
	d) i) For luminaires without drain holes – no water entry		N/A
	d) ii) For luminaires with drain holes – no hazardous water entry		N/A
	e) no water in watertight luminaire		N/A
	f) no contact with live parts (IP 2X)		N/A
	f) no entry into enclosure (IP 3X and IP 4X)		N/A
	f) no contact with live parts (IP 3X and IP 4X)		N/A
2.13 (9.3)	Humidity test 48 h	25°C, 93%RH, 48h	P

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
2.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
2.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø .....		—
	Insulation resistance (MΩ):		P
	SELV:		N/A
	- between current-carrying parts of different polarity .....	N/A	N/A
	- between current-carrying parts and mounting surface.....	N/A	N/A
	- between current-carrying parts and metal parts of the luminaire.....	N/A	N/A
	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/A
2.14 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test	No ignitor	N/A
	Luminaires with manual ignitors	No manual ignitor	N/A
	Test voltage (V):		N/A
	SELV:		N/A
	- between current-carrying parts of different polarity:		N/A
	- between current-carrying parts and mounting surface.....		N/A
	- between current-carrying parts and metal parts of the luminaire.....		N/A
	Other than SELV:		P
	- between live parts of different polarity.....	3000V	P
	- between live parts and mounting surface.....	3000V	P
	- between live parts and metal parts.....	3000V	P
	- between live parts of different polarity through action of a switch.....		N/A
2.14 (10.3.1)	Leakage current (mA).....	<0.08mA	P

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict

2.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
2.15 (13.2.1)	Ball-pressure test:		P
	- part tested; temperature (°C).....:	PCB: 125°C	P
	- part tested; temperature (°C).....:		N/A
2.15 (13.3.1)	Needle flame test (10 s):		N/A
	- part tested.....:		N/A
	- part tested.....:		N/A
2.15 (13.3.2)	Glow-wire test (650°C):		P
	- part tested.....:	PCB	P
	- part tested.....:		N/A
2.15 (13.4.1)	Tracking test: part tested..... :		N/A

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

ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N/A
(13.3)	DK: Needle flame test during 30 s		N/A
(13.3)	GB: Requirements according to United Kingdom Building Regulation		N/A
(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/A

	ANNEX 3: screw terminals (part of the luminaire)		N/A
(14)	SCREW TERMINALS		N/A
(14.2)	Type of terminal.....:		—
	Rated current (A).....:		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm <sup>2</sup> ).....:		N/A
(14.3.3)	Conductor space (mm).....:		N/A
(14.4)	Mechanical tests		
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread)....:	M	N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm).....:		N/A
	Torque (Nm).....:		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N).....:		N/A
(14.4.8)	Without undue damage		N/A
	ANNEX 4: screwless terminals (part of the luminaire)		N/A
(15)	SCREWLESS TERMINALS		N/A
(15.2)	Type of terminal.....:		—
	Rated current (A).....:		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5.1)	Terminals internal wiring		N/A
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples)		N/A
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples)		N/A
	Insertion force not exceeding 50 N		N/A

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict
(15.5.2)	Permanent connections: pull-off test (20 N)		N/A
(15.6)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples).....:		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles.....:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples).....:		N/A
(15.7)	Terminals external wiring		N/A
	Terminal size and rating		N/A
(15.8.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....		N/A
	Pull test pin or tab terminals (4 samples); pull (N) .....		N/A

TABLE		List of critical components and materials		
Component	manufacturers / trademark	Type / model	Value / rating	Approval/ Reference
Input wire	Various	1007	VW-1, 300V, 90°C, 24AWG	UL
LED	Various	20W Mature white LED	30-36V, 750mA CCT: 4000-4500K	Test with appliance
LED PCB	Various	Various	.V-0, 130°C,	UL
PCB	Various	Various	Min.V-0, 90°C	UL
Driver	Various	Various	Input: 200-265VAC, 50/60Hz. Output: 45-60VDC, 60mA.	Test with appliance
Internal wire	--	1005	VW-1, 80°C, 24AWG	UL



EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict

	ANNEX 2: temperature measurements, thermal tests of Section 12			P		
	Lamp used.....:	VT-2-30		—		
	Ballast used.....:	Independed LED Driver		—		
	Mounting position of luminaire.....:	As in normal use		—		
	Supply wattage (W).....:	30.3W		—		
	Supply current (A).....:	--		—		
	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 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.....:	—		—		
temperature (C) of part	clause 12.4 - normal				clause 12.5 - abnormal	
	test 1	test 2	test 3	limits	test 4	limit
Input cord of LED driver	—	42.0	—	75	—	—
LED Driver outside	—	51.2	—	75	—	—
Output cord of LED driver	—	35.4	—	75	—	—
Input cord of LED Light	—	49.6	—	70	—	—
PCB near LED	—	65.4	—	130	—	—
Enclosure outside near LED	—	41.3	—	90	—	—
Metal enclosure	—	48.2	—	90	—	—
Ambient	—	25.4	—	--	—	—

EN 60598-2-2			
Clause	Requirement - Test	Result – Remark	Verdict

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

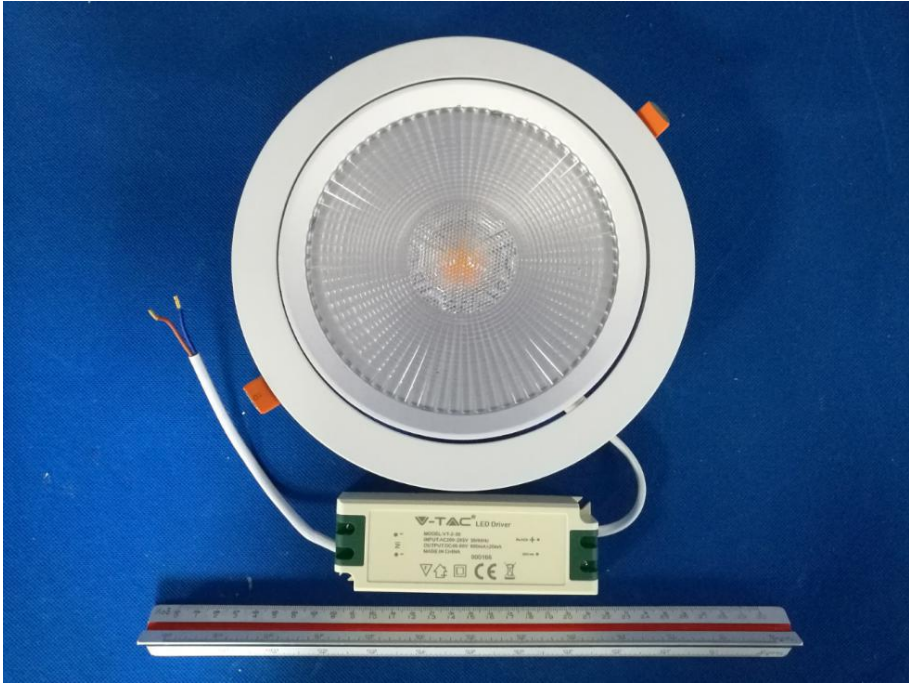
ANNEX 4	Screwless terminals (part of the luminaire)		N/A
<b>(15)</b>	<b>SCREWLESS TERMINALS</b>		N/A
(15.2)	Type of terminal..... :		—
	Rated current (A)..... :		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A

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Clause	Requirement - Test	Result – Remark	Verdict
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5.1)	Terminals internal wiring		N/A
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N/A
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples).....:		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples).....:		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples).....:		N/A
(15.6)	Terminals external wiring		N/A
	Terminal size and rating		N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....		N/A
	Pull test pin or tab terminals (4 samples); pull (N) .....		N/A

**Appendix 1**

Photo Documentation

<p>Photo 1</p> <p>View:</p> <p><input checked="" type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right side</p> <p><input type="checkbox"/> Left side</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p> <p><input type="checkbox"/> Internal</p>	
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<p>Photo 2</p> <p>View:</p> <p><input type="checkbox"/> Front</p> <p><input checked="" type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right side</p> <p><input type="checkbox"/> Left side</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p> <p><input type="checkbox"/> Internal</p>	
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Photo 3

View:

- Front
- Rear
- Right side
- Left side
- Top
- Bottom
- Internal



Photo 4

View:

- Front
- Rear
- Right side
- Left side
- Top
- Bottom
- Internal



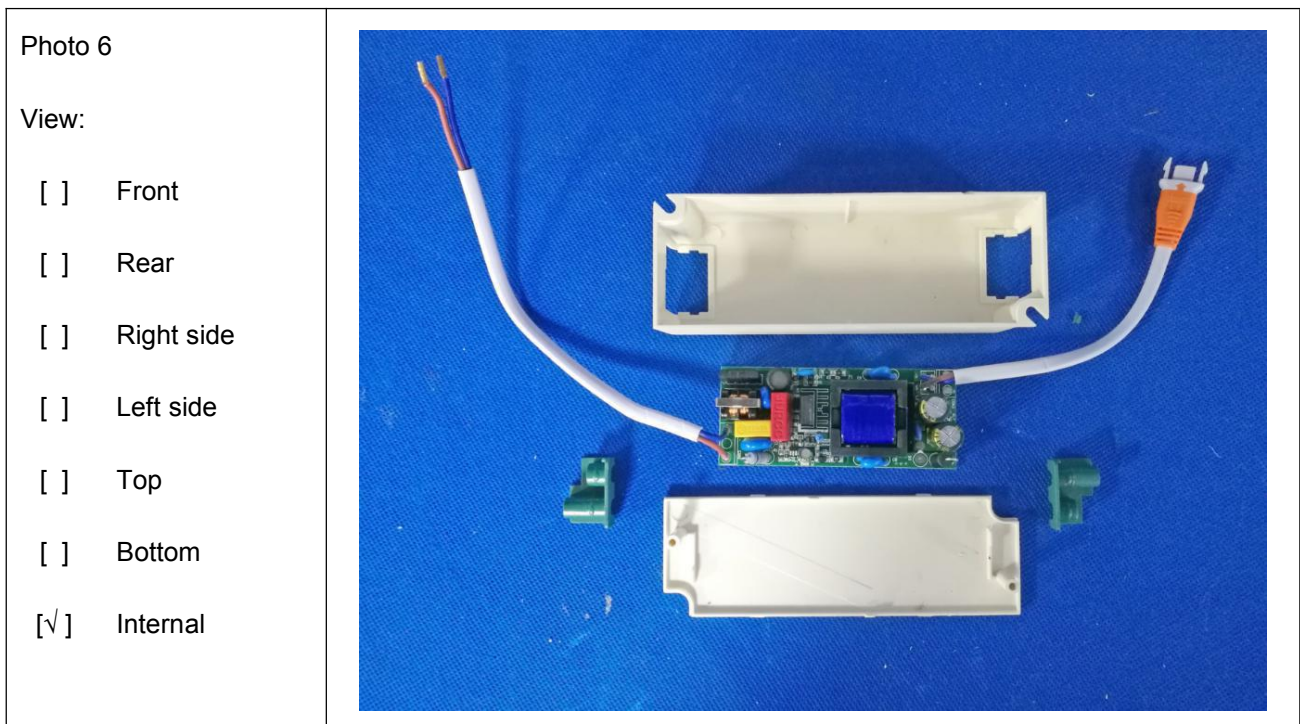
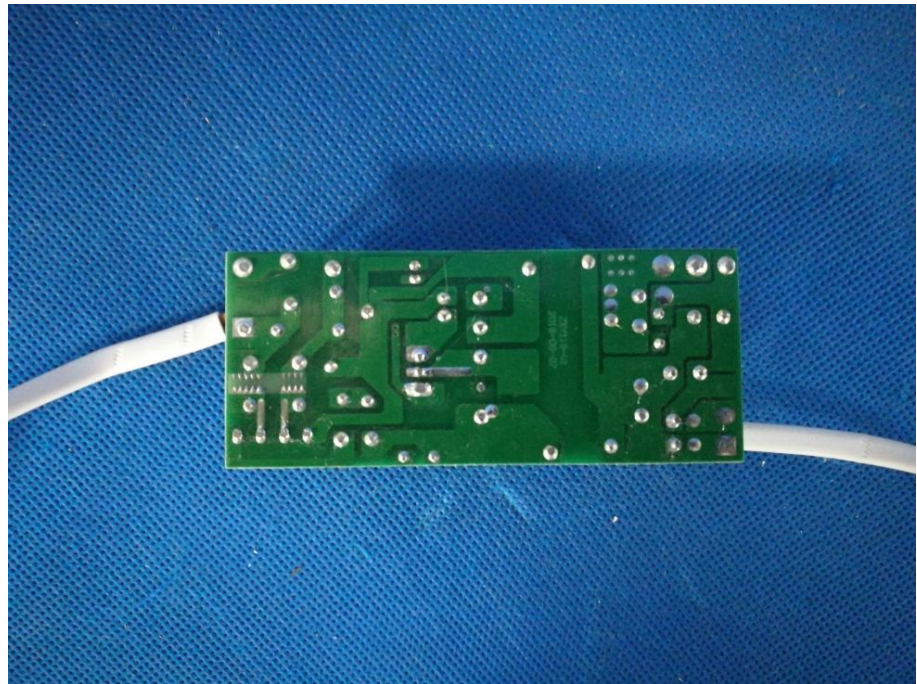


Photo 7

View:

- Front
- Rear
- Right side
- Left side
- Top
- Bottom
- Internal



---END---