TEST REPORT

AS/NZS 60598.2.5

Luminaires

Part 2: Particular requirements Section Five – Floodlights

Report reference No. ..... :	LCS130529897TS-1
Tested by(name + signature) ..... :	Sara Tang
Approved by(name + signature)..... :	Hart Qiu
Date of issue ..... :	June 27, 2013
Contents ..... :	60 pages
Testing laboratory	
Name..... :	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address ..... :	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
Testing location ..... :	Same as above
Client	
Name ..... :	Global Tech China Limited
Address ..... :	3 Flat A, Wai Yip Industrial Building, 171 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong
Manufacturer	
Name ..... :	Global Tech China Limited
Address ..... :	3 Flat A, Wai Yip Industrial Building, 171 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong
Test specification	
Standard..... :	AS/NZS 60598.2.5: 2002 & AS/NZS 60598.1: 2003+ AS/NZS 61347.1: 2002 & IEC 61347-2-13: 2006
Test procedure ..... :	Compliance with AS/NZS 60598.2.5: 2002 & AS/NZS 60598.1: 2003+ AS/NZS 61347.1: 2002 & IEC 61347-2-13: 2006
Non-standard test method ..... :	N.A.
Test item Description..... :	PIR and Flood Light
Trade Mark..... :	Hylite Mightylite
Model and/or type reference ..... :	40300(X1)(X2)(X3) X1 stands for PIR or non PIR; X2 stands for 15 watt Epistar, 15 watt Samsung, 24 watt Epistar or 24 watt Everlite; X3 stands for black ABS, black PC, White ABS, White P, yellow ABS, yellow PC, Green ABS, or special colour PC
Rating(s)..... :	240V~, 50Hz, Max.24W

Test item particulars

Classification of installation and use …….: Class II

Supply Connection ……..…: Terminal block

Test case verdicts

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

Test item does meet the requirement ..... : P(Pass)

Test item does not meet the requirement .. : F(Fail)

Testing

Date of receipt of test item ..... : May 20, 2013

Date(s) of performance of test ..... : May 20, 2013 – June 27, 2013

General remarks

This report shall not be reproduced except in full without the written approval of the testing laboratory.

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

Clause numbers between brackets refer to clauses in AS/NZS 60598.1.

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

"(see Annex #)" refers to an annex appended to the report.

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

General product information

1. The max. ambient temperature is 40℃.

2. All models are similar except their power, appearance and PIR. All tests were conducted on model 40300 non PIR 24 watt Epistar black ABS.

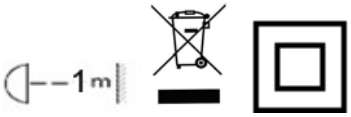
3. The test report includes: Attachment No.1: Report of IEC 61347-2-13 and AS/NZS 61347.1.

Attachment 2: 6 pages of Photo Documentation.

Attachment 3: Circuit Diagram & PWB Layout.

Copy of marking plate

Hylite Mightylite
PIR and Flood Light
Model: 40300 non PIR 24 watt Epistar black ABS
240V~, 50Hz, Max.24W
Ta: 40℃



Global Tech China Limited
MADE IN HONGKONG

Remark: The above is representative label.

Label testing

Rubbing for 15 s with a piece of cloth soaked with water. And a further 15 s with a piece of cloth soaked with petroleum.

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
5.2 (0)	**General test requirements**		**P**
5.2 (0.1)	Information for luminaires design considered	Yes [√] No [ ]	P
5.2 (0.3)	More sections applicable	240V~	P
5.4 (2)	**CLASSIFICATION**		**P**
5.4 (2.2)	Type of protection	Class II	P
5.4 (2.3)	Degree of protection	IP44	P
5.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces ……..:	Fixed luminaire	P
	Luminaire not suitable for direct mounting on normally flammable surfaces ……..:	No	N
5.4 (2.5)	Luminaire for normal use	Yes	P
	Luminaire for rough service	No	N
5.5 (3)	**MARKING**		**P**
5.5 (3.2)	Markings on luminaires	See marking label	P
	Position of the marking	Bottom of the product	P
	Format of symbols/text	The height of symbols more than 5mm, text more than 2mm	P
5.5 (-)	Additional information		P
	Language of instructions	In English	P
	a) Operating position, if not universal.		N
	b) Weight and overall dimensions of the floodlight.	See user manual	P
	c) Maximum projected area of the floodlight.	See user manual	P
	d) Range of mounting heights.	See user manual	P
	e) Suitability for use indoors.		P
5.5 (3.3.1)	Combination luminaires	Not combination luminaire	N
5.5 (3.3.2)	Nominal frequency in Hz	50Hz	P
5.5 (3.3.3)	Operating temperature	Operating temperature is 40℃	P
5.5 (3.3.4)	Symbol or warning notice		N
5.5 (3.3.5)	Wiring diagram	No such parts	N
5.5 (3.3.6)	Special conditions	No such special conditions	N
5.5 (3.3.7)	Metal halid lamp luminaire – warning		N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
5.5 (3.3.8)	Limitation for semi-luminaires		N
5.5 (3.3.9)	Power factor and supply current		P
5.5 (3.3.10)	Suitability for use indoors	Use indoor or outdoor	P
5.5 (3.3.11)	Luminaires with remote control	Not such construction	N
5.5 (3.3.12)	Clip-mounted luminaire - warning		N
5.5 (3.3.13)	Specifications of protective shields		P
5.5 (3.3.14)	Symbol for nature of supply	~	P
5.5 (3.3.15)	Rated current of socket outlet	No socket outlet	N
5.5 (3.3.16)	Rough service luminaire	Normal service luminaire	N
5.5 (3.3.17)	Mounting instruction for type Y, Type Z and some type X attachments		N
5.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N
5.5 (3.3.19)	Protective conductor current in instruction if applicable		N
5.5 (3.3.20)	Provided with information if not intended to be mounted within arms reach		N
5.5 (3.4)	Test with water	15s	P
	Test with hexane	15s	P
	Legible after test	Still legible.	P
	Label attached	Still attached.	P
5.6 (4)	**CONSTRUCTION**		**P**
5.6 (4.2)	Components replaceable without difficulty	All components can not be replaced	P
5.6 (4.3)	Wireways smooth and free from sharp edges		P
5.6 (4.4)	Lamp holders	No lamp holders	N
5.6 (4.4.1)	Integral lamp holder		N
5.6 (4.4.2)	Wiring connection		N
5.6 (4.4.3)	Lamp holder for end-to-end mounting		N
5.6 (4.4.4)	Positioning		N
	- pressure test (N)……..……..:		N
	After test the lamp holder comply with relevant standard sheets and show no damage		N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	After test on singal-capped lamp holder the lamp holder have not moved form its position and show no permanent deformation		N
	-bending test (N)……:		N
	After test the lamp holder have not moved from its position and show no permanent deformation		N
5.6 (4.4.5)	Peak pulse voltage	No ignitors	N
5.6 (4.4.6)	Centre contact	No ignitors	N
5.6 (4.4.7)	Parts in rough service luminaires resistant to tracking	Not for rough service	N
5.6 (4.4.8)	Lamp connectors	No lamp connector	N
5.6 (4.4.9)	Caps and bases correctly used		N
5.6 (4.5)	Starter holders	No starter holders	N
	Starter holder in luminaries other than Class II		N
	Starter holder Class II construction		N
5.6 (4.6)	Terminal blocks		P
	Tails		P
	Unsecured blocks		N
5.6 (4.7)	Terminals and supply connections		P
5.6 (4.7.1)	Contact to metal parts	Conductor is clamped by metal screw terminal	P
5.6 (4.7.2)	Location stranded wires		P
	8 mm test live conductor	The free wire of a conductor connected to a live terminal do not touch any live part which is accessible or connected to an accessible live part	P
	8 mm test earth conductor		N
5.6 (4.7.3)	Terminals for supply conductors		P
5.6 (4.7.3.1)	Welded connections		N
	- stranded or solider conductor		N
	- spot welding		N
	- welding between wires		N
	- type Z attachment		N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	- mechanical test according to 15.8.2		N
	- electrical test according to 15.9		N
	- hest test according to 15.9.2.3 and 15.9.2.4		N
5.6 (4.7.4)	Terminals other than supply connection		N
5.6 (4.7.5)	Heat-resistant wiring/sleeves		P
5.6 (4.7.6)	Multi-pole plug	No such plug	N
	- test at 30 N		N
5.6 (4.8)	Switches:	No switches	N
	- adequate rating		N
	- adequate fixing		N
	- polarized supply		N
	- Compliance with 61058-1 for electronic switches		N
5.6 (4.9)	Insulating lining and sleeves		P
5.6 (4.9.1)	Retainment		P
	Method of fixing……:		P
5.6 (4.9.2)	Insulated linings and sleeves		P
	Resistant to temperature >20℃ to the wire temperature or		N
	a) & c) Insulation resistance and electric strength		N
	b) Ageing test. Temperature (℃)		N
5.6 (4.10)	Insulation of Class II luminaires		P
5.6 (4.10.1)	No contact, mounting surface - accessible metal parts - wiring of basic insulation		P
	Safe installation fixed luminaires		P
	Capacitors and switches		N
	Interference suppression capacitors according to IEC 60384-14		N
5.6 (4.10.2)	Assembly gaps:		P
	- not coincidental		P
	- no straight access with test probe		P
5.6 (4.10.3)	Retainment of insulation:		P
	- fixed		N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	- unable to be replaced; luminaire inoperative		N
	- sleeves retained in position		N
	- lining in lampholder		N
5.6 (4.11)	Electrical connections		P
5.6 (4.11.1)	Contact pressure	No pressure transmitted to the insulating material	N
5.6 (4.11.2)	Screws:		P
	- Self-tapping screws		P
	- thread-cutting screws		N
5.6 (4.11.3)	Screw locking:		N
	- spring washer		N
	- rivets	No rivet provided	N
5.6 (4.11.4)	Material of current-carrying parts	> 50% copper	P
5.6 (4.11.5)	No contact to wood or mounting surface	No wood	N
5.6 (4.11.6)	Electro-mechanical contact systems	No such construction	N
5.6 (4.12)	Mechanical connections and glands		P
5.6 (4.12.1)	Screw not made of soft metal		P
	Screws of insulating material		N
	Torque test: torque (Nm); part ……..	Fixed enclosure; 3.85mm, 1.2Nm	P
	Torque test: torque (Nm); part ……..		N
	Torque test: torque (Nm); part ……..		N
5.6 (4.12.2)	Screw with diameter < 3 mm screw into metal		N
5.6 (4.12.4)	Locked connections:		N
	- fixed arms; torque (Nm)		N
	- lampholder; torque (Nm)		N
	- push-button switches; torque (Nm)	No such switches	N
5.6 (4.12.5)	Screwed glands; force (N)		N
5.6 (4.13)	Mechanical strength		P
5.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm)	0.5Nm for lens	P
	- other parts; energy (Nm)	0.7Nm for plastic enclosure	P
	1) live parts	Inaccessible	P

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	2) linings	No linings provided	N
	3) protection		P
	4) covers	No such covers	N
5.6 (4.13.2)	Metal parts enclosing live parts shall have adequate mechanical strength	Plastic enclosure	N
5.6 (4.13.3)	Straight test finger		N
5.6 (4.13.4)	Rough service luminaires	Normal service luminaires	N
	IP 54 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
5.6 (4.13.6)	Tumbling barrel		N
5.6 (4.14)	Suspensions and adjusting devices		P
5.6 (4.14.1)	Mechanical load:		P
	A) four times the weight	4*0.465Kg	P
	B) torque 2.5 Nm		N
	C) bracket arm; force (N)		N
	D) load track-mounted luminaires		N
	E) clip-mounted luminaires, glass-shelve; thickness (mm)		N
	metal rod; diameter (mm)		N
5.6 (4.14.2)	Load to flexible cables:		N
	mass (kg)		N
	stress in conductors (N/mm²)		N
	Mass (kg) of semi-luminaires		N
	Bending moment (Nm) of semi-luminaires		N
5.6 (4.14.3)	Adjusting devices:		N
	- flexing test; number of cycles		N
	- strands broken		N
	- electric strength test afterwards		N
5.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors	No such tubes	N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
5.6 (4.14.5)	Guide pulleys	No such construction	N
5.6 (4.14.6)	Strain on socket-outlets	Not such unit	N
5.6 (4.15)	Flammable materials:	Terminal block	P
	- glow-wire test 650℃	Plastic enclosure	P
	- 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
5.6 (4.15.2)	Luminaires made of thermoplastic material		N
	a) construction		N
	b) temperature sensing control		N
	c) surface temperature		N
5.6 (4.16)	Luminaires for mounting on normally flammable surfaces		P
	No lamp control gear	Used built-in control gear	N
5.6 (4.16.1)	Lamp control gear shall spacing:		N
	- spacing 10 mm		N
	- spacing 35 mm		P
5.6 (4.16.2)	Thermal protection:		N
	- in lamp control gear		N
	- external	Internal	N
	- fixed position		N
	- temperature marked lamp control gear		N
5.6 (4.16.3)	Design to satisfy the test of 12.6		N
5.6 (4.17)	Drain holes	No drain holes	N
	Clearance at least 5 mm		N
5.6 (4.18)	Resistance to corrosion:		N
5.6 (4.18.1)	- rust-resistance		N
5.6 (4.18.2)	- season cracking in copper		N
5.6 (4.18.3)	- corrosion of aluminium	No aluminium used	N
5.6 (4.19)	Ignitors compatible with ballast	No ignitors used	N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
5.6 (4.20)	Rough service vibration	Not such appliance	N
5.6 (4.21)	Protective shield		N
5.6 (4.21.1)	Shield fitted		N
	Shield of glass if tungsten halogen lamps		N
5.6 (4.21.2)	Particles from a shattering lamp not impair safety		N
5.6 (4.21.3)	No direct path		N
5.6 (4.21.4)	Impact test on shield		N
	Glow-wire test on lamp compartment		N
5.6 (4.22)	Attachments to lamps	No such attachments	N
5.6 (4.23)	Semi-luminaires comply with Class II	Not such appliance	N
5.6 (4.24)	UV radiation for tungsten halogen lamps and metal halide lamps (Annex P)	No such appliance	N
5.6 (4.25)	No sharp point edges		P
5.6 (4.26)	Short-circuit protection		N
5.6 (4.26.1)	Uninsulated accessible SELV parts		N
5.6 (4.26.2)	Short circuit test		N
5.6 (4.26.3)	Test chain according to figure 29		N
5.6.1(-)	Floodlights for use outdoors shall have protection against the ingress of moisture at least equivalent to IPX3.	IP44	P
5.6.2(-)	Lamp holder brackets and lamp supports where used shall withstand normal usage throughout the life of the floodlight. They shall accept and retain lamps which are within the dimensional tolerances stated in the appropriate IEC publication where applicable, and locate the lamp or lamps in the designed relationship to the optical control devices in the floodlight.		N
5.6.3(-)	When provision is made for alternative sizes of lamps or light centre positions, the adjusting means shall be positive and firmly retained in the selected position.		N
5.6.4(-)	Refractors, reflectors or any other light controlling components shall be so marked or constructed that they can be fitted or replaced only in the correct relationship to the light source.		P
5.6.5(-)	The means for attaching the floodlight to its support shall be appropriate to the weight of the floodlight.		N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	Fixings which carry the weight of the floodlight and internal accessories shall be provided with appropriate means to prevent the dislodgement of any part of the floodlight by vibration, either in service or during maintenance.		P
	Parts of floodlights for mounting heights 3 m or higher which are fixed other than with at least two devices		P
	The floodlight is mounted with its largest projected area as viewed in elevation lying in the horizontal plane, and with the means of attachment secured in accordance with the manufacturer's recommendations.		P
	For floodlights for use above ground level outdoors, a constant evenly distributed load is applied for 10 min on the floodlight using sand-bags providing 4.5 kN per square metre of floodlight projected area. The floodlight is then turned 180° in the vertical plane, about the point of attachment, and the test is repeated.	4.5kN, 10mins, 0.3°, no failure.	P
5.6.6(-)	Where means for angular adjustment are provided, there shall be provision for positive locking after any such adjustments have been effected.		P
5.6.7(-)	Floodlights for use outdoors shall be resistant to the vibrations which may occur during normal use.		P
5.6.8(-)	Glass covers shall either consist of a glass that fractures into small pieces, or shall be provided with a guard of sufficiently small mesh or the use of a film-coated glass that retains glass fragments.		N

5.7 (11)	**CREEPAGE DISTANCES AND CLEARANCES**		**P**
	Working voltage (V)	240V~	P
	Voltage form	Sinusoidal [√] Non-sinusoidal [ ]	P
	PTI	< 600 [√] ≥ 600 [ ]	P
	Impusle withstand category (normal category II) (category III annex U)	Category II	P
	Rated pulse voltage (kV)	<2.0kV	P
	(1) Current-carrying parts of different	cl>3.5mm, limit: 1.7mm	P

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	polarity: cr (mm); cl (mm)	cr>3.5mm, limit: 2.5mm	
	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm)	cl>7.5mm, limit: 6.5mm cr>7.5mm, limit: 6.5mm	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 clamp and metal parts: cr (mm); cl (mm) ...		N
	(5)not used		N
	(6) Current-carrying parts and supporting surface: cr (mm); cl (mm)	cl>7.5mm, limit: 6.5mm cr>7.5mm, limit: 6.5mm	P
5.8 (7)	**PROVISION FOR EARTHING**		**N**
5.8 (7.2.1 + 7.2.3)	Accessible Metal parts		N
	metal parts in contact with supporting surface		N
	Resistance < 0.5Ω		N
	Self-tapping screws used		N
	Thread-forming screws		N
	Thread-forming screws used in a grove		N
	Earth markes contact first		N
5.8 (7.2.2 +7.2.3)	Earth continuity in joints etc.		N
5.8 (7.2.4)	Locking of clamping means		N
	Compliance with 4.7.3		N
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N
5.8 (7.2.5)	Earth terminal integral part of Connector socket		N
5.8 (7.2.6)	Earth terminal adjacent to mains terminals		N
5.8 (7.2.7)	Electrolytic Corrosion of the earth terminal		N
5.8 (7.2.8)	Material of earth terminal		N
	Contact surface bare metal		N
5.8 (7.2.10)	Class II luminaire for looping-in		N
	Double or reinforced insulation to		N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	functional earth		
5.8 (7.2.11)	Earthing core coloured green-yellow		N
	Length of earth conductor		N
5.9 (14)	**SCREW TERMINALS**		**P**
	Separately approved: component list	See annex 3	P
	Part of the luminaire	See annex 3	P
5.9 (15)	**SCREWLESS TERMINALS**		**--**
	Separately approved: component list		N
	Part of the luminaire		N
5.10 (5)	**EXTERNAL AND INTERNAL WIRING**		P
5.10 (5.2)	Supply connection and external wiring		P
5.10 (5.2.1)	Means of connection.....	Terminal block	P
5.10 (5.2.2)	Type of cable		N
	Nominal cross-section area (mm^2)		N
	Cables equal to IEC 60227 and IEC 60245		N
5.10 (5.2.3)	Type of attachment, X ,Y or Z		N
5.10 (5.2.5)	Type Z not connected to screws		N
5.10 (5.2.6)	Cable entries		N
	- suitable for introduction		N
	- adequate degree of protection		N
5.10 (5.2.7)	Cable entries through rigid material have rounded edges		N
5.10 (5.2.8)	Insulating bushings:		N
	- suitably fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- tubes or guard made of insulating material		N
5.10 (5.2.9)	Locking of screw bushings		N
5.10 (5.2.10)	Cord anchorage:		N
	- covering protected from abrasion		N
	- clear how to be effective		N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	- no mechanical or thermal stress		N
	- no tying of cables into knots etc.		N
	- insulating material or lining		N
5.10 (5.2.10.1)	Cord anchorage for type X attachment cord		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 anchorage		N
5.10 (5.2.10.2)	Adequate cord anchorages for type Y and type Z attachments		N
5.10 (5.2.10.3)	Tests:		N
	- impossible to push cable; unsafe		N
	- pull test: 25 times; pull (N)		N
	- torque test: torque (Nm)		N
	- displacement ≤ 2 mm		N
	- no movement of conductors		N
	- no damage of cable or cord		N
5.10 (5.2.11)	External wiring passing into luminaire		N
5.10 (5.2.12)	Looping-in terminals	Not looping-in appliance	N
5.10 (5.2.13)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		N
5.10 (5.2.14)	Mains plug same protection		N
	Class III luminaire plug		N
5.10 (5.2.16)	Appliance inlets (IEC 60320)	No appliance inlet	N
	Appliance couplers of class II type		N
5.10 (5.2.17)	No standardized in interconnecting cables assembled		N
5.10 (5.2.18)	Used plug in accordance with		N
	- IEC 60083		N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	- other standard		N
5.10 (5.3)	Internal wiring		P
5.10 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		P
	- not delivered/ mounting instruction		N
	- factory assembled		N
	- socket outlet loaded (A).....		N
	- temperatures		N
	Green-yellow for earth only		P
5.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		P
	Cross-Sectional area (mm^2)	18AWG	P
	Insulation thickness	>0.6mm	P
	Extra insulation added where necessary		N
5.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limited device		P
	Adequate cross-section area and insulation thickness		P
5.10 (5.3.1.3)	Double or reinforced insulation for class II	Class II appliance	P
5.10 (5.3.1.4)	Conductors without insulation		N
5.10 (5.3.1.5)	SELV current-carrying parts		N
5.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N
5.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N
	Joints, raising/lowering devices		P
	Telescopic tubes etc.		N
	No twisting over 360^0		P
5.10 (5.3.3)	Insulating bushings		N
	- suitable fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- cables with protective sheath		N
5.10 (5.3.4)	Joints and Junctions effectively insulated		P
5.10 (5.3.5)	Strain on internal wiring		P

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
5.10 (5.3.6)	Wire carriers		N
5.10 (5.3.7)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N
5.11 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		P
5.11 (8.2.1)	Live parts not accessible with standard test finger		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable and adjustable luminaires		N
	Basic insulated parts not accessible with ø50mm probe from outside, within arms reach, on wall-mounted luminaires		N
	Lamp and startholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N
	Basic insulation only accessible under lamp or starter replacement		N
	Double-ended tungsten filament lamp		N
	Insulation lacquer not reliable		N
	Double-ended high pressure discharge lamp		N
	Relevant warming according to 3.2.18 fitted to the luminaire		N
5.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position	Fixed luminaire	N
5.11 (8.2.3 a)	Class II luminaire:		P
	- basic insulated metal parts not accessible during starter or lamp replacement		P
	- basic insulated not accessible other than during starter or lamp replacement		P
	- glass protective shields not used as supplementary insulation		P
5.11 (8.2.3b)	BC lampholder of metal in class I luminaires shall be earthed		N
5.11 (8.2.3c)	Class III luminaires with expose SELV parts:		N
	Ordinary luminaire :		N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	- touch current		N
	- no-load voltage		N
	- other than ordinary luminaire:		N
	- nominal voltage		N
5.11 (8.2.4)	Portable luminaire:		N
	- protection independent of supporting surface		N
	- terminal block completely covered		N
5.11 (8.2.5)	Compliance with the standard test finger or relevant probe		N
5.11 (8.2.6)	Covers reliably secured	Cover not removable without tool	P
5.11 (8.2.7)	Discharging of capacitors >0.5 µF		N
	Portable plug connected luminaire with capacitor		N
	Discharge device on or within capacitor		N
	Discharge device mounted separately		N
5.12 (12)	**ENDURANCE TEST AND THERMAL TEST**		P
5.12 (12.3)	Endurance test:		P
	- mounting-position	In draught-proof enclosure	P
	- test temperature (°C)	50ºC	P
	- total duration (h)	240hrs. Totally 10 cycles, each 24h, the first 9 cycles in normal operation, the 10th cycle in abnormal operation	P
	- supply voltage: Un factor; calculated voltage (V)	240VX1.1	P
	- lamp used	LED lamp	P
5.12 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N
	- marking legible		P
	- no cracks, deformation etc.		P
5.12 (12.4)	Thermal test (normal operation)	(see table 12.4)	P
5.12 (12.5)	Thermal test (abnormal operation)		P
	Short-circuit of starter contacts		N
	Lamps removed and not replaced		P

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
5.12 (12.6)	Thermal test (failed lamp control gear condition):		N
5.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		N
	- case of abnormal conditions	No electronic circuit	N
	- electronic ballast		N
	- measured winding temperature (°C): at 1.1 Un		N
	- measured mounting surface temperature (°C): at 1,1 Un		N
	- calculated mounting surface temperature(°C)		N
	- track-mounted luminaires		N
5.12 (12.6.2)	Temperature sensing control:		N
	- manual reset cut-out		N
	- auto reset cut-out		N
	- track-mounted luminaires		N
5.12 (12.7)	Thermal test (failed ballast or transformer in plastic luminaires):		N
5.12 (12.7.1)	Luminaire without temperature sensing control		N
5.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N
	Test method 12.7.1.1 or Annex V		N
	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 (℃): at 1.1 Un……..... :		N
	- measured temperature of fixing point/exposed part (℃): at 1.1Un..... :		N
	- calculated temperature of fixing point/exposed part (℃) .....:		N
	Ball-pressure test:		N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	- part tested; temperature (℃)..... :		N
	- part tested; temperature (℃)..... :		N
5.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N
	- case of abnormal conditions		N
	- measured winding temperature (℃): at 1.1 Un…….. :		N
	- measured temperature of fixing point/exposed part (℃): at 1.1 Un..... :		N
	- calculated temperature of fixing point/exposed part (℃) .... ……:		N
	Ball-pressure test:		N
	- part tested; temperature (℃)..... :		N
	- part tested; temperature (℃)..... :		N
5.12 (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
5.12 (12.7.2)	Luminaire with temperature sensing control		N
	- thermal link		N
	- manual reset cut-out		N
	- auto reset cut-out		N
	- case of abnormal conditions		N
	highest measured temperature of fixing point/exposed part (℃):…..... :		N
	Ball-pressure test:		N
	- part tested; temperature		N
	- part tested; temperature (℃)…..... :		N
5.12.1	When applying the limits in the tables 12-1 to 12-6 of section 12 of IEC 60598-1 to floodlights for use outdoors, 10 °C shall be deducted from the temperatures measured on the floodlight in the test enclosure to allow for the effects of natural air movement which occur in the working environment of the floodlight.	-	P

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
5.13 (9)	**RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE**		**P**
5.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP	IP44	P
	- mounting position during test		P
	- fixing screws tightened; torque (Nm)		P
	- tests according to clauses	9.2.0	P
	- electric strength		P
	a) no deposit in dust-proof luminaire		P
	b) no talcum in dust-tight luminaire		P
	c) no trace of water on current-carrying parts or SELV parts or where it could become a hazard		P
	d) i) For luminaires without drain holes – no water entry		P
	d) ii) For luminaires with drain holes – no hazardous water entry		N
	e) no water in watertight luminaire		P
	f) no contact with live parts (IP 2X)		N
	f) no entry into enclosure (IP 3X and IP 4X)		P
	f) no contact with live parts (IP3X and IP4X)		P
	g) no trace of water on part of lamp requiring protection from splashing water		N
	h) no damage of protective shield or glass envelope		P
5.13 (9.3)	Humidity test 48h	Relative humidity 93%, temperature 40℃, 120h, followed by electric strength test	P

5.14 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		P
5.14 (10.2.1)	Insulation resistance test:		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø ..... :	Class II	P
	Insulation resistance:		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

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	Other than SELV:		--
	- between live parts of different polarity	> 100MΩ, limit: 2MΩ	P
	- between live parts and mounting surface	> 100MΩ, limit: 4MΩ	P
	- between live parts and metal parts	> 100MΩ, limit: 4MΩ	P
	- between live parts of different polarity through action of a switch		N
5.14 (10.2.2)	Electric strength test:		P
	Dummy lamp		N
	Luminaires with ignitors after 24 h test		N
	Luminaires with manual ignitors		N
	Test voltage (V):		P
	SELV:		N
	- between current-carrying parts of different polarity.....:		N
	- between current-carrying parts and mounting surface ..... :		N
	- between current-carrying parts and metal parts of the luminaire ..... :		N
	Other than SELV:		--
	- between live parts of different polarity	1480Vac,1min,no breakdown	P
	- between live parts and mounting surface	3710Vac,1min,no breakdown	P
	- between live parts and metal parts	3710Vac,1min,no breakdown	P
5.14 (10.3)	Touch current (mA)	0.14mA<0.5mA	P
5.15 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
5.15 (13.2.1)	Ball-pressure test:		P
	- part tested; temperature (°C)	Enclosure, 83°C, 0.5mm	P
	- part tested; temperature (°C)	Terminal block, 125°C, 0.6mm; PCB, 125°C, 0.8mm	P
	- part tested; temperature (°C)	Bobbin of transformer, 125°C, 0.8mm; Connector, 125°C, 0.6mm	P
5.15 (13.3.1)	Needle flame test (10 s):		P
	- part tested	PCB, Bobbin of transformer, Terminal block, connector, no burning	P
	- part tested		N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
5.15 (13.3.2)	Glow-wire test (750 °C)		P
	- part tested	Enclosure, PCB, Bobbin of transformer, Terminal block, connector, no burning	P
	- part tested		N
5.15 (13.4.2)	Tracking test: part tested		N
	CENELEC COMMON MODIFICATIONS (EN)		**--**
1.5 (3)	**MARKING**		**--**
1.5.(3.3.301)	Adequate warning on the package		—
1.10 (5)	**EXTERNAL AND INTERNAL WIRING**		—
1.10 (5.2.1)	Connecting leads		P
	- 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
1.10 (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)	GB: Requirements according to United Kingdom Building Regulation		N
(13.3.2)	FR: Glow-wire test 850℃ alt. 750℃ for luminaires in premises open to public or 960℃ for luminaires in emergency exits		N
ZZ	**ANNEX ZZ, Variations to draft Ed.6 of IEC 60598.1:2003 for application in Australia and New Zealand**		P

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
0.4.2	In Australia, the supply voltage is 230 V/400 V +10% - 6% and for testing according to this Standard, the rated voltage shall be 240 V/415 V.	Input: 240V~	P
1.2.41	Material which does not comply with the glow-wire test requirements of 13.3.2; and material which can be easily ignited by spark, flame or hot surface when in contact with atmospheric oxygen and which can sustain a fire or explosion.	No such material	N
3.2.12	In Australia, luminaires with non-detachable flexible cables or cords which are intended to be connected to the supply via a socket-outlet and which are not fitted with a plug are not permitted.		N
3.3	Instructions and other texts required by this Standard shall be written in English.	English	P
3.3.7	To avoid potential unsafe lamp failure, the luminaire should be switched off at least once a week.	See the user manual	P
3.3.10	Indoor and outdoor use		P
	(a) Suitability for use "indoors" including the related ambient temperature.	outdoors	N
	(b) Suitability for “outdoors—temporary use”.	See the label	P
	(c) Suitability for “outdoors—permanent use”.		N
4.4.1	G5 lamp holders are assessed for access to live parts during lamp replacements and with the lamp removed.	No lamp holder	N
5.2.1	Portable luminaires with non detachable cables or cords shall be fitted with plugs complying with AS/NZS 3112. The plug portion of the luminaire with integral pins shall comply with Appendix J of AS/NZS 3112. Also see note under Clause 3.2.12.	Fixed luminaries	N
5.2.2	Flexible cables or cords used as a means of connection to the supply, when supplied by the luminaire manufacturer, shall be at least equal in their mechanical and electrical properties to those specified in table 5.1, and shall be capable of withstanding, without deterioration, the highest temperature to which they may be exposed under normal conditions of use.		P

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	Materials other than polyvinyl chloride and rubber are suitable if the above requirements are met.		P
	To provide adequate mechanical strength, the nominal cross-sectional area of the conductors shall be not less than:		P
	- 0.75 mm^2 for ordinary luminaires;		N
	- 1 mm^2 for other luminaires.		N
	If the luminaire is provided with a 10/16 A socket-outlet, the flexible conductor nominal cross-section area shall be at least 1,5 mm^2.		N
5.2.16	Installation couplers complying with AS/NZS 3131 or AS/NZS 61535.1 (Int) are an acceptable alternative in Australia and New Zealand.	No such parts	N
8.2.4	For Class I portable luminaires and luminaires for wall mounting within arm's reach (see Clause 1.4.12 of AS/NZS 3000), terminal blocks shall be completely covered and it shall not be possible to touch basic insulation unless opened for replacement of lamps or replaceable control gear.	Fixed luminaries	N
13.3	Resistance to flame and ignition		N
	Enclosure for auxiliary equipment including transformers, ballasts, capacitors, electrode connections, automatic switching apparatus and similar devices shall be of metal-clad type or totally enclosed in suitable material which will effectively prevent the spread of fire.		N
	Parts of insulating material retaining current-carrying parts, SELV parts in position, and external parts of insulating material providing protection against electric shock shall be resistant to flame and ignition.		N
	For materials other than ceramic, compliance is checked by the tests of 13.3.1 and 13.3.2 and 13.3.3 as appropriate.		N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
	This requirement does not apply to decorative trims, knobs, wiring insulation and other parts not likely to be ignited or to propagate flames from inside the luminaires.		N
13.3.1	Parts of insulating material retaining current-carrying parts in position shall withstand the following tests:		N
	Parts are subjected to a test using a nickel-chromium glow-wire heated to 750 °C. The test apparatus and test procedure shall be those described in AS/NZS 60695.2.10.		N
	Any flame or glowing of the sample shall extinguish within 30 s of withdrawing the glow-wire, and any burning or molten drop shall not ignite a single layer of tissue paper specified in 4.187 of ISO 4046-4, spread out horizontally 200 mm ± 5 mm below the sample.		N
	The requirements of this subclause do not apply in those cases where the luminaires provide an effective barrier to burning drops or where the insulation material is ceramic.		N
13.3.2	Parts of insulating material which do not retain live parts in position, but which provide protection against electric shock, and parts of insulating material retaining SELV, parts in position shall withstand the following test:		N
	Parts are subjected to a test using a nickel-chromium glow-wire heated to 650 °C. The test apparatus and test procedure shall be those described in AS/NZS 60695.2.10.		N
	Any flame or glowing of the sample shall extinguish within 30 s of withdrawing the glow-wire, and any burning or molten drop shall not ignite a single layer of tissue paper specified in 4.187 of ISO 4046-4, spread out horizontally 200 mm ± 5 mm below the sample.		N
	The requirements of this subclause do not apply in those cases where the luminaires provide an effective barrier to burning drops or where the insulation material is ceramic.		N

AS/NZS 60598.2.5			
Clause	Requirement - Test	Result - Remark	Verdict
13.3.3	During the application of the glow-wire tests of Clauses 13.3.1 and 13.3.2, the height and duration of the flames are measured.		N
	In addition, for parts that withstand the glow-wire test but which flame during the application of the glow-wire, the surrounding parts are subjected to the needle-flame test, in accordance with AS/NZS 4695.2.2, for the measured duration of the flame or 30 s, whichever is the least, if—		N
	– they are positioned within a distance equal to the height of the flame, and		N
	– they are likely to be impinged upon by the flame.		N
	However, parts shielded by a separate barrier that meets the needle-flame test are not tested.		N
	The needle-flame test is not carried out on parts that are made of material classified as FV-0 or FV-1 according to AS/NZS 4695.707. The sample of material submitted to the test of AS/NZS 4695.707 shall be no thicker than the relevant part.		N
	If parts, other than enclosures, do not withstand the glow-wire tests of Clauses 13.3.1 and 13.3.2 by failure to extinguish within 30 s after removal of the glow-wire tip, the needle-flame test in accordance with AS/NZS 4695.2.2 is made for 30 s on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the glow-wire tests of Clauses 13.3.1 and 13.3.2. Parts shielded by a separate barrier that meets the needle-flame test are not tested.		N

Tables

	ANNEX 1: components					**P**
object/part No.	Code	manufacturer/trademark	type/model	technical data	standard	mark(s) of conformity
Input wire	B	LEE YUEN ELECTRICAL MFY LTD	1015	18AWG, 105℃, 600V	UL 758	UL E137515
Output wire	B	LEE YUEN ELECTRICAL MFYLTD	1007	18AWG, 80℃, 300V	UL 758	UL E137515
Transformer T1	B	LYGO ELECTRONIC PRODUCTS MFY	LED20W-19V-00	Class B	--	Test with appliance
-Bobbin	B	CHANG CHUN PLASTICS CO LTD	T375J	PMC, V-0, 150℃	UL 94	UL E59481
-Insulation tape	B	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	1350	130℃	UL 510	UL E17385
-Winding	B	GREAT LEOFLON INDUSTRIAL CO LTD	TRW(B)	130℃	UL 2353	UL E211989
-Insulating tube	B	DONGGUAN QUANTAI INDUSTRIAL CO LTD	T-2	600V, 125°C	UL 224	UL E227336
-Varnish	B	SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD	T- 4260(a)	130°C	UL 1446	UL E228349
Fuse	B	WALTER ELECTRONIC CO., LTD.	2010	T2A250V	IEC 60127-2	VDE 40018781
Inductor L1	B	LYGO ELECTRONIC PRODUCTS MFY	LG28W-UU98	Class B, Min.20mH	--	Test with appliance
-Winding	B	TAI-I ELECTRIC WIRE & CABLE CO LTD	UEWE, MW-28C	130°C	UL 1446	UL E85640
-Bobbin	B	CHANG CHUN PLASTICS CO LTD	EC-12	V-0, 130℃	UL 1694	UL E59481
PCB	B	DONGGUAN HUATUO ELECTRONIC CO LTD	YK-03	V-0, 130°C	UL 796	UL E234403
Terminal block	B	HONGSHANG PLASTICS ELECTRON CO LTD	CE 1	2.6mm, 300VAC, 24A 0.75mm^2	UL 486	UL E324556
RV1	B	GUANGXI NEW FUTURE INFORMATION INDUSTRY CO., LTD.	05D	130°C, 350V, 470pF	IEC 61051-1; IEC 61051-2; IEC 61051-2-2	VDE 40030322

Tables

Enclosure	B	HUIZHOU WOTE ADVANCED MATERIALS CO LTD	2000	V-0, 95℃	UL 746D	UL E310240
Y-capacitor	B	SHANTOU HIGH- NEW TECHNOLOGY DEV. ZONE SONGTIAN ENTERPRISE CO., LTD.	CE Series	Max.2200 pF, 250V~	IEC 60384-14	VDE 40025748
X-capacitor (CX1)	B	TENTA ELECTRIC INDUSTRIAL CO. LTD.	MEX	AC 275 V, 0.047uF	IEC 60384-14	VDE 119119
X-capacitor (CX2)	B	DAIN ELECTRONICS CO., LTD.	MEX	AC 275 V, 0.1uF	IEC 60384-14	VDE 40018798

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

	ANNEX 2: temperature measurements, thermal tests of Section 12		P
	Type reference ……..:	40300 non PIR 24 watt Epistar black ABS	P
	Lamp used ……..……....:	LED lamp	P
	Lamp control gear used…….....:	Built-in lamp control gear	P
	Mounting position of luminaire……..:	Fixed mounted	P
	Supply wattage (W) ……..……:	24W	P
	Supply current (A) ……..……:	--	P
	Calculated power factor……..:	0.92	P
	Table: measured temperatures corrected for ta = 40℃：		P
	- abnormal operating mode……..……..……:		N
	- test 1: rated voltage……..……....:		N
	- test 2: 1.06 times rated voltage or 1,05 times Rated wattage ……..……..…:	1.06×240V normal operation	P
	- test 3: Load on wiring to socket-outlet, 1.06 times voltage or 1.05 times wattage .....:	--	N
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage .....:	1.1X240V	P
	Through wiring or looping-in wiring loaded by current of A during the test …..:	--	N

Tables

Temperature(℃) of part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	Test 1	Test 2	Test 3	Limits(℃)	Test 4	Limit (℃)
Input wire	--	62.4	--	105	63.8	--
Output wire	--	54.2	--	80	55.4	--
Outside enclosure	--	56.7	--	95	58.2	--
PCB	--	74.5	--	130	76.1	--
RV1	--	63.1	--	130	64.8	--
Surface 1m distance from lamp	--	45.2	--	90	46.3	130
Winding of T1	--	73.8	--	110	75.4	--
Bobbin of T1	--	71.5	--	110	73.5	--
Winding of L1	--	72.6	--	110	73.2	--
Bobbin of L1	--	70.2	--	110	71.8	--
Y-capacitors	--	65.7	--	125	67.3	--
CX1-capacitor	--	64.8	--	100	65.7	--
CX2-capacitor	--	61.7	--	100	62.5	--
Mounting surface	--	53.7		90	54.8	130
Ambient	--	40.2	--	--	40.3	--

	ANNEX 3: screw terminals		**--**
(14)	**SCREW TERMINALS**		**--**
(14.2)	Type of terminal.....:		—
	Rated current (A).....:		—
(14.3.2.1)	One or more conductors		N
(14.3.2.2)	Special preparation		N
(14.3.2.3)	Terminal size		N
	Cross-sectional area (mm²).....:		N
(14.3.3)	Conductor space (mm).....:		N
(14.4)	Mechanical tests		N
(14.4.1)	Minimum distance		N
(14.4.2)	Cannot slip out		N
(14.4.3)	Special preparation		N
(14.4.4)	Nominal diameter of thread (metric ISO thread) .....:		N
	External wiring		N
	No soft metal		N
(14.4.5)	Corrosion		N
(14.4.6)	Nominal diameter of thread (mm) .....:		N
	Torque (Nm).....:		N

Tables

(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

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

Tables

(15.8.1)	Pull test spring-type terminals (4 samples); pull (N)									N
	Pull test pin or tab terminals (4 samples); pull (N)									N
(15.9)	Contact resistance test									N
	Voltage drop (mV) after 1 h									N
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop of two inseparable joints									
	Voltage drop after 10th alt. 25th cycle									
	Max. allowed voltage drop (mV) ..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop after 50th alt. 100th cycle									
	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									
	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									
	Max. allowed voltage drop (mV) ..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										

Attachment 1

TEST REPORT **IEC 61347-2-13** **Lamp controlgear** **Part 1: General and safety requirements** **Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules**	
Report Reference No. ..... :	See report AS/NZS 60598.2.5
Tested by (+ signature) ..... :	See report AS/NZS 60598.2.5
Approved by (+ signature) ..... :	See report AS/NZS 60598.2.5
Date of issue ..... :	See report AS/NZS 60598.2.5
Contents ..... :	See report AS/NZS 60598.2.5
Testing laboratory	
Name ..... :	See report AS/NZS 60598.2.5
Address ..... :	See report AS/NZS 60598.2.5
Testing location..... .....:	See report AS/NZS 60598.2.5
Client	
Name .....:	Global Tech China Limited
Address.....:	3 Flat A, Wai Yip Industrial Building, 171 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong
Manufacturer	
Name .....:	Global Tech China Limited
Address.....:	3 Flat A, Wai Yip Industrial Building, 171 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong
Test specification	
Standard ..... :	AS/NZS 61347.1:2002 & IEC 61347-2-13: 2006
Test procedure ..... :	Compliance with AS/NZS 61347.1:2002 & IEC 61347-2-13: 2006
Non-standard test method ..... :	N.A.
Test item Description ..... :	LED Driver
Trademark ..... :	N.A.
Model and/or type reference..... :	LGLED190100-PCBA
Rating(s) ……..:	Input: 207-254V~, 50-60Hz, Max.0.3A; Output: 15-21V ⎓, Max.1.1A

Test item particulars

Construction ……..:	Built-in control gear
Lamp type ……..:	LED lamp
Operation model ……..:	Continuous
Maximum case temperature ……..…:	--
Supply connect ……..:	Supply Leads
Output voltage ……..:	15-21V ⎓

Test case verdicts

Test case does not apply to the test object...:	N(N/A)
Test item does meet the requirement .....:	P(Pass)
Test item does not meet the requirement.....:	F(Fail)

Testing

Date of receipt of test item	May 20, 2013
Date(s) of performance of test .....:	May 20, 2013 – June 27, 2013

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.

Clause numbers between brackets refer to clauses in AS/NZS 61347.1.

"(see Enclosure #)" refers to additional information appended to the report.

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

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

General product information

The max. ambient temperature is 40℃.

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
4(4)	**GENERAL REQUIREMENTS**		**P**
	Compliance of independent controlgear enclosure with EN 60 598-1	Built-in lamp controlgear	—
	Independent SELV controlgear comply with Annex I		N
6 (6)	CLASSIFICATION		---
	Independent controlgear	Yes☐ No ☒	---
	Built-in controlgear	Yes☒ No ☐	---
	Integral controlgear	Yes☐ No ☒	---
	SELV-equivalent or isolating controlgear	Yes☒ No ☐	---
	Auto-wound controlgear ..... :	Yes☐ No ☒	---
	Independent SELV controlgear	Yes☐ No ☒	---
7	**MARKING**		---
7.1 (7.1)	Mandatory markings:		P
	- mark of origin	See marking label	P
	- model number, type reference ……..:	LGLED190100-PCBA	P
	- symbol for independent controlgear, if applicable	Built-in controlgear	N
	- correlation between interchangeable parts and controlgear marked		N
	- rated supply voltage (V)	207-254V~	P
	- earthing symbol		P
	- wiring diagram	See marking label	P
	- value of tc	See marking label	P
	- symbol for declared temperature		N
	Constant voltage type:	Yes☐ No ☒	--
	- rated supply voltage (V) ..... :		N
	Constant current type:	Yes☒ No ☐	--
	- rated output current (A) ..... :	1.1A	P
	- rated maximum output voltage (V) ..... :	15-21V ⎓	P
	- indication if for LED modules only		P
7.2 (7.1)	- information to be provided, if applicable		---

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
	- declaration on protection against accidental contact	All conductive part is not a live part	N
	- cross-section of conductors (mm²) :	18AWG	P
	- number, type and wattage of lamp(s)	LED lamp, 24W	P
	- directly mains-connected windings		N
	SELV-equivalent controlgear		P
- (7.2)	Marking durable and legible		P
	Rubbing 15 s water, 15 s petroleum; marking legible		P
8 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**		P
- (10.1)	Controlgear protected against accidental contact with live parts		P
- (A1)	The current flowing between the part concerned and earth is measured and does not exceed 0,7 mA (peak) or 2 mA d.c. ..... :	0.14mA	P
	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		P
	Adequate mechanical strength on parts providing protection		N
- (10.2)	Capacitors > 0,5 μF: voltage after 1 min (V): < 50V:		N
8.1(-)	SELV-equivalent controlgear accessible parts are insulated from live parts by double or reinforced insulation according 8.6 and 13.1 in IEC 60065		N
8.2(-)	Exposed terminals of SELV or SELV-equivalent controlgear are allowed if: - the rated or maximum output voltage does not exceeding 25 V r.m.s. - the no-load output voltage does not exceed 30 V r.m.s. or 33 √2 V peak		N
	Insulated terminals if rated output voltage >25 V		P

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
	One capacitor Y1 or two capacitors Y2 of the same values used in series between SELV or SELV equivalent output and primary circuits - Capacitor complying with IEC 60384-14 - Other components bridging the separating transformer complying with IEC 60065, clause 14		P
9 (8)	**TERMINALS**		N
	Screw terminals: compliance with Section 14 of IEC 60598-1		N
	Screwless terminals: compliance with Section 15 of IEC 60598-1		N
10 (9)	**PROVISION FOR EARTHING**		**N**
	External metal parts connected to the earth terminal:		N
	- compliance with 7.2.1 in IEC 60598-1		N
	Test with a current of 10 A between earthing terminal and each of the accessible metal parts; measured resistance (Ω): < 0,5 Ω		N
	Protective earth, symbol		N
	Terminal complying with clause 8 in Part 1		N
	Locked against loosening and not possible to loosen by hand		N
	Not possible to loosen clamping means unintentionally on screwless terminals		N
	Earthing via means of fixing		N
	Earthing terminal only used for the earthing of the control gear		N
	All parts of material minimizing the danger of electrolytic corrosion		N
	Made of brass or equivalent material		N
	Contact surface bare metal		N
	Conductors by tracks on printed circuit boards:		N
	- a.c. current of 25 A for 1 min between earthing terminal and accessible metal parts		N
	- compliance with clause 7.2.1 in IEC 60598-1		N

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
11 (11)	**MOISTURE RESISTANCE AND INSULATION**		**---**
	After storage 48 h at 91-95% relative humidity and 20-30℃ measuring of insulation resistance with d.c. 500 V (MΩ):		P
	⩾ 2 MΩ for basic insulation..... :	Different polarity of input (L & N) with fuse open: >100 MΩ	P
	⩾ 4 MΩ for double or reinforced insulation ..... :	Input to output: >100 MΩ	P
11(-)	Adequate insulation between input and output terminals not bounded together in SELV-equivalent controlgear		N
12 (12)	**ELECTRIC STRENGTH**		**---**
	Immediately after clause 11 electric strength test for 1 min		P
	Working voltage ≤ 42 V, test voltage 500 V		N
	Working voltage > 42 V, test voltage (V):		P
	Basic insulation, 2U + 1000 V	Different polarity of input (L & N) with fuse open: >1508V; no damage	P
	Reinforced insulation, test voltage (V): ..... :	Input (L&N) – output: 3766VAC; no damage	P
	No flashover or breakdown		P
	Windings in separating transformers in SELV equivalent control gear according to 14.3.2 of IEC 60065		P
13 (13)	**THERMAL ENDURANCE FOR WINDINGS(Not applicable)**		**---**
14 (14)	**FAULT CONDITIONS**		P
	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value	Not thermally protected ballasts	P
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	See below.	P
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)	Refer to table 14	P

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
	Distances on printed boards provided with coating according to IEC 60664-3		P
- (14.2)	Short-circuit or interruption of semiconductor devices	Refer to table 14	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	Refer to table 14	P
- (14.4)	Short-circuit across electrolytic capacitors	Refer to table 14	P
- (14.5)	After the tests the insulation resistance with d.c. 500 V (MΩ) are ≥ 1 MΩ ..... :		P
	After the tests the accessible parts has not become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
	Temperature declared thermally protected controlgear fulfil the requirements in Annex C		N
15	**Transformer heating**		**---**
	Windings of separating transformer in a SELV equivalent controlgear fulfil the requirements according to 7.1 and 11.2 of IEC 60065		P
15.1	Temperatures do not exceed the changed values of the values in column 2 of Table 3 of IEC 60065, in respect to relevant ambient temperature at tc, under normal operation		P
15.2	Temperatures do not exceed the changed values of the values in column 3 of Table 3 of IEC 60065, in respect to relevant ambient temperature at tc, under abnormal conditions of Cl. 16 and fault conditions of Cl. 14		P
	Ambient temperature at tc.....:		N
16	**ABNORMAL CONDITIONS**		P
	Safety not impaired when the controlgear is operated at any voltage between 90% and 110% of rated voltage	254Vx 1.1=279.4Va.c.	P
16.1	Control gear which are of the constant voltage output type:		--
	a) No LED module inserted		N
	b) Double LED modules or equivalent load connected to the output terminals		N
	c) Output terminal short-circuited (20 cm and 200 cm or declared length)		N

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		N
16.2	Control gear which are of the constant current output type:		--
	a) No LED module connected		P
	b) Double the LED modules or equivalent load connected in series to the output terminals		P
	c) Output terminal short-circuited (20 cm and 200 cm or declared length)		P
	Maximum output voltage not exceeded		P
	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		P
17 (15)	**CONSTRUCTION**		**P**
- (15.1)	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	Printed boards used as internal connections complies with clause 14 of IEC 61347-1		P
	Socket-outlet in the output circuit does not accept plugs complying with IEC 60083 and IEC 60906		N
	Not possible to engage plugs accepted by socketoutlet in the output circuit with socket-outlets complying with IEC 60083 and IEC 60906		N
18 (16)	**CREEPAGE DISTANCES AND CLEARANCES**		**---**
	Creepage distances and clearances according to Table 3 and 4, as appropriate	See AS/NZS 60598.2.5 report	P
	Printed boards see clause 14 of IEC 61347-1		P
	Insulating lining of metallic enclosures		N
19 (17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		**---**
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
(4.11)	Electrical connections		---
(4.11.1)	Contact pressure		P
(4.11.2)	Screws:		P
	- self-tapping screws		P

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
	- thread-cutting screws	Not such screws	N
	- at least two self-tapping screws	Not such condition	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		P
(4.12)	Mechanical connections and glands		--
(4.12.1)	Mechanical stress		N
	Screws not made of soft metal		N
	Screws of insulating material		N
	Torque test: part; torque (Nm) ..... :		N
	Torque test: part; torque (Nm) ..... :		N
	Torque test: part; torque (Nm) ..... :		N
(4.12.2)	Screw diameter < 3 mm screwed into metal		N
(4.12.3)	Void		—
(4.12.4)	Locked connections		N
(4.12.5)	Screwed glands: force (N) ..... :	Not applicable	N

20 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
20 (18.1)	Parts of insulating material retaining live parts in position, ball-pressure test:		P
	- part; test temperature (℃) ..... …:	PCB: 125℃, 0.8mm, limits: 2mm	P
	- part; test temperature (℃) ..... :	Bobbin of transformer: 125℃, 0.8mm, limits: 2mm	P
	- part; test temperature (℃) ..... :		N
20 (18.2)	Printed boards in accordance with IEC 60249-1, 4.3		P
20 (18.3)	External parts of insulating material preventing electric shock glow-wire test 650 ℃	PCB, Bobbin of transformer , test at 750 ℃, no burning	P
20 (18.4)	Parts of insulating material retaining live parts in position, needle-flame test 10 s:		P
	- flame extinguished within 30 s	PCB, Bobbin of transformer	P
	- no flaming drops igniting tissue paper		P
20 (18.5)	Tracking test		N

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
21 (19)	**RESISTANCE TO CORROSION**		**P**
	Rust protection:		P
	- test according 4.18.1 of IEC 60598-1		P
	- adequate varnish on the outer surface		P
- 20	**NO-LOAD OUTPUT VOLTAGE**		**P**
	No load output voltage not differ more than 10 % from rated voltage		P
	- test according 4.18.1 of IEC 60598-1		P
	- adequate varnish on the outer surface		N
A	**ANNEX A (NORMATIVE), TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK**		**P**
A.2	See clause 8 A.2 in this Test Report		P
A.3	See clause 8 A.3 in this Test Report		P
C	**ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC BALLASTS WITH MEANS OF PROTECTION AGAINST OVERHEATING**		**---**
C3	**GENERAL REQUIREMENTS**		**---**
C3.1	Thermal protection means integral with the controlgear, protected against mechanical damage		N
	Renewable only by means of a tool		N
	If function depending on polarity, for cord-connected equipment protection means in both leads		N
	Thermal links comply with IEC 60691		N
	Electrical controls comply with IEC 60730-2-3		N
C3.2	No risk of fire by breaking (clause C7)		N
C5	**CLASSIFICATION**		**---**
	a) automatic resetting type		N
	b) manual resetting type		N
	c) non-renewable, non-resetting type		N
	d) renewable, non-resetting type		N
	e) other type of thermal protection; description :		N
C6	**MARKING**		**---**

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
C6.1	Symbol for temperature declared thermally protected ballasts		N
C6.2	Declaration of the type of protection provided		N
C7	**LIMITATION OF HEATING**		**---**
C7.1	Preselection test		N
	Test sample placed for at least 12 h in an oven having temperature (tc - 5) K		N
	No operation of the protection device		N
C7.2	Functioning of protection means		N
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (tc +0; -5) ℃ is obtained		N
	No operation of the protection device		N
	Introducing of the most onerous test condition determined during test of clause 14		N
	Output of windings connected to the mains supply short-circuited, and other part of the controlgear operated under normal conditions		N
	Increasing of the current through the windings continuously until operation of the protection means		N
	Continuous measuring of the highest surface temperature		N
	Controlgear according to C5 a) or C5 e) operated until stable conditions are achieved		N
	Automatic-resetting thermal protectors working 3 times		N
	Controlgear according to C5 b) working 6 times		N
	Controlgear according to C5 c) and C5) d) working once		N
	Highest temperature does not exceed the marked value		N
	Any overshoot of 10% over the marked value within 15 min		N
D	**ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR**		N
	Tests in C7 performed in accordance with Annex D, if applicable		N
E	**ANNEX E – USE OF CONSTANT S OTHER THAN 4500 IN t_w TESTS**		N

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
E1	Constant S claimed		N
	Claimed test method		N
E2	Procedure A		N
	Adequate data provided by the manufacturer		N
	The inverse of the slope is greater than or equal to the claimed value of S		N
	Compliance with the failure criteria for procedure B		N
E3	Procedure B		N
	Claimed value of T1		N
	Claimed value of T2		N
	Endurance test carried out at:		N
	T1 (7 samples)		N
	T2 (7 samples)		N
	Duration of test calculated from equation (2)		N
	T1		N
	T2		N
	During the test: - No open circuit - No breakdown insulation		N
	The claimed constant S is deemed to be verified		N
F	**ANNEX F - DRAUGHT-PROOF ENCLOSURE**		N
	Draught-proof enclosure in accordance with the description		N
	Dimensions of the enclosure		N
	Other design; description		N
I	**ANNEX I - PARTICULAR ADDITIONAL REQUIREMENTS FOR INDEPENDENT SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR LED MODULES**		N
I.3	Classification	Built-in controlgear	---
I.3.1	Class I	YES ☐ NO ☐	---
	Class II	YES ☐ NO ☐	---
I.3.2	a) non-inherently short circuit proof controlgear	YES ☐ NO ☐	---
	b) non-inherently open circuit proof controlgear	YES ☐ NO ☐	---
	c) inherently short circuit proof controlgear	YES ☐ NO ☐	---

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
	d) inherently open circuit proof controlgear	YES ☐ NO ☐	---
	e) fail safe controlgear	YES ☐ NO ☐	---
	f) non-short-circuit proof controlgear	YES ☐ NO ☐	---
	g) non-open-circuit proof controlgear	YES ☐ NO ☐	---
I.4	Marking		N
	Adequate symbols are used		N
I.5	Protection against electric shock		N
I.5.1	No connection between output winding and body		N
	No connection between output winding and protective earthing circuit		N
I.5.2	Input and output circuits electrically separated from each other		N
I.5.2.1	Insulation between input and output winding of the HF-transformer consists of double or reinforced insulation		N
	Class II: insulation between input/output and body consists of double or reinforced insulation		N
	Class I: insulation between input and body consists of basic and between output and body supplementary insulation		N
I.5.2.2	Insulation between input and output winding via the core consists of double or reinforced insulation		N
	Insulation between cord and windings of the HF - transformer consists of basic insulation		N
I.5.2.3	Serrated tape, additional layer		N
I.5.2.4	Class I controlgear for fixed connection provided with basic insulation plus protective screening comply with the following conditions:		N
	a) Insulation between the input winding and the protective screen complies with the requirements for basic insulation		N
	b) Insulation between the protective screen and the output winding complies with the requirements for basic insulation		N
	c) Metal screen consists of a metal foil or of a wire wound screen		N
	d) Metal screen so arranged that both edges cannot simultaneously touch a magnetic core		N

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Clause	Requirement – Test	Result - Remark	Verdict
	e) Metal screen and its lead-out wire have a crosssection sufficient to ensure that an overload device will open the circuit before the screen is destroyed		N
	f) Lead-out wire sufficiently fixed to the metal screen		N
I.5.2.5	Last turn of each winding of the transformer retained by positive means		N
	Impregnated winding		N
	Winding held together by means of insulating material		N
I.5.3	Components bridging between input and output circuit		N
I.5.3.1	Used capacitors and resistors comply with 8.2		N
I.5.3.2	Used opto-couplers		N
I.6	Heating		**---**
I.6.1	No excessive temperatures in normal use		N
	Used material classified as Class ____		**---**
	Stated value of ta ____		**---**
I.6.2	Upri: 1.06 time supply rated voltage		**---**
	Determined temperature rises in windings: - Primary: ____ K - Limit max: ____ K - Core: ____ K - Limit max: ____ K		N
	After the test:		N
	- no connections have worked loose		N
	- no reduction of creepage distances and clearances		N
	- no flow of sealing compound		N
	- no operation of protecting devices		N
	- electric strength test between input and output windings		N
I.6.3	Cycling test (10 cycles):		N
I.6.3.1	- heat run at ____ K		N

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Clause	Requirement – Test	Result - Remark	Verdict
I.6.3.2	- moisture treatment 48 h		N
I.6.3.3	- vibration test 1 h; 1,5 g		N
I.6.3.4	After the tests:		N
	- insulation resistance		N
	- dielectric strength test at 35 % of specified value; test voltage ____ V		N
	- Current or the ohmic component does not deviates by more than 30 %		N
I.7	Short-circuit and overload protection		N
I.7.1	Upri: 1.06 times rated voltage or 0.94 and 1.06 times rated supply voltage - used voltage _____ V		N
I.7.2 **I.7.3** **I.7.4**	Determined temperature rise in windings and on other parts:		N
	- test according to Clause _____		N
	- Primary winding ____ K		N
	- Limit max ____ K		N
	- Core ____ K		N
	- Limit max ____ K		N
	- External enclosure ____ K		N
	- Limit max ____ K		N
	- Rubber insulation of wiring ____ K		N
	- Limit max ____ K		N
	- PVC insulation of wiring ____ K		N
	- Limit max ____ K		N
	- Supports ____ K		N
	- Limit max ____ K		N
I.7.5	Fail-safe convertors		N
I.7.5.1	- Upri: 1.06 times rated supply voltage V:		---
	- Isec: 1.5 times rated output current A:		---
	- time until steady-state conditions t1 (h) :		---
	- time until failure t2 (h): < t1; < 5 h		N
I.7.5.2	During the test:		N

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Clause	Requirement – Test	Result - Remark	Verdict
	- no flames, molten material, etc.		N
	- temperature rise of enclosure < 150 K		N
	- temperature rise of plywood support < 100 K		N
	After the test:		N
	- electric strength (test voltage; 35 % of specified value); no flashover or breakdown for primary-tosecondary and for primary-to-body		N
	- live parts not accessible by test finger through holes of enclosure		N
I.8	Insulation resistance and electric strength		N
I.8.1	Conditioned 48 h between 91 % and 95 %		N
I.8.2	Adequate insulation (500 V d.c. for 1 min) between:		N
	Live parts and the body -for basic insulation not less than 2 MΩ ..... :		N
	Live parts and the body -for reinforced insulation not less than 4 MΩ ..... :		N
	Input- and output circuits not less than 5 MΩ ..... :		N
	Metal parts of class II controlgear which are separated from live parts by basic insulation only and the body not less than 5 MΩ ..... :		N
	Metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ ..... :		N
I.8.3	Electric strength test:		N
	1) Between live parts of input circuits and live parts of output circuits.....:		N
	2) Over basic or supplementary insulation between:		N
	a) live parts which are or may become of different polarity ..... :		N
	b) live parts and body if intended to be connected to protective earth ..... :		N
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord ..... :		N
	d) live parts and an intermediate metal part ..... :		N
	e) intermediate metal parts and the body ..... :		N
	3) Over reinforced insulation between the body and live parts ..... :		N

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Clause	Requirement – Test	Result - Remark	Verdict
	No flashover or breakdown occurred		N
I.9	Construction		N
I.9.1	Comply with all requirements		N
I.9.2	The distance between input and output terminals shall not be less than 25 mm ..... :		N
I.10	Components		N
I.10.1	Socket-outlets in the output circuit does not accept plugs complying with IEC 60083 and IEC 60906-1		N
I.10.2	Self-resetting protective devices shall not be used unless it is certain that there will be no hazards		N
	Compliance is checked by connecting the controlgear for 48 h at 1.06 times the rated voltage with the output short-circuited		N
I.11	Creepage distances and clearances		N
	1. Insulation between input and output circuits:		N
	a) measured values > specified values (mm) ..... :		N
	b) measured values > specified values (mm) ..... :		N
	c) measured values > specified values (mm) ..... :		N
	2. Insulation between adjacent input circuits: measured values > specified values (mm) ..... :		N
	3. Insulation between terminals for external connection:		N
	a) measured values > specified values (mm) ..... :		N
	b) measured values > specified values (mm)..... :		N
	c) measured values > specified values (mm) ..... :		N
	4. Basic or supplementary insulation:		N
	a) measured values > specified values (mm) ..... :		N
	b) measured values > specified values (mm) ..... :		N
	c) measured values > specified values (mm) ..... :		N
	5. Reinforced insulation: measured values > specified values (mm) ..... :		N
	6. Distance through insulation:		N

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Clause	Requirement – Test	Result - Remark	Verdict
	a) measured values > specified values (mm) ..... :		N
	b) measured values > specified values (mm)..... :		N
	c) measured values > specified values (mm) ..... :		N
	d) measured values > specified values (mm) ..... :		N

14	**TABLE: tests of fault conditions**		P
Part	Simulated fault	Test result	Hazard
L1	s-c	Fuse opened, no dangerous	No
BD1	s-c	Current fuse opened. Unrecoverable, No hazards.	~~YES~~ /NO
C1	s-c	Current fuse opened. Unrecoverable, No hazards.	~~YES~~ /NO
Q1(g-d)	s-c	Current fuse opened. Unrecoverable, No hazards.	~~YES /NO~~
Q1(d-s)	s-c	Current fuse opened. Unrecoverable, No hazards.	~~YES /NO~~
Q1(g-s)	s-c	The unit shutdown immediately. Recoverable after fault condition removed. No damage, no hazards	~~YES /NO~~
Output	s-c	Shut down instantly, recoverable.	~~YES~~ /NO
T1 secondary	s-c	Shut down instantly, recoverable.	~~YES~~ /NO
T1 secondary	o-l	The temperature rise: T1 winding: 107.5℃	~~YES~~ /NO
C9	s-c	Current fuse opened. Unrecoverable, No hazards.	~~YES~~ /NO

18 (16)	**TABLE: creepage distances and clearances**					**P**
	Minimum distances for a.c. (50-60Hz) sinusoidal voltages					
RMS working voltage (V) not exceeding	50	150	250	500	750	1000
1 minimum distances between live parts of different polarity. Specify the value measured.	--	--	>3.5	--	--	--
2 minimum distances between live parts and accessible parts which are permanently fixed to the ballast, including screws or devices for fixing covers or fixing the ballast to its support. Specify the value measured.	--	--	>3.5	--	--	--
- required creepage distances (mm), insulation PTI ≥ 600	0,6	1,4	1,7	3	4	5,5

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict

- required creepage distances (mm), insulation PTI < 600		1,2	1,6	2,5	5	8	10
- required clearances (mm)		0,2	1,4	1,7	3	4	5,5
3 minimum distances between live parts and a flat supporting surface or a loose metal cover, if any, if the construction does not ensure that the values under 2 above are maintained under the most unfavourable circumstances		--	--	--	--	--	--
- required clearances (mm)		2	3,2	3,6	4,8	6	8
Minimum distances for non-sinusoidal pulse voltages							
rated pulse voltage (peak kV)	2,0	2,5	3,0	4,0	5,0	6,0	8,0
required minimum distances, clearances (mm)	1,0	1,5	2	3	4	5,5	8
Specify the value measured							
rated pulse voltage (peak kV)	10	12	15	20	25	30	40
required minimum distances, clearances (mm)	11	14	18	25	33	40	60
Specify the value measured							
rated pulse voltage (peak kV)	50	60	80	100	-	-	-
required minimum distances, clearances (mm)	75	90	130	170	-	-	-
Specify the value measured							
Remark:							

15	**TABLE: Transformer heating**		P
	Type reference ……..:	LGLED190100-PCBA	P
	Lamp used ……..……...:	LED lamp	P
	Lamp control gear used…….....:	Built-in control gear	N
	Mounting position of luminaire…….……..:	Fixed mounted	P
	Supply wattage (W) ……..……..:	24W	P
	Supply current (A) ……..……..:	0.3A	P
	Calculated power factor……..:	0.92	P
	Table: measured temperatures corrected for ta = 40℃：		P
	- abnormal operating mode…….……..……..:		N
	- test 1: rated voltage……..……...:		N
	- test 2: 1.06 times rated voltage or 1,05 times Rated wattage ……..……..…:	1.06×254V normal operation	P

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict

	- test 3: Load on wiring to socket-outlet, 1.06 times voltage or 1.05 times wattage .....:	--	N
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage .....:	1.1X254V	P
	Through wiring or looping-in wiring loaded by current of A during the test ….....:	--	N

Temperature(℃) of part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	Test 1	Test 2	Test 3	Limits(℃)	Test 4	Limit (℃)
Winding of T1	--	76.1	--	110	78.2	175
Bobbin of T1	--	74.8	--	110	76.5	175
Winding of L1	--	73.5	--	110	75.1	175
Bobbin of L1	--	71.5	--	110	73.2	175
Y-capacitors	--	68.7	--	125	71.6	125
CX1-capacitor	--	67.6	--	100	68.8	100
CX2-capacitor	--	64.5	--	100	65.7	100
PCB	--	78.5	--	130	79.8	130
Ambient	--	40.2	--	--	40.3	--

	ANNEX 3: screw terminals (part of the luminaire)		**--**
(14)	**SCREW TERMINALS**		**--**
(14.2)	Type of terminal ..... :		—
	Rated current (A) ..... :		—
(14.3.2.1)	One or more conductors		N
(14.3.2.2)	Special preparation		N
(14.3.2.3)	Terminal size		N
	Cross-sectional area (mm²) ..... :		N
(14.3.3)	Conductor space (mm) ..... :		N
(14.4)	Mechanical tests		N
(14.4.1)	Minimum distance		N
(14.4.2)	Cannot slip out		N
(14.4.3)	Special preparation		N
(14.4.4)	Nominal diameter of thread (metric ISO thread) :		N
	External wiring		N
	No soft metal		N

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
(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

	Annex 4 clause 5 of AS/NZS 60598		
5	EXTERNAL AND INTERNAL WIRING		N
5.2	Supply connection and external wiring		N
5.2.1	Portable luminaires with non detachable cables or cords shall be fitted with plugs complying with AS/NZS 3112. The plug portion of the luminaire with integral pins shall comply with Appendix J of AS/NZS 3112. Also see note under Clause 3.2.12.		N
5.2.2	Flexible cables or cords used as a means of connection to the supply, when supplied by the luminaire manufacturer, shall be at least equal in their mechanical and electrical properties to those specified in table 5.1, and shall be capable of withstanding, without deterioration, the highest temperature to which they may be exposed under normal conditions of use.		N
	Materials other than polyvinyl chloride and rubber are suitable if the above requirements are met.		N
	To provide adequate mechanical strength, the nominal cross-sectional area of the conductors shall be not less than:		N
	- 0.75 mm^2 for ordinary luminaires;		N
	- 1 mm^2 for other luminaires.		N
	If the luminaire is provided with a 10/16 A socket-outlet, the flexible conductor nominal cross-section area shall be at least 1,5 mm^2.		N
	Type of cable……:		N
	Nominal cross-section area (mm^2)		N
	Cables equal to IEC 60227 and IEC 60245		N
5.2.3	Type of attachment, X ,Y or Z		N
5.2.5	Type Z not connected to screws		N

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
5.2.6	Cable entries		N
	- suitable for introduction		N
	- adequate degree of protection		N
5.2.7	Cable entries through rigid material have rounded edges		N
5.2.8	Insulating bushings:		N
	- suitably fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- tubes or guard made of insulating material		N
5.2.9	Locking of screw bushings	No such component	N
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
5.2.10.1	Cord anchorage for type X attachment cord	Not such construction	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 anchorage		N
5.2.10.2	Adequate cord anchorages for type Y and type Z attachments		N
5.2.10.3	Tests:		N
	- impossible to push cable; unsafe		N
	- pull test: 25 times; pull (N)		N
	- torque test: torque (Nm)		N
	- displacement ≤ 2 mm		N
	- no movement of conductors		N
	- no damage of cable or cord		N

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
5.2.11	External wiring passing into luminaire		N
5.2.12	Looping-in terminals		N
5.2.13	Wire ends not tinned		N
	Wire ends tinned: no cold flow		N
5.2.14	Mains plug same protection		N
	Class III luminaire plug		N
5.2.16	Appliance inlets (IEC 60320)		N
	Appliance couplers of class II type		N
	Installation couplers complying with AS/NZS 3131 or AS/NZS 61535.1 (Int) are an acceptable alternative in Australia and New Zealand.		N
5.2.17	No standardized in interconnecting cables assembled		N
5.2.18	Used plug in accordance with		N
	- IEC 60083		N
	- other standard		N
5.3	Internal wiring	No internal wiring	N
5.3.1	Internal wiring of suitable size and type		N
	Through wiring		N
	- not delivered/ mounting instruction		N
	- factory assembled		N
	- socket outlet loaded (A)..... :		N
	- temperatures..... :		N
	Green-yellow for earth only		N
5.3.1.1	Internal wiring connected directly to fixed wiring		N
	Cross-Sectional area (mm2)		N
	Insulation thickness		N
	Extra insulation added where necessary		N
5.3.1.2	Internal wiring connected to fixed wiring via internal current-limited device		N
	Adequate cross-section area and insulation thickness		N
5.3.1.3	Double or reinforced insulation for class II		N
5.3.1.4	Conductors without insulation	Not used	N
5.3.1.5	SELV current-carrying parts	No such parts	N
5.3.1.6	Insulation thickness other than PVC or rubber		N
5.3.2	Sharp edges etc.		N

IEC 61347-2-13			
Clause	Requirement – Test	Result - Remark	Verdict
	No moving parts of switches etc.		N
	Joints, raising/lowering devices		N
	Telescopic tubes etc.		N
	No twisting over 3600		N
5.3.3	Insulating bushings		N
	- suitable fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- cables with protective sheath		N
5.3.4	Joints and Junctions effectively insulated		N
5.3.5	Strain on internal wiring		N
5.3.6	Wire carriers		N
5.3.7	Wire ends not tinned		N
	Wire ends tinned: no cold flow		N

National differences for Australia and New Zealand			
Clause	Requirement Test	Result - Remark	Verdict
ANNEX 2	Australia National differences to AS/NZS 61347.1: 2002 Lamp controlgear – safety requirements (IEC 61347:2001 MOD)		P
EXPLANATION FOR ABBERVIATIONS P=Pass, F=Fail, N=Not applicable. Placed in the column to the right.			
4 (4)	Compliance of independent controlgear enclosure with AS/NZS 60598.1		P
5	For Australia, the rated supply voltage is 230 V/400V +10%, -6% and for testing according to this standard, the rated test voltage shall be 240 V/415V	207-254V~	P
5.4	The tests shall be carried out in the order listed in this standard unless otherwise specified in parts 2 of AS/NZS 61347		P
7.1	The parts that make up AS/NZS 61347-2 state which of the following items shall be marked as mandatory markings or provided as information to be given either on the lamp controlgear or made available in the manufacturer's catalogue or similar.		P
8	Screw terminals shall comply with section 14 of AS/NZS 60598.1.	See ANNEX 3	P
	Screwless terminals shall comply with section 15 of AS/NZS 60598.1.		N
	Cables and cords shall comply with the relevant requirements of section 5 of AS/NZS 60598.1		N
9.1	Provisions for earth (ground), Symbol  417C-IEC-5019		P
16	A metal enclosure shall have an insulating lining in accordance with AS/NZS 60598.1 if, in the absence of such a lining, the creepage distance or clearance between the live parts and the enclosure would be smaller than the value prescribed in the relevant tables.		P
18.2	Replace with: Resistance to heat, fire and tracking		P
	Parts of insulation material retaining current-carrying parts SELV parts in position, and external parts of insulating material providing protection against electric shock shall be resistant to flame and ignition.		P
	For materals other than ceramic, compliance is checked by the test of subclauses 18.2.1,18.2.2,and 18.2.3 as appropriate		P
18.2.1	Parts of insulating material retaining current-carrying parts in position shall withstand the following tests:		P

National differences for Australia and New Zealand			
Clause	Requirement Test	Result - Remark	Verdict
	Parts are subjects to a test using a nickel-chromium glow wire heated to 750℃, The test apparatus and test procedure shall be those described in AS/NZS 60695.2.10	Bobbin of transformer, PCB, no burning	P
	Any flame or glowing of the sample shall extinguish within 30s of withdrawing the glow-wire, and any burning or molten drop shall not ignite a single layer of tissue paper specified in 6.86 of ISO 4046, spread out horizontally 200mm+/-5mm below the sample.	For Bobbin: Height of the flames: 11mm Duration of the flames: 1s	P
	The requirements of this subclause so not apply in those cases where the control gear provided an effective barrier to burning drops or where the insulation material is ceramic		N
18.2.2	Parts of insulating material which do not retain live parts in position but which provide an protection against electric shock and parts of insulation material retaining SELV parts in position shall withstand the following test:		N
	Parts are subjected to a test using a nickel-chromium glow-wire heated to 650℃, The test apparatus and test procedure shall be those described in AS/NZS 60695.2.10		N
	Any flame or glowing of the sample shall extinguish within 30 s of which withdrawing the glow-wire, and any burning or molten drop shall not ignite a single layer of tissue paper specified in 6.86 of ISO 4046 spread out horizontally 200mm+/- 5mm below the sample		N
	The requirement of this subclause do not apply in those cases where the control gear provides an effective barrier to burning drops or where the insulation material is ceramic		N
18.2.3	During the application of the glow-wire test of sb-clause 18.2.1 and 18.2.2 the height and duration of the flames are measured	See 18.2.1 and 18.2.2	P
	In addition, for parts that withstand the glow-wire test but which flame during the application of the glow-wire, the surrounding parts are subjected the needle flame test, in accordance with AS/NZS 4695.2.2 for the measured duration of the flame or 30s whichever is the least.	See below	P
	The needle-flame test is not carried out on parts that are make of material classified as FV-0 OR FV-1 according to IEC 60707 the sample of material submitted to the IEC60707 shall be no thick than the relevant part.	Material classified of PCB is V-0, Appliance enclosure had done the needle-flame test comply with IEC60707 requirement	P

National differences for Australia and New Zealand			
Clause	Requirement Test	Result - Remark	Verdict
	If parts, other than enclosure do not withstand the glow wire tests of subclasuses 18.2.1 and 18.2.2 by failure to extinguish within 30 s after remove of the glow-wire tip the needle flame test in accordance with AS/NZS 4695.2.2 is made of 30 sec on all parts of non-metallic material wihcih are with in a distance of 50mm or which are likely to be impinged upon by flame during the glow wire test of subclauses 18.2.1 and 18.2.2 parts shielded by a separate barrier that meets the needle-flame test are not tested.		N
18.3	Delete 18.3 Modify 18.4 as following: Lamp controlgear intended for building into luminaires other than ordinary, independent lamp controlgear, and lamp controlgear having insulation subject to starting voltages with a peak value higher than 1500 V shall be resistant to tracking.		N
	For materials other than ceramic, compliance is checked by subjecting the parts to the tracking test according to section 13 of AS/NZS 60598-1.		--
19	Compliance is checked by the test of 4.18.1 of section 4 of AS/ZNS 60598.1		P
Annex B3.2	Lamp controlgear marked with values up to 130 provide protection against overheating due to end-of-life effects in accordance with luminaire marking requirements. See AS/NZS 60598-1.		N
	If the value exceeds 130, F marked luminaires shall in addition be tested in accordance with AS/NZS 60598-1 with respect to luminaires without temperature sensing controls.		N
B9.2.1	For transformers, the following relevant abnormal conditions apply (in addition to those specified in annex C of AS/NZS 60598.1)		N
B9.2.1	For chokes, the following abnormal conditions apply (in addition to those specified in annex C of IEC 60598-1)		N
Annex C	Particular requirements for electronic lamp controlgear with means of protection against overheating		N
C2.1	Lamp controlgear marked with values up to 130 provide protection against overheating due to end-of-life effects in accordance with luminaire F marking requirements. See AS/NZS 60598-1.		P
	If the value exceeds 130, F marked luminaires shall, in addition, be tested in accordance With AS/NZS 60598-1 with respect to luminaires without temperature sensing controls.		N
C7.2	Functioning of the protection means		P

National differences for Australia and New Zealand			
Clause	Requirement Test	Result - Remark	Verdict
	If the lamp controlgear under test contains windings such as filter coils for suppressing harmonics according to 12.1 of AS/NZS 60929, which are connected to mains supply, the output connections of these windings shall be short-circuited and the remaining part of the lamp controlgear shall be operated as under normal conditions. Filter coils for radio interference suppression are not subjected to the test.		P

ATTACHMENT 2

Photo Documentation

View:
Model:
40300 non
PIR 24 watt
Epistar black
ABS

[ ]General
[X]Front
[ ]Rear
[ ]Internal
[ ]Top
[ ]Bottom
[ ]PWB

Figure 1

View:

[ ]General
[ ]Front
[X]Rear
[ ]Internal
[ ]Top
[ ]Bottom
[ ]PWB

Figure 2

ATTACHMENT 2

Photo Documentation

View:

[ ]General
[ ]Front
[ ]Rear
[X]Internal
[ ]Top
[ ]Bottom
[ ]PWB

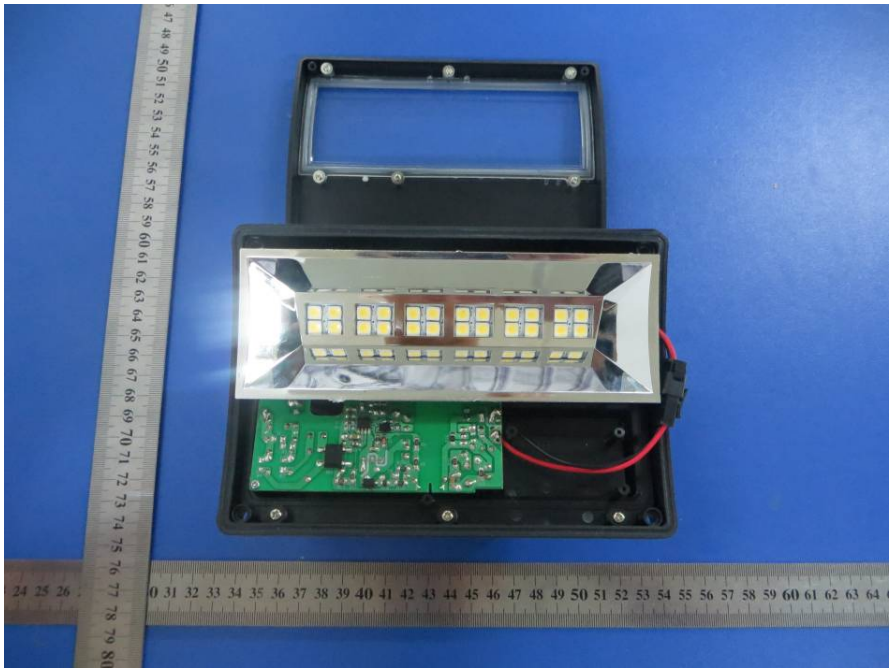


Figure 3

View:

[ ]General
[ ]Front
[ ]Rear
[ ]Internal
[ ]Top
[X]Bottom
[ ]PWB

Figure 4

ATTACHMENT 2

Photo Documentation

View:

[ ]General
[ ]Front
[ ]Rear
[ ]Internal
[ ]Top
[X]Bottom
[ ]PWB

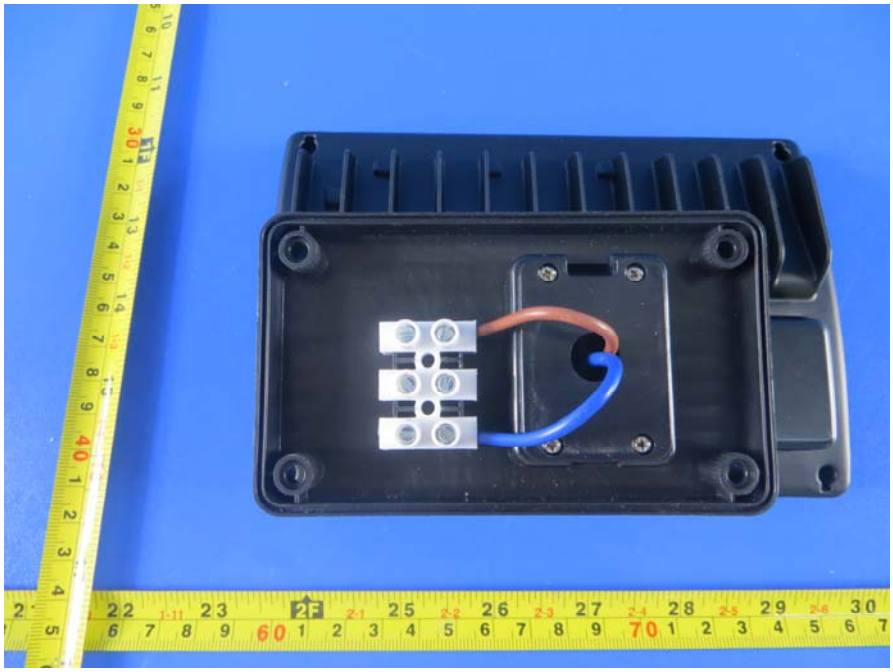


Figure 5

View:

[ ]General
[ ]Front
[ ]Rear
[ ]Internal
[ ]Top
[ ]Bottom
[X]PWB

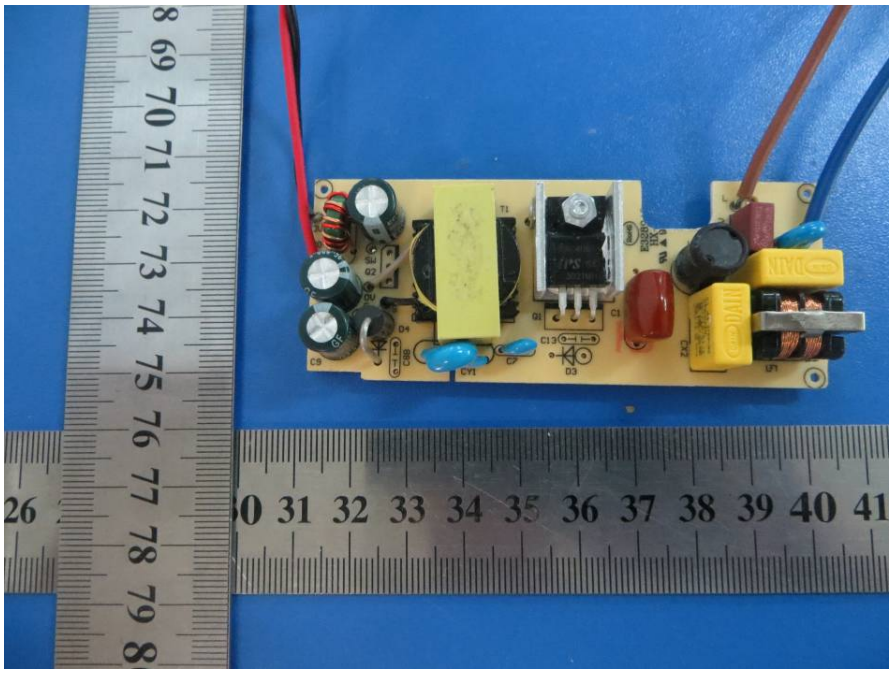


Figure 6

ATTACHMENT 2

Photo Documentation

View:

[ ]General
[ ]Front
[ ]Rear
[ ]Internal
[ ]Top
[ ]Bottom
[X]PWB

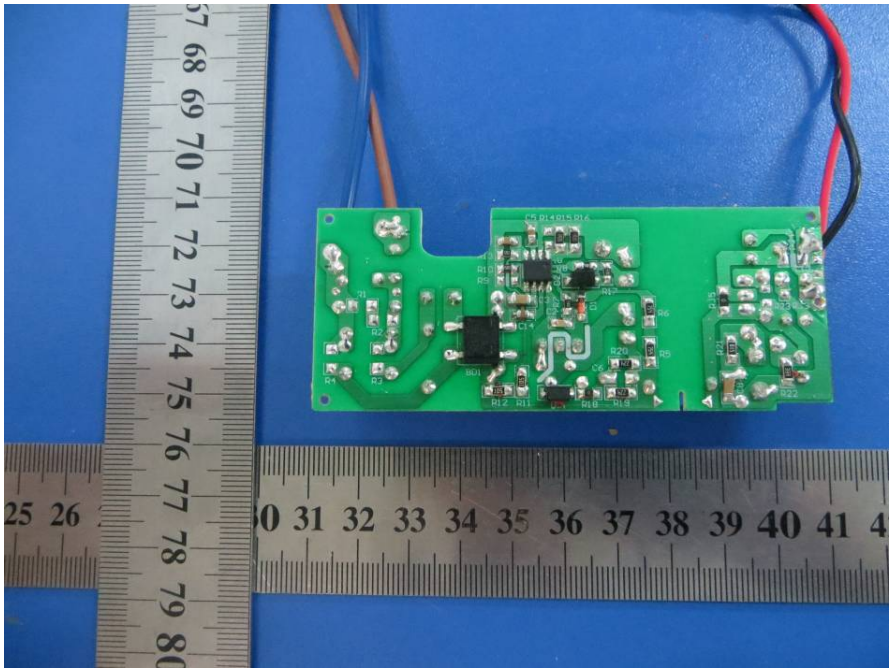


Figure 7

View:
Model:
40300 PIR
24 watt
Epistar
black ABS

[ ]General
[ ]Front
[ ]Rear
[X]Internal
[ ]Top
[ ]Bottom
[ ]PWB

Figure 8

ATTACHMENT 2

Photo Documentation

View:

[ ]General
[ ]Front
[ ]Rear
[X]Internal
[ ]Top
[ ]Bottom
[ ]PWB

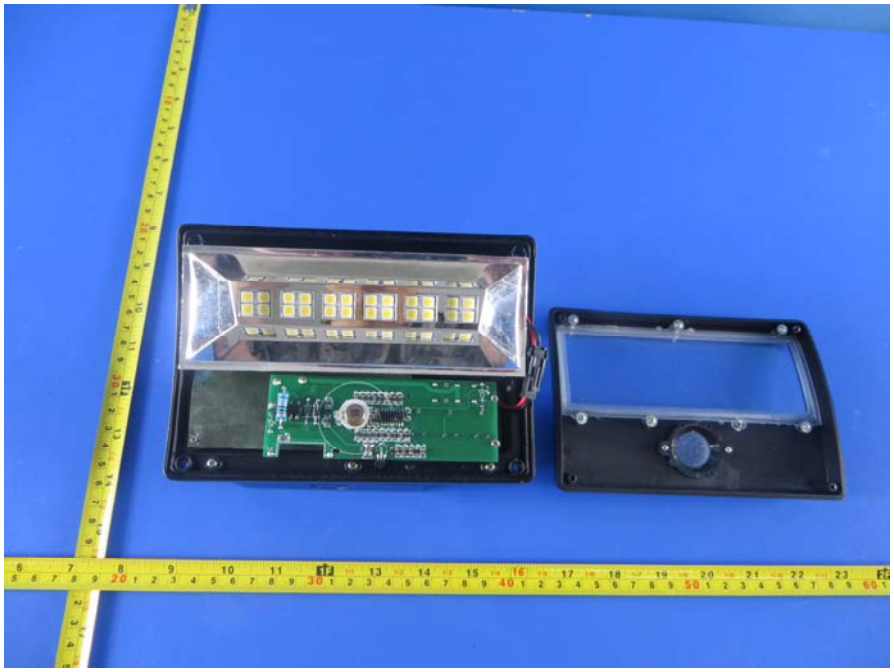


Figure 9

View:

[ ]General
[ ]Front
[ ]Rear
[ ]Internal
[ ]Top
[ ]Bottom
[X]PWB

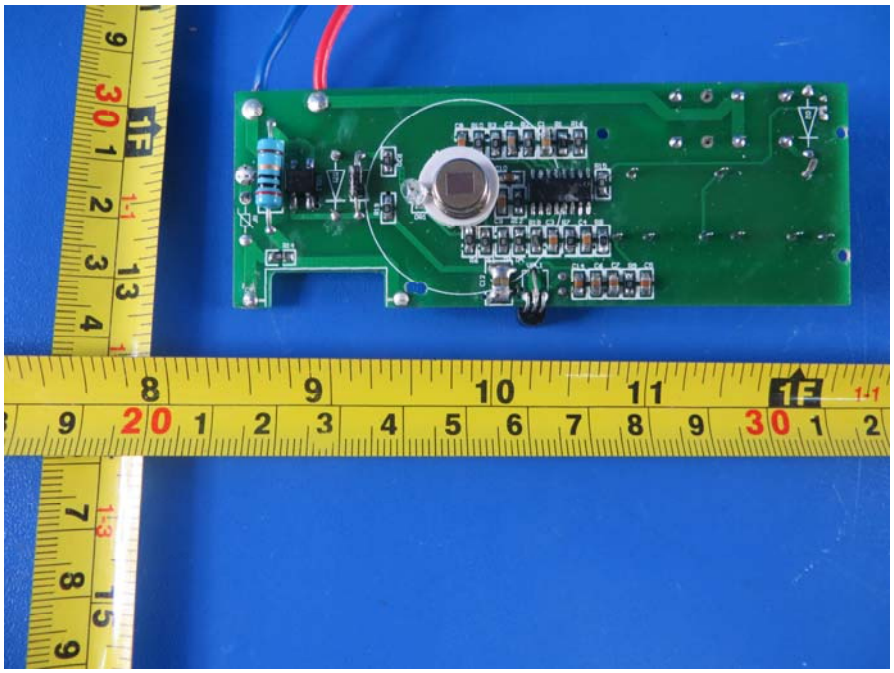


Figure 10

ATTACHMENT 2

Photo Documentation

View:

[ ]General
[ ]Front
[ ]Rear
[ ]Internal
[ ]Top
[ ]Bottom
[X]PWB

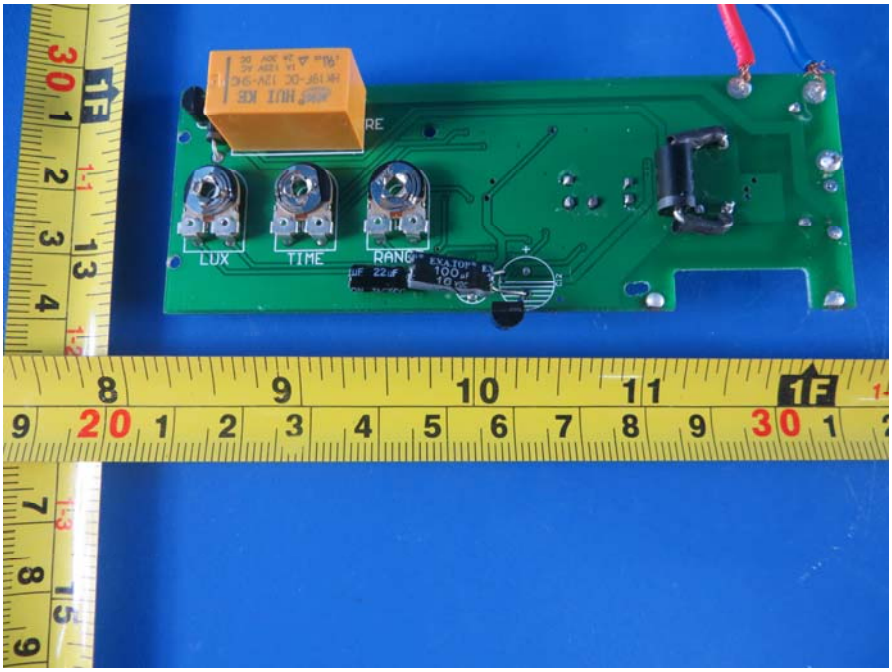
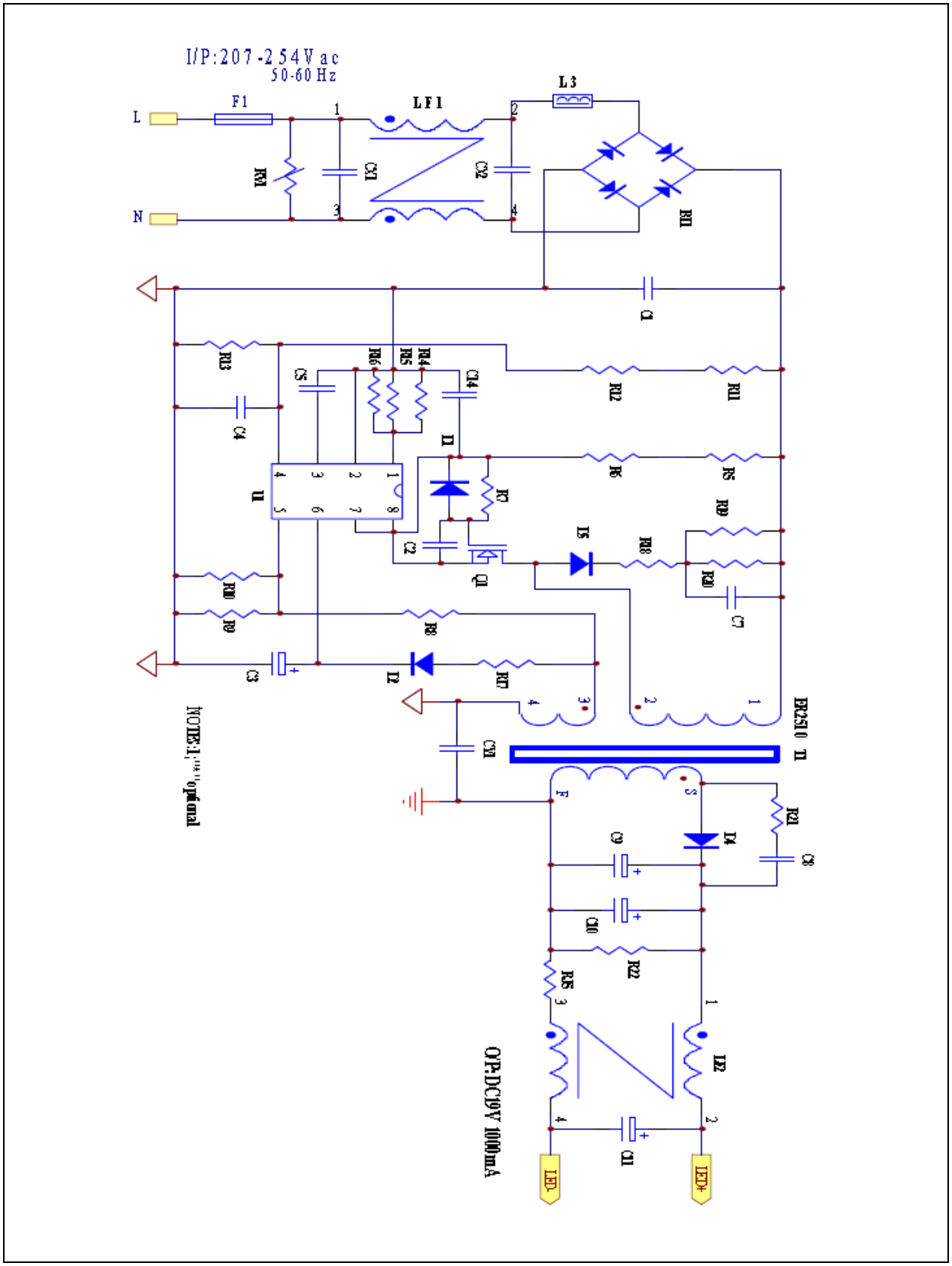


Figure 11

ATTACHMENT 3

Circuit Diagram & PWB Layout



ATTACHMENT 3

Circuit Diagram & PWB Layout