

## **APPLICATION REPORT**

**On Behalf of**

**SHENZHEN YOUWIN OPTRONICS CO., LTD.**

**LED High Bay Light**

**Model: YWHBGL-100, YWHBGL-120, YWHBGL-150, YWHBGL-200**

**Prepared For : SHENZHEN YOUWIN OPTRONICS CO., LTD.**  
**6F, Building B, Jinmeiwei No. 2 Industrial Park, Hi-Tech Industrial**  
**Area, Guanlan, Longhua New District, Shenzhen City, China**

**Prepared By : Shenzhen LCS Compliance Testing Laboratory Ltd.**  
**B Area, 2F, Building B, Zhongyu Green High-tech Industrial Park,**  
**Wenge Road, Heshuikou, Gongming Street, Guangming New District,**  
**Shenzhen, Guangdong, China**

**Date of Test : September 20, 2016 – October 13, 2016**

**Date of Report : October 13, 2016**

**Report Number : LCS1609242146S**

**TEST REPORT****EN 60598-2-1****Luminaires - Part 2: Particular requirements****Section One-Fixed general purpose luminaires****Report reference No.**..... : LCS1609242146S

Tested by(name + signature)..... : Muk Huang

*Muk Huang*

Approved by(name +signature)..... : Hart Qiu

*Hart Qiu*

Date of issue ..... : October 13, 2016

Contents..... : 35 pages

**Testing laboratory**

Name..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Address..... : B Area, 2F, Building B, Zhongyu Green High-tech Industrial Park,  
Wenge Road, Heshuikou, Gongming Street, Guangming New District,  
Shenzhen, Guangdong, China

Testing location ..... : Same as above

**Client**

Name ..... : SHENZHEN YOUWIN OPTRONICS CO., LTD.

Address..... : 6F, Building B, Jinmeiwei No. 2 Industrial Park, Hi-Tech Industrial  
Area, Guanlan, Longhua New District, Shenzhen City, China**Manufacturer**

Name ..... : SHENZHEN YOUWIN OPTRONICS CO., LTD.

Address..... : 6F, Building B, Jinmeiwei No. 2 Industrial Park, Hi-Tech Industrial  
Area, Guanlan, Longhua New District, Shenzhen City, China**Test specification**Standard..... : EN 60598-2-1: 1989; EN 60598-1: 2015; EN 62031: 2008+A1:  
2013+A2: 2015; EN 62493: 2015; EN 62471: 2008Test procedure ..... : Compliance with EN 60598-2-1: 1989; EN 60598-1: 2015; EN 62031:  
2008+A1: 2013+A2: 2015; EN 62493: 2015; EN 62471: 2008

Non-standard test method ..... : N/A

**Test item Description**..... : LED High Bay Light

Trademark ..... : YOUWIN

Model and/or type reference..... : See model list on page 3

Rating(s)..... : See model list on page 3

**Test item particulars**

Classification of installation and use .....: Class I  
 Supply Connection .....: Supply cord Supply cords

**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.....: September 20, 2016  
 Date(s) of performance of test.....: September 20, 2016 – October 13, 2016

**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 EN 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.

**Modified Information**

Version	Report No.	Revision Data	Summary
V1.0	LCS1609242146S	/	Original Version

**General product information**

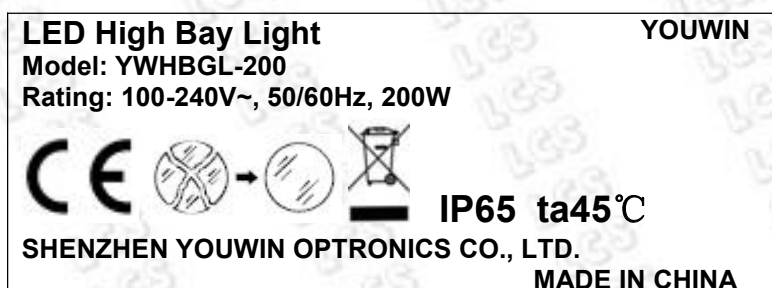
1, All models is Class I luminaires.

2, All models are similar except their model name, power, size and LED driver. All tests were conducted on model SYH6402-200W.

3, The test report include: Attachment No. 1: Report of EN 62031.

Attachment No. 2: Report of EN 62471. (it is not within the scope of CNAS)

Attachment No. 3: 3 pages of product photos.

**Copy of marking plate**

All labels are similar except model name and rating.

**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.

**Model list**

Model	Rating	LED driver	Size	Weight(kg)
YWHBGL-100	100-240Vac, 50/60Hz, 100W, IP65	HBG-100-48A	Ø280mm×185mm	3.4
YWHBGL-120	100-240Vac, 50/60Hz, 120W, IP65	HBG-160-48A	Ø320mm×187mm	5.0
YWHBGL-150	100-240Vac, 50/60Hz, 150W, IP65	HBG-160-48A	Ø320mm×187mm	5.0
YWHBGL-200	100-240Vac, 50/60Hz, 200W, IP65	HBG-240-48A	Ø400mm×208mm	7.4

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict

<b>1.1 (0)</b>	<b>SCOPE (GENERAL INTRODUCTION)</b>		<b>P</b>
1.1 (0.1)	Scope		--
	Information for luminaires design considered	Yes [ <input checked="" type="checkbox"/> ]      No [    ]	P
	Supply voltage	100-240V~	P
1.1 (0.2)	Normative references		--

<b>1.2 (0.3)</b>	<b>GENERAL REQUIREMENTS</b>		<b>P</b>
1.2 (0.4)	General test requirements and verification		P

<b>1.3 (1)</b>	<b>TERMS AND DEFINITIONS</b>		<b>P</b>
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<b>1.4 (2)</b>	<b>CLASSIFICATION</b>		<b>P</b>
1.4 (2.1)	General		--
1.4 (2.2)	Type of protection .....	Class I	P
1.4 (2.3)	Degree of protection .....	IP65	P
1.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces .....	Yes	P
	Luminaire not suitable for direct mounting on normally flammable surfaces .....	No	N
1.4 (2.5)	Luminaire for normal use .....	Yes	P
	Luminaire for rough service .....	No	N

<b>1.5 (3)</b>	<b>MARKING</b>		<b>P</b>
1.5 (3.1)	General		--
1.5 (3.2)	Markings on luminaires	See marking label	P
	a)Marking to be observed when replacing lamps or other replaceable components		N
	b)Marking to be observed during installation	The height of symbols more than 5mm, text more than 2mm	P
	c)Marking to be observed after installation		N
	Format of symbols/text	The height of symbols more than 5mm, except for symbols for class II and class III classification minimum of 3 mm, and symbols of not suitable for direct mounting on normally flammable surfaces minimum 25mm; text more than 2mm	P



EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
1.5 (3.3)	Additional information		P
	Language of instructions	In official language	P
1.5 (3.3.1)	Combination luminaires	Not combination luminaire	N
1.5 (3.3.2)	Nominal frequency in Hz	50/60Hz	P
1.5 (3.3.3)	Operating temperature	45°C	P
1.5 (3.3.4)	Symbol or warning notice		N
1.5 (3.3.5)	Wiring diagram	See the manual	P
1.5 (3.3.6)	Special conditions	No such special conditions	N
1.5 (3.3.7)	Metal halid lamp luminaire – warning		N
1.5 (3.3.8)	Limitation for semi-luminaires		N
1.5 (3.3.9)	Power factor and supply current for supply information		N
1.5 (3.3.10)	Suitability for use indoors	IP65	N
1.5 (3.3.11)	Luminaires with remote control	Not such construction	N
1.5 (3.3.12)	Clip-mounted luminaire - warning		N
1.5 (3.3.13)	Specifications of protective shields		N
1.5 (3.3.14)	Symbol for nature of supply	~	P
1.5 (3.3.15)	Rated current of socket outlet	No socket outlet	N
1.5 (3.3.16)	Rough service luminaire	Normal service luminaire	N
1.5 (3.3.17)	Mounting instruction for type Y, Type Z and some type X attachments	Type Z	P
1.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N
1.5 (3.3.19)	Protective conductor current in instruction if applicable		N
1.5 (3.3.20)	Provided with information if not intended to be mounted within arms reach		N
1.5 (3.3.21)	Luminaires with non replaceable and non-user replaceable light source		N
1.5 (3.3.22)	Controllable luminaires		N
1.5 (3.4)	Test with water and petroleum spirit	15s	P
	Legible after test	Marking still be legible, marking labels not be easily removable and no curling.	P
<b>1.6 (4)</b>	<b>CONSTRUCTION</b>		<b>P</b>
1.6 (4.1)	General		--

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
1.6 (4.2)	Components replaceable without difficulty		N
1.6 (4.3)	Wireways smooth and free from sharp edges		P
1.6 (4.4)	Lampholders	No lampholder	N
1.6 (4.4.1)	Integral lampholder		N
1.6 (4.4.2)	Wiring connection		N
1.6 (4.4.3)	Lampholder for end-to-end mounting	No such lampholder	N
1.6 (4.4.4)	Positioning		N
	Lampholders for a fluorescent lamp		N
	- pressure test (N).....:		N
	After test the lampholder comply with relevant standard sheets and show no damage		N
	After test on signal-capped lampholder the lampholder have not moved form its position and show no permanent deformation		N
	Edison screw or bayonet-capped lampholders		N
	- bending test (Nm).....:		N
	After test the lamholder have not moved from its position and show no permanent deformation		N
1.6 (4.4.5)	Luminaires with ignitor	Not ignitor	N
1.6 (4.4.6)	Centre contact	Not ignitor	N
1.6 (4.4.7)	Parts in rough service luminaires resistant to tracking	Not for rough service	N
1.6 (4.4.8)	Lamp connectors	No lamp connector	N
1.6 (4.4.9)	Caps and bases correctly used		N
1.6 (4.4.10)	Lampholder or connector according to IEC60061		N
1.6 (4.5)	Starter holders	No such parts	N
	Starter holder in luminaries other than Class II		N
	Starter holder Class II construction		N
1.6 (4.6)	Terminal blocks		N
	Tails		N
	Unsecured blocks		N
1.6 (4.7)	Terminals and supply connections		N

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Luminaries type		N
1.6 (4.7.1)	Taken to prevent metal parts from becoming live due to a detached wire or screw		N
1.6 (4.7.2)	Supply terminals		N
	8 mm test live conductor		N
1.6 (4.7.3)	Terminals for supply cords		N
1.6 (4.7.3.1)	Welding method and material		N
	- stranded or solid wire of copper materials		N
	- spot welding		N
	- welding of wire and plate		N
	- welded connections are used in type Z attachments only		N
	- mechanical test according to 15.6.2		N
	- electrical test according to 15.6.3		N
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N
1.6 (4.7.4)	Terminals other than supply connection		N
	- comply with the requirements of Sections 14 and 15		N
1.6 (4.7.5)	Heat-resistant wiring/sleeves	The external wiring or supply cord is unsuitable for the temperatures reached inside the luminaire	N
1.6 (4.7.6)	Multi-pole plug and socket		N
	- test at 30 N		N
1.6 (4.8)	Switches:		N
	- adequate rating		N
	- adequate fixing		N
	- degree of protection		N
	- polarized supply		N
	- compliance with 61058-1 for electronic switches		N
1.6 (4.9)	Insulating lining and sleeves		N
1.6 (4.9.1)	Reliably retained in position		N
1.6 (4.9.2)	Adequate mechanical, electrical and thermal strength		N



EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Resistant to temperature >20°C to the wire temperature or		N
	a) & c) insulation resistance and electric strength		N
	b) roast test. Temperature (°C)		N
1.6 (4.10)	Insulation of Class II luminaires		N
1.6 (4.10.1)	No contact, mounting surface - accessible metal parts - wiring of basic insulation		N
	Safe installation fixed luminaires		N
	Capacitors and switches		N
	Interference suppression capacitors according to IEC 60384-14 and their connection accordance with 8.6 of IEC60065:2001		N
1.6 (4.10.2)	Assembly gaps:		N
	- not coincidental		N
	- no straight access with test probe		N
1.6 (4.10.3)	Supplementary insulation or reinforced insulation:		N
	- fixed		N
	- unable to be replaced; luminaire inoperative		N
	- sleeves retained in position		N
	- lining in lampholder		N
1.6 (4.10.4)	Protective impedance device		N
	Y1, Y2 capacitors according to IEC 60384-14 and their connection accordance with 8.6 of IEC60065		N
1.6 (4.11)	Electrical connections and current-carrying parts		P
1.6 (4.11.1)	Contact pressure		P
1.6 (4.11.2)	Screws:		P
	- Self-tapping screws		P
	- thread-cutting screws		N
1.6 (4.11.3)	Screw locking:		N
	- spring washer		N
	- rivets		N
1.6 (4.11.4)	Material of current-carrying parts	> 50% copper	P
1.6 (4.11.5)	No contact to wood or mounting surface	No wood	P

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
1.6 (4.11.6)	Electro-mechanical contact systems		N
	-test		N
1.6 (4.12)	Screws and connections (mechanical) and glands		N
1.6 (4.12.1)	Screw not made of soft metal		P
	Screws made of insulating material	Impair supplementary or reinforced insulation if replacement by a metal screw	N
	Screws used to provide earthing continuity		P
	Fixing screws for ballasts and other components	at least one screw retaining the ballast will have a mechanical and electrical function.	N
	- not considered to be maintenance		N
	Screws of insulating material used in cord anchorages		N
	Torque test: torque (Nm); part .....	1.2Nm, Fixed Driver	P
	Torque test: torque (Nm); part .....	0.8Nm, Fixed LED PCB	P
	Torque test: torque (Nm); part .....		N
1.6 (4.12.2)	Screws transmitting contact pressure and screws		N
	Screw with diameter < 3 mm screw into metal		N
1.6 (4.12.3)	Not used		--
1.6 (4.12.4)	Screwed and other fixed connections between different parts of luminaires		N
	- locked connections; torque (Nm) .....		N
	- locked lampholder during lamp replacement; torque (Nm) .....		N
	- push-button switches; torque (Nm) .....	No such switches	N
1.6 (4.12.5)	Screwed glands; force (N) .....		P
1.6 (4.13)	Mechanical strength		P
1.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm) .....	0.2Nm, no damage	P
	- other parts; energy (Nm) .....	0.35Nm, no damage	P
	1) live parts not have become accessible		P
	2) effectiveness of insulating linings and barriers not have been impaired		P
	3) degree of protection	IP65	P


EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	4) possible to remove and to replace external covers		N
1.6 (4.13.2)	Metal parts enclosing live parts have adequate mechanical strength		P
1.6 (4.13.3)	Straight test finger with a force of 30 N	metal parts not touch live parts, not be excessively deformed and continue to meet the requirements of Section 11	P
1.6 (4.13.4)	Rough service luminaires	Normal service luminaires	N
	IP 54 or higher		N
	a) fixed rough service luminaires and portable rough service luminaires (not hand-held)		N
	b) hand-held luminaires		N
	c) luminaires delivered with a stand		N
	d) luminaires for temporary installations and suitable for mounting on a stand		N
1.6 (4.13.5)	Not used		--
1.6 (4.13.6)	Plug-ballast/transformers and mains socket-outlet-mounted luminaires		N
	Tumbling barrel test		N
	- sample does not exceed 250 g	50 times	N
	- sample exceeds 250 g	25 times	N
1.6 (4.14)	Suspensions, fixings and means of adjustment		N
1.6 (4.14.1)	Adequate factors of safety		P
	Test A) four times the weight.....:	Max.7.4Kg x 4	P
	- suspended or fixed luminaire		N
	- external parts fixed to the luminaire		N
	Test B) for rigid suspension luminaires: torque 2.5 Nm.....:		N
	Test C) for rigid suspension brackets: bracket arm; force (N) .....		N
	a) for heavy-duty brackets		N
	b) for light-duty brackets		N
	D) for load track-mounted luminaires		N
	E) for clip-mounted luminaires:		N
1.6 (4.14.2)	Load to flexible cables:	No flexible cable	N

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	mass (kg) .....		N
	stress in conductors (N/mm <sup>2</sup> ) .....		N
	Mass (kg) of semi-luminaires .....		N
	Bending moment (Nm) of semi-luminaires :		N
1.6 (4.14.3)	Adjusting devices:		N
	a) adjusting devices and means of adjustment		N
	- flexing test; number of cycles .....		N
	- not more than 50 % of the strands in a conductor are broken		N
	- insulation resistance and high-voltage tests afterwards		N
	b) luminaires with a means of adjustment intended to be installed within arm's reach		N
	c) luminaires intended to be mounted within arm's reach		N
1.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors	No such tubes	N
1.6 (4.14.5)	Guide pulleys	No such construction	N
1.6 (4.14.6)	Plug-ballast/transformers and mains socket-outlet-mounted luminaires	Not such unit	N
1.6 (4.15)	Flammable materials:		P
	- glow- wire test 650°C		P
	- spacing $\geq$ 30 mm		N
	- screen withstanding test of 13.3.1		N
	- screen dimensions	Spacing from heated parts min 3mm	N
	- no fiercely burning material		N
	- thermal protection		N
	- electronic circuits exempted		N
1.6 (4.15.2)	Luminaires made of thermoplastic material		N
	a) construction		N
	b) temperature sensing control		N
	c) surface temperature		N
1.6 (4.16)	Luminaires for mounting on normally flammable surfaces		P
	Lamp control gear		N
1.6 (4.16.1)	Lamp control gear shall spacing:		N

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	- spacing 10 mm		N
	- spacing 35 mm		N
1.6 (4.16.2)	Thermal protection:	No such component	N
	- external		N
	-fixed position		N
	- class P" thermally protected ballast/transformer,		N
	- temperature declared thermally protected ballast/transformer,		N
1.6 (4.16.3)	Design to satisfy the test of 12.6		N
1.6 (4.17)	Drain holes	No drain holes	N
	Clearance at least 5 mm		N
1.6 (4.18)	Resistance to corrosion:		P
1.6 (4.18.1)	- more than IPX1 luminaires		P
1.6 (4.18.2)	- season cracking in copper		N
1.6 (4.18.3)	- corrosion of aluminium		N
1.6 (4.19)	Ignitors	No ignitors used	N
1.6 (4.20)	Rough service vibration ..... :	No such appliance	N
1.6 (4.21)	Protective shield		N
1.6 (4.21.1)	Shield fitted		N
	Shield of glass if tungsten halogen lamps		N
1.6 (4.21.2)	Particles from a shattering lamp not impair safety		N
1.6 (4.21.3)	No direct path		N
1.6 (4.21.4)	Impact test on shield		N
	Glow-wire test on lamp compartment		N
1.6 (4.22)	Attachments to lamps		N
1.6 (4.23)	Semi-luminaires comply with Class II	No semi-luminaires	N
1.6 (4.24)	Photobiological hazards		P
1.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps		N
1.6 (4.24.2)	Retinal blue light hazard	Exempt: RG0	P
	Luminaires with Ethr:		N
	a)Fixed luminaires		N
	-distance x m, borderline between RG1 and RG2		N
	-marking and instruction according 3.2.23		N



EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	b)Portable and handheld luminaires		N
	-marking according 3.2.23 if RG1 exceeded at 200mm according to IEC/TR 62778		N
	Portable luminaires for children IEC 60598-2-20 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200mm according to IEC/TR 62778		N
1.6 (4.25)	Mechanical hazard	No sharp points or edges	P
1.6 (4.26)	Short-circuit protection		N
1.6 (4.26.1)	uninsulated accessible SELV parts		N
1.6 (4.26.2)	Short circuit test		N
1.6 (4.26.3)	Test chain according to figure 29		N
1.6 (4.27)	Terminal blocks with integrated screwless earthing contacts		N
	Test according Annex V		N
	Pull test of terminal fixing (20N)		N
	After test, resistance<0.05 $\Omega$		N
	Pull test of mechanical connection (50 N)		N
	After test, resistance < 0,05 $\Omega$		N
	Voltage drop test, resistance < 0,05 $\Omega$		N
1.6 (4.28)	Fixing of thermal sensing controls		N
	Not plug-in or easily replaceable type		N
	Reliably kept in position		N
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N
	Not outside the luminaire enclosure		N
	Test of adhesive fixing:		N
	Max. temperature on adhesive material ( $^{\circ}\text{C}$ )		N
	100 cycles between t min and t max		N
	Temperature sensing control still in position		N
1.6 (4.29)	Luminaire with non replaceable light source		P
	Not possible to replace light source		P
	Live part not accessible after parts have been opened by hand or tools		P
1.6 (4.30)	Luminaires with non-user replaceable light sources		N

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	If protective cover provide protection against electric shock and marked with "caution, electric shock risk" symbol:		N
	Minimum two fixing means		N
1.6 (4.31)	Insulation between circuits		N
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		N
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N
1.6 (4.31.1)	SELV circuits		N
	Used SELV source		N
	Voltage $\leq$ ELV		N
	Insulating of SELV circuits from LV supply		N
	Insulating of SELV circuits from other non SELV circuits		N
	Insulating of SELV circuits from FELV		N
	Insulating of SELV circuits from other SELV circuits		N
	SELV circuits insulated from accessible parts according Table X.1		N
	Plugs not able to enter socket-outlets of other voltage systems		N
	Socket outlets does not admit plugs of other voltage systems		N
	Plugs and socket-outlets does not have protective conductor contact		N
1.6 (4.31.2)	FELV circuits		N
	Used FELV source		N
	Voltage $\leq$ ELV		N
	Insulating of FELV circuits from LV supply		N
	FELV circuits insulated from accessible parts according Table X.1		N
	Plugs not able to enter socket-outlets of other voltage systems		N
	Socket outlets does not admit plugs of other voltage systems		N
	Socket-outlets does not have protective		N

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	conductor contact		
1.6 (4.31.3)	Other circuits		N
	Other circuits insulated from accessible parts according Table X.1		N
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N
	- conductive parts are connected together		N
	- test according 7.2.3 of above		N
	- conductive part not cause an electric shock in case of an insulation fault		N
	- equipotential bonding in master/slave applications		N
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N
	- slave luminaire constructed as class I		N
1.6 (4.32)	Overvoltage protective devices		N
	Comply with IEC 61643-11		N
	External to control gear and connected to earth:		N
	- only in fixed luminaires		N
	- only connected to protective earth		N

<b>1.7 (11)</b>	<b>CREEPAGE DISTANCES AND CLEARANCES</b>		<b>P</b>
	Working voltage (V) .....	100-240V~	P
	Voltage form	Sinusoidal [✓] Non-sinusoidal [ ]	P
	PTI	< 600 [✓]      ≥ 600 [ ]	P
	Impulse withstand category (normal category II) (category III annex U)		
	Rated pulse voltage (kV) .....		N
	(1) Current-carrying parts of different polarity: cr (mm); cl (mm) .....	LED driver: CE approve	P
	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm) .....	Cr: 4.8mm, limit: 2.5mm Cl: 4.8mm, limit: 1.5mm	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		N

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict

	and metal parts: cr (mm); cl (mm) .....		
	(5)not used		N
	(6) Current-carrying parts and supporting surface: cr (mm); cl (mm) .....	Cr: 4.8mm, limit: 2.5mm Cl: 4.8mm, limit: 1.5mm	P

<b>1.8 (7)</b>	<b>PROVISION FOR EARTHING</b>		<b>P</b>
1.8 (7.2.1 + 7.2.3)	Accessible Metal parts		P
	metal parts in contact with supporting surface		P
	Resistance < 0.5 $\Omega$	0.036 $\Omega$	P
	Self-tapping screws used		N
	Thread-forming screws		P
	Thread-forming screws used in a groove		N
	Earth marks contact first		P
1.8 (7.2.2 + 7.2.3)	Earth continuity in joints etc.		P
1.8 (7.2.4)	Locking of clamping means		P
	Compliance with 4.7.3		P
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N
1.8 (7.2.5)	Earth terminal integral part of Connector socket		N
1.8 (7.2.6)	Earth terminal adjacent to mains terminals		P
1.8 (7.2.7)	Electrolytic corrosion of the earth terminal		P
1.8 (7.2.8)	Material of earth terminal		P
	Contact surface bare metal		P
1.8 (7.2.10)	Class II luminaire for looping-in		N
	Double or reinforced insulation to functional earth		N
1.8 (7.2.11)	Earthing core coloured green-yellow		P
	Length of earth conductor		P

<b>1.9 (14)</b>	<b>SCREW TERMINALS</b>		<b>N</b>
	Separately approved: component list	See annex 1	N
	Part of the luminaire		N

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict

<b>1.9 (15)</b>	<b>SCREWLESS TERMINALS</b>		<b>N</b>
	Separately approved: component list	See annex 1	N
	Part of the luminaire		N

<b>1.10 (5)</b>	<b>EXTERNAL AND INTERNAL WIRING</b>		<b>P</b>
1.10 (5.2)	Supply connection and other external wiring		P
1.10 (5.2.1)	Means of connection..... :	Supply cords	P
1.10 (5.2.2)	Type of supply cord..... :	H05RR-F	P
	Nominal cross-section area (mm <sup>2</sup> )	3G1.0mm <sup>2</sup>	P
	Cables equal to IEC 60227 and IEC 60245		P
1.10 (5.2.3)	Type of attachment, X, Y or Z	Type Z	P
1.10 (5.2.5)	Type Z not connected to screws		N
1.10 (5.2.6)	Cable entries		P
	- suitable for introduction		P
	- adequate degree of protection		P
1.10 (5.2.7)	Cable entries through rigid material have rounded edges	Not cable entries	N
1.10 (5.2.8)	Insulating bushings in class II luminaires, in settable and adjustable luminaires or in portable luminaires other than those for wall mounting:		N
	- suitably fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- tubes or guard made of insulating material		N
1.10 (5.2.9)	Bushing locking of screw bushings	No such component	N
1.10 (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.		N
	- insulating material or lining		N
1.10 (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



EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	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
1.10 (5.2.10.2)	Adequate cord anchorages for type Y and type Z attachments	Type Z	P
1.10 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N)	60N	P
	- torque test: torque (Nm)	0.25Nm	P
	- displacement $\leq 2$ mm	0.6mm	P
	- no movement of conductors		P
	- no damage of cable or cord		P
1.10 (5.2.11)	External wiring passing into luminaire		P
1.10 (5.2.12)	Looping-in terminals	Not looping-in appliance	N
1.10 (5.2.13)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		N
1.10 (5.2.14)	Mains plug same protection	Not plug	N
	Class III luminaire plug		N
1.10 (5.2.16)	Appliance inlets (IEC 60320)	No appliance inlet	N
	Appliance couplers of class II type		N
1.10 (5.2.17)	No standardized in interconnecting cables assembled		N
1.10 (5.2.18)	Used plug in accordance with		N
	- IEC 60083		N
	- other standard		N
1.10 (5.3)	Internal wiring		P
1.10 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		N
	- not delivered/ mounting instruction		N
	- factory assembled		N
	- socket outlet loaded (A).....:		N
	- temperatures.....:		N

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Green-yellow for earth only		P
1.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N
	Cross-Sectional area (mm <sup>2</sup> )		N
	Insulation thickness		N
	Extra insulation added where necessary		N
1.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limited device		N
	Adequate cross-section area and insulation thickness		N
1.10 (5.3.1.3)	Double or reinforced insulation for class II		N
1.10 (5.3.1.4)	Conductors without insulation	Not used	N
1.10 (5.3.1.5)	SELV current-carrying parts		P
1.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N
1.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N
	Joints, raising/lowering devices		N
	Telescopic tubes etc.		N
	No twisting over 360°		P
1.10 (5.3.3)	Insulating bushings on class II luminaires, in settable and adjustable luminaires, or in portable luminaires other than those for wall mounting,		N
	- suitable fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- cables with protective sheath		N
1.10 (5.3.4)	Joints and Junctions effectively insulated		N
1.10 (5.3.5)	Strain on internal wiring		N
1.10 (5.3.6)	Wire carriers		N
1.10 (5.3.7)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		N
<b>1.11 (8)</b>	<b>PROTECTION AGAINST ELECTRIC SHOCK</b>		P
1.11 (8.2.1)	Live parts not accessible with standard test finger		P

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	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 $\varnothing 50\text{mm}$ probe from outside, within arms reach, on wall-mounted luminaires		P
	Lamp and starholders 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
1.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position	Fixed luminaire	N
1.11 (8.2.3 a)	Class II luminaire:		N
	- basic insulated metal parts not accessible during starter or lamp replacement		N
	- basic insulated not accessible other than during starter or lamp replacement		N
	- glass protective shields not used as supplementary insulation	No such parts	N
1.11 (8.2.3b)	BC lampholder of metal in class I luminaires shall be earthed		N
1.11 (8.2.3c)	Class III luminaires with expose SELV parts:		N
	Ordinary luminaire :		N
	- touch current		N
	- no-load voltage		N
	- other than ordinary luminaire:		N
	- nominal voltage		N
1.11 (8.2.4)	Portable luminaire:	Fixed luminaire	N
	- protection independent of supporting surface		N
	- terminal block completely covered		N

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict

1.11 (8.2.5)	Compliance with the standard test finger or relevant probe		P
1.11 (8.2.6)	Covers reliably secured		N
1.11 (8.2.7)	Discharging of capacitors >0.5 $\mu$ F	0V after 1min	P
	Portable plug connected luminaire with capacitor		N
	Discharge device on or within capacitor		N
	Discharge device mounted separately		N

<b>1.12 (12)</b>	<b>ENDURANCE TEST AND THERMAL TEST</b>		P
1.12 (12.3)	Endurance test:		P
	- mounting- position .....	Normal installation	P
	- test temperature (°C) .....	55°C	P
	- total duration (h) .....	240hrs. Totally 10 cycles, each 24h	P
	- supply voltage: Un factor; calculated voltage (V) .....	1.1x240V	P
	- lamp used .....	LED lamp	P
1.12 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N
	- marking legible		P
	- no cracks, deformation etc.		P
1.12 (12.4)	Thermal test (normal operation)	(see table 12.4 )	P
1.12 (12.5)	Thermal test (abnormal operation)		N
	Short-circuit of starter contacts		N
	Lamps removed and not replaced		N
1.12 (12.6)	Thermal test (failed lamp control gear condition):		N
1.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		N
	- case of abnormal conditions .....		N
	- electronic ballast		N
	- measured winding temperature (°C): at 1.1 Un		N
	- measured mounting surface temperature (°C): at 1.1 Un .....		N

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	- calculated mounting surface temperature(°C)		N
	- track-mounted luminaires		N
1.12 (12.6.2)	Temperature sensing control:		N
	- manual reset cut- out		N
	- auto reset cut- out		N
	- track- mounted luminaires		N
1.12 (12.7)	Thermal test (failed ballast or transformer in plastic luminaires):		N
1.12 (12.7.1)	Luminaire without temperature sensing control		N
1.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N
	Test method 12.7.1.1 or Annex 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 (°C): at 1.1 Un.. :		N
	- measured temperature of fixing point/exposed part (°C): at 1.1Un.....:		N
	- calculated temperature of fixing point/exposed part (°C) .....		N
	Ball-pressure test:		N
	- part tested; temperature (°C)..... :		N
	- part tested; temperature (°C)..... :		N
1.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		--
	- case of abnormal conditions		N
	- measured winding temperature (°C): at 1.1 Un.. .....		N
	- measured temperature of fixing point/exposed part (°C): at 1.1 Un..... :		N



EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict

	- calculated temperature of fixing point/ exposed part (°C) ..... :		N
	Ball-pressure test:		N
	- part tested; temperature (°C)..... :		N
	- part tested; temperature (°C)..... :		N
1.12 (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
1.12 (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 (°C):..... :		N
	Ball-pressure test:		N
	- part tested; temperature (°C)..... :		N
	- part tested; temperature (°C)..... :		N

<b>1.13 (9)</b>	<b>RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE</b>		<b>P</b>
1.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP ..... :	IP65	P
	- mounting position during test ..... :		P
	- fixing screws tightened; torque (Nm) ..... :		P
	- tests according to clauses ..... :		P
	- electric strength		P
	a) no deposit in dust-proof luminaire		N
	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

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	d) ii) For luminaires with drain holes – no hazardous water entry		N
	e) no water in watertight luminaire		N
	f ) no contact with live parts (IP 2X)		N
	f) no entry into enclosure (IP 3X and IP 4X)		N
	f) no contact with live parts (IP3X and IP4X)		N
	g) no trace of water on part of lamp requiring protection from splashing water		P
	h) no damage of protective shield or glass envelope		P
1.13 (9.3)	Humidity test 48h	Relative humidity 93%, temperature 25°C, 48h, followed by hi-pot test	P

<b>1.14 (10)</b>	<b>INSULATION RESISTANCE AND ELECTRIC STRENGTH</b>		P
1.14 (10.2.1)	Insulation resistance test:		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø.....:		P
	Insulation resistance:		P
	SELV:		--
	- 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 .....:	LED driver: CE approve	P
	- between live parts and mounting surface.:	100M $\Omega$ , limit: 2 M $\Omega$	P
	- between live parts and accessible parts.. :	100M $\Omega$ , limit: 2 M $\Omega$	P
	- between live parts of different polarity through action of a switch ..... :		N
1.14 (10.2.2)	Electric strength test:		P
	Dummy lamp		N
	Luminaires with ignitors after 24 h test		N
	Luminaires with manual ignitors		N
	Test voltage (V):		P

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict

	SELV:		--
	- 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 ..... :	LED driver: CE approve	P
	- between live parts and mounting surface..... :	1480Vac, no breakdown	P
	- between live parts and accessible parts...:	1480Vac, no breakdown	P
	- between live parts of different polarity through action of a switch ..... :		N
1.14 (10.3)	Touch current (mA) ..... :		N
	Protective conductor current (mA) ..... :	0.25mA<3.5mA	P

<b>1.15 (13)</b>	<b>RESISTANCE TO HEAT, FIRE AND TRACKING</b>		P
1.15 (13.2.1)	Ball-pressure test:		P
	- part tested; temperature (°C) ..... :	Gland, 125°C, 1.1mm	P
	- part tested; temperature (°C) ..... :		N
	- part tested; temperature (°C) ..... :		N
1.15 (13.3.1)	Needle flame test (10 s):		N
	- part tested ..... :		N
1.15 (13.3.2)	Glow-wire test:		N
	- part tested ..... :		N
1.15 (13.4.2)	Tracking test: part tested ..... :		N

<b>Annex A</b>	<b>TEST TO ESTABLISH WHETHER A CONDUCTIVE PART MAY CAUSE AN ELECTRIC SHOCK</b>		P
A.2	Voltage not exceed 35 V a.c. peak or 60 V ripple free d.c.		N
A.3	Touch-current not exceed:		P
	- for a.c.: 0,7 mA (peak);		P
	- for d.c.: 2,0 mA		N

<b>Annex B</b>	<b>TEST LAMP</b>		N
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EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict

<b>Annex C</b>	<b>ABNORMAL CIRCUIT CONDITIONS</b>		N
	a) Short-circuit of starter contacts		N
	b) Lamp rectification		N
	c) Lamps removed and not replaced		N
	d) One electrode of lamp open-circuited		N
	e) Lamp will not start, but both electrodes are intact		N
	f) Blockage of the motor(s) contained in the luminaire		N

<b>Annex D</b>	<b>DRAUGHT-PROOF ENCLOSURE</b>		N
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<b>Annex E</b>	<b>DETERMINATION OF WINDING TEMPERATURE RISES BY THE INCREASE—IN-RESISTANCE METHOD</b>		N
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<b>Annex F</b>	<b>TEST FOR RESISTANCE TO STRESS CORROSION OF COPPER AND COPPER ALLOYS</b>		N
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<b>Annex G</b>	<b>MEASUREMENT OF TOUCH CURRENT AND PROTECTIVE CONDUCTOR CURRENT</b>		P
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	<b>CENELEC COMMON MODIFICATIONS (EN)</b>		--
<b>3</b>	<b>MARKING</b>		--
	Adequate warning on the package		--
<b>5</b>	<b>EXTERNAL AND INTERNAL WIRING</b>		--
5.2.1	Connecting leads		N
	- without a means for connection to the supply		N
	- terminal block specified		N
	- relevant information provided		N
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2,12 and 13.2 of Part 1		N
5.2.2	Cables equal to HD21 S2 or HD22 S2		N

<b>ZB</b>	<b>ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)</b>		N
3.3	DK: power supply cord with label		N
	IT: warning label on Class 0 luminaire		N

EN 60598-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
4.5.1	DK: socket-outlets		N
5.2.1	CY, DK, FI, SE, GB: type of plug		N
<b>ZC</b>	<b>ANNEX ZC, NATIONAL DEVIATIONS (EN)</b>		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°C alt. 750°C for luminaries in premises open to public or 960°C for luminaries in emergency exits		N



Tables

ANNEX 1: components						P
object/part No.	Code	manufacturer/trademark	type/model	technical data	standard	mark(s) of conformity
Plug	A	Awin Wire & Cable Co., Ltd.	AW202	250V, 10A	AS/NZS 3112	ESO130488
-Alternative	D	LINOYA	XYP-05	250V, 10A	AS/NZS 3112	ESO150009
Input wire of LED driver	A	Awin Wire & Cable Co., Ltd.	H05VV-F	3G1.0mm <sup>2</sup> 300/300V	AS/NZS 60227.5	NSW23371
-Alternative	D	Lucky United	H05RR-F	3G1.0mm <sup>2</sup> 250/440V	AS/NZS 60227.5	ESO120426
-Alternative	D	Dong Guan Recheer Electric Wire & Cable Co., Ltd.	H05RR-F	3G1.0mm <sup>2</sup> 300/500V	AS/NZS 60245.4	NSW21859
LED driver for model YWHBGL-200	B	Mean Well Enterprises Co., Ltd	HBG-240-48A	Input: AC100-240V~, 2.5A, 50/60Hz, Output: DC49V, 5.0A, t <sub>a</sub> :50°C, t <sub>c</sub> :75°C	AS/NZS 61347.1, AS/NZS IEC 61347.2.13	SAA-160086-EA
LED driver for model YWHBGL-150 and YWHBGL-120	B	Mean Well Enterprises Co., Ltd	HBG-160-48A	Input: AC100-240V~, 1.7A, 50/60Hz, Output: DC48V, 3.3A, t <sub>a</sub> :50°C, t <sub>c</sub> :85°C	AS/NZS 61347.1, AS/NZS IEC 61347.2.13	SAA-160128-EA
LED driver for model YWHBGL-100	B	Mean Well Enterprises Co., Ltd	HBG-100-48A	Input: AC100-240V~, 1.1A, 50/60Hz, Output: DC25V, 4A, t <sub>a</sub> :60°C, t <sub>c</sub> :85°C	AS/NZS 61347.1, AS/NZS IEC 61347.2.13	SAA-160127-EA
Output wire of LED driver	A	Awin Wire & Cable Co Ltd	H05VV-F	2x1.5mm <sup>2</sup> 300/300V	AS/NZS 60227.5	NSW23371
-Alternative	D	Lucky United	H05VV-F	2x1.5mm <sup>2</sup> 250/440V	AS/NZS 60227.5	ESO120426, Q98250
-Alternative	D	Dong Guan Recheer Electric Wire & Cable Co Ltd	H05RR-F	2x1.5mm <sup>2</sup> 300/500V	AS/NZS 60245.4	NSW21859
-Alternative	D	Xinya Electronic Co Ltd	H05VV-F	2x1.5mm <sup>2</sup> 250/440V	AS/NZS 60227.5	NSW19420
LED PCB	B	Shenzhen Qiang Neng Da Circuit co., LTD.	UFO-001-200W	V-1, 130°C	UL 746	UL E339220

## Tables

LED bead	B	LUMILEDS	LUXEON 3030	CCT: 5000K $V_F=6.1V$ ; $I_F=300mA$ ;	--	--
LED bead	C	NICHIA CORPORATION	NF2W757GR T	$I_F:200mA$ , $V_F:5.7-7.1V$ CCT:2700-6500K	--	--

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 authorized 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 .....	YWHBGL-200			P	
	Lamp used .....	LED lamp			P	
	Lamp control gear used.....	LED lamp controlgear			N	
	Mounting position of luminaire.....	See user manual			P	
	Supply wattage (W) .....	208.3W			P	
	Supply current (A) .....	0.906A			P	
	Calculated power factor.....	0.956PF			P	
	Table: measured temperatures corrected for ta = 45°C:				P	
	- abnormal operating mode.....				N	
	- test 1: rated voltage.....	100V			P	
	- test 2: 1,06 times rated voltage or 1,05 times Rated wattage .....	1.06x240V			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 .....				N	
	Through wiring or looping-in wiring loaded by a current of A during the test .....				N	
Temperature(°C) of part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	Test 1	Test 2	Test 3	Limits	Test 4	Limit
Input wire of LED driver	--	55.6	--	90	--	--
Tc of driver	71.8	70.6	--	75	--	--
LED PCB	--	88.5	--	130	--	--
Internal wire near LED Bead	--	69.1	--	105	--	--

## Tables

Lighting surface (10cm)	--	50.9	--	90	--	--
Mounting surface	--	48.7	--	90	--	--
Ambient	45.0	45.0	--	--	--	--

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

	<b>ANNEX 4: screwless terminals (part of the luminaire)</b>		--
<b>15</b>	<b>SCREWLESS TERMINALS</b>		--
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

## Tables

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							
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)										

Tables

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)										

	<b>ANNEX 5: EMF test result according to EN 62493:2015</b>				P
4.2.d	<b>MEASUREMENT RESULTS</b>				P
	Measuring with “Van der Hoofden” test head				P
	EUT operation model: <input checked="" type="checkbox"/> Normal operation <input type="checkbox"/> Other operation:				P
	Voltage:	100-240V~	Frequency:	50/60Hz	--
	Temperature:	25°C	Humidity:	55% R.H.	--
	Location of EuT	Measuring distance (cm)	Result (F)	Limit (F)	Verdict
	YWHBGL-200	50	0.0856	0.85	P



**Attachment No.1****Summary of requirements and test clause of:****EN 62031: 2008+A1: 2013+A2: 2015: LED modules for general lighting - Safety specifications**

6	Classification		---
	Built-in.....:		N
	Independent.....:		N
	Integral.....:		P
7	Marking		N
7.1	Mandatory marking for built-in or independent modules		N
7.2	Location of marking		N
7.3	Durability and legibility of marking		N
8	Terminals		N
9	Provisions for protective earthing		N
10	Protection against accidental contact with live parts		N
11	Moisture resistance and insulation		P
12	Electric strength		P
13	Fault conditions		P
13.1	Fault conditions according to IEC 61347-1, Clause 14		P
13.2	Overpower condition	No damage	P
14	Conformity testing during manufacture		N
15	Construction		P
	Non Wood, cotton, silk, paper and similar fibrous material used as insulation.		P
16	Creepage distances and clearances		N
17	Screws, current-carrying parts and connections		N
18	Resistance to heat, fire and tracking		N
19	Resistance to corrosion		N
20	Information for luminaire design		N
21	Heat management		N
22	Photobiological safety		P
22.1	UV radiation		P
22.2	Blue light hazard		P
22.3	Infrared radiation		N
Annex A	Test		--
Annex C	Conformity testing during manufacture		--
Annex D	Information for luminaire design		--

**Attachment No.2****Summary of requirements and test clause of:****EN 62471: 2008: Photobiological safety of lamps and lamp systems**

<b>4</b>	<b>EXPOSURE LIMITS (EL'S)</b>		<b>---</b>
4.2	Specific factors involved in the determination and application of retinal exposure limits		P
4.2.1	Pupil diameter		P
4.2.2	Angular subtense of source and measurement field-of-view		P
4.3	Hazard exposure limits		P
4.3.1	Actinic UV hazard exposure limit for the skin and eye		N
4.3.2	Near-UV hazard exposure limit for the eye		N
4.3.3	Retinal blue light hazard exposure limit		P
4.3.4	Retinal blue light hazard exposure limit - small source		P
4.3.5	Retinal thermal hazard exposure limit		N
4.3.6	Retinal thermal hazard exposure limit – weak visual stimulus		P
4.3.7	Infrared radiation hazard exposure limits for the eye		N
4.3.8	Thermal hazard exposure limit for the skin		P
<b>5</b>	<b>MEASUREMENT OF LAMPS AND LAMP SYSTEMS</b>		<b>P</b>
5.1	Measurement conditions		P
5.1.1	Lamp ageing (seasoning)		P
5.1.2	Test environment		P
5.1.3	Extraneous radiation		P
5.1.4	Lamp operation		P
5.1.5	Lamp system operation		P
5.2	Measurement procedure		P
5.2.1	Irradiance measurements		P
5.2.2	Radiance measurements		P
5.2.3	Measurement of source size		P
5.2.4	Pulse width measurement for pulsed sources		N
5.3	Analysis methods		P
5.3.1	Weighting curve interpolations		P
5.3.2	Calculations		P
5.3.3	Measurement uncertainty		P
<b>6</b>	<b>LAMP CLASSIFICATION</b>		<b>P</b>
6.1	Continuous wave lamps		P
6.1.1	Exempt group		P
6.1.2	Risk Group 1 (Low-Risk)		N

6.1.3	Risk Group 2 (Moderate-Risk)		N
6.1.4	Risk Group 3 (High-Risk)		N
6.2	Pulsed lamps		N

<b>Annex A</b>	<b>SUMMARY OF BIOLOGICAL EFFECTS</b>	--
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<b>Annex B</b>	<b>MEASUREMENT METHOD</b>	--
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<b>Annex C</b>	<b>UNCERTAINTY ANALYSIS</b>	--
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<b>Annex D</b>	<b>GENERAL REFERENCES</b>	--
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Table 6.1	Emission limits for risk groups of continuous wave lamps(based on EU directive 2006/25/EC)								P
Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	SUV( $\lambda$ )	Es	$W \cdot m^{-2}$	0,001	$1.75 \times 10^{-4}$	-	-	-	-
Near UV		E <sub>UVA</sub>	$W \cdot m^{-2}$	0.33	$1.93 \times 10^{-4}$	-	-	-	-
Blue light	B( $\lambda$ )	L <sub>B</sub>	$W \cdot m^{-2} \cdot sr^{-1}$	100	$0.55 \times 10^1$	10000	-	4000000	-
Blue light, small source	B( $\lambda$ )	E <sub>B</sub>	$W \cdot m^{-2}$	0.01*	-	1,0	-	400	-
Retinal thermal	R( $\lambda$ )	L <sub>R</sub>	$W \cdot m^{-2} \cdot sr^{-1}$	28000/ $\alpha$	$5.62 \times 10^3$	28000/ $\alpha$	-	71000/ $\alpha$	-
Retinal thermal, weak visual stimulus**	R( $\lambda$ )	L <sub>IR</sub>	$W \cdot m^{-2} \cdot sr^{-1}$	545000 0.0017 $\leq \alpha \leq$ 0.011	-	-	-	-	-
				6000/ $\alpha$ 0.011 $\leq$ $\alpha \leq 0.1$	-	-	-	-	-
IR radiation, eye		E <sub>IR</sub>	$W \cdot m^{-2}$	100	0.0123	570	-	3200	-
<p>* Small source defined as one with <math>\alpha &lt; 0,011</math> radian. Averaging field of view at 10000 s is 0,1 radian.</p> <p>** Involves evaluation of non-GLS source</p> <p>Note: The action functions: see Table 4.1 and Table 4.2</p> <p>The applicable aperture diameters: see 4.2.1</p> <p>The limitations for the angular subtenses: see 4.2.2</p> <p>The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5</p>									



## ATTACHMENT 3

## Photo Documentation

View:  
Model:  
YWHBGL-  
200

☒General  
☐Front  
☐Rear  
☐Internal  
☐Top  
☐Bottom  
☐PWB

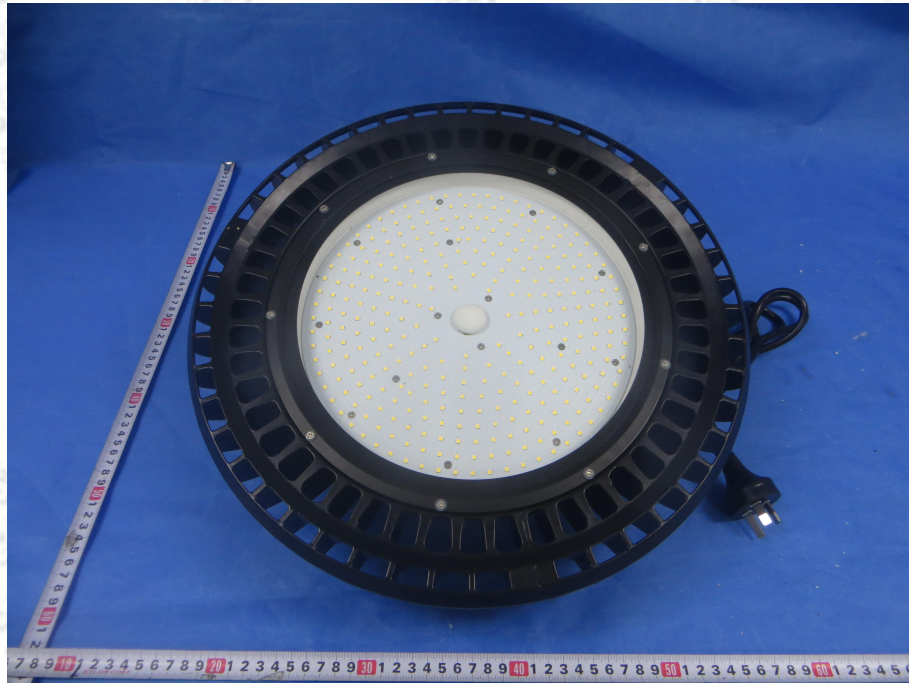


Figure 1

Remark: YWHBGL-200, YWHBGL-150, YWHBGL-120, YWHBGL-100 have a similar appearance except there size. It have another same sample without a plug.

View:

☐General  
☐Front  
☒Rear  
☐Internal  
☐Top  
☐Bottom  
☐PWB

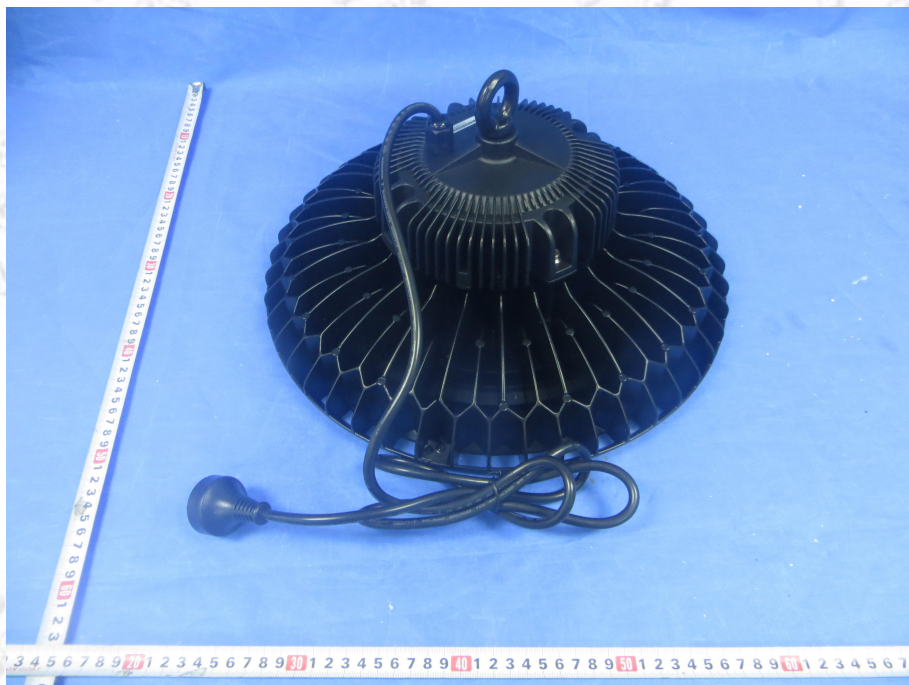


Figure 2



## ATTACHMENT 3

## Photo Documentation

View:

- ☒General  
☐Front  
☐Rear  
☐Internal  
☐Top  
☐Bottom  
☐PWB

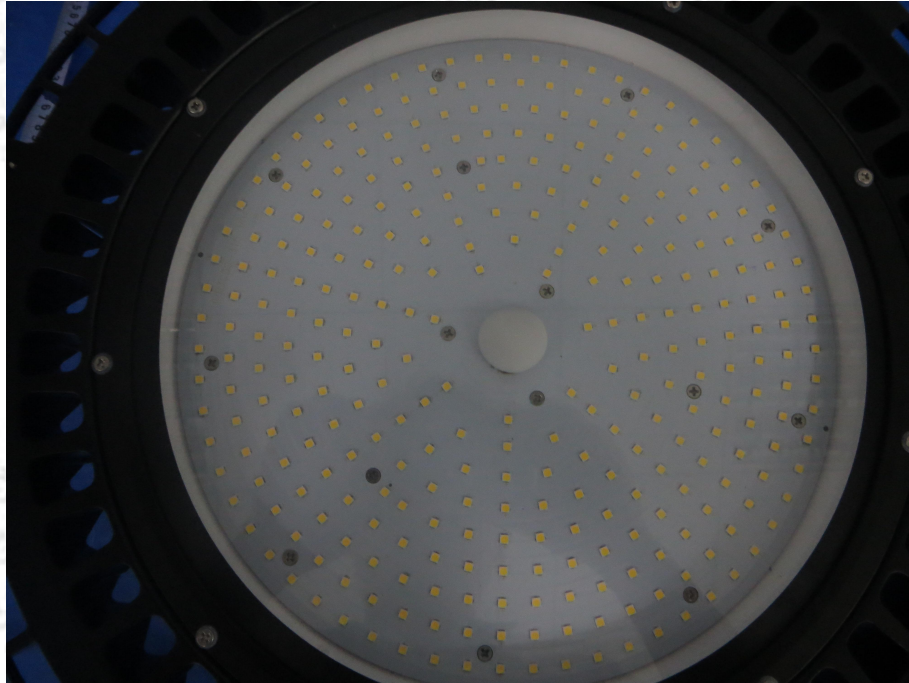


Figure 3

View:

- ☐General  
☐Front  
☐Rear  
☒Internal  
☐Top  
☐Bottom  
☐PWB



Figure 4



## ATTACHMENT 3

## Photo Documentation

View:

- ☐ General
- ☐ Front
- ☐ Rear
- ☒ Internal
- ☐ Top
- ☐ Bottom
- ☐ PWB



Figure 5

Remark: LED driver is different!