



MIC OPTOELECTRONIC CO.,LTD

CE LVD REPORT

Prepared For :	MIC OPTOELECTRONIC CO.,LTD 3rd Floor, D Building ,12# Jinyuan First Road, Heao, Henggang, Longgang District, Shenzhen, China
Product Name:	LED STREET LIGHT
Main Test Model:	MSL-90W
Additional Model:	MSL-(30W, 40W, 50W, 60W, 80W, 90W, 100W, 120W, 150W, 180W, 200W, 240W, 300W)
Prepared By :	Shenzhen BST Technology Co., Ltd. Building No.23-24, Zhiheng industrial park, Guankouer Road, Nantou, Nanshan District, Shenzhen, Guangdong, China
Test Date:	Oct. 20, 2017 – Nov. 02, 2017
Date of Report :	Nov. 03, 2017
Report No.:	BST17111032100001Y-1SR-2

**LVD REPORT****EN 60598-1 & EN 60598-2-3****Luminaires****Part 1: General requirements and tests****Part 2-3: Particular requirements****Section Three – Luminaires for road and Street Lighting**

Testing Laboratory Name	Shenzhen BST Technology Co., Ltd.
Address	Building No.23-24, Zhiheng Industrial Park, Guankouer Road, Nantou, Nanshan District, Shenzhen, Guangdong, China.
Testing location	Shenzhen BST Technology Co., Ltd.
Applicant's Name	MIC OPTOELECTRONIC CO.,LTD
Address	3rd Floor, D Building ,12# Jinyuan First Road, Heao, Henggang, Longgang District, Shenzhen, China
Manufacturer	MIC OPTOELECTRONIC CO.,LTD
Address	3rd Floor, D Building ,12# Jinyuan First Road, Heao, Henggang, Longgang District, Shenzhen, China
Test specification	
Standard	EN 60598-2-3: 2003+A1:2011 EN 60598-1:2015
Procedure deviation	N/A
Non-standard test method	N/A
Test item description	LED STREET LIGHT
Trademark	N/A
Model and/or type reference	See page 1
Rating(s)	See Copy of marking plate
Test case verdicts	
Test case does not apply to the test object	N(/A)
Test item does meet the requirement	P(ass)
Test item does not meet the requirement	F(ail)

**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(s) tested.

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

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

Clause numbers between brackets refer to clauses in IEC 60598-1 (EN 60598-1)

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

General product information:

The series products have the same circuit diagram, PCB layout and functionality. The differences are the model name, so, we select MSL-90W to test

Copy of marking plate:

LED STREET LIGHT
Model: MSL-90W
Rated: AC110-240V, 50-60Hz, 90W
 
Manufacturer : MIC OPTOELECTRONIC CO.,LTD
MADE IN CHINA

Prepared by :

Adam Chen

Engineer

Reviewer :

Jacky Zhang

Supervisor

Approved & Authorized Signer :



Manager



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict

3.1 (0)	SCOPE		P
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3.4 (2)	CLASSIFICATION		P
(2.2)	Type of protection.....:	Class I	—
(2.3)	Degree of protection.....:	IP65	—
(2.4)	Portable or handheld luminaire	No	—
	Fixed luminaire suitable for normally flammable surfaces	Yes	—
	Fixed luminaire suitable for non-combustible materials only	No	—
(2.5)	Luminaire for normal use	Yes	—
	Luminaire for rough service	No	—

3.5 (3)	MARKING		P
(3.2)	Mandatory markings		P
	Position of the marking	On the enclosure	P
	Format of symbols/text		P
(3.3)	Additional information		P
	Language of instructions		P
(3.3.1)	Combination luminaires	Not combination luminaire	N
(3.3.2)	Nominal frequency in Hz	50/60Hz	P
(3.3.3)	Operating temperature		P
(3.3.4)	Symbol or warning notice		P
(3.3.5)	Wiring diagram		N
(3.3.6)	Special conditions		N
(3.3.7)	Metal halid lamp luminaire – warning		N
(3.3.8)	Limitation for semi-luminaires		N
(3.3.9)	Power factor and supply current	PF>0.9	P
(3.3.10)	Suitability for use indoors		N
(3.3.11)	Luminaires with remote control	No remote control	N
(3.3.12)	Clip-mounted luminaire – warning		N
(3.3.13)	Specifications of protective shields		N
(3.3.14)	Symbol for nature of supply	~	P
(3.3.15)	Rated current of socket outlet	Not provided socket outlet	N
(3.3.16)	Rough service luminaire		N



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict
(3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		N
(3.3.18)	Non-ordinary luminaires with PVC cable		N
(3.3.101)	Terminal block supplied with luminaire		N
(3.4)	Test with water	15s with water	P
	Test with hexane	15s with hexane	P
	Legible after test	The marking is legible	P
	Label attached	The marking not be easily removable and shows no curling	P
3.5(-)	In addition information shall provided in instruction		N
	a) design attitude		N
	b) weight		N
	c) overall dimensions		N
	d) wind force (mounting more than 8m)		N
	e) the range of cross-sectional areas of suspension wire		N
	f) indoor use		N
	g) dimension of compartment		N
	h) torque		N

3.6 (4)	CONSTRUCTION		P
3.6.1(-)	All luminaires shall have protection against ingress of moisture at least IPX3		P
	Other		N
3.6.2(-)	Luminaires for suspension on span wire		N
3.6.3(-)	Attached and external parts shall withstand wind speed of 150Km/h		P
3.6.3.1(-)	Static force test		P
3.6.4(-)	A single lampholder shall adequate support		P
3.6.5(-)	Glass covers		N
3.6.6(-)	Adequate space for connection compartment		N
3.6.7(-)	Column integrate luminaires shall comply with ISO standards		N
3.6.8(-)	The door of column-integrated luminaires shall against corrosion.		N
3.6.9(-)	For Column-integrated luminaires		N
	- Cable enter slot shall not less than 50mm X 150mm		N



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict
	- the path from slot to compartment shall not less than 50mm		N
3.6 (4.2)	Components replaceable without difficulty		P
3.6 (4.3)	Wireways smooth and free from sharp edges		P
3.6 (4.4)	Lampholders		N
3.6 (4.4.1)	Integral lampholder		N
3.6 (4.4.2)	Wiring connection		N
3.6 (4.4.3)	Lampholder for end-to-end mounting		N
3.6 (4.4.4)	Positioning		N
3.6 (4.4.5)	Peak pulse voltage		N
3.6 (4.4.6)	Centre contact		N
3.6 (4.4.7)	Rough service luminaires		N
3.6 (4.4.8)	Lamp connectors		P
3.6 (4.5)	Starter holders		N
	Starter holder in luminaires other than class II		N
	Starter holder class II construction		N
3.6 (4.6)	Terminal blocks		N
	Tails		N
	Unsecured blocks		N
3.6 (4.7)	Terminals and supply connections		P
3.6 (4.7.1)	Contact to metal parts		P
3.6 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		P
3.6 (4.7.3)	Terminals for supply conductors		N
3.6 (4.7.4)	Terminals other than supply connection		N
3.6 (4.7.5)	Heat-resistant wiring/sleeves		P
3.6 (4.7.6)	Multi-pole plug		N
3.6 (4.8)	Switches:		N
	- adequate rating	No switch	N
	- adequate fixing		N
	- polarized supply		N
3.6 (4.9)	Insulating lining and sleeves		N
3.6 (4.9.1)	Retainment		N
	Method of fixing :		N
3.6 (4.9.2)	Insulated linings and sleeves		P
	a) & c) Insulation resistance and electric strength		P
	b) Ageing test. Temperature (°C) :		P



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict
3.6 (4.10)	Insulation of Class II luminaires		N
3.6 (4.10.1)	No contact, mounting surface - accessible metal parts - wiring of basic insulation		N
	Safe installation fixed luminaires		N
	Capacitors		N
	Interference suppression capacitors according to IEC 60384-14	No such capacitor	N
3.6 (4.10.2)	Assembly gaps:		N
	- not coincidental		N
	- no straight access with test probe		N
3.6 (4.10.3)	Retention of insulation:		P
	- fixed		P
	- unable to be replaced; luminaire inoperative		N
	- sleeves retained in position		N
	- lining in lampholder		N
3.6 (4.11)	Electrical connections		P
3.6 (4.11.1)	Contact pressure		P
3.6 (4.11.2)	Screws:		P
	- self-tapping screws		P
	- thread-cutting screws		N
	- at least two self-tapping screws		N
3.6 (4.11.3)	Screw locking:		P
	- spring washer		P
	- rivets		P
3.6 (4.11.4)	Material of current-carrying parts	Copper conductor used	P
3.6 (4.11.5)	No contact to wood	No wood material in the luminaire	P
3.6 (4.11.6)	Electro-mechanical contact systems	No such systems	N
3.6 (4.12)	Mechanical connections and glands		P
3.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		P
	Torque test: torque (Nm); part.....:	2.0 N/m	P
	Torque test: torque (Nm); part.....:		N



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict
	Torque test: torque (Nm); part..... :		N
3.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N
3.6 (4.12.4)	Locked connections:		N
	- fixed arms; torque (Nm) :		N
	- lampholder; torque (Nm) :		N
	- push-button switches; torque 0,8 Nm :		N
3.6 (4.12.5)	Screwed glands; force (N)..... :		N
3.6 (4.13)	Mechanical strength		P
3.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm) :	0.50Nm	P
	- other parts; energy (Nm) :	Enclosure : 0.7Nm	P
	1) live parts		P
	2) linings		P
	3) protection		P
	4) covers	No break	P
3.6 (4.13.3)	Straight test finger	Can't touch with live part with 30N	P
3.6 (4.13.4)	Rough service luminaires		N
	a) fixed	Ordinary luminaire	N
	b) hand-held		N
	c) delivered with a stand		N
	d) for temporary installations and suitable for mounting on a stand		N
3.6 (4.13.6)	Tumbling barrel		N
3.6 (4.14)	Suspensions and adjusting devices		N
3.6 (4.14.1)	Mechanical load:		N
	A) four times the weight		N
	B) torque 2,5 Nm		N
	C) bracket arm; bending moment (Nm)..... :		N
	D) load track-mounted luminaires		N
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) :		N
	metal rod. Diameter (mm) :		N



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict
3.6 (4.14.2)	Load to flexible cables		N
	Mass (kg).....:		N
	Stress in conductors (N/mm ²).....:		N
	Semi-luminaires – mass (kg)		N
	Semi-luminaires – bending moment (Nm).....:		N
3.6 (4.14.3)	Adjusting devices:		N
	- flexing test; number of cycles.....:		N
	- strands broken		N
	- electric strength test afterwards		N
3.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors	No telescopic tubes	N
3.6 (4.14.5)	Guide pulleys	No guide pulleys	N
3.6 (4.14.6)	Strain on socket-outlets		N
3.6 (4.15)	Flammable materials:		P
	- glow-wire test 650 °C		P
	- spacing ≥ 30 mm		P
	- screen withstanding test of 13.3.1		N
	- screen dimensions		N
	- no fiercely burning material		N
	- thermal protection		N
	- electronic circuits exempted		N
3.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		P
	a) construction		P
	b) temperature sensing control		N
	c) surface temperature		P
3.6 (4.16)	Luminaires marked with F-symbol		N
	No lamp control gear	(compliance with Section 12)	N
3.6 (4.16.1)	Lamp control gear spacing:		P
	- spacing 35 mm		P
	- spacing 10 mm		N
3.6 (4.16.2)	Thermal protection:		N
	- in lamp control gear		N



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict
	- external		N
	- fixed position		N
	- temperature marked lamp control gear		N
3.6 (4.16.3)	"F" curve measured		N
3.6 (4.17)	Drain holes		N
	Clearance at least 5 mm		N
3.6 (4.18)	Resistance to corrosion:		P
3.6 (4.18.1)	- rust-resistance		P
1.6 (4.18.2)	- season cracking in copper		N
3.6 (4.18.3)	- corrosion of aluminium		N
3.6 (4.19)	Ignitors compatible with ballast		P
3.6 (4.20)	Rough service vibration.....: Ordinary service luminaire		N
3.6 (4.21)	Protective shield:		P
3.6 (4.21.1)	Shield fitted		P
3.6 (4.21.2)	Particles from a shattering lamp not impair safety		N
3.6 (4.21.3)	No direct path		N
3.6 (4.21.4)	Impact test on shield		P
	Glow-wire test on lamp compartment		N
3.6 (4.22)	Attachments to lamps		N
3.6 (4.23)	Semi-luminaires comply class II		N
3.6 (4.24)	UV radiation		N
3.6 (4.25)	No sharp point or edges	No sharp points or edges	P
3.6 (4.26)	Short-circuit protection:		N
3.6 (4.26.1)	Uninsulated accessible SELV parts		N
3.6 (4.26.2)	Short-circuit test		N
3.6 (4.26.3)	Test chain according to IEC 61032		N

3.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
	Working voltage (V).....: 110-240~		—



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict
	Voltage form	Sinusoidal	—
	PTI	< 600	—
	Rated pulse voltage (kV)		—
	(1) Current-carrying parts of different polarity: cr (mm); cl (mm)	Cr>2.5mm, Cl>1.5mm	P
	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm)	Cr>2.5mm, Cl>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 clamped and metal parts: cr (mm); cl (mm)		N
	(5) Current-carrying parts of switches and metal parts, after removal of insulation: cr (mm); cl (mm)		N
	(6) Current-carrying parts and supporting surface: cr (mm); cl (mm)	Cr>2.5mm, Cl>1.5mm	P

3.8 (7)	PROVISION FOR EARTHING		P
3.8 (7.2.1 + 7.2.3)	Accessible metal parts		P
	Metal parts in contact with supporting surface		P
	Resistance < 0,5 Ω	0.3 Ω	P
	Two self-tapping screws used		P
	Thread-forming screws		P
	Connector earthing first		P
3.8.1(-)	The attachment of fixed parts of terminals shall not rotated when clamped part is removed		P
3.8 (7.2.2 + 7.2.3)	Earth continuity in joints etc.		P
3.8 (7.2.4)	Locking of clamping means		P
	Compliance with 4.7.3		P
3.8 (7.2.5)	Earth terminal integral part of connector socket		P
3.8 (7.2.6)	Earth terminal adjacent to mains terminals		P
3.8 (7.2.7)	Electrolytic corrosion of the earth terminal		P
3.8 (7.2.8)	Material of earth terminal		P
	Contact surface bare metal		P
3.8 (7.2.10)	Class II luminaire for looping-in		N
3.8 (7.2.11)	Earthing core coloured green-yellow		P



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict
	Length of earth conductor		P

3.9 (14)	TERMINALS		N
	Separately approved; component list		N
	Part of the luminaire		N
(-)	The cross-sectional area of conduct for terminals for supply connection shall comply Table 14.1 of IEC 60598-1		N
	Exclude provision of supply cable		N

3.9 (15)	TERMINALS		N
	Separately approved; component list		N
	Part of the luminaire		N

3.10 (5)	EXTERNAL AND INTERNAL WIRING		P
3.10.1(-)	A cord anchorage		N
	Test		N
	Mounted high than 20m and weight than 4Kg		N
3.10 (5.2)	Supply connection and external wiring		P
3.10 (5.2.1)	Means of connection		P
3.10 (5.2.2)	Type of cable		P
	Nominal cross-sectional area (mm ²)		P
3.10 (5.2.3)	Type of attachment, X, Y or Z	Y	P
3.10 (5.2.5)	Type Z not connected to screws		N
3.10 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
3.10 (5.2.7)	Cable entries through rigid material have rounded edges		N
1.10 (5.2.8)	Insulating bushings:		N
	- suitably fixed		N
	- material in bushings		N
	- tubes or guards made of insulating material		P



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict
3.10 (5.2.9)	Locking of screwed bushings		P
3.10 (5.2.10)	Cord anchorage:		N
	- covering protected from abrasion		N
	- clear how to be effective		N
	- no mechanical or thermal stress		N
	- no tying of cables into knots etc.		N
	- insulating material or lining		N
3.10 (5.2.10.1)	Cord anchorage for type X attachment:		P
	a) at least one part fixed		P
	b) types of cable		N
	c) no damaging of the cable		N
	d) whole cable can be mounted		N
	e) no touching of clamping screws		N
	f) metal screw not directly on cable		N
	g) replacement without special tool		N
	Glands not used as anchorage		N
	Labyrinth type anchorages		N
3.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N
3.10 (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
3.10 (5.2.11)	External wiring passing into luminaire		N
3.10 (5.2.12)	Looping-in terminals		N
1.10 (5.2.13)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		N
3.10 (5.2.14)	Mains plug same protection		N
	Class III luminaire plug		N



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict
3.10 (5.2.15)	Colour code low voltage		N
3.10 (5.2.16)	Appliance inlets (IEC 60320)		N
	Appliance couplers of class II type		N
3.10 (5.3)	Internal wiring		P
3.10 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		P
	- not delivered/ mounting instruction		P
	- factory assembled		P
	- socket outlet loaded (A)		N
	- temperatures		P
	Green-yellow for earth only		P
3.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		P
	Cross-sectional area (mm ²)		P
	Insulation thickness		P
	Extra insulation added where necessary		N
3.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N
	Adequate cross-sectional area and insulation thickness		N
3.10 (5.3.1.3)	Double or reinforced insulation for class II		N
3.10 (5.3.1.4)	Conductors without insulation		N
3.10 (5.3.1.5)	SELV current-carrying parts		N
1.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N
3.10 (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
3.10 (5.3.3)	Openings		N
	Bushings not removable		N



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict
	Bushings in sharp openings		N
	Cables with protective sheath		N
3.10 (5.3.4)	Joints and junctions effectively insulated		P
3.10 (5.3.5)	Strain on internal wiring		N
3.10 (5.3.6)	Wire carriers	The equipment is fixed luminaire	N
3.10 (5.3.7)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		N

3.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
3.11 (8.2.1)	Live parts not accessible		P
	Protection in any position		P
	Double-ended tungsten filament lamp		N
	Insulation lacquer not reliable		N
	Double-ended high pressure discharge lamp		N
3.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N
3.11 (8.2.3)	Class II luminaire:		N
	- basic insulated metal parts not accessible during starter or lamp replacement		N
	- basic insulation not accessible other than during starter or lamp replacement		N
	- glass protective shields not used as supplementary insulation		N
	Class I luminaire with BC lampholder		N
3.11 (8.2.4)	Portable luminaire:		N
	- protection independent of supporting surface		N
	- terminal block completely covered		N
3.11 (8.2.6)	Covers reliably secured		N
3.11 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$		N
	Portable plug connected luminaire with capacitor		N
	Other plug connected luminaire with capacitor		N
	Discharge device on or within capacitor		N



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict
	Discharge device mounted separately		N

3.12 (12)	ENDURANCE TEST AND THERMAL TEST		P
3.12.1(-)	The limit shall deduct 10°C the tables of section 12 of EN 60598-1		P
	Test ambient at $t_a \pm 5^\circ\text{C}$ for outdoor use		P
3.12.2(-)	IP greater than IP20		P
3.12 (12.3)	Endurance test:		P
	- mounting-position.....:	Normal position	—
	- test temperature ($^\circ\text{C}$).....:	35 $^\circ\text{C}$	—
	- total duration (h).....:	240h	—
	- supply voltage: U_n factor; calculated voltage (V).....:	$240 \times 1.1 = 264$	—
	- lamp used.....:		—
3.12 (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
3.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
3.12 (12.5)	Thermal test (abnormal operation)		N
3.12 (12.6)	Thermal test (failed lamp control gear condition):		N
3.12 (12.6.1)	- case of abnormal conditions.....:		—
	- electronic lamp control gear		N
	- measured winding temperature ($^\circ\text{C}$) at 1,1 U_n ..:		—
	- measured mounting surface temperature ($^\circ\text{C}$) at 1,1 U_n:		N
	- calculated mounting surface temperature ($^\circ\text{C}$) ..:		N
	- track-mounted luminaires		N
3.12 (12.6.2)	Temperature sensing control		N
	- case of abnormal conditions.....:		—
	- thermal link		N
	- manual reset cut-out		N
	- auto reset cut-out		N



EN 60598-2-3			
Cl.	Requirement – Test	Result	Verdict
	- measured mounting surface temperature (°C) :		N
	- track-mounted luminaires		N
3.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N
	- case of abnormal conditions		—
3.12 (12.7.1)	- measured winding temperature (°C) at 1,1 Un .:		—
	- measured temperature of fixing point/ exposed part (°C) at 1,1 Un		N
	- calculated temperature of fixing point/ exposed part (°C)		N
3.12 (12.7.2)	Temperature sensing control		N
	- thermal link		N
	- manual reset cut-out		N
	- auto reset cut-out		N
	- measured temperature of fixing point/ exposed part (°C)		N

3.13 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
3.13.1(-)	IP greater than IP20		P
3.13 (9.2)	Tests for ingress of dust, solid objects and moisture:	IP65	P
	- classification according to IP		—
	- mounting position during test		—
	- fixing screws tightened; torque (Nm)		—
	- tests according to clauses		—
	- electric strength test afterwards		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 where it could become a hazard		N
	d) i) For luminaires without drain holes – no water entry		N
	d) ii) For luminaires with drain holes – no hazardous water entry		N
	e) no water in watertight luminaire		P
	f) no contact with live parts (IP 2X)		N
	f) no entry into enclosure (IP 3X and IP 4X)		N



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Cl.	Requirement – Test	Result	Verdict
3.13 (9.3)	Humidity test 48 h	R.H:93% T:30°C	P

3.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
3.14 (10.2.1)	Insulation resistance test		P
	Insulation resistance (MΩ):		P
	SELV:		N
	- between current-carrying parts of different polarity		N
	- between current-carrying parts and mounting surface		N
	- between current-carrying parts and metal parts of the luminaire		N
	Other than SELV:		P
	- between live parts of different polarity	>2 MΩ	P
	- between live parts and mounting surface	>2 MΩ	P
	- between live parts and enclosure	>2 MΩ	P
	- between live parts of different polarity through action of a switch		N
3.14 (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:		P
	- between live parts of different polarity	1480V	P
	- between live parts and mounting surface	1480V	P
	- between live parts and enclosure	1480V	P
	- between live parts of different polarity through action of a switch		N



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Cl.	Requirement – Test	Result	Verdict
3.14 (10.3.1)	Touch current (mA)	0.024mA < 1.0mA	P

3.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
3.15 (13.2.1)	Ball-pressure test:		P
	- part tested; temperature (°C)	lampshade 75°C .0.9mm	Mm
3.15 (13.3.1)	Needle flame test (10 s):		P
	- part tested	lampshade	P
3.15 (13.3.2)	Glow wire test (650°C):		P
	- part tested	lampshade: 650°C	P
3.15 (13.4.1)	Tracking test: part tested		N

	COMMON MODIFICATIONS		N
(3.3.101 + 5.2.1)	For luminaires connected by tails, information about terminal block		N
(5.2.2)	Cables equal to HD 21 S2 or HD 22 S2		N
(5.2.15)	Colour code low voltage		N

ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS		N
(2.2)	Class 0 not accepted		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
(4.5.1)	FR: socket-outlets		N
(5.2.1)	DK, FI, SE, GB: type of plug		N

ZC	ANNEX ZC, NATIONAL DEVIATIONS		N
(13.3)	DK: Needle flame test or glow-wire test 750°C for luminaires in access routes		N
(13.3)	GB: Requirements according to United Kingdom Building Regulation		N
(13.3.2)	FR: Glow-wire test 850°C alt. 750°C for luminaires in premises open to public and workers		N



ANNEX 1: components				P
object/part No.	manufacturer/ trademark	type/model	technical data	mark(s) of conformity
Internal Cable	Various	Various	-	-
Led driver	MEAN WELL	HLG-80H-48A	See photo	ETL

	ANNEX 2: temperature measurements, thermal tests of Section 12				P	
	Type reference		See Page 2			P
	Lamp used.....		LED			P
	Lamp control gear used.....					—
	Mounting position of luminaire.....		Normal			—
	Supply wattage (W)					P
	Supply current (A)					—
	Calculated power factor.....					—
	Table: measured temperatures corrected for ta = 25 °C:					
	- abnormal operating mode					—
	- test 1: rated voltage.....		240x1.06			P
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....					—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....					—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage.....					—
temperature (°C) of part		clause 12.4 – normal			clause 12.5 – abnormal	
	test 1	test 2	test 3	limits	test 4	limit
Enclosure		50.2		90		
Internal wire		46.2		80		
Led model		60.5		120		
Light surface		73.7		Ref.		
LED Driver		40.8		120		
Ambient		25.2		--		

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



	Cross-sectional area (mm ²)		N
(14.3.3)	Conductor space (mm)		N
(14.4)	Mechanical tests		N
(14.4.1)	Minimum distance		N
(14.4.2)	Cannot slip out		N
(14.4.3)	Special preparation		N
(14.4.4)	Nominal diameter of thread (metric ISO thread) . :		N
	External wiring		N
	No soft metal		N
(14.4.5)	Corrosion		N
(14.4.6)	Nominal diameter of thread (mm)		N
	Torque (Nm)		N
(14.4.7)	Between metal surfaces		N
	Lug terminal		N
	Mantle terminal		N
	Pull test; pull (N)		N
(14.4.8)	Without undue damage		N

	ANNEX 4: SCREWLESS TERMINALS (PART OF THE LUMINAIRE)		N
(15)	SCREWLESS TERMINALS		N
(15.2)	Type of terminal.....	No screwless terminals	—
	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		N
	Voltage drop (mV) after 1 h (4 samples)		N



	Voltage drop of two inseparable joints									N
	Number of cycles..... :									—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples)..... :									N
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples)..... :									N
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples)									N
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples)									N
(15.7)	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)										
	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)										



ANNEX A:

Photo-documentation



Photo 1



Photo 2



Photo 3



Photo 4