



---

## HUAXIA LIGHTING CO., LIMITED

---

# CE LVD REPORT

Prepared For :	HUAXIA LIGHTING CO., LIMITED 5th Floor, 6th Building, Lihe Industrial Zone, Songbai Road, Xili Town, Nanshan District, Shenzhen, China
Product Name:	LED PAR56 SWIMMING POOL LIGHT
Trade Name:	huaxia
Model :	HX-P56-SMD3014-441
Additional Model	(See Annex)
Prepared By :	Shenzhen BST Technology Co., Ltd. Building No.23-24, Zhiheng Industrial Park, Guankouer Road, Nantou, Nanshan District, Shenzhen, Guangdong, China
Test Date:	Aug. 06, 2016 –Aug. 16, 2016
Date of Report :	Aug. 16, 2016
Report No.:	BST16085788A0002Y-1SR-2

**TEST REPORT****EN 60598-2-18****Luminaires****Part 2: Luminaires for swimming pools and similar applications**

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 .....	HUAXIA LIGHTING CO., LIMITED
Address .....	5th Floor, 6th Building, Lihe Industrial Zone, Songbai Road, Xili Town, Nanshan District, Shenzhen, China
Manufacturer .....	HUAXIA LIGHTING CO., LIMITED
Address .....	5th Floor, 6th Building, Lihe Industrial Zone, Songbai Road, Xili Town, Nanshan District, Shenzhen, China
Test specification	
Standard .....	EN 60598-2-18:1994+A1:2012 EN 60598-1:2015+AC:2016
Procedure deviation .....	N/A
Non-standard test method .....	N/A
Test item description .....	LED PAR56 SWIMMING POOL LIGHT
Trademark .....	huaxia
Model and/or type reference .....	HX-P56-SMD3014-441
Rating(s) .....	12VDC, 50/60Hz, 35W
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)

Copy of marking plate:



Prepared by :

Engineer

Reviewer :

Supervisor

Approved & Authorized Signer :

Christina / Manager



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
0	SCOPE		P
0.1	More sections applicable .....	Yes [ <input checked="" type="checkbox"/> ]      No [ <input type="checkbox"/> ]	—
2	CLASSIFICATION		P
2.2	Type of protection .....	Class III	—
2.3	Degree of protection .....	IP 68	—
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	—
18.4.1	Luminaires shall be Class III for protection against electric shock and shall have external and internal circuits which operate on voltages not exceeding 12 V.	12VDC	—
18.4.2	Luminaires shall be classified according to the degree of protection against the ingress of moisture and dust as follows:		P
18.4.2.1	For those parts of luminaires which are in contact with the water of the pool, fountain, etc., the classification shall be pressure watertight (IPX8).	IP68	P
18.4.2.2	For those parts of luminaires which are not in contact with the water of the pool, fountain, etc., the classification shall be at least dustproof and splashproof (IP54).		N
18.4.3	Luminaires shall be classified according to the manner of mounting, lamp changing and connection to the supply as follows:		P
18.4.3.1	Category A. Luminaires for which connection to the supply and replacement of lamps takes place from the side of the luminaire which is not in contact with the water.		N
18.4.3.2	Category B. Luminaires for which replacement of lamps takes place from the side of the luminaires in contact with the water but after the water of the pool has been partially or completely drained.		N



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
18.4.3.3	Category C. Luminaires which are completely removed from the water for replacement of lamps.		P
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	English	P
3.3.1	Combination luminaires		N
3.3.2	Nominal frequency in Hz	50/60Hz	N
3.3.3	Operating temperature		N
3.3.4	Symbol or warning notice		P
3.3.5	Wiring diagram		P
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		N
3.3.10	Suitability for use indoors	Suitability for use outdoors	N
3.3.11	Luminaires with 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		N
3.3.16	Rough service luminaire		N
3.3.17	Mounting instruction for type Y, type Z and some type X attachments	Type Y	P
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



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
18.5.1	Luminaires intended only for use in water shall be marked: "For use only when immersed in water"	For use only when immersed in water	P
18.5.2	Luminaires intended for use with safety isolating transformers shall be marked: "For operation only with safety isolating transformer"		P
18.5.3	Luminaires shall be supplied with the installation instructions firmly attached to the luminaire. These instructions shall detail all information necessary for mounting, connecting to the supply, operation and maintenance of the luminaire.		P
18.5.4	In the instruction leaflet supplied with the luminaire, the manufacturer shall provide advice on the mounting of the luminaire with particular regard to corrosion, for example aluminium and its alloys in contact with concrete or similar materials and the electro-chemical action of dissimilar metals. In providing information for the correct installation of luminaires, the manufacturer shall take account of the requirements of IEC 364-7-702.		P

4	CONSTRUCTION		P
4.2	Components replaceable without difficulty		N
4.3	Wireways smooth and free from sharp edges		P
4.4	Lampholders		--
4.4.1	Integral lampholder		N
4.4.2	Wiring connection		N
4.4.3	Lampholder for end-to-end mounting		N
4.4.4	Positioning		N
4.4.5	Peak pulse voltage		N
4.4.6	Centre contact		N
4.4.7	Rough service luminaires	Ordinary luminaires	N
4.4.8	Lamp connectors	No lamp connector provided	N
4.5	Starter holders		--
	Starter holder in luminaires other than class II		N
	Starter holder class II construction		N
4.6	Terminal blocks		--
	Tails		N
	Unsecured blocks		N



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
4.7	Terminals and supply connections		--
4.7.1	Contact to metal parts		N
4.7.2	Test 8 mm live conductor		N
	Test 8 mm earth conductor		N
4.7.3	Terminals for supply conductors		N
4.7.4	Terminals other than supply connection		P
4.7.5	Heat-resistant wiring/sleeves		P
4.7.6	Multi-pole plug		N
4.8	Switches:		--
	- adequate rating		N
	- adequate fixing		N
	- polarized supply		N
4.9	Insulating lining and sleeves		--
4.9.1	Retention		P
	Method of fixing .....		--
4.9.2	Insulated linings and sleeves		--
	a) & c) Insulation resistance and electric strength		P
	b) Ageing test. Temperature (°C) .....		P
4.10	Insulation of Class II luminaires		P
4.10.1	No contact, mounting surface - accessible metal parts - wiring of basic insulation		P
	Safe installation FIXED LUMINAIREs		P
	Capacitors		N
	Interference suppression capacitors according to IEC 60384-14		N
4.10.2	Assembly gaps:		--
	- not coincidental		N
	- no straight access with test probe		N
4.10.3	Retention of insulation:		--
	- fixed		N
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		P
	- lining in lampholder		P
4.11	Electrical connections		--



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
4.11.1	Contact pressure	Not transmitted through insulating material	P
4.11.2	Screws:		P
	- self-tapping screws		P
	- thread-cutting screws		P
	- at least two self-tapping screws		P
4.11.3	Screw locking:		--
	- spring washer		N
	- rivets		N
4.11.4	Material of current-carrying parts	At least 50% copper	P
4.11.5	No contact to wood	No wood material in the luminaires	N
4.11.6	Electro-mechanical contact systems	No such systems	N
4.12	Mechanical connections and glands		--
4.12.1	Screws not made of soft metal		N
	Screws of insulating material		N
	Torque test: torque (Nm); part.....:		N
	Torque test: torque (Nm); part.....:		N
4.12.2	Screws with diameter < 3 mm screwed into metal		N
4.12.4	Locked connections:		--
	- fixed arms; torque (Nm).....:		N
	- lampholder; torque (Nm) .....		N
	- push-button switches; torque 0,8 Nm .....		N
4.12.5	Screwed glands; force (N).....:		P
4.13	Mechanical strength		--
4.13.1	Impact tests:		--
	- fragile parts; energy (Nm) .....		N
	- other parts; energy (Nm) .....	Enclosure, 0.35Nm	N
	1) live parts	Not access	P
	2) linings		N
	3) protection	Continue to afford the degree of protection against ingress of dust, solid objects and moisture	P
	4) covers	No break	P





EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
4.13.3	Straight test finger		P
4.13.4	Rough service luminaires		--
	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
4.13.6	Tumbling barrel		N
4.14	Suspensions and adjusting devices		--
4.14.1	Mechanical load:		--
	A) four times the weight		N
	B) torque 2,5 Nm		N
	C) bracket arm; bending moment (Nm).....:		N
	D) load track-mounted luminaires		N
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) .....		N
	Metal rod. Diameter (mm) .....		N
4.14.2	Load to flexible cables		--
	Mass (kg).....:		N
	Stress in conductors (N/mm <sup>2</sup> ).....:		N
	Semi-luminaires – mass (kg) .....		N
	Semi-luminaires – bending moment (Nm).....:		N
4.14.3	Adjusting devices:		--
	- flexing test; number of cycles .....		N
	- strands broken		N
	- electric strength test afterwards		N
4.14.4	Telescopic tubes: cords not fixed to tube; no strain on conductors	No telescopic tubes	N
4.14.5	Guide pulleys	No guide pulleys	N
4.14.6	Strain on socket-outlets	No socket-outlet	N
4.15	Flammable materials:		--
	- glow-wire test 650 °C		P
	- spacing ≥ 30 mm		N
	- screen withstanding test of 13.3.1		N
	- screen dimensions		N



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
	- no fiercely burning material		N
	- thermal protection		N
	- electronic circuits exempted		N
4.15.2	Luminaires made of thermoplastic material with lamp control gear		--
	a) construction		N
	b) temperature sensing control		N
	c) surface temperature		N
4.16	Luminaires marked with F-symbol		--
	No lamp control gear		N
4.16.1	Lamp control gear spacing:		--
	- spacing 35 mm		N
	- spacing 10 mm		N
4.16.2	Thermal protection:		--
	- in lamp control gear		N
	- external		N
	- fixed position		N
	- temperature marked lamp control gear		N
4.17	Drain holes	Not protection against water	N
	Clearance at least 5 mm		N
4.18	Resistance to corrosion:		--
4.18.1	- rust-resistance		N
4.18.2	- season cracking in copper		N
4.18.3	- corrosion of aluminium		P
4.19	Igniters compatible with ballast		N
4.20	Rough service vibration.....:		N
4.21	Protective shield:		--
4.21.1	Shield fitted		N
4.21.2	Particles from a shattering lamp not impair safety		N
4.21.3	No direct path		N
4.21.4	Impact test on shield		N
	Glow-wire test on lamp compartment		N
4.22	Attachments to lamps	No attachments	N
4.23	Semi-luminaires comply class II		N
4.24	UV radiation		N



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
4.25	No sharp point or edges	No sharp points or edges	P
4.26	Short-circuit protection:		N
4.26.1	Uninsulated accessible SELV parts		N
4.26.2	Short-circuit test		N
4.26.3	Test chain according to IEC 61032		N
18.6.1	Luminaires shall be subjected to a test for mechanical strength as follows:	0.7N.m no damage	P
	Those parts of the luminaire, including protective glasses, which are in contact with the water in normal use shall be subjected to an impact test with an impact energy of 0,7 Nm in the direction of the water pressure. The test shall be carried out in free air. After this test the sample shall show no unacceptable damage (see Part 1, subclause 4.13).		P
18.6.2	Luminaires shall be subjected to a corrosion test as follows:		P
	Those parts of the luminaire which are in contact with water in normal use shall be immersed in artificial sea water at a temperature of (25 ± 2) °C for a period of 14 days. After this treatment the parts shall show no signs of corrosion or roughening of their surfaces. Traces of corrosion removable by rubbing shall be ignored		P

5	EXTERNAL AND INTERNAL WIRING		P
5.2	Supply connection and external wiring		--
5.2.1	Means of connection .....		P
5.2.2	Type of cable .....		P
	Nominal cross-sectional area (mm <sup>2</sup> ) .....		P
5.2.3	Type of attachment, X, Y or Z	Type Y	P
5.2.5	Type Z not connected to screws		N
5.2.6	Cable entries:		--
	- 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:		--



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
	- suitably fixed		N
	- material in bushings		N
	- tubes or guards made of insulating material		N
5.2.9	Locking of screwed bushings		N
5.2.10	Cord anchorage:		--
	- 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:		--
	a) at least one part fixed		N
	b) types of cable		N
	c) no damaging of the cable		N
	d) whole cable can be mounted		N
	e) no touching of clamping screws		N
	f) metal screw not directly on cable		N
	g) replacement without special tool		N
	Glands not used as anchorage		N
	Labyrinth type anchorages		N
5.2.10.2	Adequate cord anchorage for type Y and type Z attachment	Type Y	P
5.2.10.3	Tests:		--
	- impossible to push cable; unsafe		N
	- pull test: 25 times; pull (N).....:		N
	- torque test: torque (Nm) .....		N
	- displacement $\leq 2$ mm		N
	- no movement of conductors		N
	- no damage of cable or cord		N
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



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
	Class III luminaire plug		P
5.2.15	Colour code low voltage		N
5.2.16	Appliance inlets (IEC 60320)		N
	Appliance couplers of class II type		N
5.3	Internal wiring		--
5.3.1	Internal wiring of suitable size and type		P
	Through wiring		--
	- not delivered/ mounting instruction		P
	- factory assembled		P
	- socket outlet loaded (A) .....		N
	- temperatures .....		N
	Green-yellow for earth only		N
5.3.1.1	Internal wiring connected directly to fixed wiring		--
	Cross-sectional area (mm <sup>2</sup> ).....		N
	Insulation thickness		N
	Extra insulation added where necessary		N
5.3.1.2	Internal wiring connected to fixed wiring via internal current-limiting device		--
	Adequate cross-sectional area and insulation thickness		N
5.3.1.3	Double or reinforced insulation for class II		N
5.3.1.4	Conductors without insulation		N
5.3.1.5	SELV current-carrying parts		P
5.3.1.6	Insulation thickness other than PVC or rubber		N
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°		N
5.3.3	Openings		N
	Bushings not removable		N
	Bushings in sharp openings		N
	Cables with protective sheath		N
5.3.4	Joints and junctions effectively insulated		N
5.3.5	Strain on internal wiring		N



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
5.3.6	Wire carriers		N
5.3.7	Wire ends not tinned		N
	Wire ends tinned: no cold flow		N
18.10.1	Connecting leads (tails) are not permitted.		P
18.10.2	Switches in flexible cables or cords are not permitted.	No switches	P
18.10.3	The nominal cross-sectional area of the conductors of external cables and cords shall be not less than 1.5 mm <sup>2</sup> .		P
18.10.4	Category B luminaires (see 18.4.3.2) shall be provided with a non-detachable flexible cable or cord at least equivalent in mechanical and electrical properties to cords of the type HO5RN-F.		P
18.10.5	For Category C luminaires (see 18.4.3.3), any non-detachable flexible cable or cord provided, shall have mechanical and electrical properties at least equivalent to cords of the type HO5RN-F.		P

7	PROVISION FOR EARTHING		N
7.2.1 + 7.2.3	Accessible metal parts		N
	Metal parts in contact with supporting surface		N
	Resistance < 0,5 Ω		N
	Two self-tapping screws used		N
	Thread-forming screws		N
	Connector earthing first		N
7.2.2 + 7.2.3	Earth continuity in joints etc.		N
7.2.4	Locking of clamping means		N
	Compliance with 4.7.3		N
7.2.5	Earth terminal integral part of connector socket		N
7.2.6	Earth terminal adjacent to mains terminals		N
7.2.7	Electrolytic corrosion of the earth terminal		N
7.2.8	Material of earth terminal		N
	Contact surface bare metal		N
7.2.10	Class II luminaire for looping-in		N
7.2.11	Earthing core coloured green-yellow		N



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
8	PROTECTION AGAINST ELECTRIC SHOCK		P
8.2.1	Live parts not accessible	No access of live part in normal use	P
	Protection in any position		P
	Double-ended tungsten filament lamp		N
	Insulation lacquer not reliable	No insulation lacquer and similar materials as protection against electric shock	P
	Double-ended high pressure discharge lamp		N
8.2.2	Portable luminaire adjusted in most unfavourable position		N
8.2.3	Class II luminaire:		--
	- 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
8.2.4	Portable luminaire:		--
	- protection independent of supporting surface		N
	- terminal block completely covered		N
8.2.6	Covers reliably secured		N
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
	Discharge device mounted separately		N

9	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
9.2	Tests for ingress of dust, solid objects and moisture:		--
	- classification according to IP .....	IP68	—
	- mounting position during test .....		—
	- fixing screws tightened; torque (Nm).....		—
	- tests according to clauses .....		—



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N
	b) no talcum in dust-tight luminaire		N
	c) no trace of water on current-carrying parts or where it could become a hazard		N
	d) i) For luminaires without drain holes – no water entry		N
	d) ii) For luminaires with drain holes – no hazardous water entry		N
	e) no water in watertight luminaire		N
	f) no contact with live parts (IP 2X)		N
	f) no entry into enclosure (IP 3X and IP 4X)		N
9.3	Humidity test 48 h	R.H.:93% T:25°C	P
18.13.1	The luminaire shall be subjected to a thermal shock test as follows:		P
	The luminaire is operated in free air until stable temperatures are achieved and then immersed for 30 s in water which has a temperature of 20 °C ± 2 °C, all parts which are in contact with water in normal operation being below the water surface.	21°C	P

10	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
10.2.1	Insulation resistance test		--
	Insulation resistance (MΩ):		--
	SELV:		N
	- between current-carrying parts of different polarity .....	>1MΩ	P
	- between current-carrying parts and mounting surface .....	>1MΩ	P
	- between current-carrying parts and metal parts of the luminaire .....	>1MΩ	P
	Other than SELV:		--
	- between live parts of different polarity.....		N
	- between live parts and mounting surface .....		N
	- between live parts and enclosure.....		N





EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
	- between live parts of different polarity through action of a switch .....		N
10.2.2	Electric strength test		--
	Dummy lamp		N
	Luminaires with ignitors after 24 h test		N
	Luminaires with manual ignitors		N
	Test voltage (V):		--
	SELV:		P
	- between current-carrying parts of different polarity .....	500V, no broken	P
	- between current-carrying parts and mounting surface .....	500V, no broken	P
	- between current-carrying parts and metal parts of the luminaire .....	500V, no broken	P
	Other than SELV:		--
	- between live parts of different polarity.....		N
	- between live parts and mounting surface .....		N
	- between live parts and enclosure.....		N
	- between live parts of different polarity through action of a switch .....		N
10.3.1	Leakage current (mA).....		N

11	CREEPAGE DISTANCES AND CLEARANCES		P
	Working voltage (V) .....	12VDC	—
	Voltage form	Sinusoidal [ ✓ ] Non-sinusoidal [ ]	—
	PTI	< 600 [ ✓ ] ≥ 600 [ ]	—
	Rated pulse voltage (Kv) .....	--	—
	(1) Current-carrying parts of different polarity: cr (mm); cl (mm) .....	Cr>1.2mm Cl>0.2mm	P
	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm) .....		N
	(3) Parts becoming live due to breakdown of basic insulation and metal parts: cr (mm); cl (mm) .....		N



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
	(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) .....		N

12	ENDURANCE TEST AND THERMAL TEST		P
12.3	Endurance test:		P
	- mounting-position .....	Normal position	—
	- test temperature (°C).....	35°C	—
	- total duration (h) .....	240h	—
	- supply voltage: Un factor; calculated voltage (V) .....	12V	—
	- lamp used .....	LED	—
12.3.2	After endurance test:		--
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		P
	- marking legible	Marking still legible and shows no curling	P
	- no cracks, deformation etc.		P
12.4	Thermal test (normal operation)	(see Annex 2)	P
12.5	Thermal test (abnormal operation)	(see Annex 2)	P
12.6	Thermal test (failed lamp control gear condition):		--
12.6.1	- case of abnormal conditions .....		—
	- electronic lamp control gear		N
	- measured winding temperature (°C) at 1,1 Un ..		—
	- measured mounting surface temperature (°C) at 1,1 Un .....		N
	- calculated mounting surface temperature (°C) .:		N
	- track-mounted luminaires		N
12.6.2	Temperature sensing control		--
	- case of abnormal conditions .....		—
	- thermal link		N



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
	- manual reset cut-out		N
	- auto reset cut-out		N
	- measured mounting surface temperature (°C) :		N
	- track-mounted luminaires		N
12.7	Thermal test (failed lamp control gear in plastic luminaries):		N
	- case of abnormal conditions .....		—
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
12.7.2	Temperature sensing control		--
	- thermal link		N
	- manual reset cut-out		N
	- auto reset cut-out		N
	- measured temperature of fixing point/ exposed part (°C) .....		N
18.12.1	The temperature of the water in front of the luminaire is maintained at $t_a \pm 10$ °C.		

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

14	SCREW TERMINALS		N
	Separately approved; component list		N
	Part of the luminaire		N



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict

15	SCREWLESS TERMINALS		N
	Separately approved; component list		N

	COMMON MODIFICATIONS		N
3.3.101 + 5.2.1	For luminaries 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 luminaries 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 luminaries in premises open to public and workers		N		
	ANNEX 1: components		P		
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity

	ANNEX 2: temperature measurements, thermal tests of Section 12		P
	Type reference.....:	See page 2	—
	Lamp used.....:	LED	—
	Lamp control gear used.....:	Not used	—
	Mounting position of luminaire.....:	Normal position	—



EN 60598-2-18						
Cl.	Requirement – Test	Result			Verdict	
	Supply wattage (W) .....	35W			—	
	Supply voltage (V) .....	--			—	
	Supply current (A).....	--			—	
	Calculated power factor.....	--			—	
Table: measured temperatures corrected for ta = 25 °C:						
	- abnormal operating mode .....	--			—	
	- test 1: rated voltage .....	--			—	
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage .....	12.72V			—	
	- 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 inside			47.2		90	
Enclosure outside			38.5		90	
Power cord			39.6		90	
Ambient			25.0		--	

	ANNEX 3: screw terminals (part of the luminaire)	N
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	--
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



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
	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
18.9.1	Terminals for supply connection shall allow the connection of conductors having nominal cross-sectional areas 1,5 mm <sup>2</sup> up to and including 4,0 mm <sup>2</sup> .		

	ANNEX 4: SCREWLESS TERMINALS (PART OF THE LUMINAIRE)		N
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		N
	Voltage drop (mV) after 1 h (4 samples).....		N



EN 60598-2-18			
Cl.	Requirement – Test	Result	Verdict
	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)										





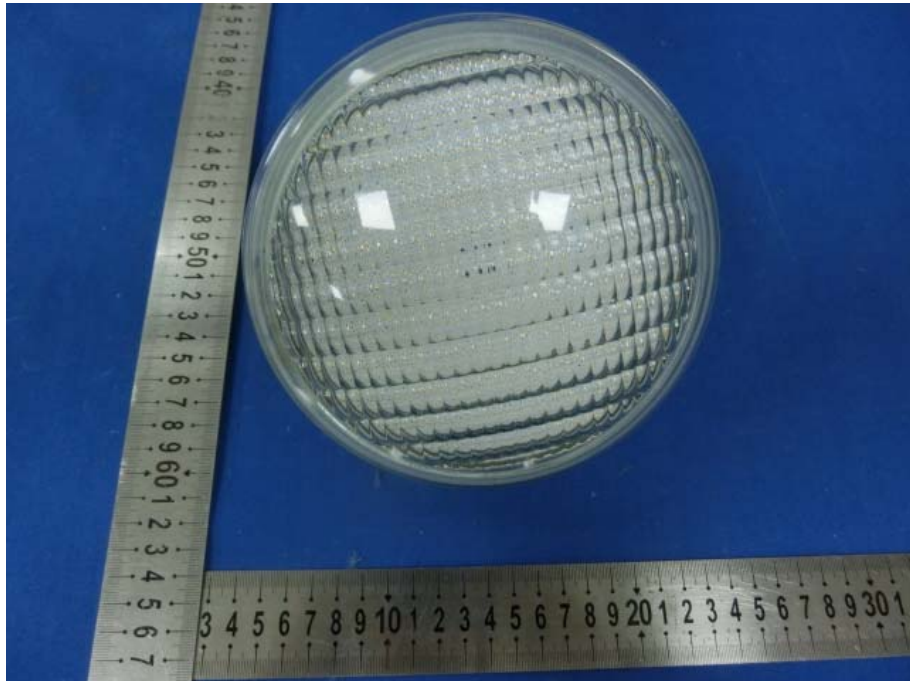
**Additional Model: (See Annex)**

HX-P56-SMD3014-252, HX-P56-SMD3014-333,  
HX-P56-SMD3014-531, HX-P56-SMD3014-630,  
HX-P56-SMD2835-252, HX-P56-SMD2835-333,  
HX-P56-SMD2835-441, HX-P56-252-TG, HX-P56-351-TG,  
HX-P56-252-E27-PC, HX-P56-333-E27-PC,  
HX-P56-441-E27-PC, HX-P56-SMD144-TG, HX-P56-H54W-TG,  
HX-P56-H18W-TG, HX-P56-H36W-TG, HX-P56-H27W-TG,  
HX-P38-129-E27-PC, HX-P25-81-E27-PC,  
HX-RF178-SMD3014-252, HX-RF178-SMD3014-333,  
HX-RF178-SMD3014-441, HX-RF178-SMD3014-531,  
HX-RF178-SMD3014-630, HX-RF178-H18W, HX-RF178-H54W



## **ANNEX A:**

### **Photo-documentation**



**Photo 1 Overview**

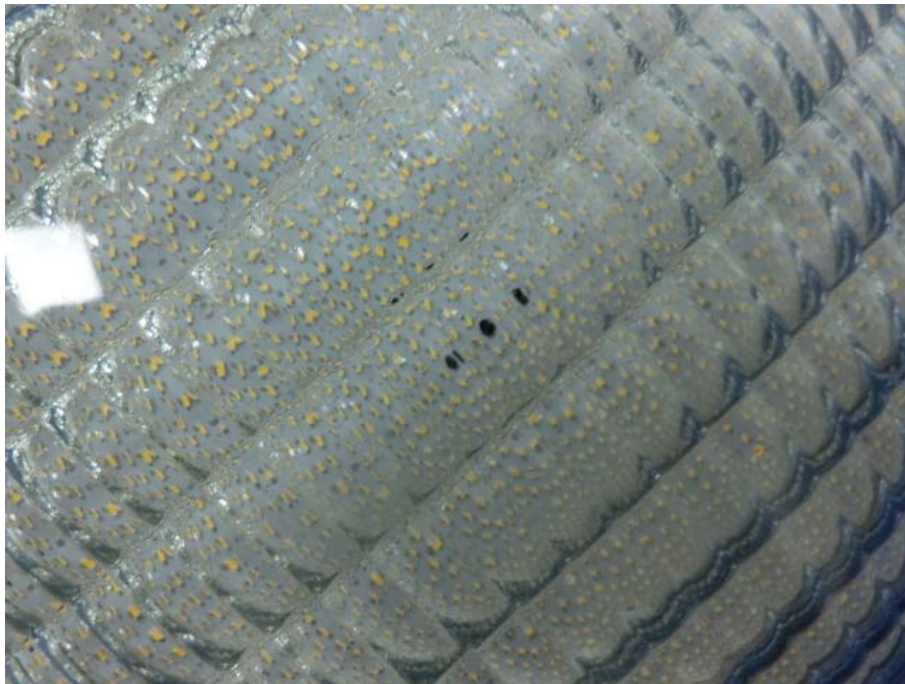


Photo 2 Overview



Photo 3 Overview



Photo 4 Overview