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Technical Report No. 704021907107-00

Rev. 00

Dated 2019-03-28

Client : Hangzhou ZGSM Technology Co., Ltd.
1188 Jinxi Rd.S., Linglong Industrial Zone 311301 Linan, Hangzhou, Zhejiang Prov. PEOPLE'S REPUBLIC OF CHINA

Manufacturing place : Same as applicant

Type of Product : LED luminaires for road and street lighting (LED street light)

Model/Type : ZGSM-LDXXXH4, ZGSM-LDXXXH5, ZGSM-LDXXXH4+, ZGSM-LDXXXH5+ (XXX can be 020-240, represents the rated power of product, e.g.020=20W)

Test methods : EN 60598-2-3:2003/A1:2011 used in conjunction with EN 60598-1:2015/A1:2018 (clause 3.13 (9.2) of IP66 test)
IEC 60598-2-3:2002/A1:2011 used in conjunction with IEC 60598-1:2014/A1:2017 (clause 3.13 (9.2) of IP66 test)
EN 60529:1991/A2:2013 and IEC 60529:1989/A2:2013 (IP66 test)
IEC/EN 62262:2002 and IEC/EN 60068-2-75:2014 (IK10 test)

Purpose of examination : IK10 test and IP66 test

Test result : The test results show that the presented product is in compliance with the specified requirements.

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1 Description of the test subject

1.1 Technical Data

Model	:	ZGSM-LDXXXH4, ZGSM-LDXXXH5, ZGSM-LDXXXH4+, ZGSM-LDXXXH5+ (XXX can be 020-240, represents the rated power of product, e.g.020=20W)
Rated Voltage	:	100-240V~
Rated Frequency (Hz)	:	50/60Hz
Rated Power	:	See model
Protection Class	:	<input checked="" type="checkbox"/> Class I; <input type="checkbox"/> Class II; <input type="checkbox"/> Class III
Degree of Protection	:	IP66
Construction	:	<input checked="" type="checkbox"/> Stationary <input type="checkbox"/> Portable <input type="checkbox"/> Hand-held <input type="checkbox"/> Open-frame <input type="checkbox"/> Non detachable cord <input type="checkbox"/> Permanent connection to fixed wiring
Supply connection	:	<input type="checkbox"/> Appliance inlet <input checked="" type="checkbox"/> Terminal <input type="checkbox"/> Rechargeable battery
Operation mode	:	<input checked="" type="checkbox"/> continuous operation; <input type="checkbox"/> Intermittent operation; <input type="checkbox"/> Short time operation;

2 Order

2.1 Date of Purchase Order, Customer's Reference

2019-01-21

2.2 Receipt of Test Sample, Location

2019-01-21, TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
No. 1999, Duhui Road, Shanghai, 201108, P. R. China

2.3 Date of Testing

2019-01-21 to 2019-03-28



2.4 Location of Testing

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

2.5 Points of Non-compliance or Exceptions of the Test Procedure

None

3 Remark

All products are LED road light for outdoor use.

All the products have similar construction, just with different LED driver and LED modules because of different wattage.

Compared with model ZGSM-LDXXXH4 series and ZGSM-LDXXXH5 series, Model ZGSM-LDXXXH4+ series and ZGSM-LDXXXH5+ series had little different of enclosure shape.

IP66 test was performed on model ZGSM-LD240H5 and ZGSM-LD240H5+.

IK10 test was performed on model ZGSM-LD240H5.

4 Test Results

4.1 Positive Test Results

The tested sample **PASS** the IK10 test and IP66 test.

Mechanical Impact Test (IK10 test):

Test Methods/Specification:

Test methods: IK09 test procedure according to IEC/EN 62262:2002 and IEC/EN 60068-2-75:2014.

Test condition: According to the client's requirement, IK10 test is for lamp cover and enclosure.

Impact energy of IK10 is shown as below:



IK code	IK00	IK01	IK02	IK03	IK04	IK05	IK06	IK07	IK08	IK09	IK10
Impact energy, J	*	0,14	0,2	0,35	0,5	0,7	1	2	5	10	20
* Not protected according to this standard.											
NOTE 1 When higher impact energy is required, the value of 50 J is recommended.											
NOTE 2 A characteristic group numeral of two figures has been chosen to avoid confusion with some national standards which used a single numeral for a specific impact energy.											

Test equipment: Vertical hammer type impact tester (IEC 60068-2-75: 2014)

Impact energy: 20J for IK10

Operating mode: Power off

Criteria after impact test

Visual inspection: Check if breakage, crack, and separation occur.

IP66 test compliance

3.13 (9)	RESISTANCE TO DUST AND MOISTURE		
3.13.1 (-)	If IP > IP 20 the order of tests as specified in clause 3.12		P
3.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP	IP66	—
	- mounting position during test	Normal position	—
	- fixing screws tightened; torque (Nm)	2/3 torque	—
	- tests according to clauses	cl 9.2.2 & cl 9.2.7	—
	- electric strength test afterwards	Live parts & earthed metal enclosure: 1480V; Live parts & mounting surface: 1480V; SELV and enclosure: 500V	P
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		P
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		P
	c.1) For luminaires without drain holes – no water entry		N/A
	c.2) For luminaires with drain holes – no hazardous water entry		P



	d) no water in watertight or pressure watertight luminaire		N/A
	e) no contact with live parts (IP 2X)		N/A
	e) no entry into enclosure (IP 3X and IP 4X)		N/A
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N/A
	f) no trace of water on part of lamp requiring protection from splashing water		N/A
	g) no damage of protective shield or glass envelope		P

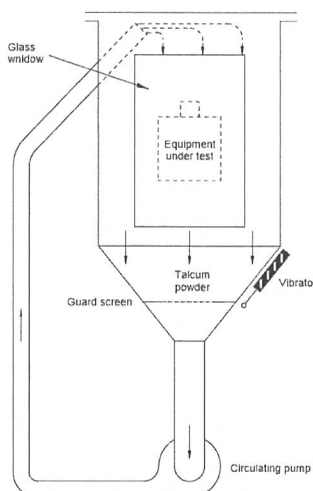
Test specification

Degree of protection	
Brief description	Definition
IP6X test	The access probe wire of 1,0 mm shall not penetrate and no ingress of dust
IPX6 test	Water projected in jets against the enclosure from any direction shall have no harmful effects

IP6X:

Test conditions:

- The luminaire is suspended outside the dust chamber and operated at rated supply voltage until operating temperature is achieved.
- The luminaire, whilst still operating, is placed with the minimum disturbance in the dust chamber.
- The door of the dust chamber is closed.
- The fan/blower causing the talcum powder to be in suspension is switched on.
- After 1 min, the luminaire is switched off and allowed to cool for 3 h whilst the talcum powder remains in suspension.

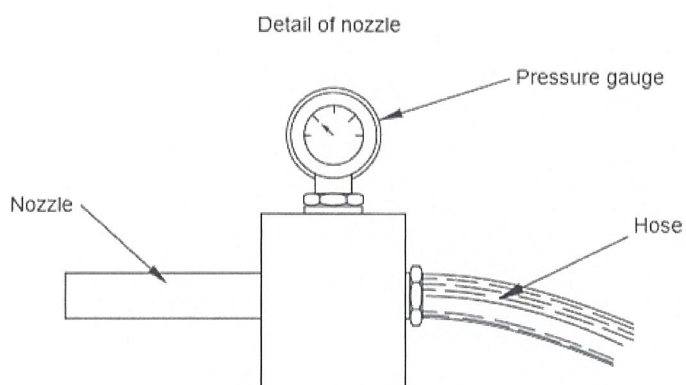


After test, there was no deposit of talcum powder inside enclosures for dust-tight luminaires.

IPX6:

Test conditions:

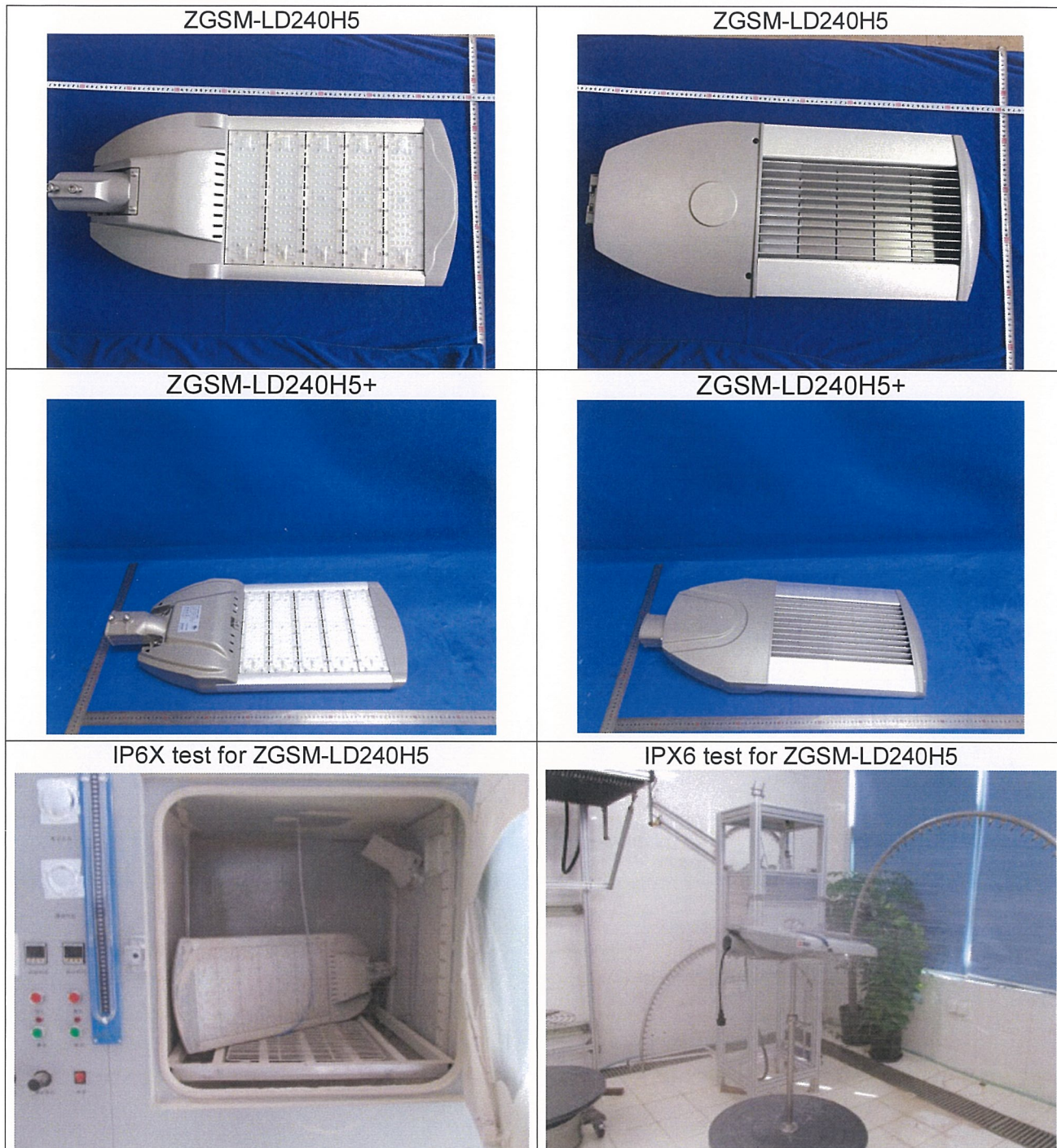
Powerful water jet-proof luminaires are switched off and immediately subjected to a water jet for 3 min from all directions by means of a hose having a nozzle with the shape and dimensions shown in below. The nozzle shall be held 3 m away from the sample. The water pressure at the nozzle shall be adjusted to achieve a water flow rate of 100 l/min \pm 5 % (approximately 100 kN/m²).

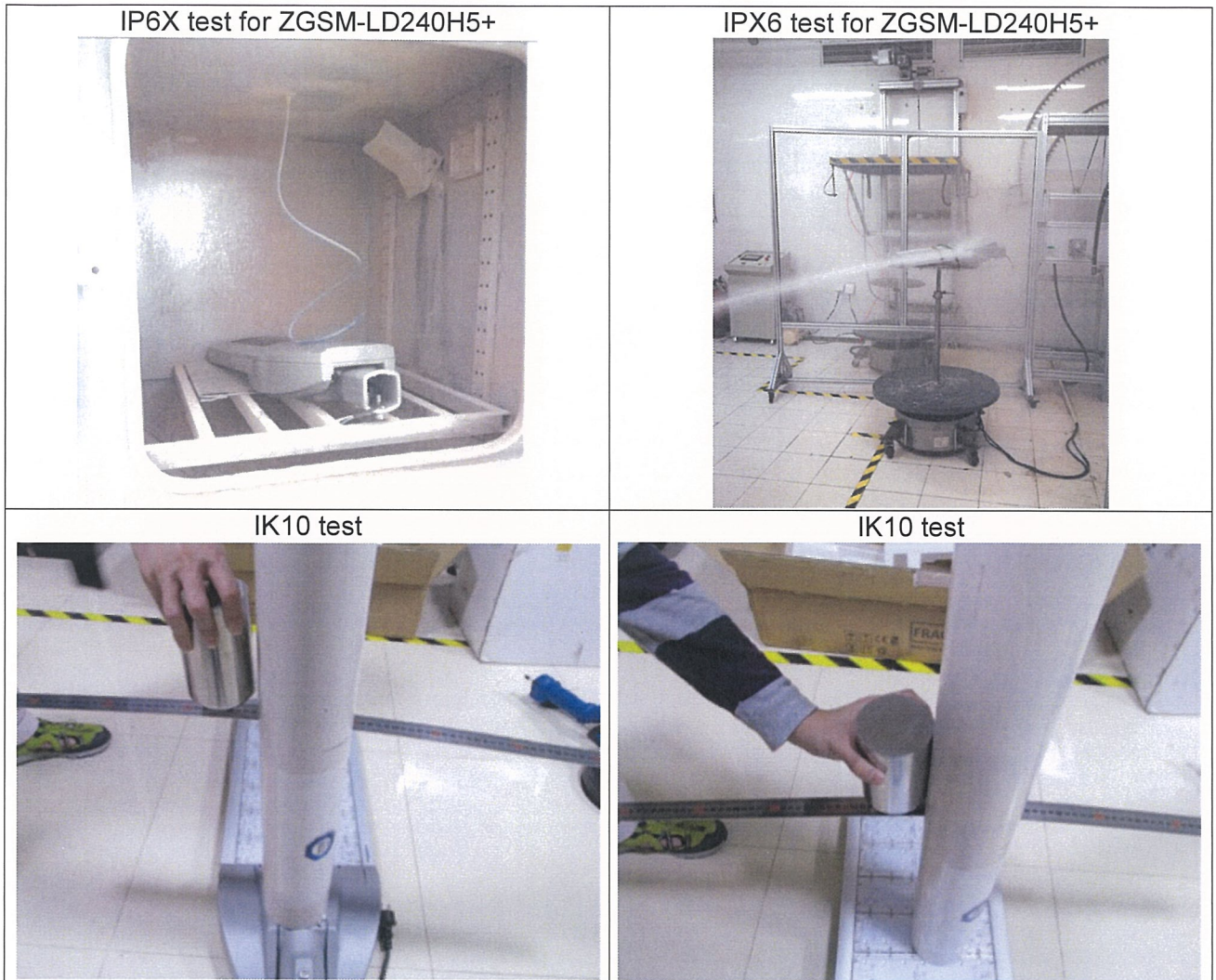


After test, there shall be no water entry.

5 Documentation

Photo documentation:





6 Summary

The test specification(s) is (are) met

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
TÜV SÜD Group

Engineer:

Limin Fan
Limin FAN

Project Handler



Technical Report checked:

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Designated Reviewer