

**TEST REPORT****IEC 60529****Degrees of protection provided by enclosures (IP Code)**

Report Reference No..... :	BTLR160615001-1
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Date of issue..... :	2016-06-19
Testing Laboratory Name	Belling testing laboratory Co., Ltd. (Shenzhen)
Address	1F, No.1 building, Meibaohe industrial park, Dalang street, Longhua district, Shenzhen, China
Testing location	Same as above
Applicant's Name	MSD LIGHTING CO.,LTD
Address	6Floor, Lixingda Industrial Park, No14 ,Zhengcheng 1 st Road ,Bao'an Fuyong ,Shenzhen, China
Manufacturer's Name	MSD LIGHTING CO.,LTD
Address	605, Bldg. 1, Modern Logistic Building, No. 448 Hongcao Road, Xuhui District, Shanghai China, 200233.
Test specification	
Standard..... :	IEC 60529:1989+AMD1:1999+AMD2:2013
Test procedure	N/A
Procedure deviation	N/A
Non-standard test method	N/A
Receive date..... :	2016-06-15
Test date..... :	2016-06-16 to 2016-06-18
Test item description	LED Tri-proof lights
Trademark	N/A
Model and/or type reference	EPSL0621-WX, EPSL1241-WX, EPSL1551-WX, TPSSL0621-WX, TPSSL1241-WX, TPSSL1261-WX, TPSSL1551-WX, TPSSL1581-WX, TPSSL0621-WY, TPSSL1241-WY, TPSSL1261-WY, TPSSL1551-WY
Rating(s)..... :	100-277Vd.c. 20W/40W/50W/60W/80W
IP code..... :	IP65



1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

MSD LIGHTING CO., LTD's product, "EUT" as referred to in this report is LED light string, test model is EP SL0621-WX, TP SL0621-WX, TP SL0621-WY

X means the rated power, it can be 5W, 8W or 16W; XX means the CCT, it can be 2700K, 3000K, 4000K, 5000K or 6000K.

1.2 Objective

The following Declaration of Conformity of a device is prepared on behalf of MSD LIGHTING CO., LTD in accordance with IEC 60529:1989+AMD1:1999+AMD2:2013, Degrees of protection provided by enclosures (IP Code). The objective of manufacturer is to demonstrate compliance with IEC

60529:1989+AMD1:1999+AMD2:2013. Currently, IEC 60529:1989+AMD1:1999+AMD2:2013 tests to be performed as follows:

- Test for protection against object probe and protection against solid foreign objects (IP6X) (Clause 12.2+12.3 and Clause 13.4+13.6);
- Test for second characteristic numeral 7: temporary immersion between 0.15 m and 1m (IPX7) (Clause 14.2.7);

Data has been collected, reduced, and analysed within this report in accordance with IEC 60529:1989+AMD1:1999+AMD2:2013. In order to demonstrate compliance, the manufacturer or a contracted laboratory makes measurements and takes the necessary steps to ensure that the equipment complies with the appropriate technical standards.

1.3 Related Submittal(s)/Grant(s)

No related submittals

1.4 Test Methodology

All measurements contained in this report were conducted with IEC 60529:1989 +AMD1:1999 +AMD2:2013, Degrees of protection provided by enclosures (IP Code).

All measurements were performed at Belling testing laboratory Co., Ltd. (Shenzhen).



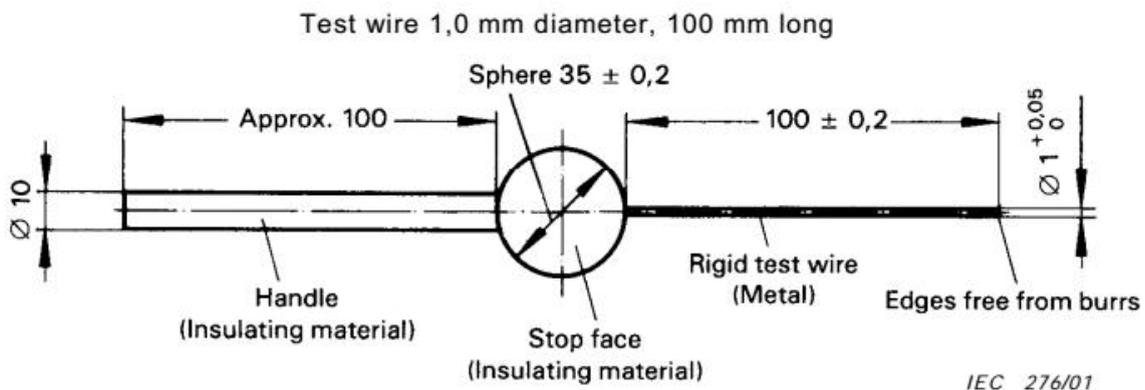
2. Test for first characteristic numerals 6 (IP6X) (Clause 12.2+12.3 and Clause 13.4+13.6)

2.1 Tests for protection against access to hazardous parts indicated by the first characteristic numeral. (Clause 12.2+12.3)

2.1.1 Method

Access probes to test the protection of persons against access to hazardous parts are given in follow figure.

- 1) The test is made using a test wire of 1.0mm diameter inserted through any openings of enclosure;
- 2) The test with the force $1 \pm 0.1\text{N}$;
- 3) For tests on low-voltage equipment, a low-voltage supply (of not less than 40 V and not more than 50 V) in series with a suitable lamp should be connected between the probe and the hazardous parts inside the enclosure. Hazardous live parts covered only with varnish or paint, or protected by oxidation or by a similar process, are covered by a metal foil electrically connected to those parts which are normally live in operation. The signal-circuit method should also be applied to the hazardous moving parts of high-voltage equipment.
- 4) Internal moving parts may be operated slowly, where this is possible.



2.1.2 Results

- (x) The access probe cannot touch hazardous live parts. (IP6X) (Clause 12.2+12.3).
Pass

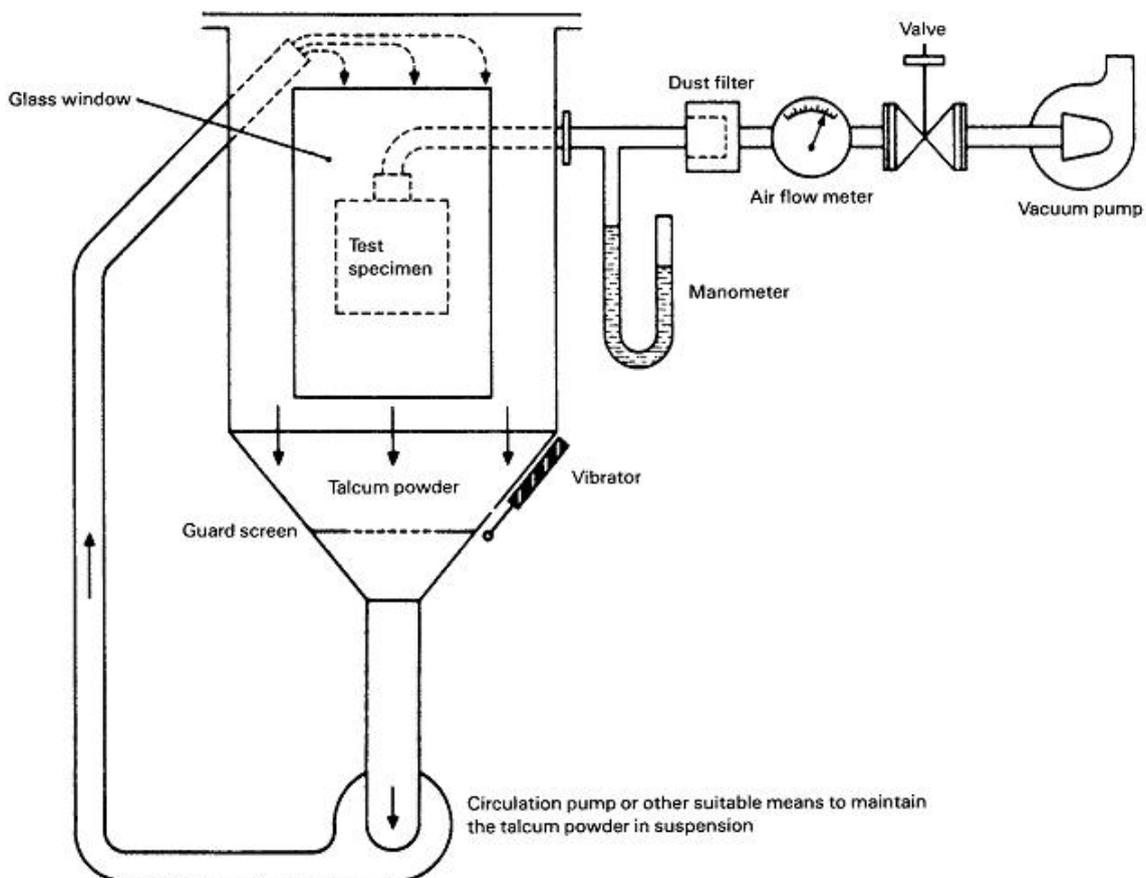


2.2 Tests for protection against solid foreign objects indicated by the first characteristic numeral. (Clause 13.4+13.6)

2.2.1 Method

The device used to verify protection against solid foreign objects like the follow figure.

- 1) The test is made using a dust chamber incorporating the basic principles shown in the following figure;
- 2) The enclosure under test is supported inside the test chamber and the pressure inside the enclosure is maintained below the surrounding atmospheric pressure by a vacuum pump. The suction connection shall be made to a hole specially provided for this test.
- 3) The extraction rate is about 40 volumes of the samples enclosure and the depression of the manometer is less than 2kPa;
- 4) The test duration is 2 hours.



IEC 280/01

2.2.2 Results

- (x) No deposit of dust is observable inside the enclosure at the end of the test. (IP6X) (Clause 13.4+13.6).
Pass



3. Tests for protection against water indicated by the second characteristic numeral (IPX7) (Clause 14.2.7)

3.1 Method

The test is made by completely immersing the enclosure in water in its service position as specified by the manufacturer so that the following conditions are satisfied:

- 1) The lowest point of enclosures with a height less than 850 mm is located 1 000 mm below the surface of the water;
- 2) The highest point of enclosures with a height equal to or greater than 850 mm is located 150 mm below the surface of the water;
- 3) The duration of the test is 30 min;
- 4) The water temperature does not differ from that of the equipment by more than 5 K.

3.1 Results

- (x) No water accumulated inside the enclosure;
- (x) The EUT complies with the requirement for protection against water characteristic numeral (IPX7) (Clause 14.2.7)
Pass