TEST REPORT

Kunde: *Client:*	Otennlux lighting technology co.,ltd
Adresse: *Address:*	301, workshop 2, No. 4, Xingda Road, Pingshan 1st Village, Shibi street, Panyu District, Guangzhou City, Guangdong Province
Hersteller: *Manufacturer:*	Otennlux lighting technology co.,ltd
Adresse: *Address:*	301, workshop 2, No. 4, Xingda Road, Pingshan 1st Village, Shibi street, Panyu District, Guangzhou City, Guangdong Province
Name der Marke: *Brand Name:*	OTENNLUX
Beschreibungdes Produkts: *Product Description:*	LED Signal light
Modelle: *Models:*	OD-401BN-RYGB
Bewertung: *Rating:*	DC24V
Verfahren: *Method:*	Clause 9 of IEC 60598-1:2020
Prüfergebnis*: *Test result*:*	Pass

Datum der Prüfung: *Date of Test:*	**Datum der Emission:** *Date of Issue:*	**Klassifizierung:** *Classification:*	**Gegenstand der Prüfung:** *Test item:*
2022/9/23	2022/9/23	Commission Test	IP54 Test

Prüflabor (Testlabor) / Testing Laboratory:
Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

Test von/Test by:	**Check von/**Check by:	**Genehmigt von/**Approved by:
Rebecca Qin	Torres He	Jesse
Rebecca Qin/ Project Engineer	Torres He/ Director	Jesse Liu/ Manager

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Modified Information

Version	Report No.	Revision Date	Summary
V1.0	LCSB092222009S	/	Original Version

Equipment used during test:

ID Number	Instrument	Model/ Type	Calibration Date
SLCS-S-031	Sand and dust test box	SG-500	2022/5/10
SLCS-S-033	Spatter/rush showering equipment	BL	2022/5/10
SLCS-S-135	Digital hygrometer thermometer	HTC-1	2022/5/10
SLCS-S-072	Torque Driver	26RTD	2022/5/10
SLCS-S-073	Hi-pot tester	AN9602M	2022/5/10
SLCS-S-062	Frequency Converter	AN97020TS	2022/5/10
SLCS-S-059	Digital Power Meter	PF9800	2022/5/10

Test Item:

Tests for protection against dust-proof: IP5X

Test Method:

The tests should be carried out under the standard atmospheric condition.

Temperature range: 15°C to 35°C.

Dust-proof luminaires (first characteristic IP numeral 5) shall be tested in a dust chamber similar to that shown in Figure 2, in which talcum powder is maintained in suspension by an air current.

The chamber shall contain 2 kg of powder for every cubic metre of its volume. The talcum powder used shall be able to pass through a square-meshed sieve whose nominal wire diameter is 50 μm and whose nominal free distance between wires is 75 μm. It shall not have been used for more than 20 tests.

The test shall proceed as follows.

a) The luminaire is suspended outside the dust chamber and operated at rated supply voltage until operating temperature is achieved.

b) The luminaire, whilst still operating, is placed with the minimum disturbance in the dust chamber.

c) The door of the dust chamber is closed.

d) 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.

NOTE: The 1 min interval between switching on the fan/blower and switching off the luminaire is to ensure that the talcum powder is properly in suspension around the luminaire during initial cooling, which is most important with smaller luminaires. The luminaire is operated initially as in item a) to ensure the test chamber is not overheated.

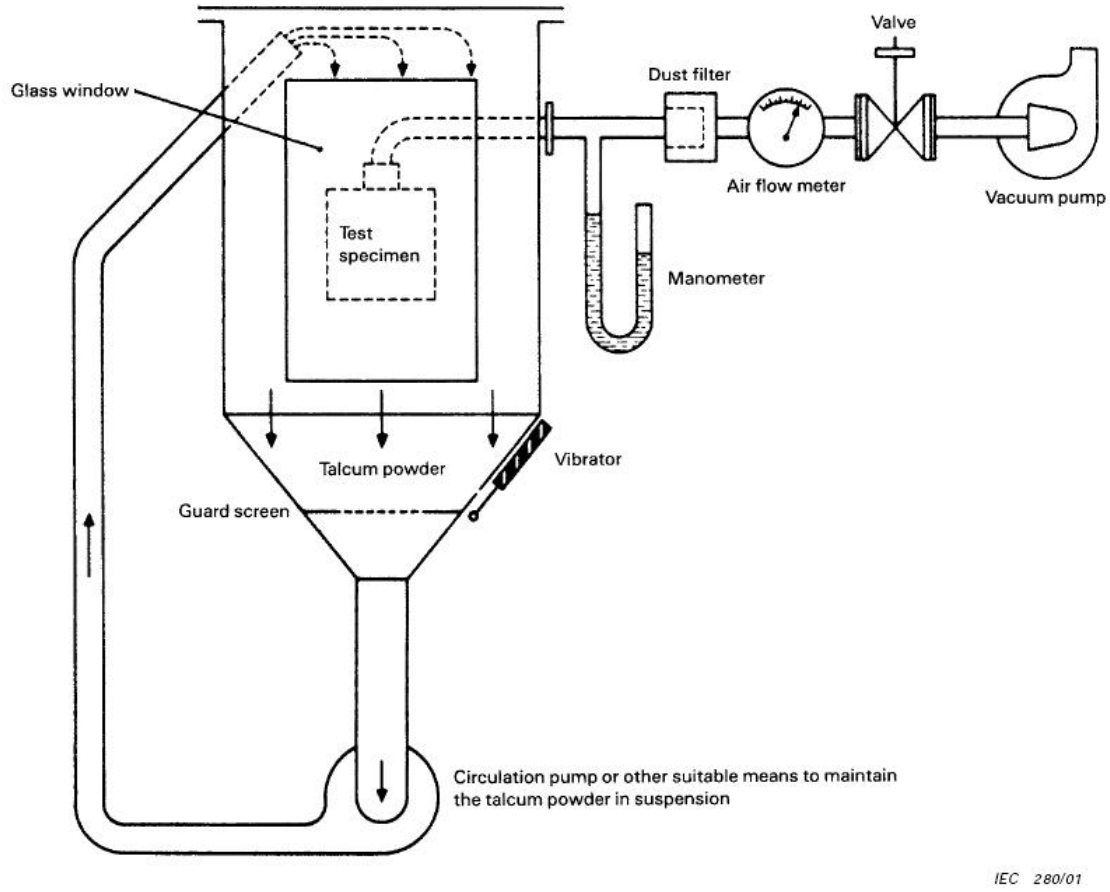
Acceptance Conditions:

After completion of the tests, the luminaire shall withstand the electric strength test specified in Section 10, and inspection shall show:

No deposit of talcum powder inside enclosures for dust-tight luminaires.

Test Result:

☒ **Pass** ☐ **Fail**



NOTE See IEC 60068-2-68, figure 2 valid for La2 only.

Figure 2 – Test device to verify protection against dust (dust chamber)

Test Item:

Tests for protection against ingress moisture: IPX4

Test Method:

The tests should be carried out under the standard atmospheric condition.

Temperature range: 15°C to 35°C.

Splash-proof luminaires (second characteristic IP numeral 4) are sprayed from every direction with water for 10 min by means of the spray apparatus shown in Figure 7 and described in 9.2.4.

The luminaire shall be mounted under the pivot line of the tube so that the ends of the luminaire receive adequate coverage from the jets.

The tube shall be caused to oscillate through an angle of almost 360°, 180° on either side of the vertical, the t for one complete oscillation (2 × 360°) being about 12 s. The luminaire shall be turned about its vertical a during the test at a rate of 1 r/min.

The support for the equipment under test shall be grid shaped in order to avoid acting as a baffle.

After this 10 min period, the luminaire shall be switched off and allowed to cool naturally whilst the water spray is continued for a further 10 min.

Before the tests for the second characteristic numeral, with the exception of IPX8, the luminaire complete with lamp(s) shall be switched on and brought to a stable operating temperature at rated voltage.

The water for the tests shall be at a temperature of 15 °C ± 10 °C.

Luminaires shall be mounted and wired as in normal use and placed in the most unfavourable position, complete with their protective translucent covers, if any, for the tests of IP.

Where connection is made by a plug or a similar device, then this shall be regarded as part of the complete luminaire and shall be included in the tests and similarly for any separate controlgear.

For tests of IP, fixed luminaire intended for mounting with its body in contact with a surface shall be tested with an expanded metal spacer interposed between the luminaire and the mounting surface. The spacer shall be at least equal in overall size to the projection of the luminaire, and have dimensions as follows:

Longway of mesh	10 mm	to	20 mm
Shortway of mesh	4 mm	to	7 mm
Strand width	1,5 mm	to	2 mm
Strand thickness	0,3 mm	to	0,5 mm
Overall thickness	1,8 mm	to	3 mm

Luminaires having provision for draining water by means of drain holes shall be mounted with the lowest drain hole open unless otherwise specified in the manufacturer's installation instructions.

If the installation instructions indicate that a luminaire is for ceiling or under-canopy mounting, the luminaire shall be attached to the underside of a flat board or plate which extends 10 mm beyond that part of the luminaire perimeter in contact with the mounting surface.

For recessed luminaires, the parts in the recess and the parts protruding from the recess shall each be tested according to their IP classification as indicated in the manufacturer's mounting instructions. A box encapsulating th part in the recess may be necessary for the test of IP.

Note: Portable luminaires, wired as in normal use, shall be placed in the most unfavourable position of normal use.

Glands, if any, shall be tightened with a torque equal to two-thirds of that applied to glands in the test of 4.12.5.

Fixing screws of covers, other than hand-operated fixing screws of glass covers, shall be tightened with a torque equal to two-thirds of that specified in Table 4.1.

Screwed lids shall be tightened with a torque having a value in newton metres numerically equal to one-tenth of the nominal diameter of the screw thread in millimetres. Screws fixing other caps shall be tightened with a torque equal to two-thirds of that specified in Table 4.1.

Acceptance Conditions:

After completion of the tests, the luminaire shall withstand the electric strength test specified in Section 10, and inspection shall show:

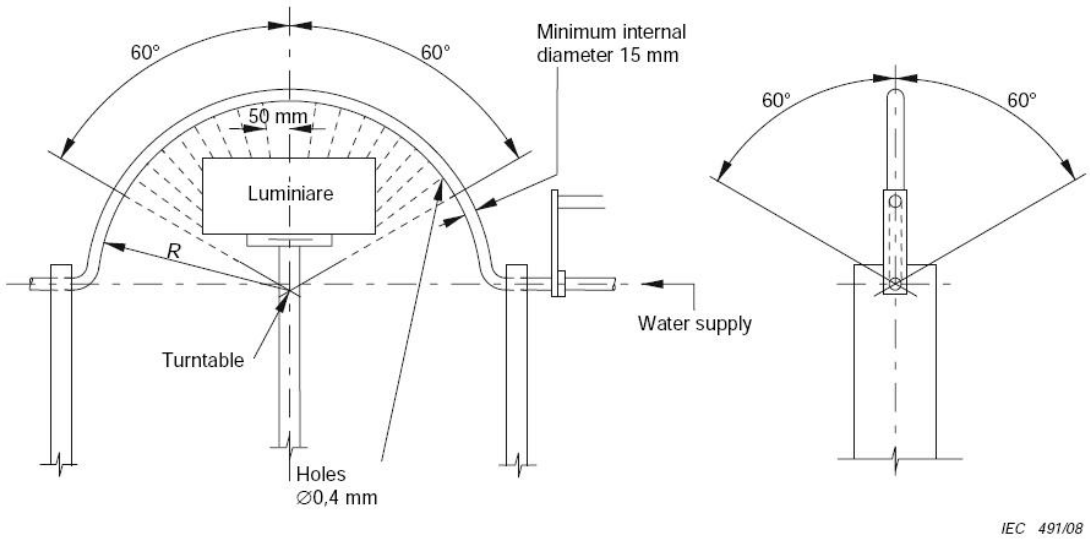
no trace of water on electrical connections, current carrying parts or on insulation where it could become a hazard for the user or surroundings, for example where it could reduce the creepage distances below the values specified in Section 11; the only exception to this is for SELV conductors where the voltage under load does not exceed 12 V r.m.s. or 30 V ripple free d.c. and the conductors are protected from corrosion.

For luminaires without drain holes, there shall be no water entry.

For luminaires with drain holes, water entry including condensation is allowed during the tests if it can drain out effectively and provided it does not reduce the creepage and clearance distances below the minimum levels specified in the standard.

Test Result:

☒ Pass ☐ Fail



	Luminaire protection	
	rainproof	splash-proof
Oscillation half-angle	±60°	±180°
Holes within half-angle	±60°	±90°

Figure 7 – Apparatus for testing protection against rain and splashing

Table 4.1 – Torque tests on screws

Nominal outer thread diameter of screw mm	Torque Nm		
	1	2	3
Up to and including 2,8	0,20	0,40	0,40
Over 2,8 up to and including 3,0	0,25	0,50	0,50
Over 3,0 up to and including 3,2	0,30	0,60	0,50
Over 3,2 up to and including 3,6	0,40	0,80	0,60
Over 3,6 up to and including 4,1	0,70	1,20	0,60
Over 4,1 up to and including 4,7	0,80	1,80	0,90
Over 4,7 up to and including 5,3	0,80	2,00	1,00
Over 5,3 up to and including 6,0	–	2,50	1,25
Over 6,0 up to and including 8,0	–	8,00	4,00
Over 8,0 up to and including 10,0	–	17,00	8,50
Over 10,0 up to and including 12,0	–	29,00	14,50
Over 12,0 up to and including 14,0	–	48,00	24,00
Over 14,0 up to and including 16,0	–	114,00	57,00

Table 4.2 – Torque tests on glands

Diameter of test rod mm	Moment	
	Metal glands Nm	Moulded plastic glands Nm
Up to 7	6,25	2,5
Over 7 up to 14	6,25	3,25
Over 14 up to 20	7,50	5
Over 20	10	7,50

Withstand the electric strength after IP5X test:		
Test Location	Test Voltage	Broken or Flashover
Live parts and accessible parts	500V	☐Yes ■No
Withstand the electric strength after IPX4 test:		
Live parts and accessible parts	500V	☐Yes ■No

Photo Documentation:

Photo 1: Overall view of model OD-401BN-RYGB

Photo 2: Overall view of model OD-401BN-RYGB

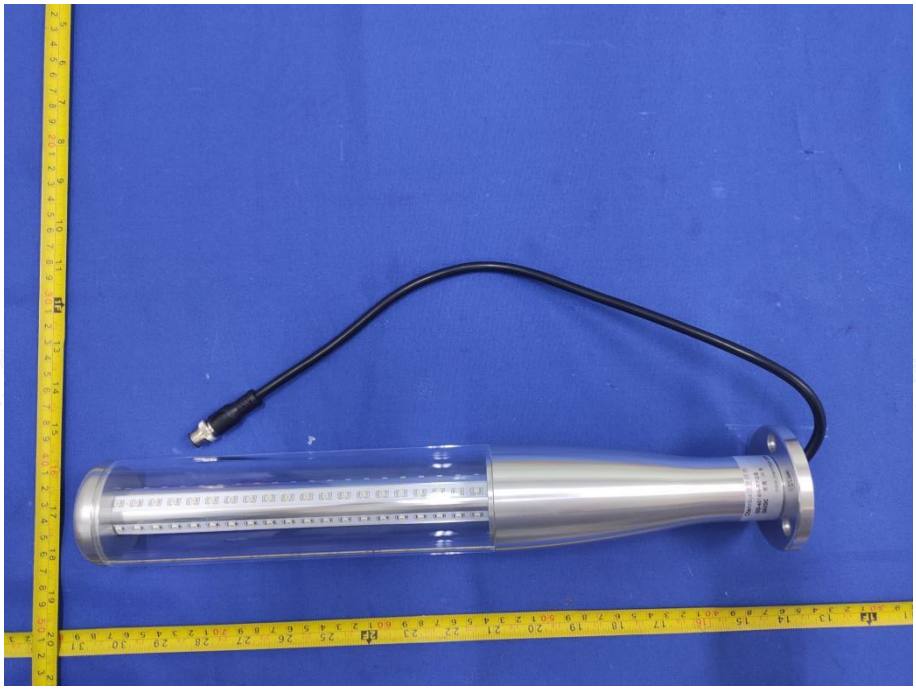


Photo Documentation:

Photo 3: IP5X test of model OD-401BN-RYGB

Photo 4: IPX4 test of model OD-401BN-RYGB

Photo Documentation:

Photo 5: Test result of IP5X and IPX4 test

Photo 6: Test result of IP5X and IPX4 test

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