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Degree of protection against dust, moisture or solid objects, according the IP65 and IP66 test requirements on Blackbird Series Luminaires

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1 INTRODUCTION

On request of SIA VIZULO, Riga, Latvia, several IP tests were conducted on the representative models of the Blackbird series luminaires. The requirements as well as the method of testing and test equipment of IP65 and IP66 test are described in EN 60598-1:2021 and as detailed on the following pages

The IP66 test was conducted on model BBL 085 757 L05 BE036 CS DH2 (class II version), which is representative for entire Blackbird series, except the tool-less and the Mushroom series. Before the IP66 test was conducted the product was subjected to an endurance test. Details about the endurance test can be found in examination report no. 2250310.54.

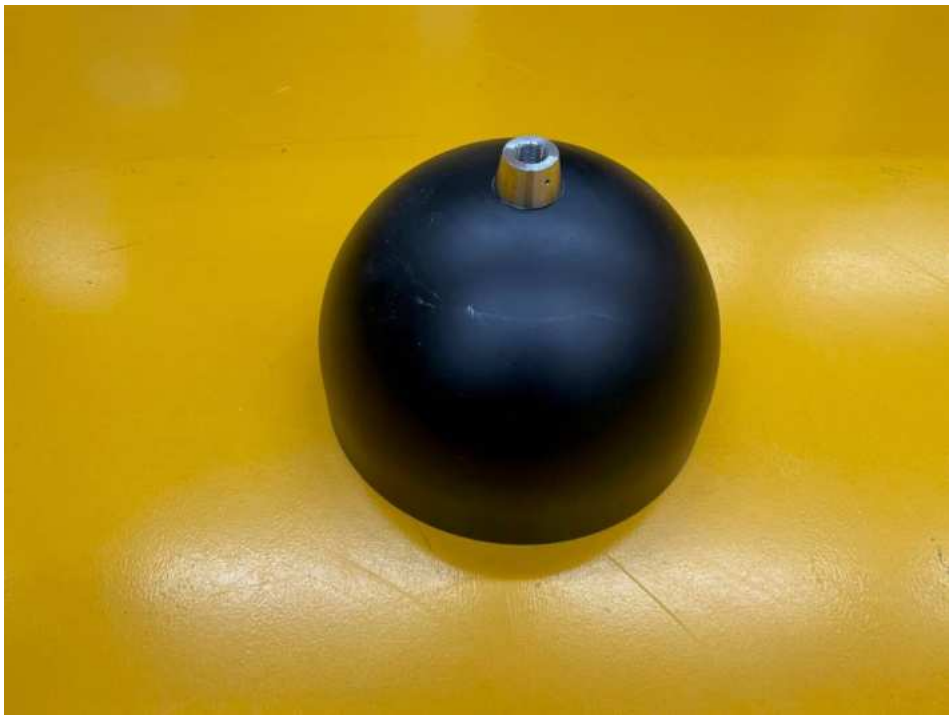
The IP65 test was conducted on model BBAT 085 730 L01 AB048 CB NG1 (class I version) which is representative for entire Blackbird tool-less series. Before the IP65 test was conducted the product was subjected to an endurance test. Details about the endurance test can be found in examination report no. 2272821.50.

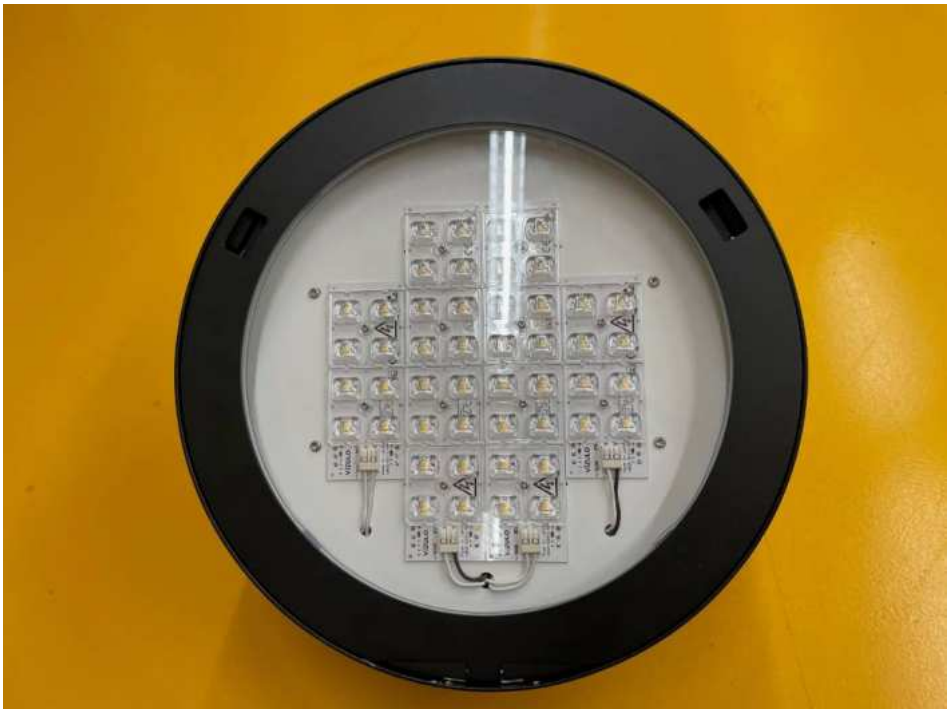
The IP65 test was conducted on model BBM 100 757 V05 BH064 CS DH1 (class I version) which is representative for entire Blackbird Mushroom series. Before the IP65 test was conducted the product was subjected to an endurance test. Details about the endurance test can be found in examination report no. 2250310.54.

2 TESTED PRODUCT AND TEST DESCRIPTION

Product overview

Figs. 1 and 2 – Front side and top side of Blackbird mushroom mounted, model BBM 100 757 V05 BH064 CS DH1(IP65)





Figs. 3 and 4 – Front side and bottom side of Blackbird toolless, model BBAT 085 730 L01 AB048 CB NG1 (IP66)

Figs. 5 and 6 – Top side and front side of model BBL 085 757 L05 BE036 CS DH2 (IP66)

Figure 7 & 8 - Top and bottom side of tool-less decorative luminaire model

IP65 and IP66 denotes

- IP6X = Dust-tight.
- IPX5 = Jet-proof
- IPX6 = Powerful water Jet-proof.

Preparation and tests:

Before the below tests were conducted the luminaire was subjected to an endurance test as described in section 12 of EN 60598-1. Refer to examination report 2250310.54 and 2272821.50 for further details.

In case the product holds screws in parts which are to be operated by the user (e.g. for lamp replacement, supply connection, etc), these were tightened with a torque of 2/3 of full torque; unless the manual states otherwise.

IP6X:

The luminaire was mounted as in normal use and connected to the supply for at least two hours to heat up.

After that, the luminaire was placed in the dust cabinet and during the first minute of circulation of the dust the product was still connected to the supply. Then the product was disconnected from the supply and subjected to circulating dust for total duration of 3 hours.

IPX5:

Directly after the IP6X test the luminaire was cleaned (most of dust was removed from the luminaire) and connected to the supply for at least 2 hours to heat up.

After that, the luminaire was disconnected from the supply and immediately sprayed with a jet-proof set to 12,5 l/min. for fifteen minutes with the appropriate nozzle. After the test, the luminaire was carefully dried and opened of visual check. Before it was opened a dielectric voltage-withstand test was conducted at 1000 V + 2xUin (Uin = maximum input voltage or maximum output voltage of the LED driver, whichever is higher).

IPX6:

Directly after the IP6X test the luminaire was cleaned (most of dust was removed from the luminaire) and connected to the supply for at least 2 hours to heat up.

After that, the luminaire was disconnected from the supply and immediately sprayed with a powerful jet-proof set to 100 l/min. for three minutes with the appropriate nozzle. After the test, the luminaire was carefully dried and opened of visual check. Before it was opened a dielectric voltage-withstand test was conducted at 2000 V + 4xUin (Uin = maximum input voltage or maximum output voltage of the LED driver, whichever is higher).

Pass criteria:

For IP6X:
No entry of dust allowed into the luminaire enclosure, connection compartment, light source compartment, etc.

For IPX5:
No entry of water allowed in the luminaire enclosure, connection compartment, light source compartment, etc. that is in contact with live parts or components or where it can accumulate and cause a dangerous situation over time.

For IPX6:
No entry of water allowed in the luminaire enclosure, connection compartment, light source compartment, etc. that is in contact with live parts or components or where it can accumulate and cause a dangerous situation over time.

No flash-over or breakdown shall occur during the dielectric voltage-withstand test at 1000 V + 2xUin for class I luminaire and 2000 V + 4xUin for class II luminaire (Uin = maximum input voltage or maximum output voltage of the LED driver, whichever is higher)

3 RESULTS/CONCLUSION

After the test there was no dust or water found in the luminaire housing, connection compartment, light source compartment, etc.

No flash-over or breakdown occur during the dielectric voltage-withstand test.

The product passed the test and complies with the specified requirements for IP65 or IP66.

Test conducted by:

A. Pomp

Reviewed by:

L.N.H. Huynh

END OF EXAMINATION REPORT