

MUTLUSAN PLASTİK ELEKTRİK SAN. VE TİC. A.Ş TEST REPORT

SCOPE OF WORK

Testing of two models of luminaires IP65 to classify the degree of protection provided

REPORT NUMBER

202100890TUR-001

ISSUE DATE

23.12.2021

PAGES

24

PROJECT NUMBER

IST21Q.1028.00

NAME OF TESTING LABORATORY PREPARING THE REPORT

INTERTEK TEST HİZMETLERİ A.S. ELECTRIC LABORATORY



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AB-0823-T
202100890TUR-001
12-21

TEST RAPORU /TESTING REPORT

Proje No: /Project Number	IST21Q.1028.00
Tarih: /Date	23.12.2021
Hizmet: /Service	IP 65
Ürün: /Product	Model LEDLIGHT-2 (016 038 70X200, 016 038 70X211) Model LEDLIGHT-4 (016 038 70X400, 016 038 70X411)
Ürün Tanımı: /Product Description	Luminaire
Firma İsmi: /Company Name	Mutlusan Plastik Elektrik San. Ve Tic. A.Ş.
Firma Adresi: /Company Address	İkitelli O.S.B. mahallesi Enkoop caddesi No:7 Başakşehir/Istanbul/Turkey
Kontak Kişi & Pozisyonu: /Contact & Position	Nihat BALCI

Deney laboratuvarı olarak faaliyet gösteren Intertek Test Hizmetleri A.Ş. TÜRKAK'tan AB-0823-T ile yukarıda belirtilen standartlara göre akredite edilmiştir.

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The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

Aksi talep edilmediği sürece Intertek Türkiye Elektrik Laboratuvarı Paylaşılan Risk Karar Kuralını (Basit Kabul Kuralı) uygulamaktadır.

The Intertek Turkey Electrical Laboratory applies the Shared Risk Decision Rule(Simple Acceptance Rule) unless otherwise requested.Sonuçlar, yaklaşık %95'lik bir güven düzeyi veren 2 kapsama faktörü (k=2) kullanılarak hesaplanan genişletilmiş bir belirsizlikle rapor edilir.

The results are reported with an expanded uncertainty calculated using a coverage factor k=2, which gives a level of confidence of approximately 95%.

İmzasız raporlar geçersizdir. Bu rapor laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz, üçüncü şahıslarla paylaşılabilir ve reklam aracı olarak kullanılamaz.

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Numune müşteri tarafından sağlanmıştır ve raporda verilen ölçüm sonuçları sadece test edilen numune için geçerlidir.

Sample has been provided by the customer and measurement results are only valid for the appliance which are tested.

Bu test raporunda (*) ile işaretlenen testler , bu laboratuvarın TÜRKAK akreditasyon kapsamında yer almamaktadır.

Tests marked with () in this test report are not within the scope of TÜRKAK accreditation of this laboratory.*

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BÖLÜM 1

/SECTION 1

BAŞVURU SAHİBİ TARAFINDAN SAĞLANAN MÜHENDİSLİK NUMUNELERİNE İLİŞKİN BİLGİLER:

/INFORMATIONS FOR ENGINEERING SAMPLES PROVIDED BY APPLICANT

Numune /Sample	Alınan Numune /Sample Received	Seri # /Serial #	Tarih /Date
Model LEDLIGHT-2 016 038 70X200	S21.1384	8 699430 480449	17.12.2021
Model LEDLIGHT-2 016 038 70X211	S21.1385	8 699430 480449	17.12.2021
Model LEDLIGHT-4 016 038 70X400	S21.1386	8 699430 480487	17.12.2021
Model LEDLIGHT-4 016 038 70X411	S21.1388	8 699430 480487	17.12.2021

Standartlar

/Standards

1- IEC/EN 60598-1

İŞARETLEME ETİKETLERİ:

/MARKING PLATES

İşaretleme Etiketleri

/Marking Plates



Model LEDLIGHT – 2



Model LEDLIGHT – 4

BÖLÜM 2 /SECTION 2

TEST METODU VE YAPILIŞ: /TEST METHOD AND APPLICATION

IEC/EN 60598-1

2.3 Classification according to degree of protection against ingress of dust, solid objects and moisture

Luminaires shall be classified in accordance with the "IP number" system of classification described in IEC 60529.

Tests for the degrees of protection are given in Section 9.

NOTE Luminaires classified as watertight are not necessarily suitable for operation under water. Pressure watertight luminaires can be used for such applications.

9.2.0 Tests

9.2.1 Dust-proof luminaires (first characteristic IP numeral 5) shall be tested in a dust chamber similar to that shown in Figure 6, 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 50µm and whose nominal free distance between wires is 75µm. It shall not have been used for more than 20 tests.

The test shall proceed as follows.

- The luminaire is suspended outside the dust chamber and operated at rated supply voltage until the 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.

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.

9.2.2 Dust-tight luminaires (first characteristic IP numeral 6) are tested in accordance with 9.2.1.

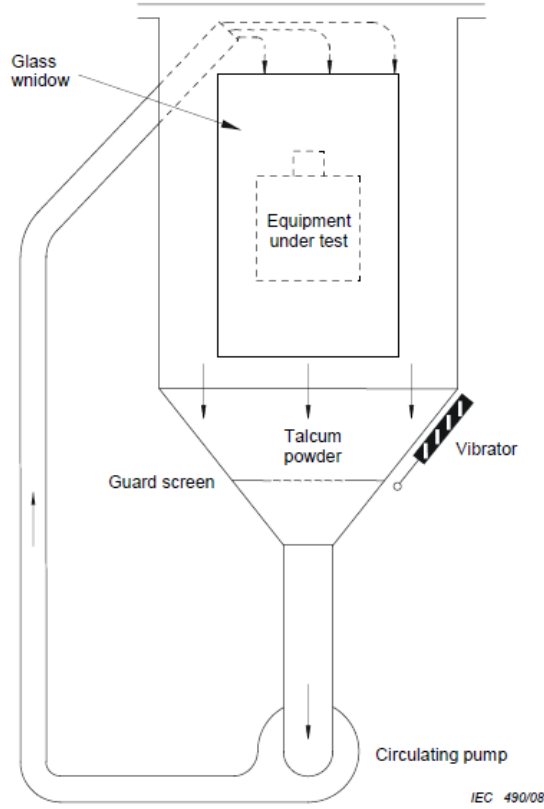


Figure 6 – Apparatus for proving protection against dust

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Table J.1 – Degrees of protection indicated by the first characteristic numeral

First characteristic numeral	Degree of protection	
	Short description	Brief details of objects which will be "excluded" from the enclosure
0	Non-protected	No special protection.
1	Protected against solid objects greater than 50 mm	A large surface of the body, such as a hand (but no protection against deliberate access). Solid objects exceeding 50 mm in diameter.
2	Protected against solid objects greater than 12 mm	Fingers or similar objects not exceeding 80 mm in length. Solid objects exceeding 12 mm in diameter.
3	Protected against solid objects greater than 2,5 mm	Tools, wires, etc., of diameter or thickness greater than 2,5 mm. Solid objects exceeding 2,5 mm in diameter.
4	Protected against solid objects greater than 1,0 mm	Wires or strips of thickness greater than 1,0 mm. Solid objects exceeding 1,0 mm in diameter.
5	Dust-protected	Ingress of dust is not totally prevented but dust does not enter in sufficient quantity to interfere with satisfactory operation of the equipment.
6	Dust-tight	No ingress of dust.

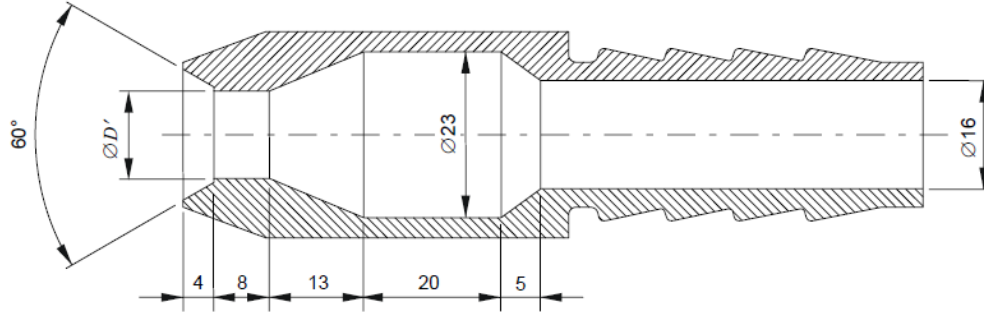
9.2.3 Drip-proof luminaires

9.2.6 Jet-proof luminaires (second characteristic IP numeral 5) are switched off and immediately subjected to a water jet for 15 min from all directions by means of a hose having a nozzle with the shape and dimensions shown in Figure 8. The nozzle shall be held 3 m away from the sample.

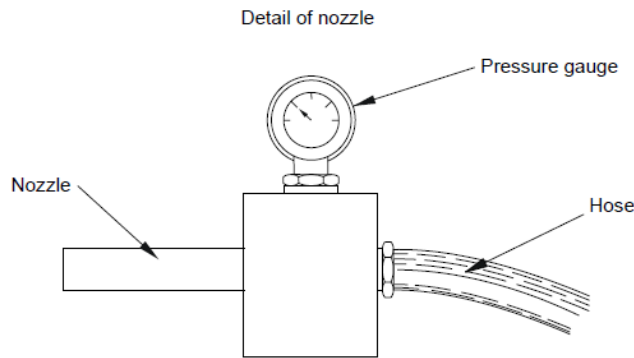
The water pressure at the nozzle shall be adjusted to achieve a water flow rate of 12,5 l/min with a tolerance of $\pm 5\%$ (approximately 30kN/m²).



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$D' = 6,3$ mm for the test of 9.2.6 (second characteristic numeral 5)
 $D' = 12,5$ mm for the test of 9.2.7 (second characteristic numeral 6)



IEC 492/08

Dimensions in millimetres

Figure 8 – Nozzle for spray test

10.2.2 Test – Electric strength

No flashover or breakdown shall occur during the electric strength test.

When carrying out the electric strength test on luminaires containing electronic controlgear, rated lamp circuit voltages greater than the luminaire supply voltage rating may be present. This is indicated by the rating U_{out} marked on the lamp controlgear. In these instances, the test voltage applied to parts of the lamp circuit shall be calculated from the U_{out} rating marked on the lamp controlgear instead of U where U is the working voltage.

Insulation of parts	Test voltage V		
	Class I luminaires	Class II luminaires	Class III luminaires
luminaire			
Between live parts which can become of different polarity through action of a switch	b ***	b ***	-
Between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts	b	c	-
Insulating bushings as described in Section 5	b	c	-
a Basic insulation for voltages of SELV/PELV	500		
b Basic insulation for voltages other than SELV/PELV	2U ** + 1 000		
c Supplementary insulation	2U ** + 1 000		
d Double or reinforced insulation	4U ** + 2 000		

Table 10.2 – Electric strength

No flashover or breakdown shall occur during the test.

BÖLÜM 3

/SECTION 3

TEST SONUÇLARI:

/TEST RESULTS

Madde /Clause	Tanım /Description	Ortam Şartları /Ambient Conditions	Sonuç /Result
S21.1385 (Model LEDLIGHT-2)			
9.2.2.	After the IP6X test, there was no dust ingress	24°C / %50Rh	P
S21.1386 (Model LEDLIGHT-4)			
9.2.2.	After the IP6X test, there was no dust ingress	24°C / %50Rh	P
S21.1384 (Model LEDLIGHT-2)			
9.2.6.	After IPX5 test no water residue appears inside	24°C / %50Rh	P
10.2.2.	During the test occurred no flashover or breakdown (1480 V)	24°C / %50Rh	P
S21.1388 (Model LEDLIGHT-4)			
9.2.6.	After IPX5 test no water residue appears inside	24°C / %50Rh	P
10.2.2.	During the test occurred no flashover or breakdown (1480 V)	24°C / %50Rh	P
P: Uygun / Conformed F: Uygunsuzluk / Non-Conformity N/A: Uygulanabilir değil / Not Applicable			

Testi Gerçekleştiren:

/Completed by

Buse Nur KAÇAR

Ünvan:

/Title

Project Engineer

İmza:

/Signature

Buse K.

Tarih:

/Date

23.12.2021

Onaylayan:

/Reviewed by

Yusuf İdris MERAL

Ünvan:

/Title

Senior Project Engineer

İmza:

/Signature

Tarih:

/Date

23.12.2021

BÖLÜM 4

/SECTION 4

TEST EKİPMANLARI:

/TEST EQUIPMENT

Ekipman Adı /Equipment Name	Üretici /Manufacturer	Ekipman # /ID #	Kalibrasyon Tarihi /Calibration Date	Sonraki Kal. Tarihi /Next Cal. Date
Chronometer	Casio HS-80TW	EN 113	01.2020	01.2022
Jet Test Set	Testing Europe T1 45	EN 049	10.2019	10.2022
Dust Cabinet	Öz Makina	EN 242	01.2020	01.2023
Electrical Safety Tester	Chroma 19032-P	EN 022	06.2021	06.2022



BÖLÜM 5 /SECTION 5

FOTO DOKÜMANTASYON: /PHOTO DOCUMENTATION



Photo 1. General view of the model LEDLIGHT-4



Photo 2. General view of the product



Photo 3. Supply cord of the product

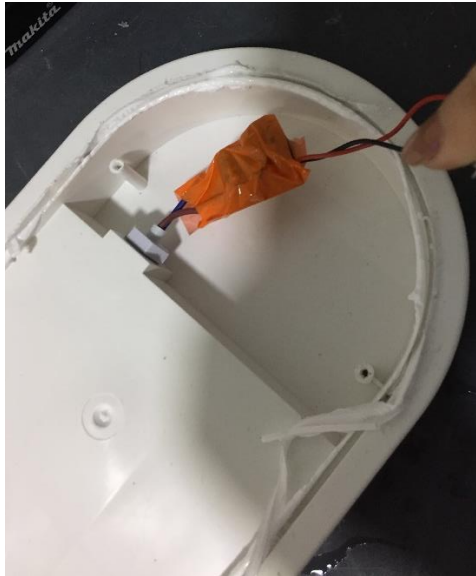


Photo 4. Inside of the product



Photo 5. Test condition for IP6X



Photo 6. General view of after the IP 6X test



Photo 7. Inside of view after the IP 6X test



Photo 8. Internal wiring of the product



Photo 8. Inside of view after the IP 6X test



Photo 9. General view of the model LEDLIGHT-2



Photo 9. General view of the product



Photo 10. Side view of the product

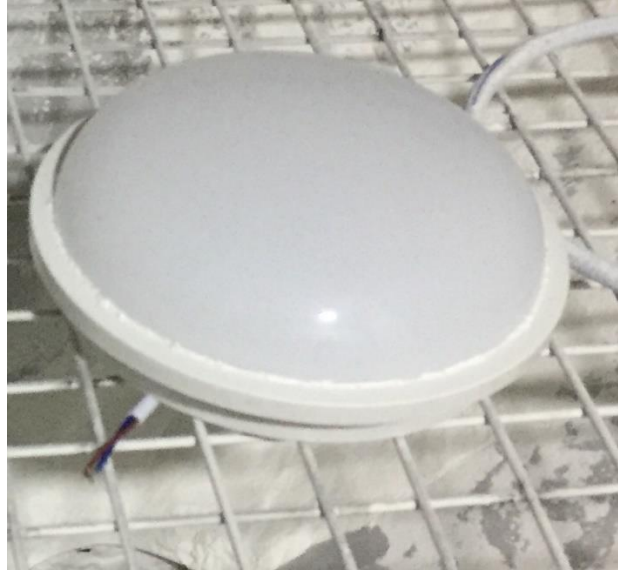


Photo 11. Test condition for IP6X



Photo 11. General view of after the IP 6X test

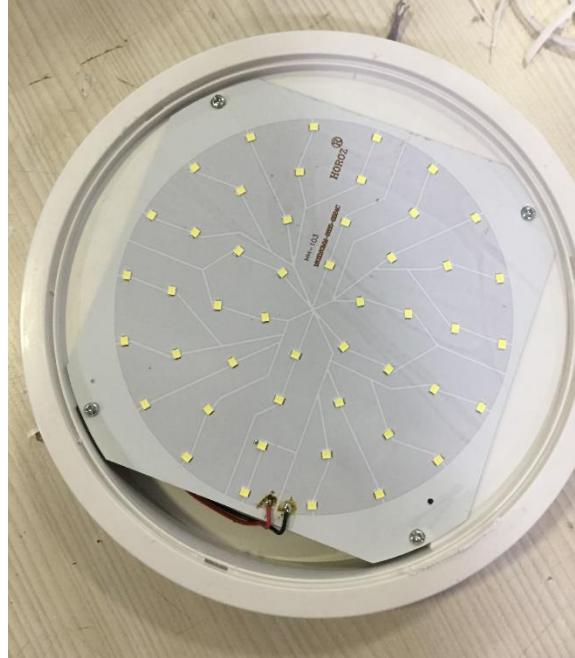


Photo 11. Inside of view after the IP 6X test

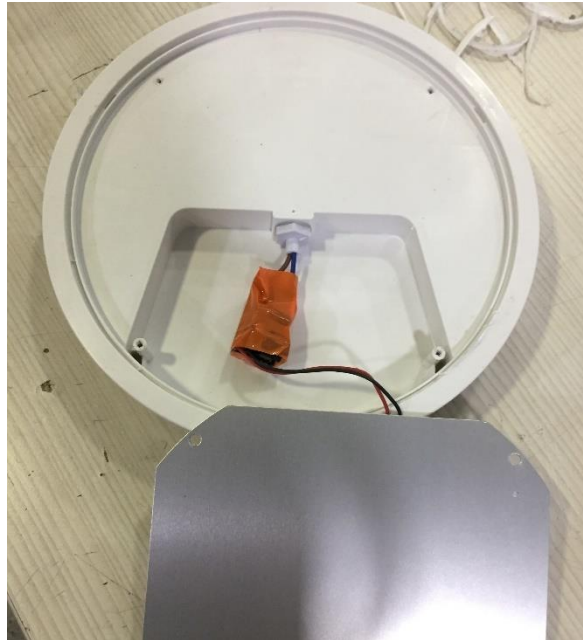


Photo 12. Inside of view after the IP 6X test

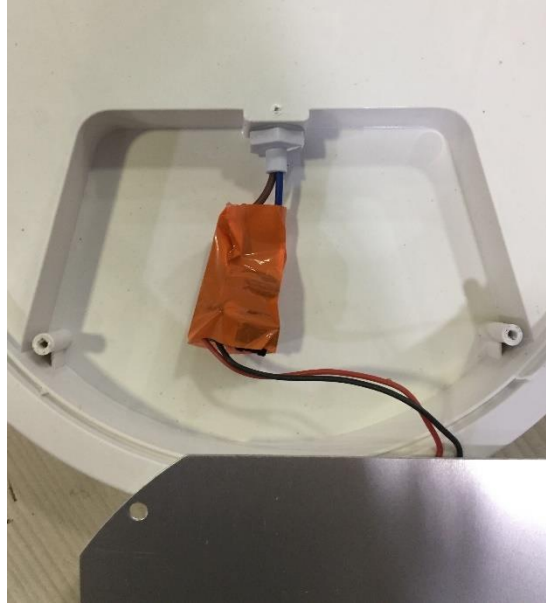


Photo 13. Internal wiring of the product



Photo 14. Test condition of model LEDLIGHT-4 for IP X5 test



Photo 15. Inside of view after the IP X5 test



Photo 16. Inside of view after the IP X5 test



Photo 17. Test condition of model LEDLIGHT-2 for IP X5 test



Photo 18. Inside of view after the IP X5 test

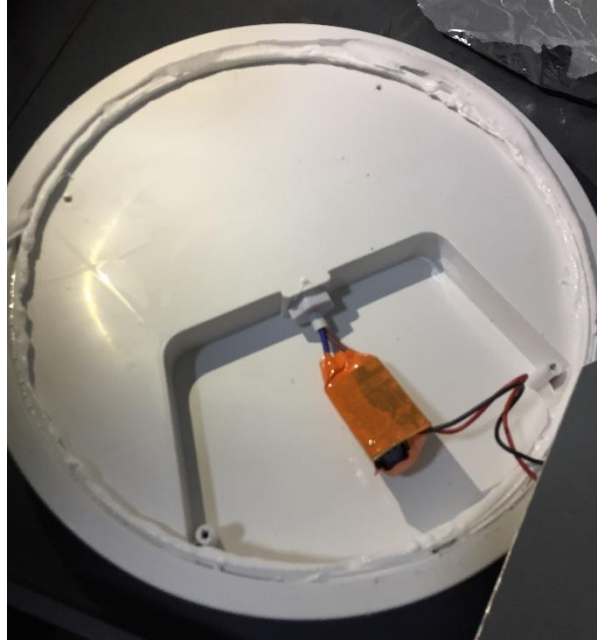


Photo 19. Inside of view after the IP X5 test



Photo 20. Inside of view after the IP X5 test