



PTC  
ÜRÜN TEST VE BELGELENDİRME  
SAN. TİC. LTD. ŞTİ



DENEY RAPORU  
TEST REPORT

AB-1374-T

2024-PTC-3562-2

10-24

Müşteri Adı / Adresi:

Customer name / address

ECOWAT ELEKTRİK AYDINLATMA SAN. VE TİC. A.Ş

HALİL RIFAT PAŞA MAH. YÜZER HAVUZ SOK. PERPA TİCARET MERKEZİ, A BLOK  
K:8 NO:763 ŞİŞLİ/İSTANBUL/TÜRKİYE

İstek Numarası

Order No.

2024-PTC-3562

Numunenin adı ve tarifi

Name and identity of test item

GÖMME SPOT / DOWNLIGHT

Numunenin kabul tarihi

The date of receipt of test item

07.08.2024

Açıklamalar

Remarks

Ürün ilgili testlerden geçmiştir, lütfen raporu inceleyiniz.

The product passed related tests, see report below.

Deneyin yapıldığı tarih

Date of Test

13.09.2024 – 02.10.2024

Raporun Sayfa Sayısı

Number of pages of the Report

48

Deney laboratuvarı olarak faaliyet gösteren PTC Ürün Test ve Belgelendirme San. Tic. Ltd. Şti., TÜRKAK'tan AB-1374-T akreditasyon dosya numarası ile TS EN ISO IEC 17025:2017 standardına göre akredite edilmiştir.

PTC Ürün Test ve Belgelendirme San. Tic. Ltd. Şti. accredited by TÜRKAK under registration number AB-1374-T accreditation file no for TS EN ISO IEC 17025:2017 as test laboratory"

Türk Akreditasyon Kurumu(TÜRKAK) deney raporlarının tanınırlığı konusunda Avrupa Akreditasyon Birliği(EA) ile Çok Taraflı Anlaşma ve Uluslararası Laboratuvar Akreditasyon Birliği(ILAC) ile karşılıklı tanıma anlaşması imzalamıştır.

Turkish Accreditation Agency (TURKAK) is a signatory to the European co-operation for Accreditation (EA) Multilateral Agreement (MLA) and to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the recognition of test reports

Deney ve /veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri ( olması halinde ) ve deney metotları bu sertifikanın tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir.

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.

Mühür

Seal

Tarih

Date

Deneyi Yapan Personel

Person in Performing the Test

Deney Sorumlusu

Person in Charge of Test

Laboratuvar Teknik

Yöneticisi

Laboratory Technical

Manager

14.10.2024



DENEY RAPORU / TEST REPORT

PTC Ürün Test ve Belgelendirme San. Tic. Ltd. Şti.

Örnek Mahallesi Udi Hasanbey Sokak Reis Plaza No: 31A Ataşehir/İstanbul-Turkey

Tel:+90 216 225 03 41 e-mail:info@ptctestng.com web: [www.ptctestng.com](http://www.ptctestng.com)



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SAN. TİC. LTD. ŞTİ

DENEY RAPORU  
TEST REPORT

AB-1374-T

2024-PTC-  
3585-2

10-24

**Deney Standardı / Test Standard:** TS EN 60598-2-2:2012 Aydınlatma armatürleri - Bölüm 2-2: Özel kurallar - Gömme armatürler / Luminaires - Part 2-2: Particular requirements - Recessed luminaires

**Akreditasyon Kapsamında Uygulanan Deneyler**

*List of Tests applied under Accreditation Scope:*

**Akreditasyon Kapsamı Dışında Uygulanan Deneyler**

*List of Tests not applied under Accreditation Scope:*

- 2.6(3.4) **İşaretleme Deneyi / Durability**  
2.7(4.12.1) **Tork Testi / Torque Test**  
2.7(4.13.1) **Mekanik Dayanım Darbe Testi / Impact Test**  
2.8 (11.2) **Yüzeysel kaçak yolu uzunlukları ve yalıtma aralıkları/**  
*Creepage distances and clearances*  
2.12(8.2.5) **Elektrik Çarpmasına Karşı Koruma /**  
*Protection Against Electric Shock*  
2.13(12.3.1) **Dayanıklılık Deneyi / Endurance Test**  
2.13(12.4.1) **Isıl Deney(Normal Çalışma) /**  
*Thermal Test(Normal Operation)*  
2.14(9.2) **IP Testi / IP Test**  
2.14(9.3) **Nem Deneyi / Humidity Test**  
2.15(10.2.1) **Yalıtım Direnci / Insulation Resistance Test**  
2.15(10.2.2) **Elektriksel Dayanım / Electric Strength Test**  
2.15(10.3) **Dokunma Akımı / Touch Current Test**  
2.16(13.2.1) **Bilye Basınç Deneyi / Ball-Pressure Test**  
2.16(13.3.2) **Kızaran Tel Deneyi / Glow Wire Test**

**DENEY RAPORU / TEST REPORT**

**PTC Ürün Test ve Belgelendirme San. Tic. Ltd. Şti.**  
Örnek Mahallesi Udi Hasanbey Sokak Reis Plaza No: 31A Ataşehir/İstanbul-Turkey  
Tel:+90 216 225 03 41 e-mail:info@ptctesting.com web: [www.ptctesting.com](http://www.ptctesting.com)

Dok.No: PR.20-RP.46 / Rev.Tarihi: 13.02.2023 / Rev. No: 01

Sayfa/Page 2 / 48

**DENEY RAPORU / TEST REPORT**  
**TS EN IEC 60598-1/A11 :2022 & TS EN 60598-2-2:2012**

<b>Rapor Numarası</b> <i>Report number</i>	: 2024-PTC-3562-2
<b>Veriliş Tarihi</b> <i>Date of issue</i>	: 14.10.2024
<b>Toplam Sayfa Sayısı</b> <i>Total number of pages</i>	: 48
<b>Deneyi Yapan Laboratuvar</b> <i>Testing Laboratory</i>	: PTC ÜRÜN TEST VE BELGELENDİRME
<b>Adres</b> <i>Address</i>	: Örnek Mahallesi Udi Hasanbey Sokak Reis Plaza No: 31A Ataşehir / İSTANBUL
<b>Deney Adresi</b> <i>Testing Location</i>	: Örnek Mahallesi Udi Hasanbey Sokak Reis Plaza No: 31A Ataşehir / İSTANBUL
<b>Başvuranın Adı</b> <i>Applicant's name</i>	: ECOWAT ELEKTRİK AYDINLATMA SAN. VE TİC. A.Ş
<b>Adresi</b> <i>Address</i>	: HALİL RIFAT PAŞA MAH. YÜZER HAVUZ SOK. PERPA TİCARET MERKEZİ, A BLOK K:8 NO:763 ŞİŞLİ/İSTANBUL/TÜRKİYE
<b>Deney Ayrıntıları</b> <i>Test Specifications</i>	
<b>Standard</b>	: TS EN IEC 60598-1/A11 :2022 ; TS EN 60598-2-2:2012
<b>Deney Prosedürü</b> <i>Test procedure</i>	: Uygunluk Testi / <i>Compliance Test</i>
<b>Standard Dışı Deney Yöntemi</b> <i>Non-standard test method</i>	: -
<b>Deney Raporu Form No</b> <i>Test report form no</i>	: PR.20-RP.01
<b>Deney Rapor Form(ları) Oluşturan</b> <i>Test report form(s) originator</i>	: PTC
<b>Ana TRF</b> <i>Master TRF</i>	: 2018-01

**Deney ve/veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metotları bu sertifikanın tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir. Bu rapor laboratuvar gönderilen numunelere uygulanan deney/deneyler sonucu hazırlanmıştır. Müşteriye ait diğer numuneleri kapsamaz.**  
*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. This report was prepared according to test results of specimens sent to laboratory. It doesn't contain other specimens belonging to customer.*

<b>Deney Numunesi Açıklaması</b> <i>Test item description</i>	: GÖMME SPOT / DOWNLIGHT
<b>Marka</b> <i>Trade Mark</i>	: TEKWAT
<b>Üretici</b> <i>Manufacturer</i>	: ECOWAT ELEKTRİK AYDINLATMA SAN. VE TİC. A.Ş
<b>Model/Tip</b> <i>Model /Type reference</i>	: DP60A
<b>Beyan Değerleri</b> <i>Ratings</i>	: 190-265V AC ; 60W ; IP20; Class II; Ta:-10...+40°C

Bu rapor, Laboratuvarımızın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürsüz raporlar geçersizdir.  
*This report may not be copied or reproduced in part without the written permission of the Laboratory. Signed and unsealed reports are invalid*

**DENEY RAPORU / TEST REPORT**

**PTC Ürün Test ve Belgelendirme San. Tic. Ltd. Şti.**  
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Tel:+90 216 225 03 41 e-mail:info@ptctestng.com web: [www.ptctestng.com](http://www.ptctestng.com)

**Ek Dosya Listesi ( Eklerin içerdiği sayfa sayısı dahil ) :**

List of attachments (including a total number of pages in each attachment) :

**Ek.1 / Attachment.1 - Ölçüm Cihazları / Measuring Equipments**

**Ek.2 / Attachment.2 - Görsel Dökümanlar / Photo Documentation**

**Deney Özeti / Summary of testing :** Uygulanan deneyler aşağıdaki listede verilmiştir. / The applied tests are in the list below

**Modeller / Models :** AR25A, AR35A, DP15A, DP35A, DP60A, TL35A, LNR12, LNR25

**Gerçekleştirilen testler (test adı ve test maddesi)**


/Tests performed (name of test and test clause):

- 2.6(3.4) **İşaretleme Deneyi / Durability**  
2.7(4.12.1) **Tork Testi / Torque Test**  
2.7(4.13.1) **Mekanik Dayanım Darbe Testi / Impact Test**  
2.8 (11.2) **Yüzeysel kaçak yolu uzunlukları ve yalıtma aralıkları/**  
*Creepage distances and clearances*  
2.12(8.2.5) **Elektrik Çarpmasına Karşı Koruma /**  
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2.13(12.3.1) **Dayanıklılık Deneyi / Endurance Test**  
2.13(12.4.1) **Isıl Deney(Normal Çalışma) /**  
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2.15(10.3) **Dokunma Akımı / Touch Current Test**  
2.16(13.2.1) **Bilye Basınç Deneyi / Ball-Pressure Test**  
2.16(13.3.2) **Kızaran Tel Deneyi / Glow Wire Test**

**Test yeri / Testing location:**

Örnek Mahallesi Udi Hasanbey Sokak Reis  
Plaza No: 31A Ataşehir / İSTANBUL

**Etiket plakasının kopyası / Copy of marking plate:**

Üretici / Manufacturer	ECOWAT ELEKTRİK AYDINLATMA SANAYİ VE TİCARET ANONİM ŞİRKETİ
Adres / Address	Perpa Ticaret Merkezi A Blok Kat 8 No 763 Şişli/İstanbul/Türkiye
Ürün / Product	Gömme spot/ Downlight
Marka / Brand	TEKWAT
Model / Type	DP60A
Çalışma Gerilimi / Working Voltage	190-265V AC
Güç / Power	60W
Frekans / Frequency	50-60Hz
Sınıf / Class	II
IP	20
*Sıcaklık Değeri / TA	-10°C...+40°C
Üretim yılı / Year of Production	2024
Made in Turkey 	

<b>Deney Numunesinin Ayrıntıları</b> .....	<b>GÖMME SPOT / DOWNLIGHT</b>
<i>Test item particulars</i>	
<b>Kurulum ve kullanım sınıflandırması</b> .....	<b>IP20 ve Sınıf II / IP20 and Class II</b>
<i>Classification of installation and use</i>	
<b>Besleme Bağlantısı</b> .....	<b>Besleme Kablosu/ Supply Cable</b>
<i>Supply Connection</i>	
<b>Karar Kuralı / Decision Rule</b>	
<p>Müşteri ile yapılan sözleşmede kararlaştırıldığı şekilde tüm test sonuçlarına "Basit Karar Kuralı" uygulanmıştır. Bu bağlamda, güven düzeyi ve ölçüm belirsizliği göz önünde bulundurulmaksızın, elde edilen deney sonucu, yalnızca deneyin yapılmasında referans alınan standartta belirtilen sınırlar içinde olup olmamasına bağlı olarak "Geçti" ya da "Kaldı" şeklinde değerlendirilmiştir. / As agreed in the contract with the customer, "Simple Decision Rule" was applied to all test results. In this context, without taking into account the confidence level and measurement uncertainty, test result was evaluated as "Pass" or "Fail" depending only on whether it was within the limits specified in the referenced standard.</p>	
Uygunluk ifadeleri şu şekilde raporlanır / Conformity statements are reported as follows;	
GEÇTİ : Ölçülen değer kabul sınırının altında	
PASS : Measured value is below the acceptance limit	
KALDI : Ölçülen değer kabul sınırının üzerinde	
FAIL : Measured value is above the acceptance limit	

**Olası Deney Durumu Kararları/ Possible test case verdicts:**

- deney durumu deney numunesi için geçerli değildir...: <i>test case does not apply to the test object</i>	N/A
- deney numunesi gereksinimi karşılıyor.....: <i>test object does meet the requirement</i>	P (Pass / Geçti)
- deney numunesi gereksinimi karşılamıyor.....: <i>test object does not meet the requirement</i>	F (Fail / Kaldı)
-deney akreditasyon kapsamında bulunmamaktadır...: <i>test not within the scope of the accreditation</i>	O/S (Out of Scope / Kapsam Dışı)

**Deney / Testing..... :**

**Numunenin Alındığı Tarih/..... :** 07.08.2024  
*Date of receipt of test item*

**Test(ler)in Gerçekleştirilme Tarihi .....** 13.09.2024 – 02.10.2024  
*Date (s) of performance of tests*

**Genel Açıklamalar / General Remarks**

*Bu raporda sunulan test sonuçları yalnızca test edilen nesneyle ilgilidir. Bu rapor, yayınlayan test laboratuvarının yazılı onayı olmaksızın tamamen veya kısmen çoğaltılamaz.*

*“(Bakınız Kutu #)” rapora eklenen ek bilgilere işaret etmektedir.*

*“Ekli tabloya bakınız”, rapora eklenen bir tabloya atıfta bulunmaktadır.*

*Parantez içerisindeki madde numaraları, ilgili deney standardında geçen maddelere karşılık gelir.*

*The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. “(See Enclosure #)” refers to additional information appended to the report. “(See appended table)” refers to a table appended to the report.*

**Bu rapor boyunca  nokta / virgül ondalık ayracı olarak kullanılır.**

*Throughout this report a  point /  comma is used as the decimal separator.*

**Genel Ürün Bilgileri / General Product Information:**

Numune 190-265V AC gerilimle çalışmaktadır. / *The sample is operating at 190-265V AC voltage.*

**TS EN IEC 60598-1/A11 :2022 & TS EN 60598-2-2:2012**

Madde Clause	İstenen Deneyle Test Requirements	Açıklamalar Remarks	Sonuç Verdict
-----------------	--------------------------------------	------------------------	------------------

2.3 (0)	GENERAL TEST REQUIREMENTS		P
2.3 (0.3)	More sections applicable .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Section/s:	—
2.3 (0.5)	Components	(see Annex 1)	—
<b>2.3 (0.7)</b>	<b>Information for luminaire design in light sources standards</b>		—
2.3 (0.7.2)	Light source safety standard .....		—
	Luminaire design in the light source safety standard		N/A

2.5 (2)	CLASSIFICATION OF LUMINAIRES		P
2.5 (2.2)	Type of protection .....	Class II	P
2.5 (2.3)	Degree of protection .....	IP20	—
2.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
2.5 (2.5)	Luminaire for normal use .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

2.6 (3)	MARKING		P
2.6 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
2.6 (3.3)	Additional information		P
	Language of instructions	TR	P
2.6 (3.3.1)	Combination luminaires		N/A
2.6 (3.3.2)	Nominal frequency in Hz		N/A
2.6 (3.3.3)	Operating temperature		N/A
2.6 (3.3.5)	Wiring diagram		N/A
2.6 (3.3.6)	Special conditions		N/A
2.6 (3.3.7)	Metal halide lamp luminaire – warning		N/A

**DENEY RAPORU / TEST REPORT**

**TS EN IEC 60598-1/A11 :2022 & TS EN 60598-2-2:2012**

Madde Clause	İstenen Deneyle Test Requirements	Açıklamalar Remarks	Sonuç Verdict
-----------------	--------------------------------------	------------------------	------------------

2.6 (3.3.8)	Limitation for semi-luminaires		N/A
2.6 (3.3.9)	Power factor and supply current		N/A
2.6 (3.3.10)	Suitability for use indoors		N/A
2.6 (3.3.11)	Luminaires with remote control		N/A
2.6 (3.3.12)	Clip-mounted luminaire – warning		N/A
2.6 (3.3.13)	Specifications of protective shields		N/A
2.6 (3.3.14)	Symbol for nature of supply		N/A
2.6 (3.3.15)	Rated current of socket outlet		N/A
2.6 (3.3.16)	Rough service luminaire		N/A
2.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Y attachments	P
2.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
2.6 (3.3.19)	Protective conductor current in instruction if applicable		N/A
2.6 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
2.6 (3.3.21)	Non replaceable and non-user replaceable light sources information provided		P
2.6 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
2.6 (3.3.23)	Luminaires without control gear provided with necessary information for selection of appropriate component		N/A
2.6 (3.3.24)	If not supplied with terminal block, information on the packaging		N/A
2.6 (3.3.25)	Luminaires employing light sources emitting UV on mains wiring, information provided		N/A
2.6 (3.3.26)	Wall mounted luminaire using external flexible cable or cord longer than 0.3 m, information provided		N/A
2.6 (3.4)	Test with water	15s	P
	Test with hexane	15s	P

**DENEY RAPORU / TEST REPORT**

**PTC Ürün Test ve Belgelendirme San. Tic. Ltd. Şti.**

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**TS EN IEC 60598-1/A11 :2022 & TS EN 60598-2-2:2012**

Madde Clause	İstenen Deneyler Test Requirements	Açıklamalar Remarks	Sonuç Verdict
-----------------	---------------------------------------	------------------------	------------------

	Legible after test		P
	Label attached		P

<b>2.7 (4)</b>	<b>CONSTRUCTION</b>		P
2.7 (4.2)	Components replaceable without difficulty		N/A
2.7 (4.3)	Wireways smooth and free from sharp edges		P
<b>2.7 (4.4)</b>	<b>Lamp holders</b>		N/A
2.7 (4.4.1)	Integral lamp holder		N/A
2.7 (4.4.2)	Wiring connection		N/A
2.7 (4.4.3)	Lamp holder for end-to-end mounting		N/A
2.7 (4.4.4)	Positioning		N/A
	- pressure test (N) .....		—
	After test the lamp holder comply with relevant standard sheets and show no damage		N/A
	After test on single-capped lamp holder the lamp holder has not moved from its position and show no permanent deformation		N/A
	- bending test (N) .....		—
	After test the lamp holder has not moved from its position and show no permanent deformation		N/A
2.7 (4.4.5)	Peak pulse voltage		N/A
2.7 (4.4.6)	Centre contact		N/A
2.7 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
2.7 (4.4.8)	Lamp connectors		N/A
2.7 (4.4.9)	Caps and bases correctly used		N/A
2.7 (4.4.10)	Light source for lamp holder or connection according IEC 60061 not connected another way		N/A
<b>2.7 (4.5)</b>	<b>Starter holders</b>		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A

**DENEY RAPORU / TEST REPORT**

**TS EN IEC 60598-1/A11 :2022 & TS EN 60598-2-2:2012**

Madde Clause	İstenen Deneyle Test Requirements	Açıklamalar Remarks	Sonuç Verdict
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<b>2.7 (4.6)</b>	<b>Terminal blocks</b>		N/A
	Tails		N/A
	Unsecured blocks		N/A
<b>2.7 (4.7)</b>	<b>Terminals and supply connections</b>		<b>P</b>
2.7 (4.7.1)	Contact to metal parts		P
2.7 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		N/A
2.7 (4.7.3)	Terminals for supply conductors		P
2.7 (4.7.3.1)	Welded method and material		N/A
	- stranded or solid conductor		N/A
	- spot welding		N/A
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.6.2		N/A
	- electrical test according to 15.6.3		N/A
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N/A
2.7 (4.7.4)	Terminals other than supply connection		P
2.7 (4.7.5)	Heat-resistant wiring/sleeves		N/A
2.7 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
<b>2.7 (4.8)</b>	<b>Switches</b>		N/A
	- adequate rating		N/A
	- adequate fixing		N/A
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
<b>2.7 (4.9)</b>	<b>Insulating lining and sleeves</b>		<b>P</b>
2.7 (4.9.1)	Retainment		P

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**TS EN IEC 60598-1/A11 :2022 & TS EN 60598-2-2:2012**

Madde Clause	İstenen Deneyleler Test Requirements	Açıklamalar Remarks	Sonuç Verdict
-----------------	---	------------------------	------------------

	Method of fixing.....:		P
2.7 (4.9.2)	Insulated linings and sleeves:		P
	Resistant to a temperature > 20 °C to the wire temperature or		P
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C).....:		N/A
<b>2.7 (4.10)</b>	<b>Double or reinforced insulation</b>		P
2.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		P
	Safe installation fixed luminaires		P
	Capacitors and switches		N/A
2.7 (4.10.2)	Assembly gaps:		N/A
	- not coincidental		N/A
	- no straight access with test probe		N/A
2.7 (4.10.3)	Retention of insulation:		N/A
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lamp holder		N/A
2.7 (4.10.4)	Protective impedance device		N/A
	Basic and supplementary insulation bridged by resistor(s) or appropriate capacitor		N/A
	Double or reinforced insulation bridged by at least two separate resistors in series or appropriate capacitor(s)		N/A
	Capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.2 of IEC 60065		N/A
<b>2.7 (4.11)</b>	<b>Electrical connections and current-carrying parts</b>		P
2.7 (4.11.1)	Contact pressure		P

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2.7 (4.11.2)	Screws:		P
	- self-tapping screws		P
	- thread-cutting screws		N/A
2.7 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
2.7 (4.11.4)	Material of current-carrying parts		P
2.7 (4.11.5)	No contact to wood or mounting surface		P
2.7 (4.11.6)	Electro-mechanical contact systems		N/A
<b>2.7 (4.12)</b>	<b>Screws and connections (mechanical) and glands</b>		<b>P</b>
2.7 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part .....		N/A
	Torque test: torque (Nm); part .....		P
	Torque test: torque (Nm); part .....		N/A
2.7 (4.12.2)	Screws with diameter <3 mm screwed into metal		N/A
2.7 (4.12.4)	Locked connections:		P
	- fixed arms; torque (Nm) .....		P
	- lamp holder; torque (Nm) .....		N/A
	- push-button switches; torque 0,8 Nm .....		N/A
2.7 (4.12.5)	Screwed glands; force (Nm) .....		N/A
<b>2.7 (4.13)</b>	<b>Mechanical strength</b>		<b>P</b>
2.7 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm) .....	0,20Nm	P
	- other parts; energy (Nm) .....	0,35Nm	P
	1) live parts		P
	2) linings		P
	3) protection		P

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	4) covers		P
2.7 (4.13.2)	Metal parts have adequate mechanical strength		P
2.7 (4.13.3)	Straight test finger	30N	P
2.7 (4.13.4)	Rough service luminaires		N/A
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A
	d) for temporary installations and suitable for mounting on a stand		N/A
2.7 (4.13.6)	Tumbling barrel		P
<b>2.7 (4.14)</b>	<b>Suspensions, fixings and means of adjusting</b>		P
2.7 (4.14.1)	Mechanical load:		P
	A) four times the weight	1,2x4=4,8kg	P
	B) torque 2,5 Nm		N/A
	C) bracket arm; bending moment (Nm) .....		N/A
	D) load track-mounted luminaires		N/A
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) .....		N/A
	Metal rod. diameter (mm) .....		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
2.7 (4.14.2)	Load to flexible cables		N/A
	Mass (kg) .....		—
	Stress in conductors (N/mm <sup>2</sup> ) .....		N/A
	Mass (kg) of semi-luminaire .....		N/A
	Bending moment (Nm) of semi-luminaire .....		N/A
2.7 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles .....		N/A

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	- strands broken .....		N/A
	- electric strength test afterwards		N/A
2.7 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
2.7 (4.14.5)	Guide pulleys		N/A
2.7 (4.14.6)	Strain on socket-outlets		N/A
<b>2.7 (4.15)</b>	<b>Flammable materials</b>		P
	- glow-wire test 650°C .....	See Test Table 1.15 (13.3.2)	P
	- spacing $\geq 30$ mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		P
	- thermal protection		N/A
	- electronic circuits exempted		N/A
2.7 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N/A
	a) construction		N/A
	b) temperature sensing control		N/A
	c) surface temperature		N/A
<b>2.7 (4.16)</b>	<b>Luminaires for mounting on normally flammable surfaces</b>		P
	No lamp control gear .....	(compliance with Section 12)	N/A
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		N/A
2.7 (4.16.1)	Lamp control gear spacing:		P
	- spacing 35 mm		P
	- spacing 10 mm		P
2.7 (4.16.2)	Thermal protection:		N/A
	- in lamp control gear		N/A
	- external		N/A

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	- fixed position		N/A
	- temperature marked lamp control gear		N/A
2.7 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
<b>2.7 (4.17)</b>	<b>Drain holes</b>		N/A
	Clearance at least 5 mm		N/A
<b>2.7 (4.18)</b>	<b>Resistance to corrosion</b>		N/A
2.7 (4.18.1)	- rust-resistance		N/A
2.7 (4.18.2)	- season cracking in copper		N/A
2.7 (4.18.3)	- corrosion of aluminium		N/A
2.7 (4.19)	Igniters compatible with ballast		N/A
2.7 (4.20)	Rough service vibration		O/S
<b>2.7 (4.21)</b>	<b>Protective shield</b>		N/A
2.7 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
2.7 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
2.7 (4.21.3)	No direct path		N/A
2.7 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment .....	See Test Table 1.15 (13.3.2)	N/A
2.7 (4.22)	Attachments to lamps not cause overheating or damage		N/A
2.7 (4.23)	Semi-luminaires comply Class II		N/A
<b>2.7 (4.24)</b>	<b>Photobiological hazards</b>		<b>O/S</b>
2.7 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		O/S
2.7 (4.24.2)	Retinal blue light hazard		O/S
	Class of risk group assessed according to IEC/TR 62778 .....		—
	Luminaires with $E_{thr}$ :		O/S

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	a) Fixed luminaires		O/S
	- distance x m, borderline between RG1 and RG2...:		O/S
	- marking and instruction according 3.2.23		O/S
	b) Portable and handheld luminaires		O/S
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		O/S
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		O/S
<b>2.7 (4.25)</b>	<b>Mechanical hazard</b>		<b>P</b>
	No sharp point or edges		P
<b>2.7 (4.26)</b>	<b>Short-circuit protection</b>		N/A
2.7 (4.26.1)	Adequate means of uninsulated accessible SELV / PELV parts		N/A
2.7 (4.26.2)	Short-circuit test with test chain according 4.26.3:		N/A
	Supply source ES1 PSE		N/A
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
<b>2.7 (4.27)</b>	<b>Terminal blocks with integrated screwless protective earthing contacts</b>		N/A
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
<b>2.7 (4.28)</b>	<b>Fixing of thermal sensing control</b>		N/A
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A

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	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A
	Test of adhesive fixing:		N/A
	Max. temperature on adhesive material (°C) .....		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
<b>2.7 (4.29)</b>	<b>Luminaires with non-replaceable light source</b>		N/A
	Not possible to replace light source		N/A
	Live part not accessible after parts have been opened by hand or tools		N/A
<b>2.7 (4.30)</b>	<b>Luminaires with non-user replaceable light source</b>		<b>P</b>
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N/A
	At least one fixing means requiring use of tool		P
<b>2.7 (4.31)</b>	<b>Insulation between circuits</b>		P
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N/A
2.7 (4.31.1)	SELV or PELV circuits		P
	Used SELV/PELV source		P
	Voltage ≤ ELV	33-40V DC	P
	Insulating of SELV/PELV circuits from LV supply		P
	Insulating of SELV/PELV circuits from other non SELV/PELV circuits		P
	Insulating of SELV/PELV circuits from FELV		N/A
	Insulating of SELV/PELV circuits from other SELV/PELV circuits		N/A

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	SELV/PELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to make any electrical contact with socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Plugs and socket-outlets does not have protective conductor contact		N/A
2.7 (4.31.2)	FELV circuits		N/A
	Used FELV source		N/A
	Voltage $\leq$ ELV		N/A
	Insulating of FELV circuits from LV supply		N/A
	FELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to make any electrical contact with socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Socket-outlets does not have protective conductor contact		N/A
2.7 (4.31.3)	Other circuits		N/A
	Other circuits insulated from accessible parts according Table X.1		N/A
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N/A
	- conductive parts are connected together		N/A
	- test according 7.2.3		N/A
	- conductive part not cause an electric shock in case of an insulation fault		N/A
	- equipotential bonding in master/slave applications		N/A
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N/A

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	- slave luminaire constructed as class I		N/A
<b>2.7 (4.32)</b>	<b>Overvoltage protective devices</b>		N/A
	Comply with IEC 61643-11		N/A
	External to controlgear and connected to earth:		N/A
	- only in fixed luminaires		N/A
	- only connected to protective earth		N/A
<b>2.7 (4.33)</b>	<b>Luminaire powered via information technology communication cabling</b>		N/A
	Requirements for Class III luminaire		N/A
	Rated voltage within the range of ES1 and does not exceed maximum voltage of used connector		N/A
	Luminaire does not create any hazard from overvoltage	(see Annex 2)	N/A
<b>2.7 (4.34)</b>	<b>Electromagnetic fields (EMF)</b>		O/S
	No harmful electromagnetic fields		O/S
<b>2.7 (4.35)</b>	<b>Protection against moving fan blades</b>		N/A
	Test with a standard test finger		N/A
	Test with test probe acc. to Figure 13 (IEC 61032) for portable luminaire		N/A
	Blades rounded with radius $\geq 0.5$ mm and:		N/A
	-hardness less than D60 Shore		N/A
	-peripheral speed less than 15 m/s		N/A
	-input power of fan $\leq 2$ W at rated voltage		N/A
<b>2.7 (4.36)</b>	<b>Track-mounted luminaires</b>		N/A
	Test in accordance with Annex A of IEC60570:2003/AMD2:2019		N/A

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2.8 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
2.8 (11.2.1)	Impulse withstand category (Normal category II)	Category II <input checked="" type="checkbox"/> Category III <input type="checkbox"/>	-
	Category III according Annex U		N/A
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N/A
2.8 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 1.7 (11.2) I	P
	Creepage distances for frequency over 30 kHz:		N/A
	- Controlgear marked with $\hat{U}_{OUT}$ and $f_{UOUT}$ according IEC 61347-1, clause 7.1, item w	See Test Table 1.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 1.7 (11.2) II	N/A
2.8 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 1.7 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with $U_P$	See Test Table 1.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 1.7 (11.2) II	N/A

2.9 (7)	PROVISION FOR EARTHING		N/A
2.9 (7.2.1 + 7.2.3)	Accessible metal parts		N/A
	Metal parts in contact with supporting surface		N/A
	Resistance < 0,5 $\Omega$ .....		N/A
	Self-tapping screws used		N/A
	Thread-forming screws		N/A
	Thread-forming screw used in a grove		N/A
	Protective earth makes contact first		N/A
	Terminal blocks with integrated screwless protective earthing contacts tested according Annex V		N/A
	Protective earthing of the luminaire not via built-in control gear		N/A

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2.9 (7.2.2 + 7.2.3)	Protective earth continuity in joints, etc.		N/A
2.9 (7.2.4)	Locking of clamping means		N/A
	Compliance with 4.7.3		N/A
2.9 (7.2.5)	Protective earth terminal integral part of connector socket		N/A
2.9 (7.2.6)	Protective earth terminal adjacent to mains terminals		N/A
2.9 (7.2.7)	Electrolytic corrosion of the protective earth terminal		N/A
2.9 (7.2.8)	Material of protective earth terminal		N/A
	Contact surface bare metal		N/A
2.9 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
2.9 (7.2.11)	Protective earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A
2.9 (7.2.12)	PELV circuit connected to protective earth for functional purpose		N/A

<b>2.10 (14)</b>	<b>SCREW TERMINALS</b>		P
	Separately approved; component list	(see Annex 1)	P
	Part of the luminaire	(see Annex 3)	N/A

<b>2.10 (15)</b>	<b>SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS</b>		P
	Separately approved; component list .....	(see Annex 1)	N/A
	Part of the luminaire .....	(see Annex 4)	P

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2.11 (5)	<b>EXTERNAL AND INTERNAL WIRING</b>		P
2.11 (5.2)	<b>Supply connection and external wiring</b>		N/A
2.11 (5.2.1)	Means of connection..... :		N/A
	Outdoor luminaire has not PVC insulated external wiring if not Class III or SELV/PELV circuits $\leq 25$ V AC/60 V DC/25 V peak interrupted DC voltage with frequency 10Hz -200 Hz or protected from outdoor environment		N/A
2.11 (5.2.2)	Type of cable..... :		N/A
	Nominal cross-sectional area (mm <sup>2</sup> )..... :		N/A
	Cables equal to IEC 60227 or IEC 60245		N/A
2.11 (5.2.3)	Type of attachment, X, Y or Z		N/A
2.11 (5.2.5)	Type Z not connected to screws		N/A
2.11 (5.2.6)	Cable entries:		N/A
	- suitable for introduction		N/A
	- adequate degree of protection		N/A
2.11 (5.2.7)	Cable entries through rigid material have rounded edges		N/A
2.11 (5.2.8)	Insulating bushings:		N/A
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
2.11 (5.2.9)	Locking of screwed bushings		N/A
2.11 (5.2.10)	Cord anchorage:		N/A
	- covering protected from abrasion		N/A
	- clear how to be effective		N/A
	- no mechanical or thermal stress		N/A
	- no tying of cables into knots etc.		N/A

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	- insulating material or lining		N/A
2.11 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
2.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N/A
2.11 (5.2.10.3)	Tests:		N/A
	- impossible to push cable; unsafe		N/A
	- pull test: 25 times; pull (N) .....		N/A
	- torque test: torque (Nm).....		N/A
	- displacement $\leq 2$ mm		N/A
	- no movement of conductors		N/A
	- no damage of cable or cord		N/A
	- function independent of electrical connection		N/A
2.11 (5.2.10.4)	Luminaire with/ designed for use with supply cord with maximum current of 2A:		N/A
	- Ordinary Class III luminaire supplied with SELV $\leq 25V$ RMS/60V DC		N/A
	- Ordinary Class III luminaire supplied with PELV $\leq 12V$ RMS/30V DC		N/A

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	- Other than ordinary Class III luminaire supplied with voltage $\leq 12V$ RMS/30V DC		N/A
	Pull test of 30N		N/A
2.11 (5.2.11)	External wiring passing into luminaire		N/A
2.11 (5.2.12)	Looping-in terminals		N/A
2.11 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
2.11 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
2.11 (5.2.15)	Connectors for Class III luminaires (IEC 60603 or IEC 62680)		N/A
2.11 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Appliance inlet or connector systems (IEC 61984)		N/A
2.11 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
2.11 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- other standard		N/A
<b>2.11 (5.3)</b>	<b>Internal wiring</b>		<b>P</b>
2.11 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		P
	- not delivered/ mounting instruction		N/A
	- factory assembled		P

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	- socket outlet loaded (A) .....		N/A
	- temperatures.....	(see Annex 2)	P
	Green-yellow for protective earth only		N/A
2.11 (5.3.1.1)	Internal wiring connected directly to fixed wiring		P
	Cross-sectional area (mm <sup>2</sup> ) .....	0,75 mm <sup>2</sup>	P
	Insulation thickness (mm) .....	0,69 mm	P
	Extra insulation added where necessary		N/A
2.11 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Cross-sectional area (mm <sup>2</sup> ) .....		N/A
2.11 (5.3.1.3)	Double or reinforced insulation for class II		N/A
2.11 (5.3.1.4)	Conductors without insulation		N/A
2.11 (5.3.1.5)	SELV/PELV current-carrying parts		P
2.11 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
2.11 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		P
2.11 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
2.11 (5.3.4)	Joints and junctions effectively insulated		N/A

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2.11 (5.3.5)	Strain on internal wiring		N/A
2.11 (5.3.6)	Wire carriers		N/A
2.11 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
<b>2.11 (5.4)</b>	<b>Test to determine suitability of conductors having a reduced cross-sectional area</b>		N/A
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	(see Annex 2)	N/A
	No damage to luminaire wiring after test		N/A

<b>2.12 (8)</b>	<b>PROTECTION AGAINST ELECTRIC SHOCK</b>		P
2.12 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N/A
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	Lamp and starter holders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		P
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		N/A
	Double-ended high-pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
2.12 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A

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2.12 (8.2.3.a)	Class II luminaire:		N/A
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		N/A
	- glass protective shields not used as supplementary insulation		N/A
2.12 (8.2.3.b)	BC lamp holder of metal in class I luminaires shall be connected to protective earth		N/A
2.12 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V) .....		N/A
	- voltage under load/ no-load DC (V).....		N/A
	- interrupted DC voltage (V) .....		N/A
	- touch current if applicable (mA) .....		N/A
	One conductive part insulated if required		N/A
	Other than ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V) .....		N/A
	- voltage under load/ no-load DC (V).....		N/A
	- interrupted DC voltage (V) .....		N/A
	Class III luminaire only for connection to SELV		N/A
	Class III luminaire not provided with means for protective earthing		N/A
2.12 (8.2.3.d)	PELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V) .....		N/A
	- voltage under load/ no-load DC (V).....		N/A
	Other than ordinary luminaire:		N/A

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	- voltage under load/ no-load AC (V) .....		N/A
	- voltage under load/ no-load DC (V).....		N/A
	One pole insulated if required		N/A
2.12 (8.2.4)	Portable luminaire has protection independent of supporting surface		N/A
2.12 (8.2.5)	Compliance with the standard test finger or relevant probe		P
2.12 (8.2.6)	Covers reliably secured		P
2.12 (8.2.7)	Luminaire other than below with capacitor > 0,5 µF not exceed 50 V 1 min after disconnection		N/A
	Portable luminaire with capacitor > 0,1 µF (0.25) not exceed 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor > 0,1 µF (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection		N/A

<b>2.13 (12)</b>	<b>ENDURANCE TEST AND THERMAL TEST</b>		<b>P</b>
2.13 (-)	If IP > IP 20 relevant test of (12.4), (12.5), (12.6) and (12.7) after (9.2) before (9.3) as specified in 1.14		—
<b>2.13 (12.2)</b>	<b>Selection of lamps and ballasts</b>		—
	Lamp used according Annex B	(Lamp used see Annex 2)	—
	Control gear if separate and not supplied	(Control gear used see Annex 2)	—
<b>2.13 (12.3)</b>	<b>Endurance test</b>		<b>P</b>
	a) mounting-position .....	Mounting Position	—
	b) test temperature (°C).....	40°C	—
	c) total duration (h) .....	240h	—
	d) supply voltage (V) .....	291,5V	—

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	d) if not equipped with control gear, constant voltage/current (V) or (A) .....		—
2.13 (12.3.1d)	d) Class III luminaires powered via information technology communication cable:		N/A
	- voltage under normal operation (V).....:		—
	- voltage under abnormal operation (V).....:		—
	e) luminaire ceases to operate		—
	f) luminaire with constant light output function		N/A
2.13 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P
2.13 (12.4)	<b>Thermal test (normal operation)</b>	(see Annex 2)	P
2.13 (12.5)	<b>Thermal test (abnormal operation)</b>	(see Annex 2)	N/A
2.13 (12.6)	<b>Thermal test (failed lamp control gear condition):</b>		N/A
2.13 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A) .....		—
	- case of abnormal conditions .....		—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un .... :		—
	- measured mounting surface temperature (°C) at 1,1 Un .....		N/A
	- calculated mounting surface temperature (°C) .....		N/A
	- track-mounted luminaires		N/A

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2.13 (12.6.2)	Temperature sensing control		N/A
	- case of abnormal conditions .....		—
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C) .....		N/A
	- track-mounted luminaires		N/A
<b>2.13 (12.7)</b>	<b>Thermal test (failed lamp control gear in plastic luminaires):</b>		N/A
2.13 (12.7.1)	Luminaire without temperature sensing control		N/A
2.13 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N/A
	Test method 12.7.1.1 or Annex W .....		—
	Test according to 12.7.1.1:		N/A
	- case of abnormal conditions .....		—
	- Ballast failure at supply voltage (V) .....		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex W:		N/A
	- case of abnormal conditions .....		—
	- measured winding temperature (°C): at 1,1 Un .....		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un .....		—
	- calculated temperature of fixing point/exposed part (°C) .....		—
	Ball-pressure test .....	See Test Table 1.15 (13.2.1)	N/A
2.13 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A

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	- case of abnormal conditions .....		—
	- measured winding temperature (°C): at 1,1 Un .....		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un .....		—
	- calculated temperature of fixing point/exposed part (°C) .....		—
	Ball-pressure test .....	See Test Table 1.15 (13.2.1)	N/A
2.13 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions .....		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
2.13 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link .....	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- manual reset cut-out .....	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- auto reset cut-out .....	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- case of abnormal conditions .....		—
	- highest measured temperature of fixing point/ exposed part (°C): .....		—
	Ball-pressure test: .....	See Test Table 1.15 (13.2.1)	N/A

<b>2.14 (9)</b>	<b>RESISTANCE TO DUST AND MOISTURE</b>		<b>P</b>
2.14 (-)	If IP> IP 20 the order of tests as specified in clause 1.12		N/A
2.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		<b>P</b>
	- classification according to IP .....	IP20	—
	- mounting position during test .....	Normal Position	—
	- fixing screws tightened; torque (Nm) .....	-	—
	- tests according to clauses .....	9.2.0	—

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	- electric strength test afterwards	3060V	P
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		N/A
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		N/A
	c.1) For luminaires without drain holes – no water entry		N/A
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight, pressure watertight, high pressure and temperature water jet-proof or high pressure and cold water jet-proof luminaire		N/A
	e) no contact with live parts (IP 2X)		P
	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		N/A
2.14 (9.3)	Humidity test 48 h	25 'C ; %93 RH	P

<b>2.15 (10)</b>	<b>INSULATION RESISTANCE AND ELECTRIC STRENGTH</b>		P
2.15 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø .....		—
	Insulation resistance (MΩ).....	999,9MΩ	P
	SELV/PELV:		P
	- between current-carrying parts of different polarity :	999,9MΩ	P
	- between current-carrying parts and mounting surface.....	999,9MΩ	P

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	- between current-carrying parts and metal parts of the luminaire .....	999,9MΩ	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....		N/A
	- Insulation bushings as described in Section 5 .....		N/A
	Other than SELV/PELV:		P
	- between live parts of different polarity .....	999,9MΩ	P
	- between live parts and mounting surface .....	999,9MΩ	P
	- between live parts and metal parts .....	999,9MΩ	P
	- between live parts of different polarity through action of a switch .....		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....		N/A
	- Insulation bushings as described in Section 5 .....		N/A
2.15 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with igniters after 24 h test		N/A
	Luminaires with manual igniters		N/A
	Test voltage (V) .....	500/ 3060V	P
	SELV/PELV:		P
	- between current-carrying parts of different polarity :	500V	P
	- between current-carrying parts and mounting surface .....	500V	P
	- between current-carrying parts and metal parts of the luminaire .....	500V	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....		N/A

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	- Insulation bushings as described in Section 5 .....		N/A
	Other than SELV/PELV:		P
	- between live parts of different polarity .....		N/A
	- between live parts and mounting surface .....	3060V	P
	- between live parts and metal parts .....	3060V	P
	- between live parts of different polarity through action of a switch.....		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....		N/A
	- Insulation bushings as described in Section 5 .....		N/A
2.15 (10.3)	Touch current (mA).....	0,01mA	P
	Protective conductor current (mA).....		N/A

<b>2.16 (13)</b>	<b>RESISTANCE TO HEAT, FIRE AND TRACKING</b>		P
2.16 (13.2.1)	Ball-pressure test .....	See Test Table 1.16 (13.2.1)	P
2.16 (13.3.1)	Needle-flame test (10 s).....	See Test Table 1.16 (13.3.1)	P
2.16 (13.3.2)	Glow-wire test (650°C) .....	See Test Table 1.16 (13.3.2)	P
2.16 (13.4)	Proof tracking test (IEC 60112).....	See Test Table 1.16 (13.4)	N/A

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2.8 (11.2)	TABLE I: Creepage distances and clearances						P
	Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages						
	Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*						
	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	B	4,94	1,26	11.1.B	5,11	2,64	11.1.A
Working voltage (V).....:					265V AC		—
PTI.....:					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or $U_P$ if applicable (kV).....:							—
Supplementary information:							
Distance 2:							
Working voltage (V).....:							—
PTI.....:					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or $U_P$ if applicable (kV).....:							—
Supplementary information:							
Distance 3:							
Working voltage (V).....:							—
PTI.....:					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or $U_P$ if applicable (kV).....:							—
Supplementary information:							

\*\* Insulation type: B – Basic; S – Supplementary; R – Reinforced. See also IEC 60598-1 Annex M.

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2.8 (11.2)	TABLE II: Creepage distances and clearances						N/A
Minimum distances (mm) for a.c. higher than 30 kHz sinusoidal voltages							
Applicable part of IEC 61347-1 Table 7 and 8* or IEC 60664-4 Table 1 and 2							
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:							
Working voltage (V).....:							—
Frequency if applicable (kHz).....:							—
PTI.....:					< 600 <input type="checkbox"/>	≥ 600 <input type="checkbox"/>	—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....							—
Supplementary information:							
Distance 2:							
Working voltage (V).....:							—
Frequency if applicable (kHz).....:							—
PTI.....:					< 600 <input type="checkbox"/>	≥ 600 <input type="checkbox"/>	—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....							—
Supplementary information:							
Distance 3:							
Working voltage (V).....:							—
Frequency if applicable (kHz).....:							—
PTI.....:					< 600 <input type="checkbox"/>	≥ 600 <input type="checkbox"/>	—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....							—
Supplementary information:							

\*\* Insulation type: B – Basic; S – Supplementary; R – Reinforced.

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Madde Clause	İstenen Deneyle Test Requirements	Açıklamalar Remarks	Sonuç Verdict
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2.16 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm) .....				—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Plastic Part	-	75°C	0,8 mm	
Terminal	-	125°C	1,2 mm	
Supplementary information:				

2.16 (13.3.1)	TABLE: Needle-flame test				P
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Terminal	-	10	NO	0	P
Supplementary information:					

2.16 (13.3.2)	TABLE: Resistance to heat and fire - Glow wire tests					P	
Object/ Part No./ Material	Manufacturer/ trademark	Glow wire test (°C)				Verdict	
		650		750			850
		te	ti	te	ti		
Plastic Part	-	30	0	-	-	-	P
Ignition of the specified layer placed underneath the test specimen (Yes/No) .....							
Supplementary information:							

**TS EN IEC 60598-1/A11 :2022 & TS EN 60598-2-2:2012**

Madde Clause	İstenen Deneyler Test Requirements	Açıklamalar Remarks	Sonuç Verdict
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2.16 (13.4)	TABLE: Proof tracking test	N/A	
Test voltage PTI .....	175 V	—	
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens	Verdict
Supplementary information:			

ANNEX 1	TABLE: Critical components information						P
Object / part No.	Code	Manufacturer / trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>	
Cable	B	RCM	H03VVH2-F	2x0,75mm	TS EN 50525-2-31	CE	
Driver	B	LİFUD	LF- GIF060YA(H) 1400H	Vin: 220-240V AC; 50/60Hz UOut: 55V Tc:90°C	EN 61347-2-13	ENEC	
LED	B	OSRAM	60W	CRI90-1500mA- 34to40V- 7070LUMEN	IEC 62031	CE	
Supplementary information:							
<sup>1)</sup> Provided evidence ensures the agreed level of compliance. See OD-CB2039. The codes above have the following meaning: A - The component is replaceable with another one, also certified, with equivalent characteristics B - The component is replaceable if authorised by the test house C - Integrated component tested together with the appliance D - Alternative component							

**TS EN IEC 60598-1/A11 :2022 & TS EN 60598-2-2:2012**

Madde Clause	İstenen Deneyler Test Requirements	Açıklamalar Remarks	Sonuç Verdict
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ANNEX 2	TABLE: Thermal tests of Section 12				P		
	Type reference .....	DP60A			—		
	Lamp used .....	LED			—		
	Lamp control gear used .....	LF-GIF060YA(H)1400H			—		
	Mounting position of luminaire .....	Mounting Position			—		
	Supply wattage (W) .....	60W			—		
	Supply current (A) .....	-			—		
	Temperatures in test 1 - 4 below are corrected for ta (°C) .....	40°C			—		
	- abnormal operating mode .....	-			—		
1.13 (12.4)	- test 1: rated voltage .....	265V AC			—		
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current .....	281V AC			—		
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage .....	-			—		
	Through wiring or looping-in wiring loaded by a current of A during the test .....	-			—		
1.13 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current or 130/150% of rated input voltage .....	-			—		
<b>Temperature measurements (°C)</b>							
Part	Ambient	Cl. 12.4 – normal				Cl. 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
LED	40°C	-	63,9	-	-	-	-
Metal Enclosure	40°C	-	47,7	-	-	-	-
Driver	40°C	58,1	58,5	-	90 °C	-	-
Internal Cable	40°C	-	41,5	-	-	-	-
Glass Enclosure	40°C	-	62,9	-	-	-	-
Reflector	40°C	-	50,4	-	-	-	-

**DENEY RAPORU / TEST REPORT**

PTC Ürün Test ve Belgelendirme San. Tic. Ltd. Şti.

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Madde Clause	İstenen Deneyler Test Requirements	Açıklamalar Remarks	Sonuç Verdict
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Supplementary information:

ANNEX 3	Screw terminals (part of the luminaire)	N/A
(14)	<b>SCREW TERMINALS</b>	N/A
(14.2)	Type of terminal .....	-
	Rated current (A) .....	-
(14.3.2.1)	One or more conductors	N/A
(14.3.2.2)	Special preparation	N/A
(14.3.2.3)	Terminal size	N/A
	Cross-sectional area (mm <sup>2</sup> ) .....	-
(14.3.3)	Conductor space (mm) .....	N/A
(14.4)	<b>Mechanical tests</b>	N/A
(14.4.1)	Minimum distance	N/A
(14.4.2)	Cannot slip out	N/A
(14.4.3)	Special preparation	N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread) .....	N/A
	External wiring	N/A
	No soft metal	N/A
(14.4.5)	Corrosion	N/A
(14.4.6)	Nominal diameter of thread (mm) .....	N/A
	Torque (Nm) .....	N/A
(14.4.7)	Between metal surfaces	N/A
	Lug terminal	N/A
	Mantle terminal	N/A
	Pull test; pull (N) .....	N/A
(14.4.8)	Without undue damage	N/A

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Madde Clause	İstenen Deneylemler Test Requirements	Açıklamalar Remarks	Sonuç Verdict
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ANNEX 4	Screwless terminals (part of the luminaire)	P
<b>(15)</b>	<b>SCREWLESS TERMINALS</b>	P
(15.2)	Type of terminal ..... :	-
	Rated current (A) ..... :	-
(15.3.1)	Material	P
(15.3.2)	Clamping	P
(15.3.3)	Stop	P
(15.3.4)	Unprepared conductors	N/A
(15.3.5)	Pressure on insulating material	N/A
(15.3.6)	Clear connection method	N/A
(15.3.7)	Clamping independently	P
(15.3.8)	Fixed in position	P
(15.3.10)	Conductor size	P
	Type of conductor	P
(15.5)	Terminals and connections for internal wiring	P
(15.5.1)	Mechanical tests	P
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples) ..... :	P
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples) ..... :	N/A
	Insertion force not exceeding 50 N	N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)	N/A
(15.5.2)	Electrical tests	N/A
	Voltage drop (mV) after 1 h (4 samples)..... :	N/A
	Voltage drop of two inseparable joints	N/A
	Number of cycles:	—

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Madde Clause	İstenen Deneyleler Test Requirements	Açıklamalar Remarks	Sonuç Verdict
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	Voltage drop (mV) after 10th alt. 25th cycle (4 samples) .....		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples) .....		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples) .....		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples) .....		N/A
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		N/A
	Terminal size and rating		N/A
15.6.2	Mechanical tests		N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....		N/A
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N) .....		N/A
(15.6.3)	Electrical tests		N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N/A

(15.6.3.1) (15.6.3.2)	<b>TABLE: Contact resistance test / Heating tests</b>										N/A
	Voltage drop (mV) after 1 h										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop of two inseparable joints										

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Madde Clause	İstenen Deneylemler Test Requirements	Açıklamalar Remarks	Sonuç Verdict
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Voltage drop after 10th alt. 25th cycle										
Max. allowed voltage drop (mV) .....										—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
Voltage drop after 50th alt. 100th cycle										
Max. allowed voltage drop (mV) .....										—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
Continued ageing: voltage drop after 10th alt. 25th cycle										
Max. allowed voltage drop (mV) .....										—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
Continued ageing: voltage drop after 50th alt. 100th cycle										
Max. allowed voltage drop (mV) .....										—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
Supplementary information:										

## EK DOSYA 1 / ATTACHMENT 1

## Ölçüm Cihazları / Measuring Equipments

Cihaz Adı Device name	Model Tipi Model Type	Üretici Manufacturer	Son Kalb. Tarihi Last Cal. Date	Gelecek Kalb. Tarihi Future Cal. Date	Test Maddesi Test Item
AC Power Source	1009	Baysallar Elektrik San. Ve Tic. Ltd. Şti.	23.01.2024	23.01.2025	2.13(12.3.1) and 2.13(12.4)
Multitester	M12094	Metrel	18.12.2023	18.12.2024	2.15(10.2.1),2.15(10.2. 2) ve 2.15(10.3)
Klimatik Test Kabini / Climatic Test Cabinet	TK 252	Nüve	22.08.2024	22.08.2025	2.14(9.3.1)
Yüksek Gerilim Test Cihazı / High Voltage Test Device	MT-78X	Multitech	19.08.2024	19.08.2025	2.15(10.2.1)
Yaylı Darbe Çekicileri / Spring impact Hammers	MT-SH-X	Multitech	20.02.2024	20.02.2025	2.7(4.13.1)
Kumpas / Caliper	MC090-51	TorQ	19.08.2024	19.08.2025	2.8 (11)
Torkmetre / Torkmeter	TS120HX		05.02.2024	05.02.2025	2.7(4.12.1)
Kuvvet Ölçer/ Force Meter	FK 500	Sauter	29.12.2024	29.12.2025	2.11(5.2.10.3)
Gerilim Atlama Mesafesi Test Kartı / Clearance and Creepage Test Card	FU-CK5	-	26.01.2022	26.01.2025	2.8(11)
IP Elektriksel Temas Devresi / IP Electrical Touch Circuit	-	Teknik Med. ve Mekat. Teknolojileri	21.02.2024	21.02.2025	2.12(8.2.5)
32 Kanallı Tarayıcı Sıcaklık Ölçer/ 32 Channel Scanner Temperature Meter	MT-32U	Multitech	19.08.2024	19.08.2025	2.13(12.4.1)
Rüzgara Dayanıklı Kabin	-	-	-	-	2.13(12.4)
Terazi/Scales	DS-150-D	Densi	26.02.2024	26.02.2025	2.7(4.14.1)
Petrol Eteri/Petroleum Ether	ASO-46- L50	Liva	-	-	2.6(3.4)
Sterilizatör / Sterilizer		Nüve	26.02.2024	26.02.2025	2.16(13.2.1)
Bilye Basıncı Test Aparatı	-	Medikal Mek.	21.08.2024	21.08.2027	2.16(13.2.1)
Kızaran Tel Cihazı / Glow Wire Test	RH15120	Multitech	16.02.2024	16.02.2025	2.16(13.3.2)

## DENEY RAPORU / TEST REPORT

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**EK DOSYA 2 / ATTACHMENT 2**

**Görsel Dökümanlar / Photo Documentation**





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Dok.No: PR.20-RP.46 / Rev.Tarihi: 13.02.2023 / Rev. No: 01

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## AYNIYAT BEYANI

## IDENTITY DECLARATION

**Tekwat** Marka **DP60A** Model **Gömme spot** adlı ürünün aşağıdaki tabloda marka ve modelleri verilen ürünler ile bütün teknik özelliklerinin ( örneğin: tasarım-konstrüksiyon özellikler-komponentler ) aynı olduğunu beyan ederiz.

We declare that the **Tekwat** Brand **DP60A** Model **Down light** product is identical in all technical respects ( e.g. design-construction-properties-critical components ) with the brands and corresponding models that indicated at below table.

**MARKA/BRAND:** Tekwat

**Modeller/Types:**AR25A-25watt/AR35A-35watt/DP15A-15watt/DP35A-35watt/DP60A-60watt/TL35A-35watt/LNR12-12watt/LNR25-25watt

MÜHÜR / TARİH  
ECOWAT ELEKTRİK AYDINLATMA  
SAN. VE TİC. A.Ş.  
Halkın Rızası...  
Perpa, Harbiye Mahallesi A Blok No: 1  
İç Kapı No: 263 Sütlüüst  
Tic. Sic. No: 324 103 0730  
T.C.C. - 363234-5

21/10/2024