

Doc No: FRM-LAB-009a

Rev.No/Date: 02 / 11.01.2019

Sayfa / Page : 1 / 10

ÖLÇÜM RAPORU MEASUREMENT REPORT

TL-806

18-TST-105-
23/R1

11-18

Müşterinin Adı Adresi
Customer name/address

: BSI AYDINLATMA ELEK. ELEKT. SAN. TIC. A.Ş.
Konutkent Mah. 3029 Cad. No: 3/91 06810, Çankaya, Ankara,

İstek Numarası
Order No

: 18-TST-0105

Numunenin Adı ve Tarifi
Name and identity of test item

: iRUTA Aydınlatma Elemanı
iRUTA Light Element

Numunenin kabul tarihi
The date of receipt of test item

: 02.11.2018

Açıklamalar
Remarks

: DGC'ye , UL 1598 standardı uyarınca "In Situ Temperature Measurement Test(ISTMT)" ölçümleri yapılmıştır. IESNA TM-21-11 standardına göre hesaplama yapılmıştır.
ISTM test has been applied to EUT according to UL 1598 standart.
The calculation made according to IESNA TM-21-11 standart.

Deneyin Yapıldığı Tarih
Date of Test

: 14.11.2018

Raporun Sayfa Sayısı
Number of Pages of the Report

:10

Deney laboratuvarı olarak faaliyet gösteren TÜV AUSTRIA TURK, International Accreditation Service, Inc. (IAS) TL-806 ile TS EN ISO/IEC 17025 Nisan 2012 standardına göre akredite edilmiştir.
TÜV AUSTRIA TURK is accredited by International Accreditation Service, Inc. (IAS) under registration number TL-806 for TS EN ISO/IEC 17025 April 2012 as a test laboratory.

International Accreditation Service, Inc. (IAS) deney raporlarının tanınırlığı konusunda Avrupa Akreditasyon Birliği(EA) ile Çok Taraflı Anlaşma ve Uluslararası Laboratuvar Akreditasyon Birliği(ILAC) ile karşılıklı tanıma anlaşması imzalamıştır.
International Accreditation Service, Inc. (IAS) 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.



Deney Sorumlusu
Person in charge of test


Gürhan CANSIZ

Onaylayan
Approval


Gürhan CANSIZ

Doc No: FRM-LAB-009a

Rev.No/Date: 02 / 11.01.2019

Sayfa / Page : 2 / 10

ÖLÇÜM RAPORU MEASUREMENT REPORT

TL-806

18-TST-105-
23/R1

11-18

İÇİNDEKİLER (CONTENTS)

	Sayfa Page
1. Dokümantasyon (Documentation)	
1.1 DGC, Çevre Şartları ve Sembollerin Tanımları (Description of the EUT, Environmental Conditions and Symbol Definitions)	3
1.2 Deney Standartları (Test Standards)	3
1.3 Deney Ekipmanları (Test Equipments)	3
1.4 Deney Sonuçları (Test Results)	4
2. Deney Sonuçları ve Koşulları (Test Results and Conditions)	4
2.1 ISTMT Testi (ANSI/UL 1598 – In-Situ Temperature Measurement Tes)	4
2.2 IES TM-21-11 Testi (IES TM-21:11 Test)	5
3. Ekler (Attachments)	7
3.1 DGC'nin Fotoğrafları (Photos of EUT)	8
3.2 Kompenent Beyanı (Compenent declaration)	10



Doc No: FRM-LAB-009a

Rev.No/Date: 02 / 11.01.2019

Sayfa / Page : 3 / 10

ÖLÇÜM RAPORU MEASUREMENT REPORT

TL-806

18-TST-105-
23/R1

11-18

1.1 DGC, Çevre Şartları ve Sembollerin Tanımları (Description of the EUT, Environmental Conditions and Symbol Definitions)

Markası / Brand	: BSI AYDINLATMA
Modeli / Model	: RUTA - 1354
Seri Numarası / Serial Number	: Test numunesi/Test sample
Tanımı / Description	: iRUTA Aydınlatma elemanı iRUTA Light Element
Beyan Gücü / Rated Power	: 57 W
Beyan Gerilimi / Rated Voltage	: 120/240 V AC 50Hz
Çevre Şartları / Environmental Conditions	: 25,1°C, %62 Rh Humidity and clean

Deneyler sırasında ölçülen çevre şartları ilgili sayfalarda belirtilmiştir.
(The environmental conditions are measured during tests, are determined related pages.)

Sembollerin Tanımı / Definitions of Symbols
DGC= Deneyden Geçen Cihaz
EUT=Equipment Under Test



Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürsüz raporlar geçersizdir.

This report shall not be reproduced other than in full except with the permission of the laboratory. Testing reports without signature and seal are not valid.

Doc No: FRM-LAB-009a

Rev.No/Date: 02 / 11.01.2019

Sayfa / Page : 4 / 10

ÖLÇÜM RAPORU MEASUREMENT REPORT

TL-806

18-TST-105-
23/R1

11-18

1.2 Deney Standartları (Test Standards)

Deneyler aşağıdaki standartlara göre yapılmıştır

The tests were performed according to following standards.

Standart / Standard
ANSI / UL1598
IES TM-21-11
ENERGY STAR

Açıklama / Description
In Situ Temperature Measurement Test (ISTMT)
Projection Long Term Lumen Maintenance of LED Light Sources
TM-21 Calculator for Uneven LM-80 Intervals rev. 02.08.2016

2.1 Deney Sonuçları (Test Results)

ISTMT Test Sonuçları
ISTMT Test Results

ISTMT Test Sonuçları / ISTMT Test Results			
Isı Prop Numarası Thermocouple Number	Ölçüm Noktası Measurement Point	Ölçülen Sıcaklık Measured Temperature	Ortam Sıcaklığı Ambient Temperature
Thermocouple – 3	T _j for LED	78.3 °C	50 °C
Thermocouple – 8	LED Driver	64.6 °C	
Thermocouple – 4	T _c of luminaire	57.1 °C	



Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

This report shall not be reproduced other than in full except with the permission of the laboratory. Testing reports without signature and seal are not valid.

Doc No: FRM-LAB-009a

Rev.No/Date: 02 / 11.01.2019

Sayfa / Page : 5 / 10

ÖLÇÜM RAPORU MEASUREMENT REPORT

TL-806

18-TST-105-
23/R1

11-18

2.2 Deney Sonuçları

IES TM-21 Test Sonuçları / IES TM-21 Test Results

IES TM-21 Girdileri / IES TM-21 Inputs

Instructions	
Yellow fields are completed by the user. Fields not used should be left blank. Cyan fields are calculated based on user entries.	
First, enter a description of the LED light source tested. Then complete the fields labeled "LM-80 Testing Details". Test duration must be at least 6,000 hours. If only one case temperature data set is to be used (no interpolation), complete only "Tested case temperature 1". If the in-situ values falls between two cases temperatures, enter only those two case temperature data sets in Tested case temperature 1 and 2 in ascending temperature order.	
Next, further to the right, in the corresponding box(es) for each tested case temperature, enter the test data along with the time (in hours) at which each measurement was taken. Data entered must be normalized then averaged measured data (per TM-21 sections 5.2.1 and 5.2.2).	
Enter drive current, in-situ temperature data and the percentage of initial lumens to project to in the fields labeled "In-Situ Inputs".	
Results can be tailored to estimate lumen maintenance at a specific time by entering a value (t) in the yellow field. A complete TM-21 report will appear on the next tab labeled "Report".	

Description of LED Light Source Tested (manufacturer, model, catalog number)	
BSI AYDINLATMA ELEK. ELEKT. SAN. TIC. A.Ş. IRUTA AYDINLATMA ELEMANI RUTA-1354 57W 120-240VAC 50Hz	

LM-80 Test Inputs	
Test Data for 55°C Case Temperature	
Time (hours)	Lumen Maintenance (%)
0	100.00%
542	99.90%
1010	100.10%
1699	100.10%
2372	99.90%
3124	99.80%
3812	99.50%
4520	99.20%
5185	98.20%
6019	99.20%
6780	98.80%
7577	98.80%
8412	98.50%
9239	98.10%
10075	98.20%

Test Data for 65°C Case Temperature	
Time (hours)	Lumen Maintenance (%)
0	100.00%
542	98.60%
1010	98.60%
1699	98.40%
2372	98.10%
3124	97.80%
3812	97.70%
4520	97.30%
5185	97.10%
6019	96.80%
6780	96.40%
7577	96.20%
8412	95.50%
9239	94.50%
10075	93.90%

Test Data for 105°C Case Temperature	
Time (hours)	Lumen Maintenance (%)
0	100.00%
542	97.10%
1010	96.70%
1699	96.20%
2372	95.70%
3124	95.20%
3812	95.10%
4520	94.80%
5185	94.60%
6019	94.40%
6780	93.90%
7577	93.30%
8412	92.50%
9239	91.50%
10075	90.70%

In-Situ Inputs	
Drive current for each LED package/array/module (mA):	175
In-situ case temperature (T _a , °C):	78.3
Percentage of initial lumens to project to (e.g. for L ₇₀ enter 70):	70

Results	
Time (t) at which to estimate lumen maintenance (hours):	10,000
Lumen maintenance at time (t) (%):	96.32%
Reported L70 (hours):	10000

Doc No: FRM-LAB-009a

Rev.No/Date: 02 / 11.01.2019

Sayfa / Page : 6 / 10

ÖLÇÜM RAPORU MEASUREMENT REPORT

TL-806

18-TST-105-
23/R1

11-18

2.2 Deney Sonuçları

IES TM-21 Test Sonuçları / IES TM-21 Test Results

IES TM-21 Çıktıları / IES TM-21 Outputs

Table 1: Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)		BSI AYDINLATMA ELEK. ELEKT. SAN. TIC. A.Ş. İRUTA AYDINLATMA ELEMANIRUT			
Test Condition 1 - 55°C Case Temp		Test Condition 2 - 85°C Case Temp		Test Condition 3 - 105°C Case Temp	
Sample size	25	Sample size	25	Sample size	25
Number of failures	0	Number of failures	0	Number of failures	0
DUT drive current used in the test (mA)	200	DUT drive current used in the test (mA)	200	DUT drive current used in the test (mA)	200
Test duration (hours)	10.075	Test duration (hours)	10.075	Test duration (hours)	10.075
Test duration used for projection (hour to hour)	4520,0 - 10075,0	Test duration used for projection (hour to hour)	4520,0 - 10075,0	Test duration used for projection (hour to hour)	4520,0 - 10075,0
Tested case temperature (°C)	55	Tested case temperature (°C)	85	Tested case temperature (°C)	105
α	2,210E-06	α	6,443E-06	α	8,135E-06
β	1,003	β	1,005	β	0,988
Reported L70(10k) (hours)	>60000	Reported L70(10k) (hours)	56.000	Reported L70(10k) (hours)	42.000

Table 2: Interpolation Report (projection based on in-situ temperature entered)	
$T_{s,1}$ (°C)	55,00
$T_{s,1}$ (K)	328,15
α_1	2,210E-06
β_1	1,003
$T_{s,2}$ (°C)	85,00
$T_{s,2}$ (K)	358,15
α_2	6,443E-06
β_2	1,005
E_a/k_b	4,19E+03
A	7,787E-01
B_0	1,004
$T_{s,i}$ (°C)	78,30
$T_{s,i}$ (K)	351,45
α_i	5,155E-06
Reported L70(10k) at 78,3°C (hours)	>60000

Lifetime = L70(10k) >60.000 hr
L80(10k) 44.000 hr
L90(10k) 21.000 hr



Doc No: FRM-LAB-009a

Rev.No/Date: 02 / 11.01.2019

Sayfa / Page : 7 / 10

ÖLÇÜM RAPORU
MEASUREMENT REPORT

TL-806

18-TST-105-
23/R1

11-18

3 Ekler Listesi (List Of Annexes)

Ek Annex	Sayfa Sayısı Number of Pages	Konu Subject
1	1	DGC'nin Fotoğrafları (Photos of EUT)
2	1	Komponent Beyanı (Compenent declaration)



Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

This report shall not be reproduced other than in full except with the permission of the laboratory. Testing reports without signature and seal are not valid.

Doc No: FRM-LAB-009a

Rev.No/Date: 02 / 11.01.2019

Sayfa / Page : 8 / 10

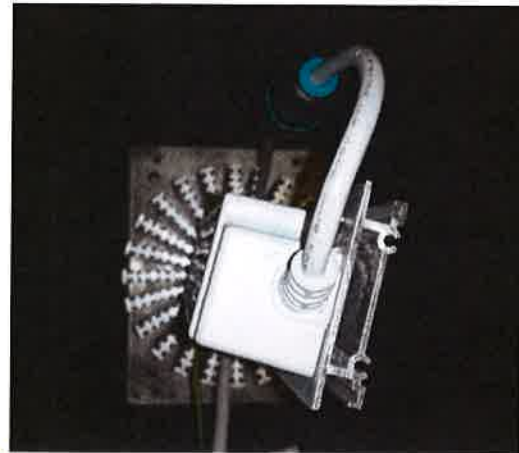
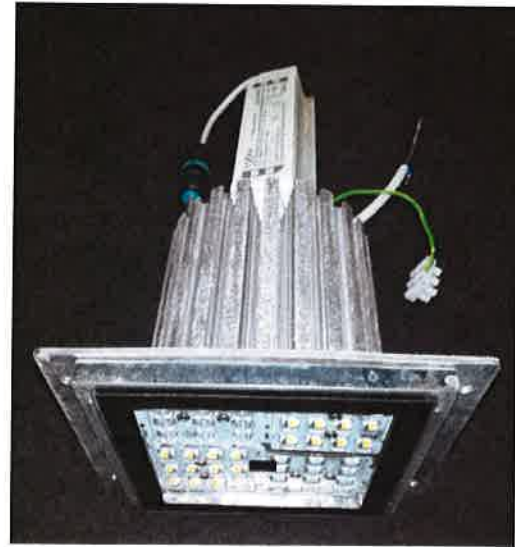
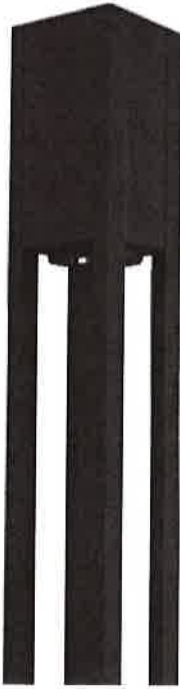
ÖLÇÜM RAPORU
MEASUREMENT REPORT

TL-806

18-TST-105-
23/R1

11-18

3.1 DGC'nin Fotoğrafları (Photos of EUT)



Doc No: FRM-LAB-009a

Rev.No/Date: 02 / 11.01.2019

Sayfa / Page : 9 / 10

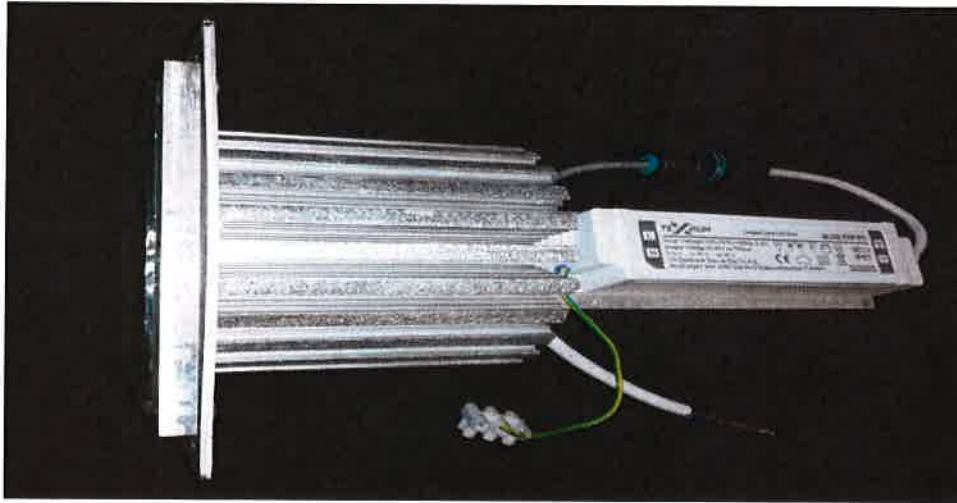
ÖLÇÜM RAPORU
MEASUREMENT REPORT

TL-806

18-TST-105-
23/R1

11-18

3.1 DGC'nin Fotoğrafları (Photos of EUT)



Doc No: FRM-LAB-009a

Rev.No/Date: 02 / 11.01.2019

Sayfa / Page : 10 / 10

ÖLÇÜM RAPORU
MEASUREMENT REPORT

TL-806

18-TST-105-
23/R1

11-18

3.2 Komponent Beyanı (Component declaration)**BSI Aydınlatma San Tic A.Ş.**
Lighting Technologies

06.11.2018

DEKLARASYON

Firmamız tarafından üretilen iRuta Décor model cihazların aşağıda belirtilen componentlerin karşılığı gelen teknik dataların doğruluğunu ve standartların gereksinimleri karşıladıklarını beyan ederiz.

TABLE: Components					
Object / part No.	Manufacturer/ trademark	Model	Technical data	Standard	Mark(s) of conformity
KABLO	PEKTAŞ	3x1,5 TTR	OLAĞAN PVC KILIFLI ELEKTRİK KABLOLARI	TS EN 50525-2- 11:2011	Kema -Keur
LED	Nichia	NF2L757GRT-V1	3x3mm kılıflı MLD POWER LED	LM- 80 TEST RAPORU	
PCB	TD elektronik	X-ML60205NCF. 757xx-48	12 adet 3x3mm kılıflı ledli 51x60cm PCB		
SÜRÜCÜ	VS	186774.82 ECXd1 400.309 110-277V	75W 700mA 36-107 V -40 ... +60 °C	EN 61347-1 EN 61347-2-13 EN 61547 EN 61000-3-2 EN 61000-3-3 EN 62384 EN 55015	
SÜRÜCÜ	MEAN WELL	ELG-75-C700	75W 700Ma 53 ~ 107V	ENEC EN61347-1, EN61347-2-13 independent, EN62384;	
SÜRÜCÜ	TRIDONIC	LCO 75W 700mA fixC L SNC2	75W 700mA 100 ~ 240 V 50 / 60 Hz -40 ... +85 °C	EN 61347-2-13 C5e	
KLEMENS	TECHNO	THB391	IP 68 Operating current max. 32A Operating voltage max. 450V AC		
MERCEK	LIMBUS	TLS12NI- CT757ST-M2M3- V1	ASYMETRIC -40 ... +105 °C		

BSİ AYDINLATMA ELEK. ELEKT. SAN. TİC. A.Ş.

Konutkent Mah. 3029 Cad. No: 3/91 06810, Çankaya, Ankara, TURKEY

T: +90.312.472.42.50 F: +90.312.255 15 95

bsilighting.com - info@bsilighting.com

MERSIS NO: 7651371784968136 REGISTRY NO: 359371

BSİ AYDINLATMA**ELEK. ELEKT. SAN. VE TİC. A.Ş.**

Konutkent Mah. 3029. Cad. No: 3/91 06810

Çankaya, Ankara, TÜRKİYE Dosyabey V.D. 187 065 2662

Tic. Sic. No: 359371 Mersis No: 7651371784968136

Web: bsilighting.com Email: info@bsilighting.com

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

This report shall not be reproduced other than in full except with the permission of the laboratory. Testing reports without signature and seal are not valid.