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ÖLÇÜM RAPORU
MEASUREMENT REPORT

TL-806

19-TST-0083-62

04-19

Müşterinin Adı Adresi
Customer name/address**: BSI AYDINLATMA ELEK. ELEKT. SAN. TIC. A.Ş.**
Konutkent Mah. 3029 Cad. No: 3/91 06810, Çankaya, Ankara, TURKEY**İstek Numarası**
Order No**: 19-TST-0083****Numunenin Adı ve Tarifi**
Name and identity of test item**: iRUTA R Aydınlatma Elemanı**
iRUTA R Light Element**Numunenin kabul tarihi**
The date of receipt of test item**: 04.04.2019****Açıklamalar**
Remarks**: DGC'ye , IES LM-79-08 standardı uyarınca fotometrik ölçümler yapılmıştır.**
Photometric measurement has been applied to EUT according to IESNA LM-79-08**Deneyin Yapıldığı Tarih**
Date of Test**: 15.04.2019****Raporun Sayfa Sayısı**
Number of Pages of the Report**: 17**

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.
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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.

Bu rapor, laboratuvara gönderilen numunelere uygulanan deney/deneyler sonucu hazırlanmıştır. Müşteriye ait diğer numuneleri kapsamaz.
This report was prepared according to test results of specimens sent to laboratory. It doesn't contain other specimens belonging to customer.

**Deney Sorumlusu**
Person in charge of test**Saltuk Buğra GÜNEŞ****Onaylayan**
Approval**Gürhan CANSIZ**

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1.1

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

Markası / Brand	: BSI AYDINLATMA
Modeli / Model	: İRUTA R
Seri Numarası / Serial Number	:Test numunesi/Test sample
Tanımı / Description	: İRUTA R Aydınlatma elemanı İRUTA R Light Element
Beyan Gücü / Rated Power	:31,2 W
Beyan Gerilimi / Rated Voltage	:220-240VAC 50-60Hz
Sembollerin Tanımı / Definitions of Symbols	DGC= Deneyden Geçen Cihaz EUT=Equipment Under Test

Çevre Şartları / Environmental Conditions	
Sıcaklık (°C) (Temperature)	25 °C ±1
Nem (Rh) (Humidity)	%45 ±10
Stabilizasyon (Stabilization)	30 dk ±5dk



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1.2 Deney Standartları (Test Standards)

Deneyler aşağıdaki standartlara göre yapılmıştır (The tests were performed according to following standards):

Standart / Standard

■ IESNA LM-79-08 Electrical and Photometric Measurements of Solid-State Lighting Products

1.3 Deney Ekipmanları (Test Equipments)**Kayıt No. (ID – No.)**LAB-011
LAB-015
LAB-027
LAB-012
LAB-023**Tip (Type)**Goniophotometer
AC Power Supply
Powermeter
Integrating Sphere
Standart Lamp**Kontrol (Check Point)**☒
☒
☒
☒
☒**1.3 Komponent listesi (Component list)**

Komponent (Component)	Üretici (Manufacturer)	Model (Model)	Standart no. (Standard No.)	Sertifika no. (Certificate No.)
Cable	ATILIM KABLO	3x1,5 TTR	TS EN 50525-3-31:2011	TSE
LED	NICHIA	NF2L757GRT-V1	LM-80	
DRIVER	VS	ECXe 900.241	EN 61347-1 EN 61347-2-13	
REKOR	PG7 / PG9	ORGL 01/ ORGL 02	VDE TSE EN 61386-22	VDE, TSE
KLEMENS	ADELS CONTACT	1003 SI/ 3 E	To EN 60598: terminal blocks 25 A at T 85 °C To EN 60998: terminal blocks 41 A at T 85 °C To EN 60127-6 fuse holders 16 A at T 70 °C	



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1.4 Deney Sonuçları (Test Results)

Electrical Measurements

Aktif güç (W)(active power)	32,07 W
Ortalama Gerilim (V)(Average Voltage)	230,1 V
Ortalama Akım (mA)(Average Current)	0,1419 A
Güç Faktörü (PF)(Power Factor)	0,9825
Frekans (Hz)(Frequency)	50 Hz
Ortam Sıcaklığı (°C)(Ambient Temperature)	25,1 °C 48% Rh

Photometric Results

Işık Akısı (Luminous Flux)	2375 lm
Maksimum Işık Şiddeti (Peak Intensity)	380,1 cd
Verimlilik (Luminous efficacy)	74,05 lm/W



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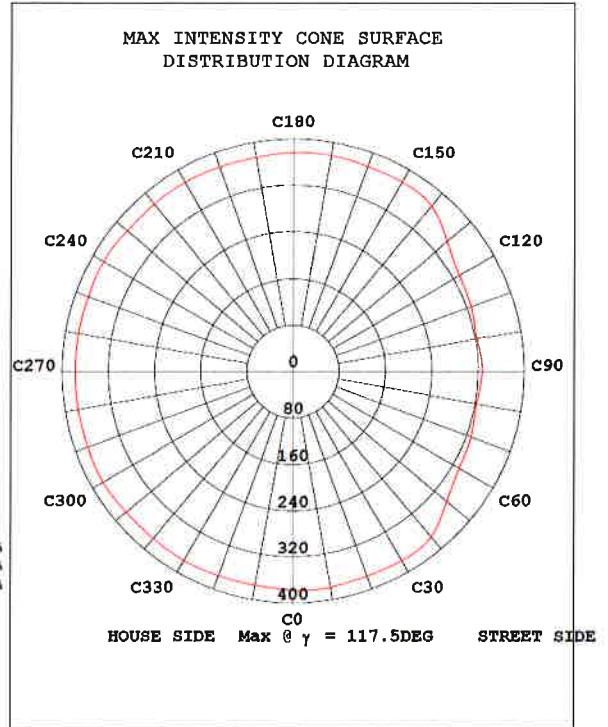
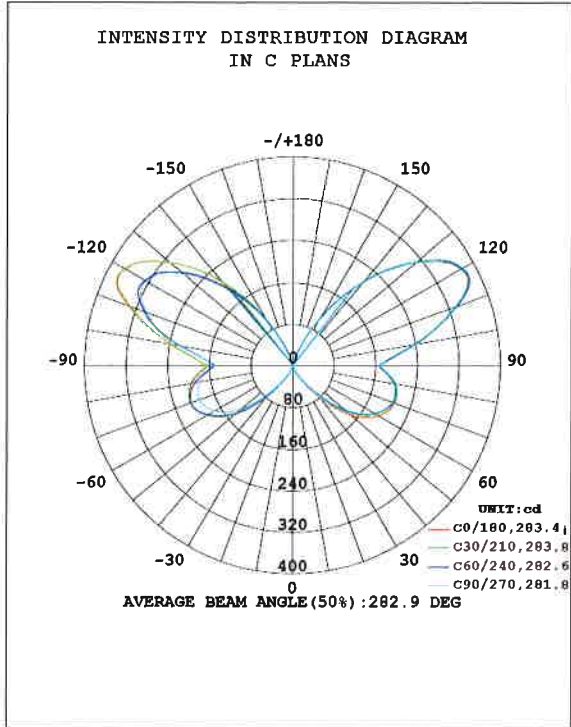
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Deney Sonuçları (Test Results)

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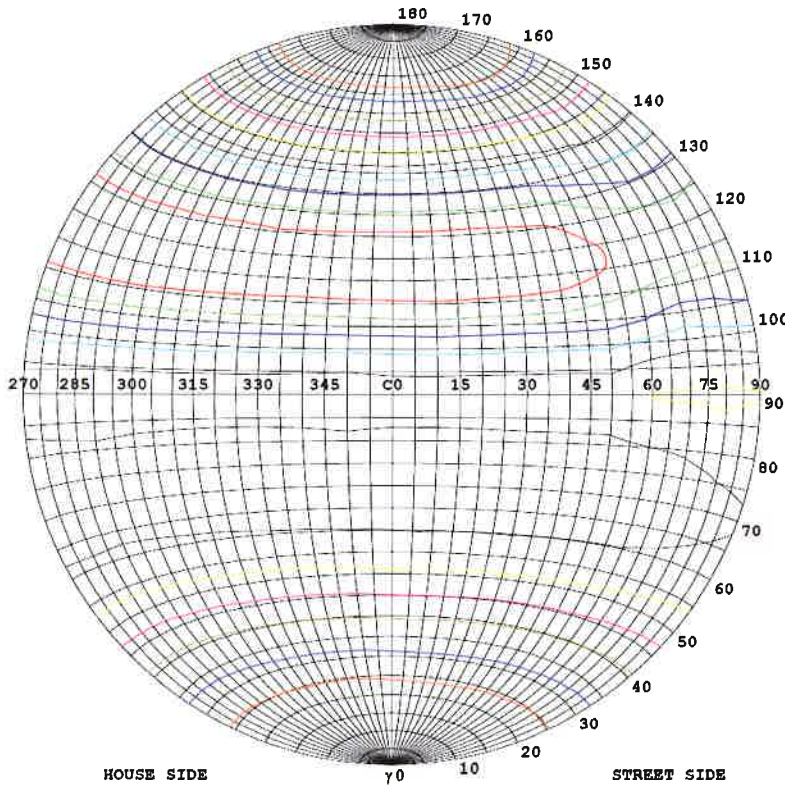
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Deney Sonuçları (Test Results)**STREETLIGHT ISOCANDELA DIAGRAM****Classification:**

IES:Type I - Very Short
CIE:Narrow - Long
IES:None cut-off
CIE:Non-cut-off
Max.At80:84.31cd/klm
Max.At90:71.59cd/klm
Max.80-90:84.31cd/klm

ISOCANDELA DIAGRAM	
UNIT	cd
Imax=100%	380
90%	342
80%	304
70%	266
60%	228
50%	190
40%	152
30%	114
20%	76
10%	38
5%	19



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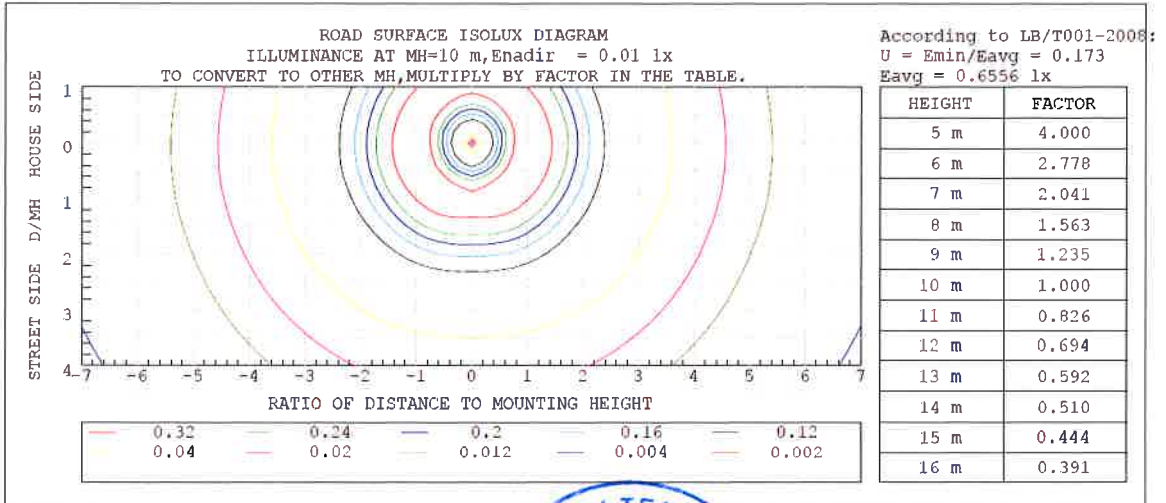
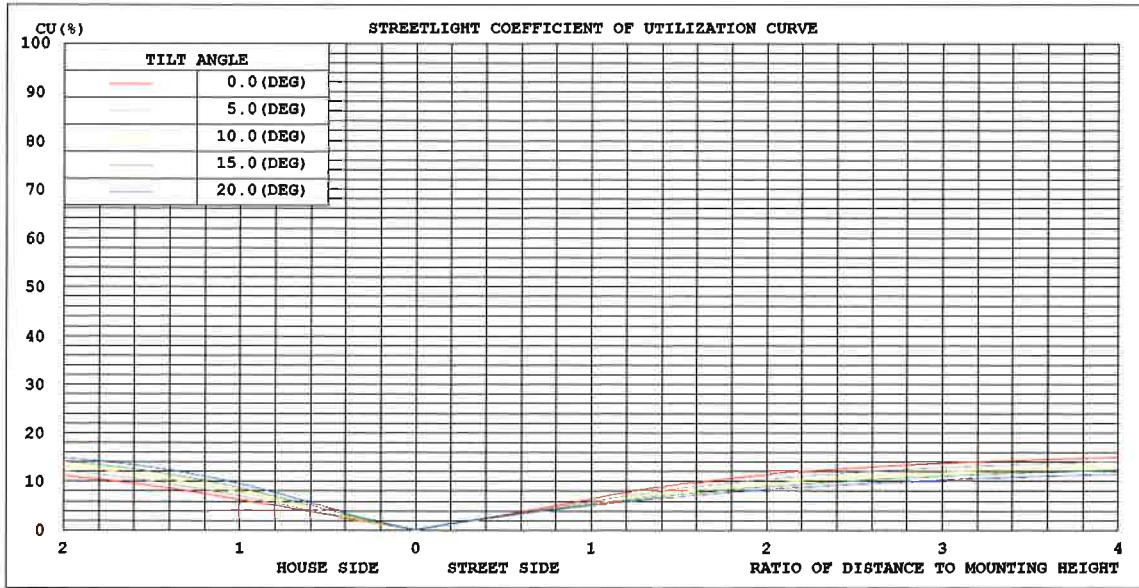
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Deney Sonuçları (Test Results)**COEFFICIENT OF UTILIZATION CURVE
AND ISOLUX DIAGRAM**

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Deney Sonuçları (Test Results)**ZONAL FLUX DIAGRAM**

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	lum, lamp
5	1.189	1.102	1.029	1.102	1.189	1.223	1.132	1.223	0- 5	0.0192	0.0192	0.00,0.00
10	4.101	3.989	3.429	3.989	4.101	4.060	3.732	4.060	5- 10	0.1818	0.2010	0.01,0.01
15	8.624	8.398	7.526	8.398	8.624	8.357	7.798	8.357	10- 15	0.7348	0.9358	0.04,0.04
20	13.61	13.14	11.83	13.14	13.61	13.08	12.11	13.08	15- 20	1.762	2.698	0.11,0.11
25	20.81	20.42	18.09	20.42	20.81	19.33	17.47	19.33	20- 25	3.378	6.077	0.26,0.26
30	33.66	32.81	29.47	32.81	33.66	31.20	27.91	31.20	25- 30	6.373	12.45	0.52,0.52
35	52.83	51.73	46.45	51.73	52.83	48.72	44.28	48.72	30- 35	11.87	24.32	1.02,1.02
40	79.98	78.07	70.69	78.07	79.98	74.03	68.69	74.03	35- 40	20.75	45.07	1.9,1.9
45	113.3	110.6	100.8	110.6	113.3	105.8	99.59	105.8	40- 45	33.87	78.94	3.32,3.32
50	145.9	143.0	131.1	143.0	145.9	138.6	132.9	138.6	45- 50	50.17	129.1	5.44,5.44
55	171.7	170.1	156.4	170.1	171.7	165.8	162.4	165.8	50- 55	66.97	196.1	8.26,8.26
60	190.3	189.7	174.5	189.7	190.3	185.1	183.2	185.1	55- 60	81.96	278.0	11.7,11.7
65	203.5	204.2	186.2	204.2	203.5	199.2	198.0	199.2	60- 65	94.31	372.3	15.7,15.7
70	209.8	209.8	191.3	209.8	209.8	206.6	207.1	206.6	65- 70	103.5	475.9	20,20
75	206.4	205.7	187.6	205.7	206.4	205.4	204.8	205.4	70- 75	107.6	583.5	24.6,24.6
80	198.9	196.0	180.6	196.0	198.9	198.2	197.9	198.2	75- 80	106.9	690.4	29.1,29.1
85	182.0	180.8	165.7	180.8	182.0	183.7	183.2	183.7	80- 85	101.8	792.2	33.4,33.4
90	167.3	165.9	149.4	165.9	167.3	169.6	167.4	169.6	85- 90	92.97	885.1	37.3,37.3
95	196.3	194.8	176.8	194.8	196.3	195.3	198.1	195.3	90- 95	96.37	981.5	41.3,41.3
100	238.9	236.6	220.4	236.6	238.9	239.7	242.1	239.7	95-100	114.9	1096	46.2,46.2
105	288.1	283.6	266.6	283.6	288.1	287.8	289.5	287.8	100-105	138.3	1235	52,52
110	335.3	322.4	299.5	322.4	335.3	333.6	334.5	333.6	105-110	158.9	1394	58.7,58.7
115	373.8	356.1	323.2	356.1	373.8	372.1	371.8	372.1	110-115	174.7	1568	66,66
120	371.9	357.2	326.0	357.2	371.9	373.6	373.5	373.6	115-120	177.1	1745	73.5,73.5
125	349.9	335.0	307.2	335.0	349.9	351.2	350.5	351.2	120-125	162.9	1908	80.3,80.3
130	308.9	300.6	273.2	300.6	308.9	309.0	311.4	309.0	125-130	139.9	2048	86.2,86.2
135	261.6	254.6	232.9	254.6	261.6	261.7	263.9	261.7	130-135	112.8	2161	91,91
140	207.5	204.7	186.3	204.7	207.5	209.4	211.1	209.4	135-140	85.39	2246	94.6,94.6
145	153.7	152.0	139.8	152.0	153.7	155.0	157.1	155.0	140-145	59.67	2306	97.1,97.1
150	103.2	101.9	93.66	101.9	103.2	103.5	104.9	103.5	145-150	37.41	2343	98.7,98.7
155	59.00	51.91	54.07	51.91	59.00	58.74	60.82	58.74	150-155	19.98	2363	99.5,99.5
160	26.73	18.61	25.19	18.61	26.73	25.98	27.11	25.98	155-160	8.196	2372	99.9,99.9
165	10.40	7.885	10.31	7.885	10.40	8.697	7.539	8.697	160-165	2.622	2374	100,100
170	3.385	3.039	3.500	3.039	3.385	1.898	0.5369	1.898	165-170	0.6408	2375	100,100
175	0.8569	1.071	1.234	1.071	0.8569	0	0.0722	0	170-175	0.1070	2375	100,100
180	0.8119	0.8240	0.7504	0.8240	0.8119	0.5127	0.7589	0.5127	175-180	0.0126	2375	100,100
DEG	LUMINOUS INTENSITY:cd								UNIT:lm			



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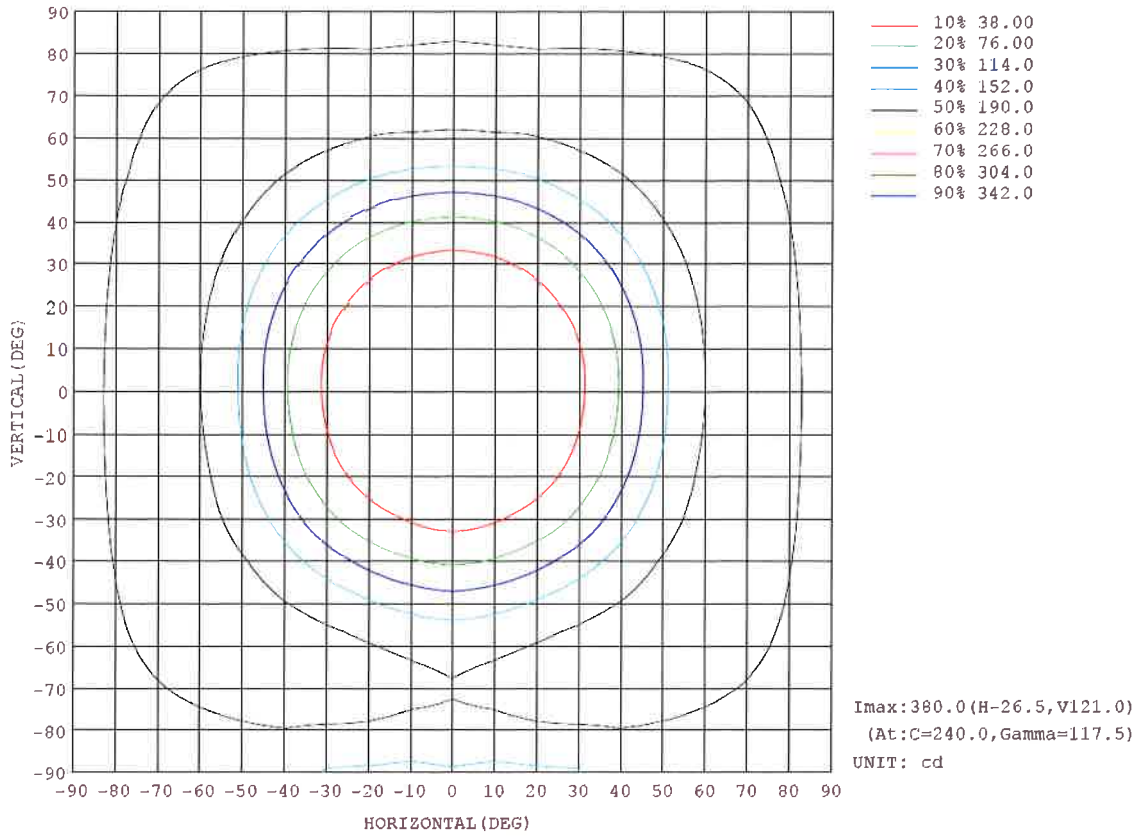
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Deney Sonuçları (Test Results)

ISOCANDELA DIAGRAM



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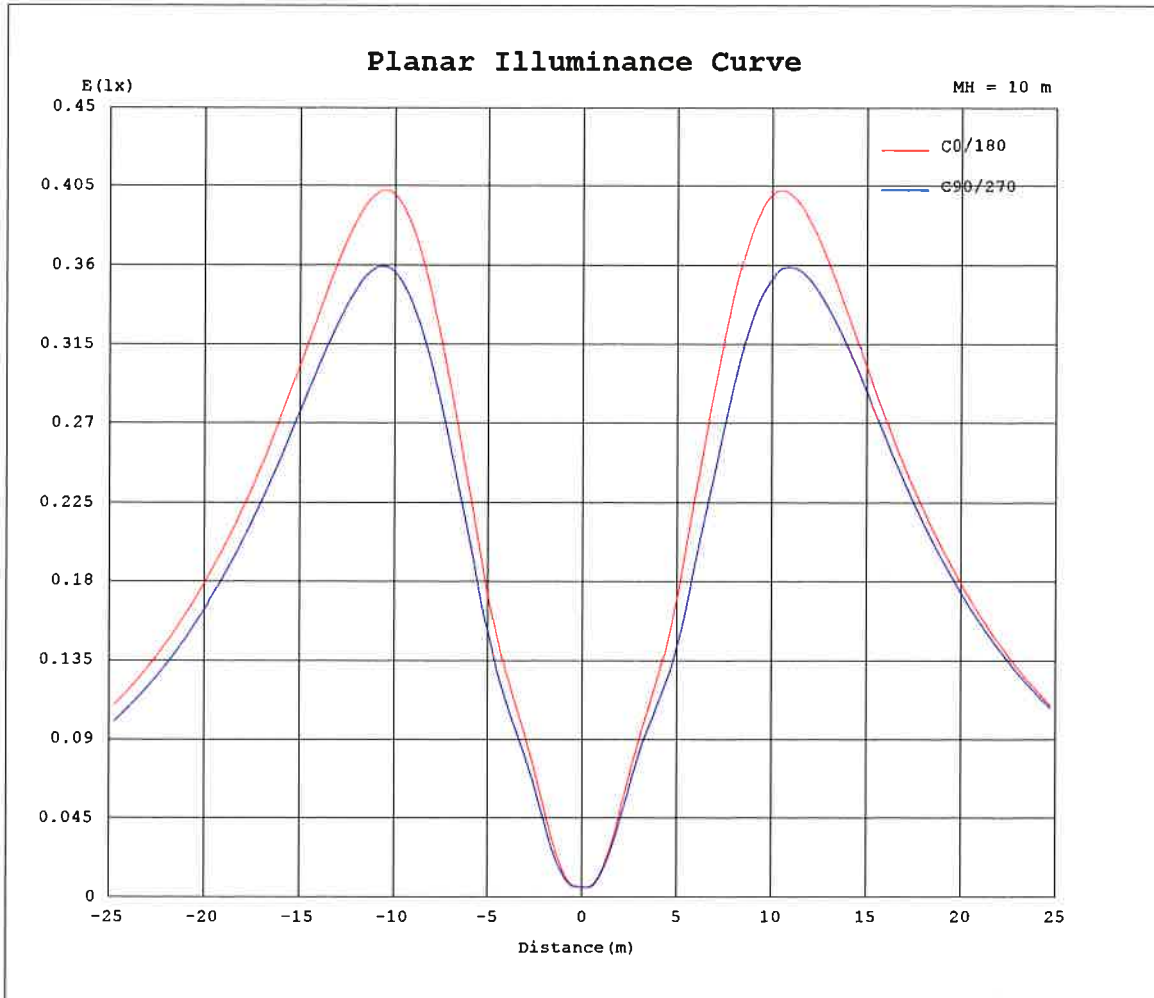
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Deney Sonuçları (Test Results)



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Deney Sonuçları (Test Results)**LUMINOUS DISTRIBUTION INTENSITY DATA**

Table--1

UNIT: cd

C (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
Y (DEG)	0	0.61	0.61	0.62	0.61	0.60	0.60	0.61	0.61	0.60	0.61	0.61	0.60	0.60	0.61	0.62	0.61	0.61	0.61
5	1.19	1.20	1.17	1.17	1.12	1.08	1.05	1.03	1.02	1.03	1.02	1.03	1.05	1.08	1.12	1.17	1.17	1.20	1.19
10	4.10	4.23	4.21	4.15	4.06	3.92	3.76	3.62	3.49	3.43	3.49	3.62	3.76	3.92	4.06	4.15	4.21	4.23	4.10
15	8.62	8.69	8.66	8.58	8.48	8.32	8.11	7.90	7.73	7.53	7.73	7.90	8.11	8.32	8.48	8.58	8.66	8.69	8.62
20	13.6	13.7	13.7	13.6	13.3	13.0	12.7	12.4	12.0	11.8	12.0	12.4	12.7	13.0	13.3	13.6	13.7	13.7	13.6
25	20.8	21.0	21.1	21.0	20.6	20.2	20.1	19.4	18.5	18.1	18.5	19.4	20.1	20.2	20.6	21.0	21.1	21.0	20.8
30	33.7	34.2	34.0	33.6	33.0	32.6	32.3	31.4	30.0	29.5	30.0	31.4	32.3	32.6	33.0	33.6	34.0	34.2	33.7
35	52.8	53.5	53.2	52.5	52.0	51.5	51.0	49.5	47.3	46.5	47.3	49.5	51.0	51.5	52.0	52.5	53.2	53.5	52.8
40	80.0	80.7	80.0	79.1	78.4	77.8	77.2	75.1	72.0	70.7	72.0	75.1	77.2	77.8	78.4	79.1	80.0	80.7	80.0
45	113	113	113	112	111	110	109	106	103	101	103	106	109	110	111	112	113	113	113
50	146	146	145	145	143	143	142	138	134	131	134	138	142	143	143	145	145	146	146
55	172	172	171	172	170	170	168	165	159	156	159	165	168	170	170	172	171	172	172
60	190	191	190	191	190	190	189	185	178	174	178	185	189	190	190	191	190	191	190
65	204	204	204	204	204	205	203	198	192	186	192	198	203	205	204	204	204	204	204
70	210	210	209	210	209	210	209	204	195	191	195	204	209	210	209	210	209	210	210
75	206	208	206	206	206	205	203	198	190	188	190	198	203	205	206	206	206	208	206
80	199	199	197	197	197	195	190	186	179	181	179	186	190	195	197	197	197	199	199
85	182	183	182	180	181	181	170	168	162	166	162	168	170	181	181	180	182	183	182
90	167	169	167	165	166	166	151	148	145	149	145	148	151	166	166	165	167	169	167
95	196	197	196	195	194	195	176	170	171	177	171	170	176	195	194	195	196	197	196
100	239	240	239	237	237	236	222	207	214	220	214	207	222	236	237	237	239	240	239
105	288	291	288	286	286	281	270	251	257	267	257	251	270	281	286	286	288	291	288
110	335	338	334	333	329	315	304	292	287	300	287	292	304	315	329	333	334	338	335
115	374	374	371	371	366	346	328	324	318	323	318	324	328	346	366	371	371	374	374
120	372	373	374	373	369	346	328	324	319	326	319	324	328	346	369	373	374	373	372
125	350	350	349	349	346	324	312	304	298	307	298	304	312	324	346	349	349	350	350
130	309	311	309	310	310	291	278	267	268	273	268	267	278	291	310	310	309	311	309
135	262	261	262	262	260	249	240	228	227	233	227	228	240	249	260	262	262	261	262
140	208	208	210	210	209	201	196	183	185	186	185	183	196	201	209	210	210	208	208
145	154	154	155	155	154	150	146	137	139	140	139	137	146	150	154	155	155	154	154
150	103	103	102	102	102	102	97.5	91.5	94.3	93.7	94.3	91.5	97.5	102	102	102	102	103	103
155	59.0	58.9	56.8	53.6	51.0	52.9	49.0	48.6	51.1	54.1	51.1	48.6	49.0	52.9	51.0	53.6	56.8	58.9	59.0
160	26.7	26.8	25.2	22.2	19.6	17.6	17.0	18.9	22.2	25.2	22.2	18.9	17.0	17.6	19.6	22.2	25.2	26.8	26.7
165	10.4	10.6	10.1	9.11	8.22	7.56	7.50	8.34	9.43	10.3	9.43	8.34	7.50	7.56	8.22	9.11	10.1	10.6	10.4
170	3.39	3.55	3.37	3.18	3.04	3.04	3.13	3.21	3.38	3.50	3.38	3.21	3.13	3.04	3.04	3.18	3.37	3.55	3.39
175	0.86	0.99	1.05	1.04	1.04	1.10	1.15	1.19	1.20	1.23	1.20	1.19	1.15	1.10	1.04	1.04	1.05	0.99	0.86
180	0.81	0.83	0.80	0.85	0.84	0.81	0.78	0.75	0.74	0.75	0.74	0.75	0.78	0.81	0.84	0.85	0.80	0.83	0.81



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Deney Sonuçları (Test Results)

LUMINOUS DISTRIBUTION INTENSITY DATA

Table--2

UNIT: cd

C (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350
γ (DEG)	0.60	0.60	0.60	0.61	0.61	0.60	0.61	0.60	0.60	0.60	0.61	0.60	0.61	0.61	0.60	0.60	0.60
5	1.22	1.24	1.24	1.23	1.21	1.19	1.18	1.16	1.13	1.16	1.18	1.19	1.21	1.23	1.24	1.24	1.22
10	4.00	4.02	4.05	4.07	4.05	4.00	3.95	3.84	3.73	3.84	3.95	4.00	4.05	4.07	4.05	4.02	4.00
15	8.39	8.45	8.44	8.38	8.34	8.25	8.08	7.93	7.80	7.93	8.08	8.25	8.34	8.38	8.44	8.45	8.39
20	13.2	13.1	13.1	13.1	13.0	12.9	12.7	12.3	12.1	12.3	12.7	12.9	13.0	13.1	13.1	13.1	13.2
25	19.8	19.5	19.5	19.5	19.1	18.7	18.2	17.8	17.5	17.8	18.2	18.7	19.1	19.5	19.5	19.5	19.8
30	32.5	32.1	31.8	31.7	30.7	29.7	28.9	28.3	27.9	28.3	28.9	29.7	30.7	31.7	31.8	32.1	32.5
35	51.0	50.4	49.8	49.5	48.0	46.8	45.4	45.0	44.3	45.0	45.4	46.8	48.0	49.5	49.8	50.4	51.0
40	77.7	76.6	75.6	75.1	73.0	71.8	69.7	69.6	68.7	69.6	69.7	71.8	73.0	75.1	75.6	76.6	77.7
45	110	109	108	107	104	103	101	101	99.6	101	101	103	104	107	108	109	110
50	142	141	140	139	138	136	134	133	133	133	134	136	138	139	140	141	142
55	170	168	167	166	166	163	162	162	162	162	162	163	166	166	167	168	170
60	189	188	188	185	185	183	182	184	183	184	182	183	185	185	188	188	189
65	203	203	201	200	198	198	198	199	198	199	198	198	198	200	201	203	203
70	208	209	208	207	206	206	205	207	207	207	205	206	206	207	208	209	208
75	206	205	207	206	205	204	203	205	205	205	203	204	205	206	207	205	206
80	196	198	200	198	198	197	194	196	198	196	194	197	198	198	200	198	196
85	180	182	184	184	183	181	180	181	183	181	180	181	183	184	184	182	180
90	165	167	169	170	169	167	166	167	167	167	166	167	169	170	169	167	165
95	192	194	195	195	195	194	193	196	198	196	193	194	195	195	195	194	192
100	237	238	238	239	240	240	240	242	242	242	240	240	240	239	238	238	237
105	287	285	287	288	288	289	290	290	289	290	289	289	288	288	287	285	287
110	333	331	333	333	334	336	336	335	335	335	336	336	334	333	333	331	333
115	371	370	370	372	372	375	375	373	372	373	375	375	372	372	370	370	371
120	373	373	372	374	374	375	376	375	373	375	376	375	374	374	372	373	373
125	348	347	347	351	351	354	349	350	350	350	349	354	351	351	347	347	348
130	309	308	310	309	309	312	314	312	311	312	314	312	309	309	310	308	309
135	261	259	259	262	261	264	263	264	264	264	263	264	261	262	259	259	261
140	208	207	208	209	209	212	212	211	211	211	212	212	209	209	208	207	208
145	154	154	154	154	155	158	157	157	157	157	157	158	155	154	154	154	154
150	104	103	102	103	104	105	105	104	105	104	105	105	104	103	102	103	104
155	59.6	59.4	58.3	58.3	59.2	58.9	58.9	59.8	60.8	59.8	58.9	58.9	59.2	58.3	58.3	59.4	59.6
160	27.2	27.0	26.3	26.1	25.9	25.8	25.8	26.5	27.1	26.5	25.8	25.8	25.9	26.1	26.3	27.0	27.2
165	10.5	10.1	9.39	8.92	8.47	8.22	8.08	7.77	7.54	7.77	8.08	8.22	8.47	8.92	9.39	10.1	10.5
170	3.25	2.86	2.22	2.02	1.77	1.30	0.53	0.60	0.54	0.60	0.53	1.30	1.77	2.02	2.22	2.86	3.25
175	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.07	0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.31	0.71	0.75	0.76	0.76	0.76	0.76	0.76	0.75	0.71	0.31	0.00	0.00	0.00



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Deney Sonuçları (Test Results)

Aktif güç (W)(active power)	32,07 W
Ortalama Gerilim (V)(Average Voltage)	230,1 V
Ortalama Akım (mA)(Average Current)	0,1419 A
Güç Faktörü (PF)(Power Factor)	0.9825
Frekans (Hz)(Frequency)	50 Hz
Ortam Sıcaklığı (°C)(Ambient Temperature)	25,1°C 49% Rh

Spectrocolorimetric Results

Chrom x	0,3834
Chrom y	0,3843
Duv	0,00108
Chrom u'	0,2241
Chrom v'	0,5053
Peak	593 nm
Dominant	578 nm
CCT	3976 K
Nominal CCT	4000 K
Ra(CRI)	83
S/P Ratio	1,7
Preburning time	1 hr
Stabilization Time	45 min
Test Configuration	4π



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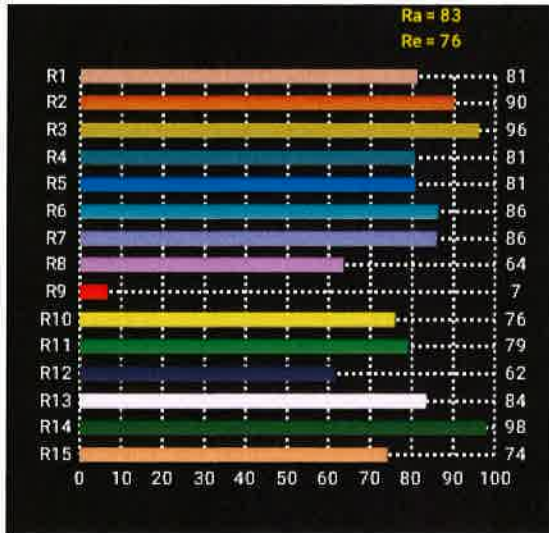
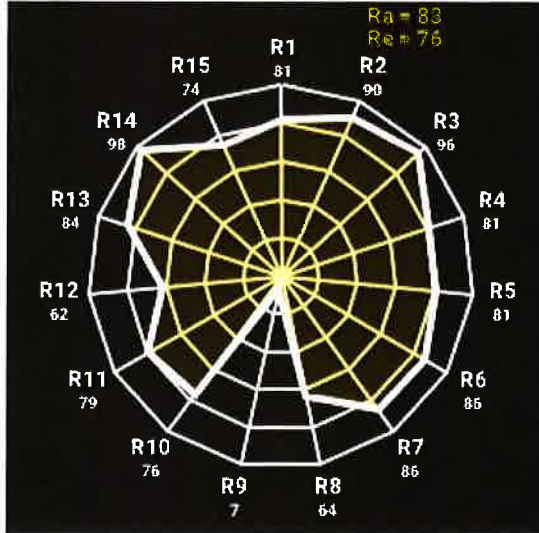
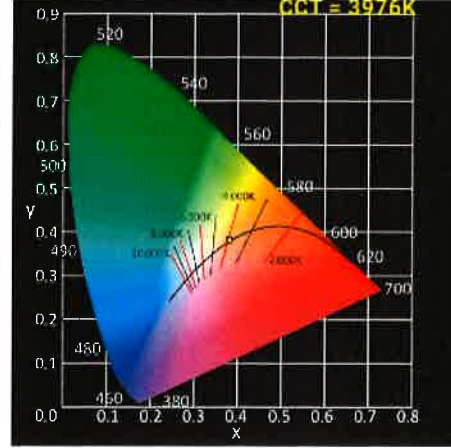
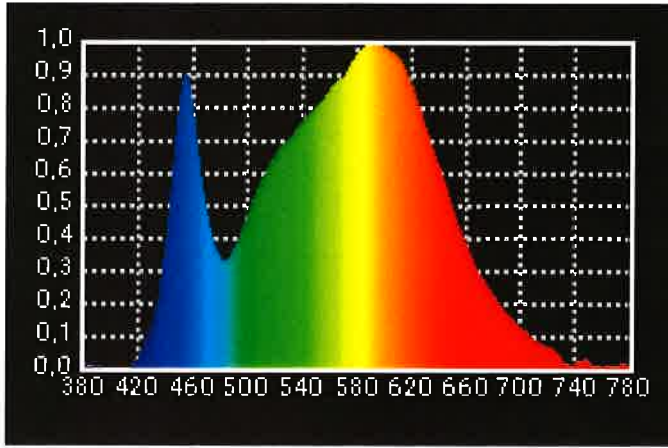
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Deney Sonuçları (Test Results)



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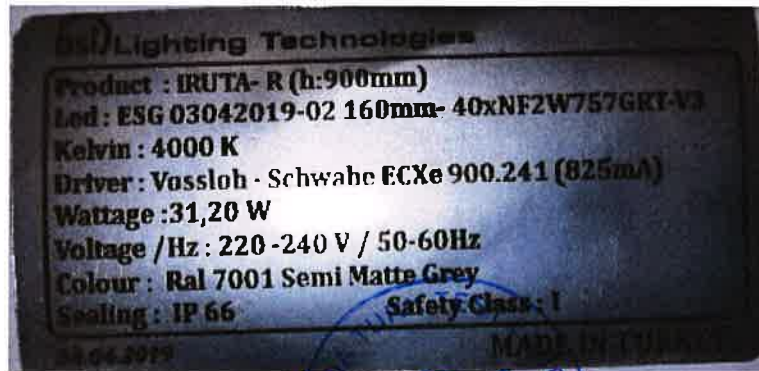
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3.1 DGC'nin Fotoğrafları (Photos of EUT)



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3.1 DGC'nin Fotoğrafları (Photos of EUT)

