

Doc No: FRM-LAB-009a

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ÖLÇÜM RAPORU
MEASUREMENT REPORT

TL-806

19-TST-0033-16

02-19

Müşterinin Adı Adresi
Customer name/address

: HERA EĞLENCE VE MİMARİ AYDINLATMA SİSTEMLERİ A.Ş.
Güllübağlar Mah. Kahramanlar Cad. No:3-1 34906 PENDİK-
İSTANBUL/TÜRKİYE

İstek Numarası
Order No

: 19-TST-0033

Numunenin Adı ve Tarifi
Name and identity of test item

: SWORD RGBW ROUND DIFFUSED (90cm)
Sword RGBW Round diffused (90cm)

Numunenin kabul tarihi
The date of receipt of test item

: 21.01.2019

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

: 24.01.2019-18.02.2019

Raporun Sayfa Sayısı
Number of Pages of the Report

:70

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.

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.

Mühür ve Tarih
Seal and Date



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	: HERA
Modeli / Model	: RGBW Round Diffused (90cm)
Seri Numarası / Serial Number	: Test Numunesi Test Sample
Beyan Gücü / Rated Power	: 21,6 W
Beyan Gerilimi / Rated Voltage	: 48 VDC
Sembollerin Tanımı / Definitions of Symbols	DGC= Deneden Geçen Cihaz EUT=Equipment Under Test



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ÖLÇÜM RAPORU
MEASUREMENT REPORT**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.)	Tip (Type)	Kalibrasyon Tarihi (Calibration Date)	Sonraki Kalibrasyon Tarihi (Next Calibration Date)	Kontrol (Check Point)
LAB-011	Goniophotometer	09.01.2019	09.01.2020	<input checked="" type="checkbox"/>
LAB-015	AC Power Supply	05.06.2018	05.06.2019	<input checked="" type="checkbox"/>
LAB-027	Powermeter	09.01.2019	09.01.2020	<input checked="" type="checkbox"/>
LAB-023	Standart Lamp	09.01.2019	09.01.2020	<input checked="" type="checkbox"/>
LAB-012	Integrating sphere	28.05.2018	28.05.2019	<input checked="" type="checkbox"/>

1.3 Komponent listesi (Component list)

Komponent (Component)	Üretici (Manufacturer)	Model (Model)	Standart no. (Standart No.)	Sertifika no. (Certificate No.)
LED	Cree Inc	CLQ6A	Led-RGBW IF=20Ma VR=5V $\phi V = \text{Initial Data} \times 0,7$	-
PCB	C13090_R1.0	1.6mm FR44 Layers, 35+35+35+35um Cu	-	-

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ÖLÇÜM RAPORU
MEASUREMENT REPORT**2.1 Beyaz Renk Deney Sonuçları (Test Results of the White Color)****Elektriksel Ölçümler**

(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	7,689
Ölçülen Gerilim (V) (Input Voltage)	48 VDC
Ölçülen Akım (A) (Input Current)	0,1602
Güç Faktörü (PF) (Power Factor)	-
Ölçülen Frekans (Hz) (Input Frequency)	-
Ortam Sıcaklığı / Bağıl Nem (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
Stabilizasyon Süresi (Stabilization Time)	60 dk ±5dk

Fotometrik Ölçüm Sonuçları

(Photometric Measurement Results)

Toplam Işık Akısı (Total Luminous Flux) (lm)	114,33
Maksimum Işık Şiddeti (Max. Light Intensity) (cd)	20,47
Armatür Etkinliği (Luminaire Efficacy) (lm/W)	14,87



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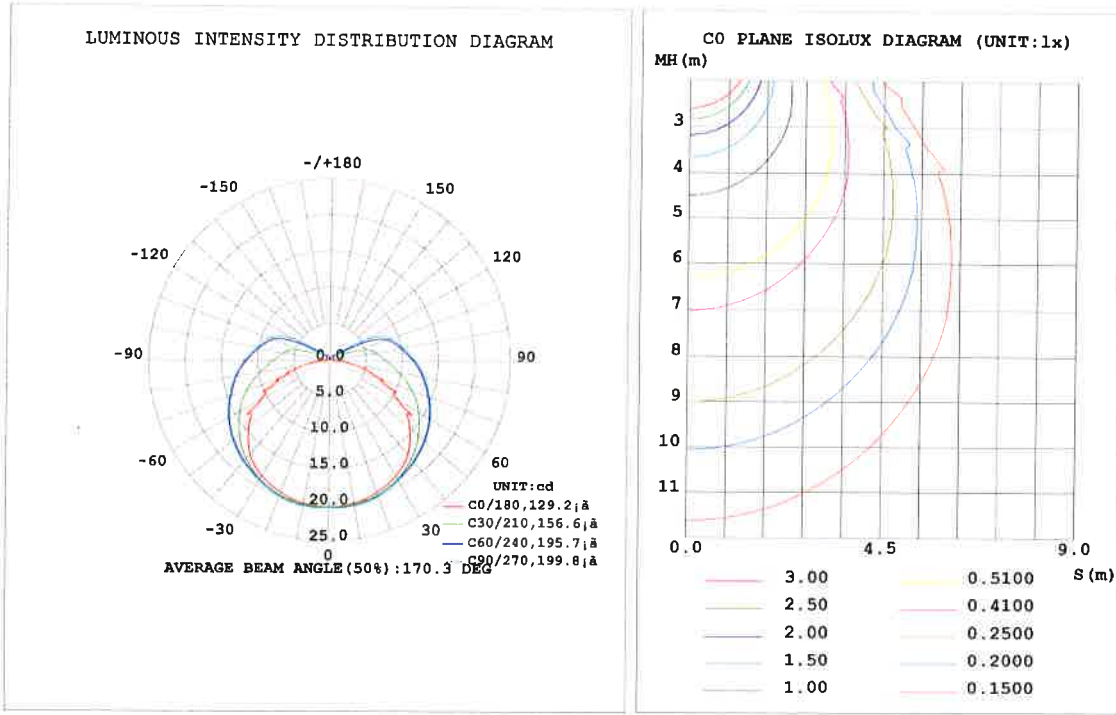
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2.1 Beyaz renk Fotometrik Deney Sonuçları (Photometric Test Results of the white color)



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2.1

Beyaz Renk Fotometrik Deneş Sonuçları (Photometric Test Results of the white color)

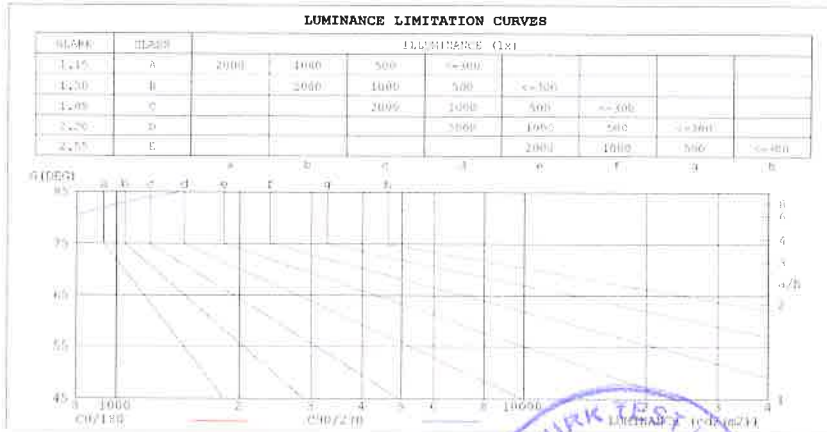
**ZONAL FLUX DIAGRAM
AND LUMINANCE LIMITATION CURVES**

ZONAL FLUX DIAGRAM:

y	C0	C45	C90	C135	C180	C225	C270	C315	y	Φ zone	Φ total	%lum,lamp
5	20.22	20.39	20.46	20.39	20.22	20.39	20.46	20.39	0- 5	0.4854	0.4854	0.43,0.43
10	20.07	20.36	20.45	20.36	20.07	20.36	20.45	20.36	5- 10	1.456	1.942	1.7,1.7
15	19.83	20.21	20.32	20.21	19.83	20.21	20.32	20.21	10- 15	2.401	4.343	1.0,3.8
20	19.48	19.94	20.06	19.94	19.48	19.94	20.06	19.94	15- 20	3.299	7.642	6.68,6.68
25	19.03	19.57	19.68	19.57	19.03	19.57	19.68	19.57	20- 25	4.330	11.77	10.3,10.3
30	18.51	19.09	19.22	19.09	18.51	19.09	19.22	19.09	25- 30	4.872	16.64	14.6,14.6
35	17.85	18.53	18.85	18.53	17.85	18.53	18.85	18.53	30- 35	5.518	22.16	19.4,19.4
40	17.00	17.96	18.42	17.96	17.00	17.96	18.42	17.96	35- 40	6.073	28.24	24.7,24.7
45	15.80	17.42	17.93	17.42	15.80	17.42	17.93	17.42	40- 45	6.505	34.74	30.4,30.4
50	14.54	16.85	17.39	16.85	14.54	16.85	17.39	16.85	45- 50	6.801	41.54	36.3,36.3
55	13.08	16.22	16.79	16.22	13.08	16.22	16.79	16.22	50- 55	6.974	48.52	42.4,42.4
60	10.97	15.54	16.15	15.54	10.97	15.54	16.15	15.54	55- 60	7.019	55.54	48.6,48.6
65	9.453	14.78	15.43	14.78	9.453	14.78	15.43	14.78	60- 65	6.957	62.39	54.6,54.6
70	7.489	13.99	14.70	13.99	7.489	13.99	14.70	13.99	65- 70	6.806	69.00	60.4,60.4
75	4.929	13.16	14.00	13.16	4.929	13.16	14.00	13.16	70- 75	6.239	75.24	65.8,65.8
80	3.149	12.33	13.31	12.33	3.149	12.33	13.31	12.33	75- 80	5.829	81.07	70.9,70.9
85	1.530	11.50	12.57	11.50	1.530	11.50	12.57	11.50	80- 85	5.389	86.45	75.6,75.6
90	0.1672	10.64	11.77	10.64	0.1672	10.64	11.77	10.64	85- 90	4.918	91.36	79.9,79.9
95	0.1536	9.832	10.99	9.832	0.1536	9.832	10.99	9.832	90- 95	4.484	95.85	83.8,83.8
100	0.3026	9.069	10.22	9.069	0.3026	9.069	10.22	9.069	95-100	4.095	99.94	87.9,87.9
105	0.4079	8.293	9.536	8.293	0.4079	8.293	9.536	8.293	100-105	3.690	103.6	90.6,90.6
110	0.4797	6.963	8.803	6.963	0.4797	6.963	8.803	6.963	105-110	3.182	106.8	93.4,93.4
115	0.5479	4.529	7.842	4.529	0.5479	4.529	7.842	4.529	110-115	2.554	109.4	95.7,95.7
120	0.6278	2.519	5.604	2.519	0.6278	2.519	5.604	2.519	115-120	1.796	111.2	97.2,97.2
125	0.7156	1.676	2.962	1.676	0.7156	1.676	2.962	1.676	120-125	1.084	112.2	98.2,98.2
130	0.6937	1.347	1.236	1.347	0.6937	1.347	1.236	1.347	125-130	0.6244	112.9	98.7,98.7
135	0.5758	1.131	0.7768	1.131	0.5758	1.131	0.7768	1.131	130-135	0.4206	113.1	99.1,99.1
140	0.4980	0.9375	0.6478	0.9375	0.4980	0.9375	0.6478	0.9375	135-140	0.3137	113.6	99.4,99.4
145	0.4178	0.7731	0.5537	0.7731	0.4178	0.7731	0.5537	0.7731	140-145	0.2350	113.8	99.6,99.6
150	0.3419	0.6262	0.4808	0.6262	0.3419	0.6262	0.4808	0.6262	145-150	0.1755	114.0	99.7,99.7
155	0.2837	0.5008	0.4224	0.5008	0.2837	0.5008	0.4224	0.5008	150-155	0.1234	114.1	99.8,99.8
160	0.2191	0.4017	0.3669	0.4017	0.2191	0.4017	0.3669	0.4017	155-160	0.0841	114.2	99.9,99.9
165	0.1589	0.3215	0.3117	0.3215	0.1589	0.3215	0.3117	0.3215	160-165	0.0536	114.3	99.9,99.9
170	0.2453	0.2912	0.2613	0.2912	0.2453	0.2912	0.2613	0.2912	165-170	0.0320	114.3	100,100
175	0.2819	0.2759	0.2394	0.2759	0.2819	0.2759	0.2394	0.2759	170-175	0.0199	114.3	100,100
180	0.2615	0.2634	0.1325	0.2634	0.2615	0.2634	0.1325	0.2634	175-180	0.0064	114.3	100,100

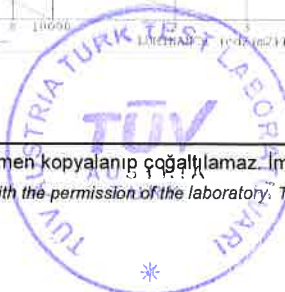
LUMINOUS INTENSITY:cd

UNIT:lm



LUMINANCE cd/ (m²)

G (DEG)	C0/180	C90/270
85	176	1442
80	181	766
75	190	541
70	219	430
65	224	365
60	219	323
55	228	293
50	226	271
45	223	254



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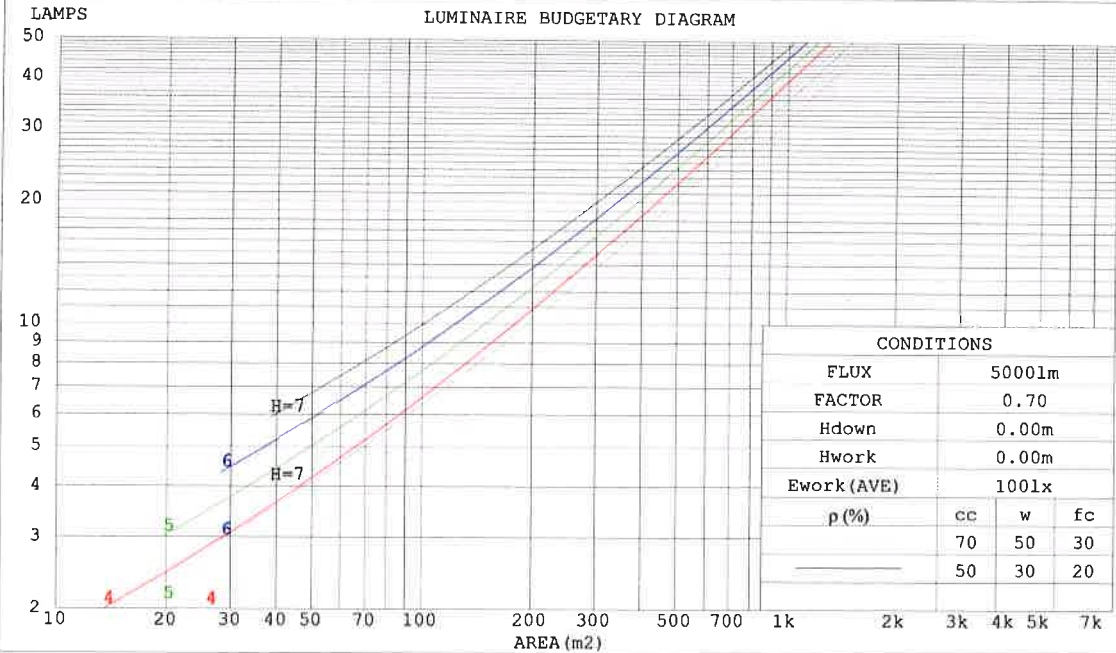
ÖLÇÜM RAPORU
MEASUREMENT REPORT

2.1

Beyaz Renk Fotometrik Deneş Sonuđları (Photometric Test Results of the white color)

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pw																
pfc																
RCR	RCR:Room Cavity Ratio			Coefficients of Utilization(CU)												
0.0	1.14	1.14	1.14	1.09	1.09	1.09	.00	.00	.00	.91	.91	.91	.84	.84	.84	.80
1.0	.94	.88	.83	.90	.84	.80	.81	.77	.74	.74	.71	.68	.67	.65	.62	.59
2.0	.80	.71	.65	.76	.69	.62	.69	.63	.58	.63	.58	.53	.57	.53	.49	.46
3.0	.69	.59	.52	.66	.57	.50	.60	.53	.47	.54	.48	.43	.49	.44	.40	.37
4.0	.60	.50	.43	.57	.48	.42	.52	.45	.39	.47	.41	.36	.43	.38	.33	.30
5.0	.53	.43	.36	.51	.42	.35	.46	.39	.33	.42	.36	.31	.38	.33	.29	.26
6.0	.47	.38	.31	.45	.37	.30	.42	.34	.28	.38	.31	.26	.35	.29	.25	.22
7.0	.43	.33	.27	.41	.32	.26	.38	.30	.25	.34	.28	.23	.31	.26	.22	.19
8.0	.39	.30	.24	.37	.29	.23	.34	.27	.22	.31	.25	.20	.29	.23	.19	.17
9.0	.35	.27	.21	.34	.26	.21	.31	.24	.19	.29	.23	.18	.26	.21	.17	.15
10.0	.32	.24	.19	.31	.24	.18	.29	.22	.17	.27	.21	.16	.24	.19	.15	.13



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MEASUREMENT REPORT

2.1

Beyaz Renk Fotometrik Deney Sonuçları (Photometric Test Results of the white color)

WEC AND CCEC

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p _w																
p _{fc}																
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.409	.233	.074	.396	.226	.072	.371	.213	.068	.348	.201	.064	.326	.189	.061	
2.0	.348	.191	.059	.336	.185	.057	.314	.174	.054	.293	.164	.051	.273	.155	.049	
3.0	.307	.163	.049	.296	.158	.048	.275	.149	.045	.256	.140	.043	.238	.132	.041	
4.0	.274	.143	.042	.264	.138	.041	.246	.130	.039	.228	.123	.037	.212	.115	.035	
5.0	.248	.127	.037	.239	.123	.036	.222	.116	.034	.206	.109	.032	.192	.102	.031	
6.0	.227	.114	.033	.218	.110	.032	.203	.104	.030	.188	.098	.029	.175	.092	.027	
7.0	.208	.103	.029	.201	.100	.029	.187	.094	.027	.173	.089	.026	.161	.084	.025	
8.0	.193	.094	.027	.186	.092	.026	.173	.086	.025	.161	.081	.023	.149	.077	.022	
9.0	.179	.087	.024	.173	.084	.024	.161	.080	.023	.150	.075	.021	.139	.071	.020	
10.0	.168	.080	.022	.162	.078	.022	.151	.074	.021	.140	.070	.020	.130	.066	.019	

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p _w																
p _{fc}																
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.344	.344	.344	.294	.294	.294	.200	.200	.200	.115	.115	.115	.037	.037	.037	
1.0	.341	.310	.281	.292	.266	.242	.200	.183	.167	.115	.106	.097	.037	.034	.031	
2.0	.335	.287	.246	.287	.247	.213	.197	.171	.149	.113	.099	.087	.036	.032	.028	
3.0	.328	.271	.225	.281	.234	.195	.193	.162	.137	.111	.095	.081	.036	.031	.026	
4.0	.320	.258	.211	.275	.223	.184	.189	.156	.129	.109	.091	.077	.035	.030	.025	
5.0	.312	.249	.202	.268	.215	.176	.185	.150	.124	.107	.088	.074	.034	.029	.024	
6.0	.305	.241	.195	.262	.209	.170	.181	.146	.120	.105	.086	.071	.034	.028	.024	
7.0	.297	.234	.190	.256	.203	.166	.177	.142	.117	.103	.084	.070	.033	.027	.023	
8.0	.291	.229	.186	.250	.198	.162	.173	.139	.115	.101	.082	.069	.033	.027	.023	
9.0	.284	.224	.183	.245	.194	.160	.170	.137	.114	.099	.081	.068	.032	.026	.022	
10.0	.278	.220	.181	.240	.191	.158	.166	.134	.112	.097	.079	.067	.031	.026	.022	



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2.1 Beyaz Renk Fotometrik Deneş Sonuçları (Photometric Test Results of the white color)

Uncorrected UGR Table

ceiling/cavity	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
walls	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions	Viewed crosswise					Viewed endwise				
x = 2H y = 2H	6.4	7.8	7.0	8.4	9.0	7.7	9.1	8.3	9.7	10.3
3H	8.1	9.4	8.7	9.9	10.6	10.5	11.8	11.1	12.4	13.0
4H	8.7	10.0	9.3	10.5	11.2	12.1	13.3	12.7	13.9	14.6
6H	9.2	10.4	9.8	11.0	11.7	13.9	15.0	14.5	15.6	16.3
8H	9.4	10.5	10.0	11.1	11.8	14.8	16.0	15.5	16.6	17.3
12H	9.5	10.6	10.2	11.2	12.0	16.0	17.0	16.6	17.7	18.4
4H 2H	7.7	8.9	8.3	9.5	10.2	8.6	9.8	9.2	10.4	11.1
3H	9.7	10.8	10.4	11.4	12.2	11.6	12.7	12.2	13.3	14.0
4H	10.7	11.7	11.3	12.3	13.1	13.3	14.3	14.0	15.0	15.7
6H	11.4	12.3	12.1	12.9	13.7	15.3	16.1	15.9	16.8	17.6
8H	11.7	12.5	12.3	13.2	14.0	16.3	17.2	17.0	17.9	18.7
12H	11.9	12.6	12.6	13.3	14.2	17.6	18.4	18.3	19.1	19.9
8H 4H	11.9	12.8	12.6	13.4	14.2	13.9	14.7	14.6	15.4	16.2
6H	13.2	13.9	13.9	14.6	15.5	16.1	16.8	16.9	17.6	18.4
8H	13.8	14.4	14.5	15.1	16.0	17.4	18.1	18.2	18.8	19.7
12H	14.2	14.8	14.9	15.5	16.4	18.9	19.5	19.6	20.2	21.1
12H 4H	12.3	13.0	13.0	13.7	14.6	14.0	14.7	14.7	15.4	16.3
6H	13.8	14.5	14.6	15.2	16.1	16.4	17.0	17.1	17.7	18.6
8H	14.7	15.2	15.4	16.0	16.9	17.8	18.3	18.5	19.1	20.0
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.1				
1.5H	+ 0.2 / - 0.2					+ 0.2 / - 0.3				
2.0H	+ 0.3 / - 0.3					+ 0.3 / - 0.4				

CIE Pub.117 Corrected 114.3 lm Total Lamp Luminous Flux. (8log(F/F0) = -7.5)



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2.1

Beyaz Renk Fotometrik Deney Sonuçları (Photometric Test Results of the white color)**UTILIZATION FACTORS TABLE**

REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	45	32	25	44	32	25	42	31	24	18
0.80	54	41	32	53	40	32	50	39	31	23
1.00	62	48	39	60	47	39	56	48	38	29
1.25	69	55	46	66	54	46	62	52	44	34
1.50	74	61	52	71	59	51	66	56	49	38
2.00	81	70	61	78	67	59	72	63	56	44
2.50	86	75	67	83	73	65	76	68	61	48
3.00	90	80	72	86	77	70	79	72	66	52
4.00	95	86	79	91	83	77	83	77	72	57
5.00	98	91	84	94	87	81	86	81	76	60
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			



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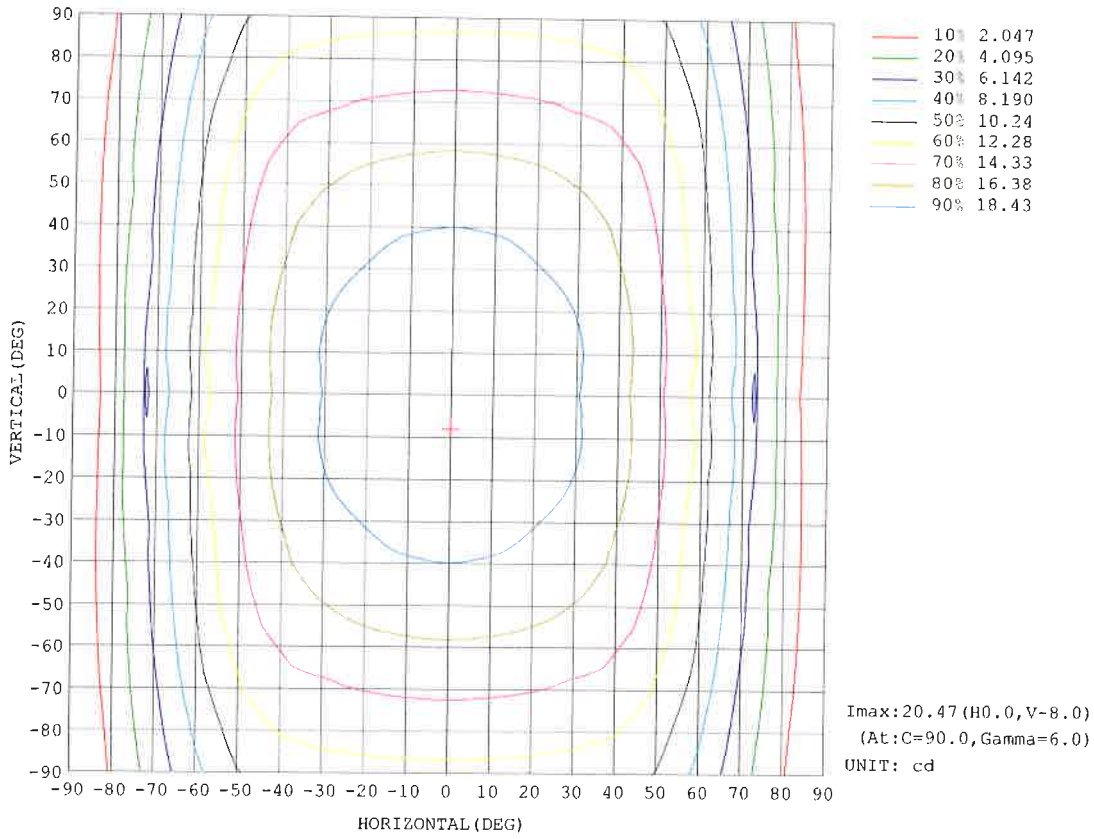
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2.1

Beyaz Renk Fotometrik Deney Sonuçları (Photometric Test Results of the white color)

ISOCANDELA DIAGRAM



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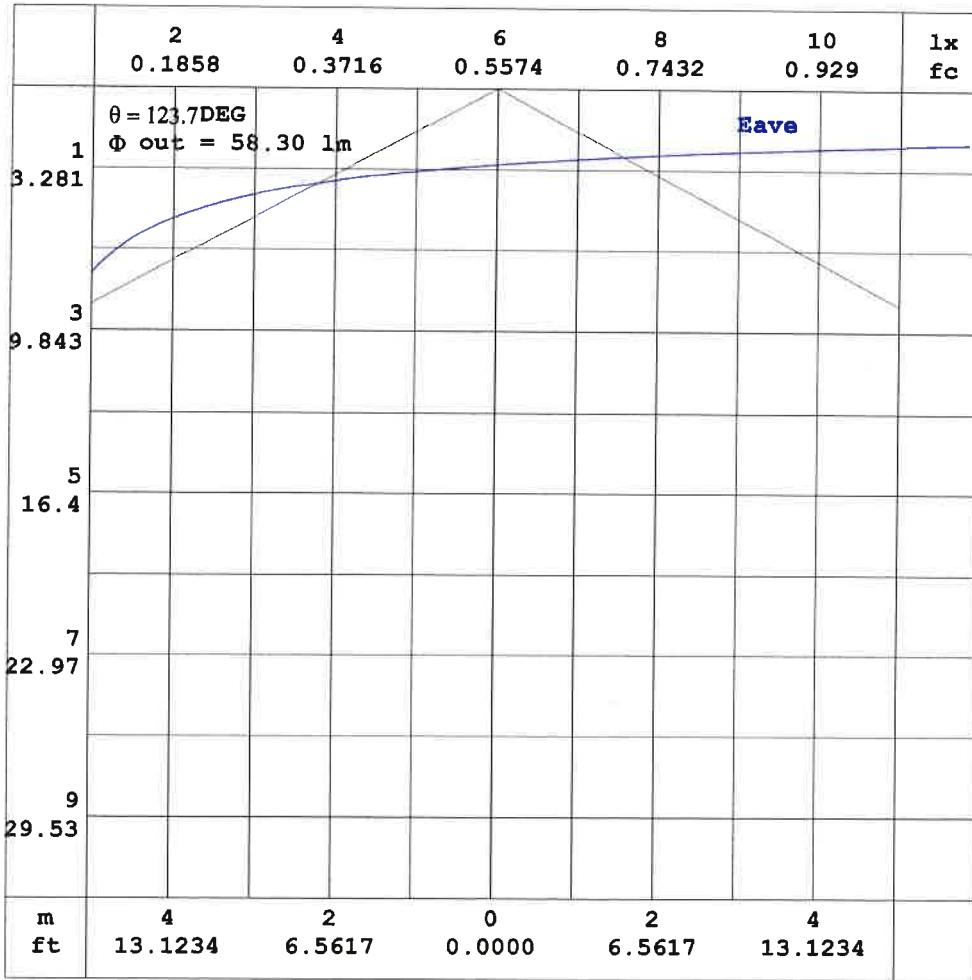
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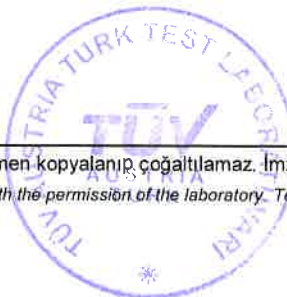
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2.1

Beyaz Renk Fotometrik Deney Sonuçları (Photometric Test Results Of The White Color)**AAI CURVES**

Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.



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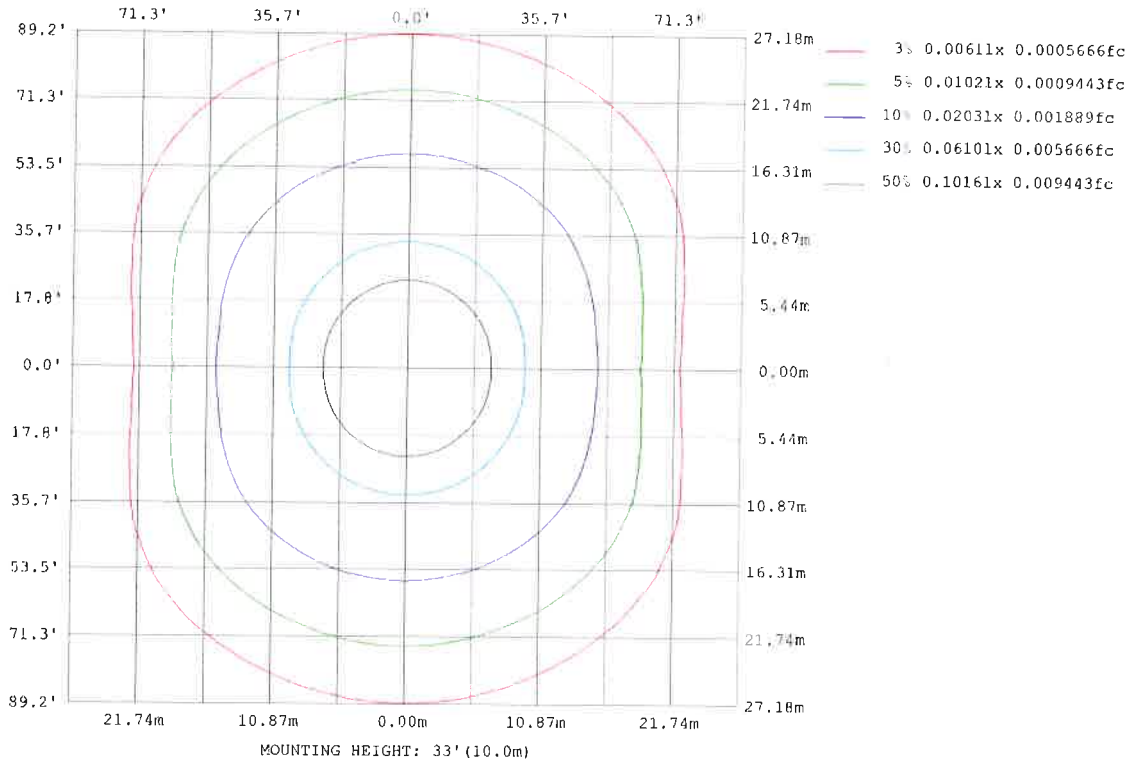
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2.1

Beyaz Renk Fotometrik Deney Sonuçları (Photometric Test Results Of the White Color)

ISOLUX DIAGRAM



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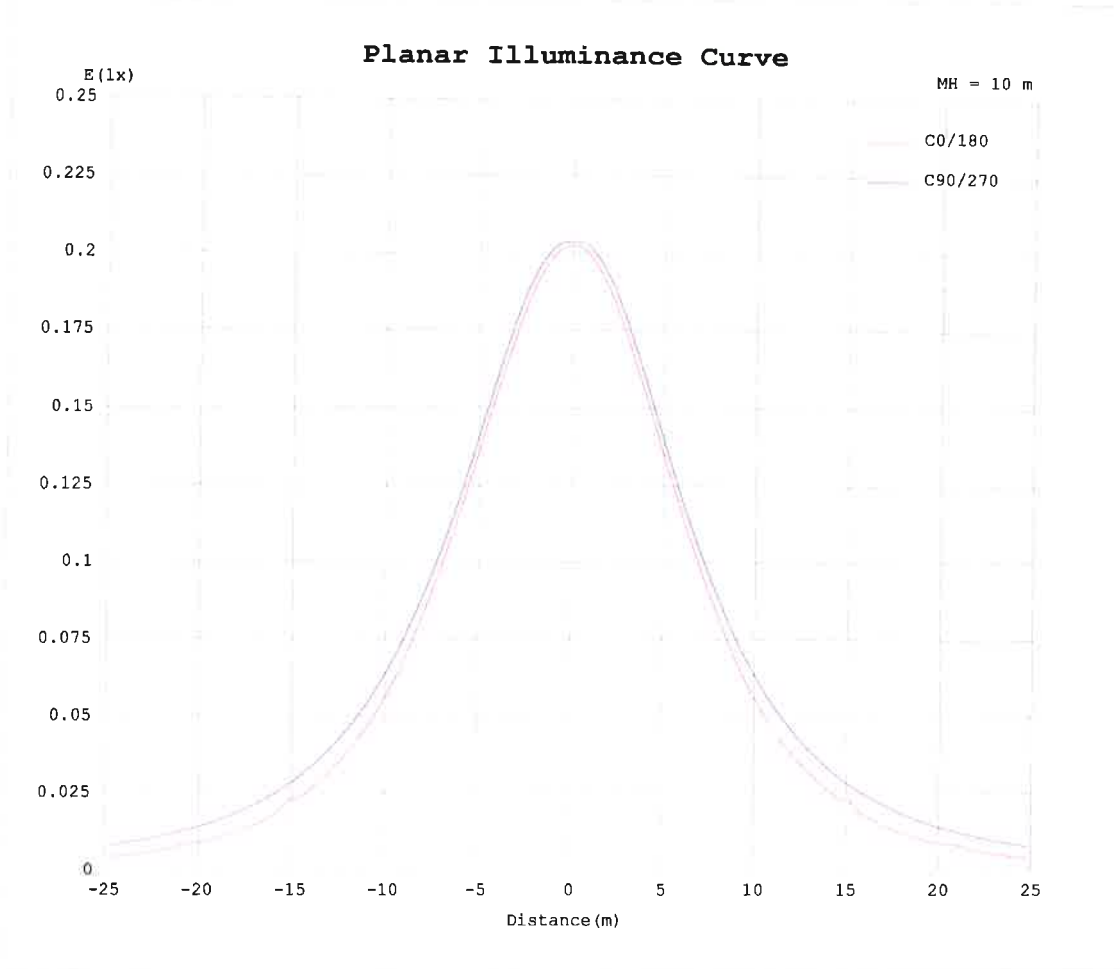
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2.1 Beyaz Renk Fotometrik Deneş Sonuđları (Photometric Test Results of The White Color)



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2.2 Beyaz Renk Spektrokolorimetrik Deney Sonuçları (spectrocolorimetric Test Results of the white color)**Elektriksel Ölçümler**

(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	7,689
Ölçülen Gerilim (V) (Input Voltage)	48 VDC
Ölçülen Akım (A) (Input Current)	0,1602
Güç Faktörü (PF) (Power Factor)	-
Ölçülen Frekans (Hz) (Input Frequency)	-
Ortam Sıcaklığı / Bağıl Nem (Ambient Temperature / Relative Humidity)	25 °C 48% Rh
Stabilizasyon Süresi (Stabilization Time)	60 dk ±5dk

Spektrokolorimetrik Ölçüm Sonuçları

(Spectrocolorimetric Measurement Results)

Chrom x	0,3428
Chrom y	0,3675
Duv	0,0089
Chrom u'	0,2039
Chrom v'	0,4919
Peak	448 nm
Dominant	564 nm
CCT	5132 K
Nominal CCT	-
Ra(CRI)	72
R9	-28
S/P Ratio	1,8
Preburning time	1 hr
Test Configuration	4π



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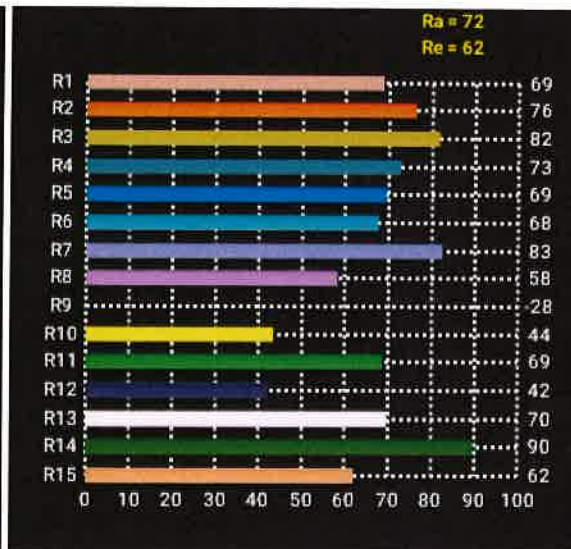
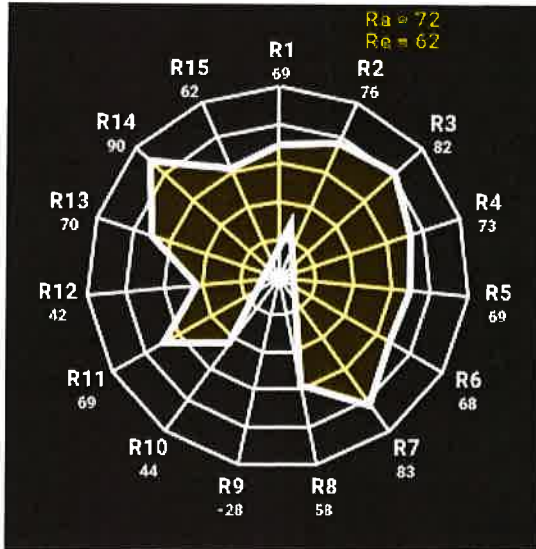
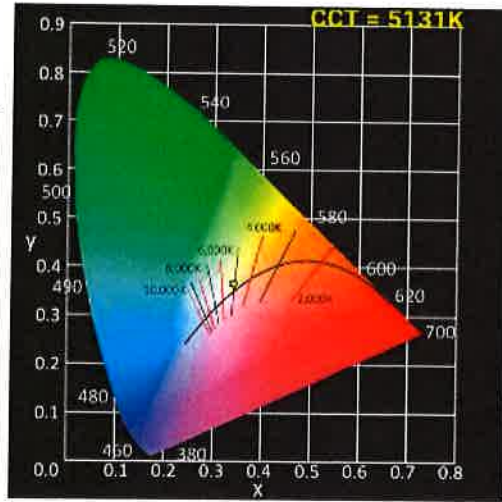
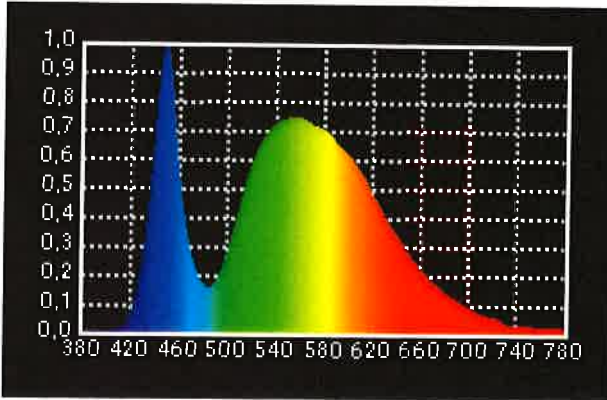
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2.2 Beyaz renk Spektrokolorimetrik Deney Sonuçları (Spectrocolorimetric Test Results of the white color)

Spectral Power Distribution



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2.3

Kırmızı Renk Deney Sonuçları (Test Results of the Red Color)

Elektriksel Ölçümler

(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	7,565
Ölçülen Gerilim (V) (Input Voltage)	48 VDC
Ölçülen Akım (A) (Input Current)	0,1576
Güç Faktörü (PF) (Power Factor)	-
Ölçülen Frekans (Hz) (Input Frequency)	-
Ortam Sıcaklığı / Bağıl Nem (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
Stabilizasyon Süresi (Stabilization Time)	60 dk ±5dk

Fotometrik Ölçüm Sonuçları

(Photometric Measurement Results)

Toplam Işık Akısı (Total Luminous Flux) (lm)	46,272
Maksimum Işık Şiddeti (Max. Light Intensity) (cd)	9,530
Armatür Etkinliği (Luminaire Efficacy) (lm/W)	6,12



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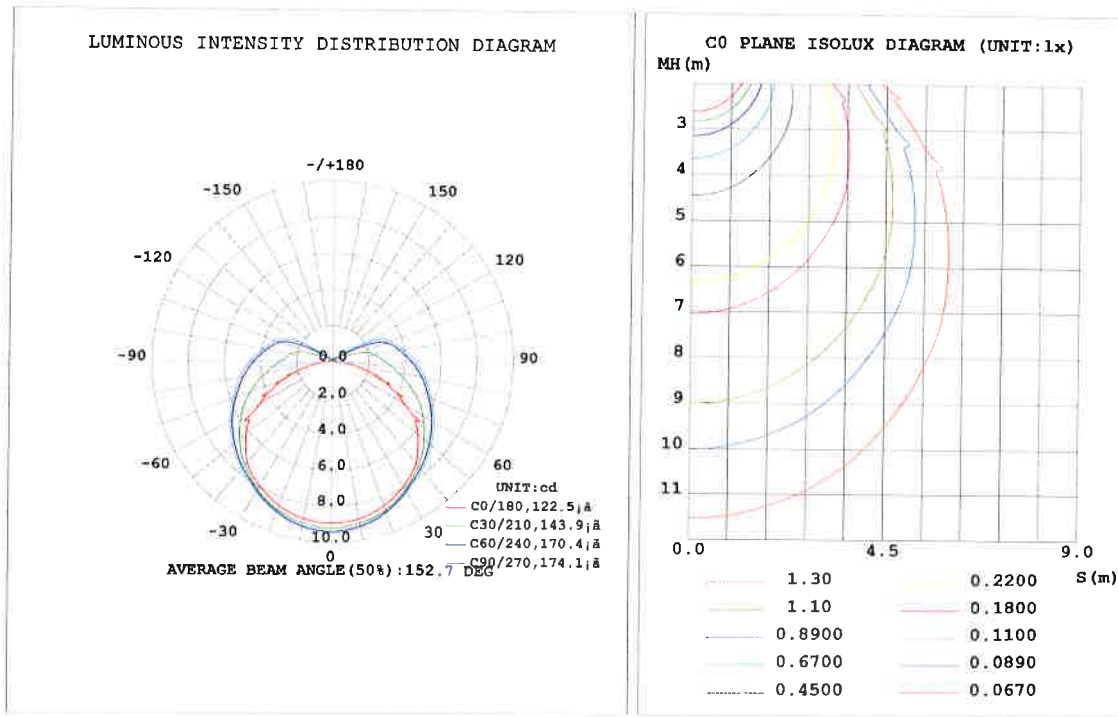
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2.3

Kırmızı renk Fotometrik Deney Sonuçları (Photometric Test Results of the Red color)



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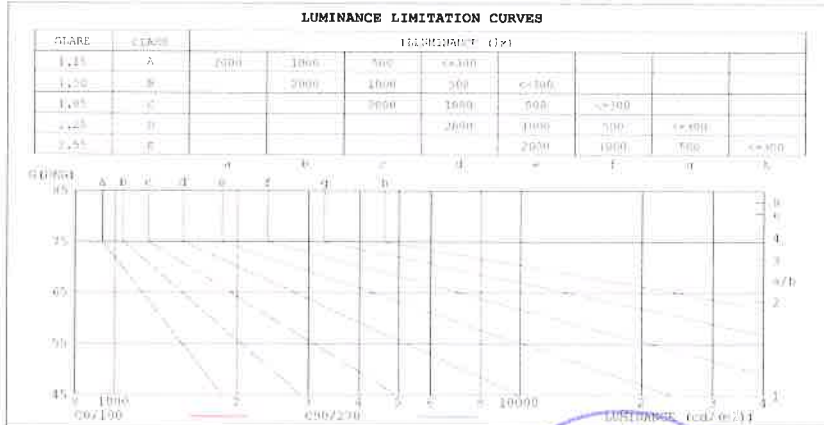
2.3

Kırmızı renk Fotometrik Deney Sonuçları (Photometric Test Results of the Red color)

ZONAL FLUX DIAGRAM
AND LUMINANCE LIMITATION CURVES

ZONAL FLUX DIAGRAM:

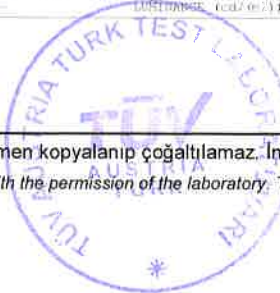
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, Lamp
5	8.895	9.286	9.472	9.286	8.895	9.286	9.472	9.286	0- 5	0.2216	0.2216	0.45, 0.48
10	8.819	9.182	9.347	9.182	8.819	9.182	9.347	9.182	5- 10	0.6881	0.8797	1.9, 1.9
15	8.685	9.020	9.160	9.020	8.685	9.020	9.160	9.020	10- 15	1.075	1.955	4.23, 4.23
20	8.484	8.801	8.918	8.801	8.484	8.801	8.918	8.801	15- 20	1.463	3.418	7.39, 7.39
25	8.225	8.533	8.635	8.533	8.225	8.533	8.635	8.533	20- 25	1.810	5.228	11.3, 11.3
30	7.944	8.217	8.319	8.217	7.944	8.217	8.319	8.217	25- 30	2.110	7.338	15.9, 15.9
35	7.643	7.867	8.058	7.867	7.643	7.867	8.058	7.867	30- 35	2.363	9.701	21, 21
40	7.262	7.517	7.778	7.517	7.262	7.517	7.778	7.517	35- 40	2.572	12.27	26.9, 26.9
45	6.745	7.197	7.473	7.197	6.745	7.197	7.473	7.197	40- 45	2.727	15.00	32.4, 32.4
50	6.218	6.878	7.164	6.878	6.218	6.878	7.164	6.878	45- 50	2.824	17.82	38.6, 38.6
55	5.598	6.545	6.845	6.545	5.598	6.545	6.845	6.545	50- 55	2.860	20.69	44.7, 44.7
60	4.685	6.202	6.517	6.202	4.685	6.202	6.517	6.202	55- 60	2.859	23.55	50.9, 50.9
65	3.979	5.843	6.172	5.843	3.979	5.843	6.172	5.843	60- 65	2.766	26.32	56.9, 56.9
70	3.133	5.475	5.834	5.475	3.133	5.475	5.834	5.475	65- 70	2.642	28.96	62.6, 62.6
75	2.063	5.105	5.522	5.105	2.063	5.105	5.522	5.105	70- 75	2.474	31.43	67.9, 67.9
80	1.301	4.752	5.213	4.752	1.301	4.752	5.213	4.752	75- 80	2.282	33.71	72.9, 72.9
85	0.6162	4.402	4.898	4.402	0.6162	4.402	4.898	4.402	80- 85	2.081	35.79	77.4, 77.4
90	0.0271	4.045	4.569	4.045	0.0271	4.045	4.569	4.045	85- 90	1.895	37.68	81.4, 81.4
95	0.0332	3.707	4.253	3.707	0.0332	3.707	4.253	3.707	90- 95	1.707	39.38	85.1, 85.1
100	0.0977	3.393	3.951	3.393	0.0977	3.393	3.951	3.393	95-100	1.552	40.94	88.5, 88.5
105	0.1428	3.090	3.657	3.090	0.1428	3.090	3.657	3.090	100-105	1.392	42.33	91.5, 91.5
110	0.1719	2.899	3.373	2.899	0.1719	2.899	3.373	2.899	105-110	1.199	43.53	94.1, 94.1
115	0.1997	1.700	3.001	1.700	0.1997	1.700	3.001	1.700	110-115	0.9632	44.49	96.2, 96.2
120	0.2307	0.9213	2.152	0.9213	0.2307	0.9213	2.152	0.9213	115-120	0.6148	45.17	97.6, 97.6
125	0.2624	0.5888	1.130	0.5888	0.2624	0.5888	1.130	0.5888	120-125	0.4026	45.57	98.5, 98.5
130	0.2512	0.4689	0.4486	0.4689	0.2512	0.4689	0.4486	0.4689	125-130	0.2234	45.79	99.09
135	0.2052	0.3912	0.2682	0.3912	0.2052	0.3912	0.2682	0.3912	130-135	0.1449	45.94	99.3, 99.3
140	0.1715	0.3191	0.2209	0.3191	0.1715	0.3191	0.2209	0.3191	135-140	0.1059	46.04	99.5, 99.5
145	0.1387	0.2572	0.1843	0.2572	0.1387	0.2572	0.1843	0.2572	140-145	0.0786	46.12	99.7, 99.7
150	0.1081	0.2031	0.1556	0.2031	0.1081	0.2031	0.1556	0.2031	145-150	0.0566	46.18	99.8, 99.8
155	0.0844	0.1575	0.1333	0.1575	0.0844	0.1575	0.1333	0.1575	150-155	0.0389	46.21	99.9, 99.9
160	0.0576	0.1206	0.1112	0.1206	0.0576	0.1206	0.1112	0.1206	155-160	0.0255	46.24	99.9, 99.9
165	0.0327	0.0914	0.0900	0.0914	0.0327	0.0914	0.0900	0.0914	160-165	0.0155	46.26	100, 100
170	0.0674	0.0829	0.0711	0.0829	0.0674	0.0829	0.0711	0.0829	165-170	0.0087	46.26	100, 100
175	0.0821	0.0819	0.0663	0.0819	0.0821	0.0819	0.0663	0.0819	170-175	0.0057	46.27	100, 100
180	0.0731	0.0813	0.0249	0.0813	0.0731	0.0813	0.0249	0.0813	175-180	0.0015	46.27	100, 100



G (DEG)	C0/180	C90/270
85	71	562
80	75	300
75	80	213
70	92	171
65	94	146
60	94	130
55	98	119
50	97	111
45	95	106

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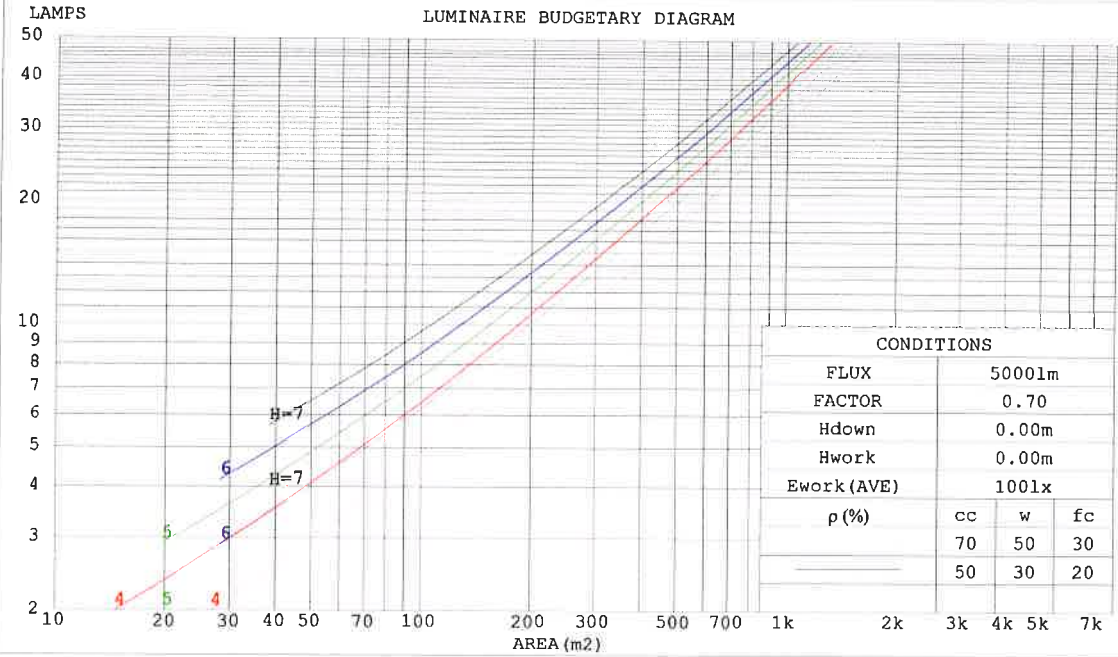
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2.3

Kırmızı renk Fotometrik Deney Sonuçları (Photometric Test Results of the Red color)

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

ρcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρw																0
ρfc																0
RCR	RCR:Room Cavity Ratio			Coefficients of Utilization(CU)												
	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0
0.0	1.15	1.15	1.15	1.10	1.10	1.10	1.01	1.01	1.01	.93	.93	.93	.85	.85	.85	.81
1.0	.95	.89	.84	.90	.85	.81	.83	.79	.75	.76	.72	.69	.69	.66	.64	.60
2.0	.81	.72	.66	.77	.70	.63	.70	.64	.59	.64	.59	.55	.58	.54	.51	.48
3.0	.70	.60	.53	.67	.58	.51	.61	.54	.48	.56	.50	.45	.51	.46	.42	.39
4.0	.61	.51	.44	.58	.49	.43	.53	.46	.40	.49	.43	.37	.45	.39	.35	.32
5.0	.54	.44	.37	.52	.43	.36	.47	.40	.34	.43	.37	.32	.40	.34	.30	.27
6.0	.48	.39	.32	.46	.38	.31	.43	.35	.29	.39	.33	.28	.36	.30	.26	.23
7.0	.44	.34	.28	.42	.33	.27	.39	.31	.26	.35	.29	.24	.33	.27	.23	.20
8.0	.40	.31	.25	.38	.30	.24	.35	.28	.23	.32	.26	.21	.30	.24	.20	.18
9.0	.36	.28	.22	.35	.27	.21	.32	.25	.20	.30	.24	.19	.28	.22	.18	.16
10.0	.33	.25	.20	.32	.24	.19	.30	.23	.18	.28	.22	.17	.26	.20	.16	.14



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2.3

Kırmızı renk Fotometrik Deney Sonuçları (Photometric Test Results of the Red color)

WEC AND CCEC

p _{cc}	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p _w																0
p _{fc}	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.402	.229	.072	.389	.222	.070	.365	.209	.067	.343	.198	.063	.322	.187	.060	
2.0	.344	.188	.058	.332	.183	.056	.310	.173	.054	.290	.163	.051	.271	.153	.048	
3.0	.303	.162	.048	.293	.157	.047	.273	.148	.045	.255	.140	.043	.238	.132	.041	
4.0	.272	.141	.042	.262	.137	.041	.244	.130	.039	.228	.122	.037	.212	.115	.035	
5.0	.246	.126	.036	.238	.122	.036	.221	.115	.034	.206	.109	.032	.192	.103	.031	
6.0	.225	.113	.032	.217	.110	.032	.202	.104	.030	.189	.098	.029	.175	.092	.027	
7.0	.207	.102	.029	.200	.100	.028	.187	.094	.027	.174	.089	.026	.162	.084	.025	
8.0	.192	.094	.026	.185	.091	.026	.173	.086	.025	.161	.082	.024	.150	.077	.022	
9.0	.179	.086	.024	.173	.084	.024	.161	.080	.023	.150	.075	.022	.140	.071	.021	
10.0	.167	.080	.022	.161	.078	.022	.151	.074	.021	.141	.070	.020	.131	.066	.019	

p _{cc}	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p _w																0
p _{fc}	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0																
1.0	.332	.332	.332	.284	.284	.284	.194	.194	.194	.111	.111	.111	.036	.036	.036	
2.0	.329	.298	.270	.282	.256	.232	.193	.176	.161	.111	.102	.093	.036	.033	.030	
3.0	.323	.275	.235	.276	.237	.203	.189	.164	.142	.109	.095	.083	.035	.031	.027	
4.0	.315	.259	.214	.270	.223	.185	.186	.155	.130	.107	.091	.077	.034	.029	.025	
5.0	.300	.237	.190	.257	.205	.166	.177	.143	.117	.103	.084	.069	.033	.027	.023	
6.0	.292	.229	.183	.251	.198	.160	.173	.139	.113	.101	.082	.067	.032	.027	.022	
7.0	.285	.222	.178	.245	.193	.155	.169	.135	.110	.098	.080	.066	.032	.026	.022	
8.0	.278	.217	.175	.239	.188	.152	.166	.132	.108	.096	.078	.064	.031	.026	.021	
9.0	.272	.212	.172	.234	.184	.150	.162	.129	.106	.095	.076	.063	.031	.025	.021	
10.0	.266	.208	.169	.229	.180	.148	.159	.127	.105	.093	.075	.063	.030	.025	.021	



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2.3 Kırmızı renk Fotometrik Deney Sonuçları (Photometric Test Results of the Red color)

Uncorrected UGR Table

ceiling/cavity	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
walls	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions	Viewed crosswise					Viewed endwise				
x = 2H y = 2H	3.5	4.9	4.0	5.4	6.0	4.6	6.0	5.1	6.5	7.1
3H	5.2	6.5	5.7	7.0	7.6	7.4	8.6	7.9	9.2	9.8
4H	5.8	7.0	6.4	7.6	8.2	8.9	10.1	9.5	10.7	11.3
6H	6.2	7.4	6.8	8.0	8.7	10.6	11.8	11.2	12.3	13.0
8H	6.4	7.5	7.0	8.1	8.8	11.6	12.7	12.1	13.3	13.9
12H	6.5	7.6	7.1	8.2	8.9	12.7	13.7	13.3	14.3	15.0
4H 2H	4.6	5.9	5.2	6.4	7.1	5.4	6.6	6.0	7.2	7.9
3H	6.7	7.8	7.3	8.4	9.1	8.4	9.4	9.0	10.0	10.7
4H	7.6	8.6	8.3	9.2	10.0	10.1	11.1	10.7	11.7	12.4
6H	8.3	9.2	9.0	9.9	10.6	12.0	12.9	12.6	13.5	14.3
8H	8.6	9.4	9.2	10.1	10.8	13.0	13.9	13.7	14.5	15.3
12H	8.7	9.5	9.4	10.2	11.0	14.3	15.0	14.9	15.7	16.5
8H 4H	8.8	9.6	9.4	10.3	11.0	10.6	11.4	11.3	12.1	12.9
6H	10.0	10.7	10.7	11.4	12.2	12.8	13.5	13.5	14.2	15.0
8H	10.5	11.2	11.2	11.9	12.7	14.1	14.7	14.8	15.4	16.3
12H	10.9	11.5	11.7	12.2	13.1	15.6	16.1	16.3	16.9	17.7
12H 4H	9.1	9.9	9.8	10.5	11.3	10.7	11.5	11.4	12.1	12.9
6H	10.6	11.2	11.3	12.0	12.8	13.0	13.7	13.8	14.4	15.2
8H	11.4	11.9	12.1	12.7	13.5	14.4	15.0	15.2	15.7	16.6
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.1				
1.5H	+ 0.2 / - 0.2					+ 0.2 / - 0.3				
2.0H	+ 0.2 / - 0.3					+ 0.3 / - 0.4				

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Kırmızı renk Fotometrik Deney Sonuçları (Photometric Test Results of the Red color)**UTILIZATION FACTORS TABLE**

REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	46	34	26	45	33	26	44	32	26	19
0.80	55	42	34	54	41	33	51	40	33	25
1.00	63	50	41	61	49	41	58	49	39	31
1.25	70	57	48	68	56	47	63	53	46	36
1.50	75	62	53	72	61	52	68	58	50	40
2.00	82	71	62	79	69	61	74	65	58	46
2.50	87	76	68	84	74	66	77	69	63	50
3.00	91	81	73	87	78	71	81	73	67	54
4.00	96	87	80	92	84	78	85	79	73	59
5.00	99	92	85	95	88	83	87	82	77	62
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004				Suspended				SHRNOM = 1.25		



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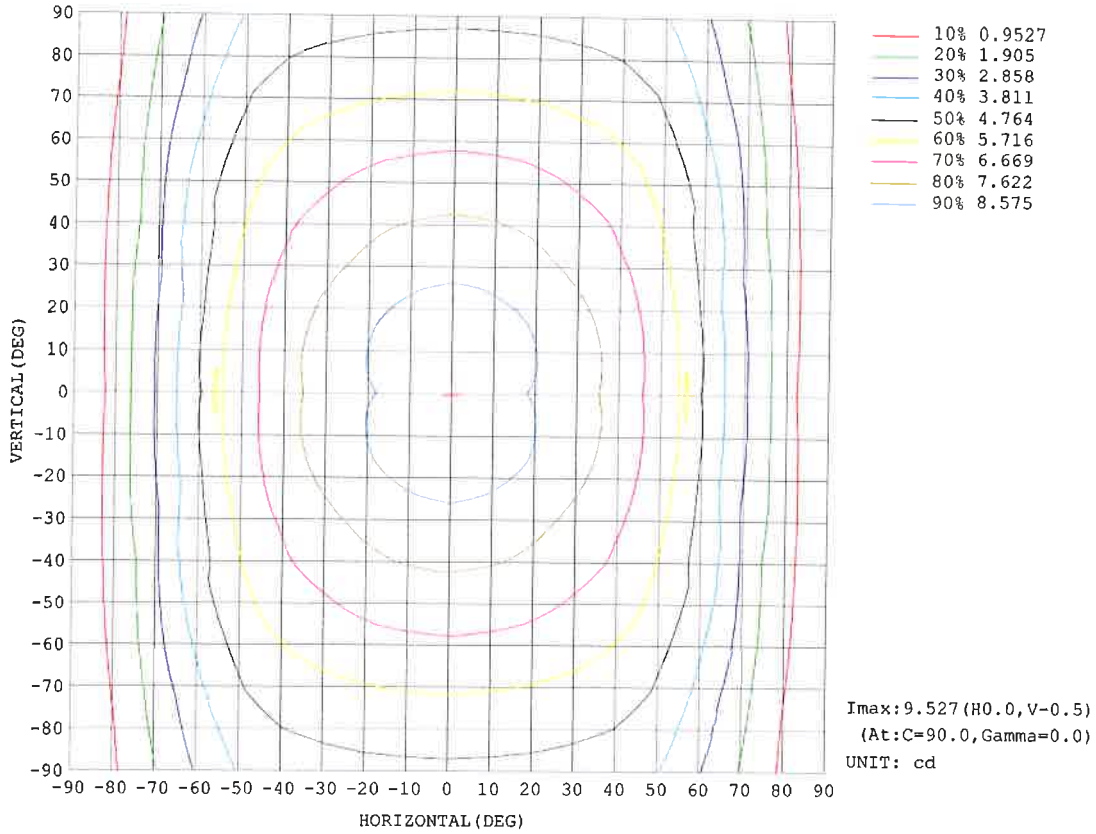
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2.3

Kırmızı renk Fotometrik Deney Sonuçları (Photometric Test Results of the Red color)

ISOCANDELA DIAGRAM



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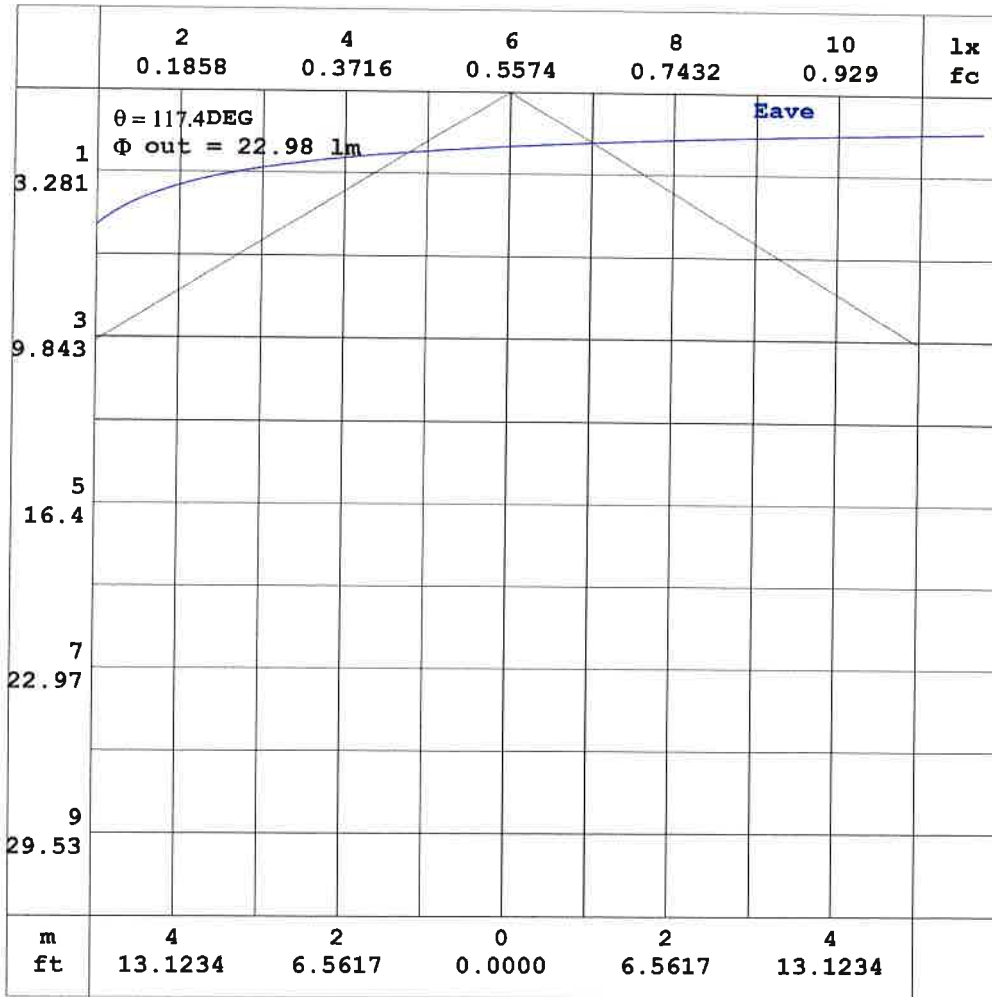
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2.3

Kırmızı renk Fotometrik Deney Sonuçları (Photometric Test Results of the Red color)

AAI CURVES



Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.



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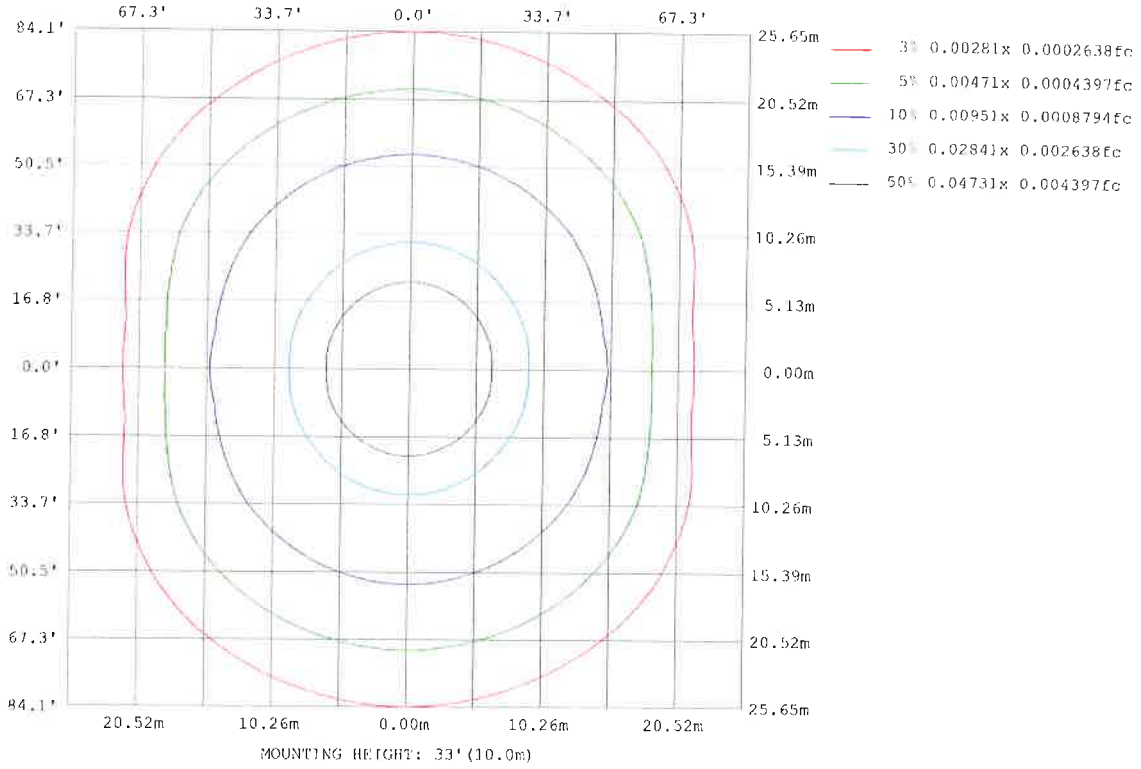
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Kırmızı renk Fotometrik Deney Sonuçları (Photometric Test Results of the Red color)

ISOLUX DIAGRAM



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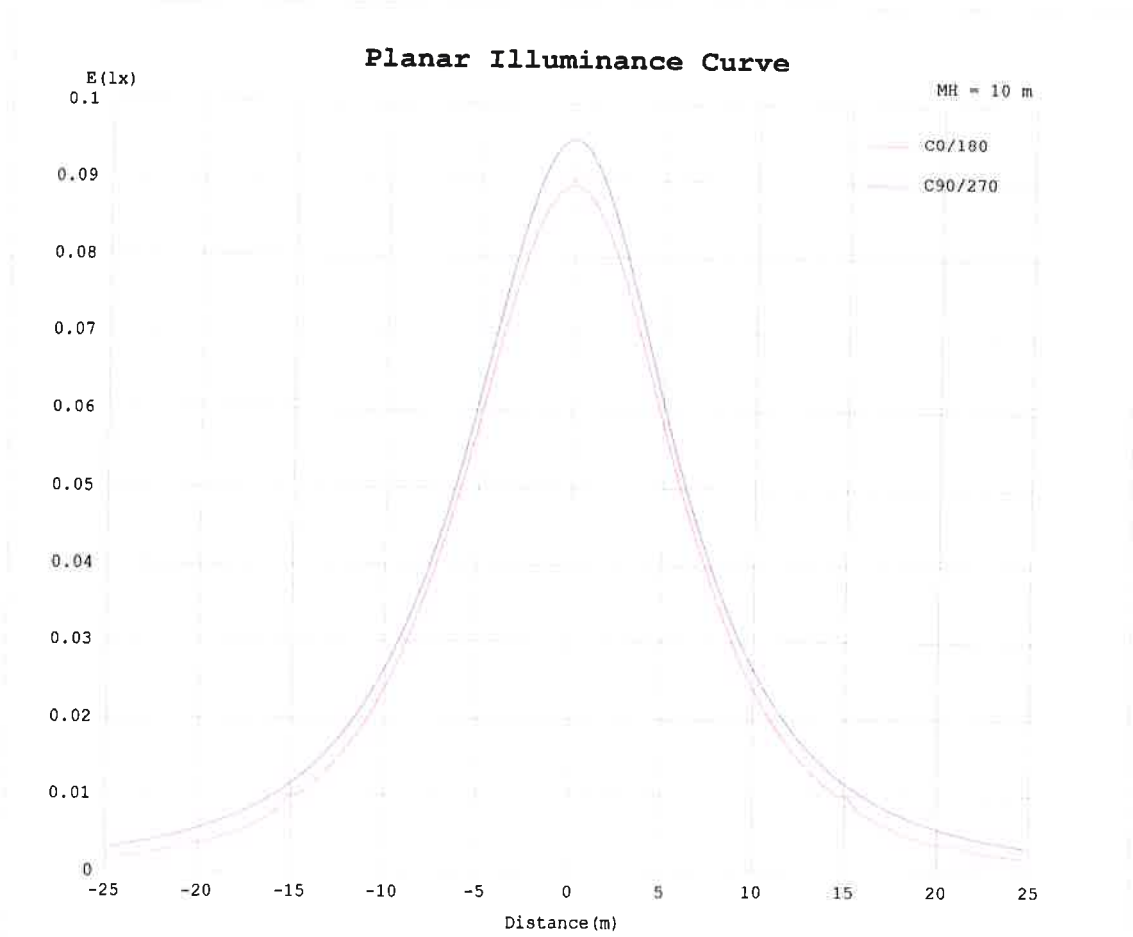
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Kırmızı renk Fotometrik Deney Sonuçları (Photometric Test Results of the Red color)



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2.4 Kırmızı Renk Spektrokolorimetrik Deney Sonuçları (spectrocolorimetric Test Results of the Red color)**Elektriksel Ölçümler**
(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	7,565
Ölçülen Gerilim (V) (Input Voltage)	48 VDC
Ölçülen Akım (A) (Input Current)	0,1576
Güç Faktörü (PF) (Power Factor)	-
Ölçülen Frekans (Hz) (Input Frequency)	-
Ortam Sıcaklığı / Bağıl Nem (Ambient Temperature / Relative Humidity)	25 °C 48% Rh
Stabilizasyon Süresi (Stabilization Time)	60 dk ±5dk

Spektrokolorimetrik Ölçüm Sonuçları
(Spectrocolorimetric Measurement Results)

Chrom x	0,6839
Chrom y	0,3093
Duv	0,00
Chrom u'	0,5119
Chrom v'	0,5209
Peak	628 nm
Dominant	620 nm
CCT	0 K
Nominal CCT	-
Ra(CRI)	0
R9	0
S/P Ratio	0,1
Preburning time	1 hr
Test Configuration	4π



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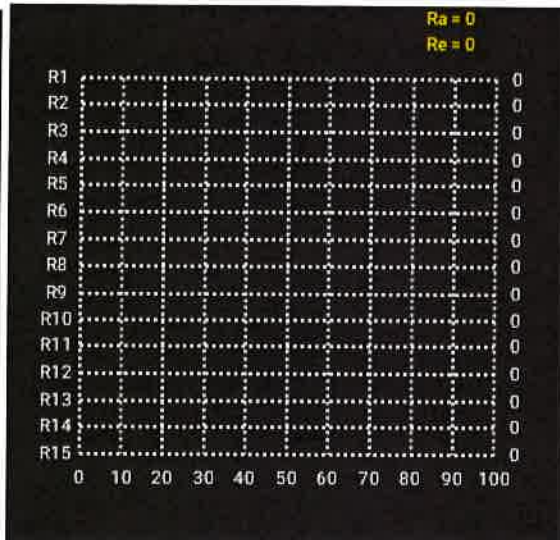
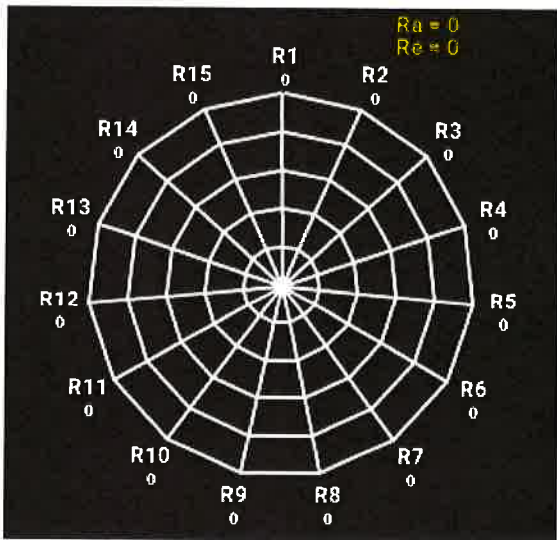
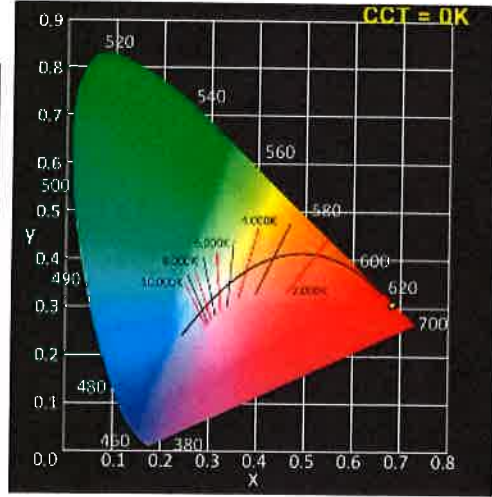
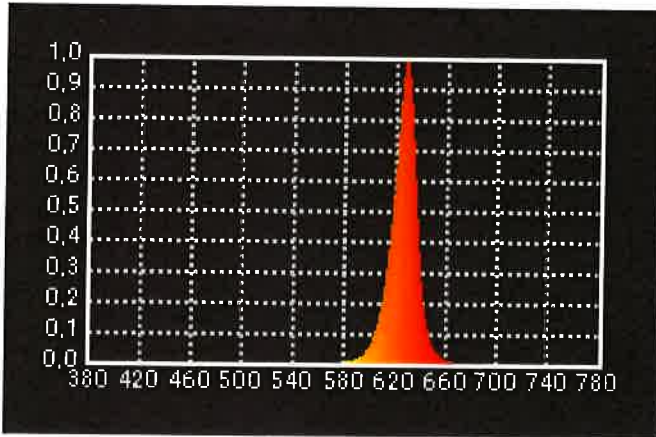
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2.4 **Kırmızı Renk Spektrokolorimetrik Denev Sonuřları** (spectrocolorimetric Test Results of the Red color)

Spectral Power Distribution



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2.5 Mavi Renk Deney Sonuçları (Test Results of the Blue Color)**Elektriksel Ölçümler**

(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	7,550
Ölçülen Gerilim (V) (Input Voltage)	48 VDC
Ölçülen Akım (A) (Input Current)	0,1574
Güç Faktörü (PF) (Power Factor)	-
Ölçülen Frekans (Hz) (Input Frequency)	-
Ortam Sıcaklığı / Bağıl Nem (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
Stabilizasyon Süresi (Stabilization Time)	60 dk ±5dk

Fotometrik Ölçüm Sonuçları

(Photometric Measurement Results)

Toplam Işık Akısı (Total Luminous Flux) (lm)	42,681
Maksimum Işık Şiddeti (Max. Light Intensity) (cd)	7,365
Armatür Etkinliği (Luminaire Efficacy) (lm/W)	5,65



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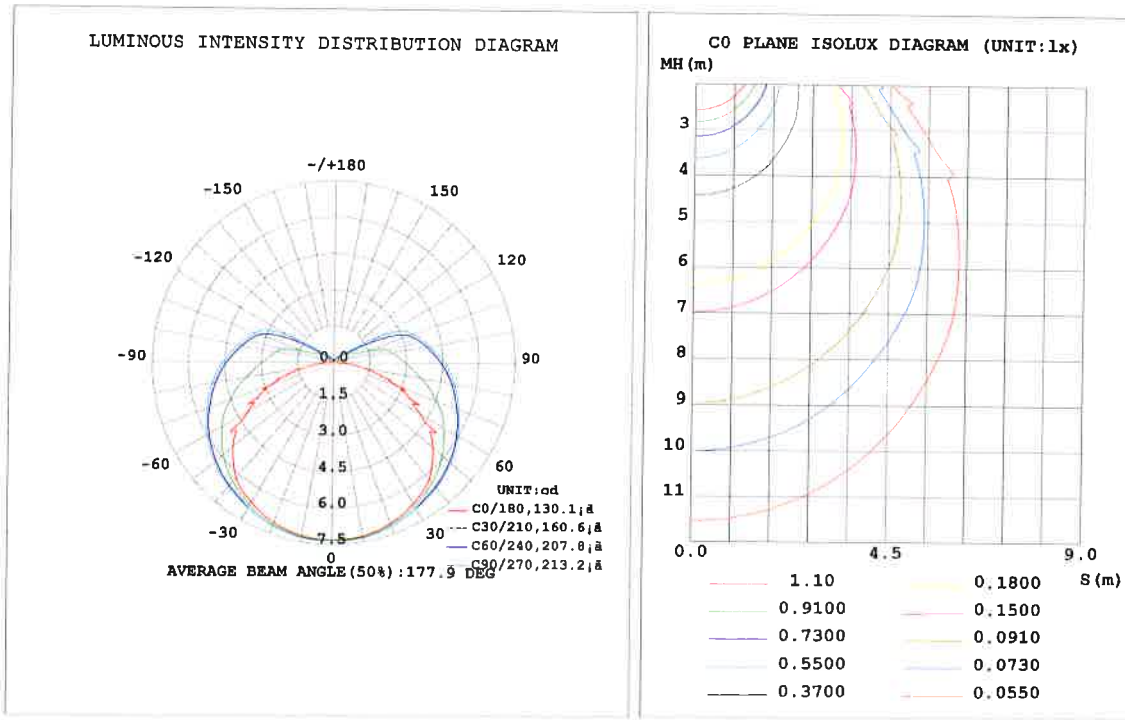
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Mavi renk Fotometrik Deney Sonuçları (Photometric Test Results of the Blue color)



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2.5 Mavi renk Fotometrik Deney Sonuçları (Photometric Test Results of the Blue color)

**ZONAL FLUX DIAGRAM
AND LUMINANCE LIMITATION CURVES**

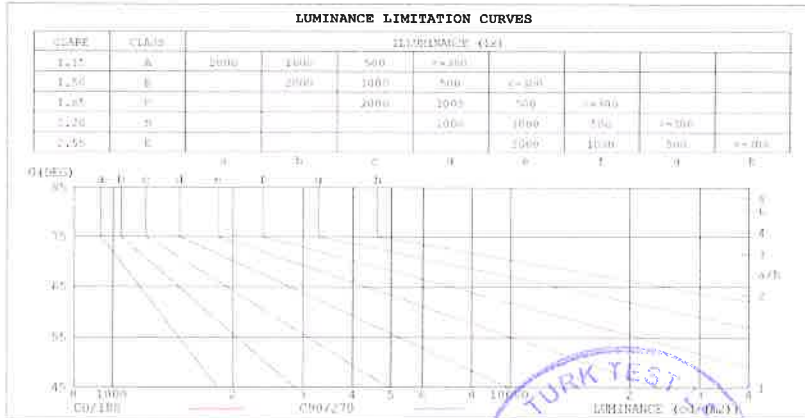
ZONAL FLUX DIAGRAM:

Y	C0	C45	C90	C135	C180	C225	C270	C315	y	Φ zone	Φ total	%lum_lamp
5	7.289	7.331	7.347	7.331	7.289	7.331	7.347	7.331	0- 5	0.1753	0.1753	0.81,0.41
10	7.239	7.307	7.327	7.307	7.239	7.307	7.327	7.307	5- 10	0.5237	0.6990	1.64,1.64
15	7.153	7.248	7.275	7.248	7.153	7.248	7.275	7.248	10- 15	0.8630	1.562	3.06,3.66
20	7.024	7.154	7.188	7.154	7.024	7.154	7.188	7.154	15- 20	1.386	2.768	6.44,6.44
25	6.856	7.025	7.067	7.025	6.856	7.025	7.067	7.025	20- 25	1.984	4.232	9.02,8.92
30	6.670	6.862	6.921	6.862	6.670	6.862	6.921	6.862	25- 30	1.753	5.984	14,14
35	6.468	6.670	6.820	6.670	6.468	6.670	6.820	6.670	30- 35	1.990	7.974	18,18,7
40	6.208	6.477	6.696	6.477	6.208	6.477	6.696	6.477	35- 40	2.197	10.17	23,8,23,8
45	5.813	6.305	6.551	6.305	5.813	6.305	6.551	6.305	40- 45	2.366	12.54	29,4,29,4
50	5.396	6.129	6.386	6.129	5.396	6.129	6.386	6.129	45- 50	2.489	15.03	35,3,35,2
55	4.885	5.936	6.205	5.936	4.885	5.936	6.205	5.936	50- 55	2.666	17.59	41,3,41,2
60	4.130	5.724	6.000	5.724	4.130	5.724	6.000	5.724	55- 60	2.598	20.19	47,3,47,3
65	3.678	5.486	5.775	5.486	3.678	5.486	5.775	5.486	60- 65	2.554	22.74	53,3,53,3
70	2.975	5.226	5.541	5.226	2.975	5.226	5.541	5.226	65- 70	2.479	25.22	59,1,59,1
75	1.975	4.949	5.315	4.949	1.975	4.949	5.315	4.949	70- 75	2.385	27.58	64,6,64,6
80	1.230	4.673	5.081	4.673	1.230	4.673	5.081	4.673	75- 80	2.210	29.79	69,8,69,8
85	0.6095	4.391	4.831	4.391	0.6095	4.391	4.831	4.391	80- 85	2.054	31.84	74,6,74,6
90	0.0508	4.091	4.566	4.091	0.0508	4.091	4.566	4.091	85- 90	1.890	33.73	79,79
95	0.0329	3.794	4.296	3.794	0.0329	3.794	4.296	3.794	90- 95	1.734	35.47	83,1,83,1
100	0.0966	3.510	4.027	3.510	0.0966	3.510	4.027	3.510	95-100	1.593	37.06	86,8,86,8
105	0.1420	3.227	3.759	3.227	0.1420	3.227	3.759	3.227	100-105	1.442	38.50	90,2,90,2
110	0.1741	2.737	3.492	2.737	0.1741	2.737	3.492	2.737	105-110	1.292	39.75	93,1,93,1
115	0.2046	1.805	3.133	1.805	0.2046	1.805	3.133	1.805	110-115	1.143	40.77	95,5,95,5
120	0.2401	0.9925	2.258	0.9925	0.2401	0.9925	2.258	0.9925	115-120	0.7149	41.48	97,2,97,2
125	0.2752	0.6363	1.193	0.6363	0.2752	0.6363	1.193	0.6363	120-125	0.4307	41.91	98,2,98,2
130	0.2668	0.5040	0.4715	0.5040	0.2668	0.5040	0.4715	0.5040	125-130	0.2415	42.15	98,8,98,8
135	0.2213	0.4218	0.2811	0.4218	0.2213	0.4218	0.2811	0.4218	130-135	0.1978	42.31	99,1,99,1
140	0.1882	0.3477	0.2325	0.3477	0.1882	0.3477	0.2325	0.3477	135-140	0.1157	42.42	99,4,99,4
145	0.1532	0.2832	0.1955	0.2832	0.1532	0.2832	0.1955	0.2832	140-145	0.0956	42.51	99,6,99,6
150	0.1198	0.2244	0.1663	0.2244	0.1198	0.2244	0.1663	0.2244	145-150	0.0619	42.57	99,1,99,1
155	0.0955	0.1753	0.1436	0.1753	0.0955	0.1753	0.1436	0.1753	150-155	0.0434	42.62	99,8,99,8
160	0.0676	0.1352	0.1216	0.1352	0.0676	0.1352	0.1216	0.1352	155-160	0.0286	42.65	99,3,99,3
165	0.0413	0.1037	0.0993	0.1037	0.0413	0.1037	0.0993	0.1037	160-165	0.0175	42.66	100,100
170	0.0761	0.0920	0.0781	0.0920	0.0761	0.0920	0.0781	0.0920	165-170	0.0099	42.67	100,100
175	0.0914	0.0873	0.0715	0.0873	0.0914	0.0873	0.0715	0.0873	170-175	0.0062	42.68	100,100
180	0.0812	0.0842	0.0265	0.0842	0.0812	0.0842	0.0265	0.0842	175-180	0.0020	42.68	100,100

LUMINOUS INTENSITY:cd

UNIT:lm

LUMINANCE LIMITATION CURVES



LUMINANCE cd/m²		
G(DEG)	C0/180	C90/270
85	70	554
80	71	293
75	76	205
70	87	162
65	87	137
60	93	120
55	95	108
50	84	89
45	82	93

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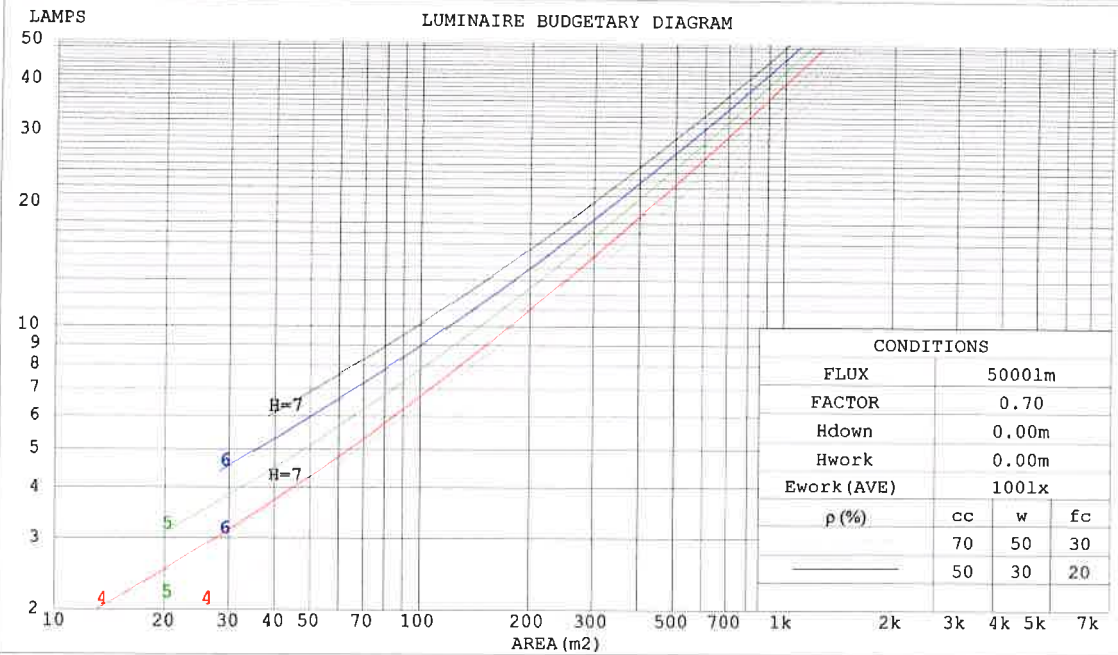
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2.5

Mavi renk Fotometrik Deneş Sonuları (Photometric Test Results of the Blue color)

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pw	20%			20%			20%			20%			20%			0
	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0
pfc	RCR:Room Cavity Ratio			Coefficients of Utilization (CU)												
	RCR	RCR:Room Cavity Ratio			Coefficients of Utilization (CU)											
0.0	1.14	1.14	1.14	1.09	1.09	1.09	.99	.99	.99	.91	.91	.91	.83	.83	.83	.79
1.0	.93	.88	.83	.89	.84	.79	.81	.77	.73	.73	.70	.67	.66	.64	.61	.57
2.0	.79	.71	.64	.75	.68	.62	.68	.62	.57	.62	.57	.53	.56	.52	.48	.45
3.0	.68	.59	.51	.65	.57	.50	.59	.52	.46	.53	.47	.43	.48	.43	.39	.36
4.0	.60	.50	.42	.57	.48	.41	.52	.44	.38	.47	.40	.35	.42	.37	.33	.30
5.0	.53	.43	.36	.50	.41	.35	.46	.38	.32	.42	.35	.30	.38	.32	.28	.25
6.0	.47	.38	.31	.45	.36	.30	.41	.33	.28	.37	.31	.26	.34	.28	.24	.21
7.0	.42	.33	.27	.41	.32	.26	.37	.30	.24	.34	.27	.23	.31	.25	.21	.19
8.0	.38	.30	.23	.37	.28	.23	.34	.26	.21	.31	.25	.20	.28	.23	.19	.16
9.0	.35	.27	.21	.34	.26	.20	.31	.24	.19	.28	.22	.18	.26	.21	.17	.15
10.0	.32	.24	.19	.31	.23	.18	.28	.22	.17	.26	.20	.16	.24	.19	.15	.13



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2.5

Mavi renk Fotometrik Deney Sonuçları (Photometric Test Results of the Blue color)

WEC AND CCEC

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p _w																0
p _{fc}	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients (WEC)									
0.0																
1.0	.413	.235	.074	.399	.228	.072	.374	.214	.068	.350	.202	.065	.328	.190	.061	
2.0	.351	.192	.059	.338	.186	.057	.315	.175	.054	.294	.165	.052	.274	.155	.049	
3.0	.308	.164	.049	.297	.159	.048	.276	.150	.045	.256	.140	.043	.238	.132	.041	
4.0	.275	.143	.042	.265	.139	.041	.246	.131	.039	.228	.123	.037	.212	.115	.035	
5.0	.249	.127	.037	.240	.123	.036	.222	.116	.034	.206	.109	.032	.191	.102	.031	
6.0	.227	.114	.033	.219	.111	.032	.203	.104	.030	.188	.098	.029	.174	.092	.027	
7.0	.209	.103	.029	.201	.100	.029	.187	.094	.027	.173	.089	.026	.160	.083	.024	
8.0	.193	.094	.027	.186	.092	.026	.173	.086	.025	.160	.081	.023	.148	.076	.022	
9.0	.180	.087	.024	.173	.084	.024	.161	.080	.023	.149	.075	.021	.138	.070	.020	
10.0	.168	.080	.022	.162	.078	.022	.150	.074	.021	.140	.069	.020	.129	.065	.019	

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p _w																0
p _{fc}	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients (CCEC)									
0.0	.350	.350	.350	.299	.299	.299	.204	.204	.204	.117	.117	.117	.038	.038	.038	
1.0	.349	.316	.287	.298	.271	.247	.204	.187	.171	.117	.108	.099	.038	.035	.032	
2.0	.342	.294	.253	.293	.253	.219	.201	.175	.153	.116	.102	.089	.037	.033	.029	
3.0	.335	.278	.232	.287	.239	.201	.197	.166	.141	.114	.097	.083	.037	.032	.027	
4.0	.327	.265	.218	.281	.229	.190	.193	.160	.133	.112	.094	.079	.036	.030	.026	
5.0	.319	.256	.209	.274	.221	.182	.189	.155	.128	.109	.091	.076	.035	.030	.025	
6.0	.312	.248	.202	.268	.215	.176	.185	.150	.124	.107	.088	.074	.035	.029	.024	
7.0	.304	.241	.197	.262	.209	.172	.181	.147	.122	.105	.086	.072	.034	.028	.024	
8.0	.298	.236	.193	.256	.205	.169	.177	.144	.120	.103	.085	.071	.033	.028	.024	
9.0	.291	.231	.190	.251	.201	.166	.174	.141	.118	.101	.083	.070	.033	.027	.023	
10.0	.285	.227	.188	.246	.197	.164	.171	.139	.117	.099	.082	.070	.032	.027	.023	



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MEASUREMENT REPORT

2.5

Mavi renk Fotometrik Deney Sonuçları (Photometric Test Results of the Blue color)

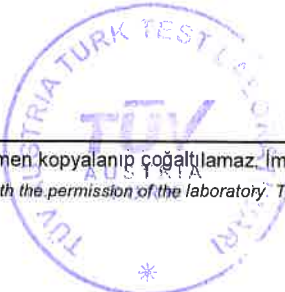
Uncorrected UGR Table

ceiling/cavity	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
walls	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions	Viewed crosswise					Viewed endwise				
x = 2H y = 2H	2.9	4.3	3.5	4.9	5.5	4.2	5.6	4.8	6.2	6.8
3H	4.7	5.9	5.2	6.5	7.2	7.1	8.4	7.7	9.0	9.6
4H	5.3	6.6	5.9	7.2	7.8	8.7	9.9	9.3	10.5	11.2
6H	5.8	7.0	6.5	7.6	8.3	10.5	11.7	11.1	12.3	13.0
8H	6.0	7.1	6.7	7.8	8.5	11.5	12.6	12.1	13.2	14.0
12H	6.2	7.3	6.8	7.9	8.6	12.7	13.7	13.3	14.4	15.1
4H 2H	4.2	5.4	4.8	6.0	6.7	5.1	6.3	5.7	6.9	7.6
3H	6.3	7.4	7.0	8.0	8.8	8.2	9.2	8.8	9.9	10.6
4H	7.3	8.2	7.9	8.9	9.7	9.9	10.9	10.6	11.6	12.3
6H	8.0	8.9	8.7	9.6	10.4	11.9	12.8	12.6	13.5	14.3
8H	8.3	9.1	9.0	9.8	10.6	13.0	13.8	13.7	14.5	15.4
12H	8.5	9.3	9.2	10.0	10.8	14.3	15.0	15.0	15.8	16.6
8H 4H	8.5	9.3	9.2	10.0	10.9	10.5	11.3	11.2	12.0	12.8
6H	9.8	10.5	10.5	11.2	12.1	12.8	13.5	13.5	14.2	15.1
8H	10.4	11.0	11.1	11.8	12.6	14.1	14.7	14.8	15.5	16.4
12H	10.8	11.4	11.6	12.2	13.1	15.6	16.2	16.4	16.9	17.8
12H 4H	8.9	9.6	9.6	10.4	11.2	10.6	11.3	11.3	12.1	12.9
6H	10.5	11.1	11.2	11.9	12.7	13.0	13.6	13.8	14.4	15.3
8H	11.3	11.9	12.1	12.6	13.5	14.5	15.0	15.2	15.8	16.7
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.1				
1.5H	+ 0.1 / - 0.2					+ 0.2 / - 0.3				
2.0H	+ 0.2 / - 0.3					+ 0.3 / - 0.4				

CIE Pub.117 Corrected 42.68 lm Total Lamp Luminous Flux. (8log(F/F0) = -11.0)

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

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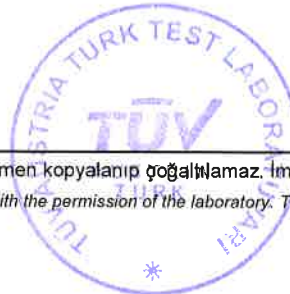
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2.5 Mavi renk Fotometrik Deneş Sonuđları (Photometric Test Results of the Blue color)**UTILIZATION FACTORS TABLE**

REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	45	32	24	44	31	24	42	31	24	17
0.80	54	40	32	52	39	31	49	38	31	23
1.00	61	48	39	59	47	38	56	47	37	28
1.25	68	55	46	66	53	45	61	51	43	33
1.50	73	60	51	71	59	50	66	55	48	37
2.00	81	69	60	78	67	58	72	63	56	43
2.50	86	74	66	82	72	64	75	67	61	47
3.00	89	79	71	86	77	69	79	71	65	51
4.00	95	86	79	90	83	76	83	76	71	56
5.00	98	90	84	93	87	81	85	80	75	59
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNM = 1,25			



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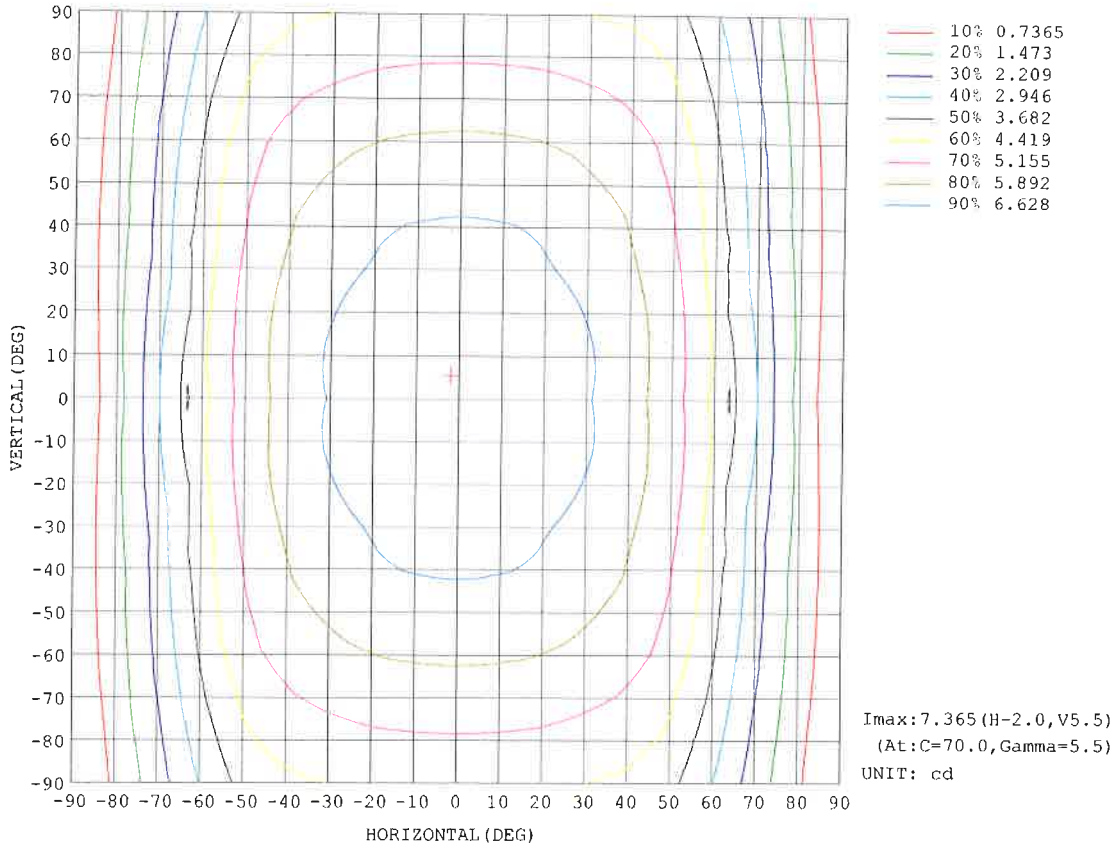
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2.5

Mavi renk Fotometrik Deney Sonuçları (Photometric Test Results of the Blue color)

ISOCANDELA DIAGRAM



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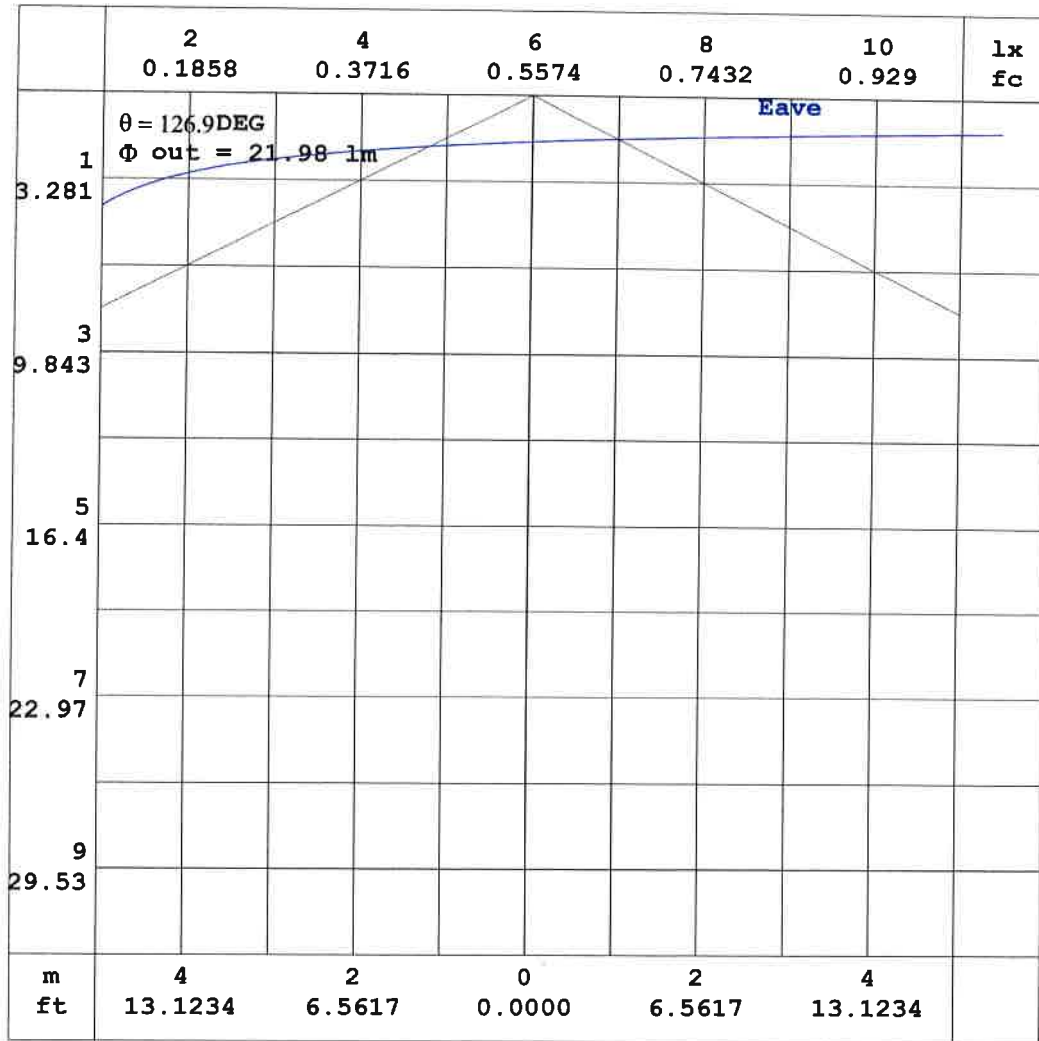
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2.5 Mavi renk Fotometrik Deney Sonuçları (Photometric Test Results of the Blue color)**AAI CURVES**

Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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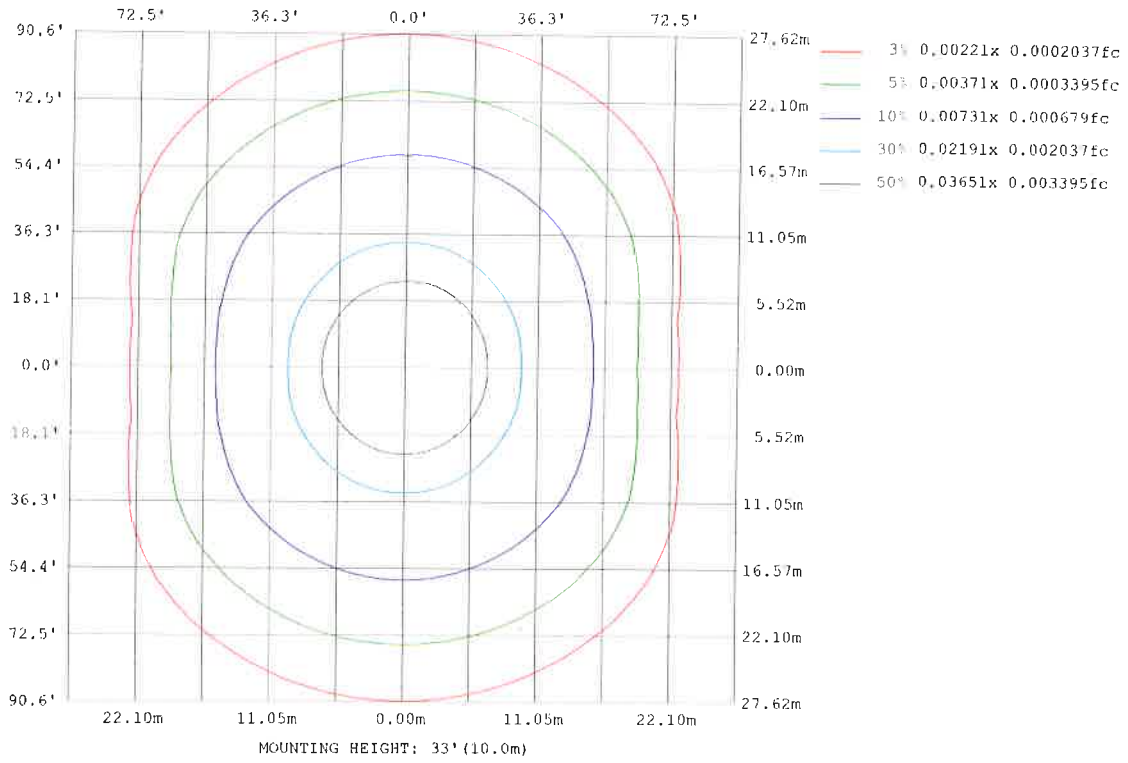
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2.5

Mavi renk Fotometrik Deney Sonuçları (Photometric Test Results of the Blue color)

ISOLUX DIAGRAM



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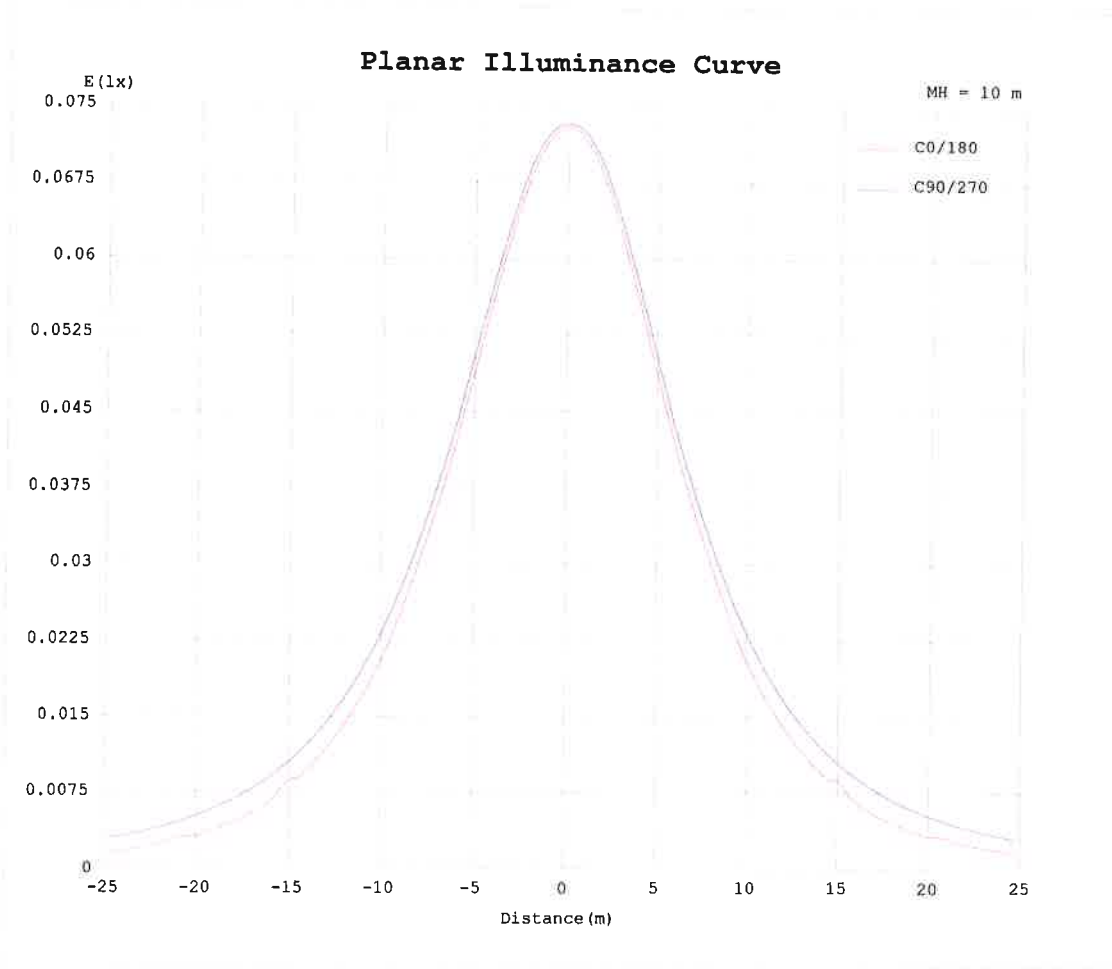
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2.5 Mavi renk Fotometrik Deney Sonuçları (Photometric Test Results of the Blue color)



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2.6 Mavi Renk Spektrokolorimetrik Deney Sonuçları (Spectrocolorimetric Test Results of the Blue color)**Elektriksel Ölçümler**

(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	7,550
Ölçülen Gerilim (V) (Input Voltage)	48 VDC
Ölçülen Akım (A) (Input Current)	0,1574
Güç Faktörü (PF) (Power Factor)	-
Ölçülen Frekans (Hz) (Input Frequency)	-
Ortam Sıcaklığı / Bağıl Nem (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
Stabilizasyon Süresi (Stabilization Time)	60 dk ±5dk

Spektrokolorimetrik Ölçüm Sonuçları

(Spectrocolorimetric Measurement Results)

Chrom x	0,1272
Chrom y	0,0943
Duv	0,00
Chrom u'	0,1313
Chrom v'	0,2189
Peak	469 nm
Dominant	474 nm
CCT	0 K
Nominal CCT	-
Ra(CRI)	0
R9	0
S/P Ratio	12,7
Preburning time	1 hr
Test Configuration	4π



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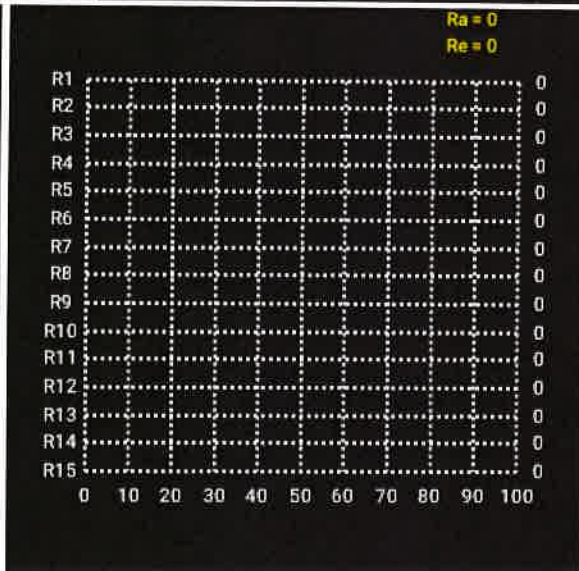
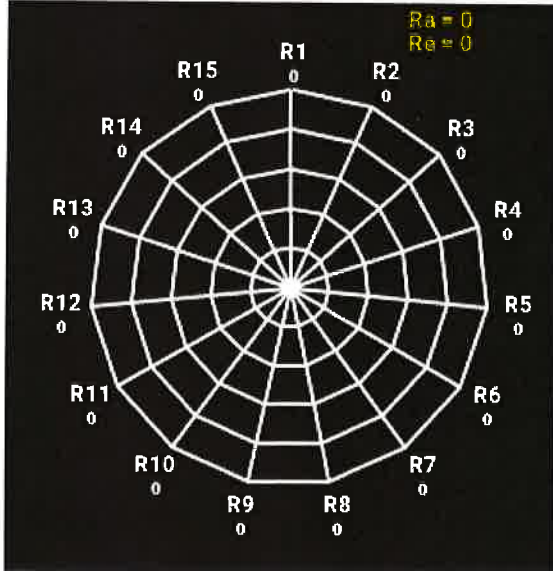
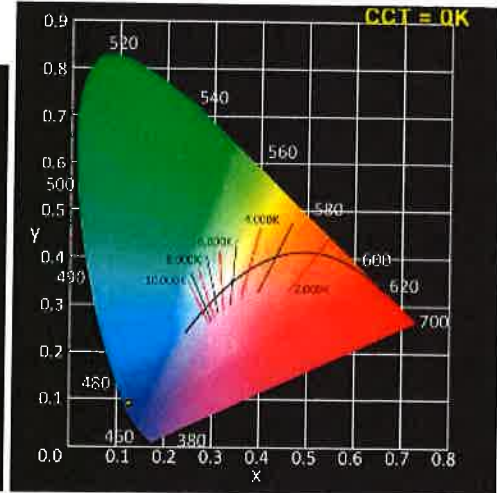
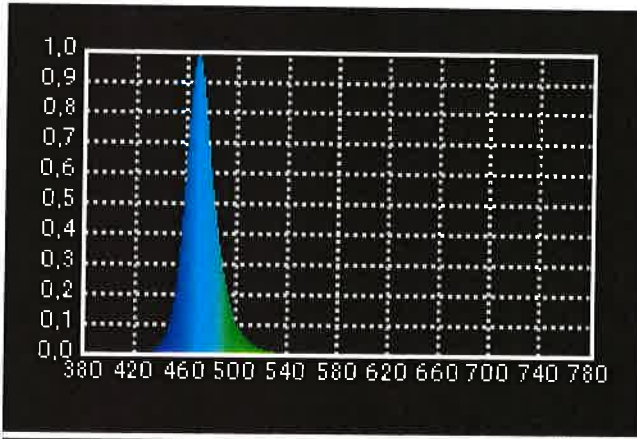
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2.6

Mavi Renk Spektrokolorimetrik Deney Sonuçları (Spectrocolorimetric Test Results of the Blue color)



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2.7 RGBW Renk Deney Sonuçları (Test Results of the RGBW Color)**Elektriksel Ölçümler**

(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	21,18
Ölçülen Gerilim (V) (Input Voltage)	48 VDC
Ölçülen Akım (A) (Input Current)	0,4413
Güç Faktörü (PF) (Power Factor)	-
Ölçülen Frekans (Hz) (Input Frequency)	-
Ortam Sıcaklığı / Bağıl Nem (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
Stabilizasyon Süresi (Stabilization Time)	60 dk ±5dk

Fotometrik Ölçüm Sonuçları

(Photometric Measurement Results)

Toplam Işık Akısı (Total Luminous Flux) (lm)	364,64
Maksimum Işık Şiddeti (Max. Light Intensity) (cd)	68,06
Armatür Etkinliği (Luminaire Efficacy) (lm/W)	17,21



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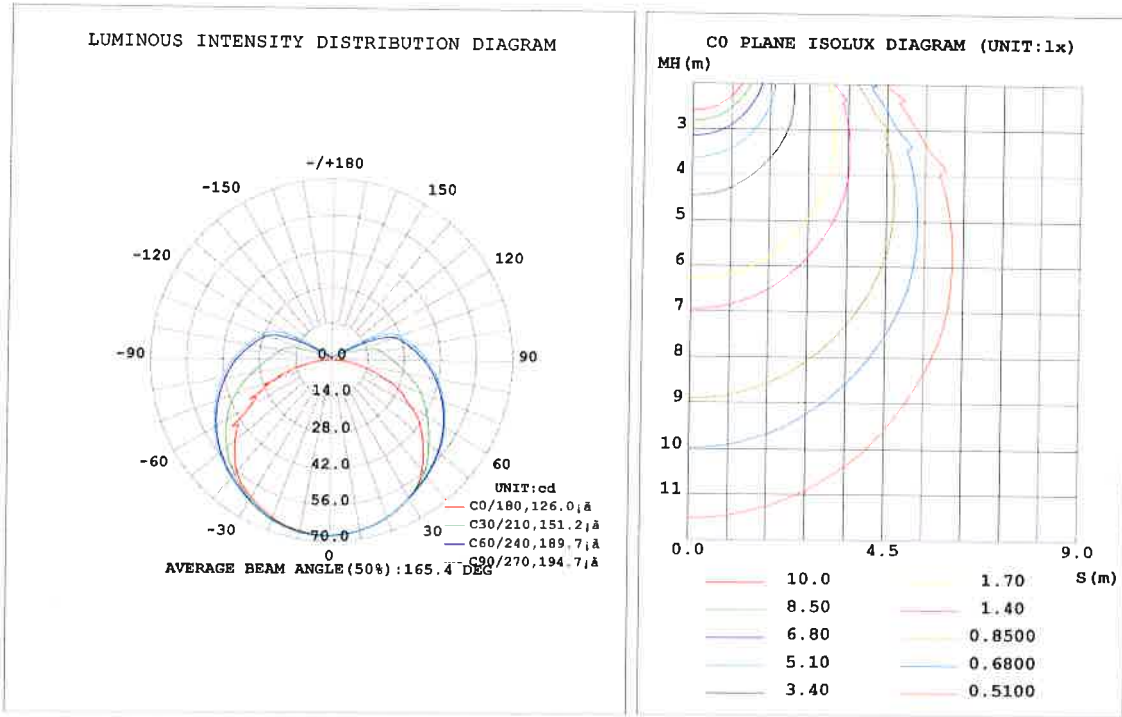
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2.7 RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)



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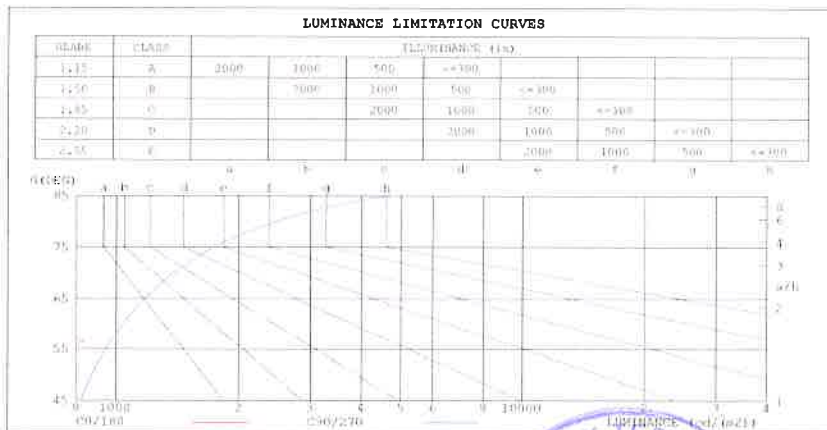
02-19

2.7 RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)

**ZONAL FLUX DIAGRAM
AND LUMINANCE LIMITATION CURVES**

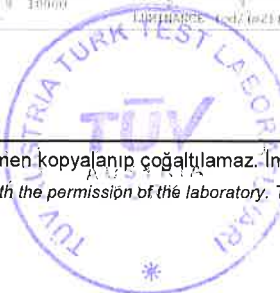
ZONAL FLUX DIAGRAM:

y	C0	C45	C90	C135	C180	C225	C270	C315	y	Φ zone	Φ total	llum, lamp
5	67.47	67.83	67.97	67.66	67.38	67.44	67.56	67.33	0- 5	1.617	1.617	0.44, 0.44
10	66.96	67.46	67.63	67.29	66.79	66.76	66.85	66.64	5- 10	4.814	6.431	1.76, 1.76
15	66.07	66.72	66.87	66.54	65.87	65.74	65.81	65.59	10- 15	7.898	14.33	3.93, 3.93
20	64.76	65.60	65.75	65.45	64.61	64.43	64.46	64.21	15- 20	10.80	25.12	6.09, 6.09
25	63.09	64.14	64.28	64.04	63.07	62.88	62.86	62.53	20- 25	13.54	38.57	10.4, 10.4
30	61.22	62.34	62.57	62.35	61.16	61.05	61.14	60.58	25- 30	15.80	54.37	14.9, 14.9
35	59.12	60.27	61.24	60.41	58.70	59.06	59.80	58.48	30- 35	17.84	72.20	19.9, 19.9
40	56.42	58.20	59.71	58.42	54.95	57.06	58.22	56.44	35- 40	19.45	91.76	25.2, 25.2
45	52.58	56.27	57.99	56.49	50.57	53.14	56.53	54.58	40- 45	20.84	112.6	30.9, 30.9
50	48.59	54.31	56.13	54.47	46.15	53.00	54.73	52.63	45- 50	21.71	134.3	36.8, 36.8
55	43.84	52.21	54.16	52.12	41.84	50.58	52.77	50.59	50- 55	22.19	156.5	42.9, 42.9
60	36.88	49.98	52.02	49.51	35.50	48.02	50.70	48.37	55- 60	22.26	178.8	49.40
65	32.29	47.53	49.73	46.79	29.99	45.36	48.48	46.00	60- 65	21.77	200.5	55.59
70	25.91	44.96	47.41	44.01	23.26	42.62	46.19	43.53	65- 70	20.97	221.5	60.7, 60.7
75	17.17	42.28	45.18	41.20	16.27	39.87	43.94	40.99	70- 75	19.79	241.3	66.2, 66.2
80	10.71	39.67	42.97	38.48	9.434	37.26	41.65	38.47	75- 80	18.41	259.7	71.2, 71.2
85	5.470	37.05	40.61	35.81	4.759	34.67	39.30	35.89	80- 85	16.96	276.7	75.9, 75.9
90	0.6821	34.31	38.14	33.08	0.5670	32.04	36.90	33.23	85- 90	15.49	292.1	80.1, 80.1
95	0.6330	31.64	35.70	30.47	0.5657	29.58	34.54	30.66	90- 95	14.13	306.3	84.84
100	1.147	29.12	33.29	28.03	1.001	27.25	32.24	28.19	95-100	12.84	319.2	87.5, 87.5
105	1.513	26.68	30.94	25.70	1.474	24.98	29.94	25.84	100-105	11.63	330.8	90.1, 90.1
110	1.766	22.52	28.64	21.41	1.759	20.88	27.68	21.54	105-110	10.07	340.9	93.5, 93.5
115	2.016	14.76	25.58	13.99	2.008	13.29	24.57	13.70	110-115	8.120	349.0	95.7, 95.7
120	2.317	8.233	18.36	8.230	2.233	7.255	16.79	7.854	115-120	5.674	354.7	97.3, 97.3
125	2.584	5.417	9.840	5.644	2.416	4.979	8.096	5.763	120-125	3.404	358.1	98.2, 98.2
130	2.471	4.437	4.112	4.419	2.455	4.004	3.132	4.717	125-130	1.949	360.3	98.7, 98.7
135	2.076	3.752	2.610	3.525	2.323	3.167	2.407	3.810	130-135	1.324	361.4	99.1, 99.1
140	1.803	3.123	2.199	2.813	2.116	2.476	2.095	3.063	135-140	0.9909	362.4	99.4, 99.4
145	1.524	2.575	1.897	2.235	1.916	1.784	1.812	2.396	140-145	0.7340	363.1	99.6, 99.6
150	1.265	2.107	1.656	1.768	1.739	1.031	1.568	1.807	145-150	0.5335	363.6	99.7, 99.7
155	1.067	1.705	1.467	1.381	1.557	0.6488	1.140	1.427	150-155	0.3730	364.0	99.8, 99.8
160	0.8454	1.385	1.283	1.076	1.380	0.8112	0.7195	1.253	155-160	0.2508	364.2	99.9, 99.9
165	0.6433	1.132	1.107	0.8373	1.248	0.8967	0.9145	1.100	160-165	0.1723	364.4	99.9, 99.9
170	0.9327	1.049	0.9418	0.9240	1.114	0.9662	0.9059	1.078	165-170	0.1129	364.5	100, 100
175	1.055	1.018	0.8846	0.9712	0.9998	0.9777	0.9527	1.059	170-175	0.0684	364.6	100, 100
180	0.9816	1.002	0.5400	1.023	0.9823	0.9960	0.8241	1.023	175-180	0.0230	364.6	100, 100



LUMINANCE (cd/m²)

G (DEG)	C0/180	C90/270
85	628	4659
80	617	2474
75	603	1746
70	758	1386
65	764	1177
60	738	1040
55	764	944
50	756	873
45	744	820



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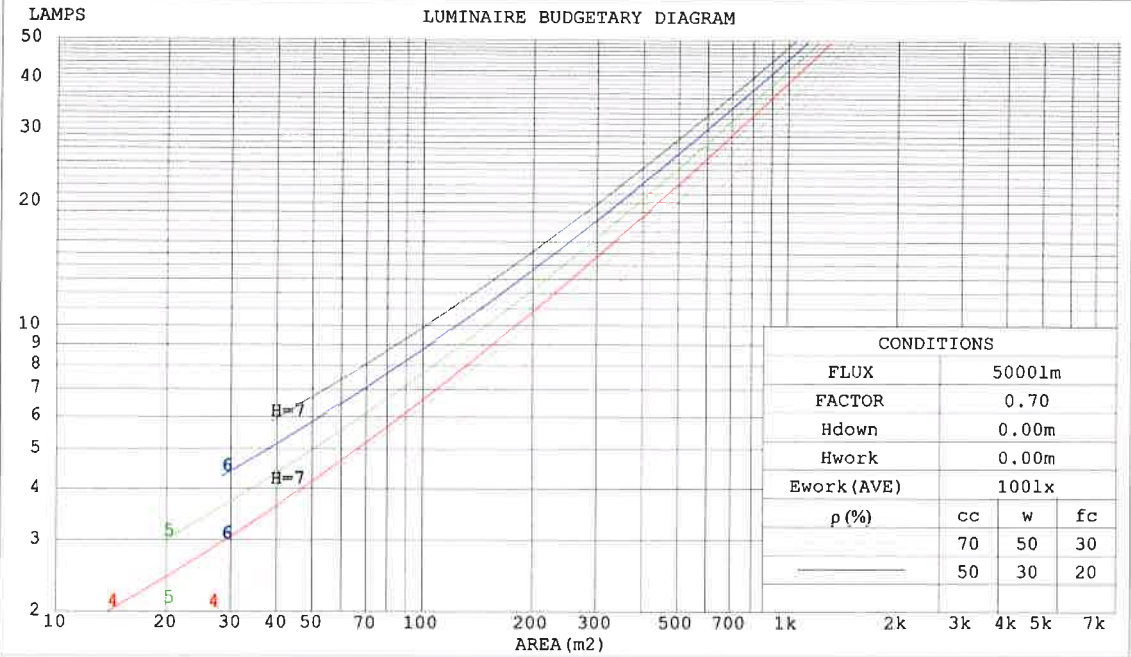
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2.7

RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p _w	0															
p _{fc}	0															
RcR	RCR:Room Cavity Ratio						Coefficients of Utilization(CU)									
	20%			20%			20%			20%			20%			
0.0	1.14	1.14	1.14	1.09	1.09	1.09	1.00	1.00	1.00	.92	.92	.92	.84	.84	.84	.80
1.0	.94	.88	.83	.90	.85	.80	.82	.78	.74	.74	.71	.68	.68	.65	.63	.59
2.0	.80	.72	.65	.76	.69	.62	.69	.63	.58	.63	.58	.54	.57	.53	.50	.46
3.0	.69	.60	.52	.66	.57	.50	.60	.53	.47	.54	.49	.44	.49	.45	.40	.37
4.0	.60	.51	.43	.58	.49	.42	.53	.45	.39	.48	.41	.36	.43	.38	.34	.31
5.0	.53	.44	.37	.51	.42	.35	.47	.39	.33	.42	.36	.31	.39	.33	.29	.26
6.0	.48	.38	.31	.46	.37	.30	.42	.34	.29	.38	.32	.27	.35	.29	.25	.22
7.0	.43	.34	.27	.41	.33	.26	.38	.30	.25	.35	.28	.23	.32	.26	.22	.19
8.0	.39	.30	.24	.37	.29	.23	.34	.27	.22	.32	.25	.21	.29	.23	.19	.17
9.0	.36	.27	.21	.34	.26	.21	.32	.25	.20	.29	.23	.18	.27	.21	.17	.15
10.0	.33	.25	.19	.31	.24	.19	.29	.22	.18	.27	.21	.17	.25	.19	.16	.14



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2.7 RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)

WEC AND CCEC

ρ_{cc}	80%			70%			50%			30%			10%			0
	ρ_w	ρ_{fc}		ρ_w	ρ_{fc}		ρ_w	ρ_{fc}		ρ_w	ρ_{fc}		ρ_w	ρ_{fc}		
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.407	.232	.073	.394	.225	.071	.369	.212	.068	.346	.200	.064	.325	.188	.061	
2.0	.347	.190	.058	.335	.185	.057	.312	.174	.054	.292	.164	.051	.272	.154	.049	
3.0	.306	.163	.049	.295	.158	.048	.274	.149	.045	.255	.140	.043	.238	.132	.041	
4.0	.274	.142	.042	.264	.138	.041	.245	.130	.039	.228	.122	.037	.212	.115	.035	
5.0	.248	.126	.037	.239	.123	.036	.222	.115	.034	.206	.109	.032	.191	.102	.031	
6.0	.226	.113	.032	.218	.110	.032	.203	.104	.030	.188	.098	.029	.175	.092	.027	
7.0	.208	.103	.029	.201	.100	.028	.186	.094	.027	.173	.089	.026	.161	.084	.025	
8.0	.193	.094	.026	.186	.091	.026	.173	.086	.025	.161	.081	.023	.149	.077	.022	
9.0	.179	.087	.024	.173	.084	.024	.161	.080	.023	.150	.075	.021	.139	.071	.020	
10.0	.167	.080	.022	.162	.078	.022	.151	.074	.021	.140	.070	.020	.130	.065	.019	

ρ_{cc}	80%			70%			50%			30%			10%			0
	ρ_w	ρ_{fc}		ρ_w	ρ_{fc}		ρ_w	ρ_{fc}		ρ_w	ρ_{fc}		ρ_w	ρ_{fc}		
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.342	.342	.342	.292	.292	.292	.199	.199	.199	.115	.115	.115	.037	.037	.037	
1.0	.340	.308	.279	.291	.264	.240	.199	.182	.166	.114	.105	.097	.037	.034	.031	
2.0	.333	.285	.245	.286	.246	.212	.196	.170	.148	.113	.099	.087	.036	.032	.028	
3.0	.326	.269	.224	.279	.232	.194	.192	.161	.136	.111	.094	.080	.036	.031	.026	
4.0	.318	.257	.210	.273	.222	.182	.188	.155	.128	.109	.091	.076	.035	.029	.025	
5.0	.310	.247	.200	.266	.214	.174	.184	.149	.123	.106	.088	.073	.034	.029	.024	
6.0	.303	.239	.194	.260	.207	.169	.180	.145	.119	.104	.085	.071	.034	.028	.023	
7.0	.296	.233	.189	.254	.202	.164	.176	.141	.116	.102	.083	.069	.033	.027	.023	
8.0	.289	.227	.185	.249	.197	.161	.172	.138	.114	.100	.082	.068	.032	.027	.023	
9.0	.282	.222	.182	.243	.193	.159	.169	.136	.113	.098	.080	.067	.032	.026	.022	
10.0	.276	.218	.179	.238	.189	.157	.165	.133	.111	.096	.079	.066	.031	.026	.022	

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2.7 RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)

Uncorrected UGR Table

ceiling/cavity	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3	
walls	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3	
working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Room dimensions	Viewed crosswise					Viewed endwise					
x = 2H y = 2H	10.7	12.1	11.2	12.6	13.2	11.8	13.2	12.4	13.8	14.4	
3H	12.4	13.7	12.9	14.2	14.9	14.6	15.9	15.2	16.5	17.1	
4H	13.0	14.3	13.6	14.8	15.5	16.2	17.4	16.8	18.0	18.7	
6H	13.5	14.7	14.1	15.3	16.0	18.0	19.1	18.6	19.7	20.4	
8H	13.7	14.8	14.3	15.4	16.1	19.0	20.1	19.6	20.7	21.4	
12H	13.9	14.9	14.5	15.6	16.3	20.1	21.2	20.7	21.8	22.5	
4H	2H	11.9	13.1	12.5	13.7	14.3	12.7	13.9	13.3	14.5	15.1
3H	14.0	15.0	14.6	15.7	16.4	15.7	16.8	16.3	17.4	18.1	
4H	14.9	15.9	15.6	16.5	17.3	17.4	18.4	18.1	19.1	19.8	
6H	15.6	16.5	16.3	17.2	18.0	19.4	20.3	20.0	20.9	21.7	
8H	15.9	16.7	16.6	17.4	18.2	20.5	21.3	21.1	22.0	22.8	
12H	16.1	16.9	16.8	17.6	18.4	21.7	22.5	22.4	23.2	24.0	
8H	4H	16.1	16.9	16.8	17.6	18.4	18.0	18.8	18.7	19.5	20.3
6H	17.4	18.1	18.1	18.8	19.6	20.2	20.9	21.0	21.7	22.5	
8H	17.9	18.6	18.7	19.3	20.2	21.5	22.2	22.3	22.9	23.8	
12H	18.4	18.9	19.1	19.7	20.6	23.0	23.6	23.8	24.3	25.2	
12H	4H	16.4	17.2	17.1	17.9	18.7	18.1	18.8	18.8	19.5	20.4
6H	18.0	18.7	18.7	19.4	20.2	20.5	21.1	21.2	21.8	22.7	
8H	18.8	19.4	19.6	20.1	21.0	21.9	22.4	22.6	23.2	24.1	
Variations with the observer position at spacings:											
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.1					
1.5H	+ 0.2 / - 0.2					+ 0.2 / - 0.3					
2.0H	+ 0.2 / - 0.3					+ 0.3 / - 0.4					

CIE Pub.117 Corrected 364.6 lm Total Lamp Luminous Flux. (8log(F/F0) = -3.5)



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2.7

RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)**UTILIZATION FACTORS TABLE**

REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	46	33	25	44	32	25	43	32	25	18
0.80	54	41	33	53	40	32	50	39	32	24
1.00	62	49	40	60	48	39	57	48	38	29
1.25	69	56	47	67	54	46	62	52	44	35
1.50	74	61	52	71	60	51	67	57	49	39
2.00	82	70	61	79	68	60	73	64	57	45
2.50	86	75	67	83	73	65	76	68	62	49
3.00	90	80	72	86	77	70	80	72	66	52
4.00	95	87	79	91	83	77	84	77	72	57
5.00	98	91	84	94	87	82	86	81	76	60
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			



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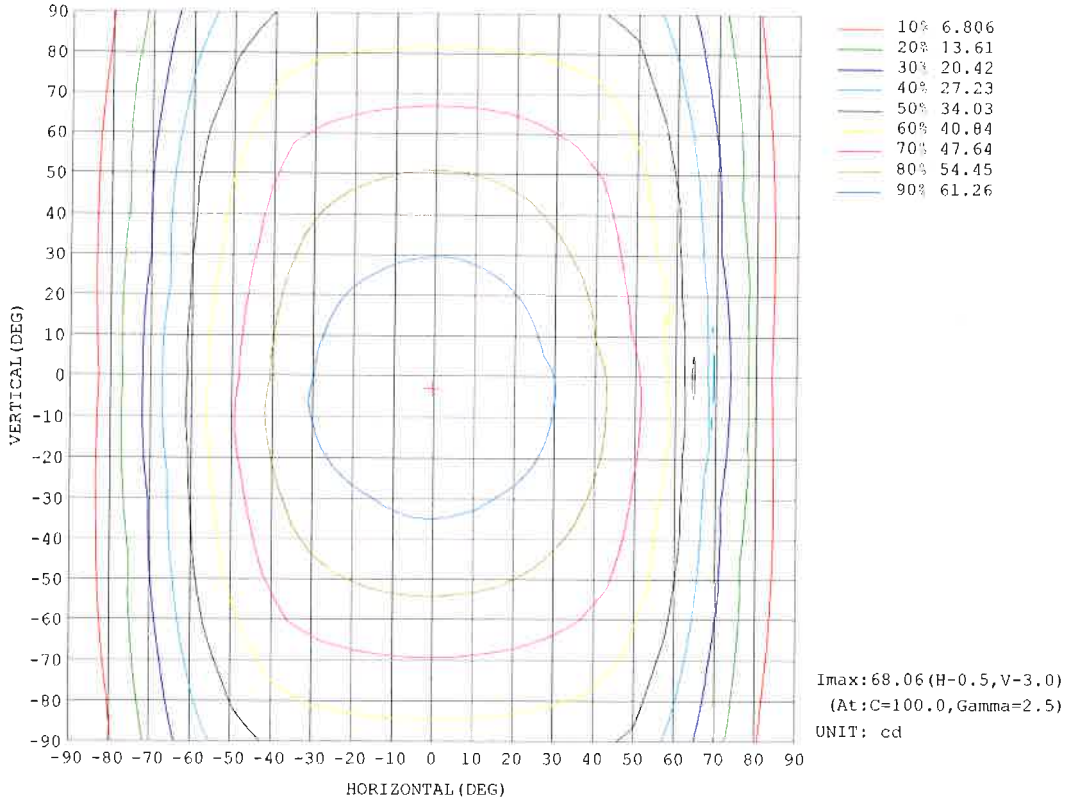
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2.7

RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)

ISOCANDELA DIAGRAM



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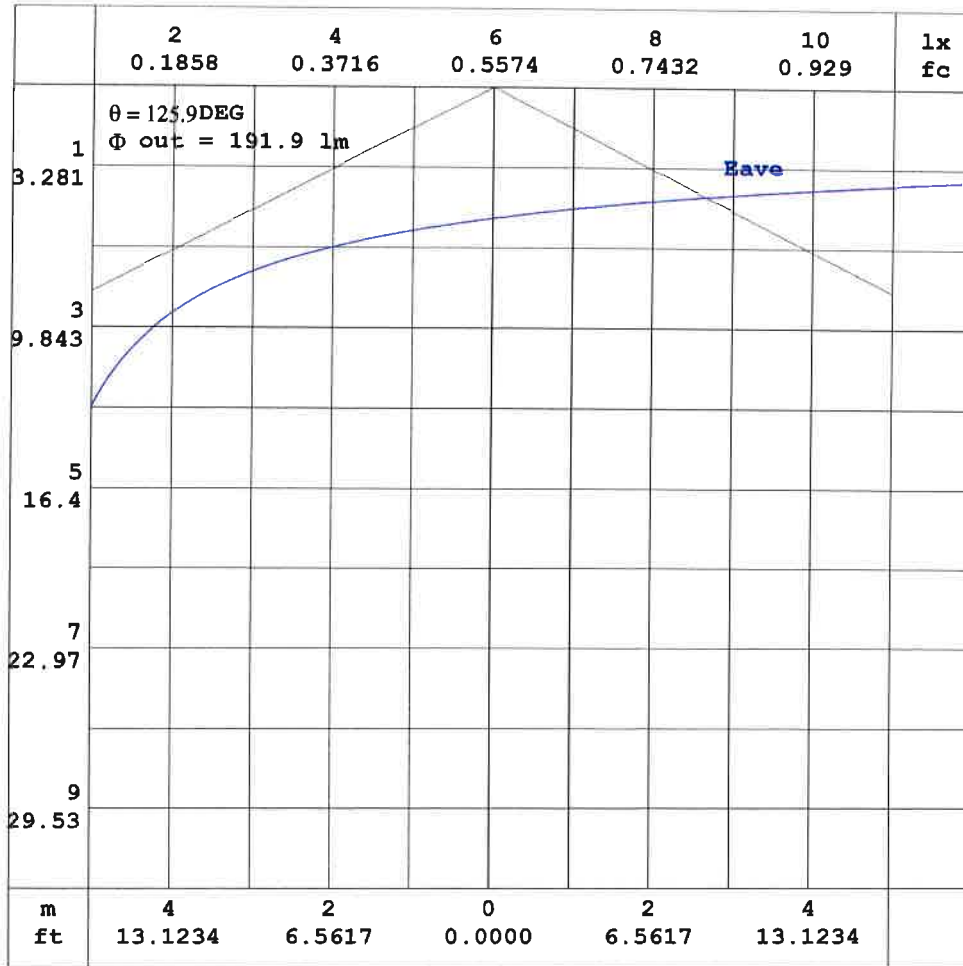
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2.7 RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)**AAI CURVES**

Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.



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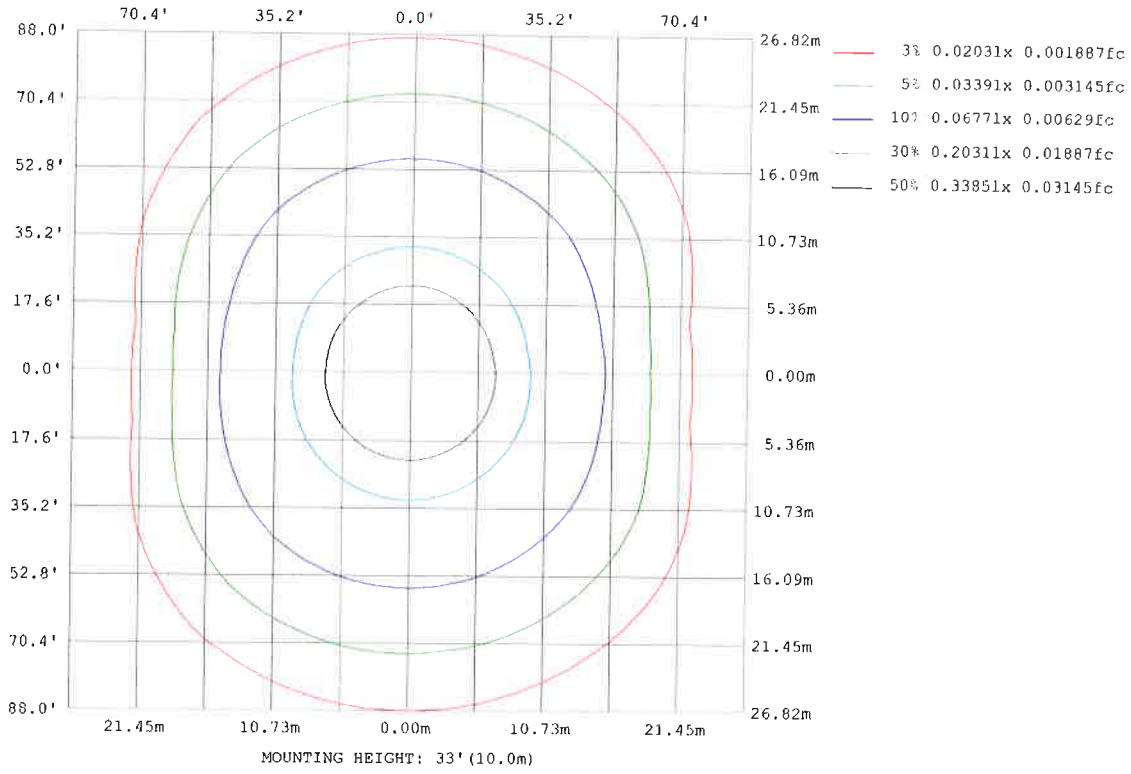
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2.7

RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)

ISOLUX DIAGRAM



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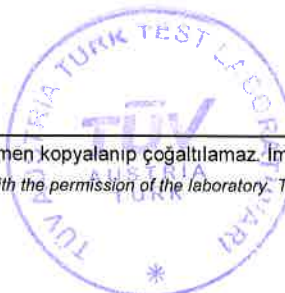
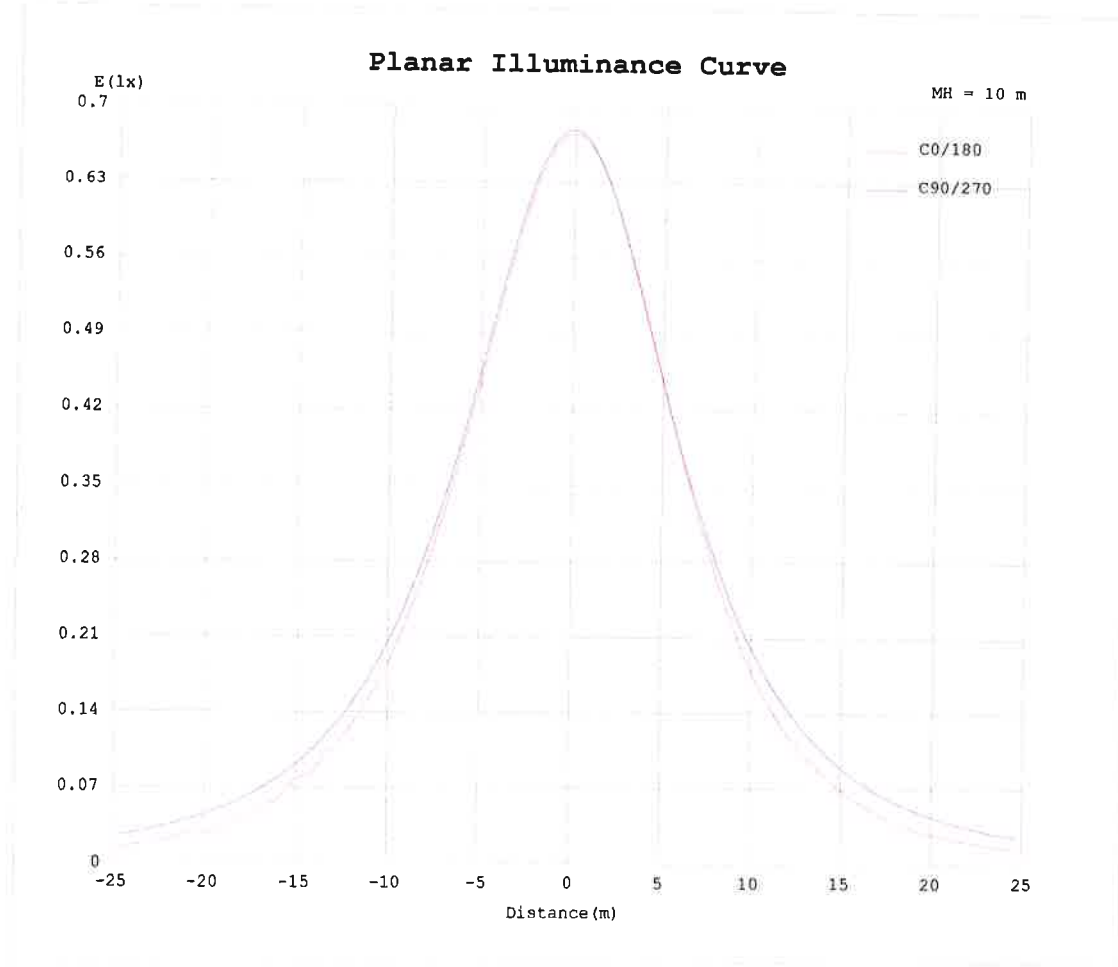
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2.7

RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)



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2.8

RGBW Renk Spektrokolorimetrik Deney Sonuçları (Spectrocolorimetric Test Results of the RGBW color)**Elektriksel Ölçümler**

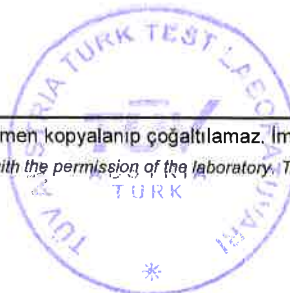
(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	21,18
Ölçülen Gerilim (V) (Input Voltage)	48 VDC
Ölçülen Akım (A) (Input Current)	0,4413
Güç Faktörü (PF) (Power Factor)	-
Ölçülen Frekans (Hz) (Input Frequency)	-
Ortam Sıcaklığı / Bağıl Nem (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
Stabilizasyon Süresi (Stabilization Time)	60 dk ±5dk

Spektrokolorimetrik Ölçüm Sonuçları

(Spectrocolorimetric Measurement Results)

Chrom x	0,2817
Chrom y	0,3209
Duv	0,0158
Chrom u'	0,1792
Chrom v'	0,4593
Peak	469 nm
Dominant	489 nm
CCT	8586 K
Nominal CCT	-
Ra(CRI)	74
R9	-37
S/P Ratio	3,1
Preburning time	1 hr
Test Configuration	4π



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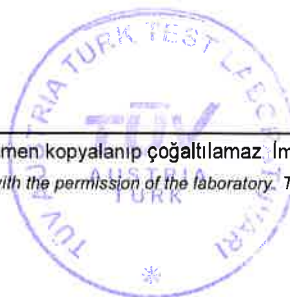
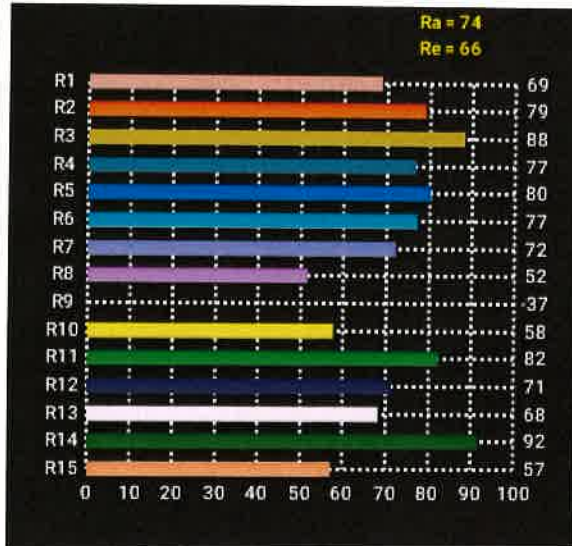
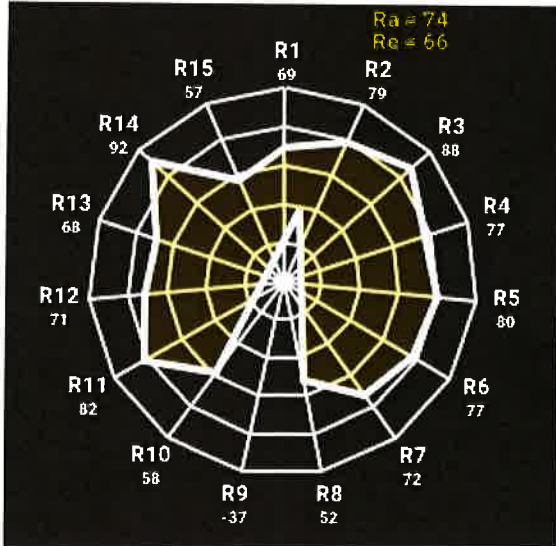
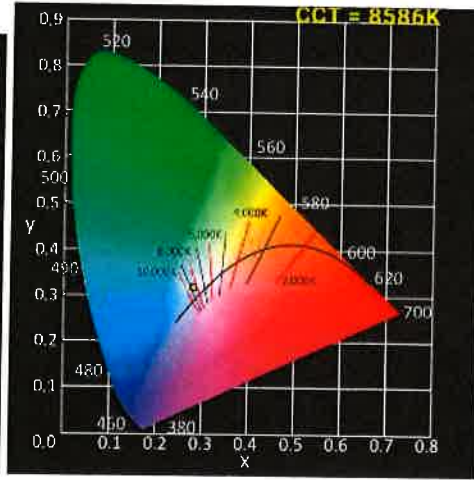
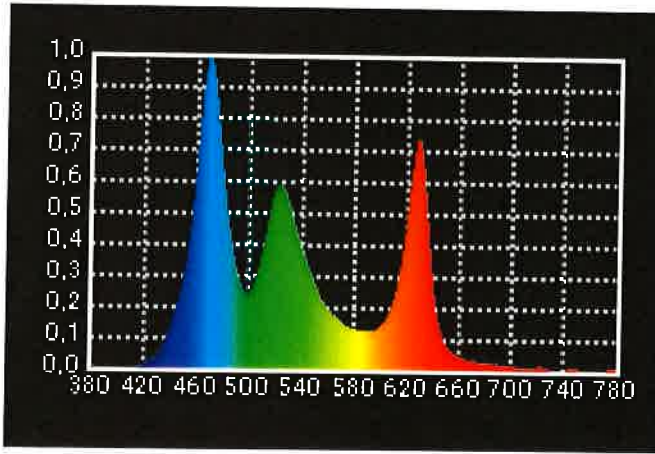
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2.8

RGBW Renk Spektrokolorimetrik Deneş Sonuđları (Spectrocolorimetric Test Results of the RGBW color)



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2.9 Yeşil Renk Deney Sonuçları (Test Results of the Green Color)**Elektriksel Ölçümler**

(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	7,536
Ölçülen Gerilim (V) (Input Voltage)	48 VDC
Ölçülen Akım (A) (Input Current)	0,1570
Güç Faktörü (PF) (Power Factor)	-
Ölçülen Frekans (Hz) (Input Frequency)	-
Ortam Sıcaklığı / Bağıl Nem (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
Stabilizasyon Süresi (Stabilization Time)	60 dk ±5dk

Fotometrik Ölçüm Sonuçları

(Photometric Measurement Results)

Toplam Işık Akısı (Total Luminous Flux) (lm)	175,16
Maksimum Işık Şiddeti (Max. Light Intensity) (cd)	32,18
Armatür Etkinliği (Luminaire Efficacy) (lm/W)	23,24



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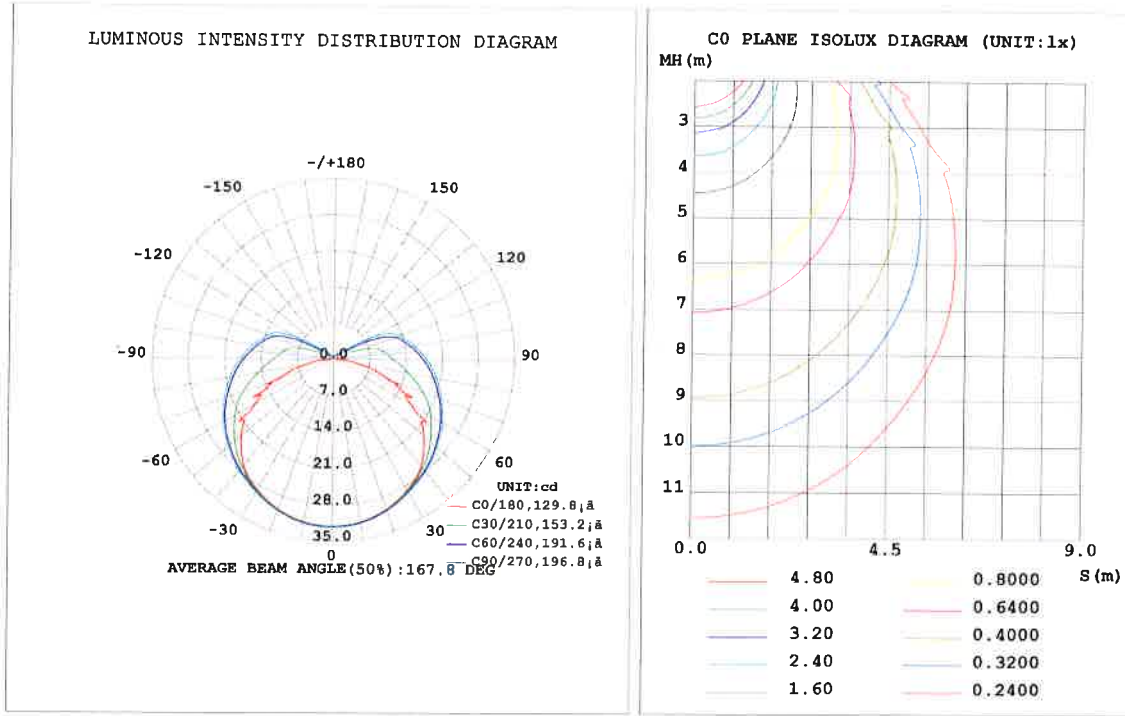
TL-806

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2.9

Yeşil renk Fotometrik Deney Sonuçları (Photometric Test Results of the Green color)



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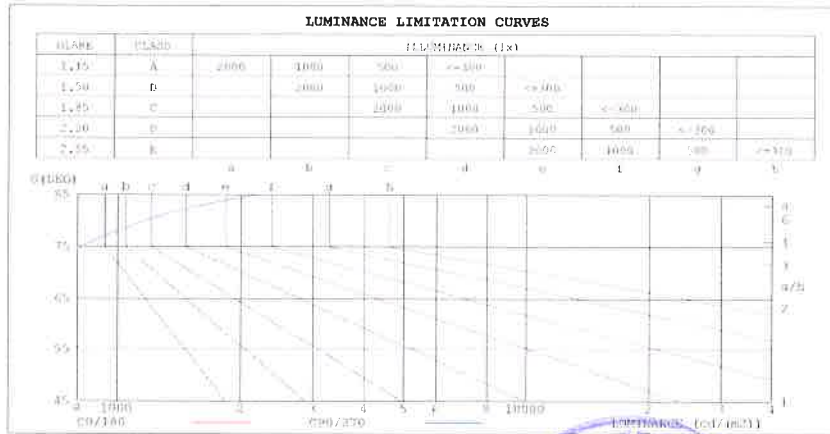
ZONAL FLUX DIAGRAM
AND LUMINANCE LIMITATION CURVES

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	lum, lamp
5	31.91	32.06	32.13	32.06	31.91	32.06	32.13	32.06	0- 5	0.7663	0.7663	0.44, 0.44
10	31.67	31.84	31.90	31.84	31.67	31.84	31.90	31.84	5- 10	2.283	3.050	1.74, 1.74
15	31.24	31.46	31.50	31.46	31.24	31.46	31.50	31.46	10- 15	3.750	6.199	3.03, 3.03
20	30.60	30.88	30.91	30.88	30.60	30.88	30.91	30.88	15- 20	5.127	11.93	6.01, 6.01
25	29.77	30.16	30.21	30.16	29.77	30.16	30.21	30.16	20- 25	6.387	18.31	10.5, 10.5
30	28.87	29.29	29.40	29.29	28.87	29.29	29.40	29.29	25- 30	7.501	25.81	14.7, 14.7
35	27.90	28.29	28.77	28.29	27.90	28.29	28.77	28.29	30- 35	8.468	34.28	19.6, 19.6
40	26.66	27.27	28.05	27.27	26.66	27.27	28.05	27.27	35- 40	9.293	43.58	24.9, 24.9
45	24.88	26.36	27.23	26.36	24.88	26.36	27.23	26.36	40- 45	9.939	53.51	30.6, 30.6
50	23.03	25.44	26.37	25.44	23.03	25.44	26.37	25.44	45- 50	10.39	63.90	36.5, 36.5
55	20.81	24.46	25.44	24.46	20.81	24.46	25.44	24.46	50- 55	10.64	74.54	42.6, 42.6
60	17.51	23.41	24.45	23.41	17.51	23.41	24.45	23.41	55- 60	10.70	85.24	48.7, 48.7
65	15.74	22.28	23.38	22.28	15.74	22.28	23.38	22.28	60- 65	10.45	95.70	54.6, 54.6
70	12.64	21.08	22.30	21.08	12.64	22.30	23.08	21.08	65- 70	10.08	105.8	60.4, 60.4
75	8.465	19.84	21.28	19.84	8.465	19.84	21.28	19.84	70- 75	9.519	115.3	65.9, 65.9
80	5.280	18.62	20.25	18.62	5.280	18.62	20.25	18.62	75- 80	8.671	124.2	70.9, 70.9
85	2.691	17.40	19.15	17.40	2.691	17.40	19.15	17.40	80- 85	7.482	132.1	75.6, 75.6
90	0.3314	16.11	18.00	16.11	0.3314	16.11	18.00	16.11	85- 90	6.027	139.8	79.8, 79.8
95	0.2801	14.86	16.86	14.86	0.2801	14.86	16.86	14.86	90- 95	4.627	146.7	83.7, 83.7
100	0.5312	13.70	15.73	13.70	0.5312	13.70	15.73	13.70	95-100	3.247	152.9	87.3, 87.3
105	0.7152	12.53	14.64	12.53	0.7152	12.53	14.64	12.53	100-105	2.631	158.5	90.5, 90.5
110	0.8377	10.60	13.55	10.60	0.8377	10.60	13.55	10.60	105-110	2.075	163.4	93.3, 93.3
115	0.9563	7.045	12.11	7.045	0.9563	7.045	12.11	7.045	110-115	1.627	167.4	95.5, 95.5
120	1.080	3.935	8.784	3.935	1.080	3.935	8.784	3.935	115-120	1.199	170.2	97.1, 97.1
125	1.201	2.589	4.704	2.589	1.201	2.589	4.704	2.589	120-125	0.711	171.9	98.1, 98.1
130	1.157	2.079	1.960	2.079	1.157	2.079	1.960	2.079	125-130	0.9840	172.9	98.7, 98.7
135	0.9962	1.758	1.228	1.758	0.9962	1.758	1.228	1.758	130-135	0.6568	173.5	99.1, 99.1
140	0.8616	1.465	1.030	1.465	0.8616	1.465	1.030	1.465	135-140	0.4940	174.6	99.3, 99.3
145	0.7248	1.212	0.8851	1.212	0.7248	1.212	0.8851	1.212	140-145	0.3707	174.6	99.3, 99.3
150	0.5968	0.9869	0.7110	0.9869	0.5968	0.9869	0.7110	0.9869	145-150	0.2744	174.6	99.7, 99.7
155	0.4981	0.7959	0.6787	0.7959	0.4981	0.7959	0.6787	0.7959	150-155	0.1978	174.6	99.8, 99.8
160	0.3916	0.6404	0.5922	0.6404	0.3916	0.5922	0.6404	0.5922	155-160	0.1357	175.0	99.9, 99.9
165	0.2900	0.5194	0.5077	0.5194	0.2900	0.5077	0.5194	0.5077	160-165	0.0876	175.1	99.9, 99.9
170	0.4320	0.4833	0.4294	0.4833	0.4320	0.4294	0.4833	0.4833	165-170	0.0531	175.1	100, 100
175	0.4919	0.4722	0.4053	0.4722	0.4919	0.4722	0.4053	0.4722	170-175	0.0336	175.2	100, 100
180	0.4575	0.4675	0.2459	0.4675	0.4575	0.2459	0.4675	0.4675	175-180	0.0112	175.2	100, 100

LUMINOUS INTENSITY:cd

UNIT:lm



G (DEG)	C0/190	C90/270
85	309	2197
90	304	1166
95	327	822
100	370	652
105	371	553
110	350	489
115	363	444
120	358	410
125	352	385



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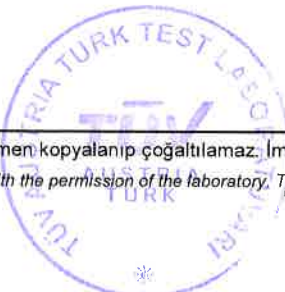
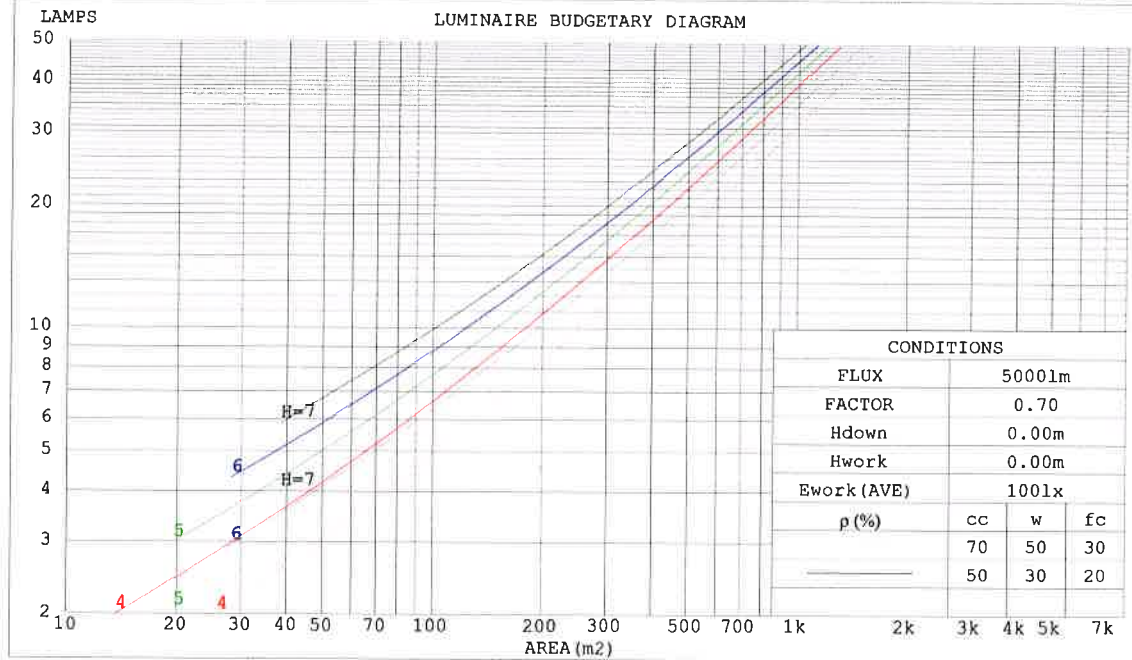
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2.9

Yeşil renk Fotometrik Deney Sonuçları (Photometric Test Results of the Green color)

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
pw	0															
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Coefficients of Utilization(CU)									
0.0	1.14	1.14	1.14	1.09	1.09	1.09	.00	.00	.00	.91	.91	.91	.84	.84	.84	.80
1.0	.94	.88	.83	.90	.84	.80	.82	.77	.74	.74	.71	.68	.67	.65	.62	.59
2.0	.80	.72	.65	.76	.69	.62	.69	.63	.58	.63	.58	.53	.57	.53	.49	.46
3.0	.69	.60	.52	.66	.57	.50	.60	.53	.47	.54	.48	.43	.49	.44	.40	.37
4.0	.60	.51	.43	.57	.49	.42	.52	.45	.39	.48	.41	.36	.43	.38	.34	.31
5.0	.53	.44	.36	.51	.42	.35	.46	.39	.33	.42	.36	.31	.38	.33	.29	.26
6.0	.48	.38	.31	.46	.37	.30	.42	.34	.28	.38	.32	.27	.35	.29	.25	.22
7.0	.43	.34	.27	.41	.32	.26	.38	.30	.25	.34	.28	.23	.31	.26	.22	.19
8.0	.39	.30	.24	.37	.29	.23	.34	.27	.22	.31	.25	.21	.29	.23	.19	.17
9.0	.35	.27	.21	.34	.26	.21	.31	.24	.19	.29	.23	.18	.27	.21	.17	.15
10.0	.33	.24	.19	.31	.24	.19	.29	.22	.18	.27	.21	.17	.25	.19	.16	.14



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WEC AND CCEC

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p _w																0
p _{fc}	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.408	.232	.074	.395	.225	.071	.369	.212	.068	.346	.200	.064	.325	.188	.061	
2.0	.348	.190	.058	.335	.185	.057	.313	.174	.054	.292	.164	.051	.272	.154	.049	
3.0	.306	.163	.049	.295	.158	.048	.274	.149	.045	.255	.140	.043	.238	.132	.041	
4.0	.274	.142	.042	.264	.138	.041	.245	.130	.039	.228	.122	.037	.212	.115	.035	
5.0	.248	.126	.037	.239	.123	.036	.222	.115	.034	.206	.109	.032	.191	.102	.031	
6.0	.226	.113	.032	.218	.110	.032	.202	.104	.030	.188	.098	.029	.174	.092	.027	
7.0	.208	.103	.029	.201	.100	.028	.186	.094	.027	.173	.089	.026	.160	.083	.025	
8.0	.193	.094	.026	.186	.091	.026	.173	.086	.025	.160	.081	.023	.149	.076	.022	
9.0	.179	.087	.024	.173	.084	.024	.161	.079	.023	.149	.075	.021	.139	.070	.020	
10.0	.167	.080	.022	.162	.078	.022	.150	.074	.021	.140	.069	.020	.130	.065	.019	

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p _w																0
p _{fc}	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.344	.344	.344	.294	.294	.294	.201	.201	.201	.115	.115	.115	.037	.037	.037	
1.0	.342	.310	.282	.293	.266	.242	.200	.183	.168	.115	.106	.097	.037	.034	.032	
2.0	.336	.288	.247	.288	.248	.214	.197	.171	.149	.114	.100	.087	.036	.032	.028	
3.0	.328	.271	.226	.281	.234	.196	.193	.163	.137	.112	.095	.081	.036	.031	.027	
4.0	.320	.259	.212	.275	.224	.184	.189	.156	.130	.109	.091	.077	.035	.030	.025	
5.0	.313	.249	.203	.269	.216	.176	.185	.151	.124	.107	.088	.074	.035	.029	.024	
6.0	.305	.242	.196	.262	.209	.171	.181	.146	.121	.105	.086	.072	.034	.028	.024	
7.0	.298	.235	.191	.256	.204	.166	.177	.143	.118	.103	.084	.070	.033	.028	.023	
8.0	.291	.229	.187	.251	.199	.163	.173	.140	.116	.101	.082	.069	.033	.027	.023	
9.0	.285	.225	.184	.245	.195	.161	.170	.137	.114	.099	.081	.068	.032	.027	.023	
10.0	.279	.221	.182	.240	.191	.159	.167	.135	.113	.097	.080	.067	.032	.026	.022	

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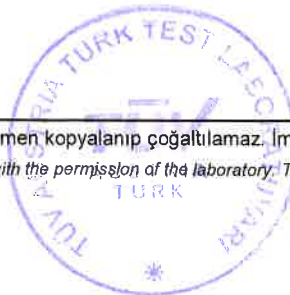
2.9

Yeşil renk Fotometrik Denev Sonuçları (Photometric Test Results of the Green color)

Uncorrected UGR Table

ceiling/cavity	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3	
walls	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3	
working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Room dimensions	Viewed crosswise					Viewed endwise					
x = 2H y = 2H	8.0	9.4	8.5	9.9	10.5	9.1	10.5	9.7	11.1	11.7	
3H	9.7	11.0	10.3	11.6	12.2	11.9	13.2	12.5	13.8	14.5	
4H	10.4	11.6	11.0	12.2	12.9	13.5	14.7	14.1	15.3	16.0	
6H	10.9	12.0	11.5	12.6	13.3	15.3	16.4	15.9	17.0	17.7	
8H	11.1	12.2	11.7	12.8	13.5	16.3	17.4	16.9	18.0	18.7	
12H	11.2	12.3	11.9	12.9	13.7	17.4	18.5	18.0	19.1	19.8	
4H	2H	9.2	10.4	9.8	11.0	11.7	10.0	11.2	10.5	11.8	12.4
3H	11.3	12.4	11.9	13.0	13.7	13.0	14.0	13.6	14.7	15.4	
4H	12.2	13.2	12.9	13.9	14.6	14.7	15.7	15.4	16.4	17.1	
6H	13.0	13.8	13.6	14.5	15.3	16.7	17.6	17.3	18.2	19.0	
8H	13.2	14.1	13.9	14.8	15.6	17.8	18.6	18.4	19.3	20.1	
12H	13.4	14.2	14.2	14.9	15.7	19.0	19.8	19.7	20.5	21.3	
8H	4H	13.4	14.2	14.1	14.9	15.7	15.3	16.1	16.0	16.8	17.6
6H	14.7	15.4	15.4	16.1	17.0	17.5	18.2	18.3	19.0	19.8	
8H	15.3	15.9	16.0	16.6	17.5	18.8	19.5	19.6	20.2	21.1	
12H	15.7	16.3	16.4	17.0	17.9	20.3	20.9	21.1	21.6	22.5	
12H	4H	13.8	14.5	14.5	15.2	16.0	15.4	16.1	16.1	16.8	17.7
6H	15.3	16.0	16.1	16.7	17.6	17.8	18.4	18.5	19.1	20.0	
8H	16.1	16.7	16.9	17.4	18.3	19.2	19.7	19.9	20.5	21.4	
Variations with the observer position at spacings:											
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.1					
1.5H	+ 0.1 / - 0.2					+ 0.2 / - 0.3					
2.0H	+ 0.2 / - 0.3					+ 0.3 / - 0.4					

CIE Pub.117 Corrected 175.2 lm Total Lamp Luminous Flux. (8log(F/F0) = -6.1)



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Yeşil renk Fotometrik Deney Sonuçları (Photometric Test Results of the Green color)**UTILIZATION FACTORS TABLE**

REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	45	33	25	44	32	25	42	31	25	18
0.80	54	41	32	53	40	32	50	39	31	23
1.00	62	48	40	60	47	39	56	48	38	29
1.25	69	56	47	66	54	46	62	52	44	34
1.50	74	61	52	71	59	51	66	56	49	38
2.00	81	70	61	78	68	59	72	64	57	44
2.50	86	75	67	83	73	65	76	68	61	48
3.00	90	80	72	86	77	70	79	72	66	52
4.00	95	86	79	91	83	77	83	77	72	57
5.00	98	91	84	94	87	81	86	81	76	60
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004										
Suspended										
SHRNOM = 1.25										



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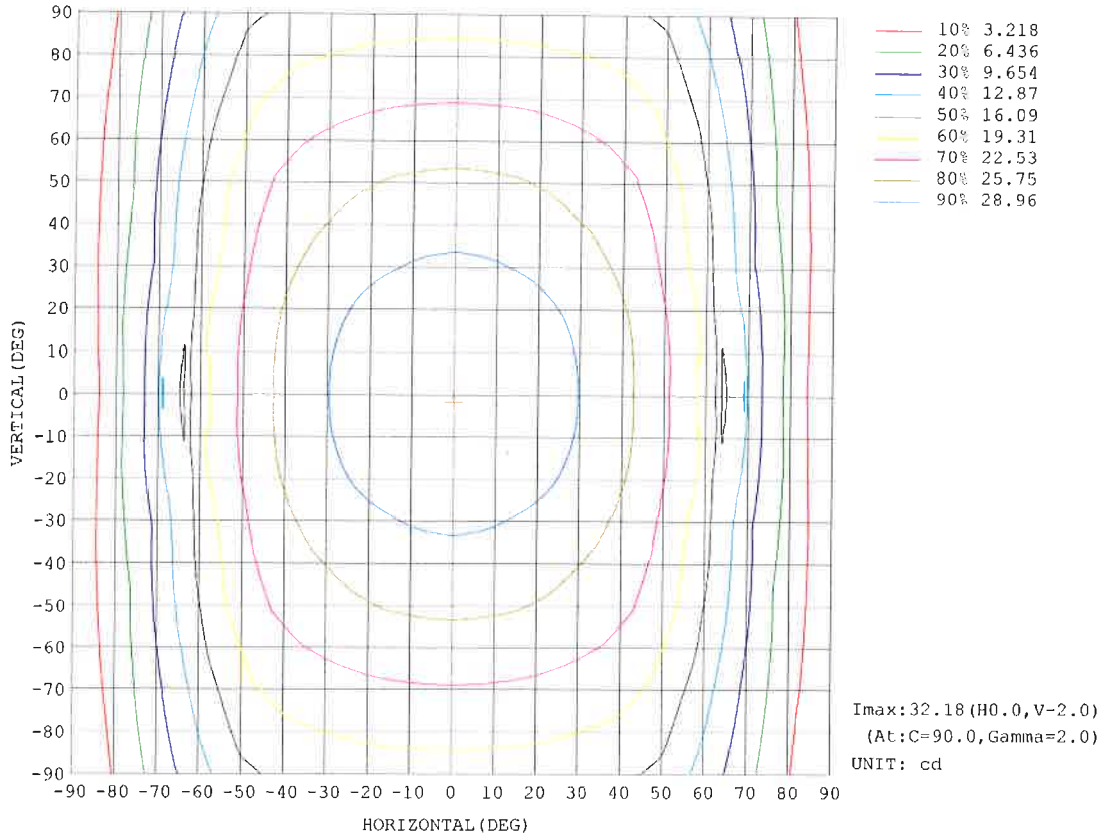
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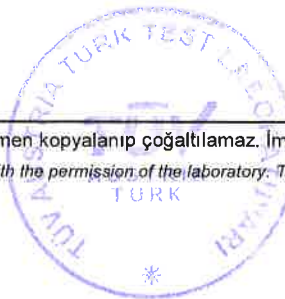
Yeşil renk Fotometrik Deney Sonuçları (Photometric Test Results of the Green color)

ISOCANDELA DIAGRAM



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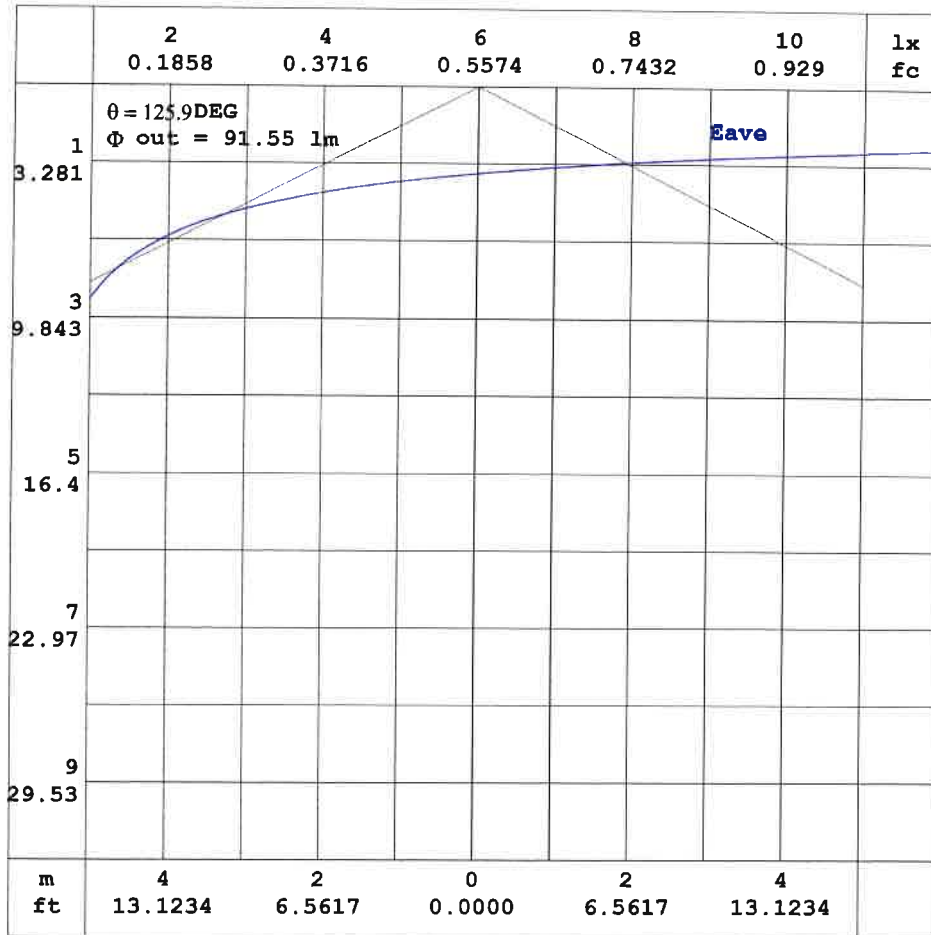
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Yeşil renk Fotometrik Deney Sonuçları (Photometric Test Results of the Green color)**AAI CURVES**

Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.



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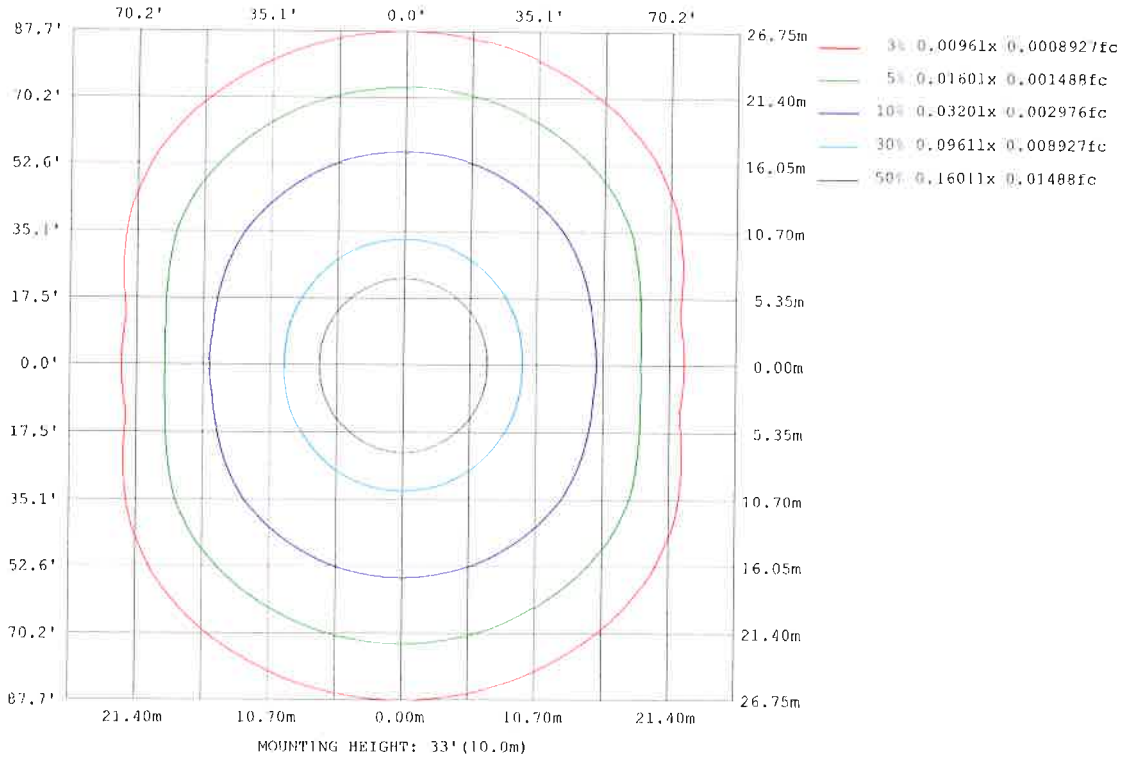
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Yeşil renk Fotometrik Denev Sonuçları (Photometric Test Results of the Green color)

ISOLUX DIAGRAM



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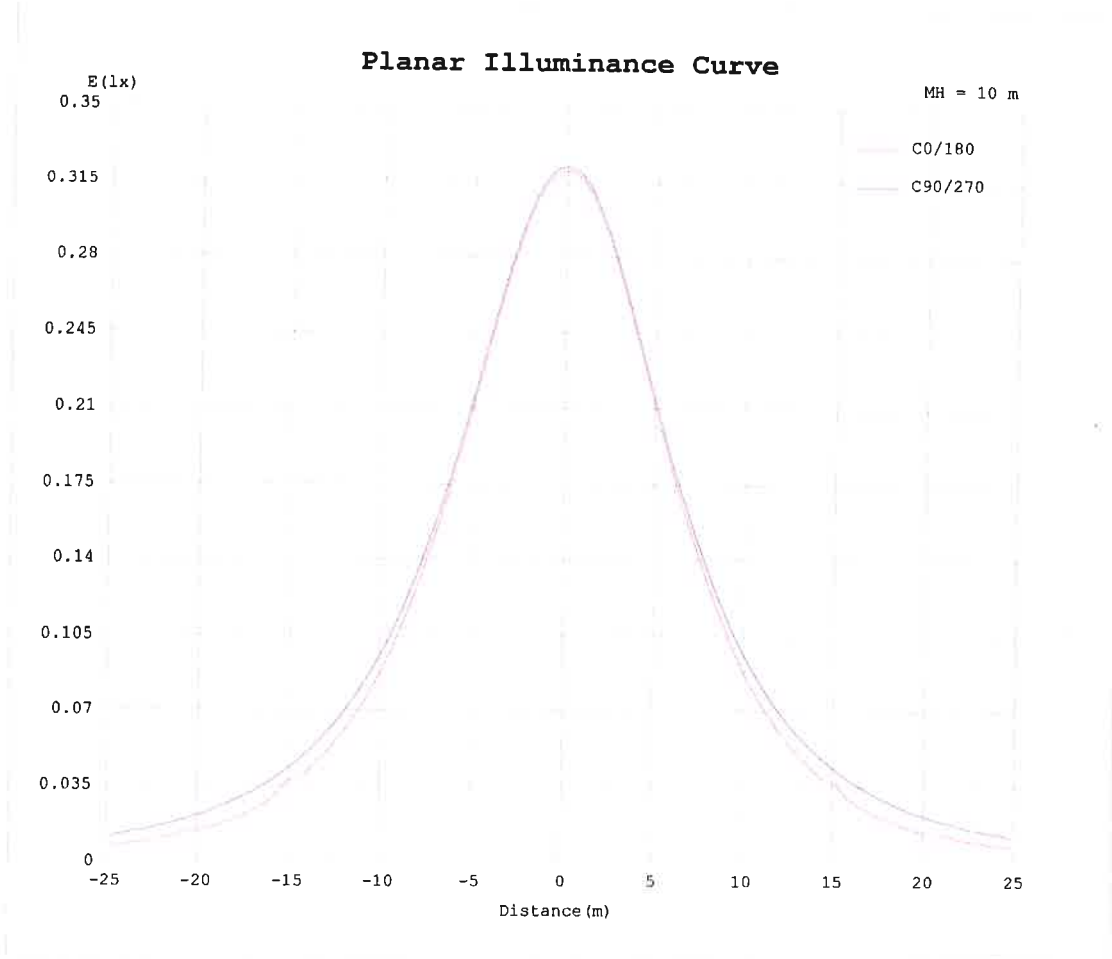
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2.10 Yeşil Renk Spektrokolorimetrik Deney Sonuçları (Spectrocolorimetric Test Results of the Green color)**Elektriksel Ölçümler**

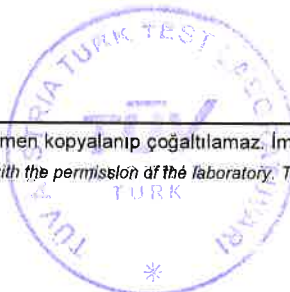
(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	7,536
Ölçülen Gerilim (V) (Input Voltage)	48 VDC
Ölçülen Akım (A) (Input Current)	0,1570
Güç Faktörü (PF) (Power Factor)	-
Ölçülen Frekans (Hz) (Input Frequency)	-
Ortam Sıcaklığı / Bağıl Nem (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
Stabilizasyon Süresi (Stabilization Time)	60 dk ±5dk

Spektrokolorimetrik Ölçüm Sonuçları

(Spectrocolorimetric Measurement Results)

Chrom x	0,1938
Chrom y	0,7210
Duv	0,1504
Chrom u'	0,0668
Chrom v'	0,5761
Peak	523 nm
Dominant	531 nm
CCT	7457 K
Nominal CCT	-
Ra(CRI)	0
R9	0
S/P Ratio	2,5
Preburning time	1 hr
Test Configuration	4π



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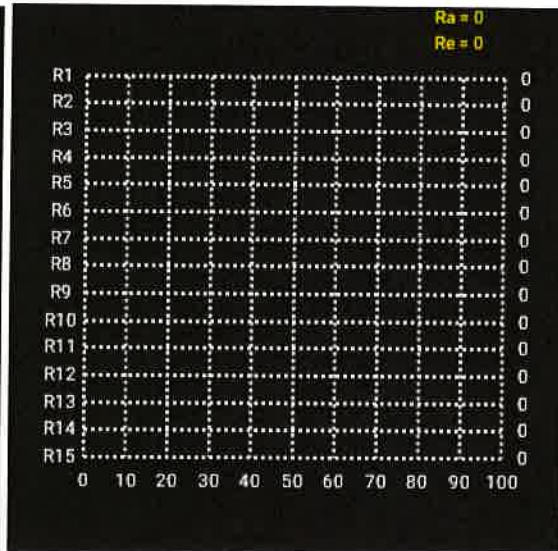
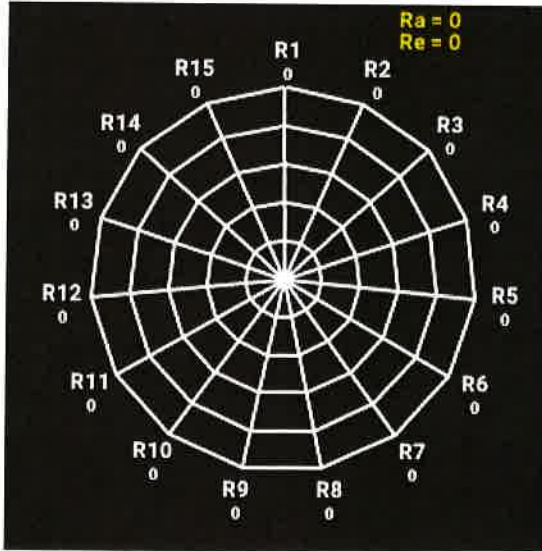
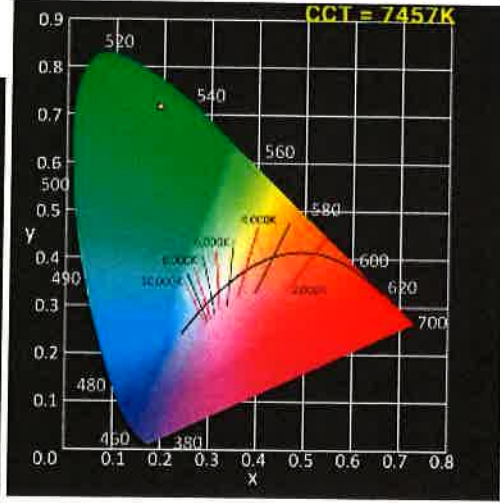
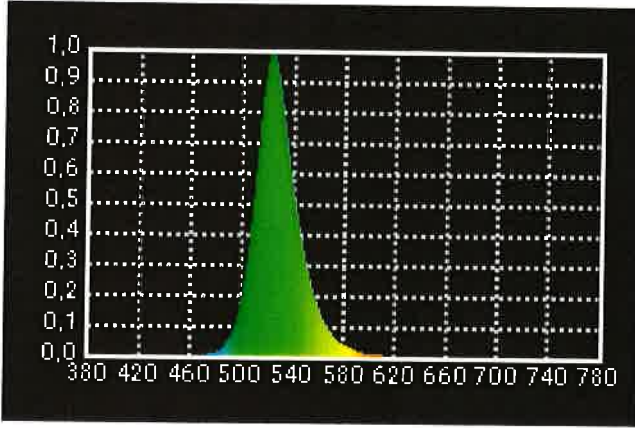
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2.10

Yeşil Renk Spektrokolorimetrik Deneş Sonuđları (Spectrocolorimetric Test Results of the Green color)



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3.1 DGC'nin Fotoğrafları (Photos of EUT)

