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TL-806

19-TST-0033-15

02-19

**ÖLÇÜM RAPORU**  
**MEASUREMENT REPORT**

**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 DIRECT VIEW (90cm)  
Sword RGBW Direct View (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 Direct View (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= Deneyden Geçen Cihaz  
EUT=Equipment Under Test



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**1.2 Deney Standartları (Test Standards)**

DeneYler ařağıdaki standartlara göre yapılmıřtır (The tests were performed according to following standarts):

**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 (Compenent list)**

Komponent (Componenets)	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)

<b>Ölçülen Güç (W)</b> (Input Power)	7,277
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	48 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,1516
<b>Güç Faktörü (PF)</b> (Power Factor)	-
<b>Ölçülen Frekans (Hz)</b> (Input Frequency)	-
<b>Ortam Sıcaklığı / Bağıl Nem</b> (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
<b>Stabilizasyon Süresi</b> (Stabilization Time)	60 dk ±5dk

**Fotometrik Ölçüm Sonuçları**

(Photometric Measurement Results)

<b>Toplam Işık Akısı</b> (Total Luminous Flux) (lm)	157,54
<b>Maksimum Işık Şiddeti</b> (Max. Light Intensity) (cd)	45,02
<b>Armatür Etkinliği</b> (Luminaire Efficacy) (lm/W)	21,65



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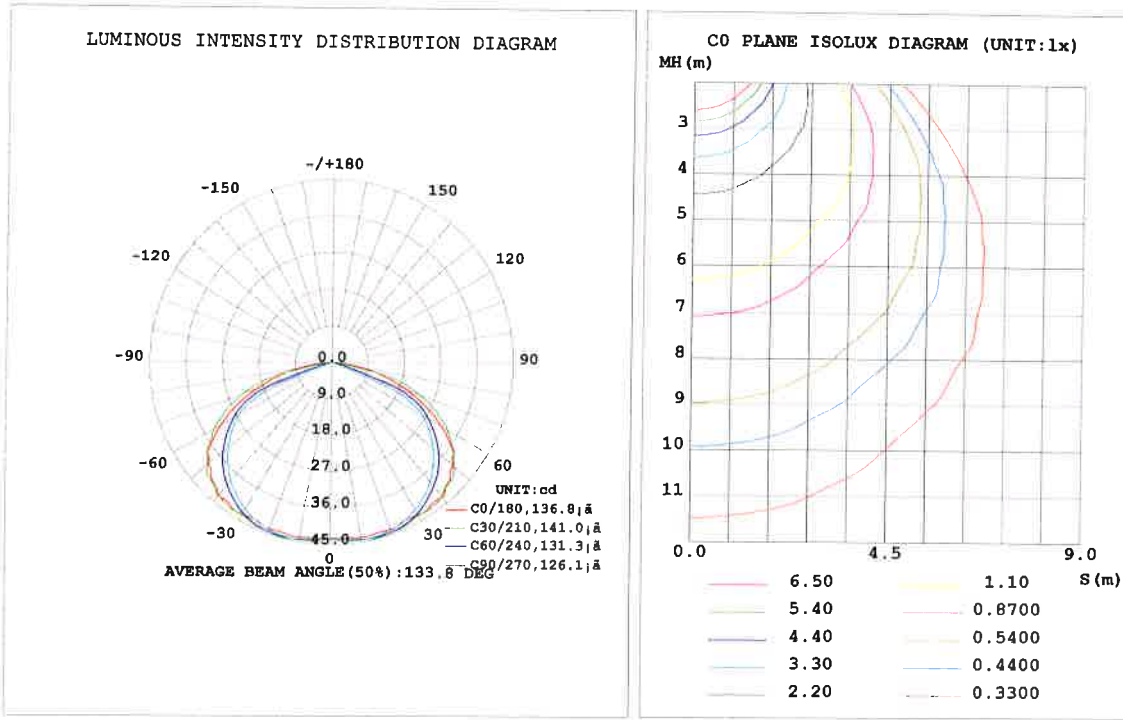
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**2.1 Beyaz renk Fotometrik Deney Sonuçları (Photometric Test Results of the white color)**



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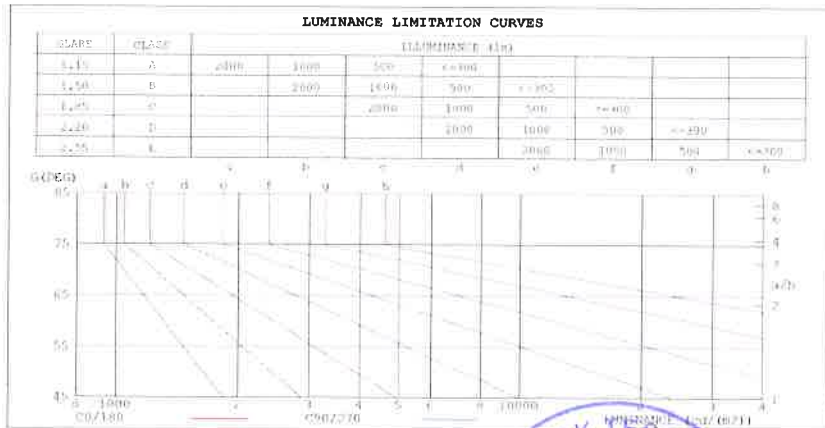
2.1

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

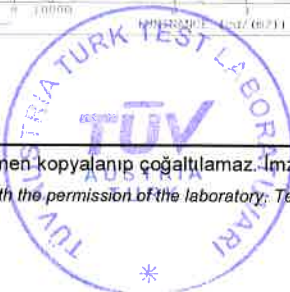
**ZONAL FLUX DIAGRAM**  
**AND LUMINANCE LIMITATION CURVES**

ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\phi$ zone	$\phi$ total	Lum, Lamp
5	43.51	44.18	44.26	44.18	43.51	44.18	44.26	44.18	0- 5	1,050	1,050	0,67,0,8
10	43.80	44.55	44.57	44.55	43.80	44.55	44.57	44.55	5- 10	3,165	4,215	2,68,2,68
15	43.74	44.92	44.51	44.92	43.74	44.92	44.51	44.92	10- 15	5,293	6,499	6,03,6,03
20	43.83	44.88	44.06	44.88	43.83	44.88	44.06	44.88	15- 20	7,337	16,84	16,7,10,7
25	43.16	44.31	43.24	44.31	43.16	44.31	43.24	44.31	20- 25	9,276	26,11	16,6,16,6
30	43.32	43.54	42.03	43.54	43.32	43.54	42.03	43.54	25- 30	11,02	37,13	22,6,23,6
35	43.18	42.39	40.39	42.39	43.18	42.39	40.39	42.39	30- 35	12,63	49,76	31,6,31,6
40	43.27	41.18	38.37	41.18	43.27	41.18	38.37	41.18	35- 40	13,95	63,70	40,4,40,4
45	41.46	39.43	35.90	39.43	41.46	39.43	35.90	39.43	40- 45	14,24	78,64	49,9,49,9
50	39.44	37.15	33.00	37.15	39.44	37.15	33.00	37.15	45- 50	15,46	94,10	59,7,59,7
55	36.57	34.52	29.68	34.52	36.57	34.52	29.68	34.52	50- 55	15,47	109,6	69,5,69,5
60	31.48	30.70	25.89	30.70	31.48	30.70	25.89	30.70	55- 60	14,85	124,4	79,79
65	25.92	26.31	18.84	26.31	25.92	26.31	18.84	26.31	60- 65	13,40	137,9	87,5,87,5
70	20.00	20,22	3,681	20,22	20,00	20,22	3,681	20,22	65- 70	10,35	148,2	94,1,94,1
75	13.82	5,544	0,1121	5,544	13,82	5,544	0,1121	5,544	70- 75	5,827	154,0	92,8,92,8
80	8,103	0,1752	0,1049	0,1752	8,103	0,1752	0,1049	0,1752	75- 80	2,977	156,6	90,4,90,4
85	3,127	0,1148	0,0219	0,1148	3,127	0,1148	0,0219	0,1148	80- 85	0,8311	157,4	90,9,90,9
90	0,0897	0	0	0	0,0897	0	0	0	85- 90	0,1353	157,5	100,100
95	0	0	0	0	0	0	0	0	90- 95	0,0002	157,5	100,100
100	0	0	0	0	0	0	0	0	95-100	0	157,5	100,100
105	0	0	0	0	0	0	0	0	100-105	0	157,5	100,100
110	0	0	0	0	0	0	0	0	105-110	0	157,5	100,100
115	0	0	0	0	0	0	0	0	110-115	0	157,5	100,100
120	0	0	0	0	0	0	0	0	115-120	0	157,5	100,100
125	0	0	0	0	0	0	0	0	120-125	0	157,5	100,100
130	0	0	0	0	0	0	0	0	125-130	0	157,5	100,100
135	0	0	0	0	0	0	0	0	130-135	0	157,5	100,100
140	0	0	0	0	0	0	0	0	135-140	0	157,5	100,100
145	0	0	0	0	0	0	0	0	140-145	0	157,5	100,100
150	0	0	0	0	0	0	0	0	145-150	0	157,5	100,100
155	0	0	0	0	0	0	0	0	150-155	0	157,5	100,100
160	0	0	0	0	0	0	0	0	155-160	0	157,5	100,100
165	0	0	0	0	0	0	0	0	160-165	0	157,5	100,100
170	0	0	0	0	0	0	0	0	165-170	0	157,5	100,100
175	0	0	0	0	0	0	0	0	170-175	0	157,5	100,100
180	0	0	0	0	0	0	0	0	175-180	0	157,5	100,100
DEG												



G (DEG)	C0/180	C90/270
85	350	3
80	467	6
75	534	4
70	585	108
65	613	446
60	630	518
55	638	517
50	614	513
45	586	508



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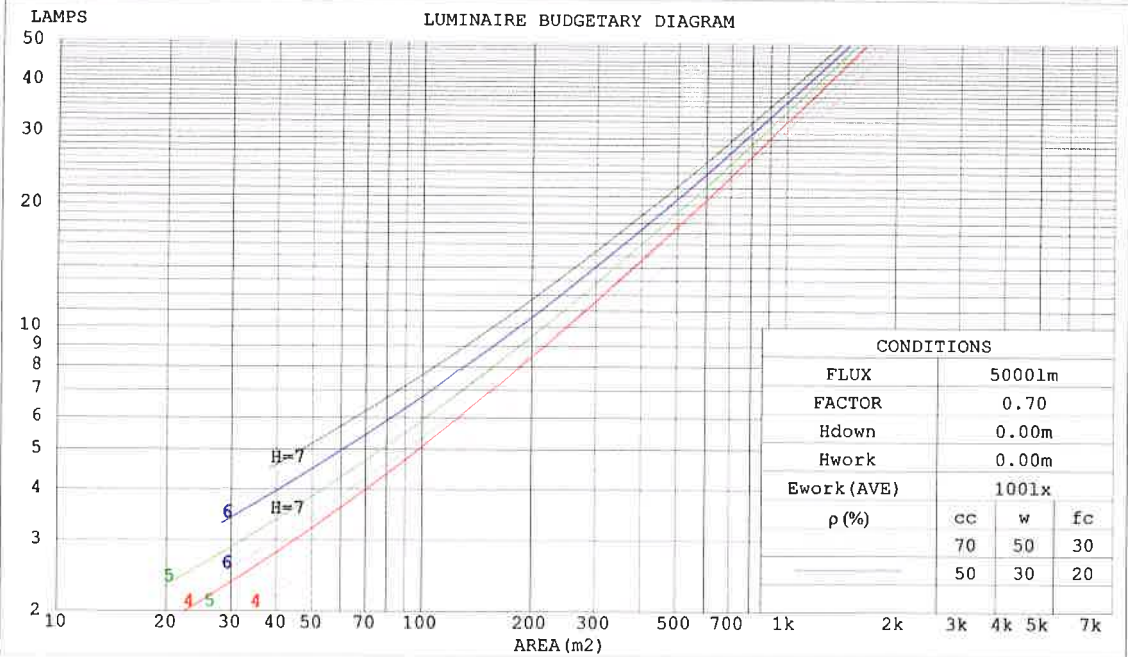
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2.1

**Beyaz Renk Fotometrik Deneş Sonuları** (Photometric Test Results of the white color)

**CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM**

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio															
	Coefficients of Utilization(CU)															
0.0	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	.00
1.0	1.04	1.00	.96	1.02	.98	.95	.98	.95	.92	.94	.91	.89	.90	.88	.86	.84
2.0	.90	.84	.78	.89	.82	.77	.85	.80	.75	.82	.77	.73	.79	.75	.72	.70
3.0	.79	.71	.64	.77	.70	.63	.74	.68	.62	.71	.66	.61	.69	.64	.60	.58
4.0	.69	.60	.53	.68	.60	.53	.65	.58	.52	.63	.57	.52	.61	.55	.51	.49
5.0	.61	.52	.45	.60	.52	.45	.58	.50	.45	.56	.49	.44	.54	.48	.44	.41
6.0	.55	.46	.39	.54	.45	.39	.52	.44	.39	.50	.43	.38	.49	.43	.38	.36
7.0	.49	.40	.34	.49	.40	.34	.47	.39	.34	.46	.39	.33	.44	.38	.33	.31
8.0	.45	.36	.30	.44	.36	.30	.43	.35	.30	.42	.35	.30	.40	.34	.29	.27
9.0	.41	.33	.27	.40	.32	.27	.39	.32	.27	.38	.31	.26	.37	.31	.26	.24
10.0	.38	.30	.24	.37	.29	.24	.36	.29	.24	.35	.28	.24	.34	.28	.24	.22



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### 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 <sub>w</sub>	20%			20%			20%			20%			20%			0
p <sub>fc</sub>	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients (WEC)									
0.0																
1.0	.301	.171	.054	.294	.168	.053	.281	.161	.051	.268	.155	.050	.257	.149	.048	
2.0	.291	.160	.049	.285	.157	.048	.273	.152	.047	.263	.147	.046	.253	.143	.045	
3.0	.273	.145	.044	.268	.143	.043	.257	.139	.042	.248	.136	.042	.239	.132	.041	
4.0	.254	.132	.039	.249	.130	.039	.240	.127	.038	.231	.124	.037	.223	.121	.037	
5.0	.235	.120	.035	.231	.119	.035	.223	.116	.034	.215	.114	.034	.208	.111	.033	
6.0	.219	.110	.031	.215	.109	.031	.207	.106	.031	.201	.104	.031	.194	.102	.030	
7.0	.204	.101	.029	.200	.100	.028	.194	.098	.028	.187	.096	.028	.182	.094	.028	
8.0	.190	.093	.026	.187	.092	.026	.181	.091	.026	.176	.089	.026	.170	.087	.025	
9.0	.178	.086	.024	.175	.085	.024	.170	.084	.024	.165	.083	.024	.160	.081	.024	
10.0	.167	.080	.022	.165	.080	.022	.160	.078	.022	.156	.077	.022	.151	.076	.022	

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p <sub>w</sub>	20%			20%			20%			20%			20%			0
p <sub>fc</sub>	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients (CCEC)									
0.0																
1.0	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
2.0	.180	.156	.135	.154	.134	.116	.105	.092	.080	.061	.053	.047	.019	.017	.015	
3.0	.172	.132	.098	.147	.114	.085	.101	.079	.059	.058	.046	.035	.019	.015	.011	
4.0	.165	.114	.074	.142	.099	.064	.097	.069	.045	.056	.040	.026	.018	.013	.009	
5.0	.158	.101	.058	.136	.087	.050	.093	.061	.035	.054	.036	.021	.017	.012	.007	
6.0	.151	.091	.046	.130	.079	.040	.089	.055	.029	.052	.032	.017	.017	.011	.006	
7.0	.144	.083	.038	.124	.071	.033	.085	.050	.024	.050	.029	.014	.016	.010	.005	
8.0	.137	.076	.033	.118	.066	.028	.082	.046	.020	.047	.027	.012	.015	.009	.004	
9.0	.131	.070	.028	.113	.061	.025	.078	.043	.017	.045	.025	.010	.015	.008	.003	
10.0	.125	.065	.025	.107	.056	.022	.074	.040	.015	.043	.023	.009	.014	.008	.003	
10.0	.119	.061	.022	.103	.053	.019	.071	.037	.014	.041	.022	.008	.013	.007	.003	



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**2.1 Beyaz Renk Fotometrik Deney 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	12.2	13.8	12.5	14.0	14.2	10.9	12.5	11.2	12.7	12.9	
3H	14.0	15.4	14.3	15.7	15.9	11.5	13.0	11.8	13.2	13.4	
4H	14.6	16.0	14.9	16.3	16.5	11.4	12.8	11.7	13.0	13.3	
6H	15.1	16.4	15.4	16.6	16.9	11.3	12.6	11.6	12.9	13.1	
8H	15.2	16.4	15.5	16.7	17.0	11.2	12.5	11.6	12.8	13.1	
12H	15.3	16.4	15.6	16.7	17.0	11.2	12.4	11.5	12.7	13.0	
4H	2H	12.9	14.2	13.2	14.5	14.7	11.9	13.3	12.2	13.5	13.8
3H	14.9	16.1	15.2	16.4	16.7	12.6	13.7	12.9	14.0	14.3	
4H	15.7	16.8	16.1	17.1	17.4	12.5	13.5	12.8	13.9	14.2	
6H	16.3	17.2	16.7	17.6	17.9	12.4	13.3	12.8	13.7	14.0	
8H	16.4	17.3	16.8	17.7	18.1	12.3	13.2	12.7	13.6	14.0	
12H	16.5	17.4	17.0	17.7	18.1	12.3	13.1	12.7	13.5	13.9	
8H	4H	15.7	16.6	16.1	17.0	17.3	12.7	13.6	13.1	14.0	14.4
6H	16.3	17.1	16.8	17.5	17.9	12.6	13.4	13.1	13.8	14.2	
8H	16.5	17.2	17.0	17.6	18.0	12.6	13.3	13.1	13.7	14.1	
12H	16.6	17.2	17.1	17.6	18.1	12.6	13.1	13.1	13.6	14.1	
12H	4H	15.7	16.5	16.1	16.9	17.3	12.7	13.5	13.2	13.9	14.3
6H	16.3	16.9	16.8	17.4	17.8	12.6	13.3	13.1	13.7	14.2	
8H	16.5	17.0	17.0	17.5	18.0	12.6	13.2	13.1	13.6	14.1	
Variations with the observer position at spacings:											
S = 1.0H	+ 0.1 / - 0.2					+ 0.4 / - 0.5					
1.5H	+ 0.2 / - 0.4					+ 0.4 / - 0.6					
2.0H	+ 0.2 / - 0.6					+ 0.8 / - 1.7					

CIE Pub.117 Corrected 157.5 lm Total Lamp Luminous Flux. (8log(F/F0) = -6.4)



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## 2.1

**Beyaz Renk Fotometrik Deneş 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) $k(RI) \times RCR = 5$									
$k = 0.60$	55	43	35	54	42	35	53	42	35	28
0.80	65	53	45	64	53	45	62	52	45	38
1.00	74	63	55	73	62	55	71	64	54	47
1.25	82	71	64	80	70	63	78	69	62	55
1.50	87	77	70	85	76	69	82	74	68	61
2.00	95	86	79	93	85	79	89	82	77	69
2.50	99	91	85	97	89	84	93	87	82	74
3.00	102	95	90	100	94	89	96	91	87	78
4.00	106	101	96	104	99	95	100	96	92	83
5.00	109	104	100	107	102	99	102	99	96	87
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004	Suspended					SHRNOM = 1.25				



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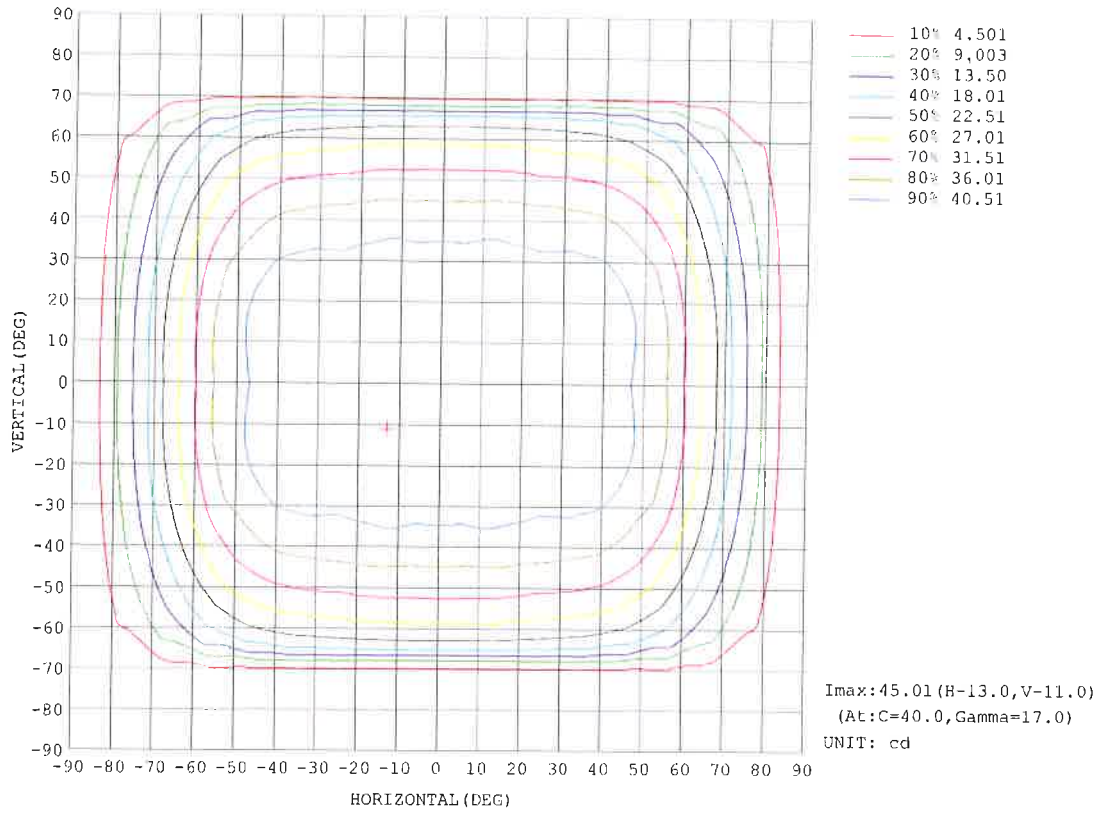
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**2.1**

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

**ISOCANDELA DIAGRAM**



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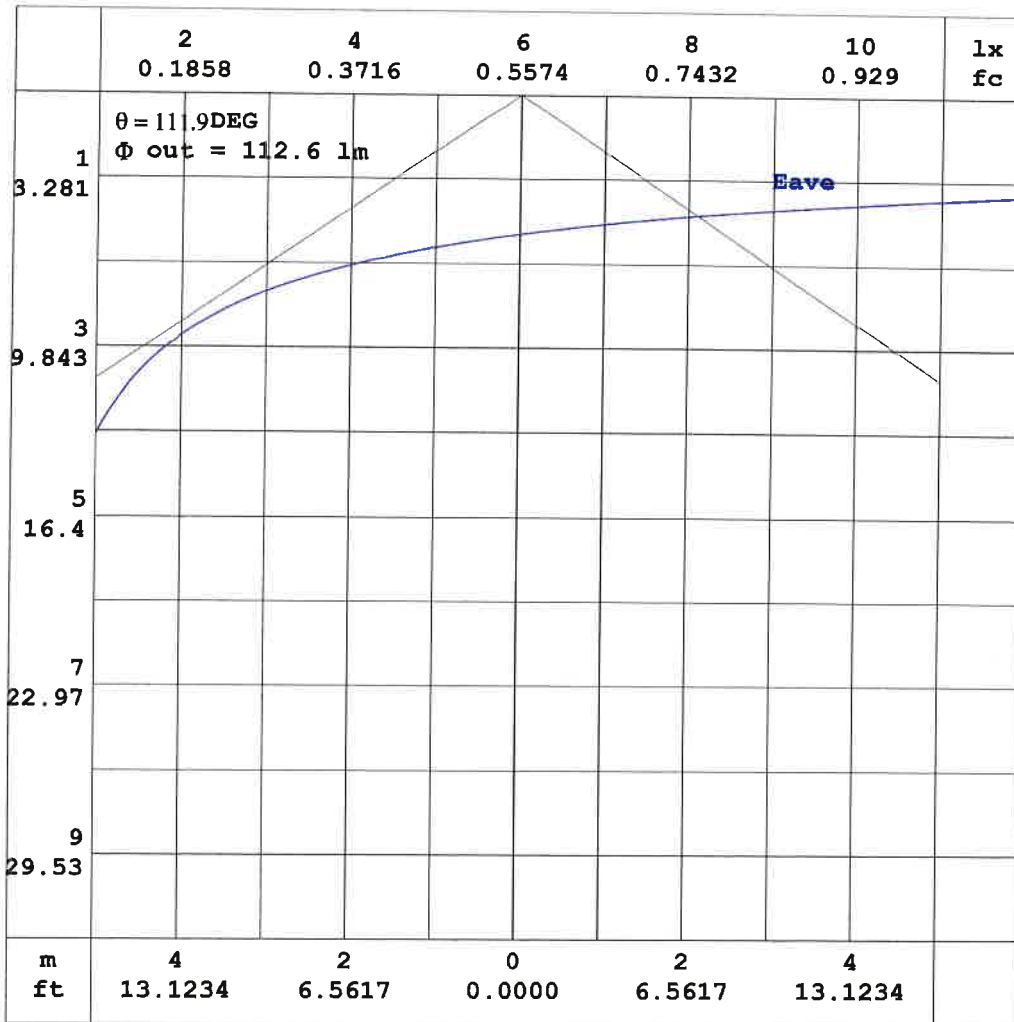
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**2.1 Beyaz Renk Fotometrik Deney Sonuçları (Photometric Test Results Of The White Color)****AAI CURVES**

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

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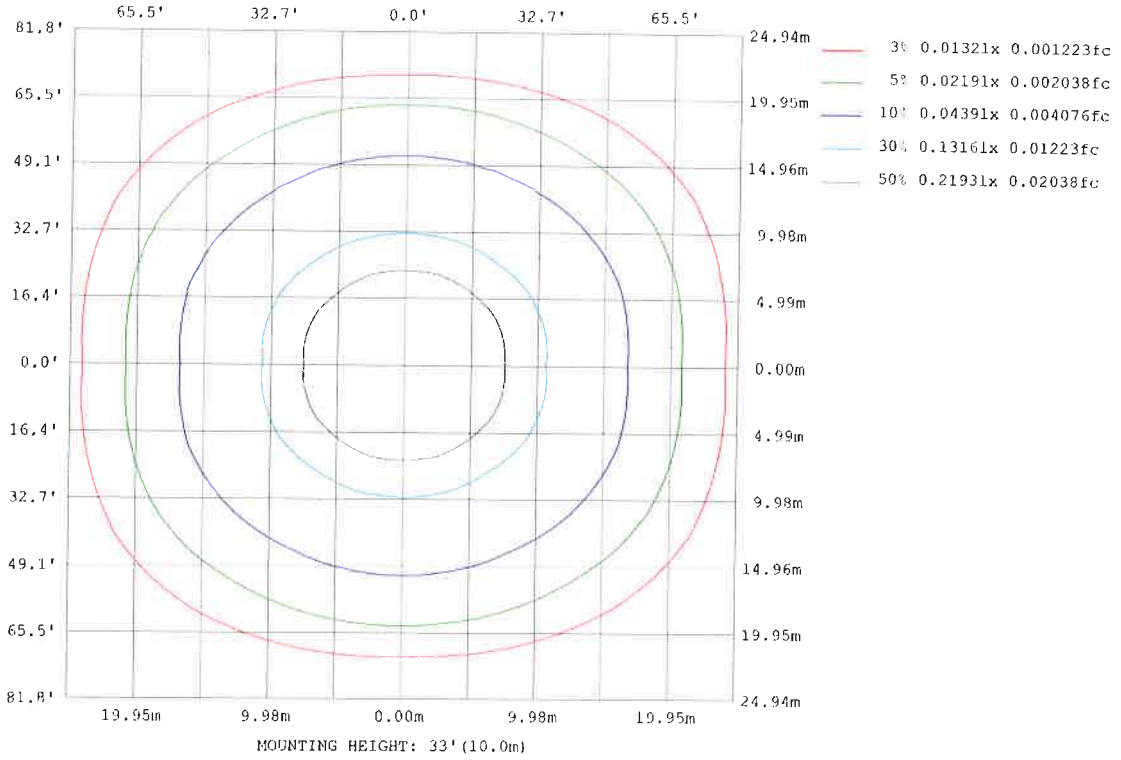
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**2.1 Beyaz Renk Fotometrik Deney Sonuçları (Photometric Test Results Of the White Color)**

**ISOLUX DIAGRAM**



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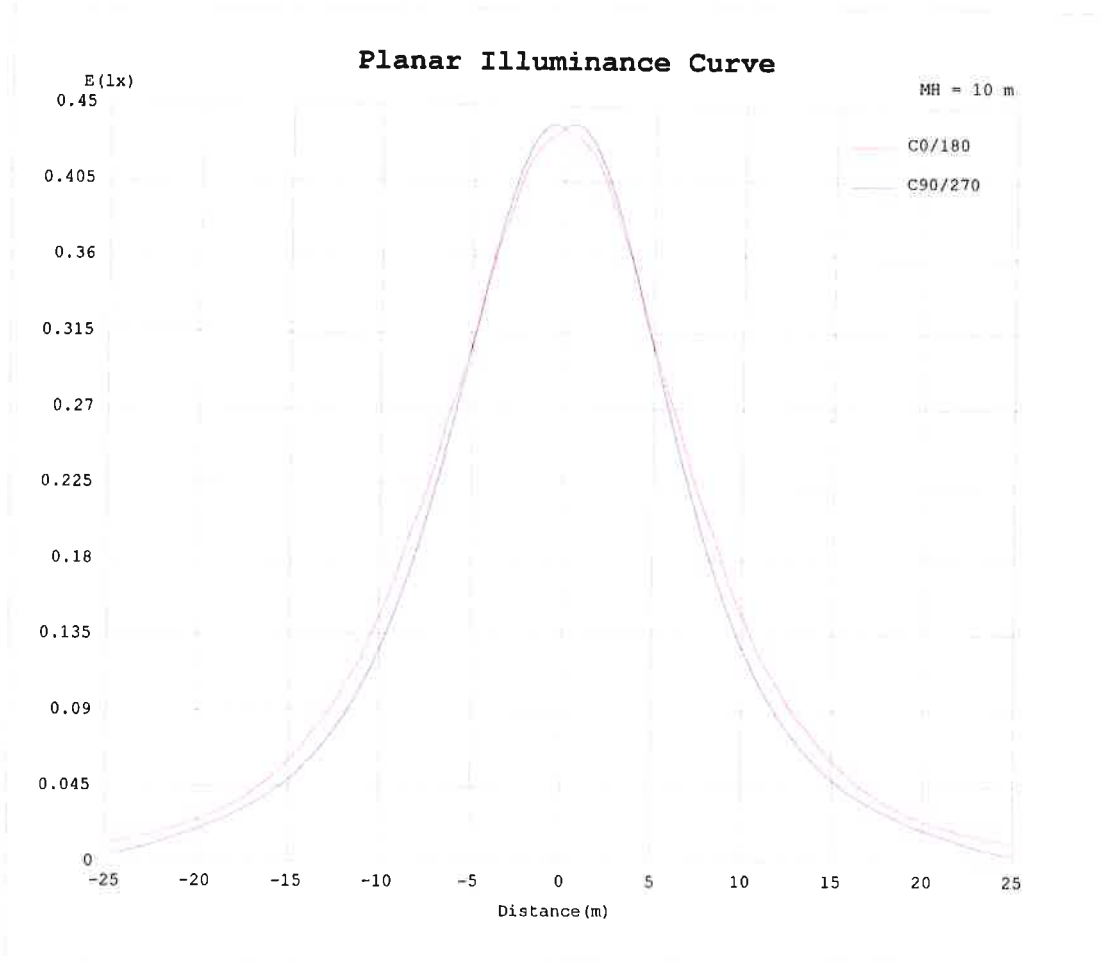
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**2.1 Beyaz Renk Fotometrik Deney Sonuçları** (Photometric Test Results of The White Color)



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

(Electrical Measurements)

<b>Ölçülen Güç (W)</b> (Input Power)	7,277
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	48 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,1516
<b>Güç Faktörü (PF)</b> (Power Factor)	-
<b>Ölçülen Frekans (Hz)</b> (Input Frequency)	-
<b>Ortam Sıcaklığı / Bağıl Nem</b> (Ambient Temperature / Relative Humidity)	25 °C 48% Rh
<b>Stabilizasyon Süresi</b> (Stabilization Time)	60 dk ±5dk

**Spektrokolorimetrik Ölçüm Sonuçları**

(Spectrocolorimetric Measurement Results)

<b>Chrom x</b>	0,3346
<b>Chrom y</b>	0,3608
<b>Duv</b>	0,0089
<b>Chrom u'</b>	0,2009
<b>Chrom v'</b>	0,4876
<b>Peak</b>	448 nm
<b>Dominant</b>	556 nm
<b>CCT</b>	5424 K
<b>Nominal CCT</b>	-
<b>Ra(CRI)</b>	72
<b>R9</b>	-33
<b>S/P Ratio</b>	1,9
<b>Preburning time</b>	1 hr
<b>Test Configuration</b>	4π



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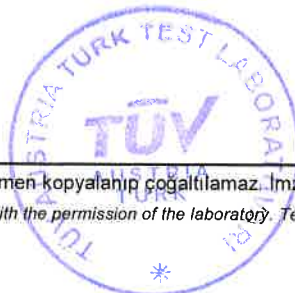
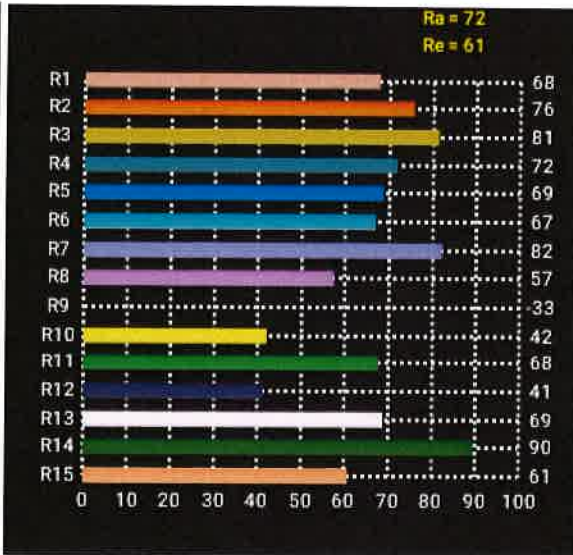
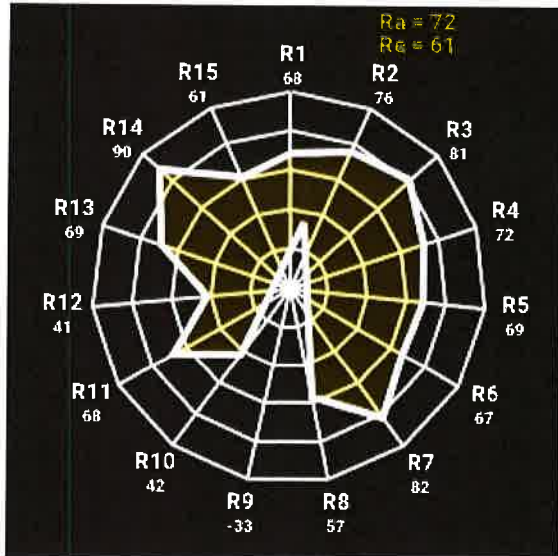
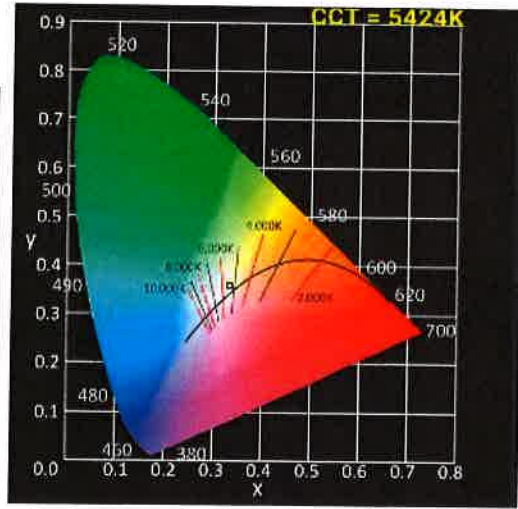
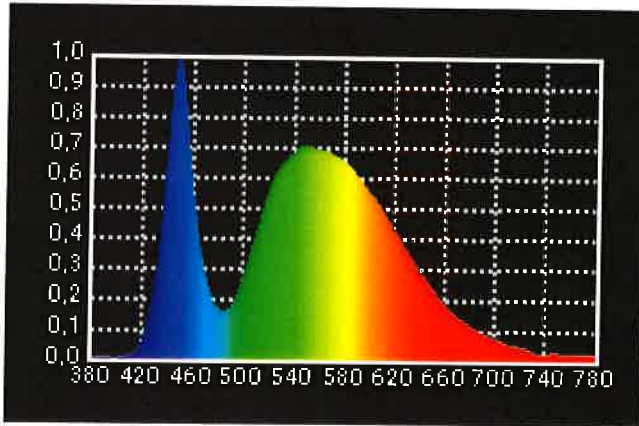
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**2.2 Beyaz renk Spektrokolorimetrik Deneş Sonuđları (Spectrocolorimetric Test Results of the white color)**

**Spectral Power Distribution**



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**2.3 Kırmızı Renk Deney Sonuçları ( Test Results of the Red Color)****Elektriksel Ölçümler**

(Electrical Measurements)

<b>Ölçülen Güç (W)</b> (Input Power)	7,260
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	48 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,1513
<b>Güç Faktörü (PF)</b> (Power Factor)	-
<b>Ölçülen Frekans (Hz)</b> (Input Frequency)	-
<b>Ortam Sıcaklığı / Bağıl Nem</b> (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
<b>Stabilizasyon Süresi</b> (Stabilization Time)	60 dk ±5dk

**Fotometrik Ölçüm Sonuçları**

(Photometric Measurement Results)

<b>Toplam Işık Akısı</b> (Total Luminous Flux) (lm)	69,21
<b>Maksimum Işık Şiddeti</b> (Max. Light Intensity) (cd)	23,84
<b>Armatür Etkinliği</b> (Luminaire Efficacy) (lm/W)	9,53



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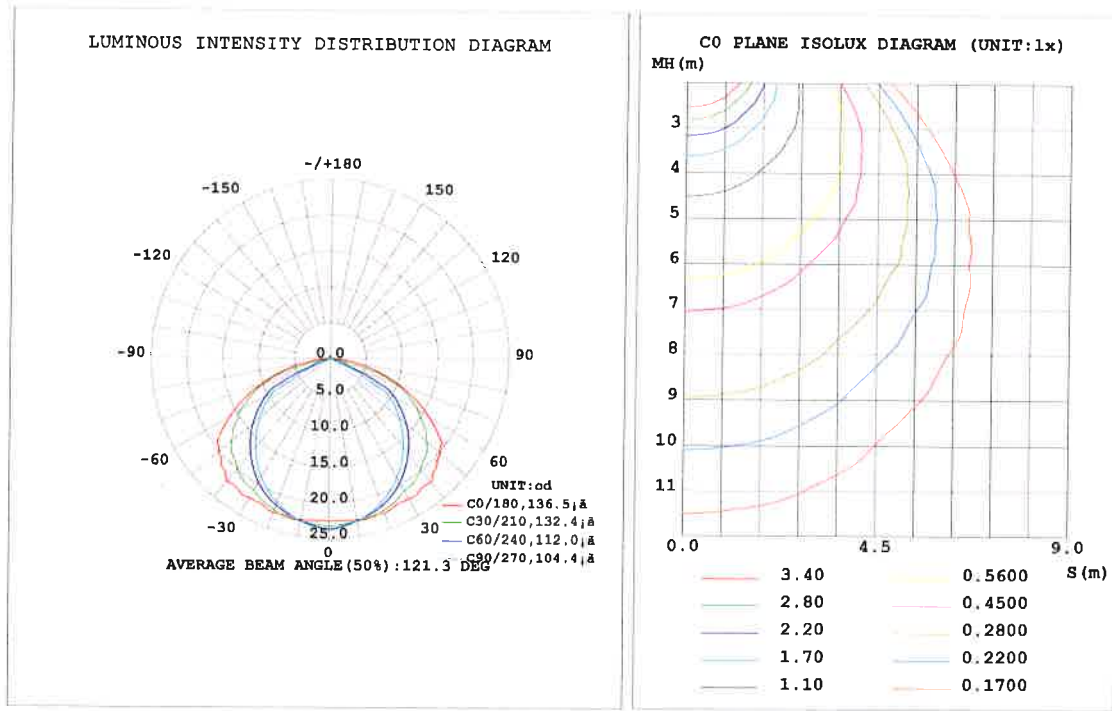
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**2.3 Kırmızı renk Fotometrik Deney Sonuçları (Photometric Test Results of the Red color)**



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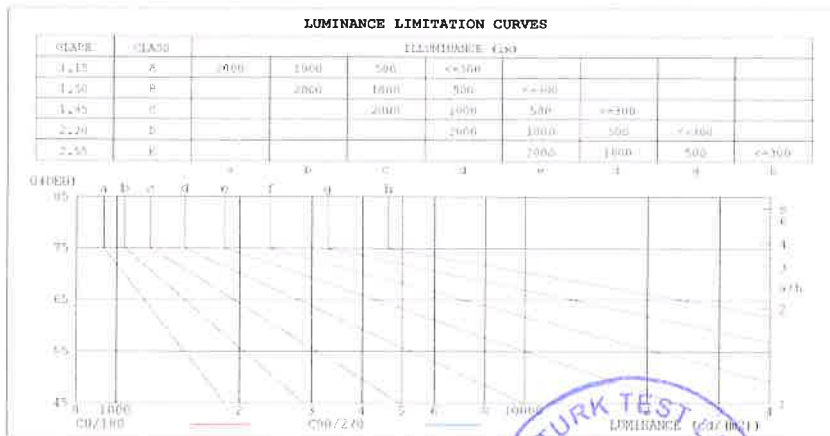
2.3

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

**ZONAL FLUX DIAGRAM  
AND LUMINANCE LIMITATION CURVES**

ZONAL FLUX DIAGRAM:

y	C0	C45	C90	C135	C180	C225	C270	C315	y	Φ zone	Φ total	%lum, lamp
5	22.41	23.17	23.43	23.17	22.41	23.17	23.43	23.17	0- 5	0.5545	0.5545	0.00, 0.00
10	22.58	22.85	22.85	22.85	22.58	22.85	22.85	22.85	5- 10	1.641	2.195	3.17, 3.17
15	22.55	22.54	22.10	22.54	22.55	22.54	22.10	22.54	10- 15	2.646	4.841	7.05, 7.05
20	22.58	22.03	21.17	22.03	22.58	22.03	21.17	22.03	15- 20	3.656	8.498	12.3, 12.3
25	22.21	21.24	20.10	21.24	22.21	21.24	20.10	21.24	20- 25	4.526	13.06	18.8, 18.8
30	22.20	20.39	18.90	20.39	22.20	20.39	18.90	20.39	25- 30	5.273	18.32	26.5, 26.5
35	22.06	19.38	17.53	19.38	22.06	19.38	17.53	19.38	30- 35	5.910	24.24	35, 35
40	22.09	18.36	16.04	18.36	22.09	18.36	16.04	18.36	35- 40	6.385	30.63	44.3, 44.3
45	21.14	17.08	14.43	17.08	21.14	17.08	14.43	17.08	40- 45	6.693	37.32	53.9, 53.9
50	20.20	15.66	12.70	15.66	20.20	15.66	12.70	15.66	45- 50	6.772	44.09	63.7, 63.7
55	18.81	14.11	10.96	14.11	18.81	14.11	10.96	14.11	50- 55	6.635	50.73	73.3, 73.3
60	16.15	12.17	8.603	12.17	16.15	12.17	8.603	12.17	55- 60	6.224	56.95	82.3, 82.3
65	13.28	10.15	3.092	10.15	13.28	10.15	3.092	10.15	60- 65	5.227	62.18	89.8, 89.8
70	10.30	5.635	0.3043	5.635	10.30	5.635	0.3043	5.635	65- 70	3.609	65.79	95.1, 95.1
75	7.191	0.5759	0.0534	0.5759	7.191	0.5759	0.0534	0.5759	70- 75	2.056	67.84	96.98
80	4.169	0.0762	0.0718	0.0762	4.169	0.0762	0.0718	0.0762	75- 80	0.9963	68.82	99.4, 99.4
85	1.586	0.0671	0.0025	0.0671	1.586	0.0671	0.0025	0.0671	80- 85	0.1406	69.16	99.9, 99.9
90	0.0139	0	0	0	0.0139	0	0	0	85- 90	0.0512	69.21	100, 100
95	0	0	0	0	0	0	0	0	90- 95	0.0000	69.21	100, 100
100	0	0	0	0	0	0	0	0	95-100	0	69.21	100, 100
105	0	0	0	0	0	0	0	0	100-105	0	69.21	100, 100
110	0	0	0	0	0	0	0	0	105-110	0	69.21	100, 100
115	0	0	0	0	0	0	0	0	110-115	0	69.21	100, 100
120	0	0	0	0	0	0	0	0	115-120	0	69.21	100, 100
125	0	0	0	0	0	0	0	0	120-125	0	69.21	100, 100
130	0	0	0	0	0	0	0	0	125-130	0	69.21	100, 100
135	0	0	0	0	0	0	0	0	130-135	0	69.21	100, 100
140	0	0	0	0	0	0	0	0	135-140	0	69.21	100, 100
145	0	0	0	0	0	0	0	0	140-145	0	69.21	100, 100
150	0	0	0	0	0	0	0	0	145-150	0	69.21	100, 100
155	0	0	0	0	0	0	0	0	150-155	0	69.21	100, 100
160	0	0	0	0	0	0	0	0	155-160	0	69.21	100, 100
165	0	0	0	0	0	0	0	0	160-165	0	69.21	100, 100
170	0	0	0	0	0	0	0	0	165-170	0	69.21	100, 100
175	0	0	0	0	0	0	0	0	170-175	0.0000	69.21	100, 100
180	0	0	0	0	0	0	0	0	175-180	0	69.21	100, 100



G (DEG)	C0/180	C90/270
95	182	0
90	240	4
75	278	3
70	301	9
65	314	73
60	323	172
55	328	191
50	314	196
45	299	204

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

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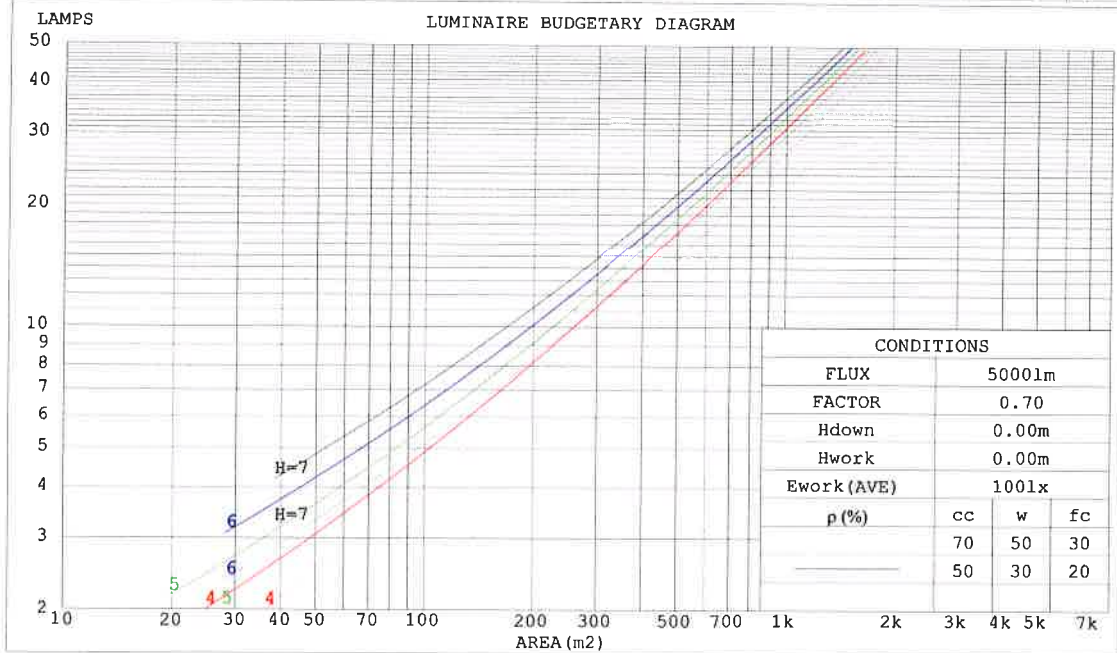
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**2.3 Kırmızı renk Fotometrik Deney Sonuçları (Photometric Test Results of the Red color)**

**CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM**

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p <sub>w</sub>																
p <sub>fc</sub>																
RCR	RCR:Room Cavity Ratio						Coefficients of Utilization(CU)									
0.0	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	.00
1.0	1.05	1.01	.97	1.03	.99	.96	.99	.96	.93	.95	.92	.90	.91	.89	.87	.85
2.0	.92	.85	.80	.90	.84	.79	.86	.81	.77	.83	.79	.75	.80	.77	.73	.71
3.0	.81	.73	.66	.79	.72	.66	.76	.70	.64	.73	.68	.63	.71	.66	.62	.60
4.0	.71	.62	.56	.70	.62	.55	.67	.60	.55	.65	.59	.54	.63	.58	.53	.51
5.0	.63	.54	.48	.62	.54	.48	.60	.53	.47	.58	.52	.46	.56	.51	.46	.44
6.0	.57	.48	.41	.56	.47	.41	.54	.47	.41	.52	.46	.41	.51	.45	.40	.38
7.0	.51	.43	.36	.51	.42	.36	.49	.42	.36	.48	.41	.36	.46	.40	.36	.34
8.0	.47	.38	.32	.46	.38	.32	.45	.37	.32	.43	.37	.32	.42	.36	.32	.30
9.0	.43	.35	.29	.42	.34	.29	.41	.34	.29	.40	.33	.29	.39	.33	.28	.27
10.0	.39	.31	.26	.39	.31	.26	.38	.31	.26	.37	.30	.26	.36	.30	.26	.24



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2.3

**Kırmızı renk Fotometrik Deney Sonuçları (Photometric Test Results of the Red 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 <sub>w</sub>																
p <sub>fc</sub>																
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.288	.164	.052	.281	.160	.051	.267	.153	.049	.255	.147	.047	.244	.142	.046	
2.0	.279	.153	.047	.273	.150	.046	.261	.145	.045	.251	.141	.044	.241	.136	.043	
3.0	.263	.140	.042	.257	.138	.041	.247	.134	.041	.237	.130	.040	.229	.127	.039	
4.0	.245	.127	.037	.240	.126	.037	.231	.122	.037	.222	.119	.036	.215	.117	.036	
5.0	.228	.116	.034	.224	.115	.033	.216	.112	.033	.208	.110	.033	.201	.107	.032	
6.0	.212	.106	.030	.209	.105	.030	.201	.103	.030	.195	.101	.030	.188	.099	.029	
7.0	.198	.098	.028	.195	.097	.028	.188	.095	.027	.182	.093	.027	.177	.092	.027	
8.0	.186	.091	.025	.182	.090	.025	.177	.088	.025	.171	.087	.025	.166	.085	.025	
9.0	.174	.084	.024	.171	.084	.023	.166	.082	.023	.161	.081	.023	.157	.080	.023	
10.0	.164	.079	.022	.161	.078	.022	.157	.077	.022	.152	.076	.021	.148	.074	.021	

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p <sub>w</sub>																
p <sub>fc</sub>																
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.179	.156	.136	.153	.134	.117	.105	.092	.081	.060	.053	.047	.019	.017	.015	
2.0	.171	.132	.100	.146	.114	.086	.100	.079	.060	.058	.046	.035	.019	.015	.011	
3.0	.163	.114	.075	.140	.099	.065	.096	.068	.046	.055	.040	.027	.018	.013	.009	
4.0	.156	.101	.059	.134	.087	.051	.092	.061	.036	.053	.036	.021	.017	.012	.007	
5.0	.149	.090	.048	.128	.078	.041	.088	.055	.029	.051	.032	.017	.016	.010	.006	
6.0	.142	.082	.039	.122	.071	.034	.084	.050	.024	.049	.029	.014	.016	.010	.005	
7.0	.135	.075	.033	.116	.065	.029	.080	.046	.021	.047	.027	.012	.015	.009	.004	
8.0	.129	.070	.029	.111	.060	.025	.077	.042	.018	.045	.025	.011	.014	.008	.004	
9.0	.123	.065	.025	.106	.056	.022	.073	.039	.016	.043	.023	.009	.014	.008	.003	
10.0	.117	.060	.022	.101	.052	.020	.070	.037	.014	.041	.022	.008	.013	.007	.003	



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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	9.8	11.3	10.1	11.5	11.7	6.8	8.3	7.0	8.5	8.7		
3H	11.6	13.0	11.9	13.2	13.5	6.7	8.1	7.0	8.3	8.6		
4H	12.3	13.6	12.6	13.9	14.1	6.6	7.9	6.9	8.2	8.4		
6H	12.8	14.0	13.1	14.3	14.6	6.5	7.7	6.8	8.0	8.3		
8H	12.9	14.1	13.3	14.4	14.7	6.4	7.6	6.8	7.9	8.2		
12H	13.0	14.1	13.3	14.4	14.7	6.4	7.5	6.7	7.8	8.1		
4H	2H	10.2	11.5	10.5	11.7	12.0	7.8	9.1	8.1	9.4	9.7	
3H	12.2	13.4	12.6	13.7	14.0	14.0	7.8	8.9	8.1	9.2	9.5	
4H	13.0	14.1	13.4	14.4	14.7	14.7	7.7	8.7	8.1	9.1	9.4	
6H	13.6	14.5	14.0	14.9	15.3	15.3	7.6	8.5	8.0	8.9	9.2	
8H	13.8	14.6	14.2	15.0	15.4	15.4	7.6	8.4	8.0	8.8	9.2	
12H	13.9	14.7	14.3	15.1	15.5	15.5	7.5	8.3	7.9	8.7	9.1	
8H	4H	12.9	13.8	13.3	14.1	14.5	14.5	8.0	8.8	8.4	9.2	9.6
6H	13.5	14.2	14.0	14.6	15.1	15.1	7.9	8.6	8.3	9.0	9.4	
8H	13.7	14.3	14.2	14.8	15.2	15.2	7.8	8.5	8.3	8.9	9.3	
12H	13.9	14.4	14.3	14.8	15.3	15.3	7.8	8.3	8.3	8.8	9.3	
12H	4H	12.9	13.7	13.3	14.0	14.4	14.4	8.0	8.7	8.4	9.1	9.5
6H	13.5	14.1	14.0	14.5	15.0	15.0	7.9	8.5	8.3	8.9	9.4	
8H	13.7	14.2	14.2	14.7	15.1	15.1	7.8	8.4	8.3	8.8	9.3	
Variations with the observer position at spacings:												
S = 1.0H	+ 0.2 / - 0.2					+ 0.4 / - 0.6						
1.5H	+ 0.2 / - 0.2					+ 0.9 / - 1.3						
2.0H	+ 0.3 / - 0.6					+ 0.6 / - 1.1						

CIE Pub.117 Corrected 69.21 lm Total Lamp Luminous Flux. (8log(F/F0) = -9.3)



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## 2.3

**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	57	45	38	56	45	38	55	44	38	31
0.80	67	56	48	66	55	48	65	54	48	41
1.00	76	65	58	75	65	58	73	66	57	50
1.25	84	73	66	82	73	66	80	71	65	58
1.50	89	79	72	87	78	72	84	77	71	63
2.00	96	88	82	94	87	81	91	84	79	72
2.50	100	92	87	98	91	86	94	88	84	76
3.00	103	97	91	101	95	90	97	92	88	80
4.00	107	102	97	105	100	96	101	97	93	85
5.00	109	105	101	107	103	100	103	99	96	87
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			



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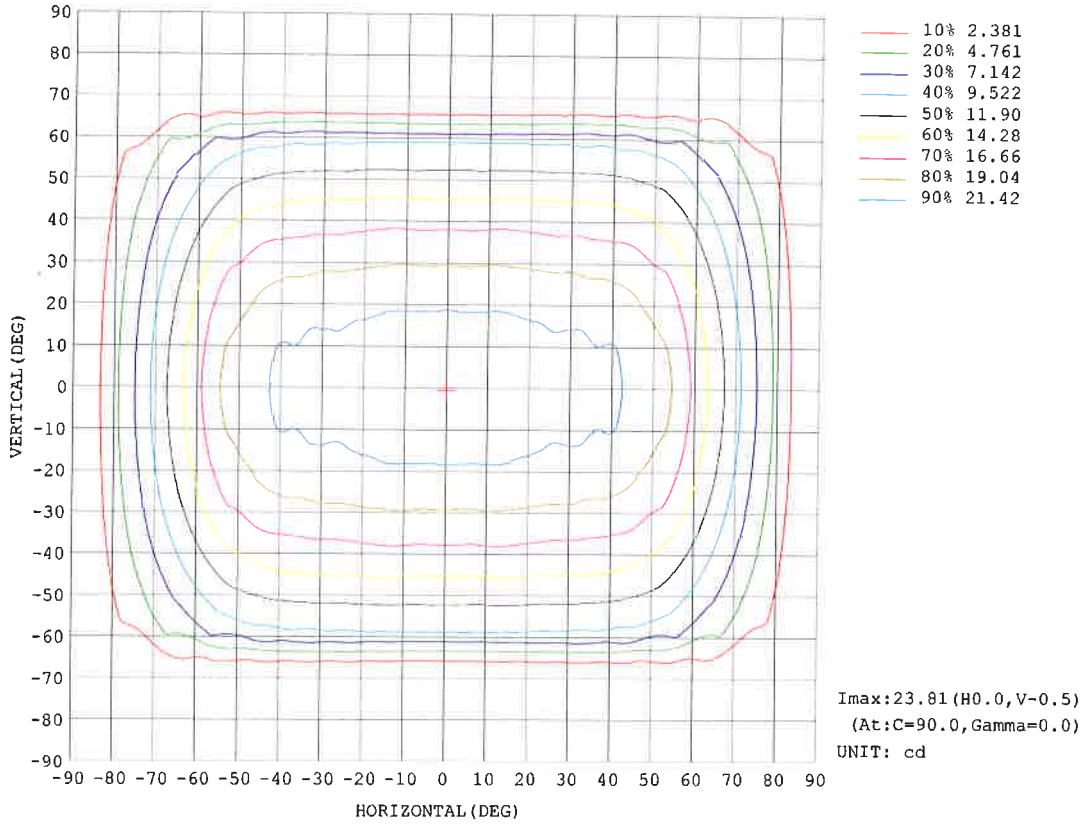
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**2.3**

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

**ISOCANDELA DIAGRAM**



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

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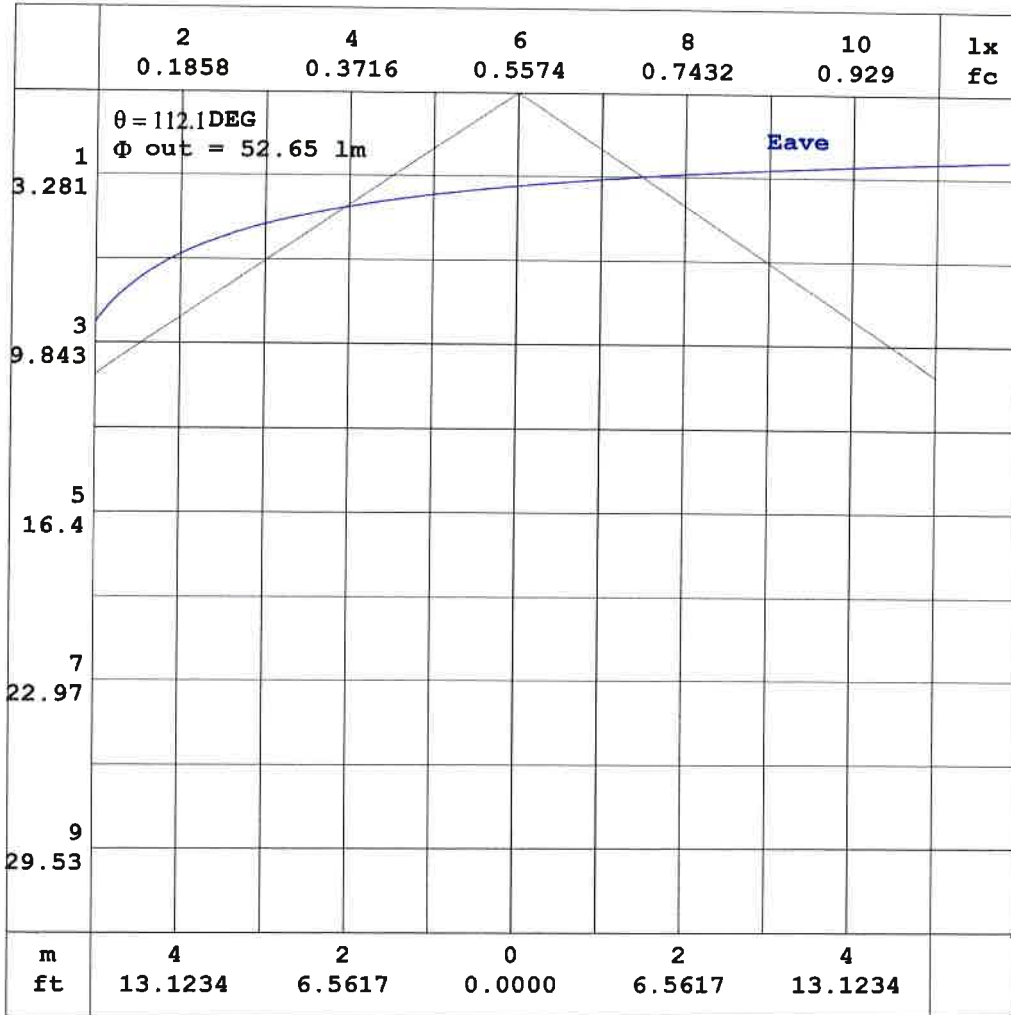
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## 2.3

**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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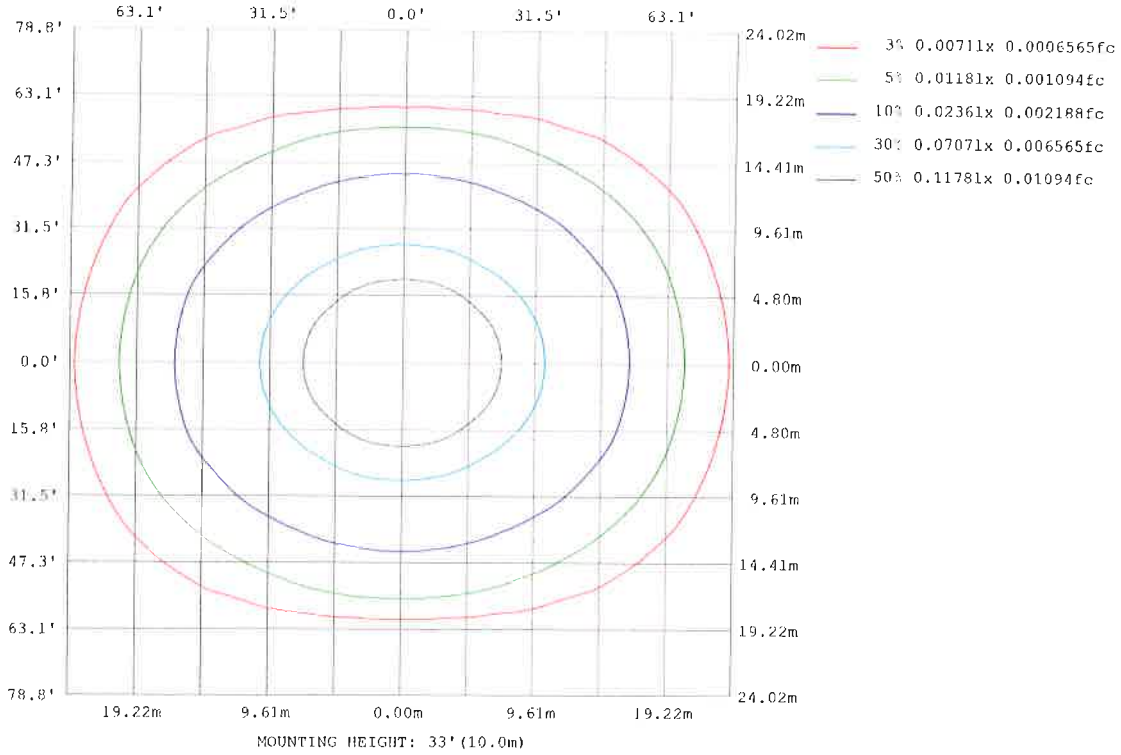
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**2.3**

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

**ISOLUX DIAGRAM**



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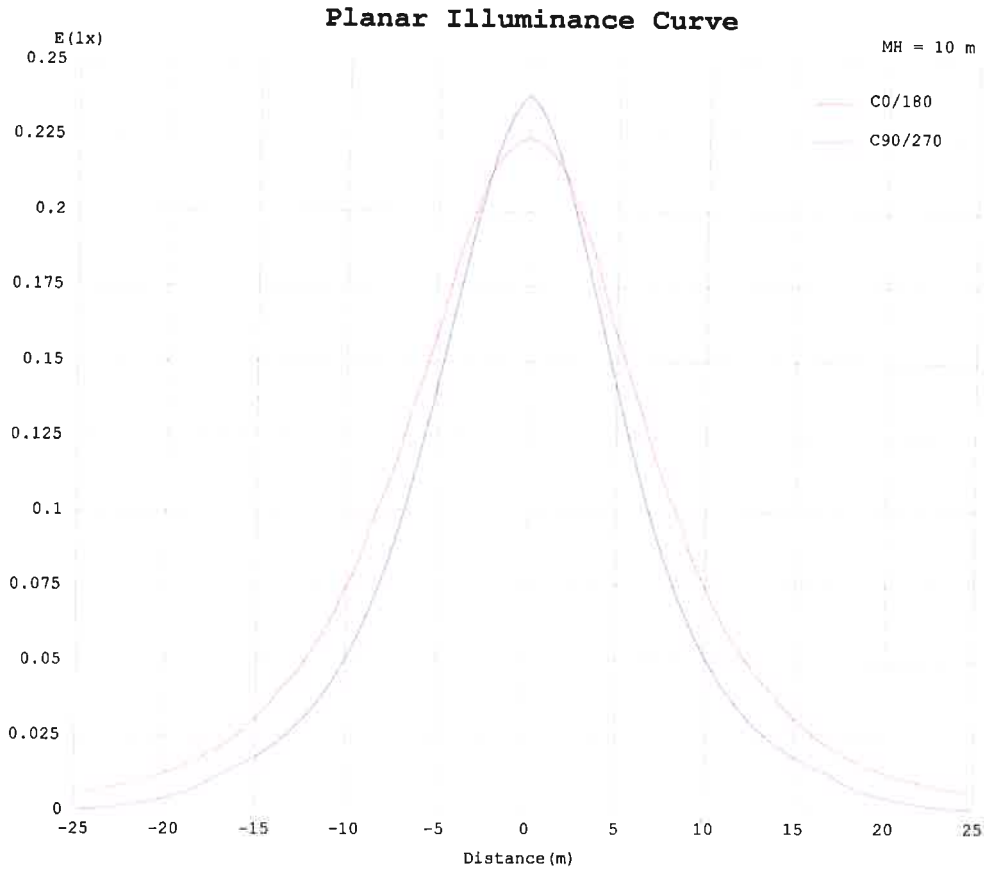
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**2.3**

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



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

(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	7,260
Ölçülen Gerilim (V) (Input Voltage)	48 VDC
Ölçülen Akım (A) (Input Current)	0,1513
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	0,6877
Chrom y	0,3081
Duv	0,00
Chrom u'	0,5169
Chrom v'	0,5210
Peak	629 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

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

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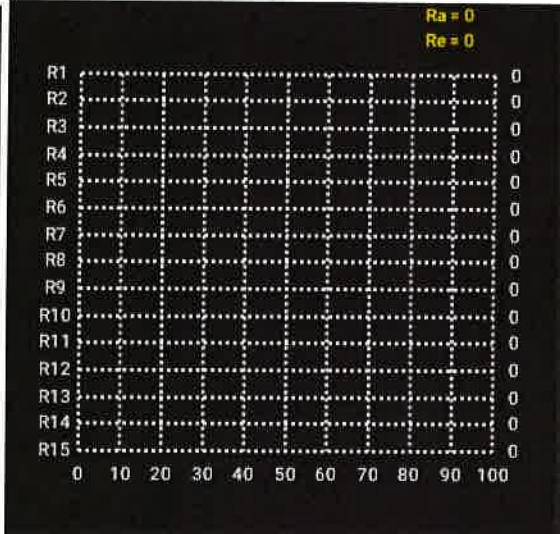
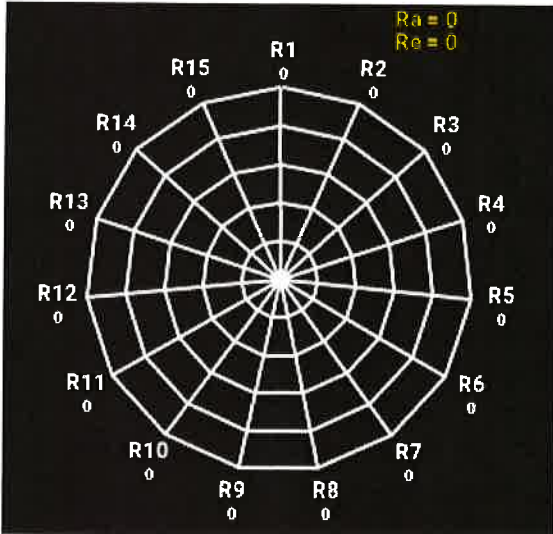
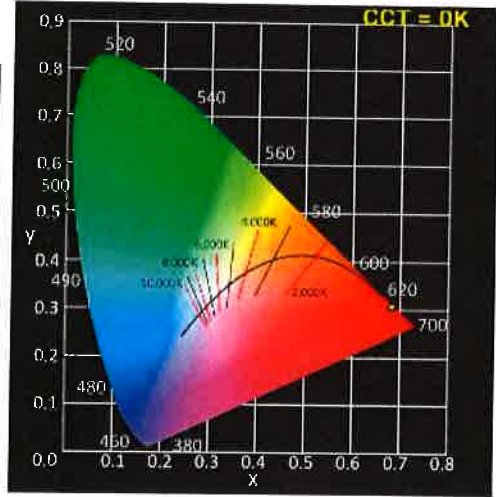
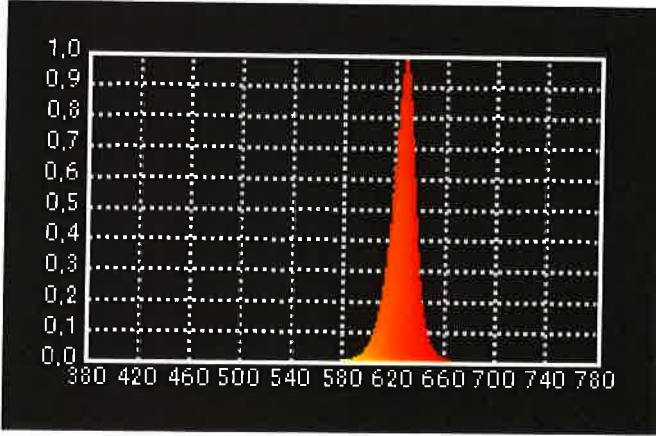
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**2.4 Kırmızı Renk Spektrokolorimetrik Deney Sonuçları** (spectrocolorimetric Test Results of the Red color)

**Spectral Power Distribution**



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

<b>Ölçülen Güç (W)</b> (Input Power)	7,262
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	48 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,1513
<b>Güç Faktörü (PF)</b> (Power Factor)	-
<b>Ölçülen Frekans (Hz)</b> (Input Frequency)	-
<b>Ortam Sıcaklığı / Bağıl Nem</b> (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
<b>Stabilizasyon Süresi</b> (Stabilization Time)	60 dk ±5dk

**Fotometrik Ölçüm Sonuçları**  
(Photometric Measurement Results)

<b>Toplam Işık Akısı</b> (Total Luminous Flux) (lm)	59,768
<b>Maksimum Işık Şiddeti</b> (Max. Light Intensity) (cd)	17,49
<b>Armatür Etkinliği</b> (Luminaire Efficacy) (lm/W)	8,23



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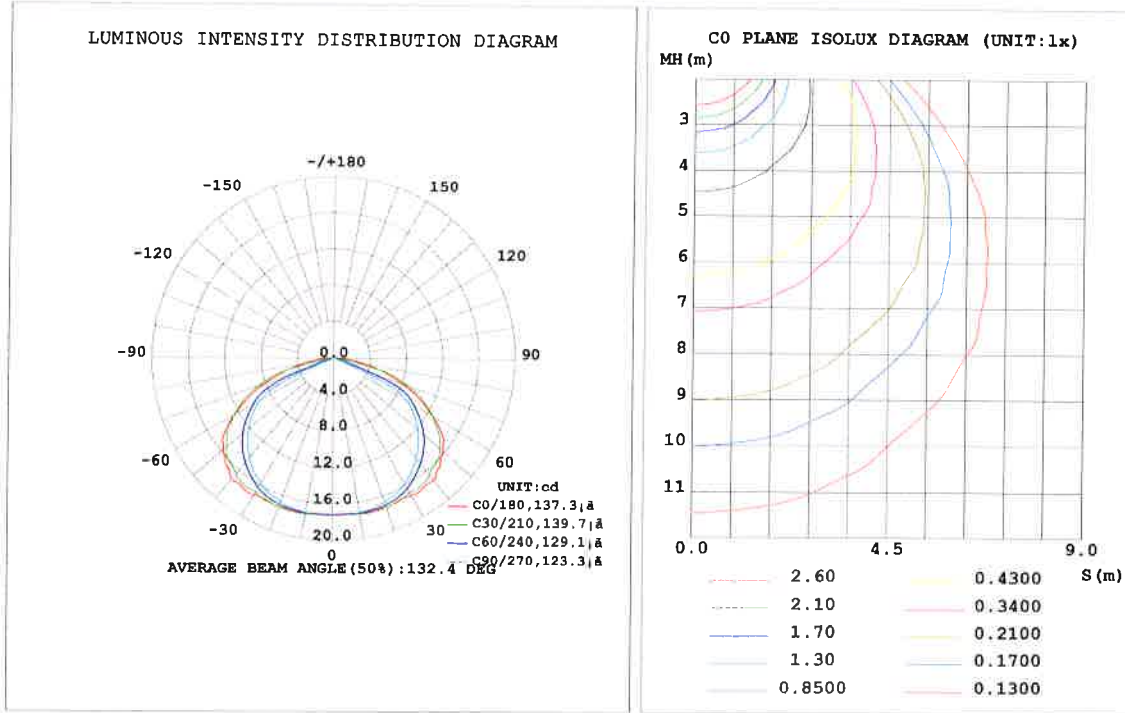
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**2.5 Mavi renk Fotometrik Deney Sonuçları (Photometric Test Results of the Blue color)**



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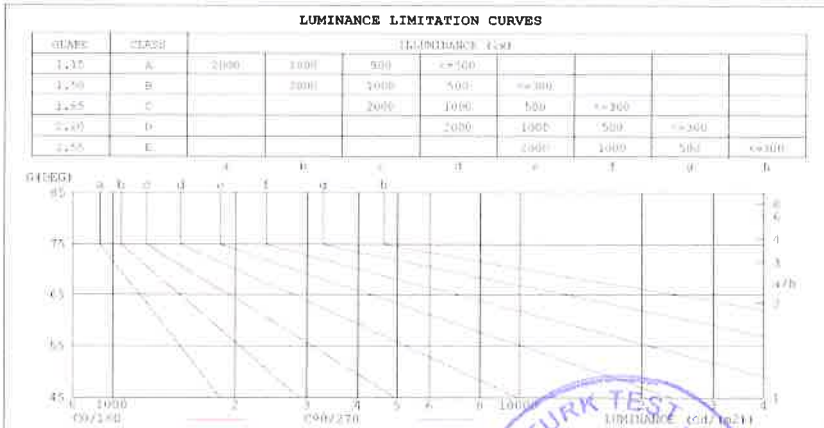
2.5

Mavi renk Fotometrik Deney Sonuçları (Photometric Test Results of the Blue 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	llum, Lamp
5	17.07	17.21	17.20	17.21	17.07	17.21	17.20	17.21	0- 5	0.4111	0.4111	0.69,0.69
10	17.23	17.26	17.18	17.26	17.23	17.26	17.18	17.26	5- 10	1.233	1.644	2.75,2.75
15	17.24	17.33	17.03	17.33	17.24	17.33	17.03	17.33	10- 15	2.050	2.694	4.18,4.18
20	17.34	17.26	16.76	17.26	17.34	17.26	16.76	17.26	15- 20	2.838	4.530	6.18,6.18
25	17.13	16.99	16.35	16.99	17.13	16.99	16.35	16.99	20- 25	3.577	10.11	16.9,16.9
30	17.24	16.65	15.80	16.65	17.24	16.65	15.80	16.65	25- 30	4.245	14.35	24,24
35	17.24	16.18	15.11	16.18	17.24	16.18	15.11	16.18	30- 35	4.854	19.21	32.1,32.1
40	17.32	15.67	14.28	15.67	17.32	15.67	14.28	15.67	35- 40	5.351	24.56	41.1,41.1
45	16.62	14.94	13.28	14.94	16.62	14.94	13.28	14.94	40- 45	5.717	30.28	50.2,50.2
50	15.82	14.02	12.14	14.02	15.82	14.02	12.14	14.02	45- 50	5.898	36.17	60.5,60.5
55	14.66	12.97	10.85	12.97	14.66	12.97	10.85	12.97	50- 55	5.882	42.06	70.4,70.4
60	12.64	11.46	9.367	11.46	12.64	11.46	9.367	11.46	55- 60	5.420	47.68	79.8,79.8
65	10.43	9.758	5.580	9.758	10.43	9.758	5.580	9.758	60- 65	5.016	52.69	88.2,88.2
70	8.060	7.044	0.7361	7.044	8.060	7.044	0.7361	7.044	65- 70	3.726	56.42	94.4,94.4
75	5.615	1.510	0.0238	1.510	5.615	1.510	0.0238	1.510	70- 75	2.073	58.49	97.9,97.9
80	3.251	0.0436	0.0266	0.0436	3.251	0.0436	0.0266	0.0436	75- 80	0.9319	59.42	98.4,98.4
85	1.230	0.0254	0	0.0254	1.230	0.0254	0	0.0254	80- 85	0.3077	59.72	99.9,99.9
90	0.0069	0	0	0	0.0069	0	0	0	85- 90	0.0430	59.77	100,100
95	0	0	0	0	0	0	0	0	90- 95	0.0000	59.77	100,100
100	0	0	0	0	0	0	0	0	95-100	0	59.77	100,100
105	0	0	0	0	0	0	0	0	100-105	0	59.77	100,100
110	0	0	0	0	0	0	0	0	105-110	0	59.77	100,100
115	0	0	0	0	0	0	0	0	110-115	0	59.77	100,100
120	0	0	0	0	0	0	0	0	115-120	0	59.77	100,100
125	0	0	0	0	0	0	0	0	120-125	0	59.77	100,100
130	0	0	0	0	0	0	0	0	125-130	0	59.77	100,100
135	0	0	0	0	0	0	0	0	130-135	0	59.77	100,100
140	0	0	0	0	0	0	0	0	135-140	0	59.77	100,100
145	0	0	0	0	0	0	0	0	140-145	0	59.77	100,100
150	0	0	0	0	0	0	0	0	145-150	0	59.77	100,100
155	0	0	0	0	0	0	0	0	150-155	0	59.77	100,100
160	0	0	0	0	0	0	0	0	155-160	0	59.77	100,100
165	0	0	0	0	0	0	0	0	160-165	0	59.77	100,100
170	0	0	0	0	0	0	0	0	165-170	0	59.77	100,100
175	0	0	0	0	0	0	0	0	170-175	0	59.77	100,100
180	0	0	0	0	0	0	0	0	175-180	0	59.77	100,100



HEIGHT	C0/180	C90/270
85	141	0
80	187	0
75	217	1
70	236	22
65	247	132
60	253	187
55	256	189
50	246	189
45	235	188

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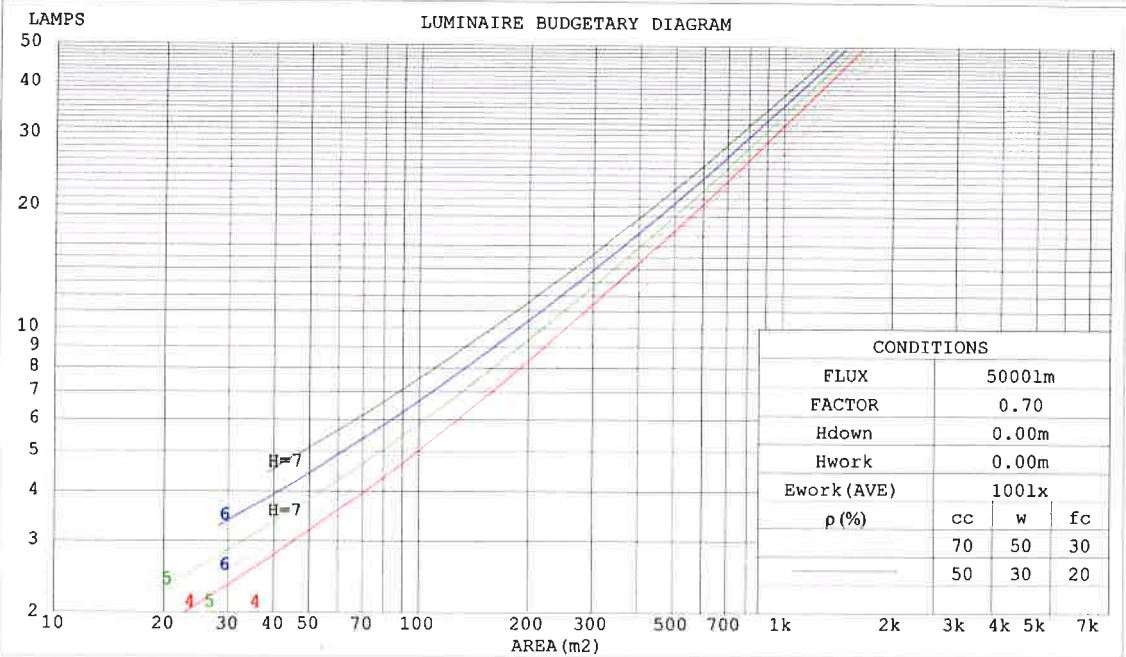
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2.5

**Mavi renk Fotometrik Deney Sonuçları (Photometric Test Results of the Blue 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%	
ρw	0															
ρfc	0															
RCR	RCR:Room Cavity Ratio						Coefficients of Utilization (CU)									
0.0	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	.00
1.0	1.05	1.00	.97	1.02	.98	.95	.98	.95	.92	.94	.92	.89	.91	.88	.87	.85
2.0	.91	.84	.78	.89	.83	.77	.85	.80	.76	.82	.78	.74	.79	.75	.72	.70
3.0	.79	.71	.64	.78	.70	.64	.75	.68	.63	.72	.66	.62	.69	.65	.60	.58
4.0	.70	.61	.54	.68	.60	.53	.66	.59	.53	.63	.57	.52	.61	.56	.51	.49
5.0	.62	.53	.46	.61	.52	.46	.59	.51	.45	.57	.50	.45	.55	.49	.44	.42
6.0	.55	.46	.40	.54	.46	.39	.52	.45	.39	.51	.44	.39	.49	.43	.38	.36
7.0	.50	.41	.35	.49	.40	.34	.47	.40	.34	.46	.39	.34	.45	.38	.34	.32
8.0	.45	.36	.30	.44	.36	.30	.43	.36	.30	.42	.35	.30	.41	.34	.30	.28
9.0	.41	.33	.27	.41	.33	.27	.40	.32	.27	.38	.32	.27	.37	.31	.27	.25
10.0	.38	.30	.24	.37	.30	.24	.36	.29	.24	.35	.29	.24	.35	.28	.24	.22



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**ÖLÇÜM RAPORU**  
**MEASUREMENT REPORT**

**2.5**

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

**WEC AND CCEC**

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.298	.169	.054	.291	.166	.053	.277	.159	.051	.265	.153	.049	.254	.147	.047	
2.0	.289	.158	.049	.282	.156	.048	.271	.151	.047	.260	.146	.046	.250	.141	.045	
3.0	.271	.144	.043	.265	.142	.043	.255	.138	.042	.245	.135	.041	.237	.131	.041	
4.0	.252	.131	.039	.247	.129	.038	.238	.126	.038	.229	.123	.037	.221	.120	.037	
5.0	.234	.119	.035	.230	.118	.034	.221	.115	.034	.214	.113	.034	.207	.110	.033	
6.0	.218	.109	.031	.214	.108	.031	.206	.106	.031	.199	.104	.030	.193	.102	.030	
7.0	.203	.100	.028	.199	.099	.028	.193	.097	.028	.187	.096	.028	.181	.094	.028	
8.0	.189	.093	.026	.186	.092	.026	.180	.090	.026	.175	.089	.026	.170	.087	.025	
9.0	.177	.086	.024	.175	.085	.024	.169	.084	.024	.164	.082	.024	.160	.081	.023	
10.0	.167	.080	.022	.164	.079	.022	.159	.078	.022	.155	.077	.022	.151	.076	.022	

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.179	.156	.135	.154	.134	.116	.105	.092	.081	.060	.053	.047	.019	.017	.015	
2.0	.172	.132	.098	.147	.114	.085	.101	.079	.059	.058	.046	.035	.019	.015	.011	
3.0	.165	.114	.074	.141	.099	.064	.097	.069	.045	.056	.040	.027	.018	.013	.009	
4.0	.158	.101	.058	.135	.087	.050	.093	.061	.035	.054	.036	.021	.017	.012	.007	
5.0	.150	.091	.047	.129	.078	.041	.089	.055	.029	.052	.032	.017	.017	.011	.006	
6.0	.144	.082	.039	.123	.071	.034	.085	.050	.024	.049	.029	.014	.016	.010	.005	
7.0	.137	.076	.033	.118	.066	.028	.081	.046	.020	.047	.027	.012	.015	.009	.004	
8.0	.130	.070	.028	.112	.061	.025	.078	.043	.017	.045	.025	.010	.015	.008	.003	
9.0	.124	.065	.025	.107	.056	.022	.074	.040	.015	.043	.023	.009	.014	.008	.003	
10.0	.119	.061	.022	.102	.053	.019	.071	.037	.014	.041	.022	.008	.013	.007	.003	



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**ÖLÇÜM RAPORU**  
**MEASUREMENT REPORT**

**2.5 Mavi renk Fotometrik Deneş Sonuđları (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	9.0	10.6	9.3	10.8	11.0	7.4	8.9	7.6	9.1	9.3
3H	10.8	12.2	11.1	12.5	12.7	7.7	9.1	8.0	9.3	9.6
4H	11.5	12.8	11.8	13.1	13.4	7.6	8.9	7.9	9.2	9.4
6H	11.9	13.2	12.3	13.5	13.8	7.4	8.7	7.8	9.0	9.3
8H	12.1	13.3	12.4	13.6	13.9	7.4	8.6	7.7	8.9	9.2
12H	12.1	13.3	12.5	13.6	13.9	7.3	8.5	7.7	8.8	9.1
4H 2H	9.6	11.0	9.9	11.2	11.5	8.3	9.7	8.7	10.0	10.2
3H	11.6	12.8	12.0	13.1	13.4	8.7	9.9	9.1	10.2	10.5
4H	12.4	13.5	12.8	13.8	14.2	8.6	9.7	9.0	10.0	10.4
6H	13.0	14.0	13.4	14.3	14.7	8.5	9.5	8.9	9.8	10.2
8H	13.2	14.1	13.6	14.4	14.8	8.5	9.4	8.9	9.7	10.1
12H	13.3	14.1	13.7	14.5	14.9	8.4	9.2	8.9	9.6	10.0
8H 4H	12.4	13.3	12.8	13.7	14.0	8.9	9.8	9.3	10.1	10.5
6H	13.0	13.8	13.5	14.2	14.6	8.8	9.5	9.3	9.9	10.4
8H	13.2	13.9	13.7	14.3	14.7	8.8	9.4	9.2	9.8	10.3
12H	13.3	13.9	13.8	14.3	14.8	8.7	9.3	9.2	9.7	10.2
12H 4H	12.4	13.2	12.8	13.6	14.0	8.9	9.7	9.3	10.1	10.5
6H	13.0	13.6	13.5	14.1	14.5	8.8	9.5	9.3	9.9	10.3
8H	13.2	13.7	13.7	14.2	14.7	8.8	9.3	9.3	9.8	10.2
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.2					+ 0.5 / - 0.6				
1.5H	+ 0.2 / - 0.3					+ 0.5 / - 0.6				
2.0H	+ 0.3 / - 0.6					+ 0.7 / - 1.6				

CIE Pub.117 Corrected 59.77 lm Total Lamp Luminous Flux. (8log(F/F0) = -9.8)



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**2.5****Mavi renk Fotometrik Deney Sonuçları (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	55	43	36	54	43	36	53	42	35	29	
0.80	66	54	46	65	53	46	63	52	45	38	
1.00	75	63	56	73	63	55	71	64	55	48	
1.25	82	71	64	81	71	64	78	69	63	56	
1.50	88	77	70	86	77	70	83	75	69	61	
2.00	95	86	80	93	85	79	90	83	78	70	
2.50	99	91	85	97	90	84	93	87	82	74	
3.00	102	96	90	100	94	89	96	91	87	79	
4.00	107	101	97	104	99	95	100	96	92	84	
5.00	109	104	100	107	102	99	102	99	96	87	
ROOM INDEX	UF(total)									Direct	
According to DIN EN 13032-2 2004				Suspended				SHRNM = 1.25			



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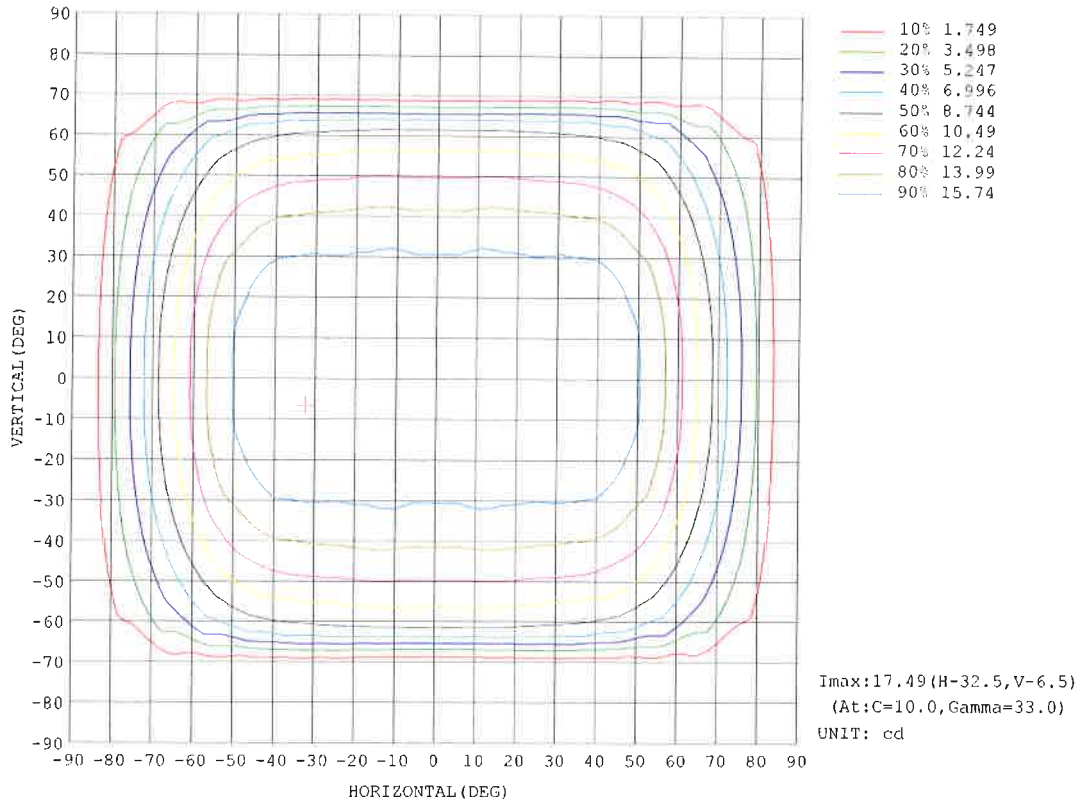
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**2.5 Mavi renk Fotometrik Deney Sonuçları (Photometric Test Results of the Blue color)**

**ISOCANDELA DIAGRAM**



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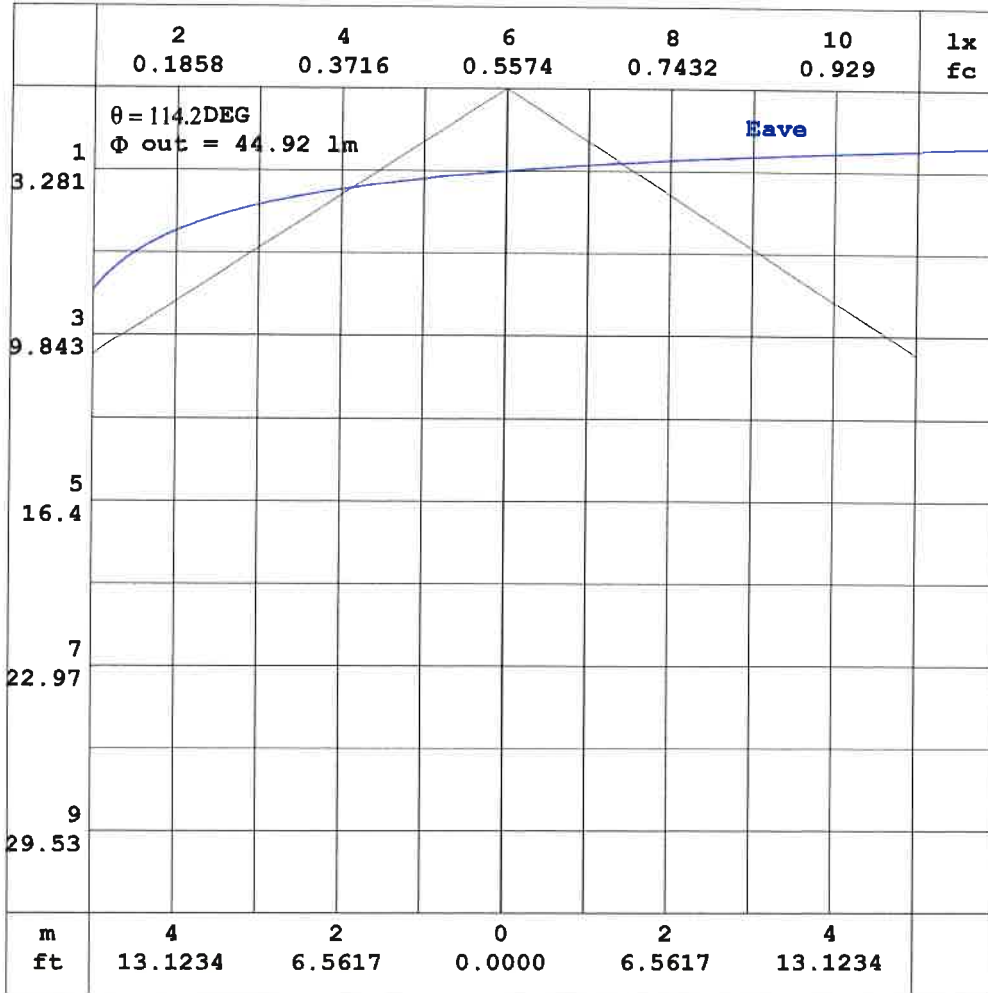
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**2.5 Mavi renk Fotometrik Deney Sonuçları (Photometric Test Results of the Blue color)****AAI CURVES**

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



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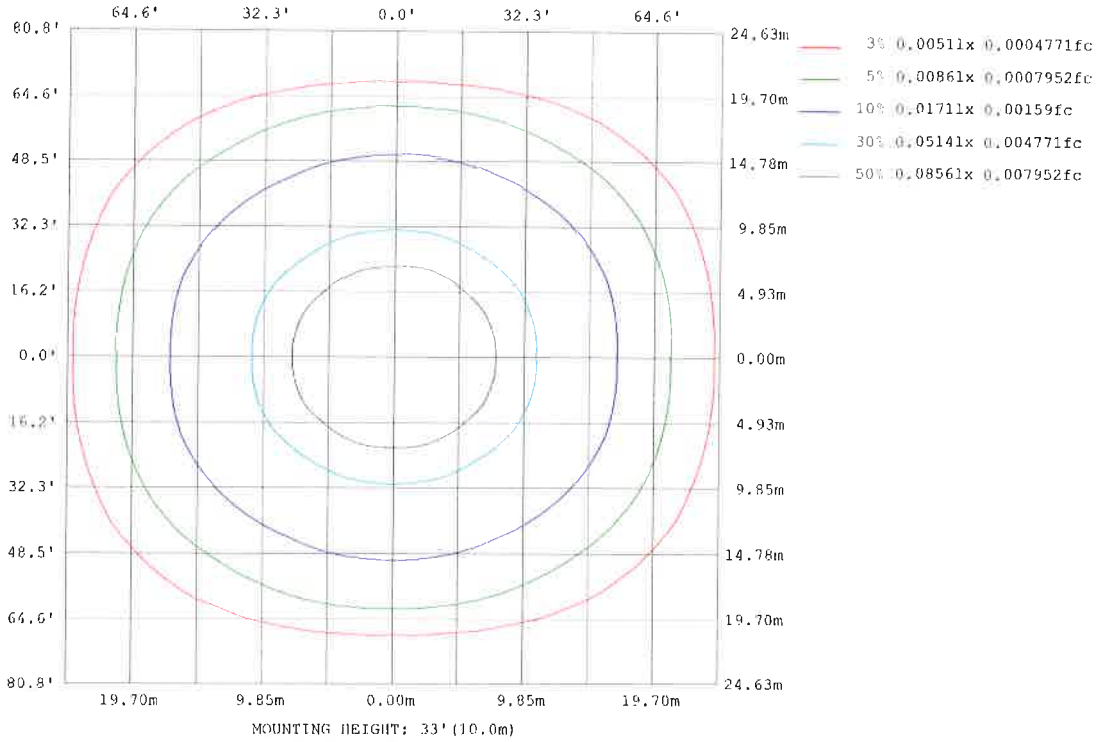
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2.5

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

**ISOLUX DIAGRAM**



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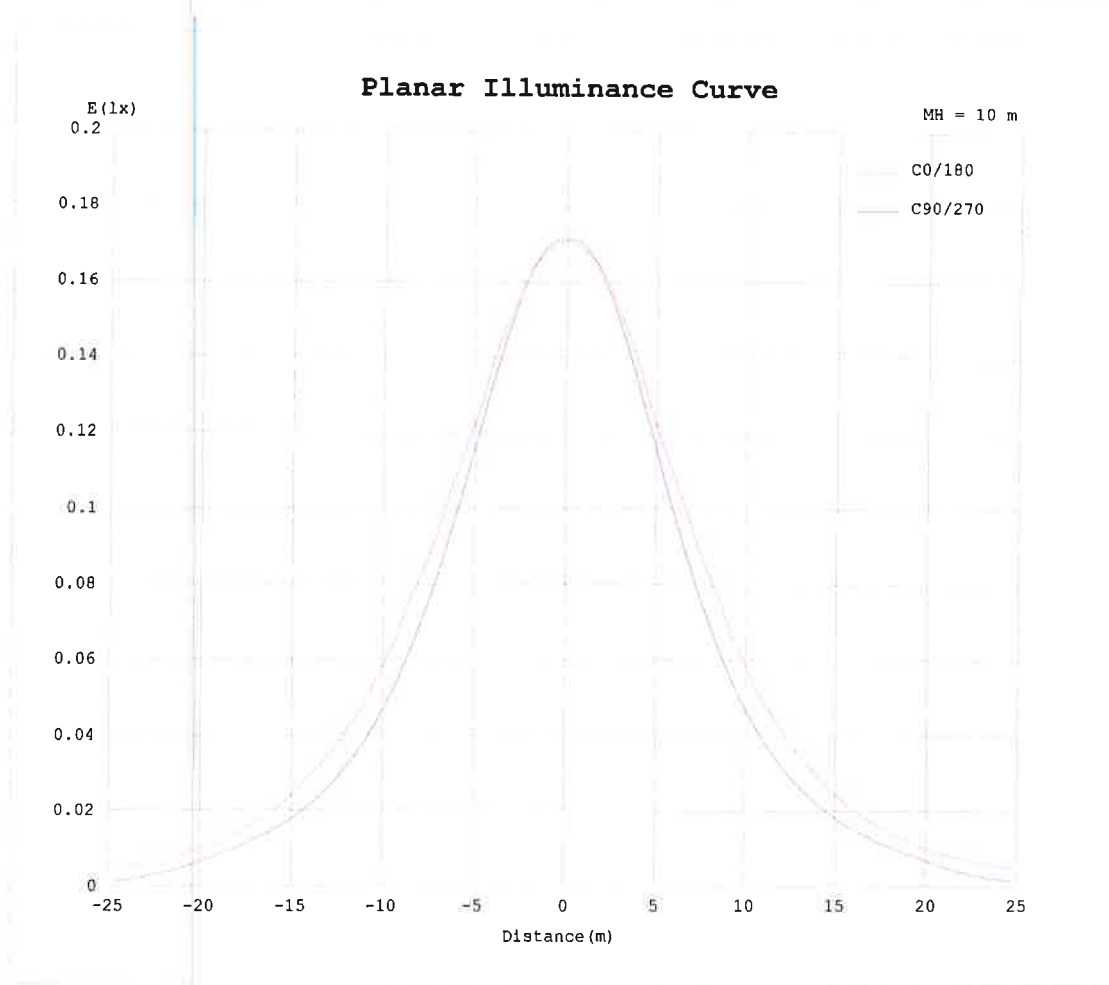
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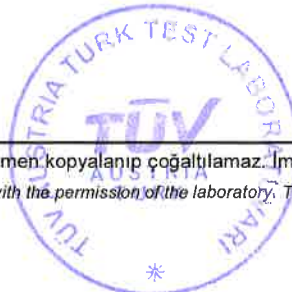
**2.5**

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



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

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**ÖLÇÜM RAPORU**  
MEASUREMENT REPORT**2.6 Mavi Renk Spektrokolorimetrik Deneş Sonuęları** (Spectrocolorimetric Test Results of the Blue color)**Elektriksel Ölçümler**

(Electrical Measurements)

<b>Ölçülen Güç (W)</b> (Input Power)	7,262
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	48 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,1513
<b>Güç Faktörü (PF)</b> (Power Factor)	-
<b>Ölçülen Frekans (Hz)</b> (Input Frequency)	-
<b>Ortam Sıcaklığı / Baęıl Nem</b> (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
<b>Stabilizasyon Süresi</b> (Stabilization Time)	60 dk ±5dk

**Spektrokolorimetrik Ölçüm Sonuęları**

(Spectrocolorimetric Measurement Results)

<b>Chrom x</b>	0,1286
<b>Chrom y</b>	0,0935
<b>Duv</b>	0,00
<b>Chrom u'</b>	0,1331
<b>Chrom v'</b>	0,2178
<b>Peak</b>	469 nm
<b>Dominant</b>	474 nm
<b>CCT</b>	0 K
<b>Nominal CCT</b>	-
<b>Ra(CRI)</b>	0
<b>R9</b>	0
<b>S/P Ratio</b>	12,6
<b>Preburning time</b>	1 hr
<b>Test Configuration</b>	4π

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

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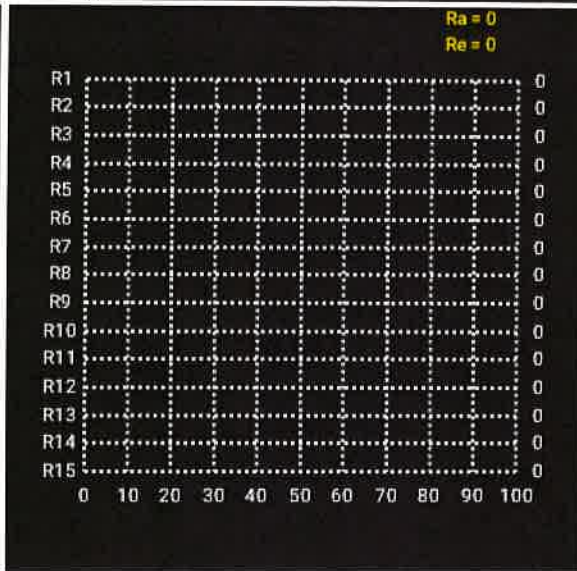
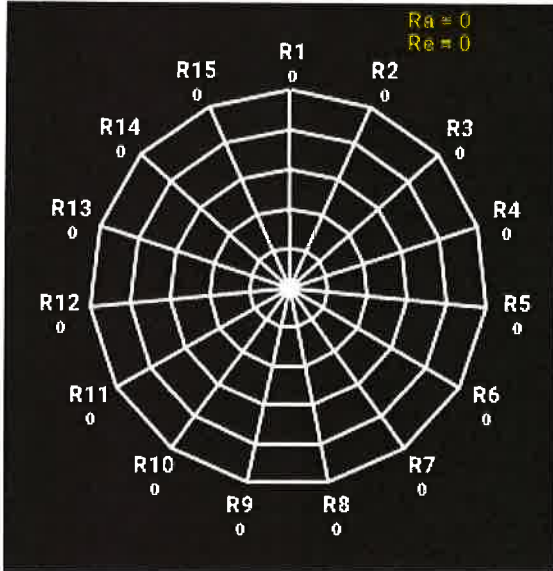
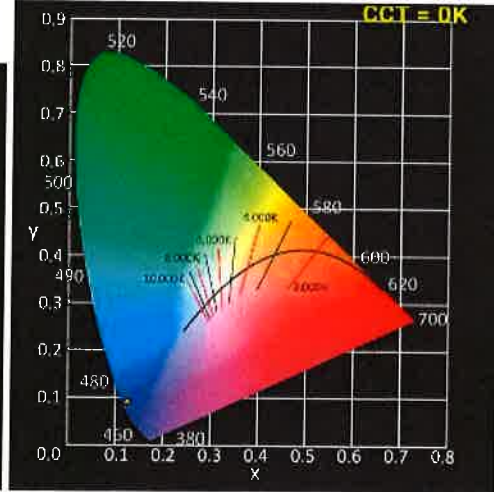
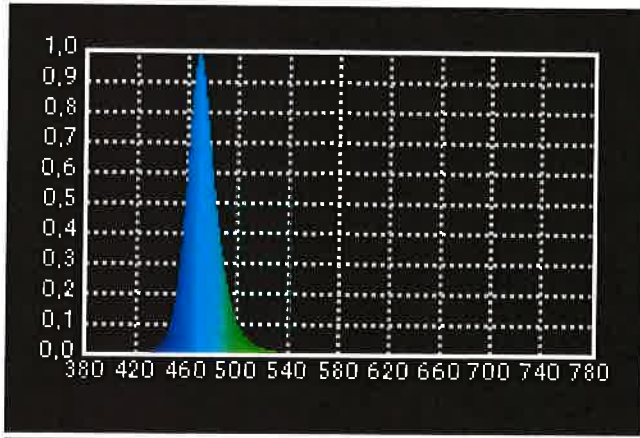
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**ÖLÇÜM RAPORU**  
**MEASUREMENT REPORT**

2.6

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



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

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

**Elektriksel Ölçümler**

(Electrical Measurements)

<b>Ölçülen Güç (W)</b> (Input Power)	20,29
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	48 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,4227
<b>Güç Faktörü (PF)</b> (Power Factor)	-
<b>Ölçülen Frekans (Hz)</b> (Input Frequency)	-
<b>Ortam Sıcaklığı / Bağıl Nem</b> (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
<b>Stabilizasyon Süresi</b> (Stabilization Time)	60 dk ±5dk

**Fotometrik Ölçüm Sonuçları**

(Photometric Measurement Results)

<b>Toplam Işık Akısı</b> (Total Luminous Flux) (lm)	520,24
<b>Maksimum Işık Şiddeti</b> (Max. Light Intensity) (cd)	158,3
<b>Armatür Etkinliği</b> (Luminaire Efficacy) (lm/W)	25,66



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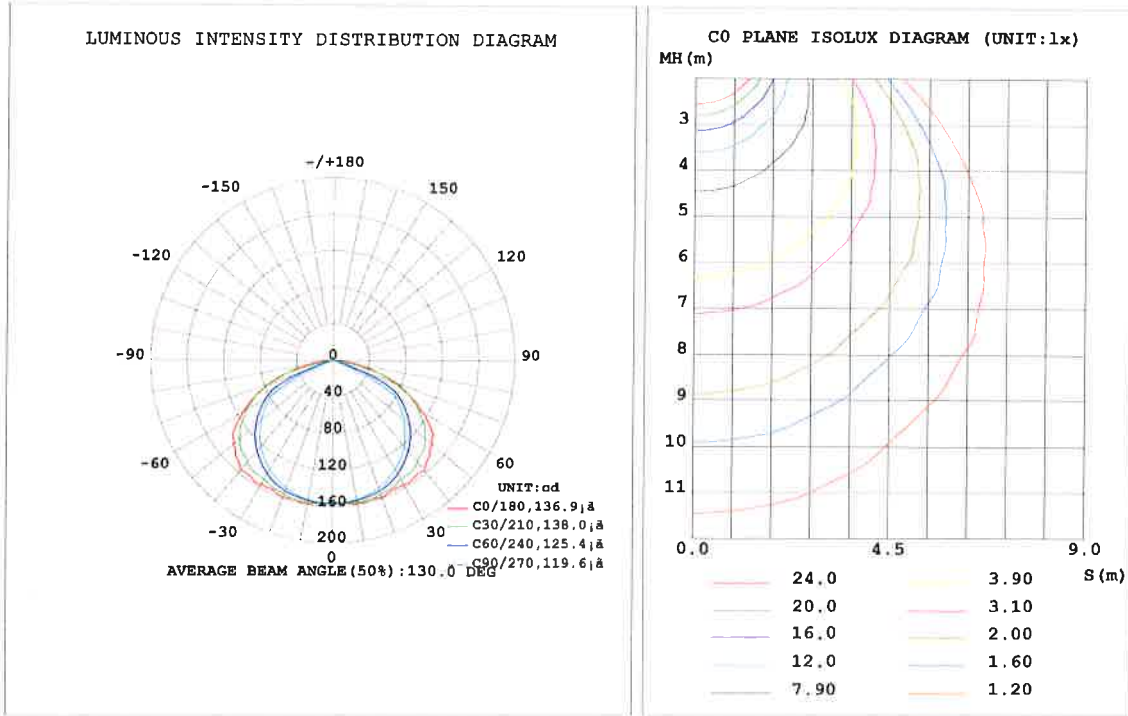
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**2.7 RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)**



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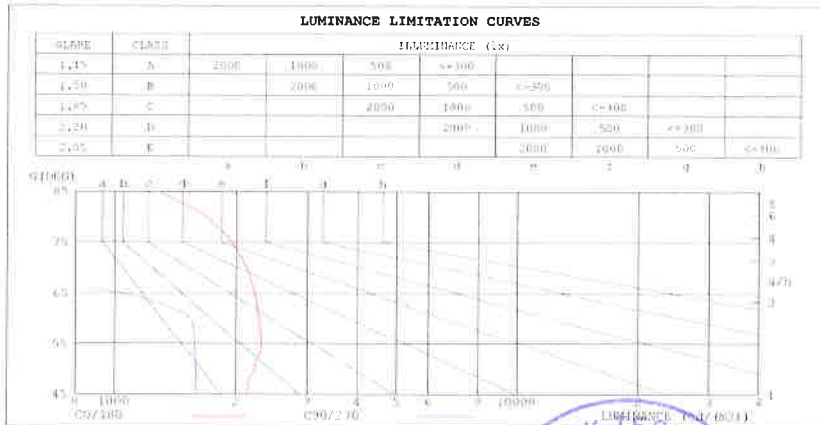
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**2.7 RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)**

**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	156.8	156.3	155.5	156.3	156.8	156.3	155.5	156.3	0- 5	1.136	3.738	0.72, 0.72
10	157.9	155.9	154.3	155.9	157.9	155.9	154.3	155.9	5- 10	11.117	14.91	2.06, 2.06
15	157.8	155.6	151.9	155.6	157.8	155.6	151.9	155.6	10- 15	18.48	33.38	6.41, 6.41
20	158.2	154.0	148.3	154.0	158.2	154.0	148.3	154.0	15- 20	28.44	58.82	11.3, 11.3
25	155.9	150.6	143.6	150.6	155.9	150.6	143.6	150.6	20- 25	31.87	90.69	17.4, 17.4
30	156.4	146.6	137.6	146.6	156.4	146.6	137.6	146.6	25- 30	37.50	128.3	24.6, 24.6
35	155.9	141.3	130.5	141.3	155.9	141.3	130.5	141.3	30- 35	42.16	171.0	32.8, 32.8
40	156.1	135.9	122.1	135.9	156.1	135.9	122.1	135.9	35- 40	46.76	217.7	41.8, 41.8
45	149.5	128.7	112.7	128.7	149.5	128.7	112.7	128.7	40- 45	49.67	267.4	51.4, 51.4
50	142.4	120.1	102.1	120.1	142.4	120.1	102.1	120.1	45- 50	50.96	318.4	61.2, 61.2
55	132.3	110.3	90.54	110.3	132.3	110.3	90.54	110.3	50- 55	50.61	369.0	70.9, 70.9
60	113.9	97.07	77.08	97.07	113.9	97.07	77.08	97.07	55- 60	48.17	417.1	80.1, 80.1
65	93.80	82.30	64.31	82.30	93.80	82.30	64.31	82.30	60- 65	42.47	459.6	88.3, 88.3
70	72.47	57.02	44.31	57.02	72.47	57.02	44.31	57.02	65- 70	31.43	491.0	104.3, 104.3
75	50.52	13.12	0.5641	13.12	50.52	13.12	0.5641	13.12	70- 75	17.93	509.0	97.8, 97.8
80	29.30	0.7406	0.5900	0.7406	29.30	0.7406	0.5900	0.7406	75- 80	8.206	517.2	99.4, 99.4
85	11.19	0.5985	0.2536	0.5985	11.19	0.5985	0.2536	0.5985	80- 85	2.829	520.0	99.9, 99.9
90	0.4267	0.0007	0	0.0007	0.4267	0.0007	0	0.0007	85- 90	0.5398	520.5	100, 100
95	0	0	0	0	0	0	0	0	90- 95	0.0034	520.5	100, 100
100	0	0	0	0	0	0	0	0	95-100	0	520.5	100, 100
105	0	0	0	0	0	0	0	0	100-105	0	520.5	100, 100
110	0	0	0	0	0	0	0	0	105-110	0	520.5	100, 100
115	0	0	0	0	0	0	0	0	110-115	0	520.5	100, 100
120	0	0	0	0	0	0	0	0	115-120	0	520.5	100, 100
125	0	0	0	0	0	0	0	0	120-125	0	520.5	100, 100
130	0	0	0	0	0	0	0	0	125-130	0	520.5	100, 100
135	0	0	0	0	0	0	0	0	130-135	0	520.5	100, 100
140	0	0	0	0	0	0	0	0	135-140	0	520.5	100, 100
145	0	0	0	0	0	0	0	0	140-145	0	520.5	100, 100
150	0	0	0	0	0	0	0	0	145-150	0	520.5	100, 100
155	0	0	0	0	0	0	0	0	150-155	0	520.5	100, 100
160	0	0	0	0	0	0	0	0	155-160	0	520.5	100, 100
165	0	0	0	0	0	0	0	0	160-165	0	520.5	100, 100
170	0	0	0	0	0	0	0	0	165-170	0	520.5	100, 100
175	0	0	0	0	0	0	0	0	170-175	0	520.5	100, 100
180	0	0	0	0	0	0	0	0	175-180	0	520.5	100, 100



LUMINANCE cd/m²		
γ (DEG)	C0/180	C90/270
85	1284	29
80	1687	34
75	1952	22
70	2119	239
65	2220	1049
60	2277	1542
55	2306	1579
50	2216	1589
45	2114	1594



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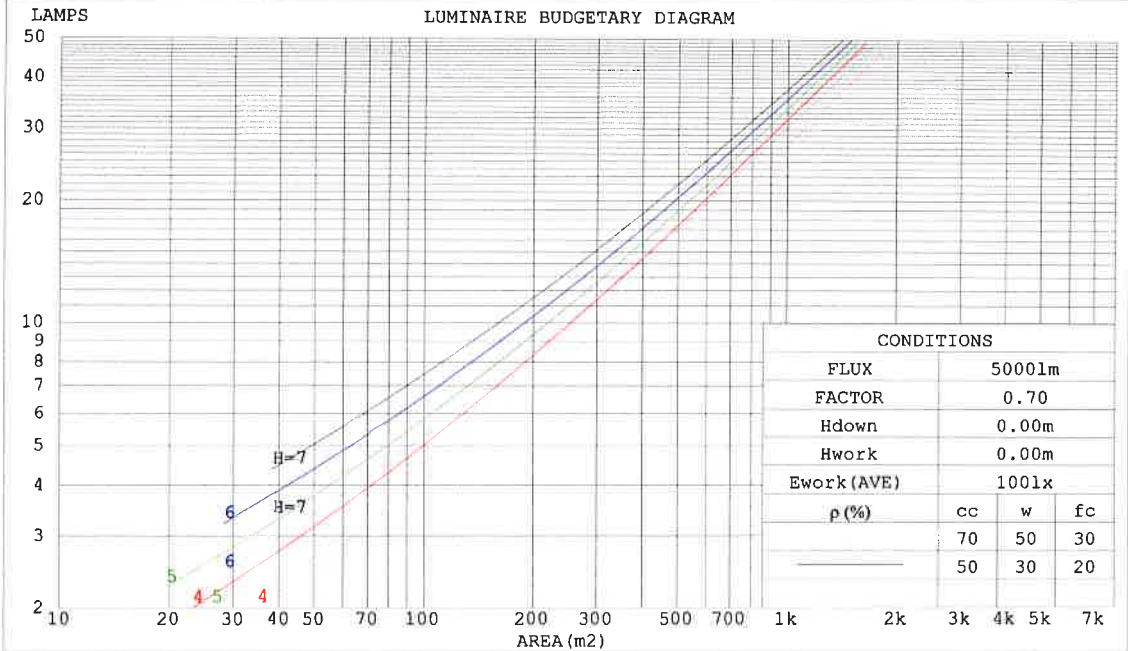
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**2.7 RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)**

**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%	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	RCR	RCR	RCR	RCR	RCR	RCR	RCR	RCR	RCR	RCR	RCR	RCR	RCR	RCR
0.0	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	0.00
1.0	1.05	1.00	.97	1.02	.99	.95	.98	.95	.92	.94	.92	.89	.91	.89	.87	.85
2.0	.91	.84	.78	.89	.83	.78	.85	.80	.76	.82	.78	.74	.79	.76	.72	.70
3.0	.79	.71	.65	.78	.70	.64	.75	.68	.63	.72	.67	.62	.70	.65	.61	.59
4.0	.70	.61	.54	.69	.60	.54	.66	.59	.53	.64	.57	.52	.62	.56	.52	.49
5.0	.62	.53	.46	.61	.52	.46	.59	.51	.45	.57	.50	.45	.55	.49	.44	.42
6.0	.56	.46	.40	.55	.46	.40	.53	.45	.39	.51	.44	.39	.50	.43	.39	.37
7.0	.50	.41	.35	.49	.41	.35	.48	.40	.35	.46	.39	.34	.45	.39	.34	.32
8.0	.46	.37	.31	.45	.37	.31	.44	.36	.31	.42	.35	.30	.41	.35	.30	.28
9.0	.42	.33	.28	.41	.33	.28	.40	.33	.27	.39	.32	.27	.38	.32	.27	.25
10.0	.38	.30	.25	.38	.30	.25	.37	.30	.25	.36	.29	.25	.35	.29	.24	.23



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## ÖLÇÜM RAPORU MEASUREMENT REPORT

2.7

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

### WEC AND CCEC

p <sub>cc</sub>	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p <sub>w</sub>	20%			20%			20%			20%			20%			0
p <sub>fc</sub>	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients (WEC)									
0.0																
1.0	.297	.169	.053	.289	.165	.052	.276	.159	.051	.264	.152	.049	.253	.147	.047	
2.0	.287	.157	.048	.281	.155	.048	.269	.150	.046	.258	.145	.045	.249	.141	.044	
3.0	.269	.143	.043	.264	.141	.043	.254	.137	.042	.244	.134	.041	.235	.130	.040	
4.0	.251	.130	.038	.246	.129	.038	.237	.125	.037	.228	.122	.037	.220	.120	.036	
5.0	.233	.119	.034	.228	.117	.034	.220	.115	.034	.213	.112	.033	.206	.110	.033	
6.0	.216	.108	.031	.213	.107	.031	.205	.105	.031	.198	.103	.030	.192	.101	.030	
7.0	.202	.100	.028	.198	.099	.028	.192	.097	.028	.186	.095	.028	.180	.093	.027	
8.0	.188	.092	.026	.185	.091	.026	.180	.090	.026	.174	.088	.025	.169	.087	.025	
9.0	.177	.085	.024	.174	.085	.024	.169	.083	.024	.164	.082	.023	.159	.081	.023	
10.0	.166	.080	.022	.164	.079	.022	.159	.078	.022	.154	.077	.022	.150	.076	.022	

p <sub>cc</sub>	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p <sub>w</sub>	20%			20%			20%			20%			20%			0
p <sub>fc</sub>	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients (CCEC)									
0.0																
1.0	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
2.0	.179	.156	.135	.153	.134	.117	.105	.092	.081	.060	.053	.047	.019	.017	.015	
3.0	.172	.132	.099	.147	.114	.085	.101	.079	.059	.058	.046	.035	.019	.015	.011	
4.0	.164	.114	.074	.141	.099	.064	.097	.068	.045	.056	.040	.027	.018	.013	.009	
5.0	.157	.101	.058	.135	.087	.050	.093	.061	.036	.054	.036	.021	.017	.012	.007	
6.0	.150	.091	.047	.129	.078	.041	.089	.055	.029	.051	.032	.017	.017	.011	.006	
7.0	.143	.082	.039	.123	.071	.034	.085	.050	.024	.049	.029	.014	.016	.010	.005	
8.0	.136	.076	.033	.117	.065	.029	.081	.046	.020	.047	.027	.012	.015	.009	.004	
9.0	.130	.070	.028	.112	.061	.025	.077	.042	.018	.045	.025	.010	.015	.008	.003	
10.0	.124	.065	.025	.107	.056	.022	.074	.040	.015	.043	.023	.009	.014	.008	.003	



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## ÖLÇÜM RAPORU MEASUREMENT REPORT

### 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	16.6	18.2	16.9	18.4	18.6	14.5	16.1	14.8	16.3	16.5	
3H	18.4	19.8	18.7	20.1	20.3	14.8	16.2	15.1	16.5	16.7	
4H	19.1	20.4	19.4	20.7	21.0	14.7	16.1	15.0	16.3	16.6	
6H	19.6	20.8	19.9	21.1	21.4	14.6	15.9	14.9	16.1	16.4	
8H	19.7	20.9	20.0	21.2	21.5	14.5	15.8	14.9	16.1	16.3	
12H	19.7	20.9	20.1	21.2	21.5	14.5	15.7	14.8	16.0	16.3	
4H	2H	17.1	18.5	17.4	18.7	19.0	15.6	16.9	15.9	17.2	17.4
3H	19.2	20.3	19.5	20.6	20.9	15.9	17.1	16.2	17.4	17.7	
4H	20.0	21.1	20.4	21.4	21.7	15.8	16.9	16.2	17.2	17.5	
6H	20.6	21.5	21.0	21.9	22.2	15.7	16.6	16.1	17.0	17.4	
8H	20.7	21.6	21.2	22.0	22.4	15.6	16.5	16.1	16.9	17.3	
12H	20.9	21.7	21.3	22.0	22.4	15.6	16.4	16.0	16.8	17.2	
8H	4H	19.9	20.8	20.3	21.2	21.6	16.1	16.9	16.5	17.3	17.7
6H	20.6	21.3	21.0	21.7	22.1	16.0	16.7	16.4	17.1	17.5	
8H	20.8	21.4	21.2	21.8	22.3	15.9	16.6	16.4	17.0	17.5	
12H	20.9	21.4	21.4	21.9	22.4	15.9	16.5	16.4	16.9	17.4	
12H	4H	19.9	20.7	20.3	21.1	21.5	16.1	16.9	16.5	17.3	17.7
6H	20.5	21.2	21.0	21.6	22.0	16.0	16.6	16.4	17.0	17.5	
8H	20.7	21.3	21.2	21.7	22.2	16.0	16.5	16.4	16.9	17.4	
Variations with the observer position at spacings:											
S = 1.0H	+ 0.1 / - 0.2					+ 0.5 / - 0.6					
1.5H	+ 0.2 / - 0.3					+ 0.6 / - 0.6					
2.0H	+ 0.2 / - 0.6					+ 0.6 / - 1.5					

CIE Pub.117 Corrected 520.5 lm Total Lamp Luminous Flux. (8log(F/F0) = -2.3)



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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) $k(RI) \times RCR = 5$									
$k = 0.60$	55	44	36	55	43	36	54	43	36	29
0.80	66	54	46	65	54	46	63	53	46	39
1.00	75	64	56	74	63	56	72	65	55	48
1.25	83	72	65	81	71	64	78	70	63	56
1.50	88	78	71	86	77	70	83	75	69	62
2.00	95	87	80	93	85	79	90	83	78	70
2.50	99	91	85	97	90	85	93	87	83	74
3.00	103	96	90	100	94	89	96	91	87	79
4.00	107	101	97	104	99	95	100	96	93	84
5.00	109	104	101	107	103	99	102	99	96	87
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			



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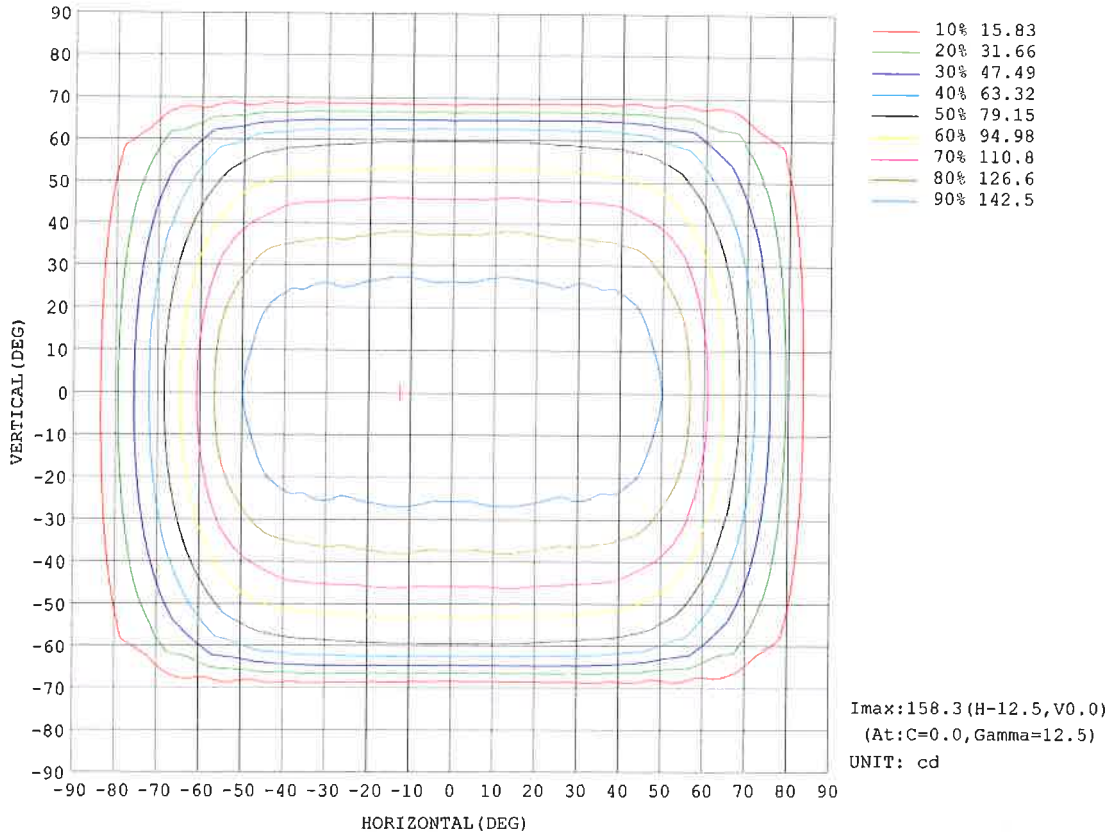
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**2.7 RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)**

**ISOCANDELA DIAGRAM**



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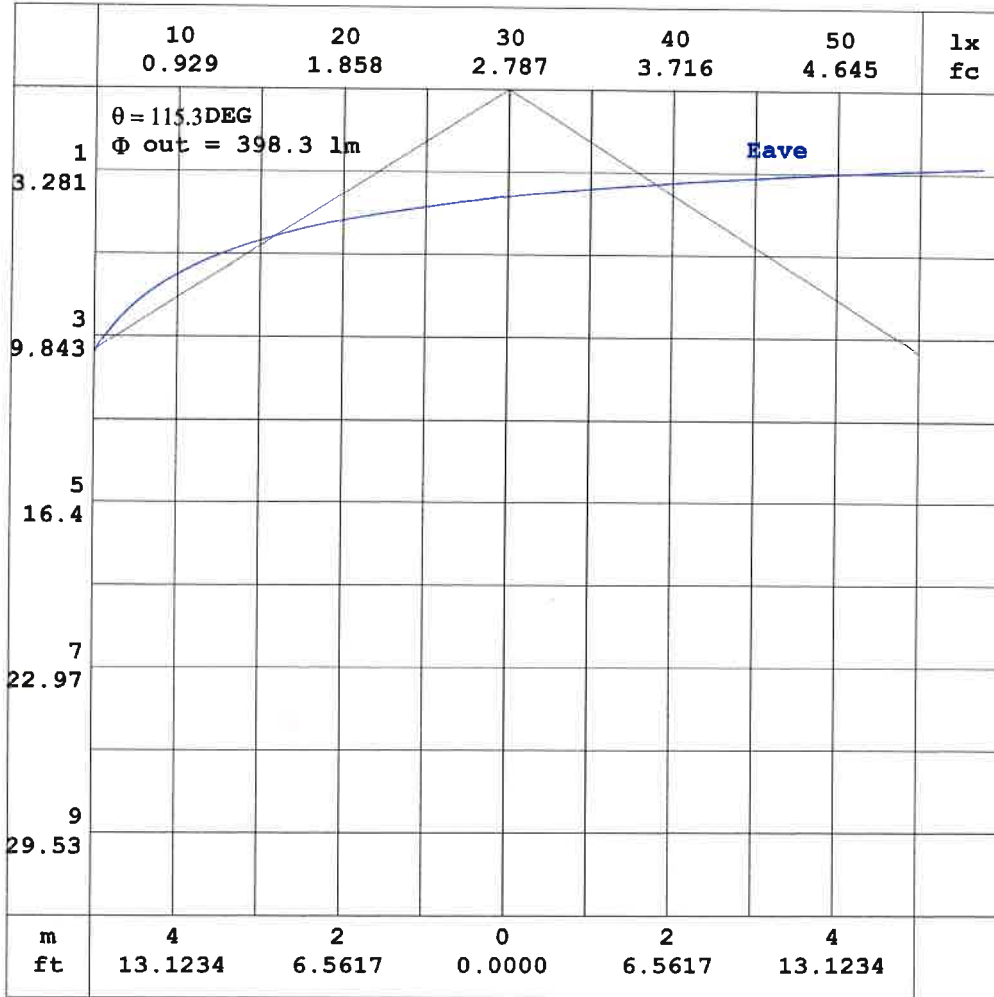
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**2.7 RGBW renk Fotometrik Deney Sonuçları (Photometric Test Results of the RGBW color)****AAI CURVES**

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

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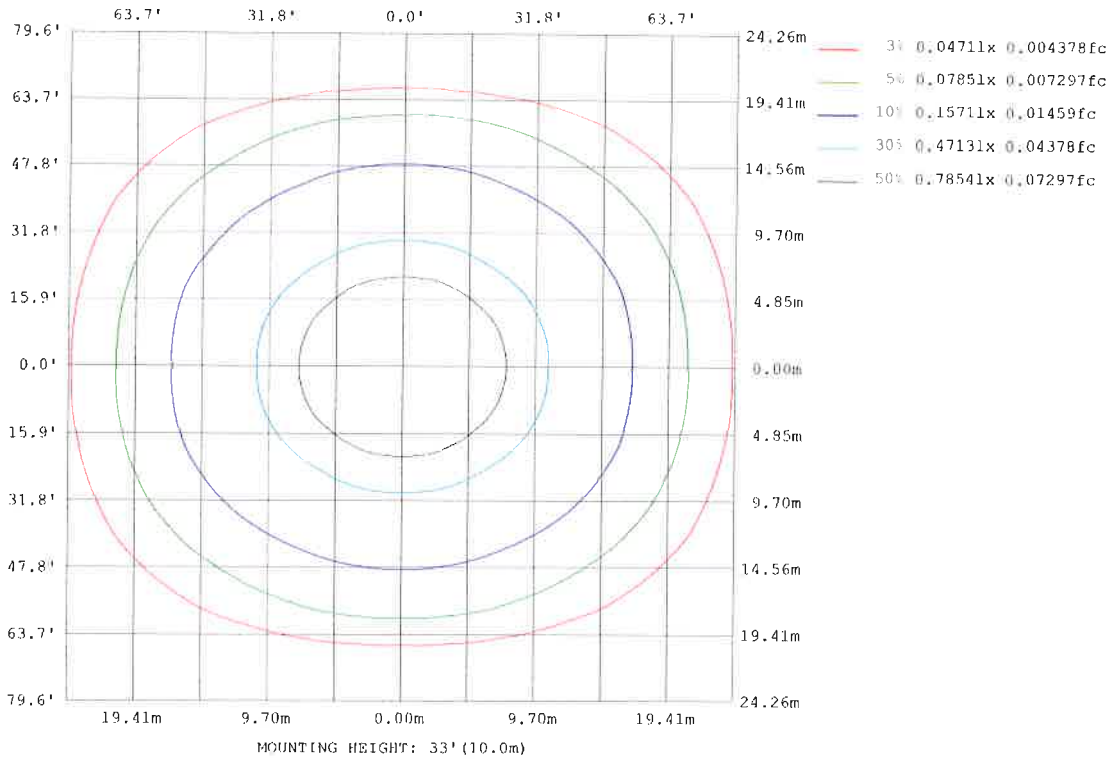
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2.7

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

**ISOLUX DIAGRAM**



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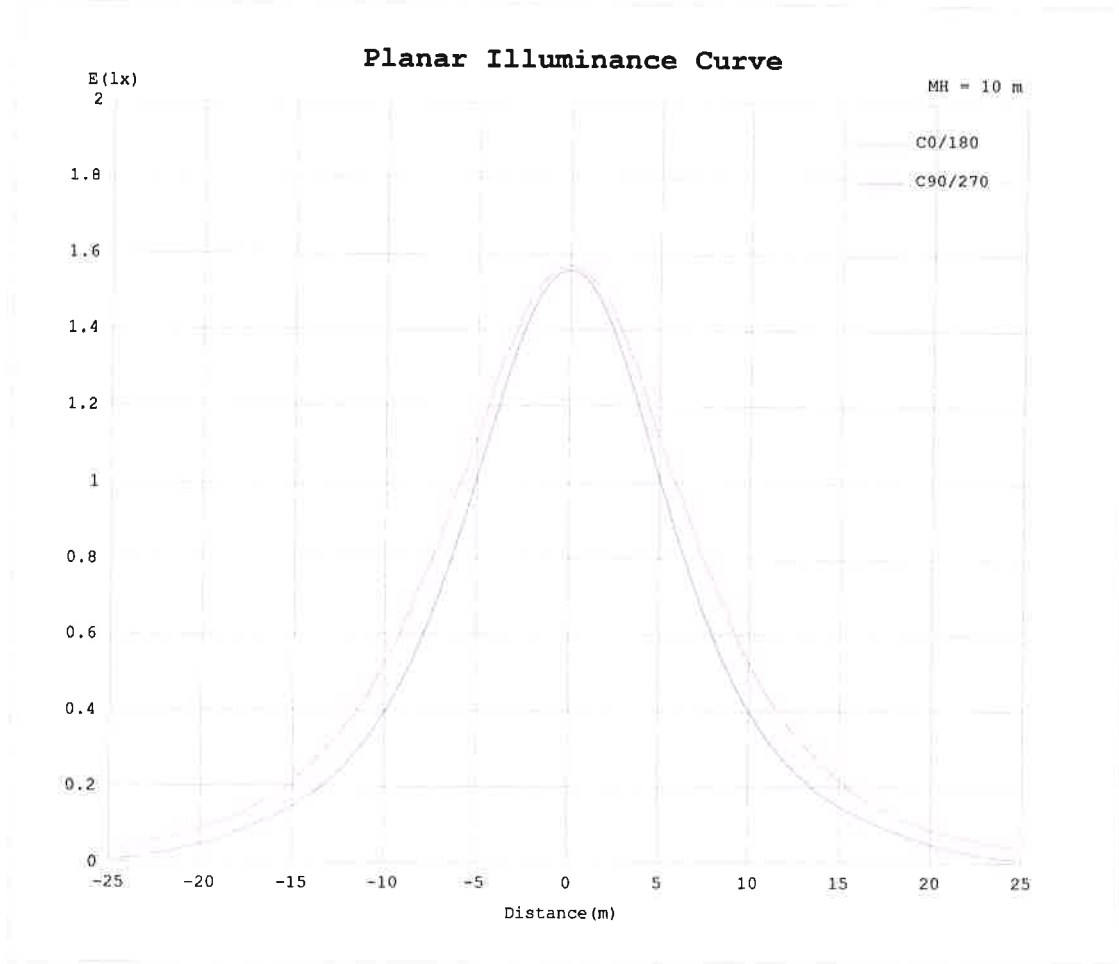
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2.7

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



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**ÖLÇÜM RAPORU**  
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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)	20,29
Ölçülen Gerilim (V) (Input Voltage)	48 VDC
Ölçülen Akım (A) (Input Current)	0,4227
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	0,2710
Chrom y	0,3145
Duv	0,0189
Chrom u'	0,1739
Chrom v'	0,4542
Peak	469 nm
Dominant	488 nm
CCT	9667 K
Nominal CCT	-
Ra(CRI)	77
R9	-26
S/P Ratio	3,3
Preburning time	1 hr
Test Configuration	4π



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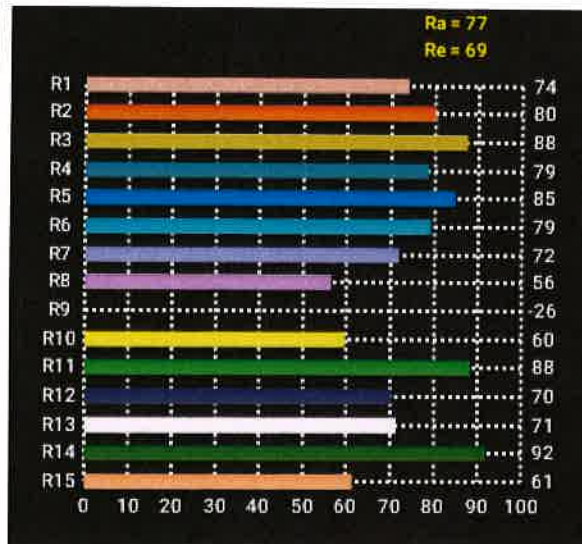
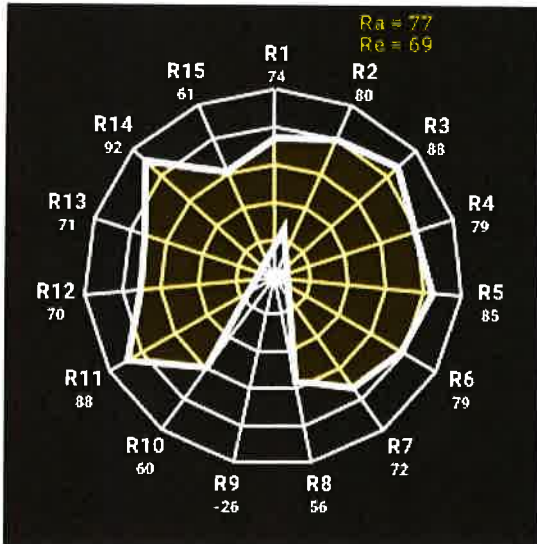
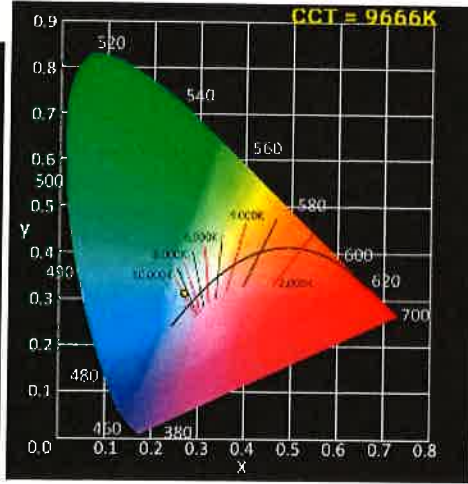
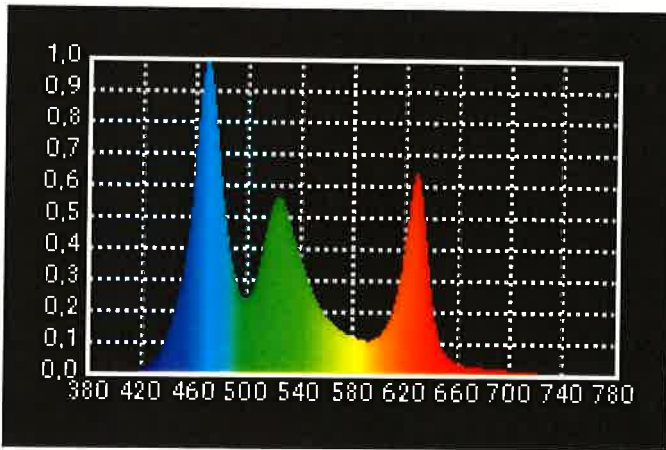
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2.8

**RGBW Renk Spektrokolorimetrik Deney Sonuçları** (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)

<b>Ölçülen Güç (W)</b> (Input Power)	7,25
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	48 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,1511
<b>Güç Faktörü (PF)</b> (Power Factor)	-
<b>Ölçülen Frekans (Hz)</b> (Input Frequency)	-
<b>Ortam Sıcaklığı / Bağıl Nem</b> (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
<b>Stabilizasyon Süresi</b> (Stabilization Time)	60 dk ±5dk

**Fotometrik Ölçüm Sonuçları**

(Photometric Measurement Results)

<b>Toplam Işık Akısı</b> (Total Luminous Flux) (lm)	248,94
<b>Maksimum Işık Şiddeti</b> (Max. Light Intensity) (cd)	77,07
<b>Armatür Etkinliği</b> (Luminaire Efficacy) (lm/W)	34,34



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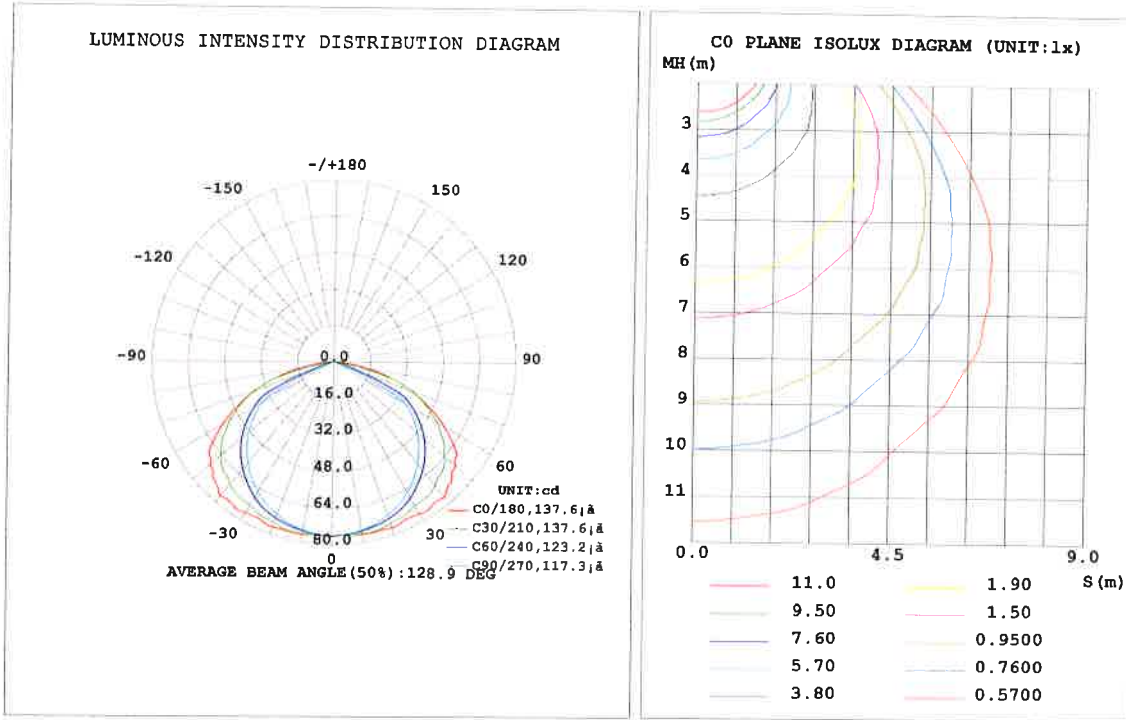
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2.9

**Yeşil renk Fotometrik Deneş Sonuřları (Photometric Test Results of the Green color)**



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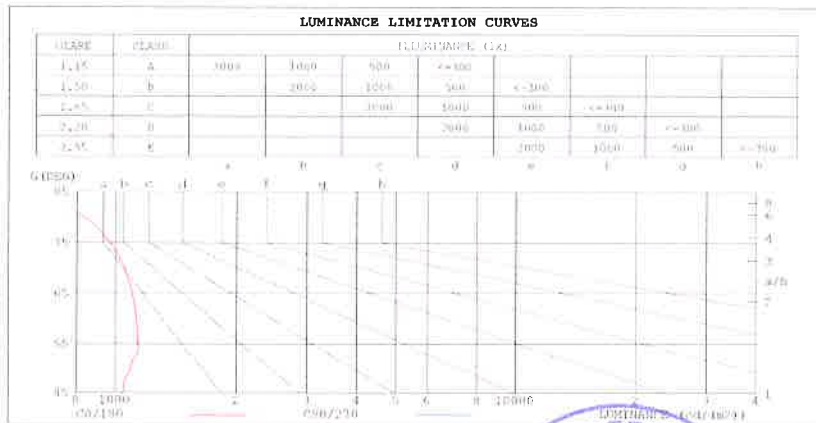
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**2.9 Yeşil renk Fotometrik Deney Sonuçları (Photometric Test Results of the Green color)**

**ZONAL FLUX DIAGRAM  
AND LUMINANCE LIMITATION CURVES**

ZONAL FLUX DIAGRAM:

Y	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	Ylum, lamp
5	75.90	75.97	75.82	75.97	75.90	75.97	75.82	75.97	0- 5	1.820	1.820	0.73, 0.73
10	76.50	75.52	74.81	75.52	76.50	75.52	74.81	75.52	5- 10	5.421	7.241	2.91, 2.91
15	76.51	75.14	73.31	75.14	76.51	75.14	73.31	75.14	10- 15	8.943	16.18	6.3, 6.3
20	76.91	74.21	71.29	74.21	76.91	74.21	71.29	74.21	15- 20	12.20	28.47	11.4, 11.4
25	75.95	72.43	68.77	72.43	75.95	72.43	68.77	72.43	20- 25	15.37	43.99	17.6, 17.6
30	76.34	70.41	65.73	70.41	76.34	70.41	65.73	70.41	25- 30	18.11	61.99	24.9, 24.9
35	76.32	67.84	62.15	67.84	76.32	67.84	62.15	67.84	30- 35	20.56	82.51	33.1, 33.1
40	76.63	65.21	58.04	65.21	76.63	65.21	58.04	65.21	35- 40	22.31	105.0	42.1, 42.1
45	73.56	61.65	53.38	61.65	73.56	61.65	53.38	61.65	40- 45	23.90	128.9	51.4, 51.4
50	70.27	57.45	48.23	57.45	70.27	57.45	48.23	57.45	45- 50	24.51	153.4	61.6, 61.6
55	65.42	52.67	42.56	52.67	65.42	52.67	42.56	52.67	50- 55	24.33	177.8	71.4, 71.4
60	56.41	46.21	36.14	46.21	56.41	46.21	36.14	46.21	55- 60	23.17	202.0	80.7, 80.7
65	46.54	39.06	16.89	39.06	46.54	39.06	16.89	39.06	60- 65	20.18	221.1	95.9, 95.9
70	35.98	25.40	1.798	25.40	35.98	25.40	1.798	25.40	65- 70	14.40	235.5	94.6, 94.6
75	25.10	4.277	0.2852	4.277	25.10	4.277	0.2852	4.277	70- 75	0.125	243.6	97.8, 97.8
80	14.52	0.3626	0.3098	0.3626	14.52	0.3626	0.3098	0.3626	75- 80	3.609	247.4	99.3, 99.3
85	5.618	0.3014	0.1170	0.3014	5.618	0.3014	0.1170	0.3014	80- 85	1.324	248.7	99.9, 99.9
90	0.2017	0	0	0	0.2017	0	0	0	85- 90	0.2292	248.0	100, 100
95	0	0	0	0	0	0	0	0	90- 95	0.0000	248.0	100, 100
100	0	0	0	0	0	0	0	0	95-100	0	248.0	100, 100
105	0	0	0	0	0	0	0	0	100-105	0.0001	248.0	100, 100
110	0	0	0	0	0	0	0	0	105-110	0.0000	248.0	100, 100
115	0	0	0	0	0	0	0	0	110-115	0	248.0	100, 100
120	0	0	0	0	0	0	0	0	115-120	0	248.0	100, 100
125	0	0	0	0	0	0	0	0	120-125	0	248.0	100, 100
130	0	0	0	0	0	0	0	0	125-130	0	248.0	100, 100
135	0	0	0	0	0	0	0	0	130-135	0	248.0	100, 100
140	0	0	0	0	0	0	0	0	135-140	0	248.0	100, 100
145	0	0	0	0	0	0	0	0	140-145	0	248.0	100, 100
150	0	0	0	0	0	0	0	0	145-150	0	248.0	100, 100
155	0	0	0	0	0	0	0	0	150-155	0	248.0	100, 100
160	0	0	0	0	0	0	0	0	155-160	0	248.0	100, 100
165	0	0	0	0	0	0	0	0	160-165	0	248.0	100, 100
170	0	0	0	0	0	0	0	0	165-170	0	248.0	100, 100
175	0	0	0	0	0	0	0	0	170-175	0	248.0	100, 100
180	0	0	0	0	0	0	0	0	175-180	0	248.0	100, 100



LUMINANCE, cd/m <sup>2</sup>		
G (LEG)	C0/180	C90/270
85	645	13
90	836	10
95	970	11
100	1052	53
105	1101	400
110	1125	723
115	1140	742
120	1093	750
125	1040	755

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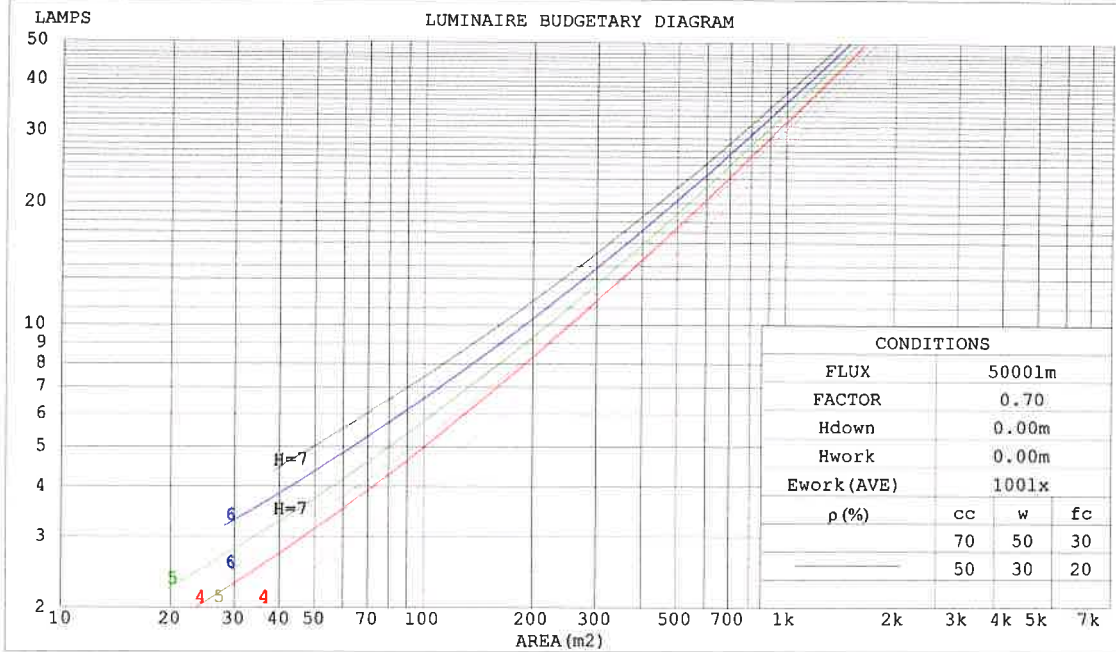
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2.9

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

**CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM**

ρcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
ρw	0															
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio															
	Coefficients of Utilization(CU)															
0.0	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	.00
1.0	1.05	1.01	.97	1.02	.99	.95	.98	.95	.92	.94	.92	.89	.91	.89	.87	.85
2.0	.91	.84	.79	.89	.83	.78	.86	.80	.76	.82	.78	.74	.79	.76	.73	.70
3.0	.80	.72	.65	.78	.71	.64	.75	.69	.63	.72	.67	.62	.70	.65	.61	.59
4.0	.70	.61	.55	.69	.61	.54	.66	.59	.53	.64	.58	.53	.62	.56	.52	.50
5.0	.62	.53	.47	.61	.53	.46	.59	.52	.46	.57	.50	.45	.55	.49	.45	.43
6.0	.56	.47	.40	.55	.46	.40	.53	.45	.40	.51	.45	.39	.50	.44	.39	.37
7.0	.50	.41	.35	.50	.41	.35	.48	.40	.35	.47	.40	.35	.45	.39	.34	.32
8.0	.46	.37	.31	.45	.37	.31	.44	.36	.31	.42	.36	.31	.41	.35	.30	.29
9.0	.42	.33	.28	.41	.33	.28	.40	.33	.28	.39	.32	.27	.38	.32	.27	.25
10.0	.38	.30	.25	.38	.30	.25	.37	.30	.25	.36	.29	.25	.35	.29	.25	.23



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**Yeşil renk Fotometrik Deney Sonuçları (Photometric Test Results of the Green 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 <sub>w</sub>																0
p <sub>fc</sub>	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients (WEC)									
0.0																
1.0	.294	.167	.053	.287	.164	.052	.274	.157	.050	.262	.151	.049	.251	.145	.047	
2.0	.285	.156	.048	.279	.154	.047	.267	.149	.046	.257	.144	.045	.247	.140	.044	
3.0	.268	.143	.043	.263	.141	.042	.252	.137	.042	.243	.133	.041	.234	.129	.040	
4.0	.250	.130	.038	.245	.128	.038	.235	.125	.037	.227	.122	.037	.219	.119	.036	
5.0	.232	.118	.034	.228	.117	.034	.219	.114	.034	.212	.112	.033	.205	.109	.033	
6.0	.216	.108	.031	.212	.107	.031	.205	.105	.030	.198	.103	.030	.191	.101	.030	
7.0	.201	.099	.028	.198	.098	.028	.191	.097	.028	.185	.095	.028	.179	.093	.027	
8.0	.188	.092	.026	.185	.091	.026	.179	.089	.026	.174	.088	.025	.168	.086	.025	
9.0	.176	.085	.024	.173	.085	.024	.168	.083	.024	.163	.082	.023	.159	.081	.023	
10.0	.166	.079	.022	.163	.079	.022	.158	.078	.022	.154	.076	.022	.150	.075	.022	

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	
p <sub>w</sub>																0
p <sub>fc</sub>	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients (CCEC)									
0.0																
1.0	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
2.0	.179	.156	.136	.153	.134	.117	.105	.092	.081	.060	.053	.047	.019	.017	.015	
3.0	.171	.132	.099	.147	.114	.085	.101	.079	.060	.058	.046	.035	.019	.015	.011	
4.0	.164	.114	.075	.141	.099	.065	.097	.068	.045	.056	.040	.027	.018	.013	.009	
5.0	.157	.101	.058	.135	.087	.051	.093	.061	.036	.054	.036	.021	.017	.012	.007	
6.0	.150	.091	.047	.129	.078	.041	.089	.055	.029	.051	.032	.017	.017	.010	.006	
7.0	.143	.082	.039	.123	.071	.034	.085	.050	.024	.049	.029	.014	.016	.010	.005	
8.0	.136	.075	.033	.117	.065	.029	.081	.046	.020	.047	.027	.012	.015	.009	.004	
9.0	.130	.070	.028	.112	.060	.025	.077	.042	.018	.045	.025	.010	.015	.008	.003	
10.0	.124	.065	.025	.107	.056	.022	.074	.040	.015	.043	.023	.009	.014	.008	.003	

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2.9

**Yeşil renk Fotometrik Deney 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	14.2	15.7	14.5	15.9	16.1	11.9	13.4	12.1	13.6	13.8	
3H	16.0	17.4	16.3	17.7	17.9	12.0	13.4	12.3	13.6	13.8	
4H	16.7	18.0	17.0	18.3	18.5	11.8	13.2	12.2	13.4	13.7	
6H	17.2	18.4	17.5	18.7	19.0	11.7	13.0	12.1	13.3	13.5	
8H	17.3	18.5	17.6	18.8	19.1	11.7	12.9	12.0	13.2	13.5	
12H	17.4	18.5	17.7	18.8	19.1	11.6	12.8	12.0	13.1	13.4	
4H	2H	14.7	16.0	15.0	16.3	16.5	12.9	14.2	13.2	14.5	14.7
3H	16.7	17.9	17.1	18.2	18.5	13.0	14.2	13.4	14.5	14.8	
4H	17.5	18.6	17.9	18.9	19.3	12.9	14.0	13.3	14.3	14.6	
6H	18.1	19.1	18.5	19.4	19.8	12.8	13.8	13.2	14.1	14.5	
8H	18.3	19.2	18.7	19.5	19.9	12.8	13.7	13.2	14.0	14.4	
12H	18.4	19.2	18.8	19.6	20.0	12.7	13.5	13.2	13.9	14.3	
8H	4H	17.5	18.3	17.9	18.7	19.1	13.2	14.1	13.6	14.4	14.8
6H	18.1	18.8	18.5	19.2	19.6	13.1	13.8	13.6	14.2	14.7	
8H	18.3	18.9	18.7	19.3	19.8	13.1	13.7	13.5	14.1	14.6	
12H	18.4	18.9	18.9	19.4	19.9	13.0	13.6	13.5	14.0	14.5	
12H	4H	17.4	18.2	17.8	18.6	19.0	13.2	14.0	13.6	14.4	14.8
6H	18.0	18.7	18.5	19.1	19.6	13.1	13.8	13.6	14.2	14.6	
8H	18.2	18.8	18.7	19.2	19.7	13.1	13.6	13.6	14.1	14.5	
Variations with the observer position at spacings:											
S = 1.0H	+ 0.1 / - 0.2					+ 0.5 / - 0.7					
1.5H	+ 0.2 / - 0.2					+ 0.8 / - 0.9					
2.0H	+ 0.3 / - 0.6					+ 0.6 / - 1.4					

CIE Pub.117 Corrected 248.9 lm Total Lamp Luminous Flux. (8log(F/F0) = -4.8)



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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	56	44	37	55	43	36	54	43	36	30
0.80	66	54	47	65	54	47	63	53	46	39
1.00	75	64	57	74	63	56	72	65	56	48
1.25	83	72	65	81	71	65	79	70	64	56
1.50	88	78	71	86	77	71	83	75	69	62
2.00	95	87	80	93	86	80	90	83	78	70
2.50	99	92	86	97	90	85	93	88	83	75
3.00	103	96	91	101	94	90	97	92	87	79
4.00	107	101	97	104	100	95	100	96	93	84
5.00	109	105	101	107	103	99	102	99	96	87
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004										
Suspended										
SHRNOM = 1.25										

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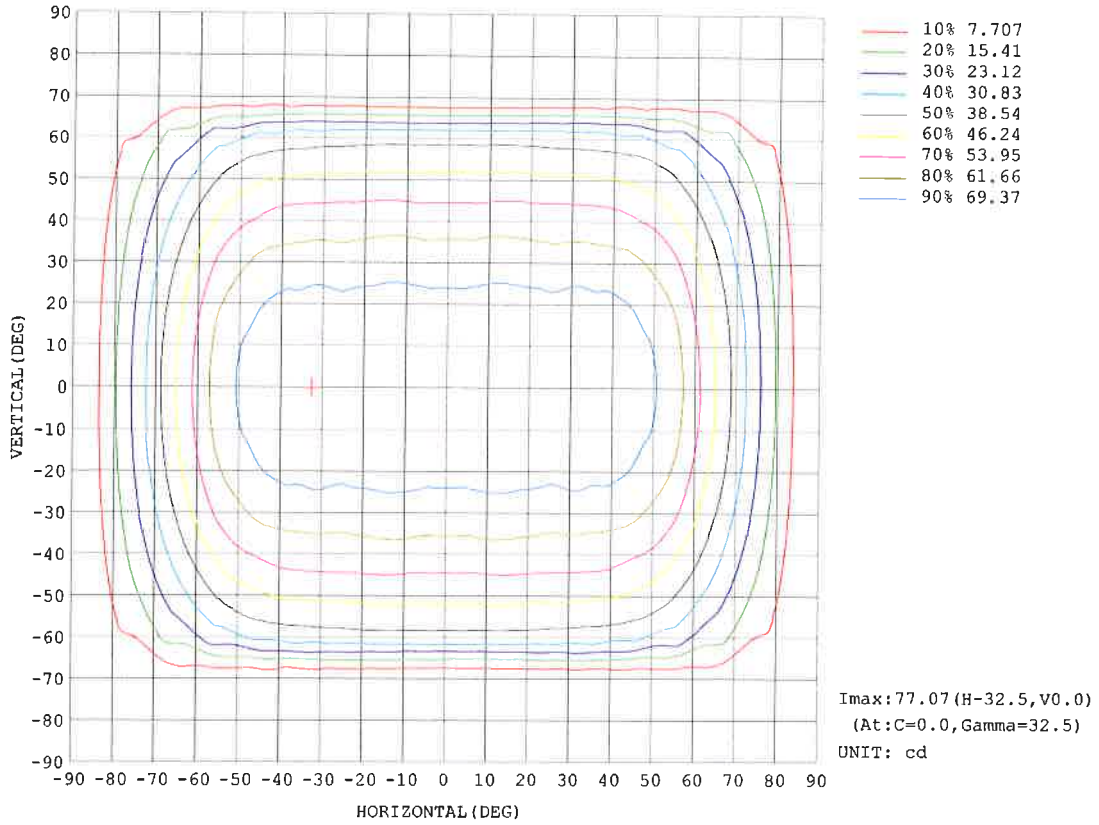
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2.9

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

**ISOCANDELA DIAGRAM**



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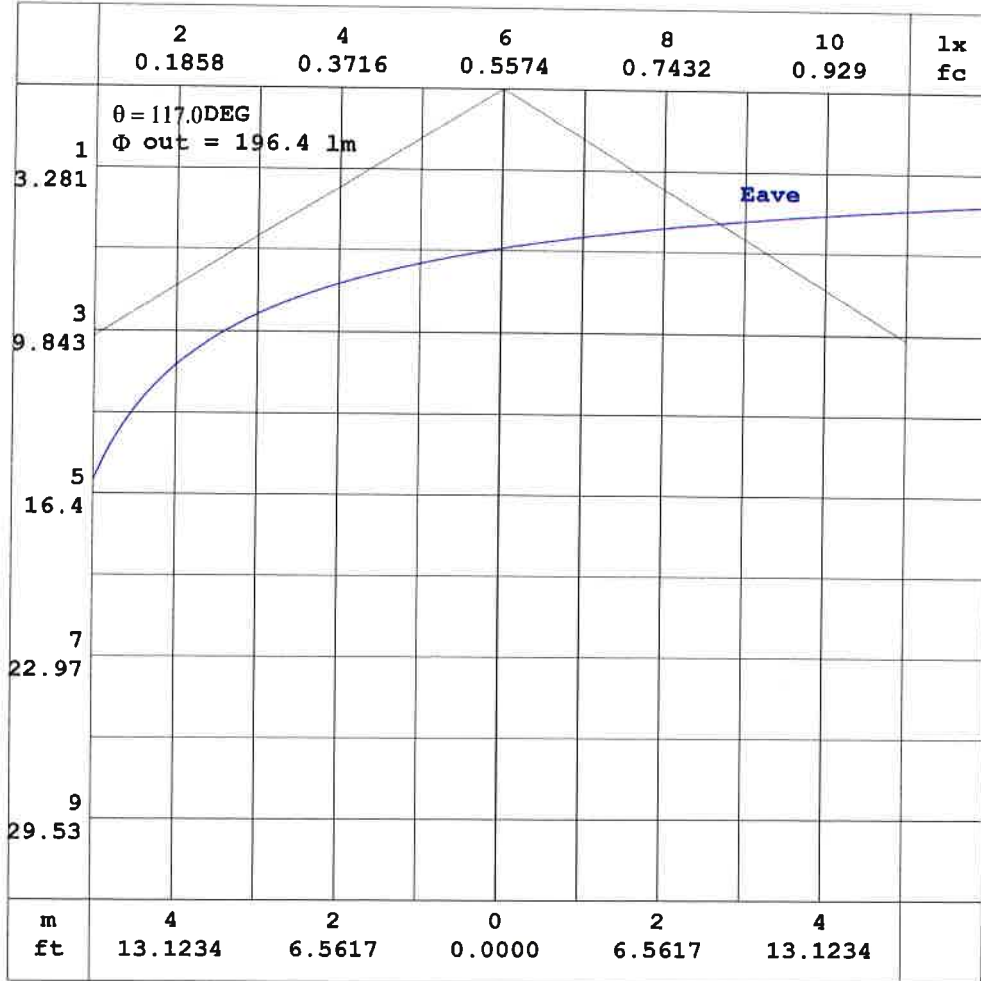
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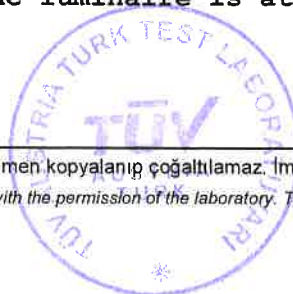
2.9

**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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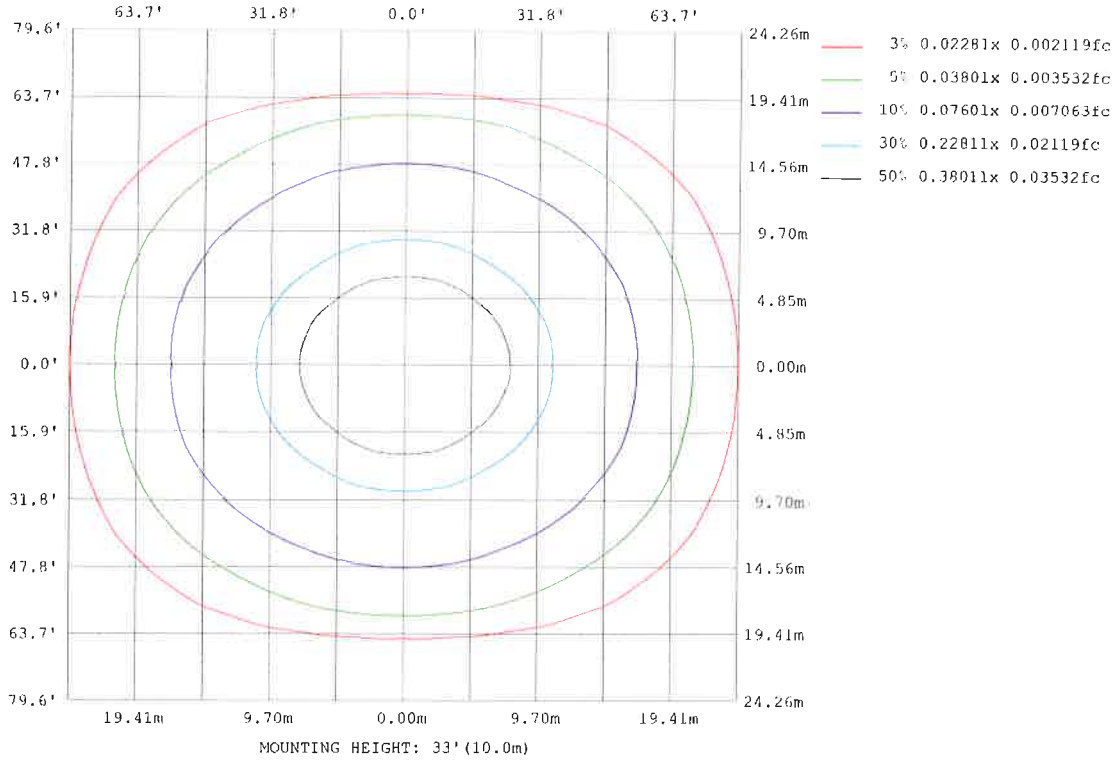
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2.9

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

**ISOLUX DIAGRAM**



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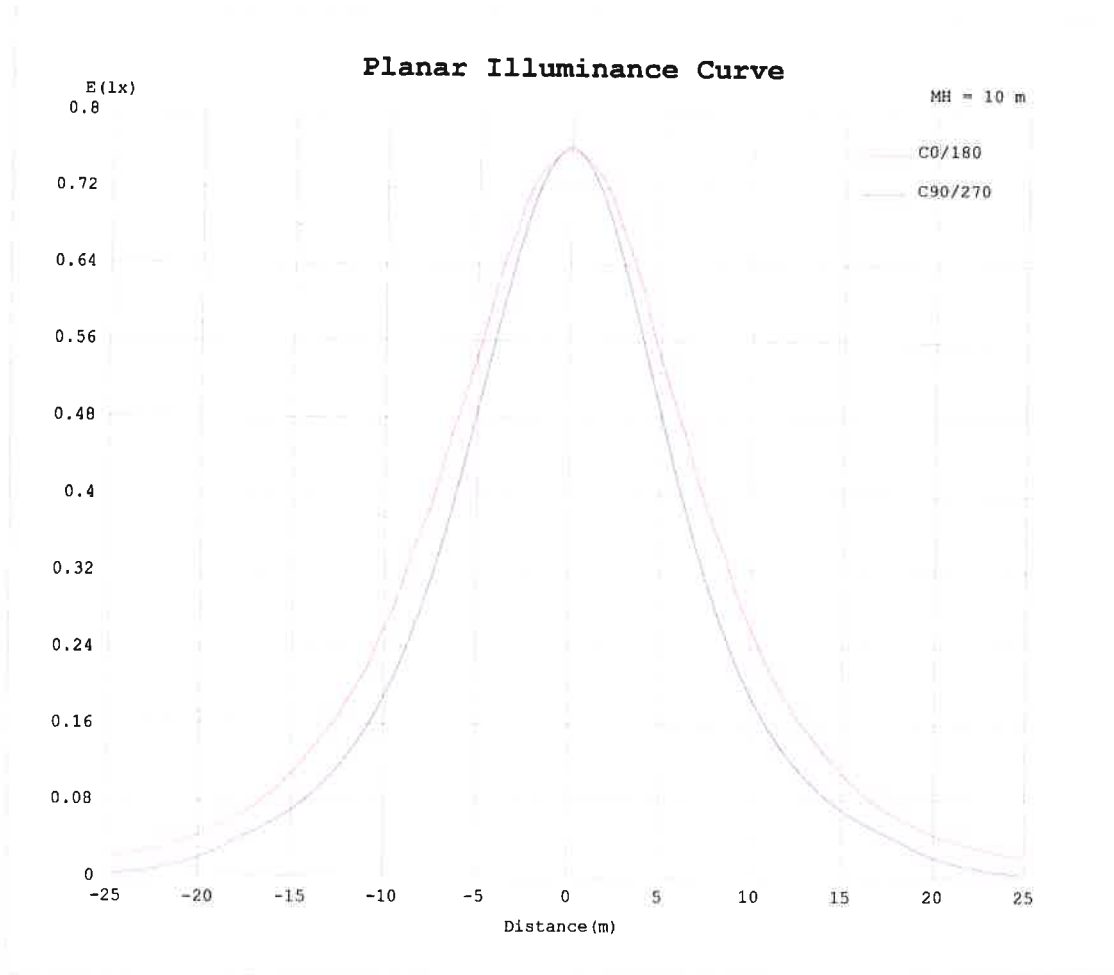
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2.9

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



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

(Electrical Measurements)

<b>Ölçülen Güç (W)</b> (Input Power)	7,25
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	48 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,1511
<b>Güç Faktörü (PF)</b> (Power Factor)	-
<b>Ölçülen Frekans (Hz)</b> (Input Frequency)	-
<b>Ortam Sıcaklığı / Bağıl Nem</b> (Ambient Temperature / Relative Humidity)	25,1 °C 48% Rh
<b>Stabilizasyon Süresi</b> (Stabilization Time)	60 dk ±5dk

**Spektrokolorimetrik Ölçüm Sonuçları**

(Spectrocolorimetric Measurement Results)

<b>Chrom x</b>	0,1925
<b>Chrom y</b>	0,7191
<b>Duv</b>	0,1505
<b>Chrom u'</b>	0,0685
<b>Chrom v'</b>	0,5756
<b>Peak</b>	523 nm
<b>Dominant</b>	531 nm
<b>CCT</b>	7485 K
<b>Nominal CCT</b>	-
<b>Ra(CRI)</b>	0
<b>R9</b>	0
<b>S/P Ratio</b>	2,6
<b>Preburning time</b>	1 hr
<b>Test Configuration</b>	4π



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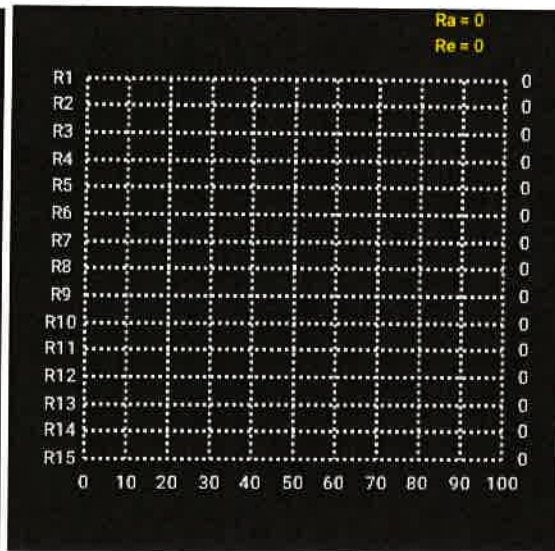
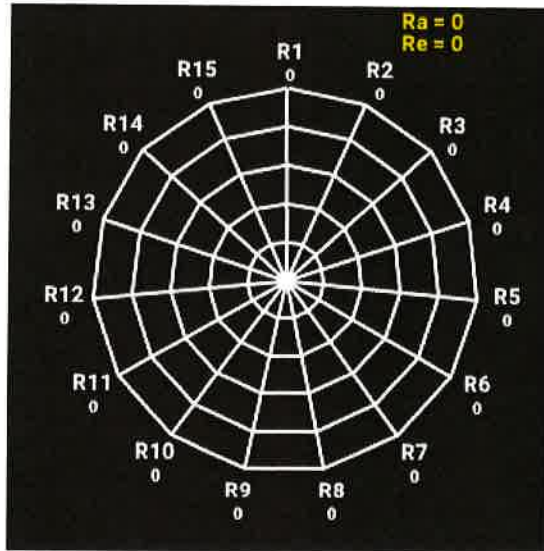
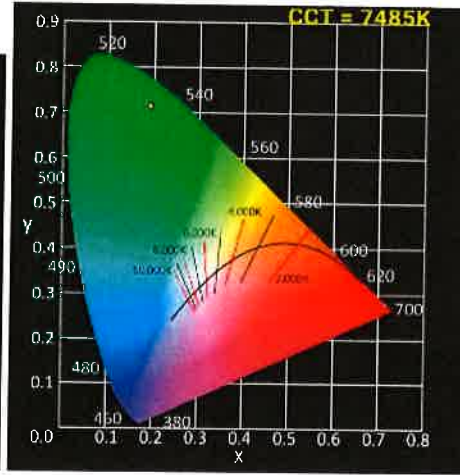
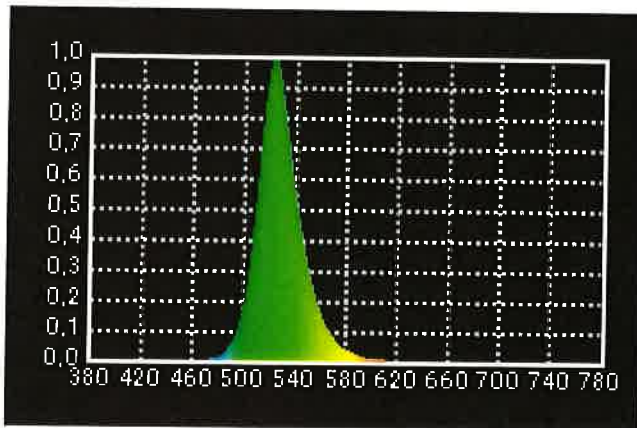
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2.10

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



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**3.1 DGC'nin Fotoğrafları (Photos of EUT)**

