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

TL-806'

19-TST-0095-  
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**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-0095

**Numunenin Adı ve Tarifi**  
Name and identity of test item

: Leoline® S12 915mm DMX SC CW Linear Asymmetric Beam 35+15°

**Numunenin kabul tarihi**  
The date of receipt of test item

: 31.07.2019

**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

: 03.08.2019

**Raporun Sayfa Sayısı**  
Number of Pages of the Report

:18

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

International Accreditation Service, Inc. (IAS) deney raporlarının tanınırlığı konusunda Avrupa Akreditasyon Birliği(EA) ile Çok Taraflı Anlaşma ve Uluslararası Laboratuvar Akreditasyon Birliği(ILAC) ile karşılıklı tanıma anlaşması imzalamıştır.  
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Deney ve /veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri ( olması halinde ) ve deney metotları bu sertifikanın tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir.  
The test and/or measurement results, the uncertainties ( if applicable ) with confidence probability and test methods are given on the following pages which are part of this report.

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



**Deney Sorumlusu**  
Person in charge of test

Gürhan CANSIZ

**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**

: Leoline® S12 915mm DMX SC CW  
Linear Asymmetric Beam 35+15°

**Seri Numarası / Serial Number**

: Test Numunesi  
Test Sample

**Beyan Gücü / Rated Power**

: 46 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 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	05.06.2020	<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	28.05.2020	<input checked="" type="checkbox"/>

**1.3 Komponent listesi (Component list)**

Komponent (Component)	Üretici (Manufacturer)	Model (Model)	Teknik Bilgi (Technical Data)	Standart no. (Standart No.)
LED	Cree Inc	XTEAWT 6500K White Led	Binned at 85 °C • Thermal resistance: 5 °C/W • Wide viewing angle: 115°-140° Unlimited floor life at ≤ 30 °C/85% Maximum drive current: White 1.5 A, Royal Blue 1.5 A Maximum Vf for High Efficacy XT-E White: 2.85 V	UL (E349212) RoHS REACH
PCB	PCB	C13088_R1.1	0.8mm FR4 4 Layers 35+35+35+35umCu/ BlackSolderMask/WhiteSilkScreen	IPC A 600 J Class II Revizyon J standardı (COC) IPC 6012 Class II UL FQC
LENS	LEDIL	CA11052_TINA2-O-35+15	Dimensions Ø 16.1 mm Height 9.7 mm	ANSI/ESD S20.20:2014 EN 61340-5-1:2007

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

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**2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)**

**Elektriksel Ölçümler**

(Electrical Measurements)

<b>Ölçülen Güç (W)</b> (Input Power)	44,17 W
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	46,84 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,943 A
<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)	2731
<b>Maksimum Işık Şiddeti</b> (Max. Light Intensity) (cd)	9101
<b>Armatür Etkinliği</b> (Luminaire Efficacy) (lm/W)	61,83



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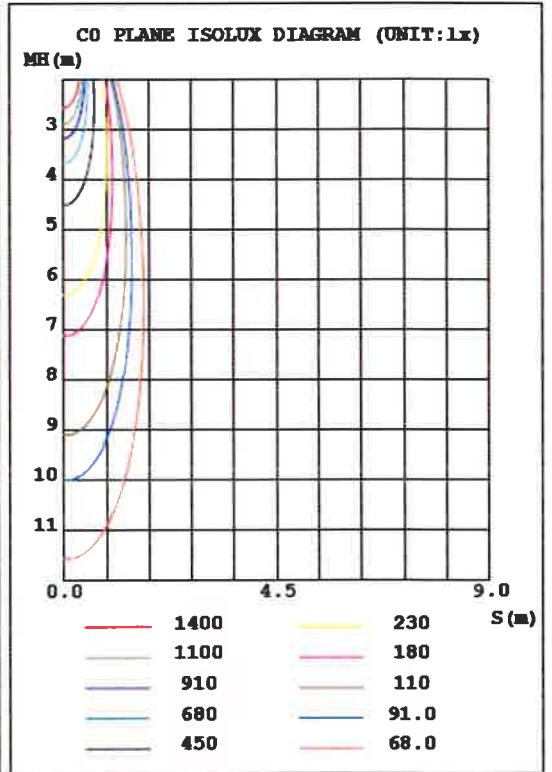
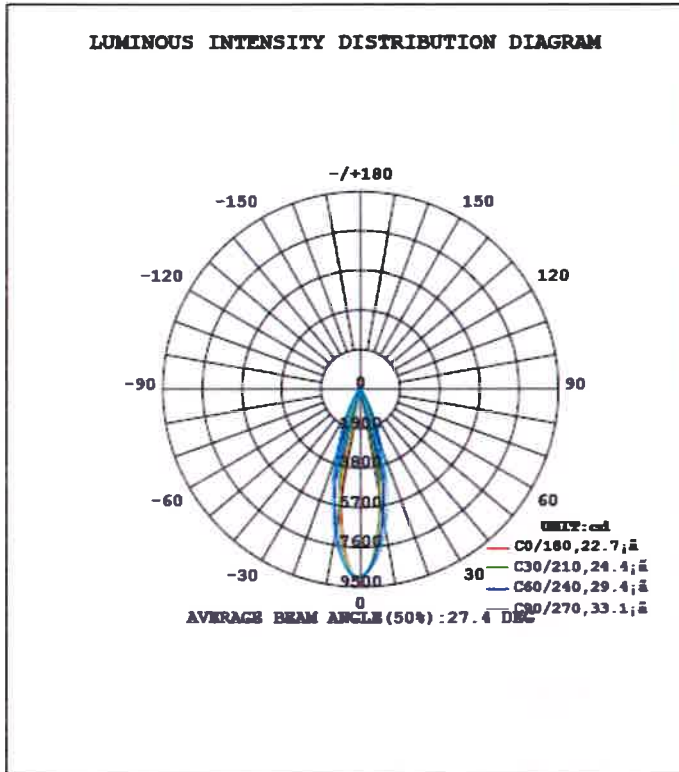
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**2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)**



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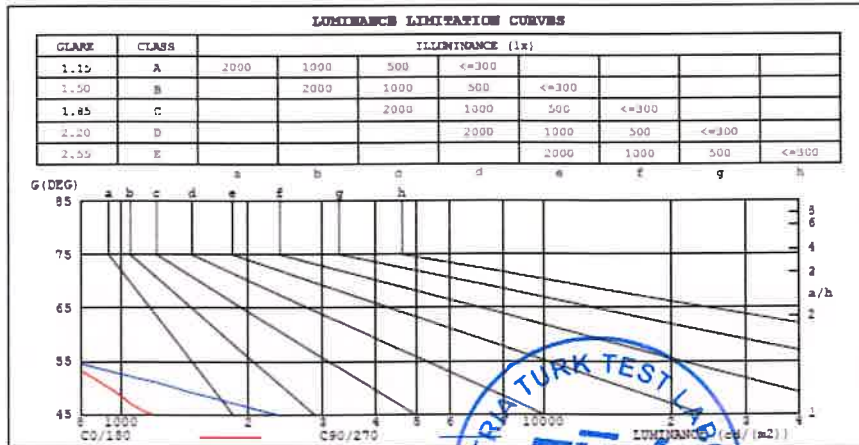
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**2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW )**

**ZONAL FLUX DIAGRAM  
AND LUMINANCE LIMITATION CURVES**

**ZONAL FLUX DIAGRAM:**

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ semi	Φ total	llum.lamp
5	8074	8269	8504	7948	7788	7894	8201	8207	0- 5	204.3	204.3	7.48,7.48
10	6399	6327	7108	8023	8183	5719	4820	6226	5- 10	502.2	707.5	25.9,25.9
15	2982	4048	8224	3672	2826	2857	4961	2979	10- 15	880.0	1288	47.1,47.1
20	1528	2299	3267	2042	1402	1992	2186	2262	15- 20	492.7	1780	65.2,65.2
25	786.0	1248	1869	1081	691.5	1025	1807	1188	20- 25	381.2	1122	78.1,78.1
30	382.7	687.8	1079	566.2	359.4	530.2	962.3	609.4	25- 30	225.7	2358	86.2,86.2
35	212.2	348.9	878.2	301.7	194.2	278.2	502.4	319.2	30- 35	138.7	2496	91.4,91.4
40	126.0	194.6	308.9	188.1	118.0	184.2	264.5	177.7	35- 40	85.05	2382	94.5,94.5
45	82.96	112.1	169.1	99.71	76.89	91.72	142.2	102.2	40- 45	52.35	2625	96.5,96.5
50	60.01	69.98	86.82	61.26	46.38	57.91	76.17	64.10	45- 50	34.80	2469	97.7,97.7
55	42.78	44.47	44.09	40.22	40.89	38.11	40.45	40.80	50- 55	22.89	2697	98.6,98.6
60	30.48	28.81	24.29	26.56	29.22	25.20	22.27	28.68	55- 60	15.51	2708	99.2,99.2
65	21.48	17.59	13.79	16.18	20.69	15.54	12.42	16.52	60- 65	10.49	2718	99.3,99.3
70	13.60	9.767	7.684	9.046	12.00	8.784	7.529	9.151	65- 70	6.809	2725	99.3,99.3
75	6.788	4.895	3.910	4.862	6.945	4.425	3.784	4.567	70- 75	2.724	2729	99.9,99.9
80	2.888	1.711	1.471	1.684	2.788	1.894	1.271	1.572	75- 80	1.720	2730	100,100
85	0.4201	0.2129	0.2005	0.2479	0.5452	0.2058	0.1461	0.1625	80- 85	0.4878	2731	100,100
90	0	0	0	0	0	0	0	0	85- 90	0.0228	2731	100,100
95	0	0	0	0	0	0	0	0	90- 95	0	2731	100,100
100	0	0	0	0	0	0	0	0	95-100	0	2731	100,100
105	0	0	0	0	0	0	0	0	100-105	0	2731	100,100
110	0	0	0	0	0	0	0	0	105-110	0	2731	100,100
115	0	0	0	0	0	0	0	0	110-115	0	2731	100,100
120	0	0	0	0	0	0	0	0	115-120	0	2731	100,100
125	0	0	0	0	0	0	0	0	120-125	0	2731	100,100
130	0	0	0	0	0	0	0	0	125-130	0	2731	100,100
135	0	0	0	0	0	0	0	0	130-135	0	2731	100,100
140	0	0	0	0	0	0	0	0	135-140	0	2731	100,100
145	0	0	0	0	0	0	0	0	140-145	0	2731	100,100
150	0	0	0.0476	0	0	0	0	0	145-150	0.0002	2731	100,100
155	0	0.0928	0.2484	0.0887	0	0.0001	0.0274	0	150-155	0.0069	2731	100,100
160	0.1873	0.2871	0.4792	0.2586	0.0328	0.0582	0.1052	0.0266	155-160	0.0229	2731	100,100
165	0.2881	0.4631	0.8927	0.4164	0.1356	0.1446	0.1611	0.1008	160-165	0.0279	2731	100,100
170	0.3212	0.5827	0.6277	0.5338	0.2221	0.2278	0.1819	0.1845	165-170	0.0404	2731	100,100
175	0.5641	0.6124	0.8688	0.5481	0.2938	0.3202	0.2327	0.2000	170-175	0.0281	2731	100,100
180	0.5206	0.5782	0.3885	0.4242	0.5297	0.5747	0.5079	0.4526	175-180	0.0108	2731	100,100



**LUMINANCE cd/(m2)**

G (DEG)	C0/180	C90/270
85	49	23
80	147	95
75	261	151
70	398	225
65	508	326
60	609	488
55	746	769
50	924	1246
45	1172	2324

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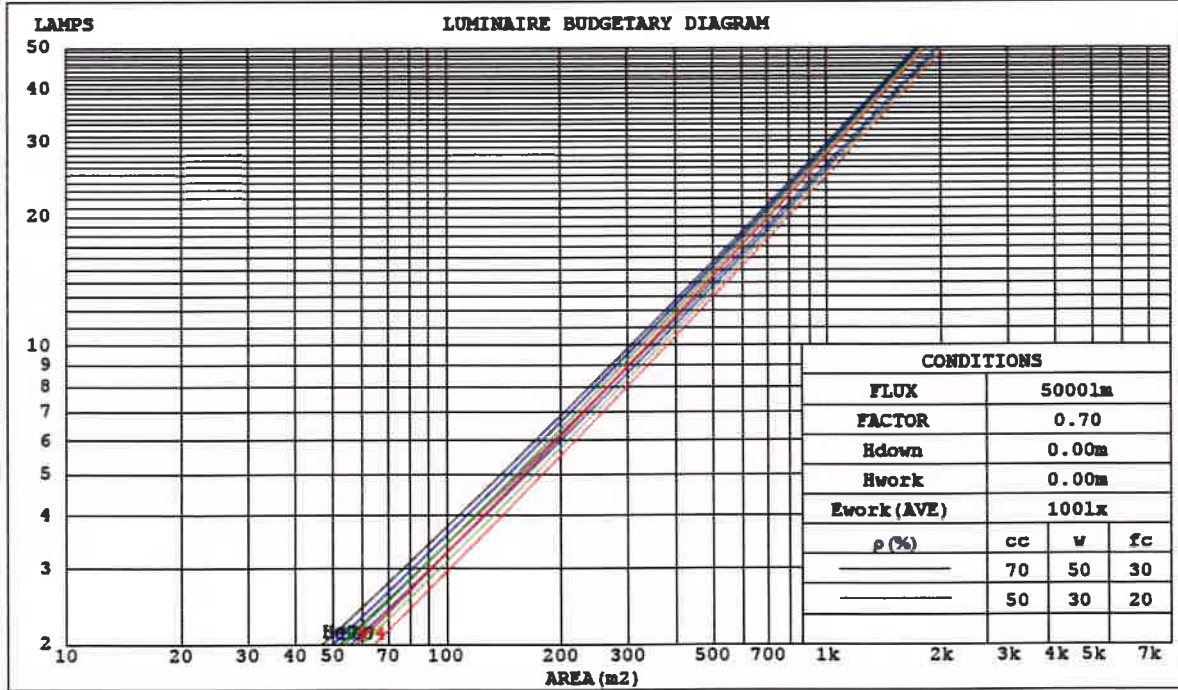
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2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW )

**CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM**

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	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	1.12	1.10	1.08	1.10	1.08	1.06	1.06	1.04	1.03	1.02	1.01	.00	.99	.98	.97	.95
2.0	1.06	1.02	.99	1.04	1.01	.98	1.01	.98	.96	.98	.96	.94	.96	.94	.92	.91
3.0	1.00	.96	.93	.99	.95	.92	.96	.93	.90	.94	.91	.89	.92	.90	.88	.86
4.0	.95	.91	.87	.94	.90	.87	.92	.88	.86	.90	.87	.85	.88	.86	.84	.82
5.0	.91	.86	.82	.90	.85	.82	.88	.84	.81	.87	.83	.81	.85	.82	.80	.79
6.0	.87	.82	.78	.86	.82	.78	.85	.81	.78	.83	.80	.77	.82	.79	.77	.75
7.0	.83	.78	.75	.83	.78	.75	.81	.77	.74	.80	.77	.74	.79	.76	.74	.72
8.0	.80	.75	.72	.79	.75	.72	.78	.74	.71	.78	.74	.71	.77	.73	.71	.70
9.0	.77	.72	.69	.77	.72	.69	.76	.72	.69	.75	.71	.68	.74	.71	.68	.67
10.0	.74	.70	.66	.74	.69	.66	.73	.69	.66	.72	.69	.66	.72	.68	.66	.65





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**2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW )**

**WEC AND CCEC**

$\rho_{cc}$	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						Wall Exitance Coefficients (WEC)									
0.0																
1.0	.155	.088	.028	.148	.084	.027	.135	.078	.025	.124	.071	.023	.113	.066	.021	
2.0	.145	.080	.024	.140	.077	.024	.130	.072	.022	.120	.067	.021	.111	.063	.020	
3.0	.137	.073	.022	.132	.071	.021	.123	.067	.020	.115	.063	.019	.108	.060	.018	
4.0	.129	.067	.020	.125	.065	.019	.118	.062	.019	.111	.059	.018	.104	.057	.017	
5.0	.122	.062	.018	.119	.061	.018	.112	.058	.017	.106	.056	.017	.101	.054	.016	
6.0	.116	.058	.017	.113	.057	.016	.107	.055	.016	.102	.053	.016	.097	.051	.015	
7.0	.110	.054	.015	.108	.054	.015	.103	.052	.015	.098	.050	.015	.094	.049	.014	
8.0	.105	.051	.014	.103	.051	.014	.099	.049	.014	.094	.048	.014	.091	.047	.014	
9.0	.100	.049	.014	.098	.048	.013	.095	.047	.013	.091	.046	.013	.088	.045	.013	
10.0	.096	.046	.013	.094	.046	.013	.091	.045	.013	.088	.044	.012	.085	.043	.012	

$\rho_{cc}$	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						Ceiling Cavity Exitance Coefficients (CCEC)									
0.0	.191	.191	.191	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.170	.158	.147	.145	.135	.126	.099	.093	.087	.057	.054	.051	.018	.017	.016	
2.0	.153	.133	.116	.131	.114	.100	.090	.079	.070	.052	.046	.041	.017	.015	.013	
3.0	.139	.113	.093	.119	.098	.081	.082	.068	.057	.047	.040	.033	.015	.013	.011	
4.0	.127	.098	.076	.109	.085	.066	.075	.059	.047	.043	.035	.028	.014	.011	.009	
5.0	.118	.086	.063	.101	.075	.055	.070	.052	.039	.040	.031	.023	.013	.010	.008	
6.0	.109	.077	.053	.094	.066	.046	.065	.046	.033	.038	.027	.020	.012	.009	.006	
7.0	.102	.069	.045	.088	.060	.040	.061	.042	.028	.035	.025	.017	.011	.008	.006	
8.0	.096	.062	.039	.082	.054	.034	.057	.038	.024	.033	.022	.014	.011	.007	.005	
9.0	.090	.057	.034	.078	.049	.030	.054	.035	.021	.031	.020	.013	.010	.007	.004	
10.0	.086	.052	.030	.074	.045	.026	.051	.032	.018	.030	.019	.011	.010	.006	.004	



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**2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)**

**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	5.7	6.5	5.9	6.6	6.8	9.3	10.1	9.5	10.2	10.4
3H	6.0	6.7	6.3	6.9	7.1	9.2	9.9	9.4	10.1	10.3
4H	6.0	6.7	6.3	6.9	7.2	9.1	9.8	9.4	10.0	10.2
6H	6.0	6.7	6.3	6.9	7.1	9.1	9.7	9.3	9.9	10.2
8H	6.0	6.6	6.3	6.8	7.1	9.0	9.6	9.3	9.9	10.1
12H	5.9	6.5	6.2	6.8	7.1	9.0	9.6	9.3	9.8	10.1
4H 2H	5.8	6.4	6.0	6.6	6.9	9.1	9.8	9.4	10.0	10.3
3H	6.1	6.7	6.4	7.0	7.2	9.1	9.7	9.4	9.9	10.2
4H	6.2	6.7	6.5	7.0	7.3	9.0	9.5	9.3	9.8	10.1
6H	6.1	6.6	6.5	6.9	7.3	8.9	9.4	9.3	9.7	10.0
8H	6.1	6.5	6.5	6.9	7.3	8.8	9.3	9.2	9.6	10.0
12H	6.0	6.5	6.5	6.8	7.2	8.8	9.2	9.2	9.6	10.0
8H 4H	6.1	6.5	6.4	6.8	7.2	8.9	9.3	9.2	9.7	10.0
6H	6.0	6.4	6.5	6.8	7.2	8.8	9.1	9.2	9.5	9.9
8H	6.0	6.3	6.4	6.7	7.2	8.7	9.0	9.2	9.5	9.9
12H	5.9	6.2	6.4	6.7	7.1	8.7	8.9	9.1	9.4	9.8
12H 4H	6.0	6.4	6.4	6.8	7.2	8.8	9.2	9.2	9.6	10.0
6H	6.0	6.3	6.4	6.7	7.2	8.7	9.0	9.2	9.4	9.9
8H	5.9	6.2	6.4	6.7	7.1	8.7	8.9	9.1	9.4	9.8
Variations with the observer position at spacings:										
S = 1.0H	+ 1.2 / - 1.9					+ 3.1 / - 5.8				
1.5H	+ 1.6 / - 1.3					+ 4.6 / - 4.5				
2.0H	+ 1.8 / - 1.6					+ 4.9 / - 4.3				

CIE Pub.117 Corrected 2731 lm Total Lamp Luminous Flux. (8log(F/F0) = 3.5)



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**2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)****UTILIZATION FACTORS TABLE**

REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.6	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) $k(RI) \times RCR = 5$									
$k = 0.60$	88	82	78	88	82	78	87	81	78	74
0.80	95	90	86	95	89	86	94	89	86	82
1.00	100	94	91	99	94	90	97	94	90	86
1.25	104	99	96	103	98	95	101	97	94	90
1.50	106	102	98	105	101	98	103	99	97	92
2.00	109	105	102	107	104	101	105	102	99	94
2.50	110	107	104	109	106	103	106	103	101	96
3.00	112	109	106	110	107	105	107	105	103	96
4.00	114	111	109	112	110	108	108	107	105	98
5.00	115	113	111	113	111	110	109	108	107	99
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004	Suspended						SENRUM = 1.25			



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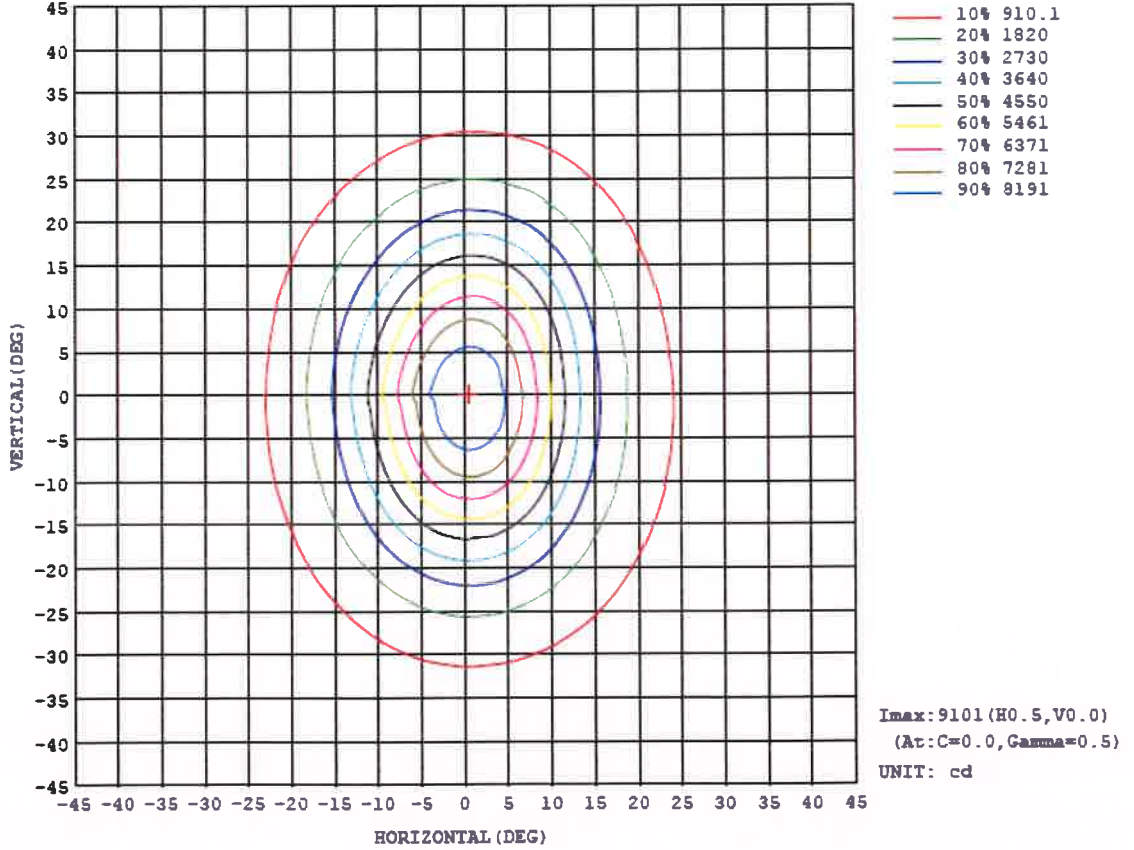
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**2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW )**

**ISOCANDELA DIAGRAM**



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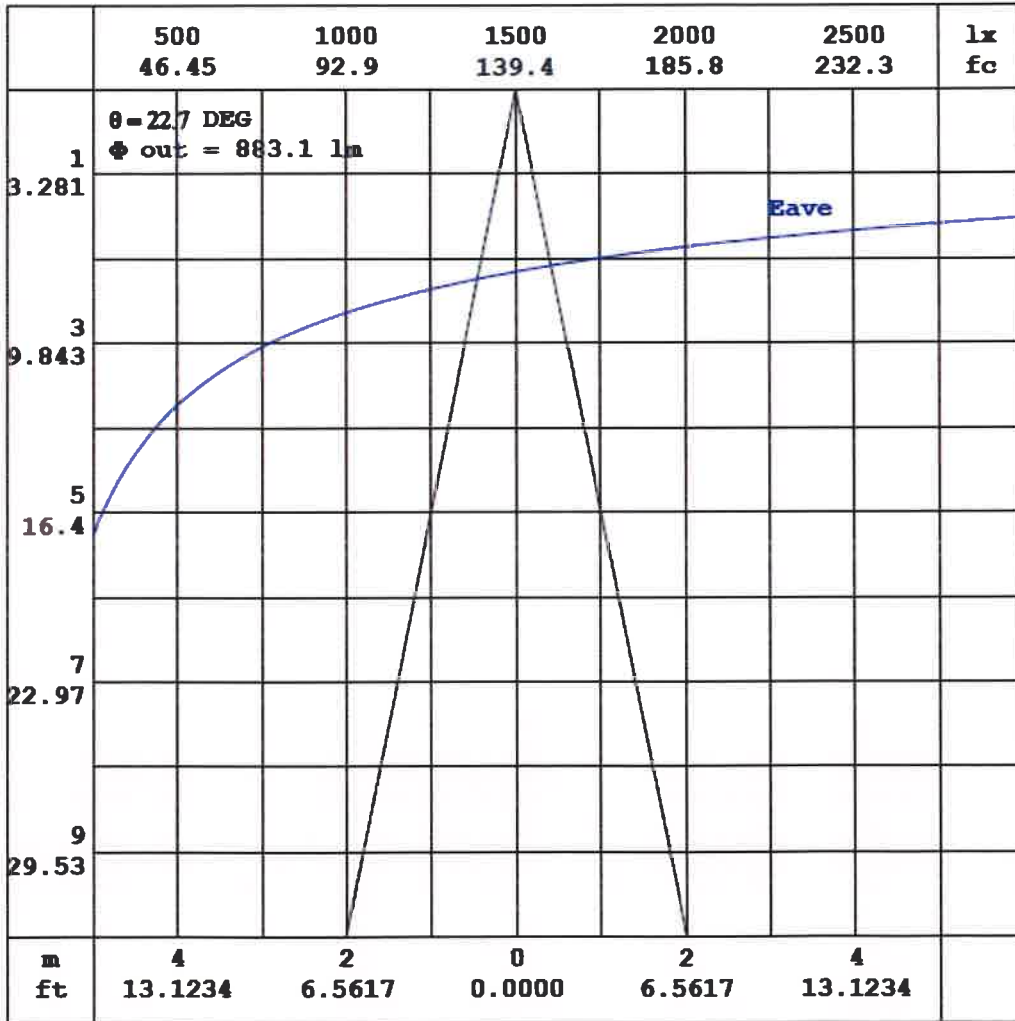
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**2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)****AAI CURVES**

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



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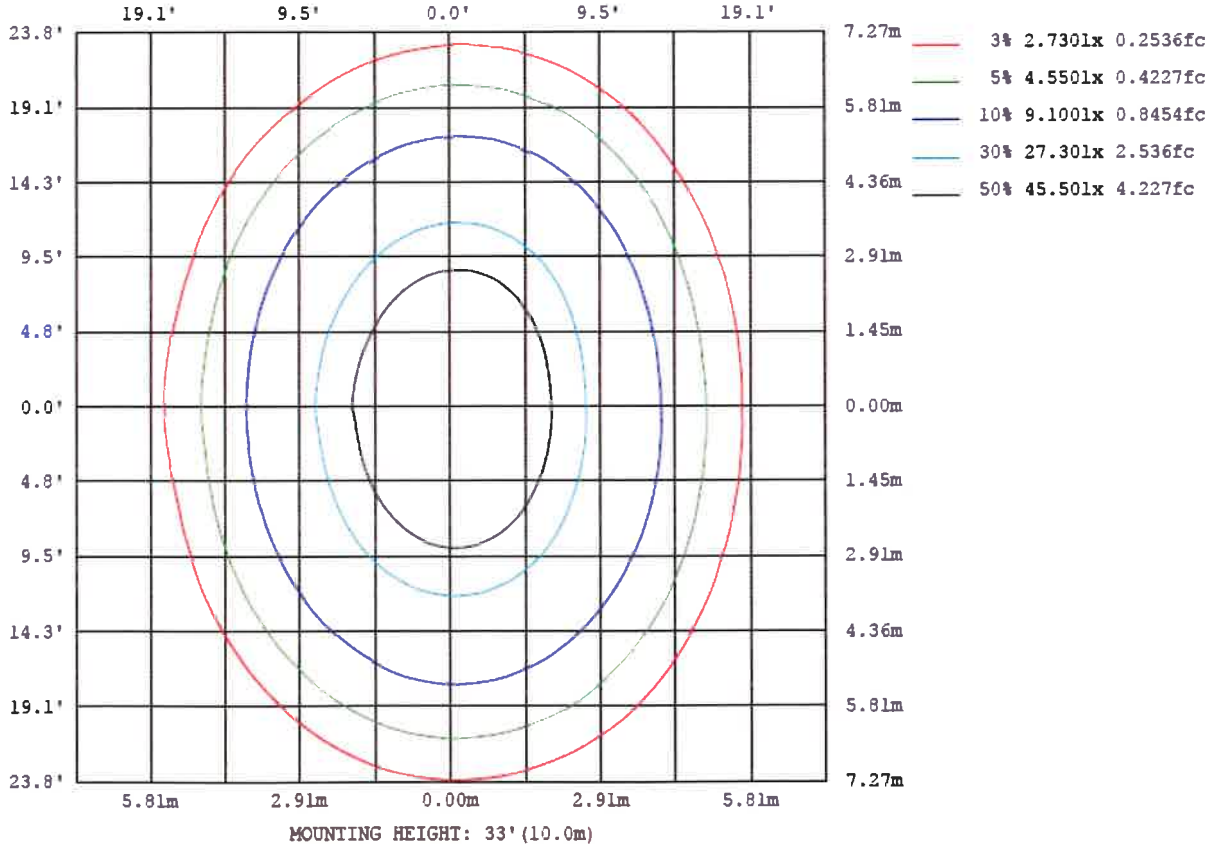
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**2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)**

**ISOLUX DIAGRAM**



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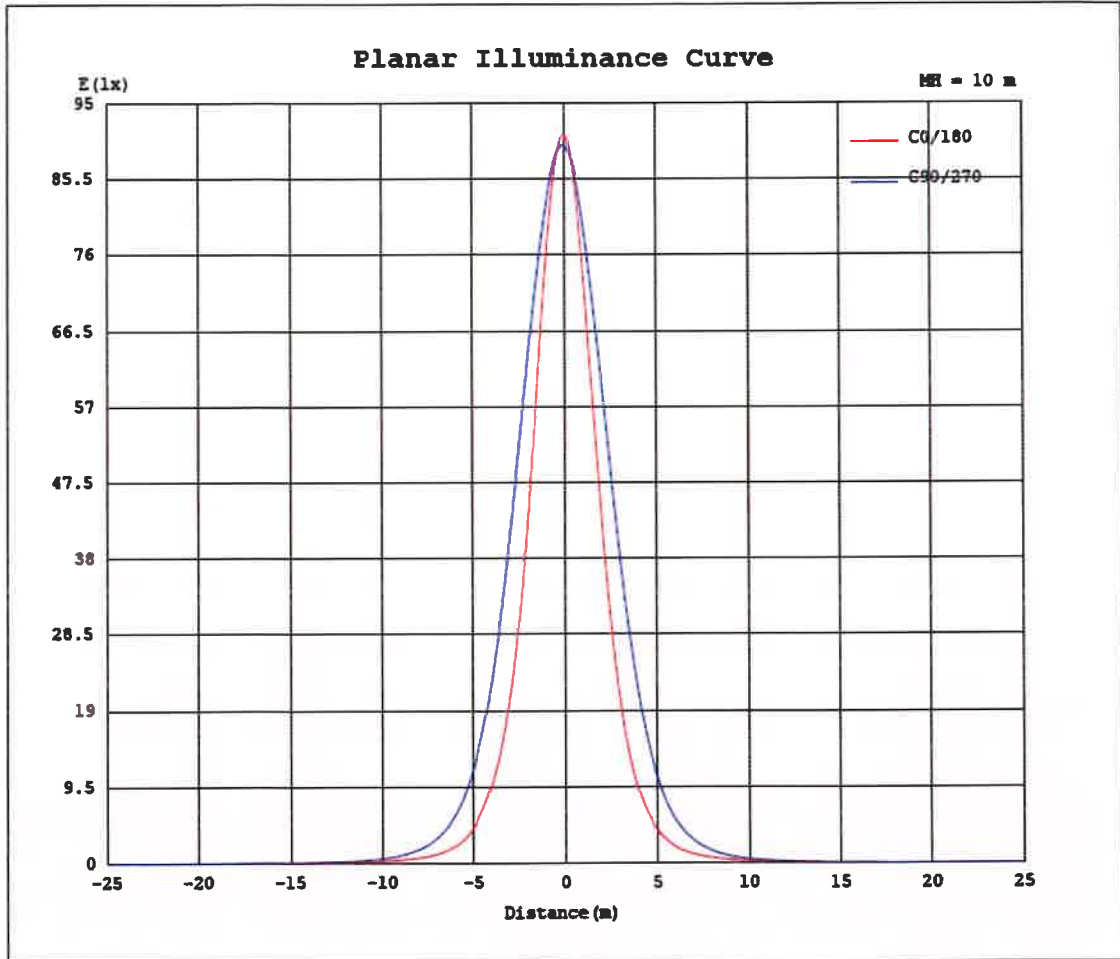
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**2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)**



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**2.2 CW Spektrokolorimetrik Deney Sonuçları (spectrocolorimetric Test Results of the CW)****Elektriksel Ölçümler**

(Electrical Measurements)

<b>Ölçülen Güç (W)</b> (Input Power)	44,17 W
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	46,84 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,943 A
<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>	0,3135
<b>Chrom y</b>	0,3301
<b>Duv</b>	0,0034
<b>Chrom u'</b>	0,1980
<b>Chrom v'</b>	0,4690
<b>Peak</b>	445 nm
<b>Dominant</b>	490 nm
<b>CCT</b>	6457 K
<b>Nominal CCT</b>	-
<b>Ra(CRI)</b>	71
<b>R9</b>	-25
<b>S/P Ratio</b>	2,0
<b>Preburning time</b>	1 hr
<b>Test Configuration</b>	4π



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

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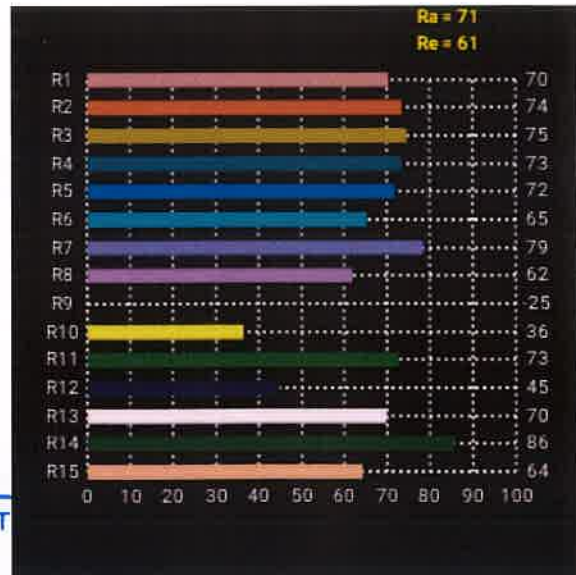
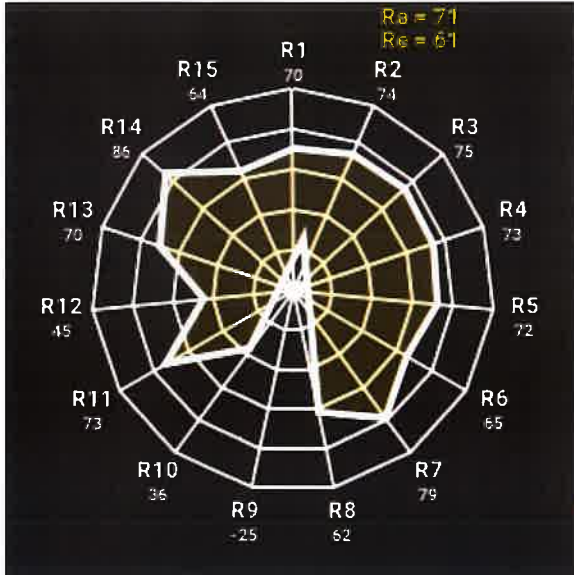
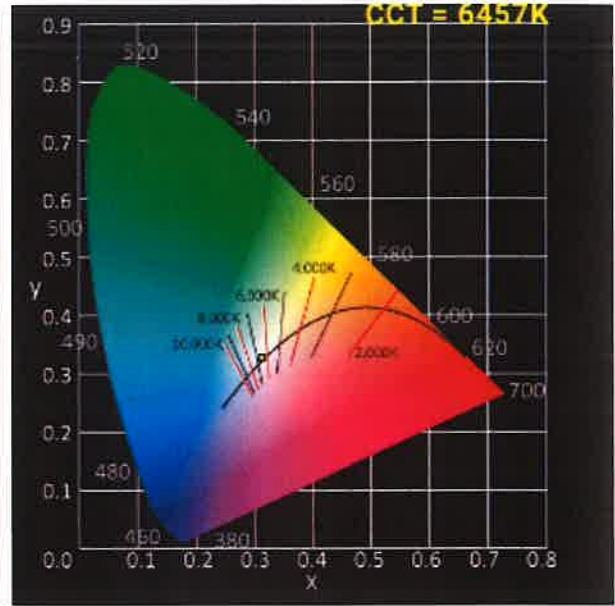
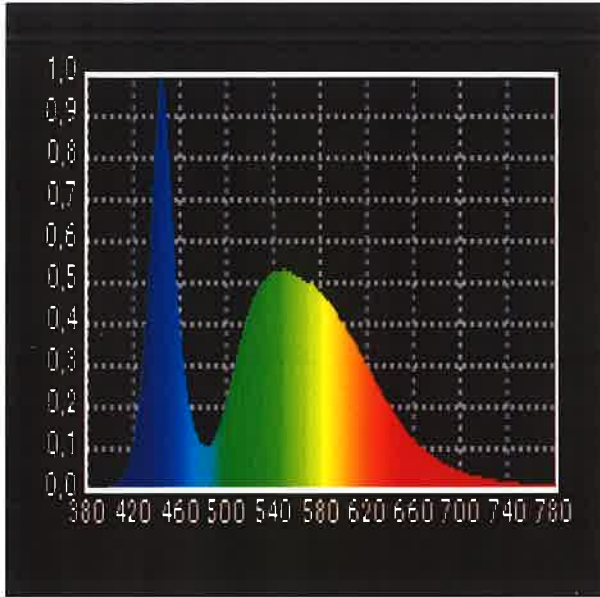
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**2.2 CW Spektrokolorimetrik Deney Sonuçları (spectrocolorimetric Test Results of the CW)**

**Spectral Power Distribution**



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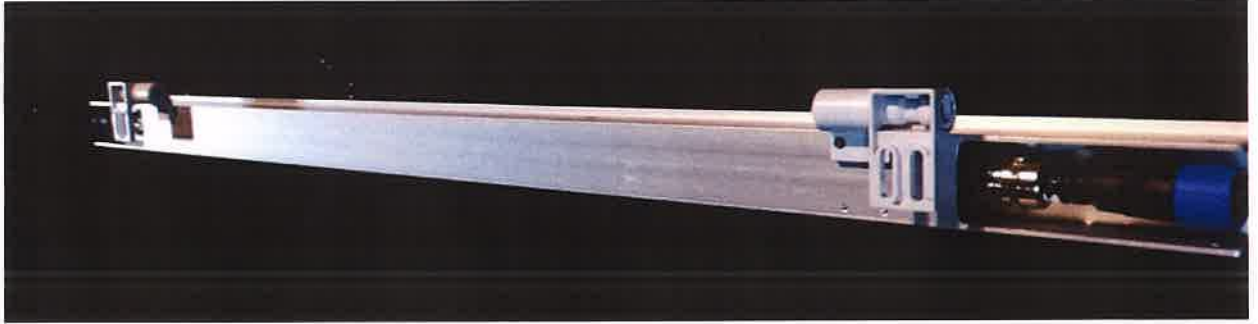
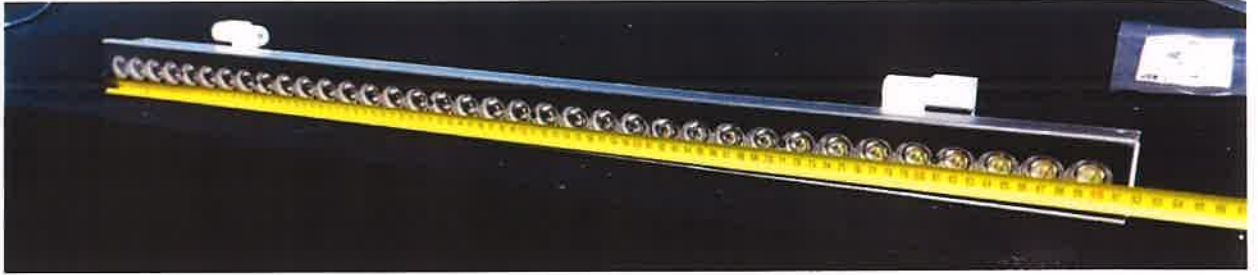
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**3.1 DGC'nin Fotoğrafları (Photos of EUT)**



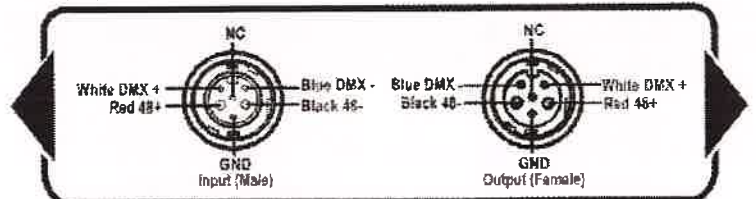
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