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

TL-806
19-TST-0095-188
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<b>Müşterinin Adı Adresi</b> Customer name/address	<b>: HERA EĞLENCE VE MİMARİ AYDINLATMA SİSTEMLERİ A.Ş.</b> Güllübağlar Mah. Kahramanlar Cad. No:3-1 34906 PENDİK-İSTANBUL/TÜRKİYE
<b>İstek Numarası</b> Order No	: 19-TST-0095
<b>Numunenin Adı ve Tarifi</b> Name and identity of test item	: Leoline® S12 915mm DMX SC NW Linear Wide Flood Beam 60°
<b>Numunenin kabul tarihi</b> The date of receipt of test item	: <b>31.07.2019</b>
<b>Açıklamalar</b> Remarks	: <b>DGC'ye , IES LM-79-08 standardı uyarınca fotometrik ölçümler yapılmıştır.</b> Photometric measurement has been applied to EUT according to IESNA LM-79-08
<b>Deneyin Yapıldığı Tarih</b> Date of Test	: <b>02.08.2019</b>
<b>Raporun Sayfa Sayısı</b> Number of Pages of the Report	: <b>18</b>

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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.



19.08.2019

**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)

<b>Markası / Brand</b>	: HERA
<b>Modeli / Model</b>	: Leoline® S12 915mm DMX SC NW Linear Wide Flood Beam 60°
<b>Seri Numarası / Serial Number</b>	: Test Numunesi Test Sample
<b>Beyan Gücü / Rated Power</b>	: 44,6 W
<b>Beyan Gerilimi / Rated Voltage</b>	: 48 VDC
<b>Sembollerin Tanımı / Definitions of Symbols</b>	DGC= Deneden 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 (Components)	Üretici (Manufacturer)	Model (Model)	Teknik Bilgi (Technical Data)	Standart no. (Standart No.)
LED	Cree Inc	XTEAWT 4000K 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/Whi teSilkScreen	IPC A 600 J Class II Revizyon J standardı (COC) IPC 6012 Class II UL FQC
LENS	LEDIL	CA11176_TINA2-WW-60	Dimensions Ø 16.1 mm Height 9.7 mm	ANSI/ESD S20.20:2014 EN 61340-5- 1:2007

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

**Elektriksel Ölçümler**

(Electrical Measurements)

<b>Ölçülen Güç (W)</b> (Input Power)	43,61 W
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	46,91 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,93 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)	3059,9
<b>Maksimum Işık Şiddeti</b> (Max. Light Intensity) (cd)	3113
<b>Armatür Etkinliği</b> (Luminaire Efficacy) (lm/W)	70,17



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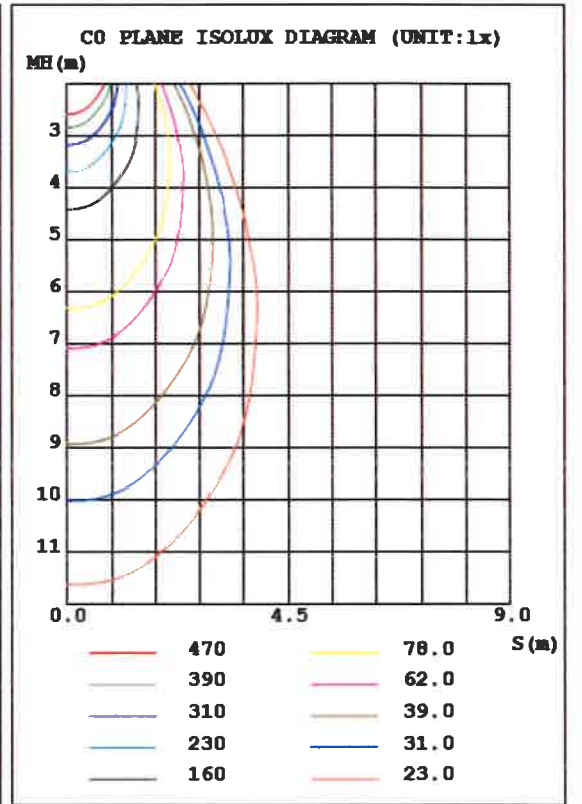
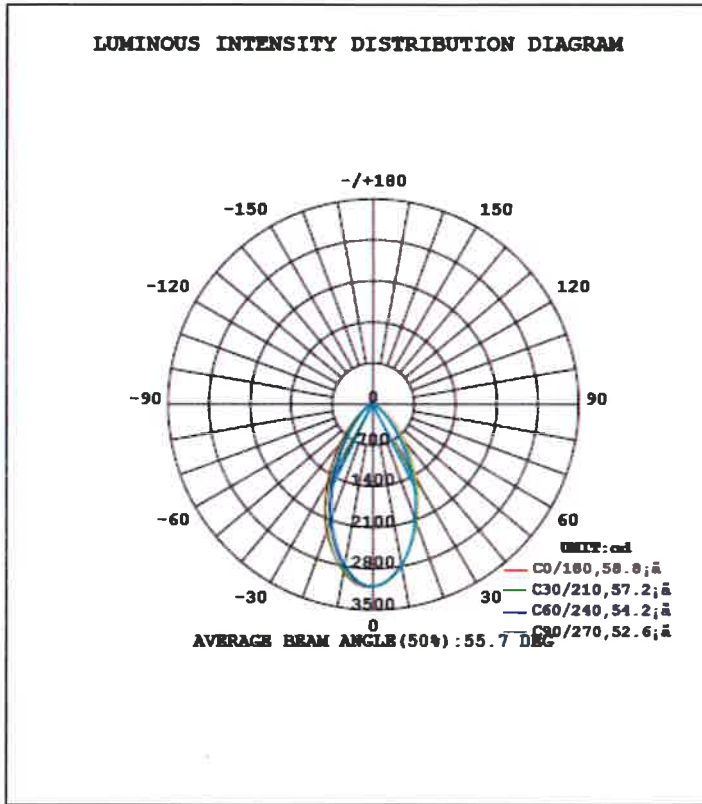
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**2.1 NW Fotometrik Deney Sonuçları (Photometric Test Results of the NW)**



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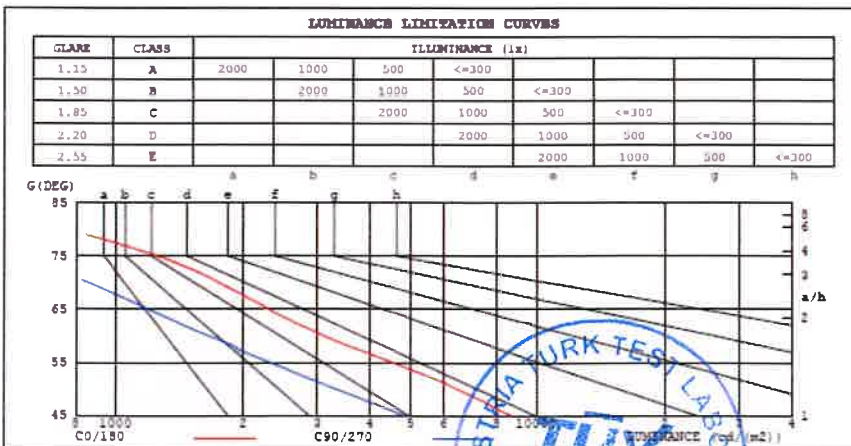
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**2.1 NW Fotometrik Deney Sonuçları (Photometric Test Results of the NW )**

**ZONAL FLUX DIAGRAM  
AND LUMINANCE LIMITATION CURVES**

**ZONAL FLUX DIAGRAM:**

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	@ same	@ total	lim. lum.
5	2079	2022	2097	2970	2991	2999	2024	2025	0- 5	72.92	72.92	2.38, 2.38
10	2909	2840	2782	2727	2779	2782	2502	2849	5- 10	207.9	280.8	9.18, 9.18
15	2827	2845	2402	2291	2602	2472	2474	2567	10- 15	214.1	594.9	19.4, 19.4
20	2327	2184	2008	2010	2142	2115	2091	2222	15- 20	281.4	978.2	31.9, 31.9
25	1955	1804	1598	1627	1791	1751	1704	1827	20- 25	407.7	1284	45.2, 45.2
30	1566	1392	1182	1250	1457	1381	1312	1429	25- 30	392.7	1778	58.1, 58.1
35	1206	992.2	808.7	892.4	1118	1018	938.2	1086	30- 35	347.4	2128	69.4, 69.4
40	876.0	674.7	522.2	608.0	812.9	706.7	631.9	729.1	35- 40	280.5	2406	78.6, 78.6
45	612.1	441.6	341.1	409.4	582.2	472.2	408.4	482.3	40- 45	212.5	2618	83.6, 83.6
50	412.7	286.2	214.0	281.4	404.2	305.3	287.4	319.4	45- 50	134.0	2772	90.6, 90.6
55	259.0	190.6	122.8	168.2	255.2	199.0	160.5	201.2	50- 55	107.4	2280	94.1, 94.1
60	155.2	114.6	82.74	107.5	159.6	127.4	100.7	129.1	55- 60	72.29	2222	98.3, 98.3
65	96.99	71.89	50.49	67.96	100.1	80.68	62.70	82.90	60- 65	47.72	2000	98.98
70	59.78	42.07	29.48	41.04	60.87	49.79	37.76	51.21	65- 70	30.72	2020	99.99
75	32.25	21.94	14.49	21.06	24.24	27.07	20.11	27.82	70- 75	18.20	2049	99.6, 99.6
80	12.76	7.092	4.457	7.064	14.18	10.21	7.422	10.22	75- 80	8.741	2057	99.9, 99.9
85	1.956	0.6415	0.4085	0.7812	2.922	1.521	1.018	1.269	80- 85	2.422	2060	100,100
90	0	0	0	0	0	0	0	0	85- 90	0.1812	2060	100,100
95	0	0	0	0	0	0	0	0	90- 95	0	2060	100,100
100	0	0	0	0	0	0	0	0	95-100	0	2060	100,100
105	0	0	0	0	0	0	0	0	100-105	0	2060	100,100
110	0	0	0	0	0	0	0	0	105-110	0	2060	100,100
115	0	0	0	0	0	0	0	0	110-115	0	2060	100,100
120	0	0	0	0	0	0	0	0	115-120	0	2060	100,100
125	0	0	0	0	0	0	0	0	120-125	0	2060	100,100
130	0	0	0	0	0	0	0	0	125-130	0	2060	100,100
135	0	0	0	0	0	0	0	0	130-135	0	2060	100,100
140	0	0	0	0	0	0	0	0	135-140	0	2060	100,100
145	0	0	0	0	0	0	0	0	140-145	0	2060	100,100
150	0	0.0230	0.0141	0.0152	0	0	0	0	145-150	0.0092	2060	100,100
155	0	0.0782	0.0224	0.0267	0	0	0	0	150-155	0.0044	2060	100,100
160	0.0879	0.1344	0.1644	0.1047	0.0047	0	0	0	155-160	0.0097	2060	100,100
165	0.1118	0.1682	0.1727	0.1248	0.0284	0.0118	0	0	160-165	0.0112	2060	100,100
170	0.1184	0.1687	0.1622	0.1227	0.0287	0.0154	0	0	165-170	0.0092	2060	100,100
175	0.1095	0.1444	0.1228	0.1225	0.0472	0.0466	0.0087	0.0018	170-175	0.0052	2060	100,100
180	0.1209	0.1521	0.1499	0.1240	0.1215	0.1229	0.1205	0.1062	175-180	0.0022	2060	100,100



**LUMINANCE cd/(m2)**

G (DEG)	C0/180	C90/270
85	224	47
80	725	257
75	1246	560
70	1748	862
65	2295	1195
60	3194	1655
55	4516	2215
50	6426	3229
45	8671	4822

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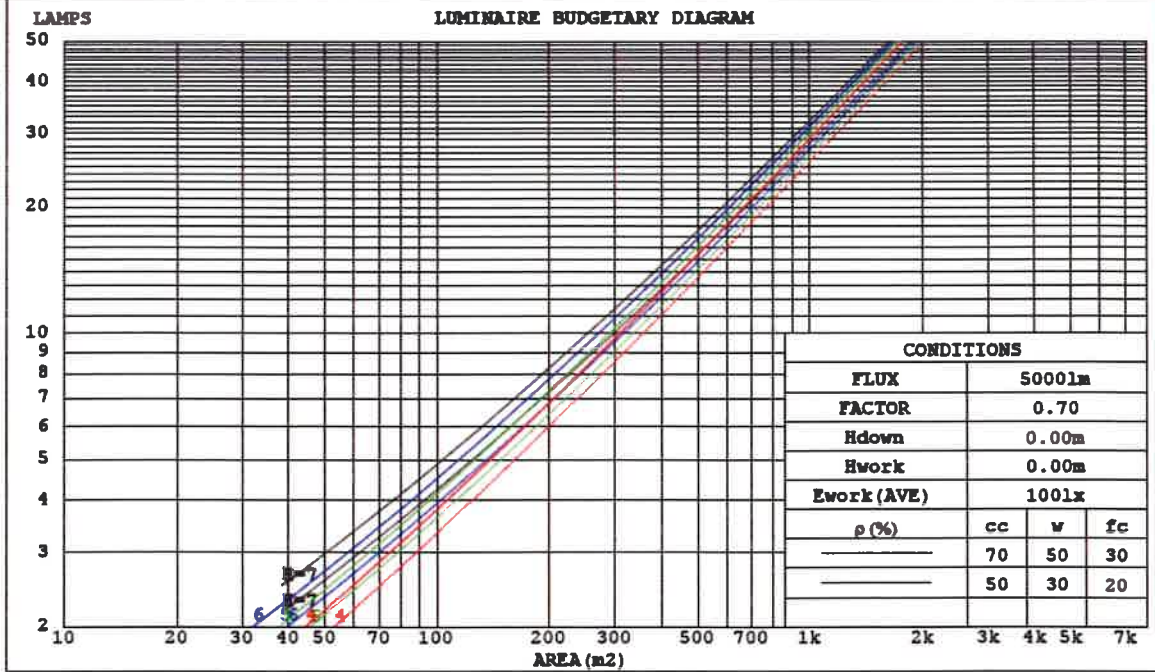
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**2.1 NW Fotometrik Deney Sonuçları (Photometric Test Results of the NW )**

**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
<b>RCR</b>	<b>RCR:Room Cavity Ratio</b>															
	<b>Coefficients of Utilization (CU)</b>															
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	1.09	1.07	1.04	1.07	1.05	1.02	1.03	1.01	.99	.99	.98	.96	.96	.95	.93	.92
2.0	1.00	.96	.92	.99	.94	.91	.95	.92	.89	.92	.89	.87	.89	.87	.85	.83
3.0	.92	.87	.82	.91	.86	.81	.88	.84	.80	.86	.82	.79	.83	.80	.78	.76
4.0	.85	.79	.74	.84	.78	.74	.82	.77	.73	.80	.75	.72	.78	.74	.71	.69
5.0	.79	.72	.67	.78	.72	.67	.76	.71	.66	.74	.70	.66	.73	.68	.65	.64
6.0	.73	.67	.62	.72	.66	.61	.71	.65	.61	.69	.64	.61	.68	.64	.60	.59
7.0	.68	.62	.57	.68	.61	.57	.66	.61	.56	.65	.60	.56	.64	.59	.56	.54
8.0	.64	.57	.53	.63	.57	.53	.62	.56	.52	.61	.56	.52	.60	.55	.52	.50
9.0	.60	.53	.49	.59	.53	.49	.58	.53	.49	.57	.52	.49	.57	.52	.48	.47
10.0	.56	.50	.46	.56	.50	.46	.55	.49	.46	.54	.49	.46	.53	.49	.45	.44





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### 2.1 NW Fotometrik Deney Sonuçları (Photometric Test Results of the NW )

#### 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	.203	.115	.037	.196	.112	.036	.183	.105	.034	.172	.099	.032	.161	.093	.030	
2.0	.196	.108	.033	.191	.105	.032	.180	.100	.031	.170	.095	.030	.160	.091	.029	
3.0	.187	.100	.030	.182	.098	.029	.173	.094	.028	.164	.090	.028	.156	.086	.027	
4.0	.177	.092	.027	.173	.091	.027	.165	.088	.026	.157	.085	.026	.150	.082	.025	
5.0	.168	.086	.025	.164	.084	.025	.157	.082	.024	.151	.079	.024	.144	.077	.023	
6.0	.160	.080	.023	.156	.079	.023	.150	.077	.022	.144	.075	.022	.138	.073	.022	
7.0	.152	.075	.021	.149	.074	.021	.143	.072	.021	.138	.071	.021	.133	.069	.020	
8.0	.144	.070	.020	.141	.070	.020	.136	.068	.019	.132	.067	.019	.127	.065	.019	
9.0	.137	.066	.019	.135	.066	.018	.130	.064	.018	.126	.063	.018	.122	.062	.018	
10.0	.131	.063	.017	.129	.062	.017	.125	.061	.017	.121	.060	.017	.117	.059	.017	

$\rho_{cc}$	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	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.173	.157	.143	.148	.135	.123	.101	.093	.085	.058	.054	.049	.019	.017	.016	
2.0	.160	.132	.110	.137	.114	.095	.094	.079	.066	.054	.046	.039	.017	.015	.013	
3.0	.149	.114	.086	.127	.098	.075	.087	.068	.052	.050	.040	.031	.016	.013	.010	
4.0	.139	.099	.069	.119	.086	.060	.082	.060	.042	.048	.035	.025	.015	.011	.008	
5.0	.131	.088	.056	.113	.076	.049	.078	.053	.035	.045	.031	.021	.014	.010	.007	
6.0	.124	.079	.047	.107	.069	.041	.074	.048	.029	.043	.028	.017	.014	.009	.006	
7.0	.118	.072	.040	.101	.062	.035	.070	.044	.024	.041	.026	.015	.013	.008	.005	
8.0	.112	.066	.034	.096	.057	.030	.067	.040	.021	.039	.024	.013	.013	.008	.004	
9.0	.107	.061	.030	.092	.053	.026	.064	.037	.018	.037	.022	.011	.012	.007	.004	
10.0	.102	.056	.026	.088	.049	.023	.061	.034	.016	.036	.020	.010	.012	.007	.003	



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

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### 2.1 NW Fotometrik Deney Sonuçları (Photometric Test Results of the NW)

#### 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	17.7	16.8	17.9	18.0	14.0	15.1	14.3	15.3	15.5	
3H	16.7	17.8	17.0	18.0	18.2	14.1	15.1	14.3	15.3	15.5	
4H	16.8	17.7	17.0	17.9	18.2	14.0	15.0	14.3	15.2	15.4	
6H	16.7	17.6	17.0	17.9	18.1	14.0	14.8	14.3	15.1	15.4	
8H	16.7	17.5	17.0	17.8	18.1	13.9	14.8	14.2	15.0	15.3	
12H	16.6	17.4	17.0	17.7	18.0	13.9	14.7	14.2	15.0	15.2	
4H	2H	16.5	17.4	16.8	17.7	17.9	14.1	15.1	14.4	15.3	15.5
	3H	16.7	17.5	17.0	17.8	18.1	14.2	15.0	14.6	15.3	15.6
	4H	16.8	17.5	17.1	17.8	18.1	14.2	15.0	14.6	15.3	15.6
	6H	16.7	17.4	17.1	17.7	18.1	14.1	14.8	14.5	15.1	15.5
	8H	16.7	17.3	17.1	17.7	18.0	14.1	14.7	14.5	15.1	15.4
	12H	16.7	17.2	17.1	17.6	18.0	14.1	14.6	14.5	15.0	15.4
8H	4H	16.7	17.3	17.0	17.6	18.0	14.2	14.8	14.6	15.1	15.5
	6H	16.6	17.1	17.1	17.5	17.9	14.1	14.6	14.5	15.0	15.4
	8H	16.6	17.0	17.1	17.5	17.9	14.1	14.5	14.5	14.9	15.3
	12H	16.6	16.9	17.0	17.4	17.8	14.0	14.4	14.5	14.8	15.3
12H	4H	16.6	17.2	17.0	17.5	17.9	14.1	14.7	14.5	15.0	15.4
	6H	16.6	17.0	17.0	17.4	17.9	14.1	14.5	14.5	14.9	15.4
	8H	16.6	16.9	17.0	17.4	17.8	14.0	14.4	14.5	14.8	15.3
Variations with the observer position at spacings:											
S = 1.0H	+ 1.5 / - 2.1					+ 1.7 / - 3.0					
1.5H	+ 2.1 / - 2.0					+ 2.0 / - 1.9					
2.0H	+ 3.4 / - 2.9					+ 2.8 / - 2.7					

CIE Pub.117 Corrected 3060 lm Total Lamp Luminous Flux. (8log(F/F0) = 3.9)



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**2.1 NW Fotometrik Deney Sonuçları (Photometric Test Results of the NW)****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	0.6	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) $k(RI) \times RCR = 5$									
$k = 0.60$	78	70	65	77	70	65	76	69	65	60
0.80	87	79	74	86	79	74	85	78	74	69
1.00	93	86	81	92	85	81	90	86	80	75
1.25	98	91	87	97	91	87	95	90	86	81
1.50	101	95	91	100	95	91	98	93	90	84
2.00	105	100	96	104	99	95	101	97	94	88
2.50	108	103	99	106	102	98	103	99	96	90
3.00	110	105	102	108	104	101	104	101	99	92
4.00	112	109	106	110	107	104	106	104	102	94
5.00	113	111	108	111	109	107	107	105	104	96
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004										
Suspended										
SERVICIUM = 1.25										



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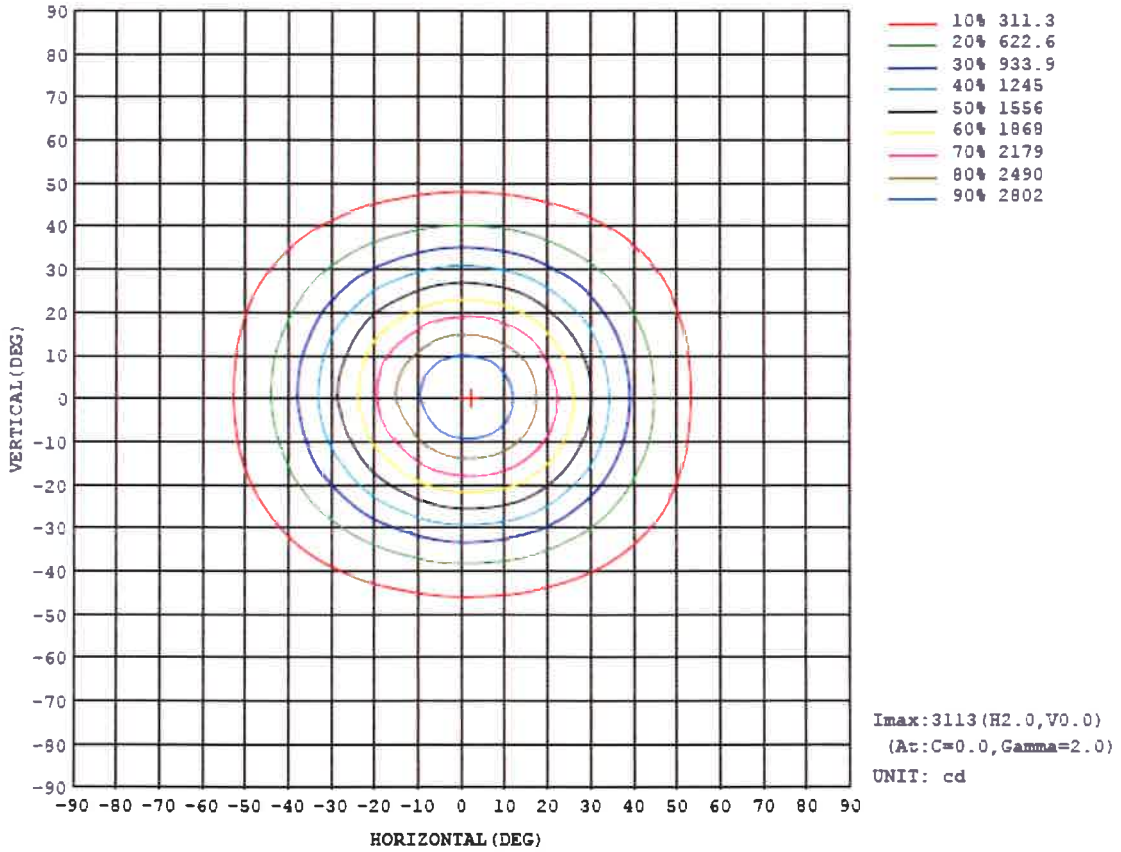
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**2.1 NW Fotometrik Deney Sonuçları (Photometric Test Results of the NW )**

**ISOCANDELA DIAGRAM**



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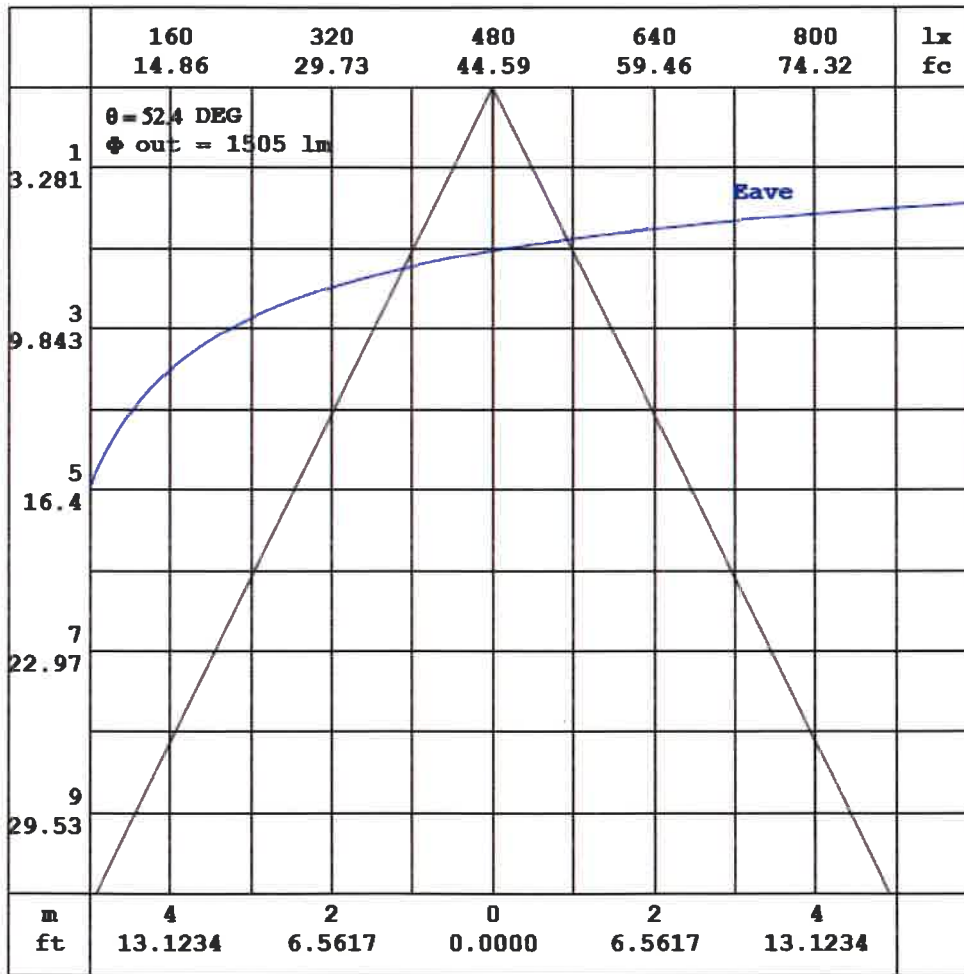
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**2.1 NW Fotometrik Deney Sonuçları (Photometric Test Results of the NW)**

**AAI CURVES**



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



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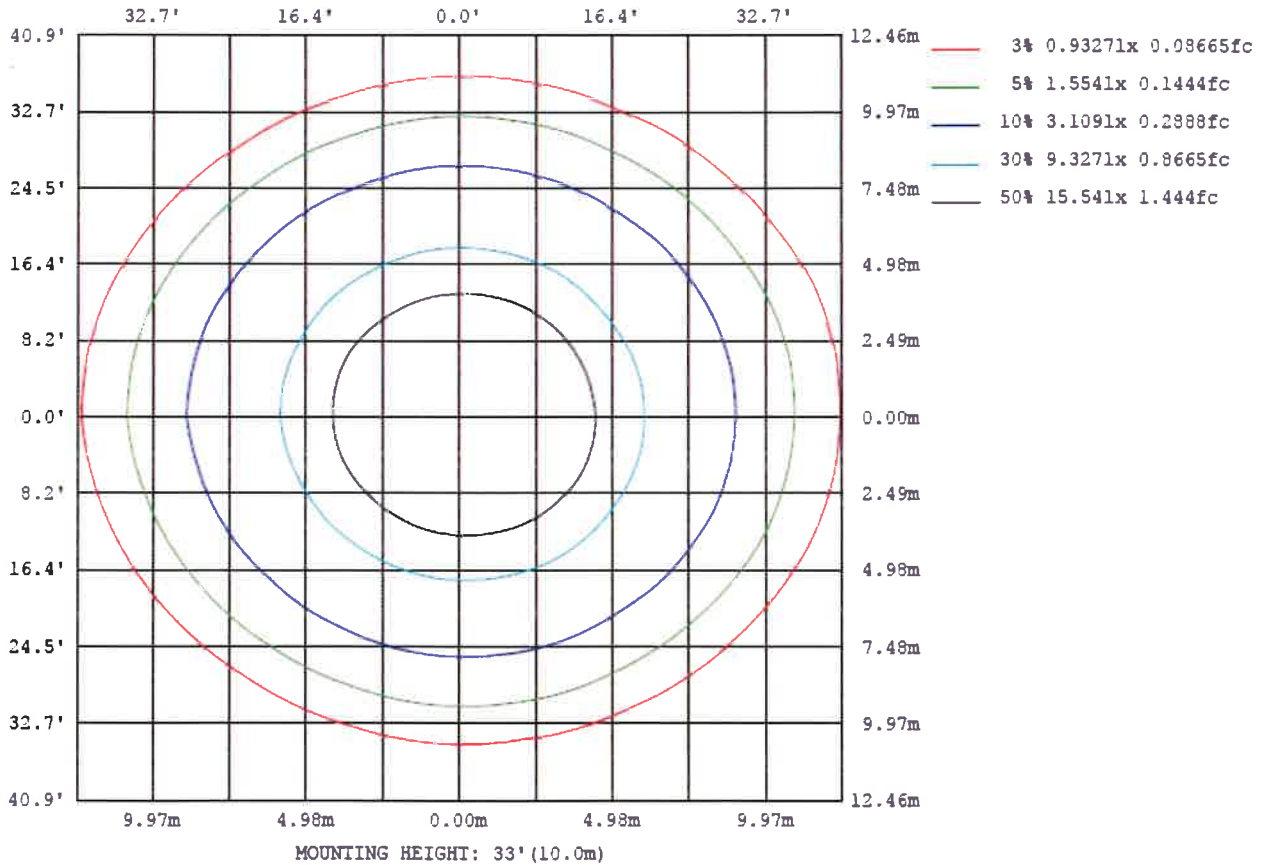
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**2.1 NW Fotometrik Deney Sonuçları (Photometric Test Results of the NW)**

**ISOLUX DIAGRAM**



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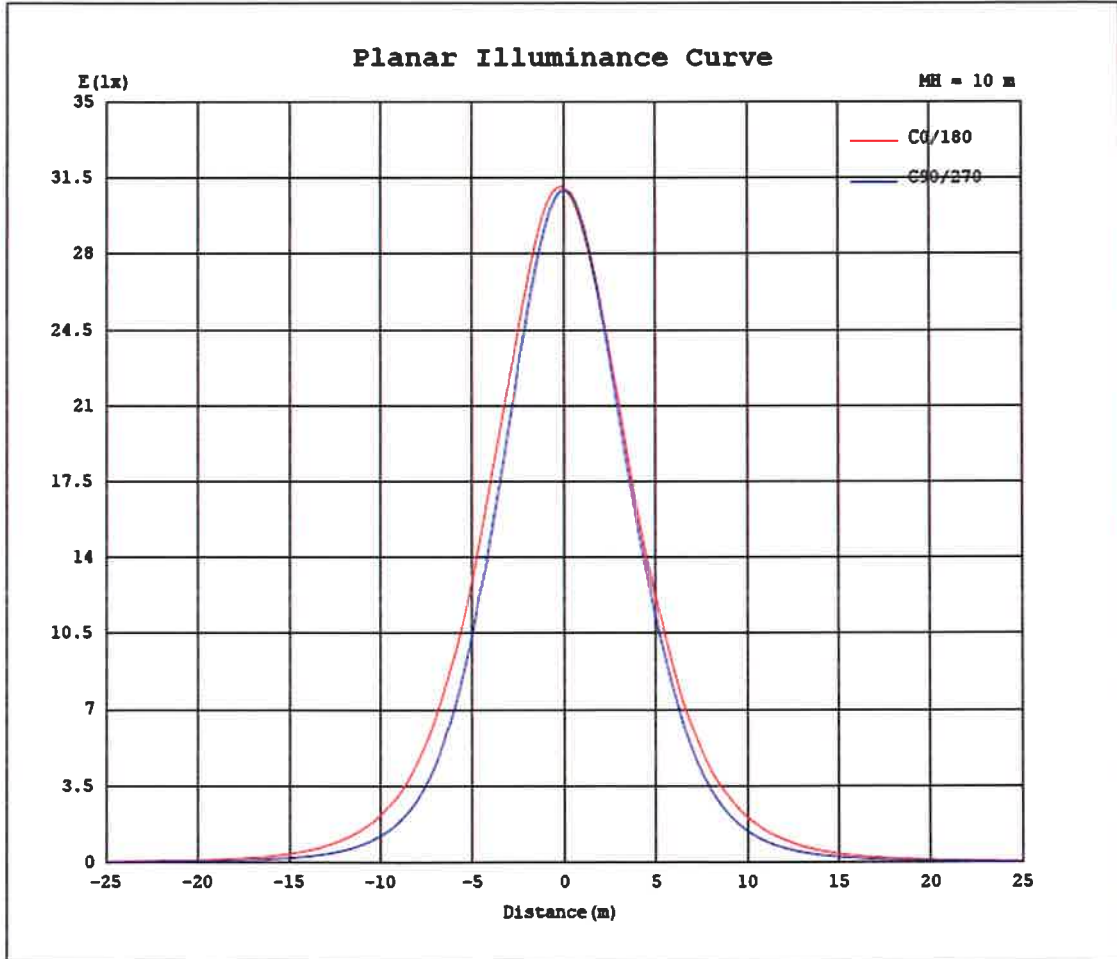
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**ÖLÇÜM RAPORU**  
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**2.1 NW Fotometrik Deney Sonuçları (Photometric Test Results of the NW)**



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

**Elektriksel Ölçümler**

(Electrical Measurements)

<b>Ölçülen Güç (W)</b> (Input Power)	43,61 W
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	46,91 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,93 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>	0,3874
<b>Chrom y</b>	0,3874
<b>Duv</b>	0,0029
<b>Chrom u'</b>	0,2254
<b>Chrom v'</b>	0,5072
<b>Peak</b>	583 nm
<b>Dominant</b>	578 nm
<b>CCT</b>	3897 K
<b>Nominal CCT</b>	-
<b>Ra(CRI)</b>	71
<b>R9</b>	-28
<b>S/P Ratio</b>	1,4
<b>Preburning time</b>	1 hr
<b>Test Configuration</b>	4π





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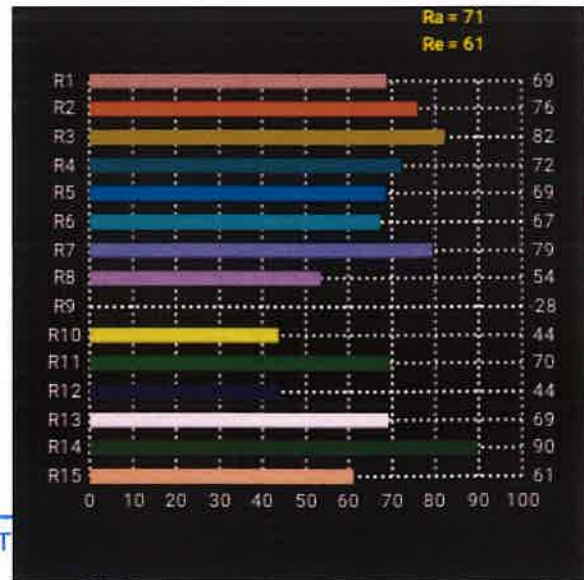
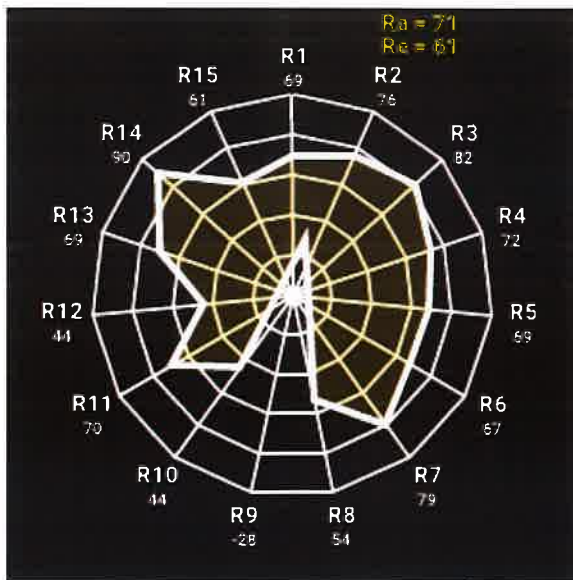
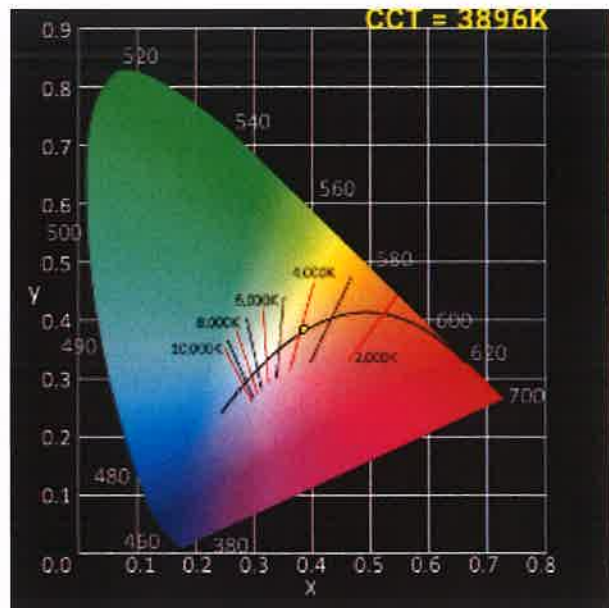
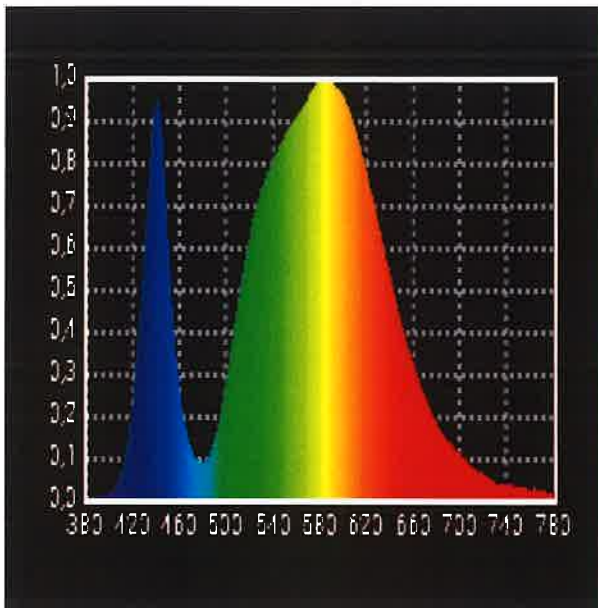
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**2.2 NW Spektrokolorimetrik Deney Sonuçları (spectrocolorimetric Test Results of the NW)**

**Spectral Power Distribution**



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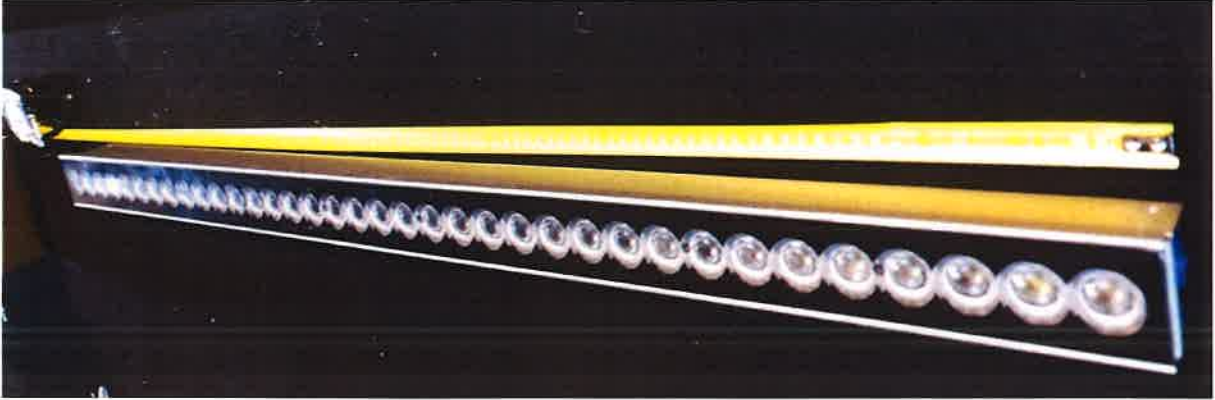
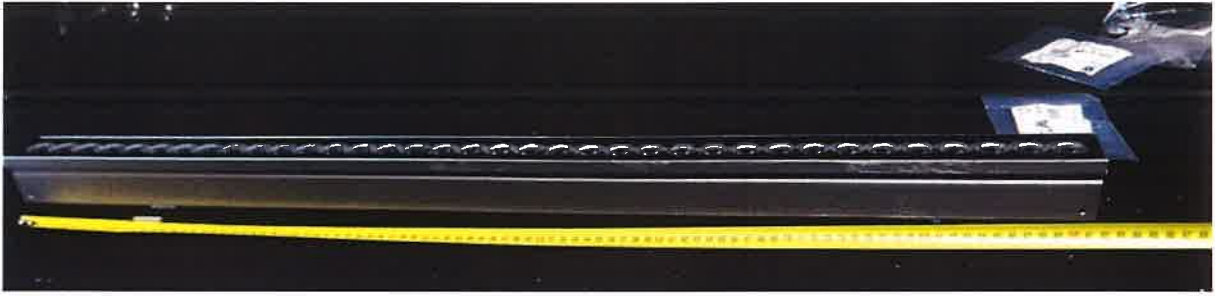
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**3.1 DGC'nin Fotoğrafları (Photos of EUT)**



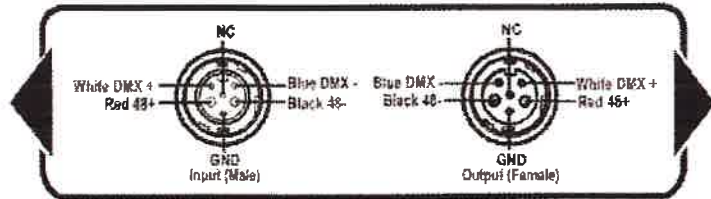
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