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**ÖLÇÜM RAPORU**  
MEASUREMENT REPORT

TL-806
19-TST-0095-181
08-19

**Müşterinin Adı Adresi**  
Customer name/address

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

**İstek Numarası**  
Order No

: 19-TST-0095

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

: Leoline® S12 915mm DMX SC WW Linear Flood Beam 45°

**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 WW  
Linear Flood Beam 45°

**Seri Numarası / Serial Number**

: Test Numunesi  
Test Sample

**Beyan Gücü / Rated Power**

: 43,7 W

**Beyan Gerilimi / Rated Voltage**

: 48 VDC

**Sembollerin Tanımı / Definitions of Symbols**

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 2700-3000K White Led	Binned at 85 °C • Thermal resistance: 5 °C/W • Wide viewing angle: 115°-140° Maximum drive current: White 1.5 A, Royal Blue 1.5 A Maximum Vf for High Efficacy XT-E White: 2.85 V Available in 2200 K CCT	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	CA12056_TINA2-W-45	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 WW Fotometrik Deneş Sonuları (Photometric Test Results of the WW)****Elektriksel Ölümler**

(Electrical Measurements)

<b>Ölülen Gü (W)</b> (Input Power)	42,66 W
<b>Ölülen Gerilim (V)</b> (Input Voltage)	46,89 VDC
<b>Ölülen Akım (A)</b> (Input Current)	0,91 A
<b>Gü Faktörü (PF)</b> (Power Factor)	-
<b>Ölülen Frekans (Hz)</b> (Input Frequency)	-
<b>Ortam Sıcaklığı / Bağıl Nem</b> (Ambient Temperature / Relative Humidity)	25,1 °C 50% Rh
<b>Stabilizasyon Süresi</b> (Stabilization Time)	60 dk ±5dk

**Fotometrik Ölüm Sonuları**

(Photometric Measurement Results)

<b>Toplam Işık Akısı</b> (Total Luminous Flux) (lm)	3105,4
<b>Maksimum Işık Şiddeti</b> (Max. Light Intensity) (cd)	4258
<b>Armatür Etkinliğı</b> (Luminaire Efficacy) (lm/W)	72,79



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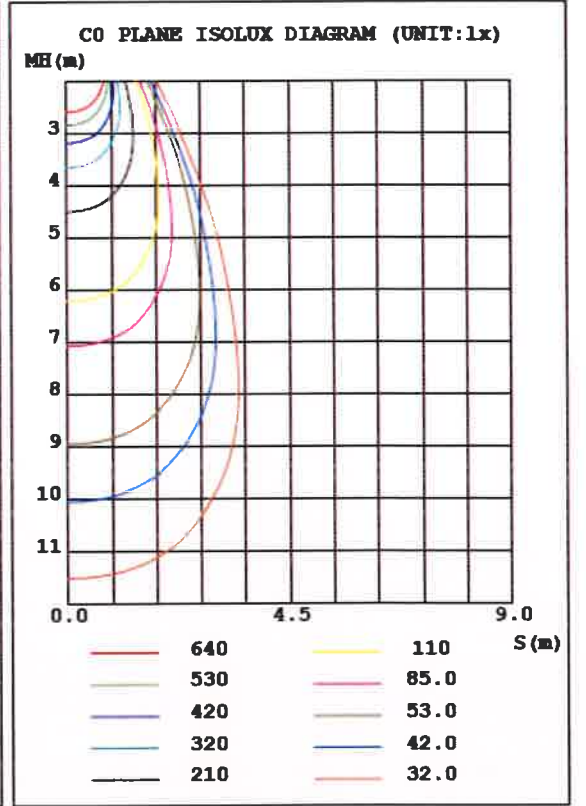
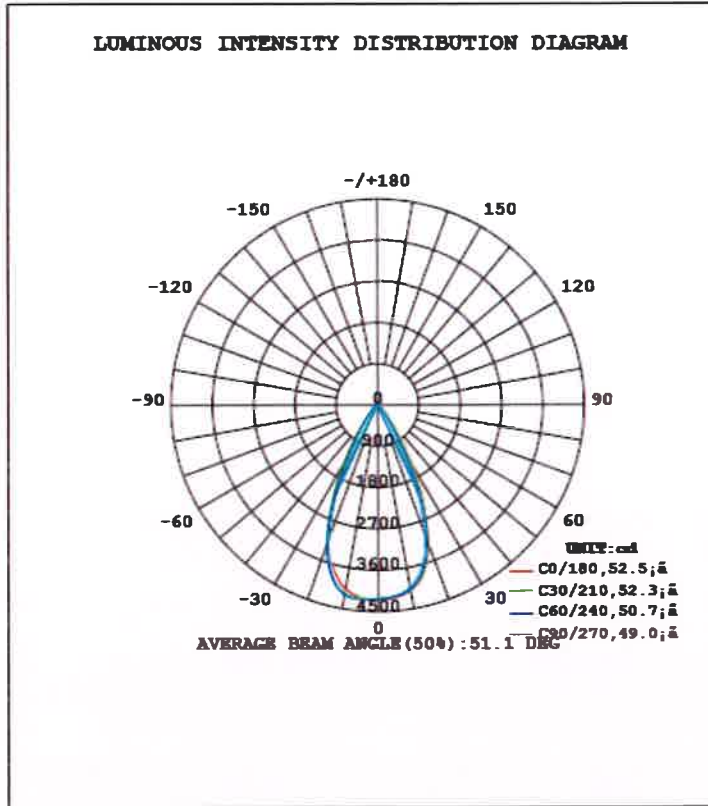
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**2.1 WW Fotometrik Deney Sonuçları (Photometric Test Results of the WW)**



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

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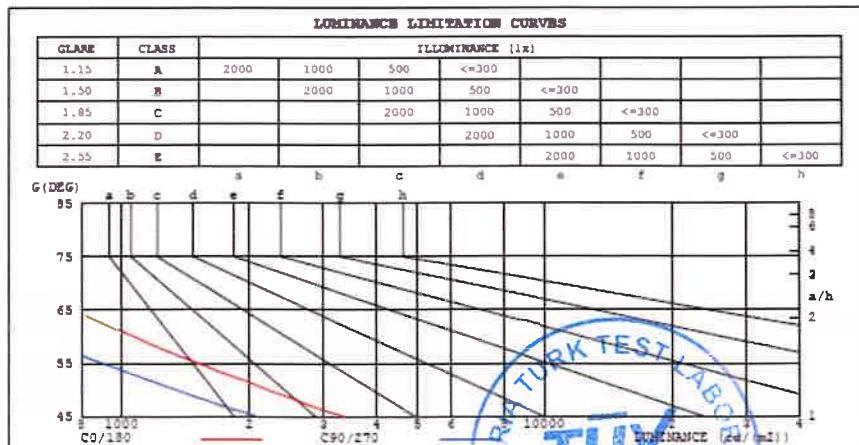
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**2.1 WW Fotometrik Deney Sonuçları (Photometric Test Results of the WW )**

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

**ZONAL FLUX DIAGRAM:**

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	U <sub>lim, lamp</sub>
5	4214	4220	4248	4204	4210	4174	4167	4123	0- 5	100.4	100.4	3.22, 3.23
10	4078	4168	4177	4113	4102	4072	4029	3985	5- 10	294.6	396.3	12.8, 12.8
15	3725	3872	3798	3749	3820	3777	3681	3654	10- 15	467.1	864.1	27.9, 27.8
20	2162	3218	3044	3054	3201	3167	3024	3048	15- 20	369.2	1433	46.2, 46.2
25	2318	2274	1997	2201	2364	2300	2051	2181	20- 25	588.5	1992	64.1, 64.1
30	1488	1302	1038	1287	1818	1372	1087	1242	25- 30	434.3	2426	78.1, 78.1
35	803.1	642.4	487.2	610.8	823.8	680.4	807.1	616.1	30- 35	273.7	2700	86.9, 86.9
40	421.2	249.2	261.3	320.1	424.2	246.6	289.9	321.1	35- 40	154.6	2856	92.82
45	227.2	190.8	146.7	182.4	243.0	189.3	138.9	178.7	40- 45	92.33	2950	98.95
50	141.9	110.8	86.21	107.1	180.1	108.9	92.27	105.0	45- 50	58.50	3008	94.9, 94.9
55	86.51	69.49	51.73	66.22	99.35	68.06	50.23	65.22	50- 55	38.18	3047	98.1, 98.1
60	53.11	43.23	31.82	41.78	52.55	42.99	31.18	40.97	55- 60	25.17	3072	99.9, 99.9
65	32.68	28.46	18.38	28.13	33.19	25.44	17.66	23.94	60- 65	16.28	3088	99.4, 99.4
70	18.70	12.87	9.369	12.23	19.30	12.90	8.724	11.90	65- 70	9.613	3098	99.9, 99.9
75	8.808	5.601	3.885	5.731	9.470	8.798	3.897	5.519	70- 75	4.995	3103	99.9, 99.9
80	3.179	1.982	1.306	1.978	3.704	2.129	1.452	1.989	75- 80	2.107	3105	100, 100
85	0.5248	0.2303	0.1400	0.2723	0.7711	0.2323	0.2100	0.2821	80- 85	0.5963	3105	100, 100
90	0	0	0	0	0	0	0	0	85- 90	0.0274	3105	100, 100
95	0	0	0	0	0	0	0	0	90- 95	0	3105	100, 100
100	0	0	0	0	0	0	0	0	95-100	0	3105	100, 100
105	0	0	0	0	0	0	0	0	100-105	0	3105	100, 100
110	0	0	0	0	0	0	0	0	105-110	0	3105	100, 100
115	0	0	0	0	0	0	0	0	110-115	0	3105	100, 100
120	0	0	0	0	0	0	0	0	115-120	0	3105	100, 100
125	0	0	0	0	0	0	0	0	120-125	0	3105	100, 100
130	0	0	0	0	0	0	0	0	125-130	0	3105	100, 100
135	0	0	0	0	0	0	0	0	130-135	0	3105	100, 100
140	0	0	0	0	0	0	0	0	135-140	0	3105	100, 100
145	0	0	0	0	0	0	0	0	140-145	0	3105	100, 100
150	0.0025	0.0907	0.0790	0.0594	0	0	0	0	145-150	0.0025	3105	100, 100
155	0.0892	0.1932	0.2264	0.1431	0.0102	0.0238	0.0275	0.0072	150-155	0.0140	3105	100, 100
160	0.2344	0.2941	0.3265	0.2245	0.0821	0.0697	0.0752	0.0597	155-160	0.0275	3105	100, 100
165	0.2730	0.3286	0.3388	0.2431	0.1323	0.1087	0.0972	0.0940	160-165	0.0205	3105	100, 100
170	0.2774	0.3240	0.3216	0.2787	0.1428	0.1231	0.0904	0.0936	165-170	0.0247	3105	100, 100
175	0.2540	0.3074	0.2740	0.2730	0.1712	0.1789	0.1168	0.1021	170-175	0.0143	3105	100, 100
180	0.2851	0.3274	0.2982	0.2864	0.2871	0.2327	0.2827	0.2604	175-180	0.0058	3105	100, 100



**LUMINANCE cd/(m2)**

G (DEG)	C0/180	C90/270
85	60	16
80	192	75
75	340	150
70	547	274
65	773	435
60	1062	636
55	1508	902
50	2205	1342
45	3257	2074

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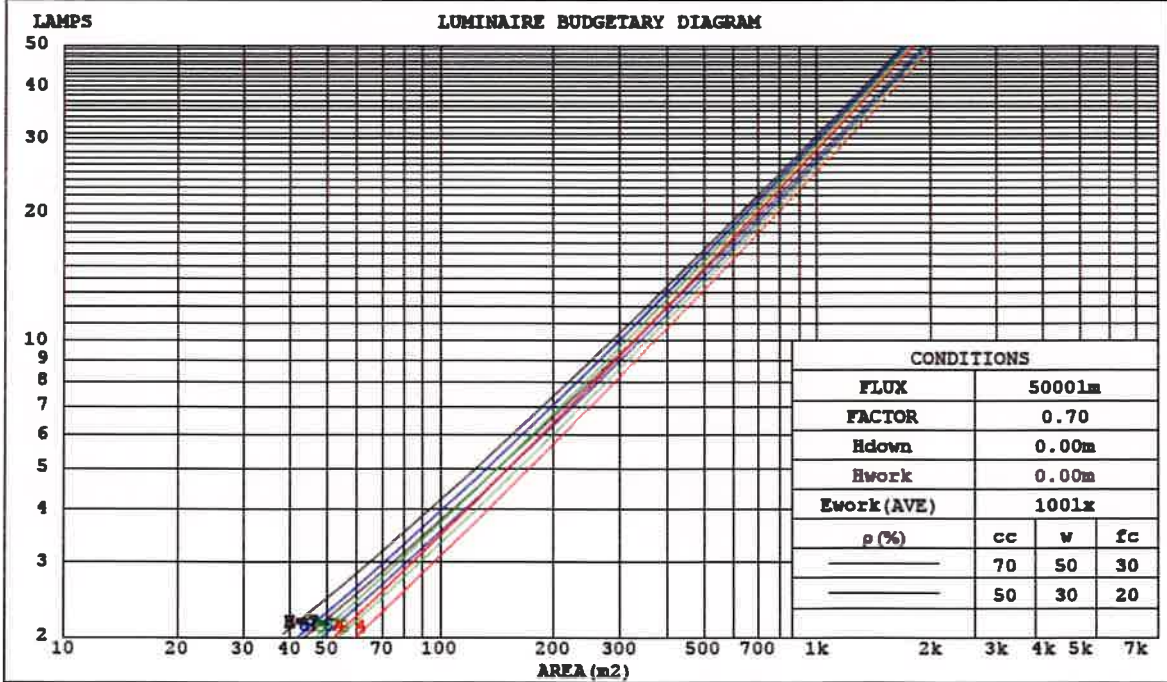
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**2.1 WW Fotometrik Deney Sonuçları (Photometric Test Results of the WW )**

**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
RCA	RCR:Room Cavity Ratio						Coefficients of Utilisation(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	1.11	1.09	1.06	1.09	1.07	1.05	1.05	1.03	1.01	1.01	.00	.98	.98	.97	.96	.94
2.0	1.04	.00	.96	1.02	.98	.96	.99	.96	.93	.96	.93	.91	.93	.91	.89	.88
3.0	.97	.92	.88	.96	.91	.88	.93	.89	.86	.91	.87	.85	.88	.86	.84	.82
4.0	.91	.86	.82	.90	.85	.81	.88	.84	.80	.86	.82	.79	.84	.81	.78	.77
5.0	.86	.80	.76	.85	.79	.76	.83	.78	.75	.81	.77	.74	.80	.76	.74	.72
6.0	.81	.75	.71	.80	.75	.71	.79	.74	.70	.77	.73	.70	.76	.72	.69	.68
7.0	.76	.71	.67	.76	.70	.66	.74	.70	.66	.73	.69	.66	.72	.68	.65	.64
8.0	.72	.67	.63	.72	.66	.63	.71	.66	.62	.70	.65	.62	.69	.65	.62	.61
9.0	.69	.63	.69	.68	.63	.69	.67	.62	.69	.66	.62	.69	.66	.62	.69	.67
10.0	.65	.60	.66	.65	.60	.66	.64	.69	.66	.63	.69	.66	.63	.69	.66	.64





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

**WEC AND CCEC**

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						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.173	.099	.031	.167	.095	.030	.154	.088	.028	.143	.082	.026	.132	.076	.025	
2.0	.166	.091	.028	.160	.088	.027	.149	.083	.026	.140	.078	.025	.131	.074	.023	
3.0	.157	.084	.025	.153	.082	.025	.144	.078	.024	.135	.074	.023	.128	.071	.022	
4.0	.149	.078	.023	.145	.076	.022	.138	.073	.022	.130	.070	.021	.124	.067	.020	
5.0	.142	.072	.021	.139	.071	.021	.132	.069	.020	.126	.066	.020	.120	.064	.019	
6.0	.135	.068	.019	.132	.067	.019	.126	.065	.019	.121	.063	.018	.116	.061	.018	
7.0	.129	.064	.018	.126	.063	.018	.121	.061	.018	.116	.060	.017	.112	.058	.017	
8.0	.124	.060	.017	.121	.060	.017	.116	.058	.017	.112	.057	.016	.108	.055	.016	
9.0	.118	.057	.016	.116	.057	.016	.112	.055	.016	.108	.054	.016	.104	.053	.015	
10.0	.113	.054	.015	.112	.054	.015	.108	.053	.015	.104	.052	.015	.101	.051	.015	

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						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.191	.191	.191	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.171	.157	.145	.146	.135	.125	.100	.093	.086	.058	.054	.050	.018	.017	.016	
2.0	.155	.133	.113	.133	.114	.098	.091	.079	.068	.053	.046	.040	.017	.015	.013	
3.0	.143	.114	.090	.122	.098	.078	.084	.068	.055	.049	.040	.032	.016	.013	.011	
4.0	.132	.099	.073	.114	.085	.064	.078	.059	.045	.045	.035	.026	.015	.011	.009	
5.0	.123	.087	.060	.106	.075	.052	.073	.053	.037	.042	.031	.022	.014	.010	.007	
6.0	.116	.078	.050	.100	.067	.044	.069	.047	.031	.040	.028	.018	.013	.009	.006	
7.0	.109	.070	.043	.094	.061	.037	.065	.043	.026	.038	.025	.016	.012	.008	.005	
8.0	.103	.064	.037	.089	.055	.032	.062	.039	.023	.036	.023	.014	.012	.008	.004	
9.0	.098	.059	.032	.085	.051	.028	.059	.036	.020	.034	.021	.012	.011	.007	.004	
10.0	.094	.054	.028	.081	.047	.024	.056	.033	.017	.033	.020	.010	.011	.006	.003	



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**2.1 WW Fotometrik Denev Sonuçları (Photometric Test Results of the WW)****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	11.8	12.7	12.0	12.8	13.0	9.3	10.2	9.5	10.4	10.6
3H	11.7	12.6	12.0	12.8	13.0	9.2	10.1	9.5	10.3	10.5
4H	11.7	12.5	12.0	12.7	12.9	9.2	10.0	9.4	10.2	10.4
6H	11.6	12.4	11.9	12.6	12.8	9.1	9.8	9.4	10.1	10.3
8H	11.6	12.3	11.9	12.5	12.8	9.0	9.8	9.3	10.0	10.3
12H	11.5	12.2	11.8	12.5	12.8	9.0	9.7	9.3	9.9	10.2
4H 2H	11.6	12.4	11.9	12.6	12.8	9.2	10.0	9.5	10.3	10.5
3H	11.6	12.3	11.9	12.5	12.8	9.2	9.9	9.5	10.1	10.4
4H	11.6	12.2	11.9	12.5	12.8	9.1	9.7	9.5	10.0	10.4
6H	11.5	12.0	11.9	12.4	12.7	9.0	9.6	9.4	9.9	10.3
8H	11.4	11.9	11.8	12.3	12.7	9.0	9.5	9.4	9.8	10.2
12H	11.4	11.8	11.8	12.2	12.6	8.9	9.4	9.3	9.8	10.2
8H 4H	11.4	11.9	11.8	12.3	12.6	9.0	9.5	9.4	9.9	10.2
6H	11.3	11.8	11.8	12.1	12.6	8.9	9.3	9.3	9.7	10.1
8H	11.3	11.7	11.7	12.1	12.5	8.9	9.2	9.3	9.6	10.1
12H	11.2	11.6	11.7	12.0	12.5	8.8	9.1	9.3	9.6	10.0
12H 4H	11.4	11.8	11.8	12.2	12.6	9.0	9.4	9.4	9.8	10.2
6H	11.3	11.7	11.7	12.1	12.5	8.9	9.2	9.3	9.6	10.1
8H	11.2	11.5	11.7	12.0	12.5	8.8	9.1	9.3	9.6	10.0
Variations with the observer position at spacings:										
S = 1.0H	+ 2.6 / - 4.1					+ 2.0 / - 4.6				
1.5H	+ 4.0 / - 3.4					+ 3.1 / - 3.1				
2.0H	+ 3.9 / - 3.3					+ 3.3 / - 3.1				

CIE Pub.117 Corrected 3105 lm Total Lamp Luminous Flux. (6log(F/F0) = 3.9)



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**2.1 WW Fotometrik Deney Sonuçları (Photometric Test Results of the WW)****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) $k(RI) \times BCR = 5$									
k = 0.60	86	80	76	86	80	76	85	79	76	72
0.80	94	88	84	93	88	84	92	87	84	80
1.00	99	93	89	98	93	89	96	92	88	84
1.25	103	97	94	102	97	94	100	96	93	89
1.50	106	101	97	104	100	97	102	98	96	91
2.00	108	104	101	107	103	100	104	101	99	93
2.50	110	106	103	108	105	102	105	103	100	94
3.00	112	108	105	110	107	104	106	104	102	96
4.00	114	111	109	112	109	107	108	106	106	97
5.00	116	113	111	113	111	109	109	107	106	98
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRMM = 1.25			



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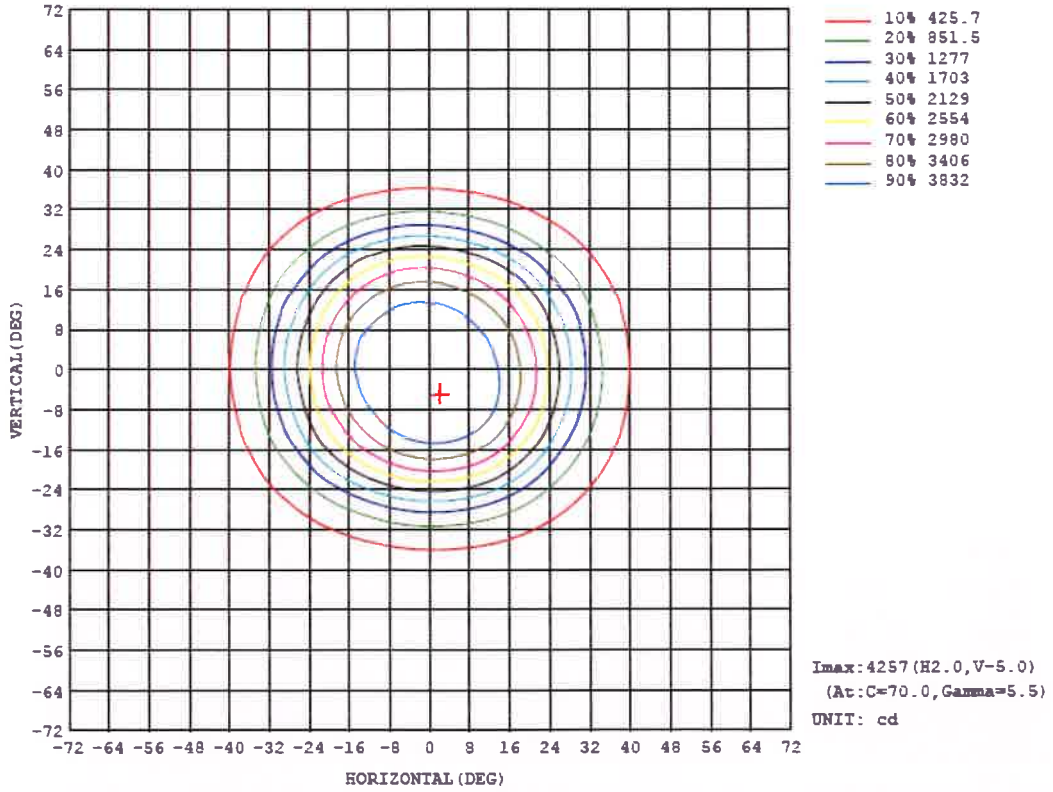
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**2.1 WW Fotometrik Deney Sonuçları (Photometric Test Results of the WW )**

**ISOCANDELA DIAGRAM**



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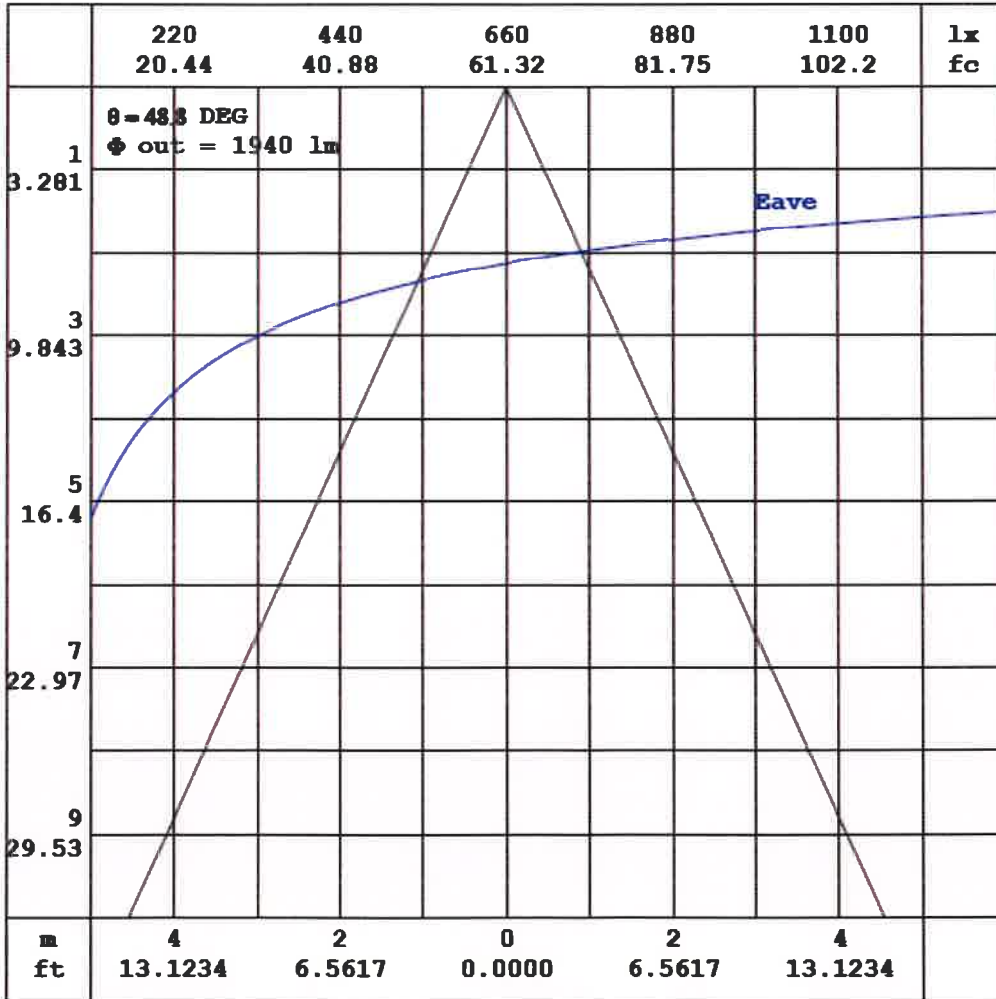
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**2.1 WW Fotometrik Deney Sonuçları (Photometric Test Results of the WW)**

**AAI CURVES**



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



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

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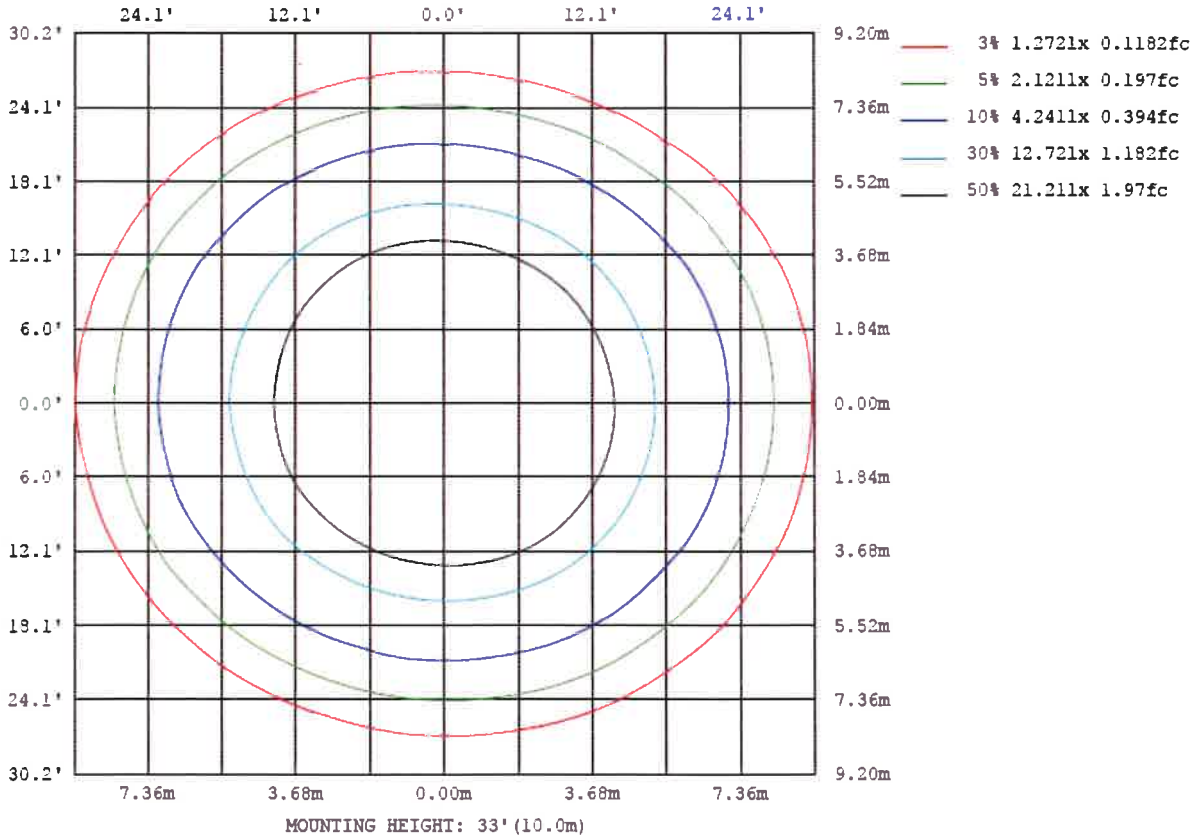
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**2.1 WW Fotometrik Deney Sonuçları (Photometric Test Results of the WW)**

**ISOLUX DIAGRAM**



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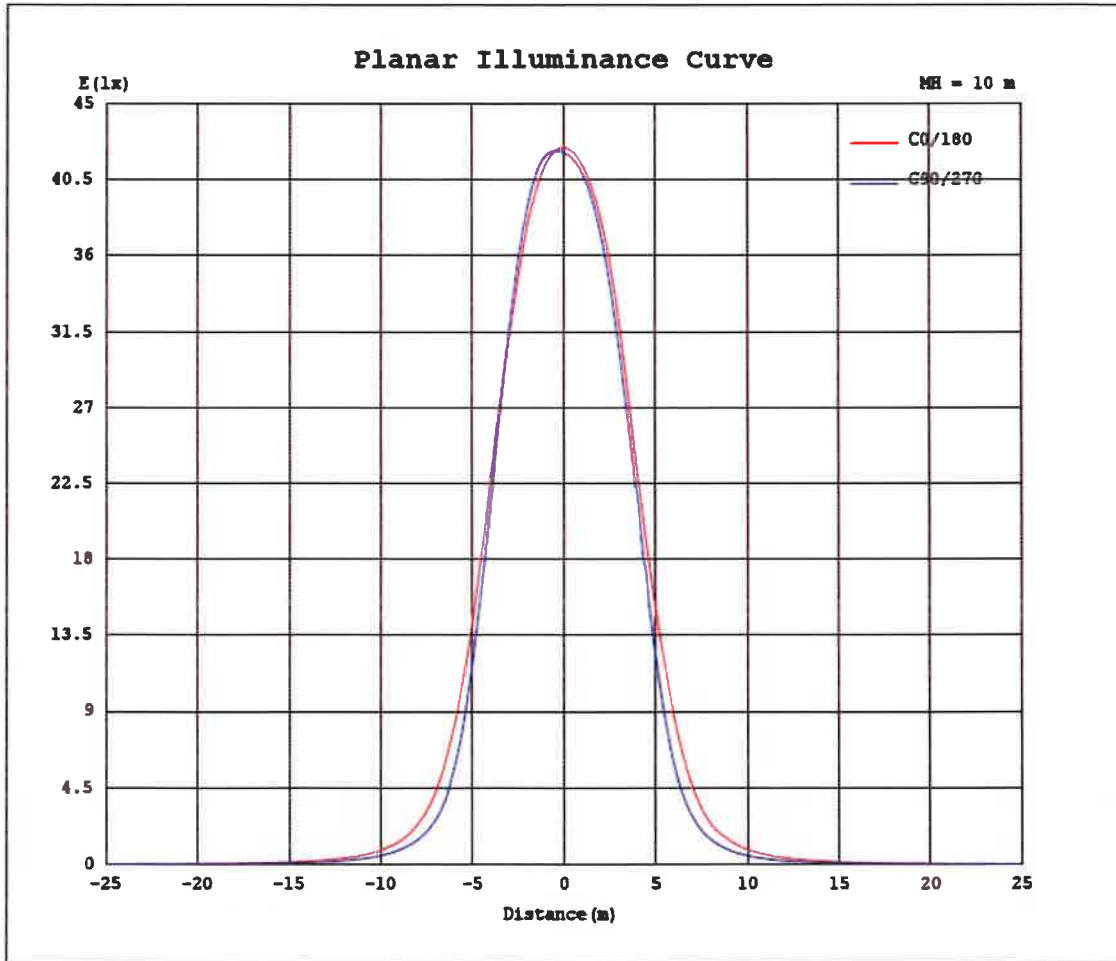
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**2.1 WW Fotometrik Deney Sonuçları (Photometric Test Results of the WW)**



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

(Electrical Measurements)

<b>Ölçülen Güç (W)</b> (Input Power)	42,66 W
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	46,89 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,91 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 50% Rh
<b>Stabilizasyon Süresi</b> (Stabilization Time)	60 dk ±5dk

**Spektrokolorimetrik Ölçüm Sonuçları**

(Spectrocolorimetric Measurement Results)

<b>Chrom x</b>	0,4405
<b>Chrom y</b>	0,4123
<b>Duv</b>	0,0027
<b>Chrom u'</b>	0,2494
<b>Chrom v'</b>	0,5251
<b>Peak</b>	595 nm
<b>Dominant</b>	582 nm
<b>CCT</b>	3041 K
<b>Nominal CCT</b>	-
<b>Ra(CRI)</b>	71
<b>R9</b>	-32
<b>S/P Ratio</b>	1,2
<b>Preburning time</b>	1 hr
<b>Test Configuration</b>	4π





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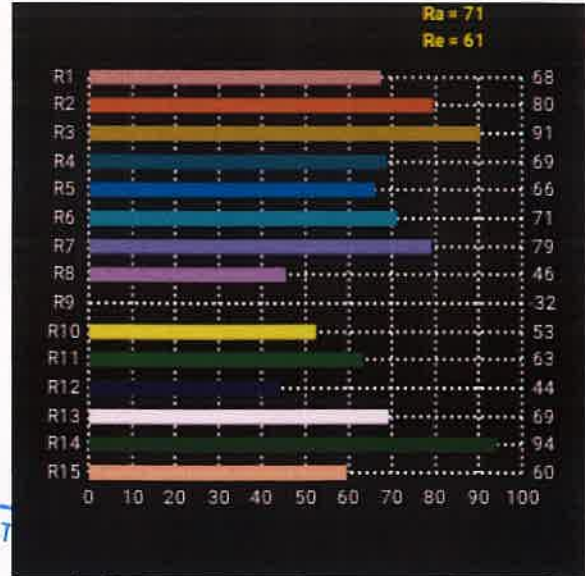
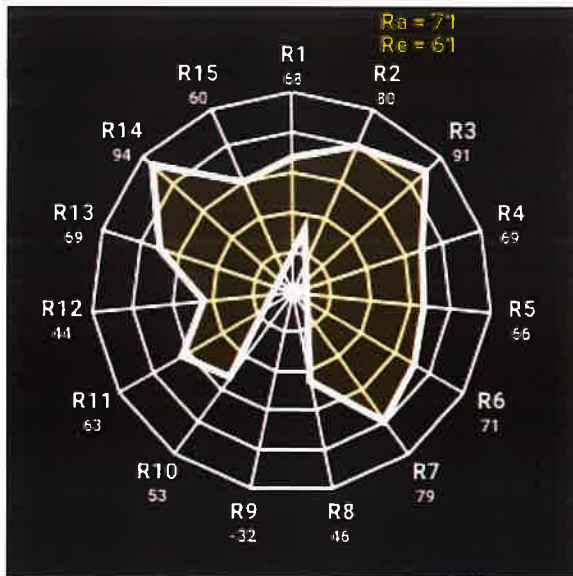
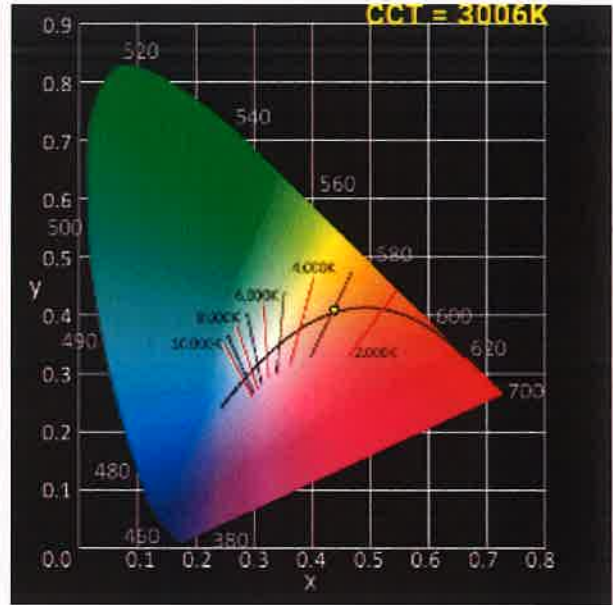
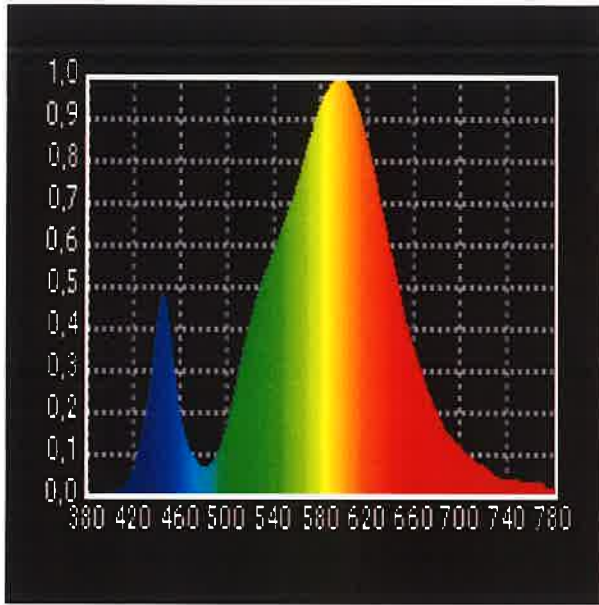
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**2.2 WW Spektrokolorimetrik Deney Sonuçları (spectrocolorimetric Test Results of the WW)**

**Spectral Power Distribution**



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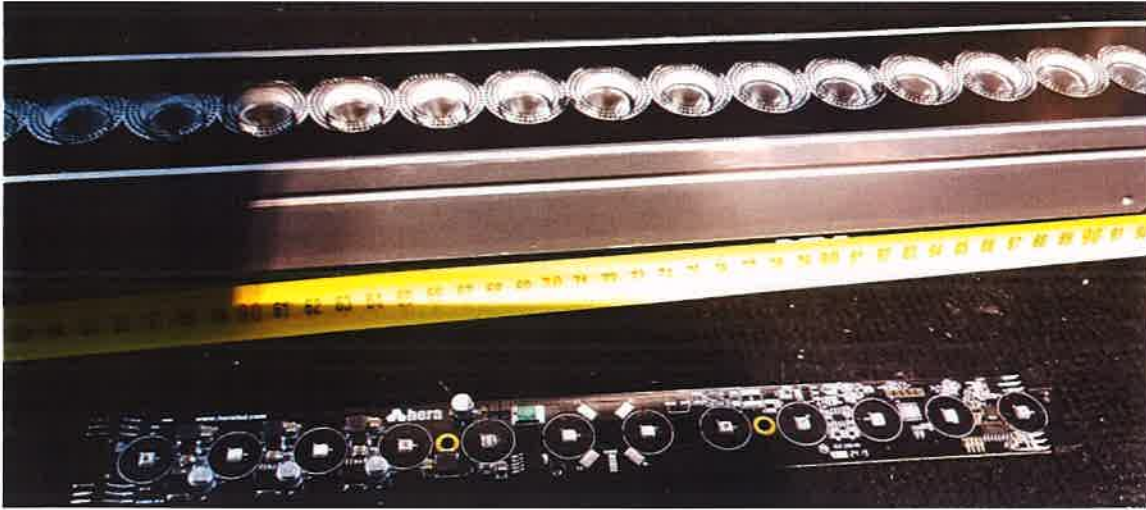
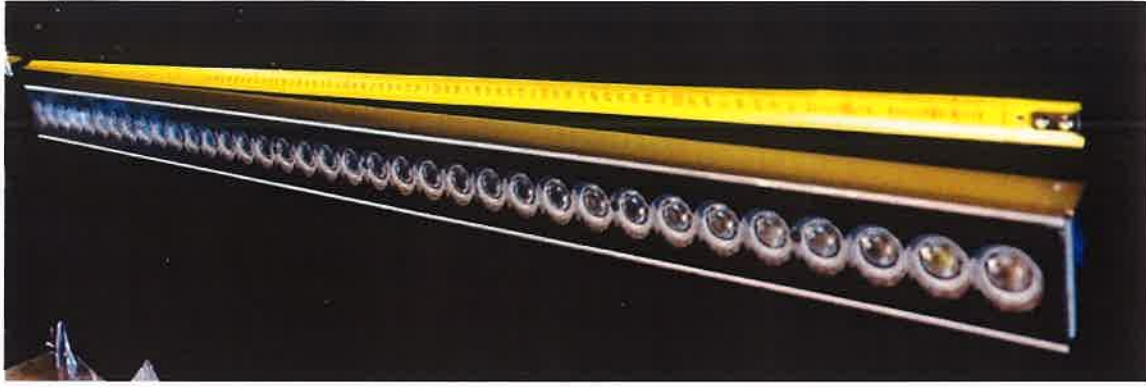
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**3.1 DGC'nin Fotoğrafları (Photos of EUT)**



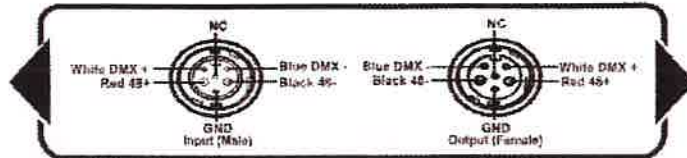
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