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**ÖLÇÜM RAPORU**  
MEASUREMENT REPORT

TL-806

19-TST-0095-  
182

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 Wide Flood Beam 60°

**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 Wide Flood Beam 60°

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

**Elektriksel Ölçümler**

(Electrical Measurements)

<b>Ölçülen Güç (W)</b> (Input Power)	42,19 W
<b>Ölçülen Gerilim (V)</b> (Input Voltage)	46,88 VDC
<b>Ölçülen Akım (A)</b> (Input Current)	0,90 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)	3017,1
<b>Maksimum Işık Şiddeti</b> (Max. Light Intensity) (cd)	2990
<b>Armatür Etkinliği</b> (Luminaire Efficacy) (lm/W)	71,51





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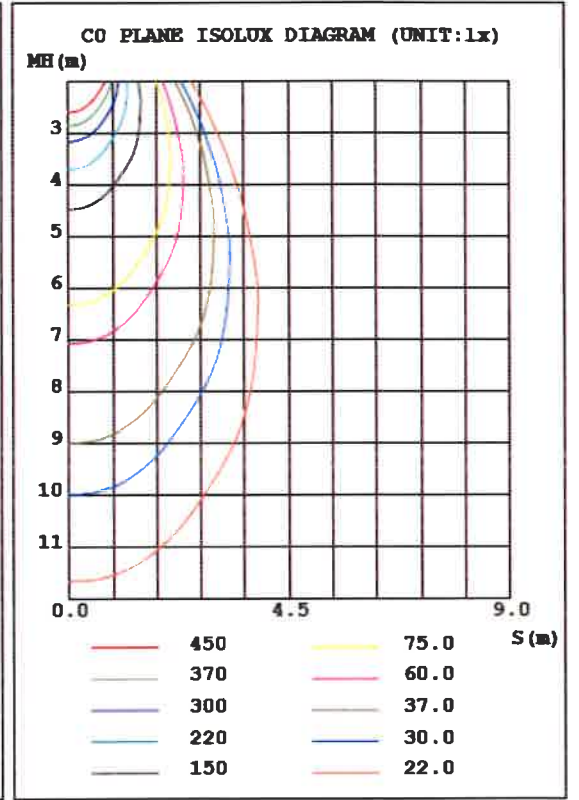
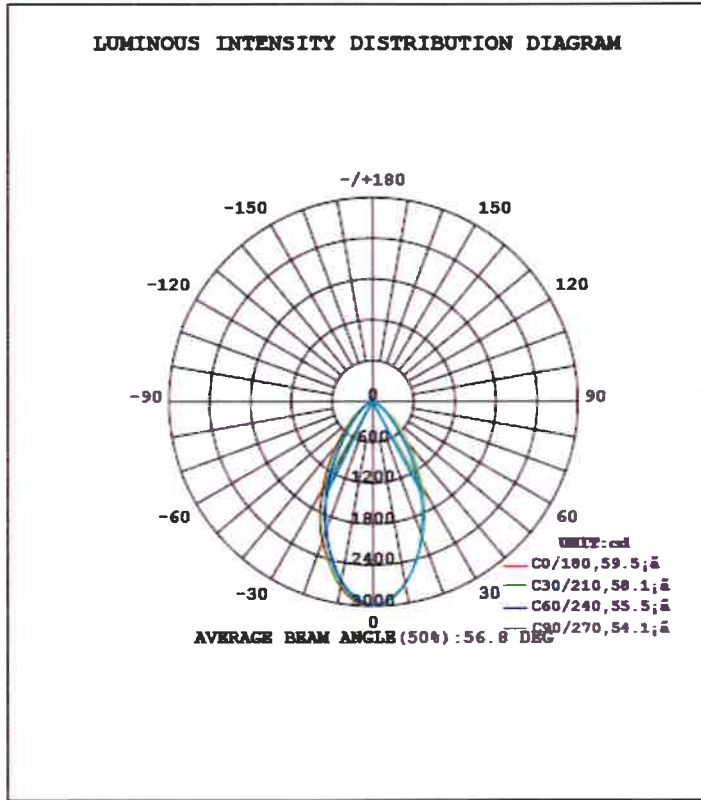
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**2.1 WW Fotometrik Deney Sonuçları (Photometric Test Results of the WW)**



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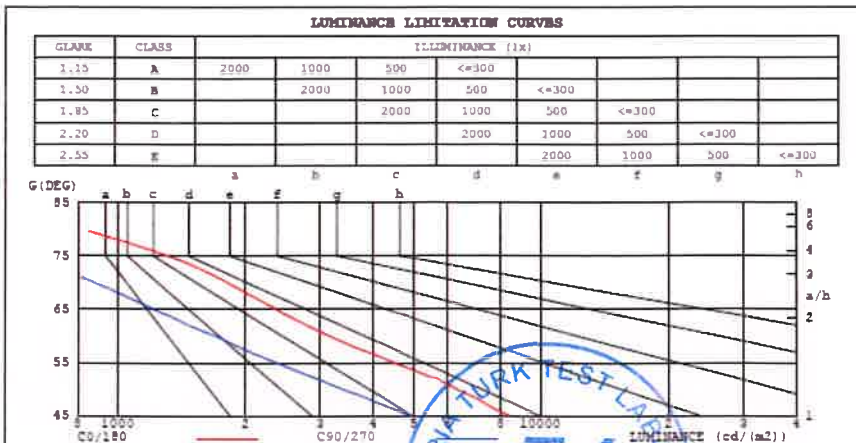
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**2.1 WW Fotometrik Deney Sonuçları (Photometric Test Results of the WW )**

**ZONAL FLUX DIAGRAM  
AND LUMINANCE LIMITATION CURVES**

**ZONAL FLUX DIAGRAM:**

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ <sub>zone</sub>	Φ <sub>total</sub>	Lim. I <sub>avg</sub>
5	2947	2894	2866	2852	2896	2902	2914	2912	0- 5	70.02	70.02	2.32, 2.22
10	2760	2702	2635	2620	2706	2719	2729	2729	5- 10	200.0	270.0	8.95, 8.85
15	2475	2418	2319	2323	2449	2446	2438	2475	10- 15	303.2	373.2	18, 19
20	2196	2084	1956	1970	2115	2114	2085	2156	15- 20	370.2	543.5	21, 21, 23
25	1870	1727	1574	1617	1779	1766	1713	1757	20- 25	398.2	742	44.5, 44.5
30	1502	1344	1179	1256	1450	1404	1328	1408	25- 30	398.8	1132	57.4, 57.4
35	1160	966.9	812.6	813.0	1114	1033	954.7	1026	30- 35	244.9	2077	68.8, 68.8
40	850.7	662.9	540.2	619.5	812.8	721.4	642.1	727.5	35- 40	279.7	2356	78.1, 78.1
45	593.9	438.5	347.2	415.0	580.9	493.2	414.4	485.6	40- 45	212.6	2369	85.1, 85.1
50	405.0	286.7	218.0	269.9	409.4	313.5	260.5	317.0	45- 50	184.5	2723	90.2, 90.2
55	256.9	183.0	135.9	175.0	260.9	204.7	162.2	202.0	50- 55	108.6	2821	92.9, 92.9
60	187.2	117.0	84.88	112.4	168.0	121.0	101.8	120.2	55- 60	72.61	2906	86.2, 86.2
65	99.90	73.46	51.24	71.27	104.2	82.26	63.41	84.67	60- 65	48.92	2955	87.9, 87.9
70	61.90	44.25	29.98	42.26	64.04	51.34	37.99	52.51	65- 70	21.67	2984	88.99
75	33.84	22.72	14.74	22.43	36.12	27.87	20.11	28.53	70- 75	18.92	2005	89.6, 89.6
80	13.72	7.565	4.622	7.842	15.29	10.68	7.402	10.58	75- 80	9.109	2014	89.9, 89.9
85	2.222	0.7920	0.5428	0.9460	2.156	1.642	1.045	1.296	80- 85	2.584	2017	100, 100
90	0	0	0	0	0	0	0	0	85- 90	0.1984	2017	100, 100
95	0	0	0	0	0	0	0	0	90- 95	0	2017	100, 100
100	0	0	0	0	0	0	0	0	95-100	0	2017	100, 100
105	0	0	0	0	0	0	0	0	100-105	0	2017	100, 100
110	0	0	0	0	0	0	0	0	105-110	0	2017	100, 100
115	0	0	0	0	0	0	0	0	110-115	0	2017	100, 100
120	0	0	0	0	0	0	0	0	115-120	0	2017	100, 100
125	0	0	0	0	0	0	0	0	120-125	0	2017	100, 100
130	0	0	0	0	0	0	0	0	125-130	0	2017	100, 100
135	0	0	0	0	0	0	0	0	130-135	0	2017	100, 100
140	0	0	0	0	0	0	0	0	135-140	0	2017	100, 100
145	0	0	0	0	0	0	0	0	140-145	0	2017	100, 100
150	0	0.0200	0.0186	0.0150	0	0	0	0	145-150	0.0004	2017	100, 100
155	0.0046	0.0783	0.1023	0.0827	0	0	0	0	150-155	0.0046	2017	100, 100
160	0.0080	0.1231	0.1608	0.0948	0.0000	0	0	0	155-160	0.0080	2017	100, 100
165	0.1121	0.1526	0.1682	0.1166	0.0224	0.0048	0	0	160-165	0.0108	2017	100, 100
170	0.1162	0.1487	0.1522	0.1222	0.0226	0.0105	0	0	165-170	0.0087	2017	100, 100
175	0.1054	0.1260	0.1122	0.1110	0.0419	0.0426	0.0027	0.0022	170-175	0.0046	2017	100, 100
180	0.1168	0.1412	0.1259	0.1129	0.1188	0.1418	0.1102	0.0982	175-180	0.0021	2017	100, 100
DEG	LUMINOUS INTENSITY, cd								UNIT: lm			



**LUMINANCE cd/(m2)**

G (DEG)	C0/180	C90/270
85	269	62
80	790	267
75	1208	570
70	1810	977
65	2264	1215
60	3143	1698
55	4478	2370
50	6200	3292
45	8398	4912

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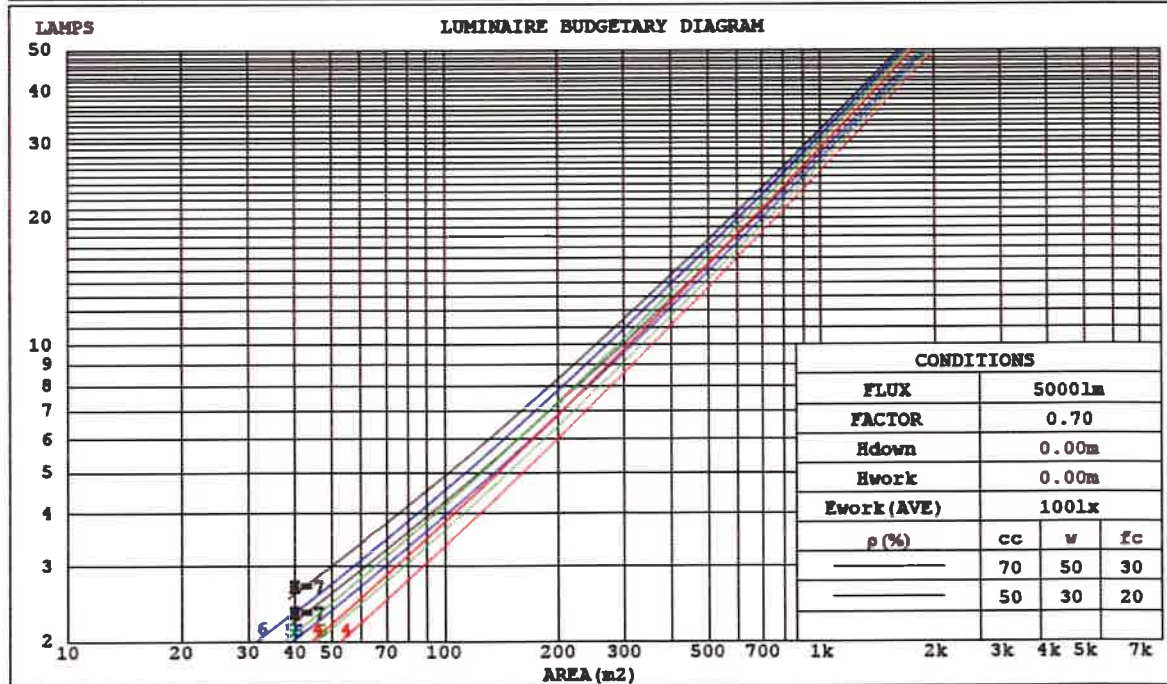
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**2.1 WW Fotometrik Deneş Sonuları (Photometric Test Results of the WW )**

**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
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	1.09	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	.98	.94	.91	.95	.92	.89	.92	.89	.87	.89	.87	.85	.83
3.0	.92	.86	.82	.91	.85	.81	.88	.83	.80	.85	.82	.78	.83	.80	.77	.76
4.0	.85	.79	.74	.84	.78	.73	.81	.76	.72	.79	.75	.71	.77	.74	.71	.69
5.0	.79	.72	.67	.78	.71	.67	.76	.70	.66	.74	.69	.65	.72	.68	.65	.63
6.0	.73	.66	.61	.72	.66	.61	.71	.65	.61	.69	.64	.60	.68	.63	.60	.58
7.0	.68	.61	.56	.67	.61	.56	.66	.60	.56	.65	.59	.56	.63	.59	.55	.54
8.0	.63	.57	.52	.63	.57	.52	.62	.56	.52	.61	.55	.52	.60	.55	.51	.50
9.0	.60	.53	.49	.59	.53	.48	.58	.52	.48	.57	.52	.48	.56	.51	.48	.46
10.0	.56	.50	.45	.56	.49	.45	.55	.49	.45	.54	.49	.45	.53	.48	.45	.43



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### 2.1 WW Fotometrik Deneş Sonuları (Photometric Test Results of the WW )

#### 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	.204	.116	.037	.198	.113	.036	.185	.106	.034	.173	.100	.032	.162	.094	.030	
2.0	.198	.108	.033	.192	.106	.033	.181	.101	.031	.171	.096	.030	.162	.092	.029	
3.0	.188	.100	.030	.183	.098	.030	.174	.094	.029	.165	.091	.028	.157	.087	.027	
4.0	.179	.093	.027	.174	.091	.027	.166	.088	.026	.159	.085	.026	.152	.082	.025	
5.0	.169	.086	.025	.166	.085	.025	.158	.082	.024	.152	.080	.024	.146	.078	.023	
6.0	.161	.081	.023	.157	.079	.023	.151	.077	.023	.145	.075	.022	.139	.073	.022	
7.0	.153	.075	.021	.150	.075	.021	.144	.073	.021	.139	.071	.021	.134	.069	.020	
8.0	.145	.071	.020	.142	.070	.020	.137	.069	.020	.133	.067	.019	.128	.066	.019	
9.0	.138	.067	.019	.136	.066	.019	.131	.065	.018	.127	.064	.018	.123	.062	.018	
10.0	.132	.063	.018	.130	.063	.017	.125	.061	.017	.122	.060	.017	.118	.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	.109	.137	.114	.095	.094	.079	.066	.054	.046	.039	.017	.015	.013	
3.0	.149	.114	.086	.128	.098	.074	.088	.068	.052	.051	.040	.031	.016	.013	.010	
4.0	.139	.099	.069	.120	.086	.060	.082	.060	.042	.048	.035	.025	.015	.011	.008	
5.0	.131	.088	.056	.113	.076	.049	.078	.053	.035	.045	.031	.020	.015	.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	.034	.070	.044	.024	.041	.026	.015	.013	.008	.005	
8.0	.112	.066	.034	.097	.057	.030	.067	.040	.021	.039	.024	.012	.013	.008	.004	
9.0	.107	.061	.029	.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	



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**2.1 WW Fotometrik Deney 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	16.5	17.6	16.8	17.8	18.0	14.1	15.2	14.3	15.4	15.5
3H	16.7	17.7	17.0	17.9	18.1	14.1	15.1	14.4	15.3	15.5
4H	16.7	17.7	17.0	17.9	18.2	14.1	15.0	14.4	15.3	15.5
6H	16.7	17.6	17.0	17.8	18.1	14.0	14.9	14.3	15.1	15.4
8H	16.7	17.5	17.0	17.8	18.1	14.0	14.8	14.3	15.1	15.3
12H	16.6	17.4	17.0	17.7	18.0	13.9	14.7	14.2	15.0	15.3
4H 2H	16.4	17.4	16.7	17.6	17.9	14.2	15.1	14.5	15.4	15.6
3H	16.7	17.5	17.0	17.8	18.1	14.3	15.1	14.6	15.4	15.7
4H	16.8	17.5	17.1	17.8	18.1	14.3	15.0	14.6	15.3	15.6
6H	16.7	17.4	17.1	17.7	18.1	14.2	14.9	14.6	15.2	15.5
8H	16.7	17.3	17.1	17.7	18.0	14.2	14.8	14.6	15.1	15.5
12H	16.7	17.2	17.1	17.6	18.0	14.1	14.7	14.5	15.0	15.4
8H 4H	16.7	17.3	17.1	17.6	18.0	14.2	14.8	14.6	15.2	15.6
6H	16.7	17.2	17.1	17.5	18.0	14.2	14.7	14.6	15.1	15.5
8H	16.6	17.1	17.1	17.5	17.9	14.1	14.6	14.6	15.0	15.4
12H	16.6	17.0	17.1	17.4	17.9	14.1	14.4	14.5	14.9	15.4
12H 4H	16.6	17.2	17.0	17.5	17.9	14.2	14.7	14.6	15.1	15.5
6H	16.6	17.0	17.1	17.5	17.9	14.1	14.6	14.6	15.0	15.4
8H	16.6	17.0	17.0	17.4	17.9	14.1	14.5	14.5	14.9	15.4
Variations with the observer position at spacings:										
S = 1.0H	+ 1.4 / - 2.0					+ 1.6 / - 2.9				
1.5H	+ 2.0 / - 1.9					+ 1.9 / - 1.9				
2.0H	+ 3.2 / - 2.8					+ 2.8 / - 2.6				

CIE Pub.117 Corrected 3017 lm Total Lamp Luminous Flux. (8log(F/F0) = 3.8)



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

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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) $k(RI) \times RCR = S$									
$k = 0.60$	78	70	65	77	69	65	76	69	65	60
0.80	86	79	74	86	78	74	84	78	73	69
1.00	93	85	81	92	85	80	90	85	80	75
1.25	98	91	87	97	91	86	94	89	86	80
1.50	101	95	91	100	94	90	97	93	89	84
2.00	105	100	96	104	99	95	101	97	94	88
2.50	107	103	99	106	101	98	102	99	96	90
3.00	109	105	102	108	104	101	104	101	99	92
4.00	112	108	106	110	107	104	106	104	102	94
5.00	113	110	108	111	109	106	107	105	103	95
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended				SEASON = 1.25			



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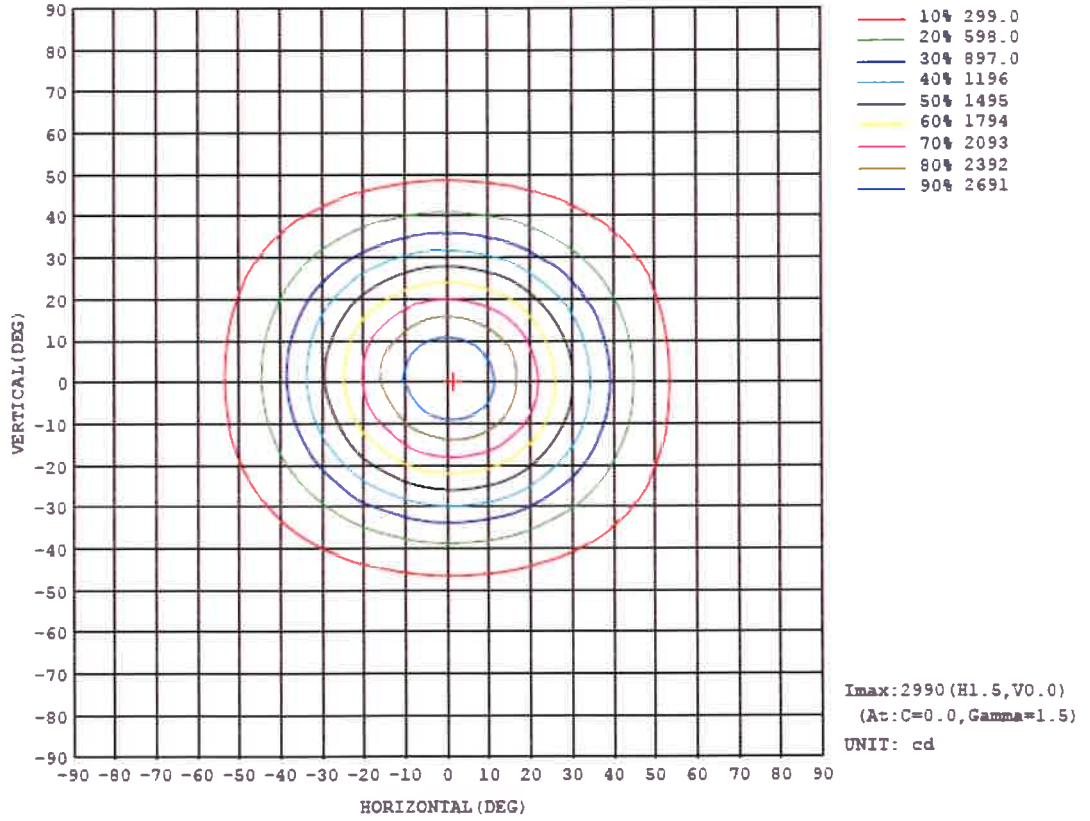
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**2.1 WW Fotometrik Deney Sonuçları (Photometric Test Results of the WW )**

**ISOCANDELA DIAGRAM**





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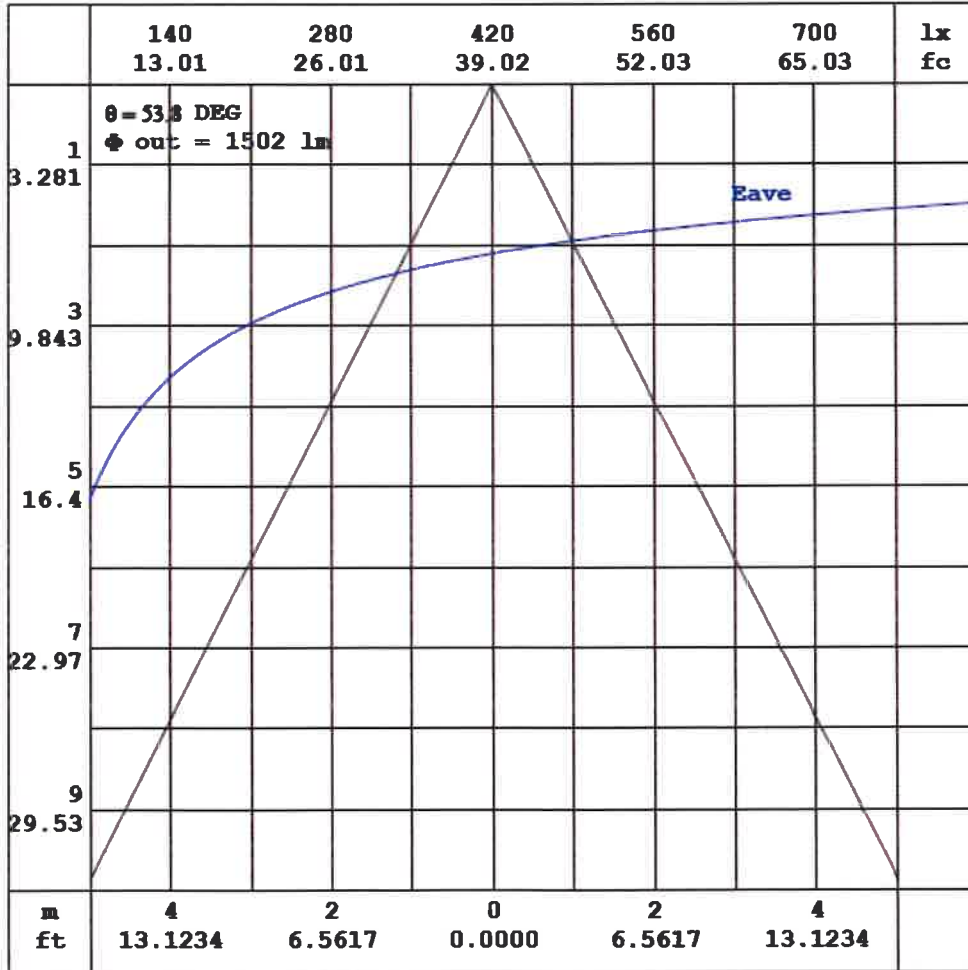
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**2.1 WW Fotometrik Deney Sonuçları (Photometric Test Results of the WW)**

**AAI CURVES**



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



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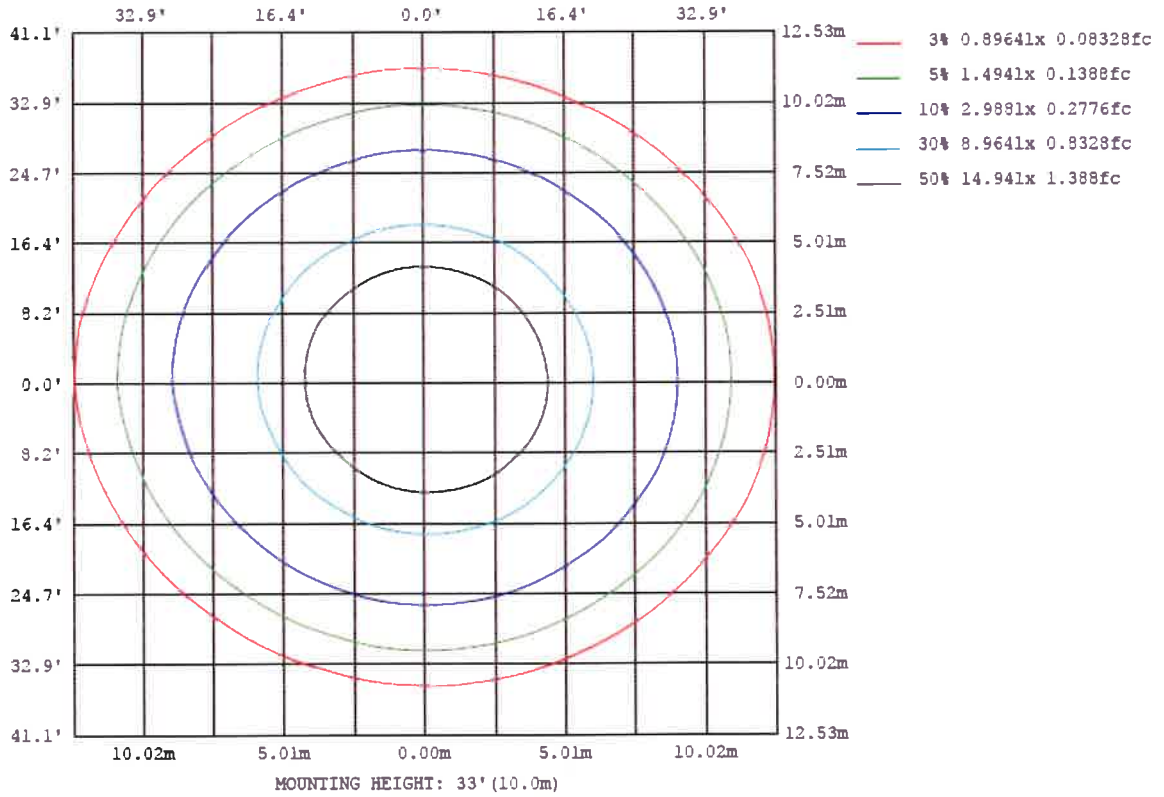
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**2.1 WW Fotometrik Deneş Sonuları (Photometric Test Results of the WW)**

**ISOLUX DIAGRAM**



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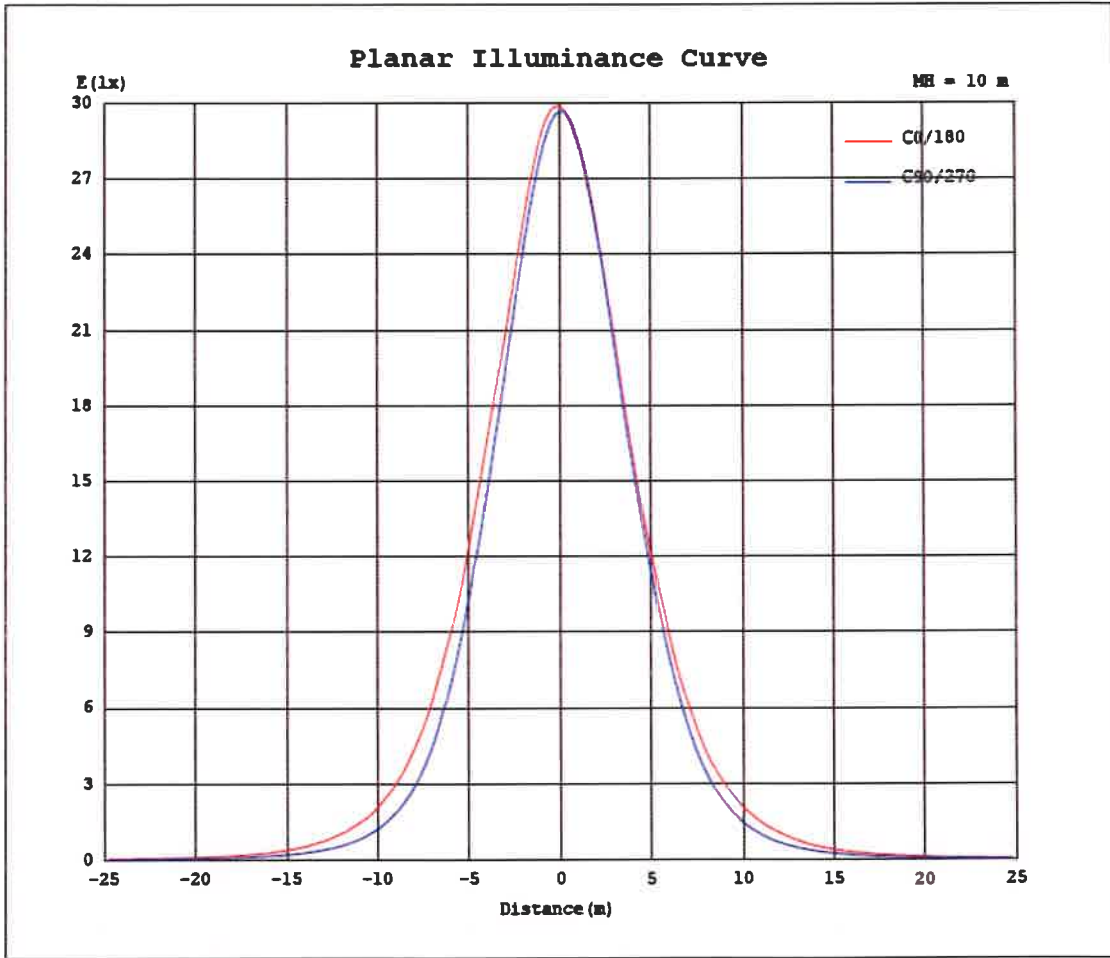
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**2.1 WW Fotometrik Deney Sonuçları (Photometric Test Results of the WW)**



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

Ölçülen Güç (W) (Input Power)	42,19 W
Ölçülen Gerilim (V) (Input Voltage)	46,88 VDC
Ölçülen Akım (A) (Input Current)	0,90 A
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	0,4439
Chrom y	0,4154
Duv	0,0035
Chrom u'	0,2502
Chrom v'	0,5268
Peak	594 nm
Dominant	582 nm
CCT	2976 K
Nominal CCT	-
Ra(CRI)	71
R9	-33
S/P Ratio	1,2
Preburning time	1 hr
Test Configuration	4π





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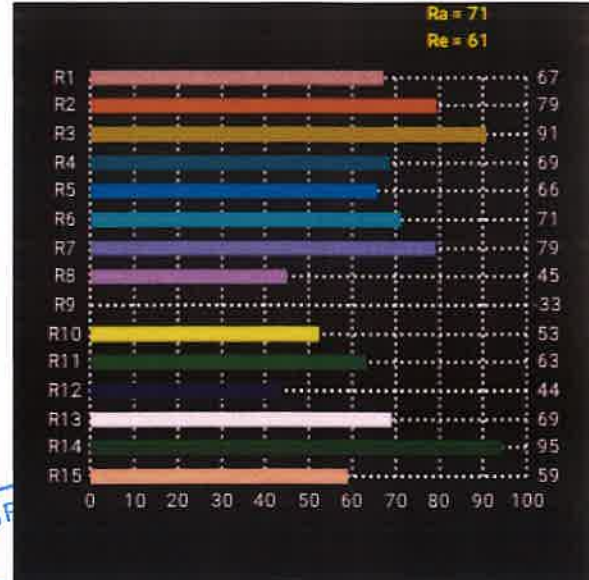
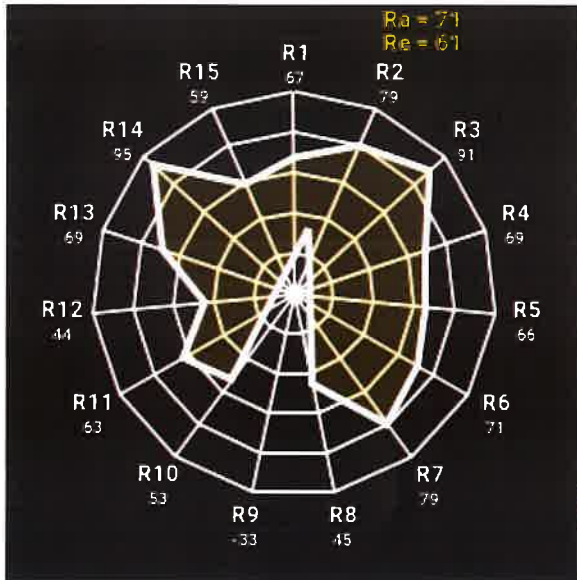
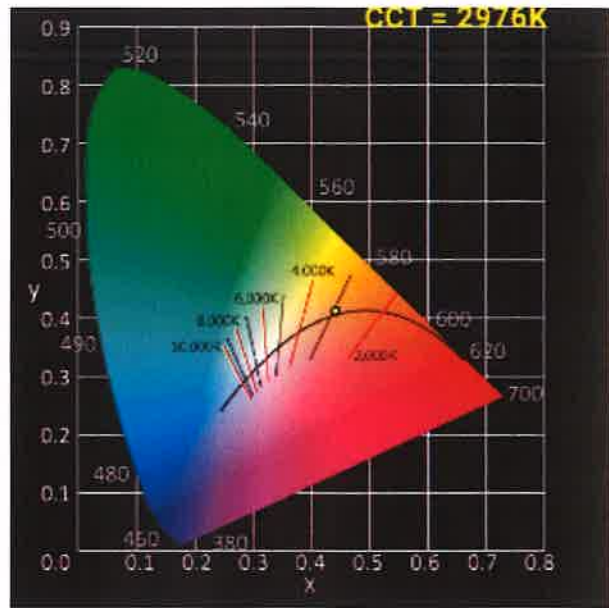
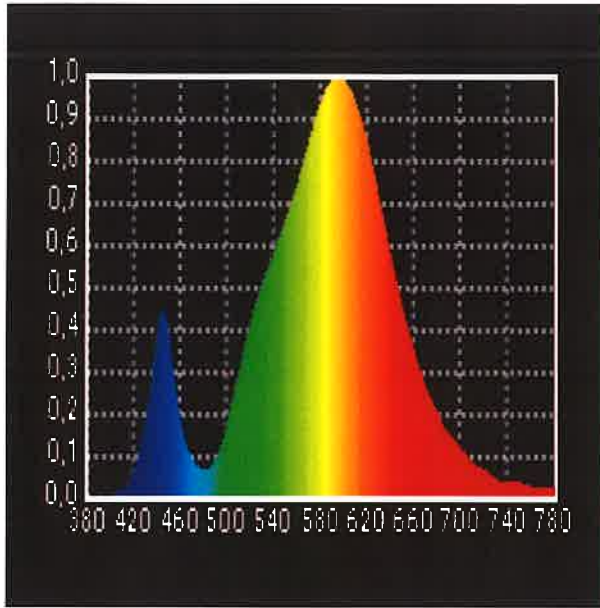
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**2.2 WW Spektrokolorimetrik Deney Sonuçları (spectrocolorimetric Test Results of the WW)**

**Spectral Power Distribution**



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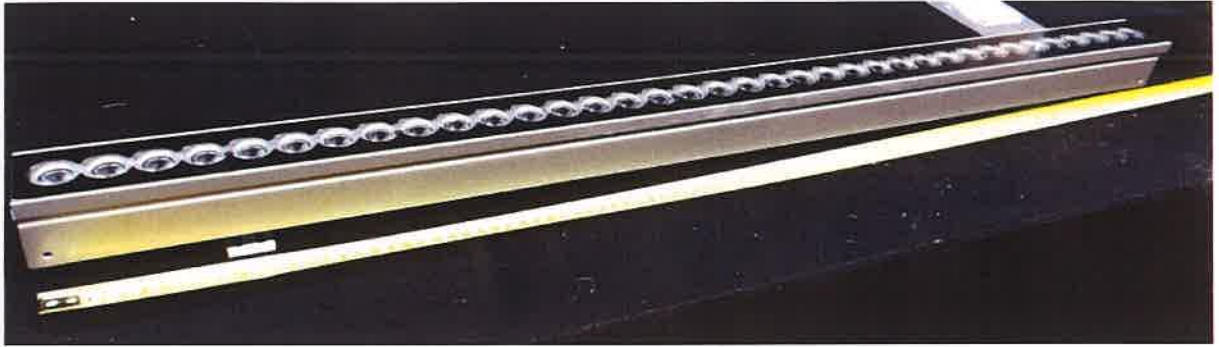
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**3.1 DGC'nin Fotoğrafları (Photos of EUT)**



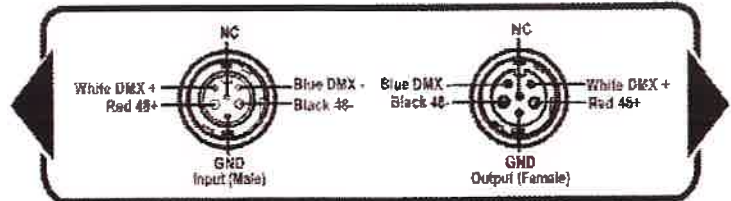
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