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ÖLÇÜM RAPORU
MEASUREMENT REPORT

TL-806

19-TST-0095-
198

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 CW 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.
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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 Wide Flood Beam 60°

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 (Components)	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	CA11176_TINA2-WW-60	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 mühürsüz raporlar geçersizdir.

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

Elektriksel Ölçümler

(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	44,02 W
Ölçülen Gerilim (V) (Input Voltage)	46,85 VDC
Ölçülen Akım (A) (Input Current)	0,94 A
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

Fotometrik Ölçüm Sonuçları

(Photometric Measurement Results)

Toplam Işık Akısı (Total Luminous Flux) (lm)	2955,4
Maksimum Işık Şiddeti (Max. Light Intensity) (cd)	3173
Armatür Etkinliği (Luminaire Efficacy) (lm/W)	67,14



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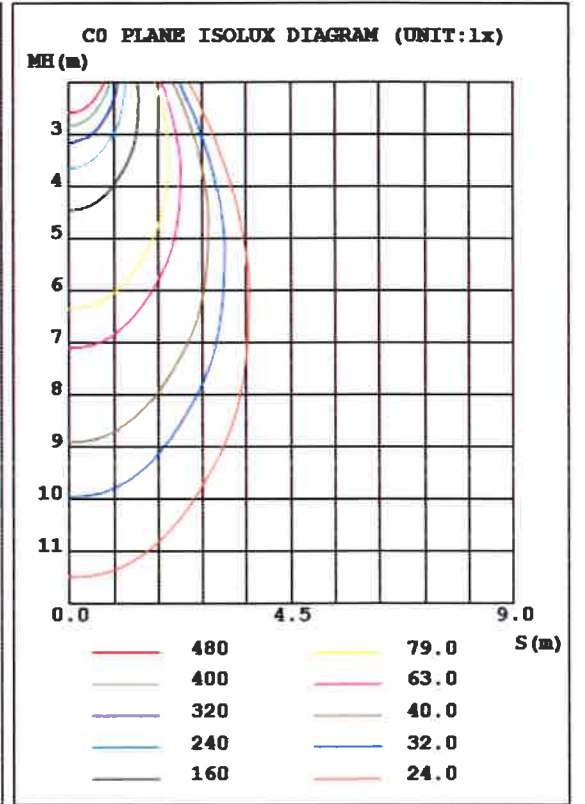
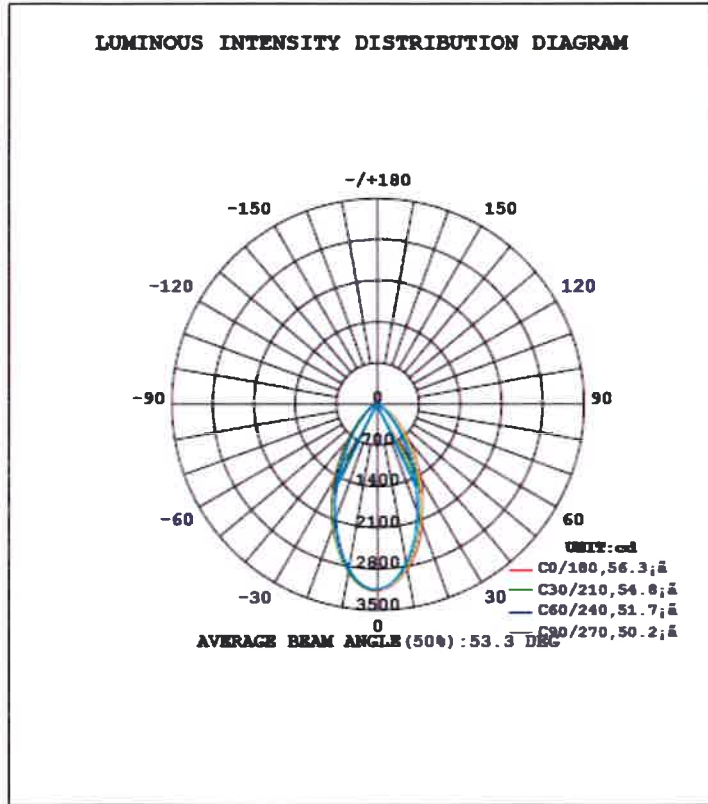
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2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)



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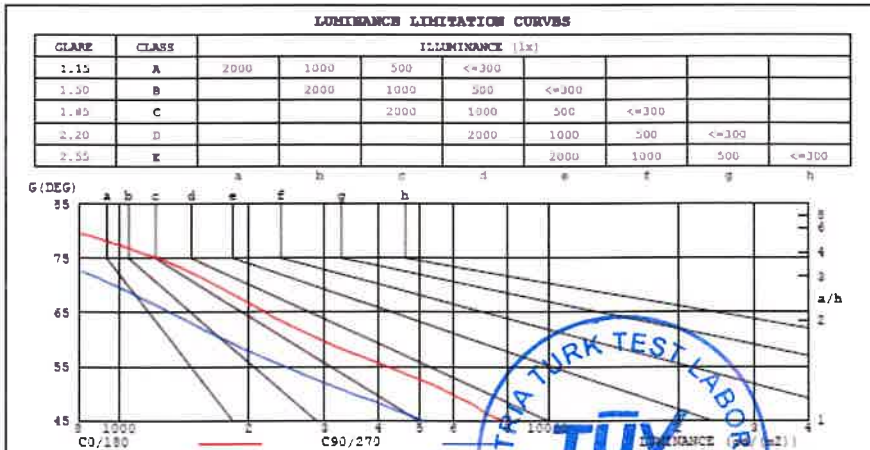
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2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)

**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	3115	3087	3048	3038	3067	3033	3024	3033	0- 5	73.94	73.94	2.5, 2.5
10	2898	2873	2812	2800	2847	2778	2748	2792	5- 10	209.5	233.5	9.89, 9.59
15	2571	2546	2447	2458	2553	2428	2371	2468	10- 15	213.3	596.8	20.2, 20.2
20	2227	2163	2041	2063	2169	2048	1988	2082	15- 20	275.6	972.4	32.9, 32.9
25	1856	1757	1619	1676	1786	1658	1546	1679	20- 25	395.8	1368	46.3, 46.3
30	1488	1380	1211	1289	1440	1282	1148	1268	25- 30	377.3	1748	59.1, 59.1
35	1117	967.5	845.6	948.4	1097	922.3	795.8	903.4	30- 35	329.5	2075	70.2, 70.2
40	797.2	661.8	564.4	649.0	791.9	620.9	524.9	620.4	35- 40	264.1	2339	79.1, 79.1
45	550.2	432.4	358.9	422.9	542.0	419.3	340.8	412.0	40- 45	195.0	2538	88.9, 88.9
50	378.1	280.6	228.1	277.3	392.4	271.7	218.1	270.6	45- 50	149.9	2682	90.8, 90.8
55	239.7	178.2	139.9	178.7	248.3	177.7	136.4	172.9	50- 55	100.9	2783	84.2, 84.2
60	146.0	114.2	87.98	116.4	184.6	114.2	85.26	110.1	55- 60	68.22	2851	86.5, 86.5
65	82.17	73.49	55.22	74.39	98.18	72.89	53.16	70.05	60- 65	45.47	2897	88.98
70	57.41	48.02	33.20	48.86	60.48	44.76	31.80	42.71	65- 70	29.60	2926	89.99
75	31.62	23.71	17.15	24.54	34.31	24.14	18.89	22.88	70- 75	17.79	2944	89.6, 89.6
80	13.23	8.263	5.886	8.057	14.43	8.969	6.123	8.176	75- 80	8.622	2953	89.9, 89.9
85	2.321	0.8736	0.6444	1.060	2.776	1.252	0.8415	1.060	80- 85	2.478	2955	100, 100
90	0	0	0	0	0	0	0	0	85- 90	0.1619	2955	100, 100
95	0	0	0	0	0	0	0	0	90- 95	0	2955	100, 100
100	0	0	0	0	0	0	0	0	95-100	0	2955	100, 100
105	0	0	0	0	0	0	0	0	100-105	0	2955	100, 100
110	0	0	0	0	0	0	0	0	105-110	0	2955	100, 100
115	0	0	0	0	0	0	0	0	110-115	0	2955	100, 100
120	0	0	0	0	0	0	0	0	115-120	0	2955	100, 100
125	0	0	0	0	0	0	0	0	120-125	0	2955	100, 100
130	0	0	0	0	0	0	0	0	125-130	0	2955	100, 100
135	0	0	0	0	0	0	0	0	130-135	0	2955	100, 100
140	0	0	0	0	0	0	0	0	135-140	0	2955	100, 100
145	0	0	0	0	0	0	0	0	140-145	0	2955	100, 100
150	0	0.0209	0.0078	0.0092	0	0	0	0	145-150	0.0002	2955	100, 100
155	0.0082	0.0723	0.0980	0.0813	0	0	0	0	150-155	0.0029	2955	100, 100
160	0.0922	0.1380	0.1610	0.1009	0.0090	0.0014	0	0	155-160	0.0095	2955	100, 100
165	0.1205	0.1607	0.1742	0.1262	0.0281	0.0169	0.0082	0.0027	160-165	0.0116	2955	100, 100
170	0.1278	0.1639	0.1697	0.1269	0.0274	0.0221	0	0.0011	165-170	0.0098	2955	100, 100
175	0.1182	0.1534	0.1325	0.1282	0.0860	0.0559	0.0274	0.0109	170-175	0.0057	2955	100, 100
180	0.1265	0.1615	0.1525	0.1287	0.1405	0.1616	0.1287	0.1160	175-180	0.0025	2955	100, 100
DEG	LUMINOUS INTENSITY:cd											UNIT:lm



LUMINANCE cd/(m2)

G (DEG)	C0/180	C90/270
85	267	74
90	762	339
75	1222	662
70	1675	974
65	2191	1309
60	2920	1760
55	4175	2422
50	5882	3471
45	7782	5076

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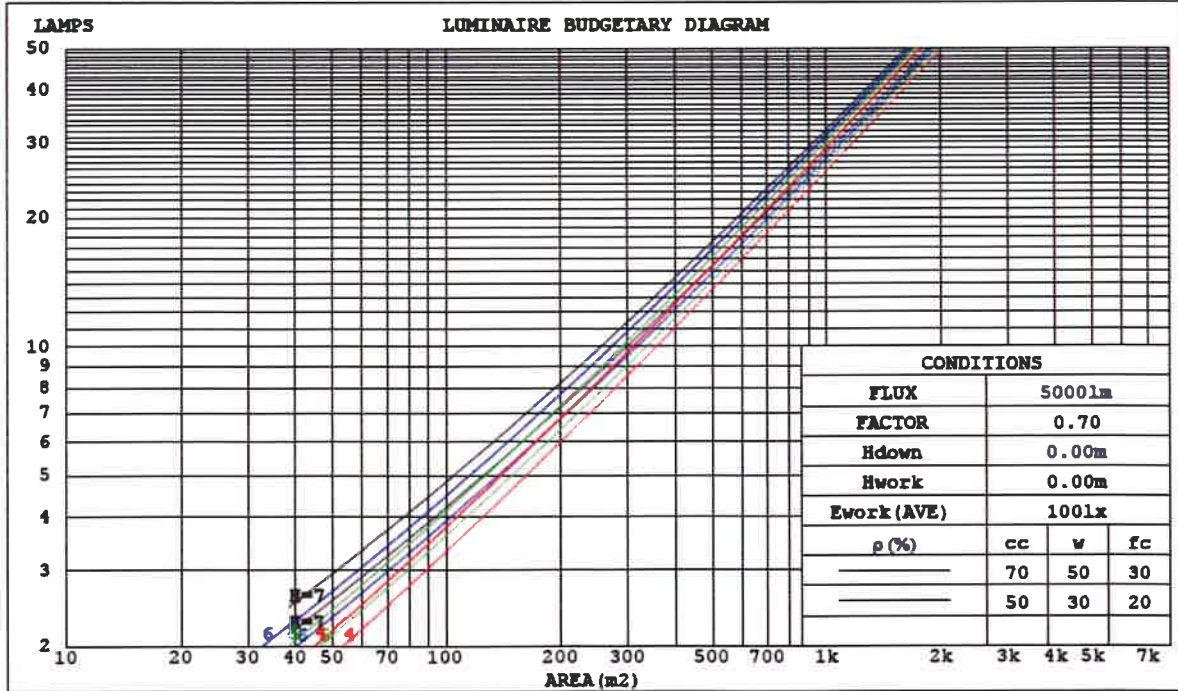
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2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

ρ_{cc}	80%			70%			50%			30%			10%			0
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ_{fc}	20%			20%			20%			20%			20%			0
RCR	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	1.10	1.07	1.04	1.07	1.05	1.03	1.03	1.01	.99	.99	.98	.96	.96	.95	.94	.92
2.0	1.01	.96	.92	.99	.95	.91	.95	.92	.89	.92	.90	.87	.90	.87	.85	.83
3.0	.93	.87	.82	.91	.86	.82	.88	.84	.80	.86	.82	.79	.84	.80	.78	.76
4.0	.85	.79	.74	.84	.78	.74	.82	.77	.73	.80	.76	.72	.78	.74	.71	.70
5.0	.79	.73	.68	.78	.72	.67	.76	.71	.67	.75	.70	.66	.73	.69	.66	.64
6.0	.74	.67	.62	.73	.67	.62	.71	.66	.62	.70	.65	.61	.68	.64	.61	.59
7.0	.69	.62	.57	.68	.62	.57	.67	.61	.57	.65	.60	.57	.64	.60	.56	.55
8.0	.64	.58	.53	.64	.57	.53	.63	.57	.53	.62	.56	.53	.60	.56	.52	.51
9.0	.60	.54	.50	.60	.54	.49	.59	.53	.49	.58	.53	.49	.57	.52	.49	.47
10.0	.57	.51	.46	.56	.50	.46	.56	.50	.46	.55	.50	.46	.54	.49	.46	.44



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

WEC AND CCEC

ρ_{cc}	80%			70%			50%			30%			10%			0
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ_{fc}	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio									Wall Exitance Coefficients(WEC)						
0.0																
1.0	.202	.115	.036	.195	.111	.035	.182	.105	.033	.171	.098	.032	.160	.093	.030	
2.0	.195	.107	.033	.189	.104	.032	.178	.099	.031	.168	.094	.030	.159	.090	.028	
3.0	.186	.099	.030	.181	.097	.029	.171	.093	.028	.163	.089	.027	.155	.086	.027	
4.0	.176	.092	.027	.172	.090	.027	.164	.087	.026	.156	.084	.025	.149	.081	.025	
5.0	.167	.085	.025	.163	.084	.024	.156	.081	.024	.149	.079	.023	.143	.077	.023	
6.0	.158	.079	.023	.155	.078	.023	.149	.076	.022	.143	.074	.022	.137	.072	.021	
7.0	.150	.074	.021	.147	.073	.021	.142	.072	.021	.137	.070	.020	.132	.068	.020	
8.0	.143	.070	.020	.140	.069	.020	.135	.068	.019	.131	.066	.019	.126	.065	.019	
9.0	.136	.066	.018	.134	.065	.018	.129	.064	.018	.125	.063	.018	.121	.061	.018	
10.0	.130	.062	.017	.128	.062	.017	.124	.061	.017	.120	.060	.017	.116	.058	.017	

ρ_{cc}	80%			70%			50%			30%			10%			0
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ_{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	.159	.132	.110	.136	.114	.095	.094	.079	.066	.054	.046	.039	.017	.015	.013	
3.0	.148	.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	.047	.035	.025	.015	.011	.008	
5.0	.131	.088	.057	.112	.076	.049	.077	.053	.035	.045	.031	.021	.014	.010	.007	
6.0	.124	.079	.047	.106	.068	.041	.073	.048	.029	.042	.028	.017	.014	.009	.006	
7.0	.117	.072	.040	.101	.062	.035	.070	.044	.025	.040	.026	.015	.013	.008	.005	
8.0	.111	.066	.034	.096	.057	.030	.066	.040	.021	.039	.024	.013	.012	.008	.004	
9.0	.106	.060	.030	.091	.052	.026	.063	.037	.018	.037	.022	.011	.012	.007	.004	
10.0	.101	.056	.026	.087	.049	.023	.061	.034	.016	.035	.020	.010	.011	.007	.003	



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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	16.3	17.4	16.6	17.6	17.8	14.3	15.4	14.5	15.6	15.7
3H	16.5	17.5	16.8	17.7	17.9	14.4	15.4	14.6	15.6	15.8
4H	16.5	17.5	16.8	17.7	17.9	14.3	15.3	14.6	15.5	15.7
6H	16.5	17.4	16.8	17.6	17.9	14.3	15.1	14.6	15.4	15.7
8H	16.4	17.3	16.8	17.6	17.8	14.2	15.1	14.5	15.3	15.6
12H	16.4	17.2	16.7	17.5	17.8	14.2	15.0	14.5	15.3	15.5
4H 2H	16.2	17.2	16.5	17.4	17.6	14.4	15.3	14.7	15.5	15.8
3H	16.5	17.3	16.8	17.6	17.9	14.5	15.3	14.8	15.6	15.9
4H	16.6	17.3	16.9	17.6	17.9	14.5	15.2	14.9	15.5	15.9
6H	16.5	17.2	16.9	17.5	17.9	14.5	15.1	14.8	15.4	15.8
8H	16.5	17.1	16.9	17.5	17.8	14.4	15.0	14.8	15.4	15.7
12H	16.5	17.0	16.9	17.4	17.8	14.4	14.9	14.8	15.3	15.7
6H 4H	16.5	17.1	16.9	17.4	17.8	14.5	15.1	14.9	15.4	15.8
6H	16.5	17.0	16.9	17.3	17.8	14.4	14.9	14.9	15.3	15.7
8H	16.4	16.9	16.9	17.3	17.7	14.4	14.8	14.8	15.2	15.7
12H	16.4	16.8	16.9	17.2	17.7	14.3	14.7	14.8	15.1	15.6
12H 4H	16.4	17.0	16.8	17.3	17.7	14.4	15.0	14.8	15.3	15.7
6H	16.4	16.8	16.9	17.3	17.7	14.4	14.8	14.8	15.2	15.7
8H	16.4	16.8	16.9	17.2	17.7	14.3	14.7	14.8	15.2	15.6
Variations with the observer position at spacings:										
S = 1.0H	+ 1.3 / - 2.0					+ 1.6 / - 2.8				
1.5H	+ 2.0 / - 1.9					+ 2.0 / - 2.0				
2.0H	+ 3.0 / - 2.6					+ 2.9 / - 2.5				

CIE Pub.117 Corrected 2955 lm Total Lamp Luminous Flux. (8log(F/F0) = 3.8)



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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	0.5	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) $k(RI) \times RCR = 5$									
$k = 0.60$	78	70	66	78	70	66	77	70	65	61
0.80	87	79	75	86	79	75	85	78	74	70
1.00	93	86	81	92	86	81	90	86	81	76
1.25	98	92	87	97	91	87	95	90	86	81
1.50	102	96	91	100	95	91	98	93	90	85
2.00	105	100	96	104	99	96	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	114	111	108	111	109	107	107	105	104	96
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended				SERNOH = 1.26			



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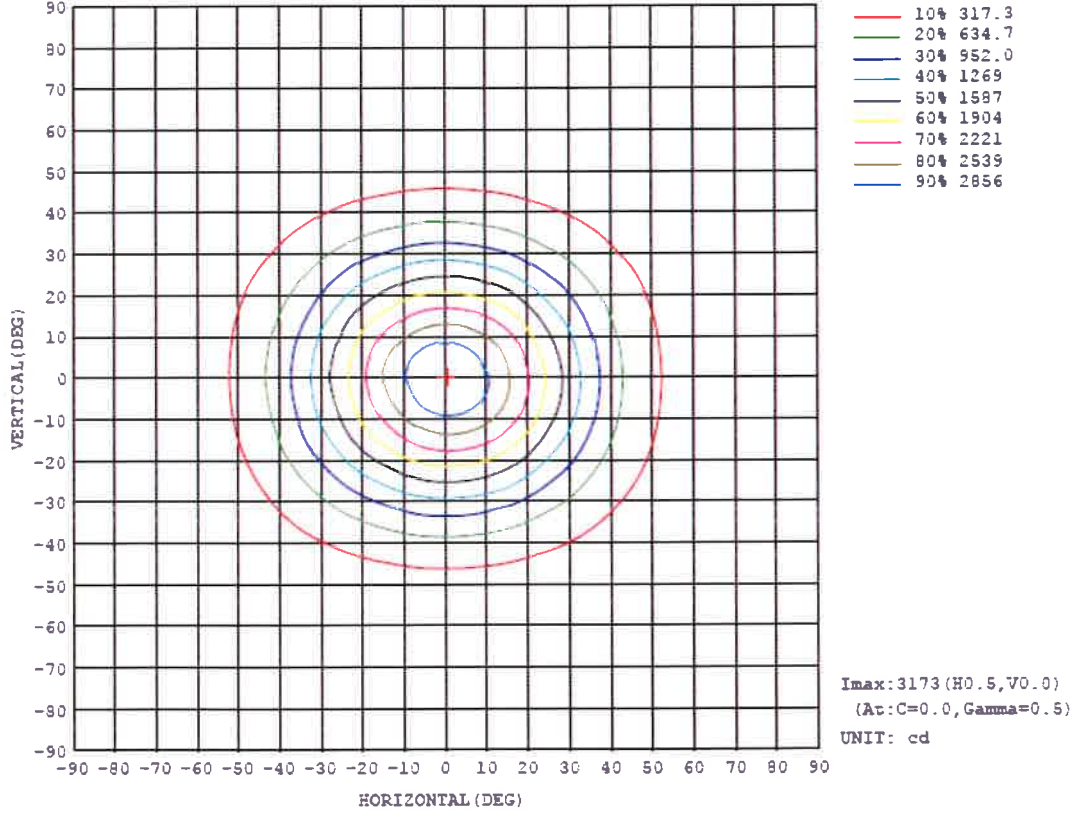
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2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)

ISOCANDELA DIAGRAM



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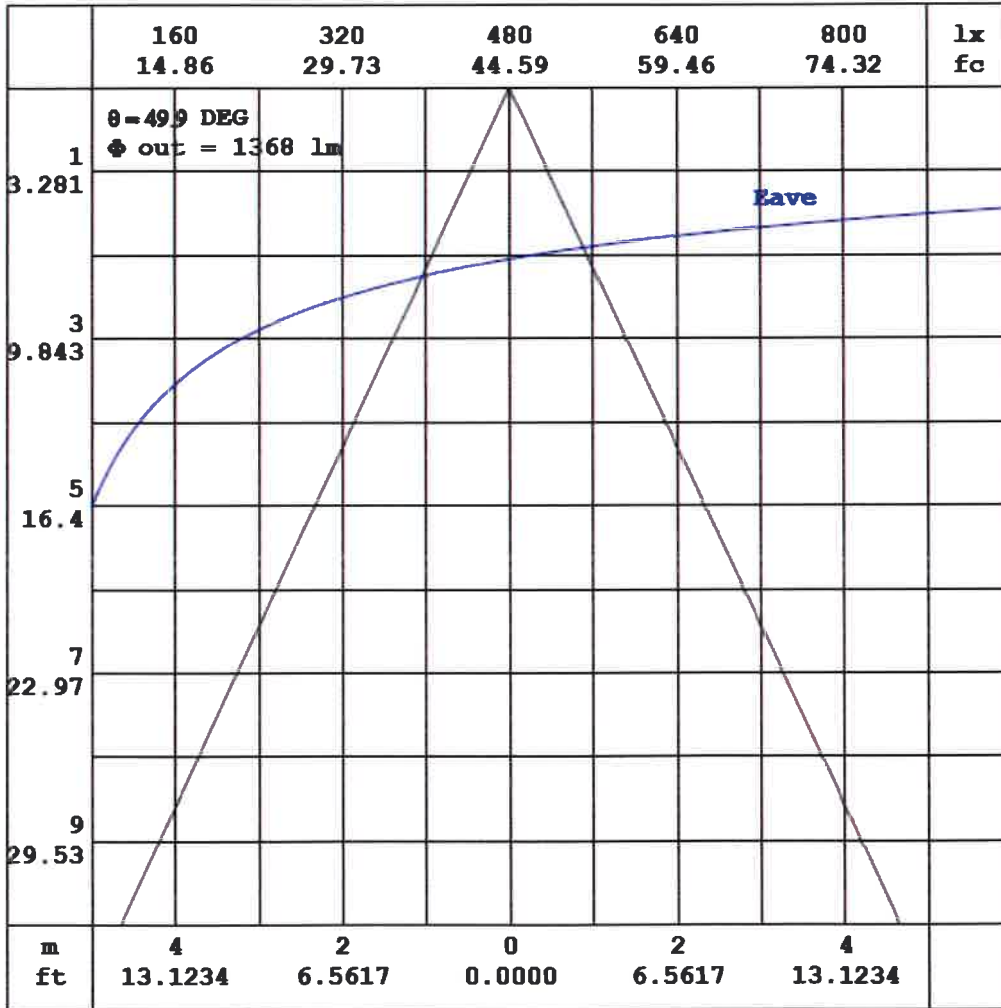
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2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)**AAI CURVES**

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



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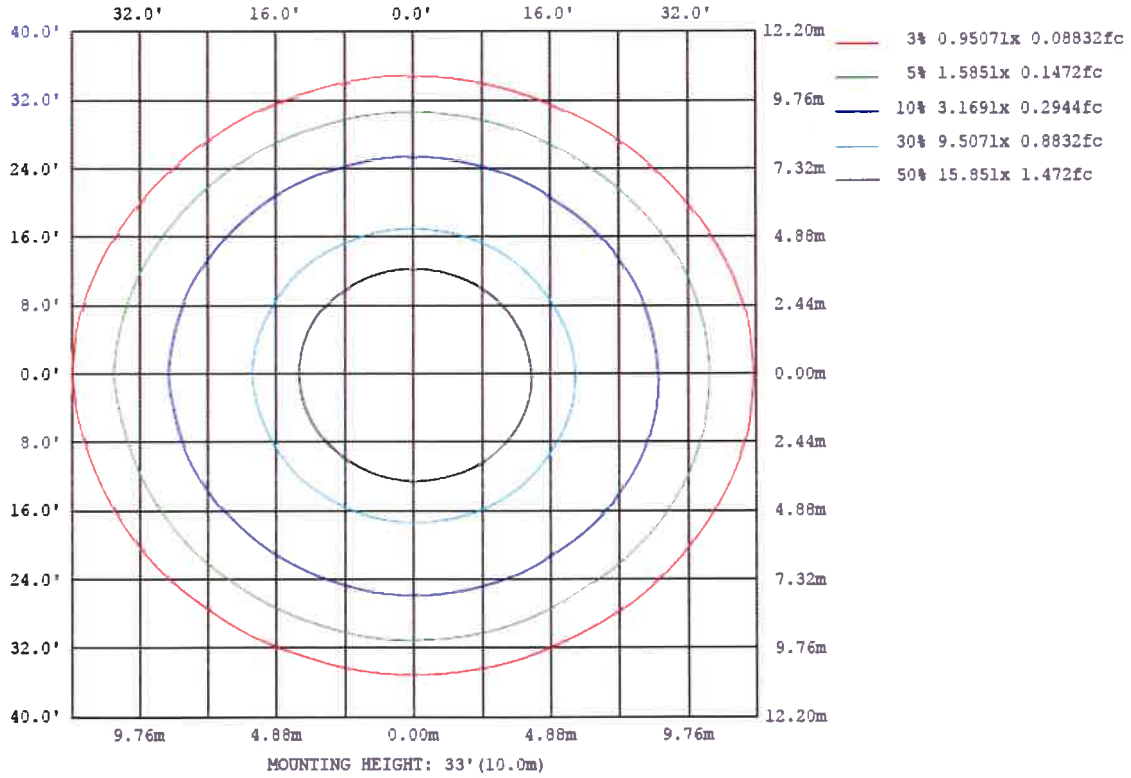
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2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)

ISOLUX DIAGRAM



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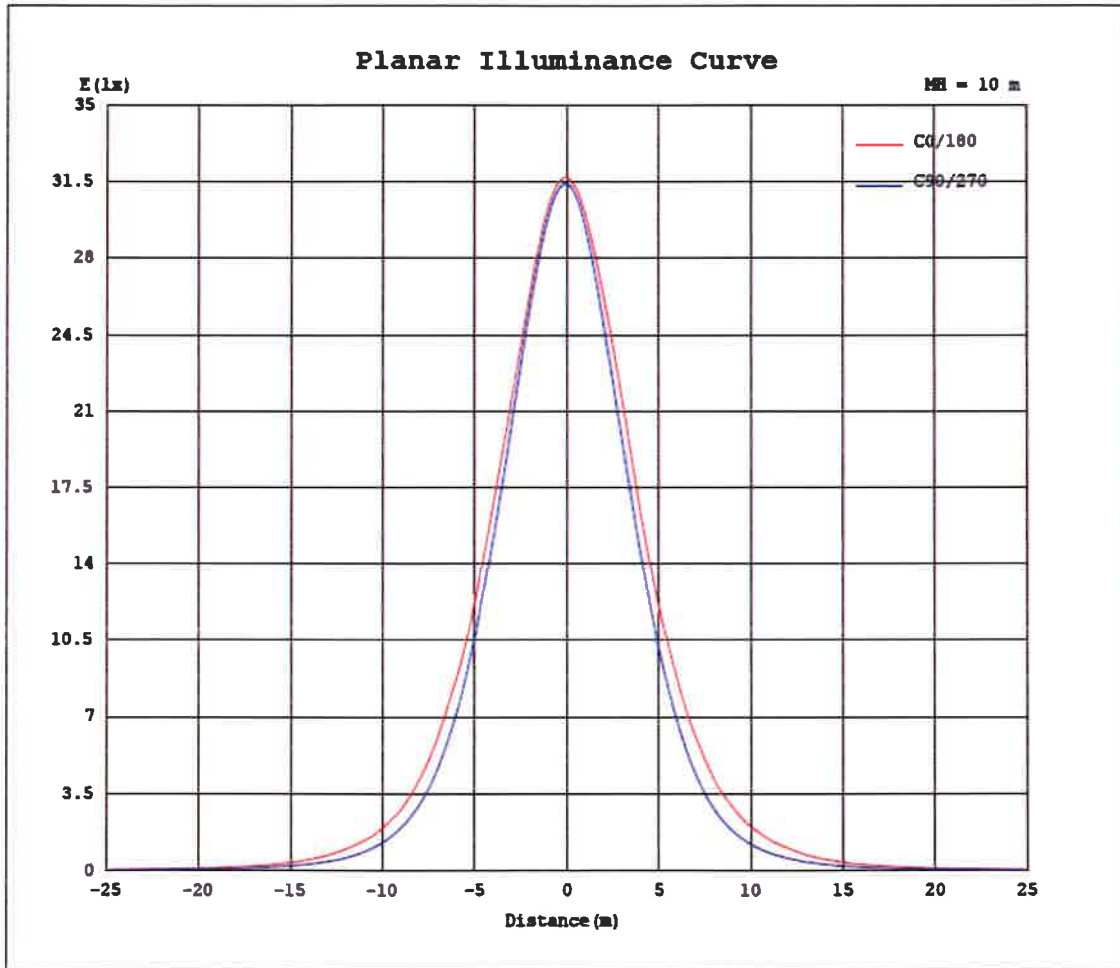
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2.1 CW Fotometrik Deney Sonuçları (Photometric Test Results of the CW)



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

(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	44,02 W
Ölçülen Gerilim (V) (Input Voltage)	46,85 VDC
Ölçülen Akım (A) (Input Current)	0,94 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	0,3158
Chrom y	0,3339
Duv	0,0041
Chrom u'	0,1982
Chrom v'	0,4714
Peak	445 nm
Dominant	492 nm
CCT	6308 K
Nominal CCT	-
Ra(CRI)	71
R9	-27
S/P Ratio	2,0
Preburning time	1 hr
Test Configuration	4π



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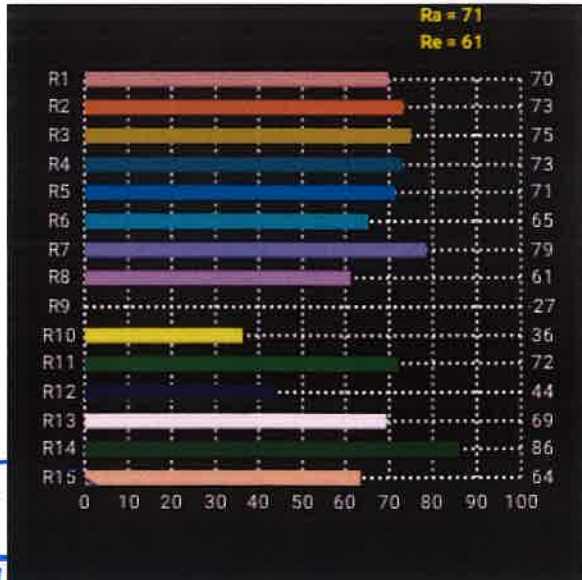
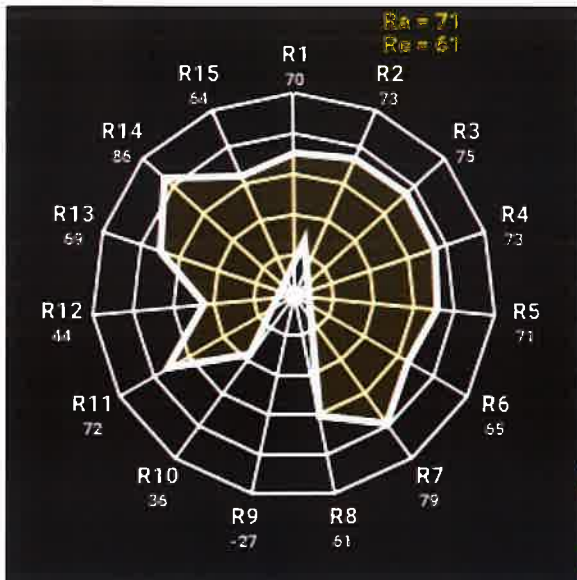
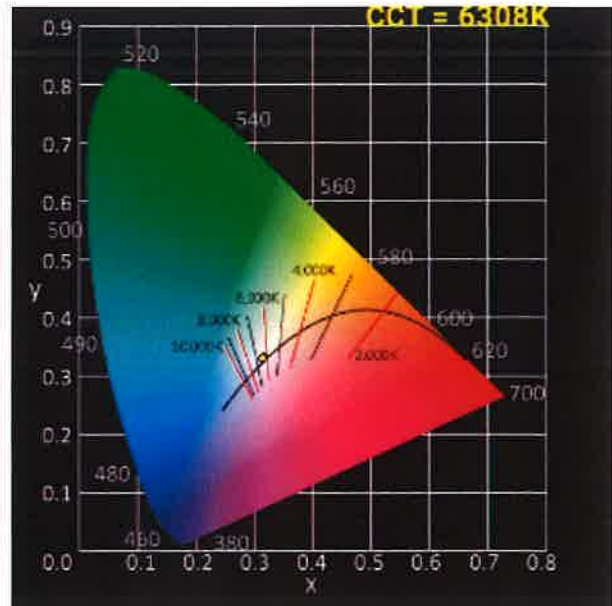
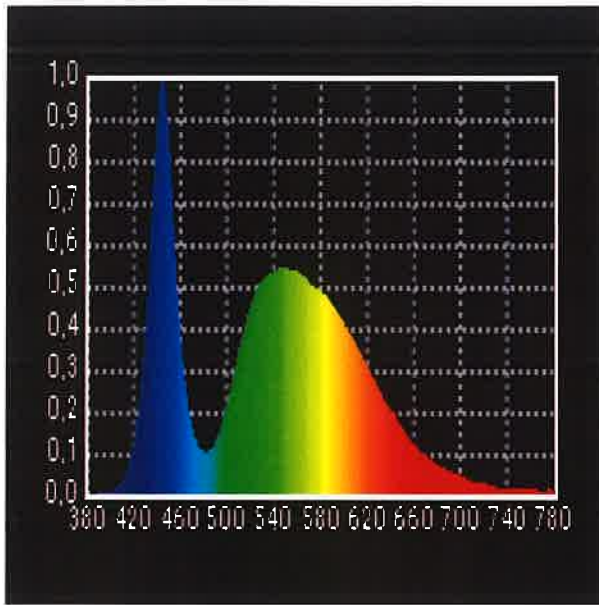
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2.2 CW Spektrokolorimetrik Deney Sonuçları (spectrocolorimetric Test Results of the CW)

Spectral Power Distribution



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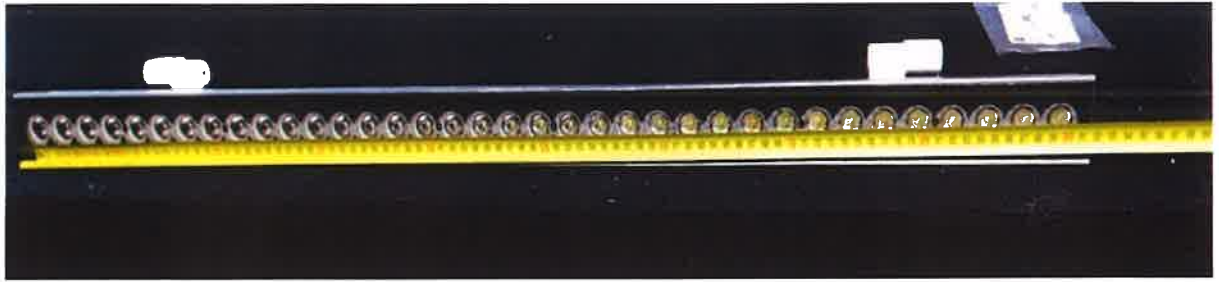
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3.1 DGC'nin Fotoğrafları (Photos of EUT)



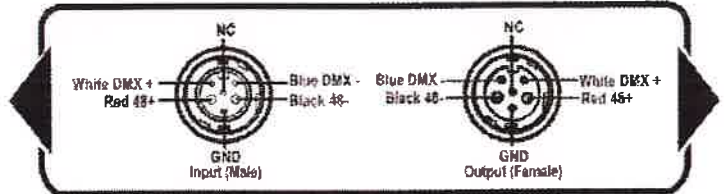
hera
entertainment & architecture lighting

CE FC III

RoHS compliant IP67



P02022054 Leoline@S12 915mm DMX SC Linear Wide Flood Beam 60°
48V DC / Max. 0.96A / Max. 46W
Ta: 50°



Address: GÜHÜBAĞIAR Mah. Kahramanlar Cad. No. 3/1 Pendik / İstanbul / Turkey
www.heraled.com Made in Turkey



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