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Müşterinin Adı Adresi <i>Customer name/address</i>	: Hera Eğlence ve Mimari Aydınlatma Sistemleri A.Ş Güllübağlar Mah. Kahramanlar Cad. No:3-1 34906 Pendik / İstanbul
İstek Numarası <i>Order No</i>	: 21-IS-0497-IR-004
Numunenin Adı ve Tarifi <i>Name and identity of test item</i>	: Chronopix RGB CLEAR - P0102508501501050100
Numunenin kabul tarihi <i>The date of receipt of test item</i>	: 17.03.2021
Açıklamalar <i>Remarks</i>	: DGC'ye , IES LM-79-08 standardı uyarınca fotometrik ölçümler yapılmıştır. <i>Photometric measurement has been applied to EUT according to IESNA LM-79-08</i>
Deneyin Yapıldığı Tarih <i>Date of Test</i>	: 18.03.2021
Raporun Sayfa Sayısı <i>Number of Pages of the Report</i>	: 16

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

Seal and Date
26.03.2021

Prepared by
Ömer H. KARAKÖSE

Approved by
Mutlu DEMİR



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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	: Chronopix RGB CLEAR P0102508501501050100
Seri Numarası / Serial Number	: 14098-00001
Beyan Gücü / Rated Power	: 2,4 W
Beyan Gerilimi / Rated Voltage	: 48 V DC
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)

Model No	Tip (Type)	Kalibrasyon Tarihi (Calibration Date)	Kontrol (Check Point)
GO-R5000	Goniophotometer	20.10.2019	☒
WY12010	AC Power Supply	21.10.2019	☒
PF-2010A	Digital Multimeter	20.10.2019	☒
D908	Standart Lamp	19.10.2019	☒
ALP-01	Lighting Passport Spectrometer	25.03.2019	☒

1.3 Komponent listesi (Compenent list)

Komponent (Componenets)	Üretici (Manufacturer)	Model (Model)	Certificate no. (Certificate no.)	Standart no. (Standart No.)
LED Light Source	Cree Inc	CLX6F-FKC RGB 3 COLOUR LED	REACH/RoHS	REACH/RoHS
LED Control Unit	Texas Ins.	TLC5971PWPR	REACH/RoHS	REACH/RoHS



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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)**Elektriksel Ölçümler**

(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	2.4
Ölçülen Gerilim (V) (Input Voltage)	48
Ölçülen Akım (A) (Input Current)	0.05
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)	2 hours

Fotometrik Ölçüm Sonuçları

(Photometric Measurement Results)

Toplam Işık Akısı (Total Luminous Flux) (lm)	62.20
Maksimum Işık Şiddeti (Max. Light Intensity) (cd)	23.99
Armatür Etkinliği (Luminaire Efficacy) (lm/W)	25.91
Illuminaire Intensity (lux)	18

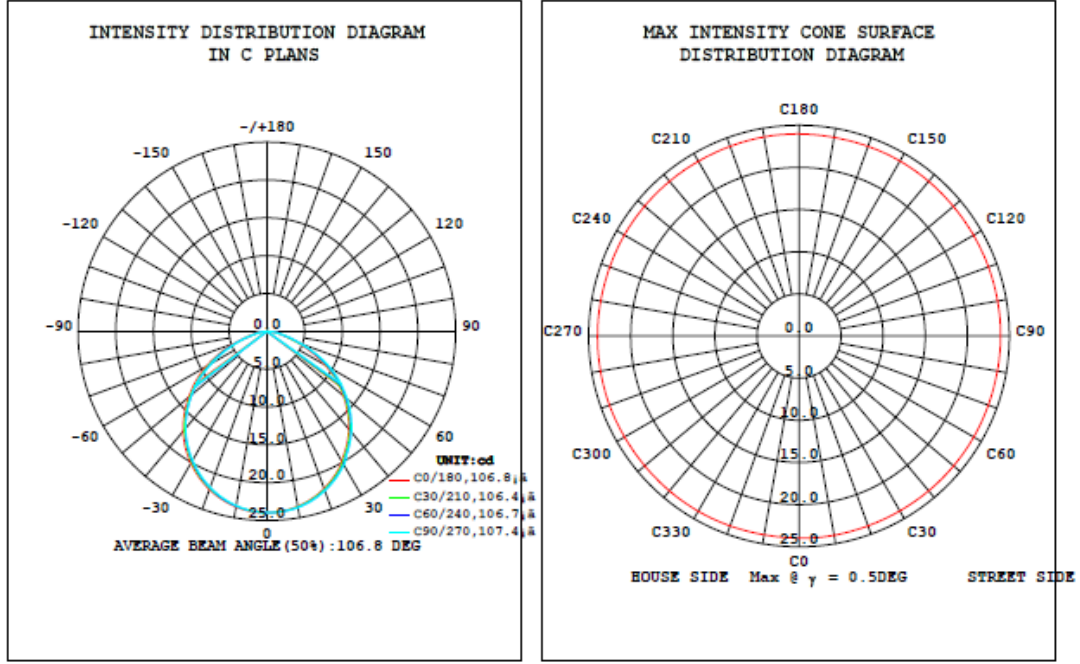


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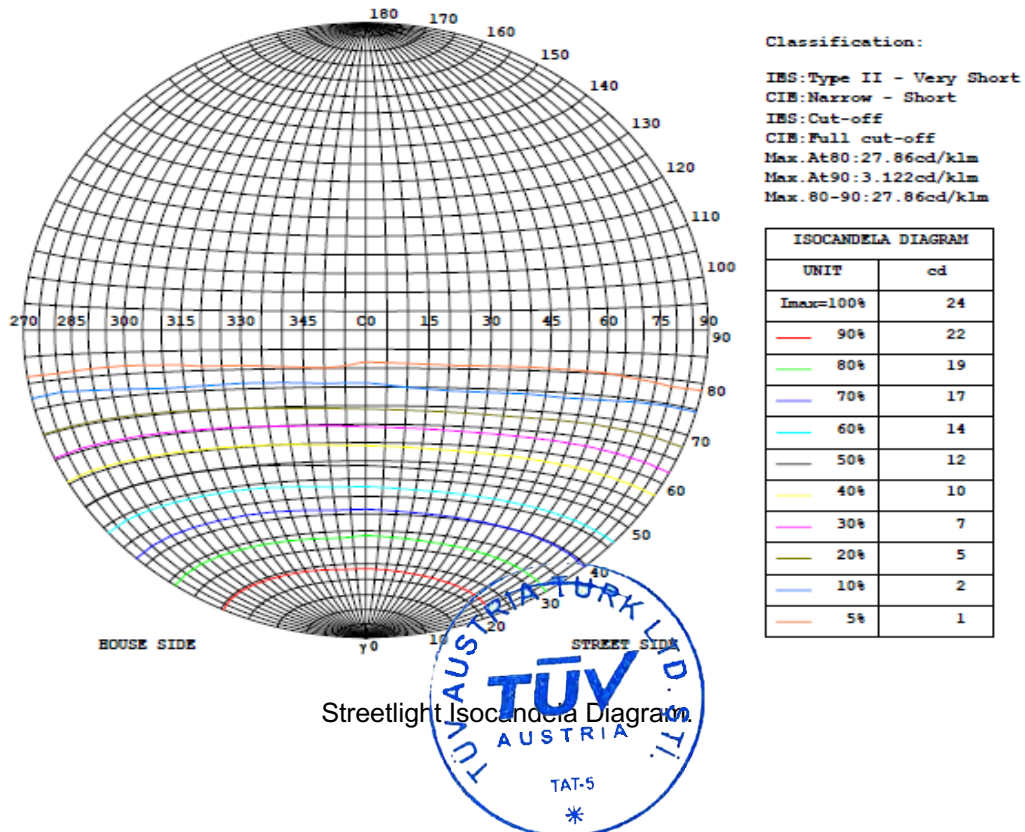
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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)



Goniophotometer Measurement Result.



Streetlight Isocandela Diagram

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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)**ZONAL FLUX DIAGRAM**

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
5	23.89	23.81	23.77	23.77	23.85	23.88	23.92	23.89	0- 5	0.5714	0.5714	0.92,0.92
10	23.55	23.45	23.36	23.35	23.49	23.58	23.64	23.60	5- 10	1.693	2.265	3.64,3.64
15	23.00	22.85	22.74	22.70	22.90	23.06	23.15	23.09	10- 15	2.754	5.019	8.07,8.07
20	22.23	22.04	21.90	21.85	22.12	22.32	22.43	22.36	15- 20	3.716	8.735	14,14
25	21.27	21.04	20.87	20.84	21.11	21.35	21.50	21.44	20- 25	4.545	13.28	21.3,21.3
30	20.12	19.83	19.66	19.70	19.81	20.21	20.40	20.34	25- 30	5.212	18.49	29.7,29.7
35	18.81	18.42	18.29	18.43	18.41	18.71	18.88	18.84	30- 35	5.676	24.17	38.9,38.9
40	17.25	16.85	16.70	16.89	16.88	17.22	17.42	17.47	35- 40	5.956	30.12	48.4,48.4
45	15.47	15.04	14.93	15.13	15.11	15.49	15.76	15.84	40- 45	6.006	36.13	58.1,58.1
50	13.52	13.05	12.97	13.22	13.23	13.59	13.92	13.98	45- 50	5.814	41.94	67.4,67.4
55	11.47	10.99	10.92	11.08	11.14	11.57	11.94	11.99	50- 55	5.392	47.34	76.1,76.1
60	9.211	8.686	8.366	8.643	8.881	9.420	9.775	9.782	55- 60	4.732	52.07	83.7,83.7
65	6.900	6.420	5.950	6.233	6.496	7.055	7.372	7.394	60- 65	3.849	55.92	89.9,89.9
70	4.363	3.910	3.889	3.965	4.265	4.570	4.900	4.931	65- 70	2.799	58.72	94.4,94.4
75	2.682	2.060	2.221	2.144	2.691	2.593	3.090	2.769	70- 75	1.772	60.49	97.2,97.2
80	1.408	1.344	0.8517	0.9910	1.426	1.660	1.508	1.476	75- 80	1.003	61.49	98.9,98.9
85	0.5700	0.3210	0.2510	0.3319	0.4152	0.4576	0.5596	0.5833	80- 85	0.4702	61.96	99.6,99.6
90	0.0197	0	0.0390	0.1360	0.0314	0.0038	0.1154	0.1534	85- 90	0.1129	62.07	99.8,99.8
95	0.0369	0.0487	0.0807	0.1233	0.0920	0.0466	0.0613	0.0767	90- 95	0.0268	62.10	99.8,99.8
100	0.0095	0.0743	0.0631	0.1014	0.0721	0.1311	0.1263	0.1178	95-100	0.0509	62.15	99.9,99.9
105	0.0330	0	0	0.0368	0.1177	0.1057	0.1469	0.0072	100-105	0.0348	62.19	100,100
110	0	0	0	0	0	0	0	0	105-110	0.0123	62.20	100,100
115	0	0	0	0	0	0	0	0	110-115	0.0018	62.20	100,100
120	0	0	0	0	0	0	0	0	115-120	0	62.20	100,100
125	0	0	0	0	0	0	0	0	120-125	0	62.20	100,100
130	0	0	0	0	0	0	0	0	125-130	0	62.20	100,100
135	0	0	0	0	0	0	0	0	130-135	0	62.20	100,100
140	0	0	0	0	0	0	0	0	135-140	0	62.20	100,100
145	0	0	0	0	0	0	0	0	140-145	0	62.20	100,100
150	0	0	0	0	0	0	0	0	145-150	0	62.20	100,100
155	0	0	0	0	0	0	0	0	150-155	0	62.20	100,100
160	0	0	0	0	0	0	0	0	155-160	0	62.20	100,100
165	0	0	0	0	0	0	0	0	160-165	0	62.20	100,100
170	0	0	0	0	0	0	0	0	165-170	0	62.20	100,100
175	0	0	0	0	0	0	0	0	170-175	0	62.20	100,100
180	0	0	0	0	0	0	0	0	175-180	0	62.20	100,100
DEG	LUMINOUS INTENSITY:cd								UNIT:lm			



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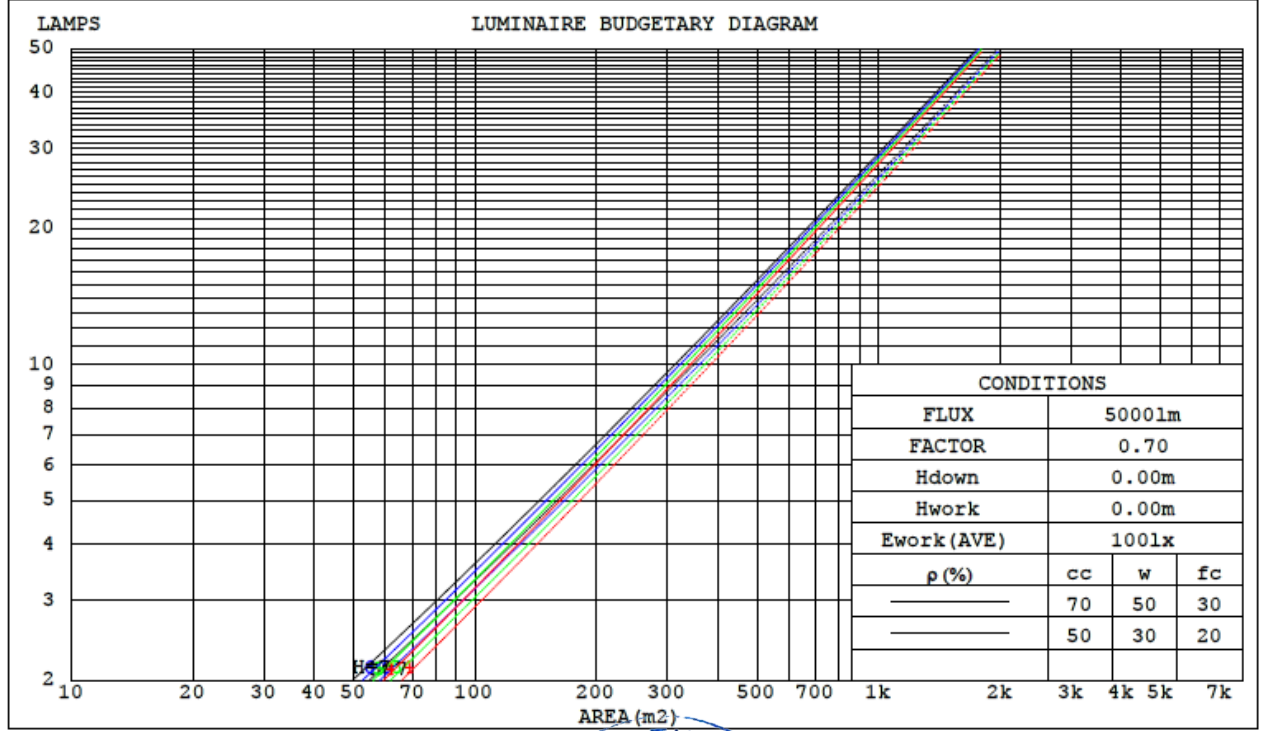
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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio															



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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)

WEC AND CCEC

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.147	.084	.026	.140	.080	.025	.128	.073	.023	.117	.067	.022	.106	.061	.020	
2.0	.138	.075	.023	.132	.073	.022	.122	.068	.021	.112	.063	.020	.103	.059	.018	
3.0	.129	.069	.021	.124	.067	.020	.116	.063	.019	.108	.059	.018	.100	.056	.017	
4.0	.121	.063	.019	.117	.061	.018	.110	.058	.017	.103	.055	.017	.097	.053	.016	
5.0	.115	.058	.017	.111	.057	.017	.105	.055	.016	.099	.052	.016	.094	.050	.015	
6.0	.109	.054	.016	.106	.053	.015	.100	.051	.015	.095	.050	.015	.091	.048	.014	
7.0	.103	.051	.014	.101	.050	.014	.096	.049	.014	.092	.047	.014	.087	.045	.013	
8.0	.099	.048	.014	.096	.047	.013	.092	.046	.013	.088	.045	.013	.085	.043	.013	
9.0	.094	.046	.013	.092	.045	.013	.089	.044	.012	.085	.043	.012	.082	.042	.012	
10.0	.090	.043	.012	.089	.043	.012	.085	.042	.012	.082	.041	.012	.079	.040	.011	

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	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	.169	.158	.147	.145	.135	.127	.099	.093	.088	.057	.054	.051	.018	.017	.016	
2.0	.152	.133	.117	.130	.114	.101	.089	.079	.070	.051	.046	.041	.016	.015	.013	
3.0	.137	.113	.094	.118	.098	.082	.081	.068	.057	.047	.040	.034	.015	.013	.011	
4.0	.125	.098	.077	.108	.085	.067	.074	.059	.047	.043	.035	.028	.014	.011	.009	
5.0	.115	.086	.064	.099	.074	.056	.068	.052	.040	.040	.031	.023	.013	.010	.008	
6.0	.107	.076	.054	.092	.066	.047	.063	.046	.033	.037	.027	.020	.012	.009	.007	
7.0	.099	.068	.046	.085	.059	.040	.059	.041	.029	.034	.024	.017	.011	.008	.006	
8.0	.093	.061	.040	.080	.053	.035	.055	.037	.025	.032	.022	.015	.010	.007	.005	
9.0	.088	.056	.035	.075	.049	.030	.052	.034	.021	.030	.020	.013	.010	.007	.004	
10.0	.083	.051	.030	.071	.045	.026	.049	.031	.019	.029	.019	.011	.009	.006	.004	



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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)

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	1.6	2.3	1.8	2.5	2.6	-0.8	-0.1	-0.6	0.0	0.2
3H	1.8	2.5	2.1	2.7	2.9	-0.8	-0.1	-0.6	0.1	0.3
4H	1.9	2.5	2.1	2.7	2.9	-0.8	-0.2	-0.6	0.0	0.2
6H	1.8	2.4	2.1	2.6	2.9	-0.9	-0.3	-0.6	-0.1	0.2
8H	1.8	2.3	2.1	2.6	2.8	-1.0	-0.4	-0.7	-0.1	0.1
12H	1.7	2.3	2.0	2.5	2.8	-1.0	-0.4	-0.7	-0.2	0.1
4H 2H	1.5	2.2	1.8	2.4	2.6	-0.8	-0.1	-0.5	0.1	0.3
3H	1.8	2.4	2.1	2.6	2.9	-0.7	-0.1	-0.4	0.1	0.4
4H	1.8	2.3	2.2	2.6	2.9	-0.7	-0.2	-0.4	0.1	0.4
6H	1.8	2.2	2.1	2.6	2.9	-0.8	-0.3	-0.4	-0.0	0.3
8H	1.7	2.1	2.1	2.5	2.9	-0.9	-0.4	-0.5	-0.1	0.3
12H	1.7	2.1	2.1	2.4	2.8	-0.9	-0.5	-0.5	-0.2	0.2
8H 4H	1.7	2.1	2.1	2.5	2.8	-0.8	-0.4	-0.4	-0.0	0.3
6H	1.6	2.0	2.1	2.4	2.8	-0.9	-0.5	-0.5	-0.2	0.3
8H	1.6	1.9	2.0	2.3	2.7	-1.0	-0.6	-0.5	-0.2	0.2
12H	1.5	1.8	2.0	2.2	2.7	-1.0	-0.8	-0.5	-0.3	0.2
12H 4H	1.6	2.0	2.1	2.4	2.8	-0.9	-0.5	-0.4	-0.1	0.3
6H	1.6	1.9	2.0	2.3	2.7	-1.0	-0.6	-0.5	-0.2	0.2
8H	1.5	1.8	2.0	2.2	2.7	-1.0	-0.7	-0.5	-0.3	0.2
Variations with the observer position at spacings:										
S = 1.0H	+ 2.4 / - 2.3					+ 1.9 / - 2.8				
1.5H	+ 3.9 / - 2.1					+ 3.0 / - 2.0				
2.0H	+ 2.4 / - 1.9					+ 2.3 / - 1.8				



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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)**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) $k(RI) \times RCR = 5$									
$k = 0.60$	89	83	80	89	83	80	88	83	80	76
0.80	97	91	88	96	91	87	95	90	87	84
1.00	101	95	92	100	95	92	98	95	91	87
1.25	104	99	96	103	99	96	101	98	95	91
1.50	107	102	99	106	102	99	103	100	98	93
2.00	109	105	102	108	104	102	105	102	100	95
2.50	111	107	104	109	106	104	106	104	102	96
3.00	112	109	106	110	108	105	107	105	103	97
4.00	114	112	110	112	110	108	109	107	105	98
5.00	115	113	112	113	112	110	109	108	107	99
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004				Suspended				SHRNOM = 1.25		

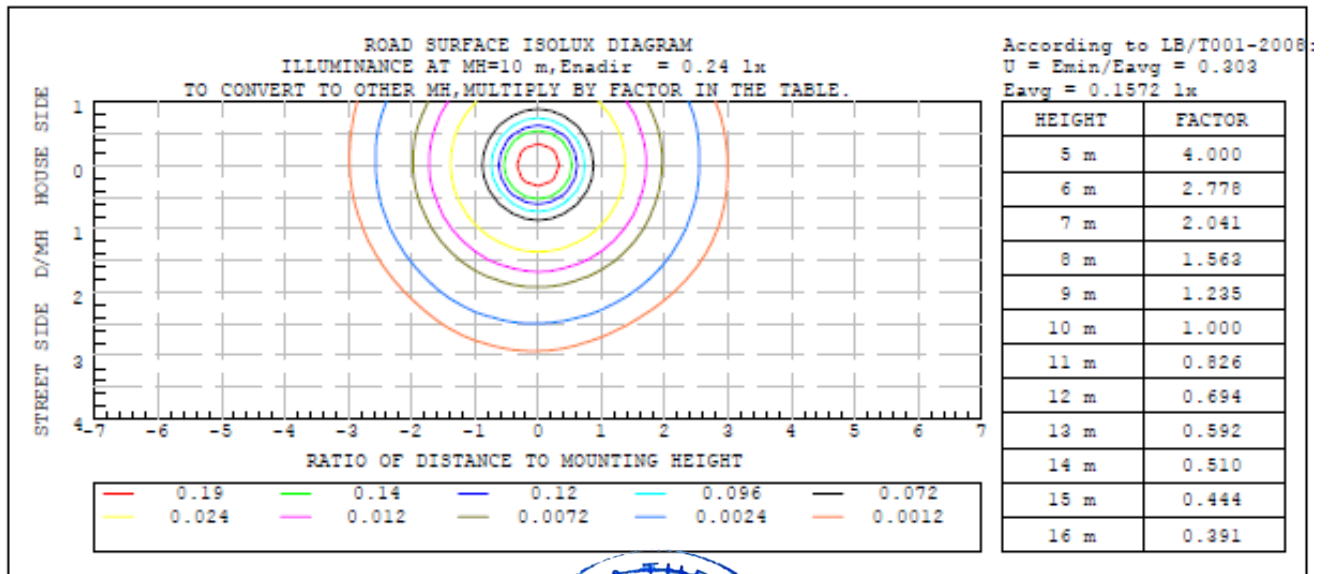
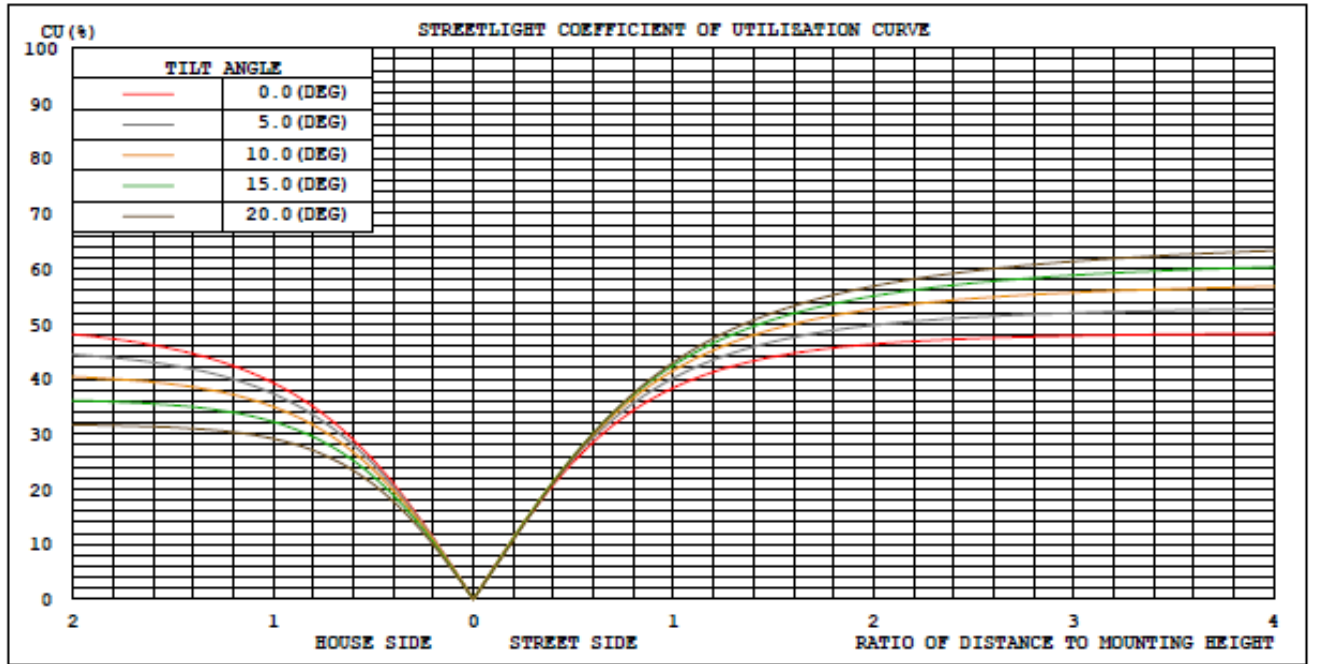


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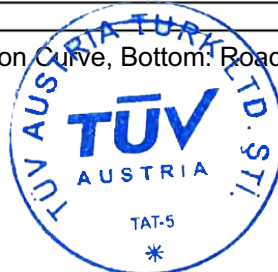
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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)



Streetlight Coefficient of Utilization Curve, Bottom: Road Surface Isolux Diagram

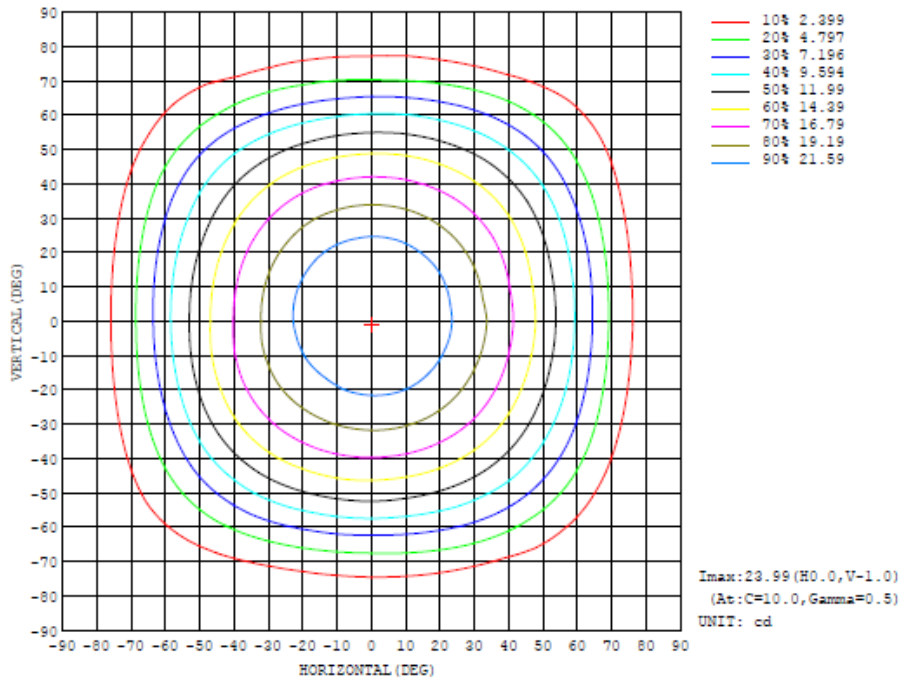


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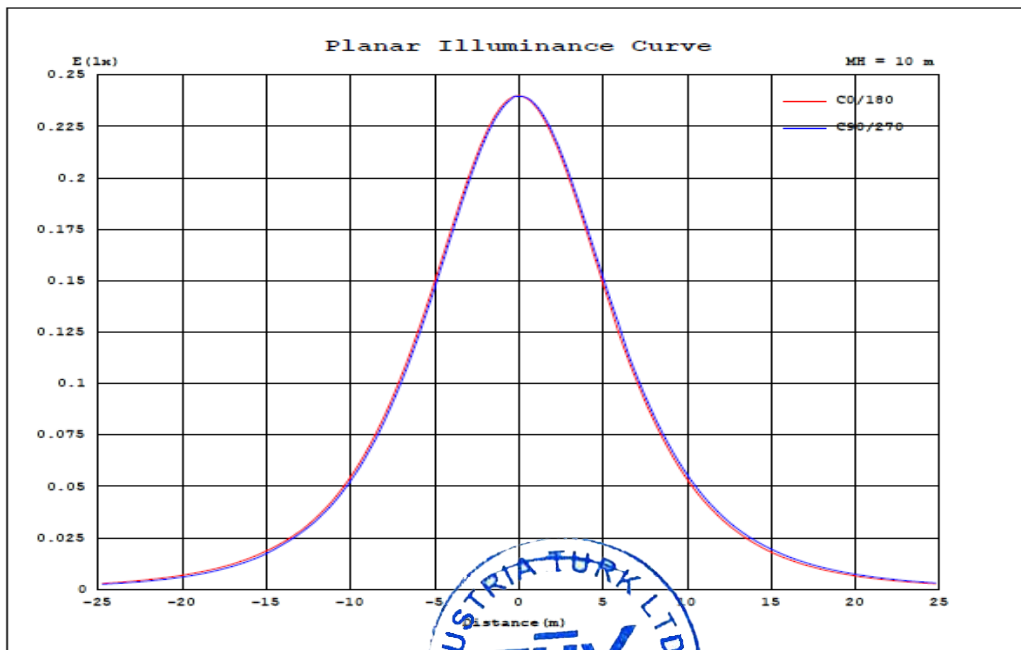
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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)



Isocandela Diagram



Planar Illuminance Curve

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

(Electrical Measurements)

Ölçülen Güç (W) (Input Power)	2.4
Ölçülen Gerilim (V) (Input Voltage)	48
Ölçülen Akım (A) (Input Current)	0.05
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)	2 hours

Spektrokolorimetrik Ölçüm Sonuçları

(Spectrocolorimetric Measurement Results)

Chrom x	0.2728
Chrom y	0.2822
Duv	0.0017
Chrom u'	0.1868
Chrom v'	0.4348
Peak	468 nm
Dominant	480 nm
CCT	11426 K
Nominal CCT	10000 K
Ra(CRI)	32
R9	-249
S/P Ratio	3.8
Preburning time	2 hr
Test Configuration	Hand-type spectrophotometer



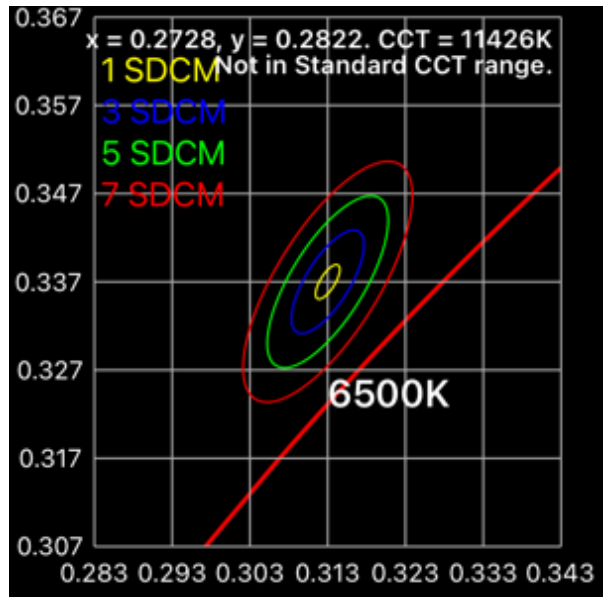
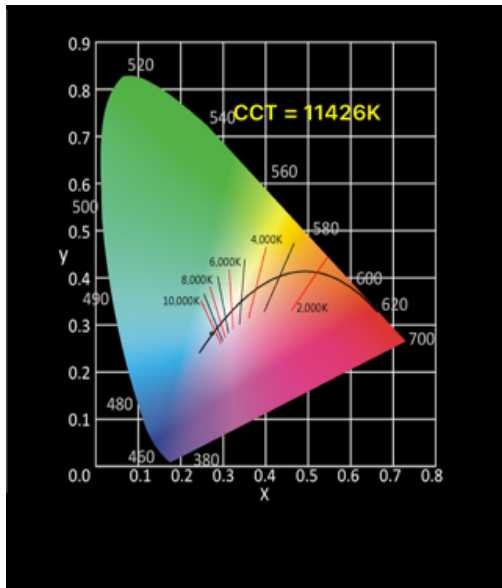
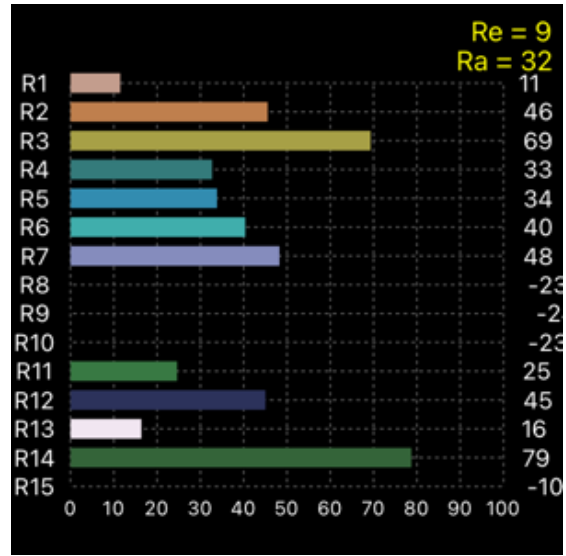
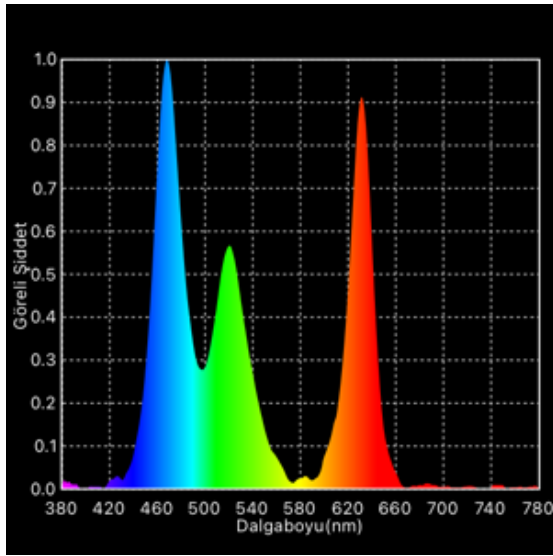
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2.2 Spektrokolorimetrik Deney Sonuçları (spectrocolorimetric Test Results)

Spectral Power Distribution



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3.1 DGC'nin Fotoğrafları (Photos of EUT)

