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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-005
Numunenin Adı ve Tarifi <i>Name and identity of test item</i>	: Chronopix RGBW DOME - P0102510501501050101
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>	: 19.03.2021
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 RGBW DOME P0102510501501050101
Seri Numarası / Serial Number	: 14096-00001
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 standarts):

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	<input checked="" type="checkbox"/>
WY12010	AC Power Supply	21.10.2019	<input checked="" type="checkbox"/>
PF-2010A	Digital Multimeter	20.10.2019	<input checked="" type="checkbox"/>
D908	Standart Lamp	19.10.2019	<input checked="" type="checkbox"/>
ALP-01	Lighting Passport Spectrometer	25.03.2019	<input checked="" type="checkbox"/>

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	CLQ6A-PLCC8 RGBW 4 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 / Bağlı 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)	71.84
Maksimum Işık Şiddeti (Max. Light Intensity) (cd)	16.5
Armatür Etkinliği (Luminaire Efficacy) (lm/W)	29.93
Illuminaire Intensity (lux)	9

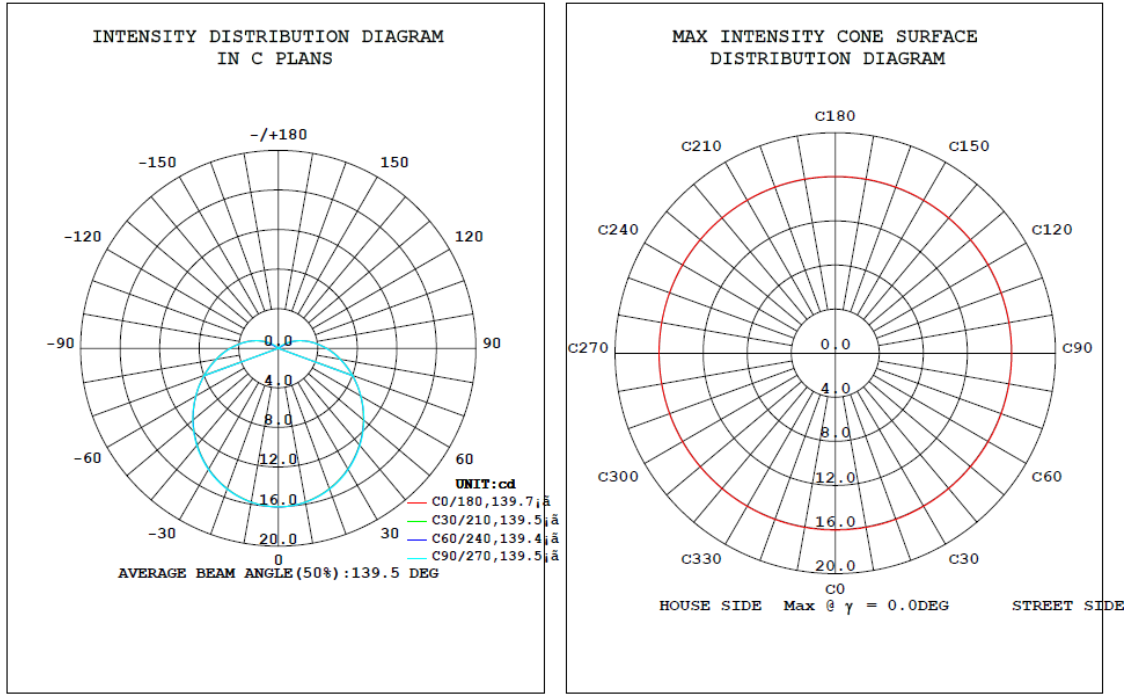


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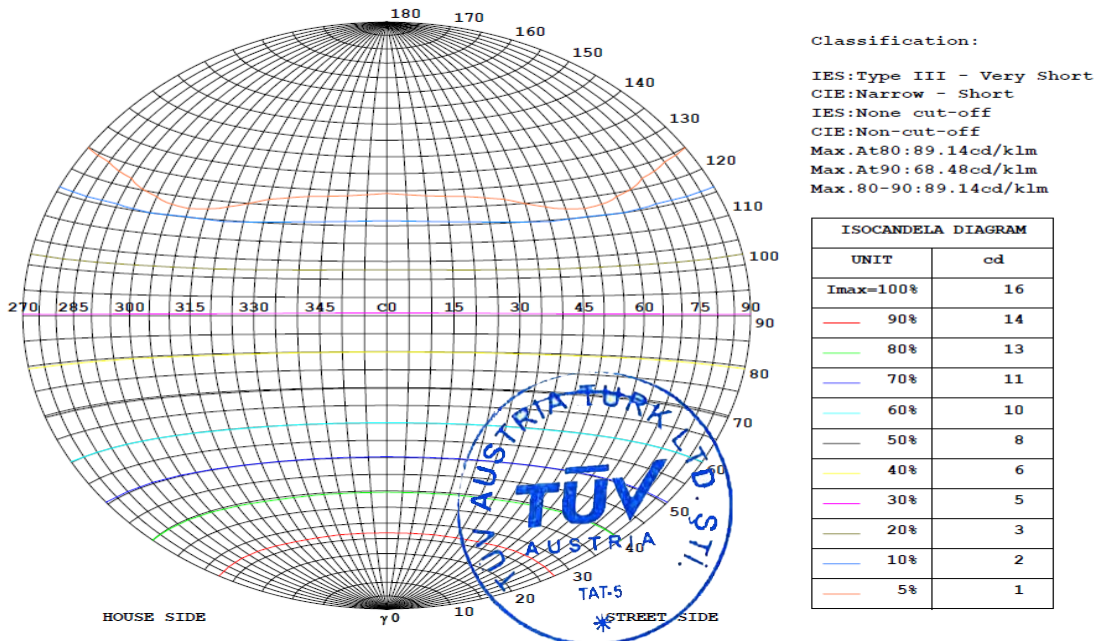
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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)



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	15.96	15.95	15.96	15.95	15.96	15.95	15.96	15.95	0- 5	0.3825	0.3825	0.53,0.53
10	15.78	15.77	15.80	15.77	15.78	15.77	15.80	15.77	5- 10	1.136	1.518	2.11,2.11
15	15.49	15.49	15.53	15.49	15.49	15.49	15.53	15.49	10- 15	1.856	3.374	4.7,4.7
20	15.11	15.10	15.16	15.10	15.11	15.10	15.16	15.10	15- 20	2.524	5.898	8.21,8.21
25	14.64	14.66	14.70	14.66	14.64	14.66	14.70	14.66	20- 25	3.123	9.020	12.6,12.6
30	14.09	14.08	14.15	14.08	14.09	14.08	14.15	14.08	25- 30	3.639	12.66	17.6,17.6
35	13.47	13.45	13.53	13.45	13.47	13.45	13.53	13.45	30- 35	4.060	16.72	23.3,23.3
40	12.78	12.77	12.85	12.77	12.78	12.77	12.85	12.77	35- 40	4.381	21.10	29.4,29.4
45	12.04	12.03	12.10	12.03	12.04	12.03	12.10	12.03	40- 45	4.597	25.70	35.8,35.8
50	11.27	11.25	11.31	11.25	11.27	11.25	11.31	11.25	45- 50	4.710	30.41	42.3,42.3
55	10.46	10.44	10.49	10.44	10.46	10.44	10.49	10.44	50- 55	4.722	35.13	48.9,48.9
60	9.643	9.620	9.657	9.620	9.643	9.620	9.657	9.620	55- 60	4.642	39.77	55.4,55.4
65	8.817	8.793	8.811	8.793	8.817	8.793	8.811	8.793	60- 65	4.480	44.25	61.6,61.6
70	7.996	7.968	7.971	7.968	7.996	7.968	7.971	7.968	65- 70	4.246	48.50	67.5,67.5
75	7.187	7.157	7.148	7.157	7.187	7.157	7.148	7.157	70- 75	3.955	52.45	73,73
80	6.404	6.369	6.351	6.369	6.404	6.369	6.351	6.369	75- 80	3.620	56.07	78.1,78.1
85	5.647	5.611	5.589	5.611	5.647	5.611	5.589	5.611	80- 85	3.256	59.33	82.6,82.6
90	4.920	4.875	4.854	4.875	4.920	4.875	4.854	4.875	85- 90	2.872	62.20	86.6,86.6
95	4.213	4.164	4.146	4.164	4.213	4.164	4.146	4.164	90- 95	2.476	64.68	90,90
100	3.548	3.491	3.480	3.491	3.548	3.491	3.480	3.491	95-100	2.082	66.76	92.9,92.9
105	2.920	2.847	2.844	2.847	2.920	2.847	2.844	2.847	100-105	1.702	68.46	95.3,95.3
110	2.319	2.233	2.256	2.233	2.319	2.233	2.256	2.233	105-110	1.337	69.80	97.2,97.2
115	1.753	1.583	1.713	1.583	1.753	1.583	1.713	1.583	110-115	0.9948	70.79	98.5,98.5
120	1.234	0.3027	1.218	0.3027	1.234	0.3027	1.218	0.3027	115-120	0.6127	71.41	99.4,99.4
125	0.7297	0.2630	0.7944	0.2630	0.7297	0.2630	0.7944	0.2630	120-125	0.3188	71.72	99.8,99.8
130	0.2844	0	0.4451	0	0.2844	0	0.4451	0	125-130	0.1033	71.83	100,100
135	0	0	0.0060	0	0	0	0.0060	0	130-135	0.0142	71.84	100,100
140	0	0	0	0	0	0	0	0	135-140	0.0000	71.84	100,100
145	0	0	0	0	0	0	0	0	140-145	0	71.84	100,100
150	0	0	0	0	0	0	0	0	145-150	0	71.84	100,100
155	0	0	0	0	0	0	0	0	150-155	0	71.84	100,100
160	0	0	0	0	0	0	0	0	155-160	0	71.84	100,100
165	0	0	0	0	0	0	0	0	160-165	0	71.84	100,100
170	0	0	0	0	0	0	0	0	165-170	0	71.84	100,100
175	0	0	0	0	0	0	0	0	170-175	0	71.84	100,100
180	0	0	0	0	0	0	0	0	175-180	0	71.84	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		



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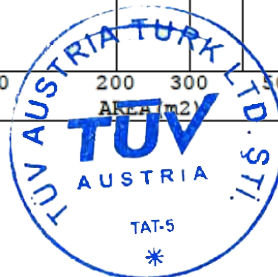
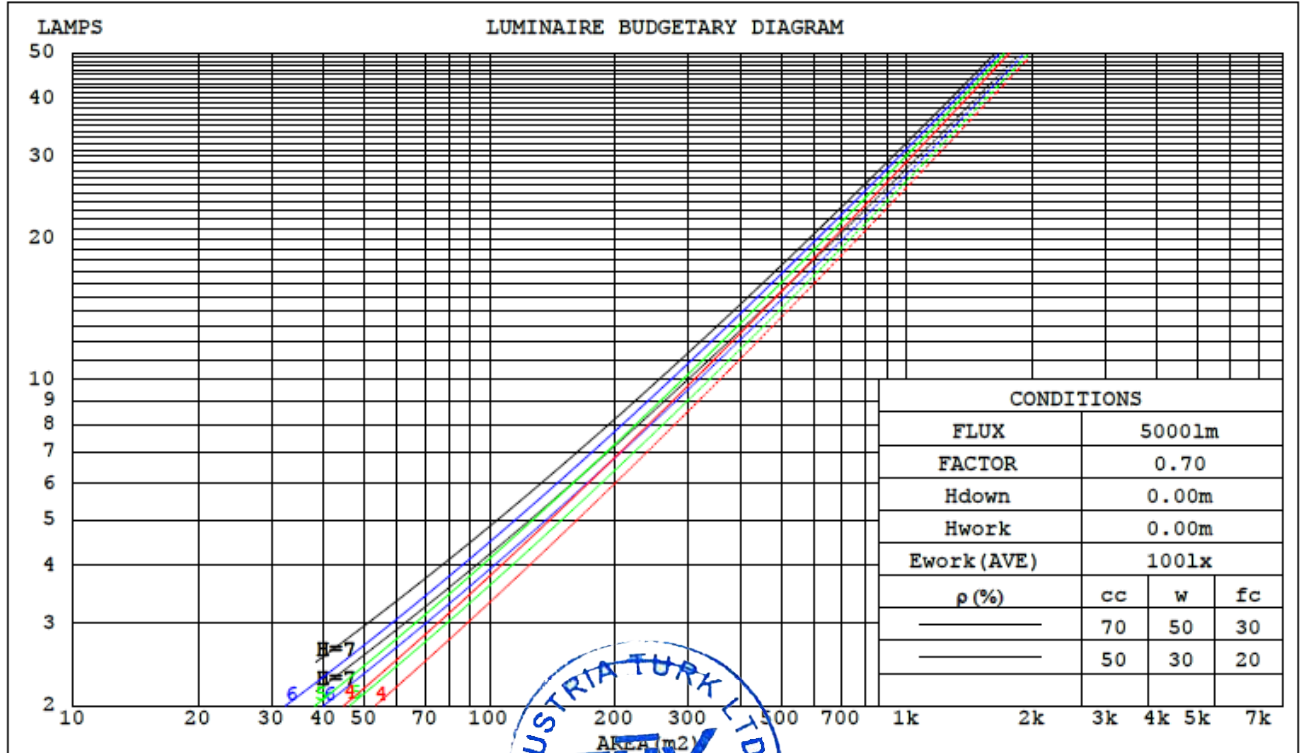
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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)

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						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	1.10	1.07	1.04	1.07	1.05	1.03	1.03	1.01	.99	.00	.98	.96	.96	.95	.94	.92
2.0	1.01	.96	.92	.99	.95	.91	.96	.92	.89	.92	.90	.87	.90	.87	.85	.84
3.0	.93	.87	.82	.91	.86	.82	.88	.84	.80	.86	.82	.79	.84	.81	.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	.66	.62	.71	.66	.61	.70	.65	.61	.68	.64	.61	.59
7.0	.69	.62	.57	.68	.62	.57	.67	.61	.57	.65	.60	.56	.64	.60	.56	.55
8.0	.64	.58	.53	.64	.57	.53	.62	.57	.53	.61	.56	.52	.60	.56	.52	.51
9.0	.60	.54	.49	.60	.53	.49	.59	.53	.49	.58	.53	.49	.57	.52	.49	.47
10.0	.57	.50	.46	.56	.50	.46	.55	.50	.46	.55	.49	.46	.54	.49	.46	.44



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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)

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	.201	.114	.036	.194	.111	.035	.181	.104	.033	.170	.098	.031	.159	.092	.030	
2.0	.194	.107	.033	.189	.104	.032	.178	.099	.031	.168	.094	.029	.159	.090	.028	
3.0	.185	.099	.030	.181	.097	.029	.171	.093	.028	.163	.089	.027	.155	.086	.026	
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	.150	.079	.023	.143	.077	.023	
6.0	.159	.080	.023	.155	.078	.023	.149	.076	.022	.143	.074	.022	.138	.072	.022	
7.0	.151	.075	.021	.148	.074	.021	.142	.072	.021	.137	.070	.020	.132	.069	.020	
8.0	.143	.070	.020	.141	.069	.020	.136	.068	.019	.131	.066	.019	.127	.065	.019	
9.0	.137	.066	.018	.134	.065	.018	.130	.064	.018	.125	.063	.018	.121	.062	.018	
10.0	.130	.063	.017	.128	.062	.017	.124	.061	.017	.120	.060	.017	.117	.059	.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	.093	.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	.043	.028	.017	.014	.009	.006	
7.0	.117	.072	.040	.101	.062	.035	.070	.044	.025	.040	.026	.015	.013	.008	.005	
8.0	.112	.066	.034	.096	.057	.030	.066	.040	.021	.039	.024	.013	.012	.008	.004	
9.0	.106	.061	.030	.092	.053	.026	.063	.037	.018	.037	.022	.011	.012	.007	.004	
10.0	.102	.056	.026	.088	.049	.023	.061	.034	.016	.035	.020	.010	.011	.007	.003	



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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	14.2	15.3	14.5	15.5	15.7	11.7	12.8	11.9	13.0	13.2
3H	14.3	15.3	14.6	15.5	15.7	11.7	12.7	12.0	12.9	13.1
4H	14.3	15.3	14.6	15.5	15.7	11.7	12.6	12.0	12.8	13.1
6H	14.3	15.1	14.6	15.4	15.7	11.6	12.5	11.9	12.7	13.0
8H	14.2	15.1	14.5	15.3	15.6	11.6	12.4	11.9	12.7	12.9
12H	14.2	15.0	14.5	15.3	15.5	11.5	12.3	11.8	12.6	12.9
4H 2H	14.1	15.0	14.4	15.3	15.5	11.8	12.7	12.1	13.0	13.2
3H	14.3	15.1	14.6	15.4	15.6	11.9	12.7	12.2	12.9	13.2
4H	14.3	15.0	14.7	15.3	15.6	11.8	12.6	12.2	12.9	13.2
6H	14.3	14.9	14.6	15.2	15.6	11.8	12.4	12.1	12.7	13.1
8H	14.2	14.8	14.6	15.2	15.5	11.7	12.3	12.1	12.7	13.0
12H	14.2	14.7	14.6	15.1	15.5	11.7	12.2	12.1	12.6	13.0
8H 4H	14.2	14.8	14.6	15.1	15.5	11.8	12.4	12.2	12.7	13.1
6H	14.2	14.6	14.6	15.0	15.5	11.7	12.2	12.1	12.6	13.0
8H	14.1	14.5	14.6	15.0	15.4	11.6	12.1	12.1	12.5	12.9
12H	14.1	14.4	14.5	14.9	15.4	11.6	12.0	12.1	12.4	12.9
12H 4H	14.1	14.7	14.6	15.1	15.5	11.7	12.3	12.1	12.6	13.0
6H	14.1	14.5	14.6	15.0	15.4	11.6	12.1	12.1	12.5	12.9
8H	14.1	14.4	14.5	14.9	15.4	11.6	12.0	12.1	12.4	12.9
Variations with the observer position at spacings:										
S = 1.0H	+ 1.5 / - 2.3					+ 1.7 / - 3.1				
1.5H	+ 2.1 / - 2.1					+ 1.9 / - 2.0				
2.0H	+ 3.3 / - 3.2					+ 2.9 / - 3.0				



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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) $k(RI) \times RCR = 5$									
$k = 0.60$	78	70	66	78	70	66	77	70	65	61
0.80	87	80	75	86	79	75	85	79	74	70
1.00	93	86	82	92	86	81	90	86	81	76
1.25	98	92	87	97	91	87	95	90	86	81
1.50	102	96	92	100	95	91	98	93	90	85
2.00	106	100	97	104	99	96	101	97	94	89
2.50	108	103	99	106	102	99	103	99	97	90
3.00	110	106	102	108	104	101	104	101	99	92
4.00	112	109	106	110	107	105	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				SHRNOM = 1.25			

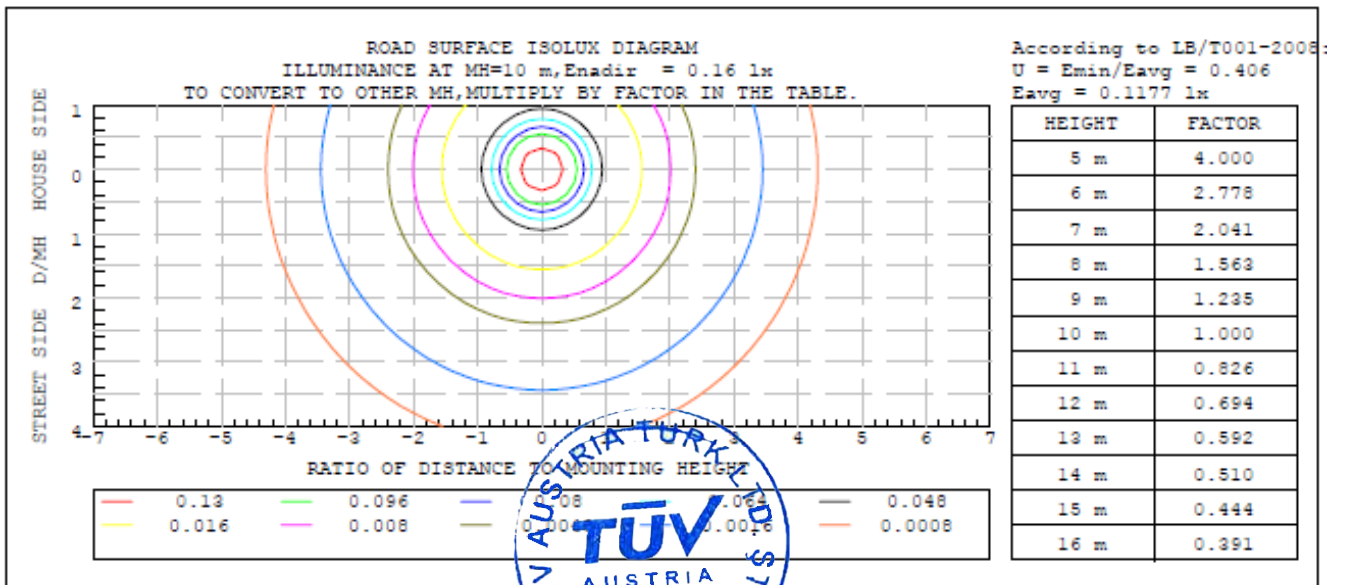
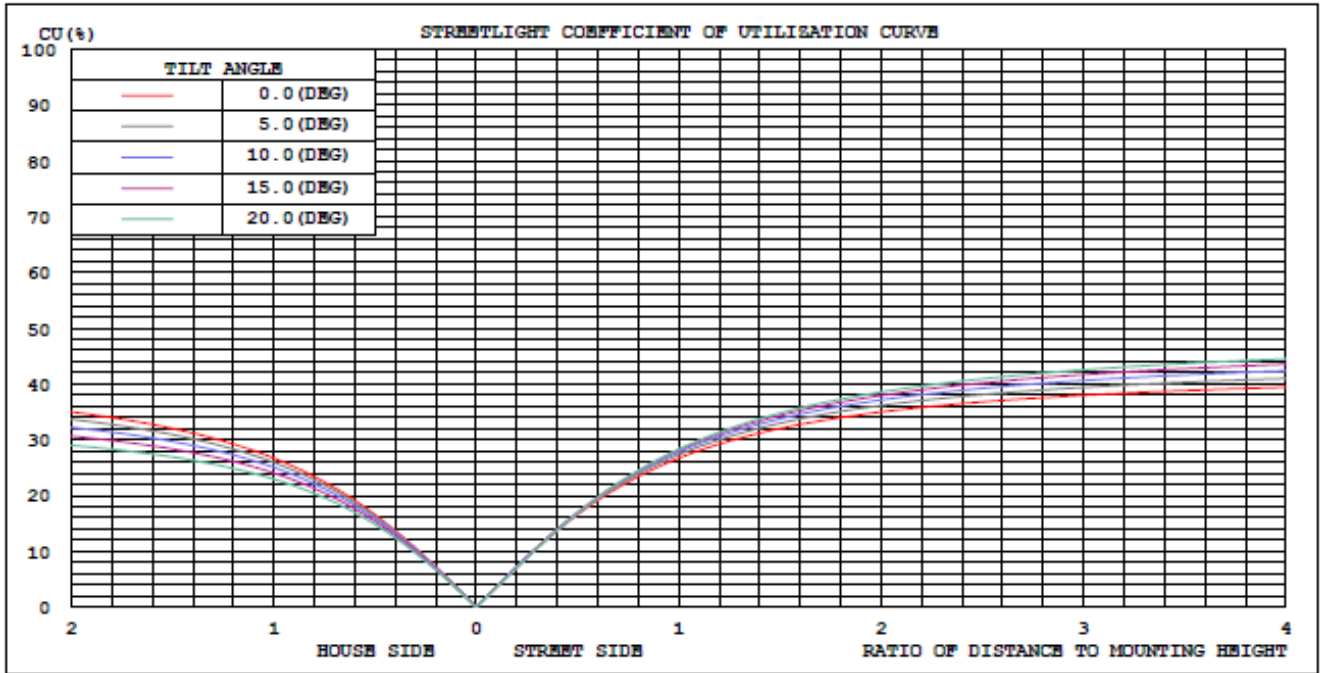


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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)



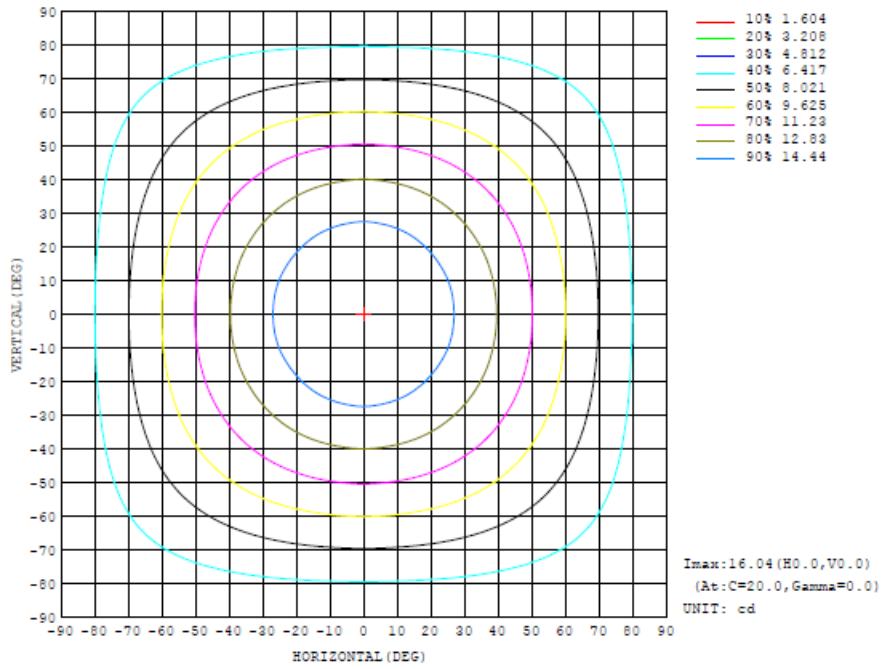
Streetlight Coefficient of Utilization Curve, Bottom: Road Surface Isolux Diagram

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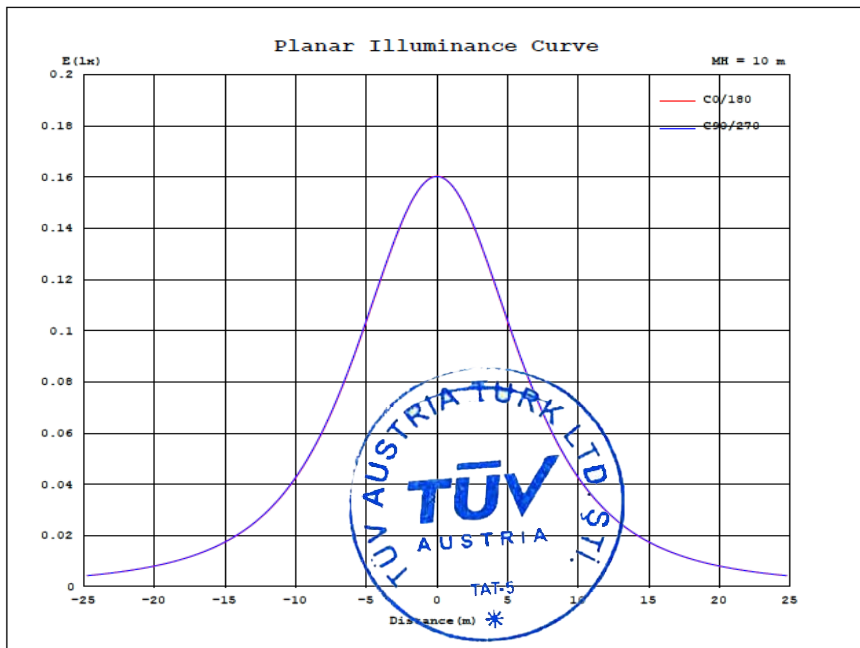
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2.1 Fotometrik Deney Sonuçları (Photometric Test Results)



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 / Bağlı Nem (Ambient Temperature / Relative Humidity)	25 °C 48% Rh
Stabilizasyon Süresi (Stabilization Time)	2 hours

Spektrokolorimetrik Ölçüm Sonuçları

(Spectrocolorimetric Measurement Results)

Chrom x	0.2693
Chrom y	0.2918
Duv	0.0089
Chrom u'	0.1807
Chrom v'	0.4405
Peak	468 nm
Dominant	483 nm
CCT	11102 K
Nominal CCT	10000 K
Ra(CRI)	74
R9	-45
S/P Ratio	3.3
Preburning time	2 hr
Test Configuration	Hand-type spectrocolorimeter



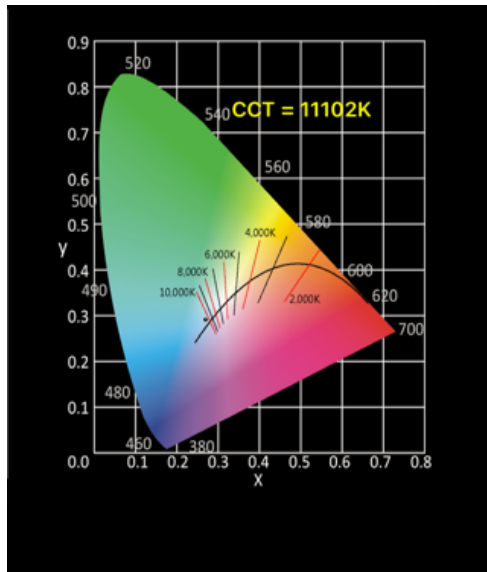
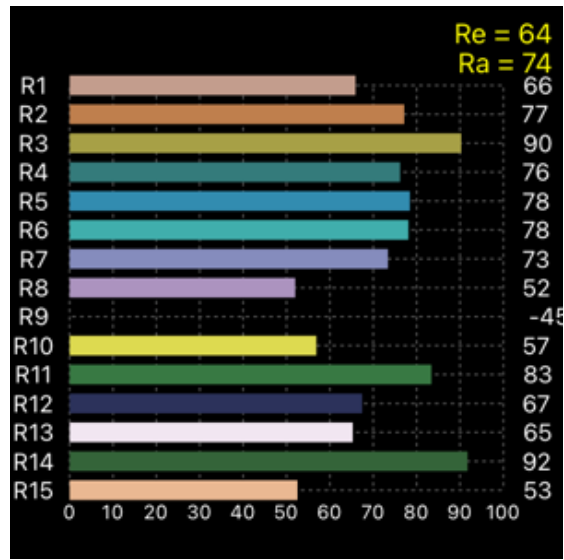
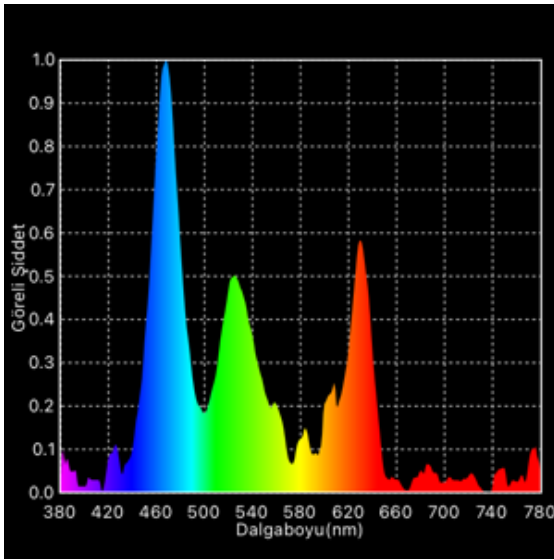
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2.2 Spektrokolorimetrik Deney Sonuçları (spectrocolorimetric Test Results)

Spectral Power Distribution



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3.1 DGC'nin Fotoğrafları (Photos of EUT)

