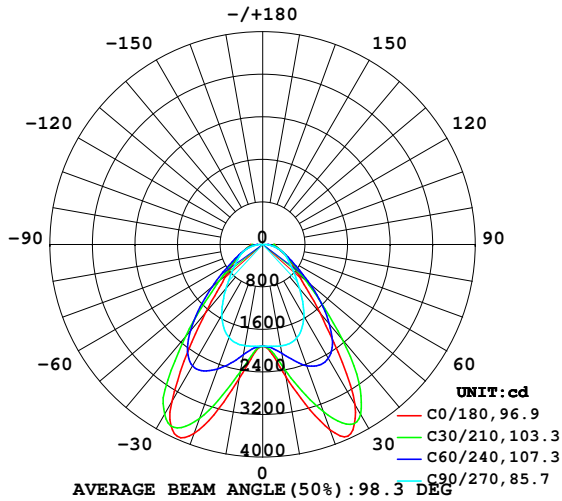


LUMINAIRE PHOTOMETRIC TEST REPORT

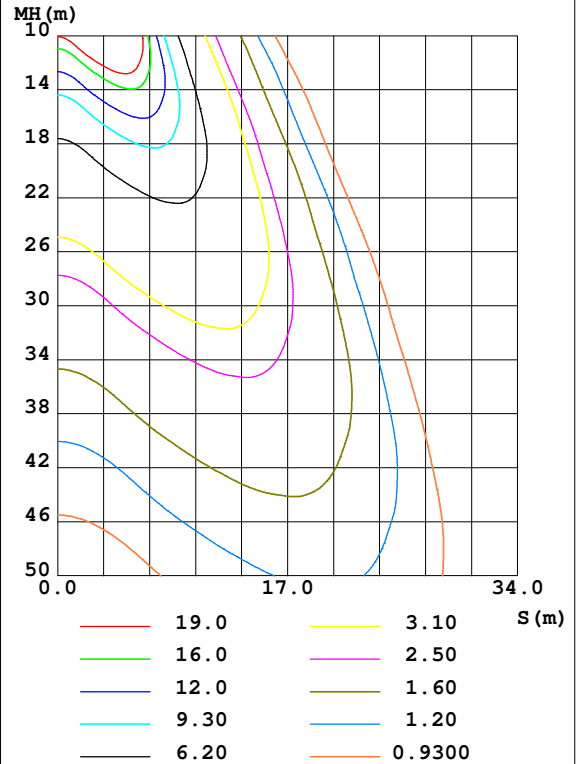
Test:U:230.26V I:0.2851A P:64.538W PF:0.9832 Freq:50.01Hz Lamp Flux:6679.48x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 103.50 lm/W			
MODEL	TCA	I _{max} (cd)	3950	S/MH (C0/180)	1.35
NOMINAL POWER (W)	65W	LOR (%)	100.0	S/MH (C90/270)	1.19
RATED VOLTAGE (V)	220.0	TOTAL FLUX (lm)	6679.5	η UP, DN (C0-180)	0.0, 49.7
NOMINAL FLUX (lm)	6679.48	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 50.3
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	0.50
TEST VOLTAGE (V)	220	η down (%)	100.0	CIBSE SHR MAX	0.70

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 20DEG
 Operators: LITPA
 Test Date: 17 April 2019

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
 Humidity: 65.0%
 Test Distance: 5.680m [K=1.0000]
 Remarks: TCA-65W-VS
 HELVAR LL1X70

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	2533	2232	1939	2311	2557	2279	1934	2206	0- 10	199.0	199.0	2.98, 2.98
20	3706	2916	1873	3087	3778	3028	1862	2912	10- 20	740.1	939.1	14.1, 14.1
30	3466	3257	1553	3388	3427	3375	1543	3320	20- 30	1395	2334	34.9, 34.9
40	1680	2493	1078	2481	1668	2553	1070	2574	30- 40	1529	3863	57.8, 57.8
50	880.6	1311	739.3	1281	905.2	1335	736.6	1348	40- 50	1102	4965	74.3, 74.3
60	584.7	637.8	543.4	638.0	588.6	656.9	535.9	654.3	50- 60	709.6	5674	85, 85
70	379.8	373.3	390.0	376.7	389.4	385.2	387.2	381.2	60- 70	482.4	6157	92.2, 92.2
80	257.7	233.7	194.9	236.7	264.3	242.4	193.6	241.8	70- 80	326.5	6483	97.1, 97.1
90	219.5	156.3	11.13	155.3	231.6	153.4	11.24	159.8	80- 90	196.2	6679	100, 100
100									90-100			
110									100-110			
120									110-120			
130									120-130			
140									130-140			
150									140-150			
160									150-160			
170									160-170			
180									170-180			
DEG	LUMINOUS INTENSITY: cd									UNIT: lm		

Conical surface Flux(90deg): 4474 lm

%lum = 67.0%

%lamp = 67.0%

Conical surface Flux(120deg): 5674.4 lm

%lum = 85.0%

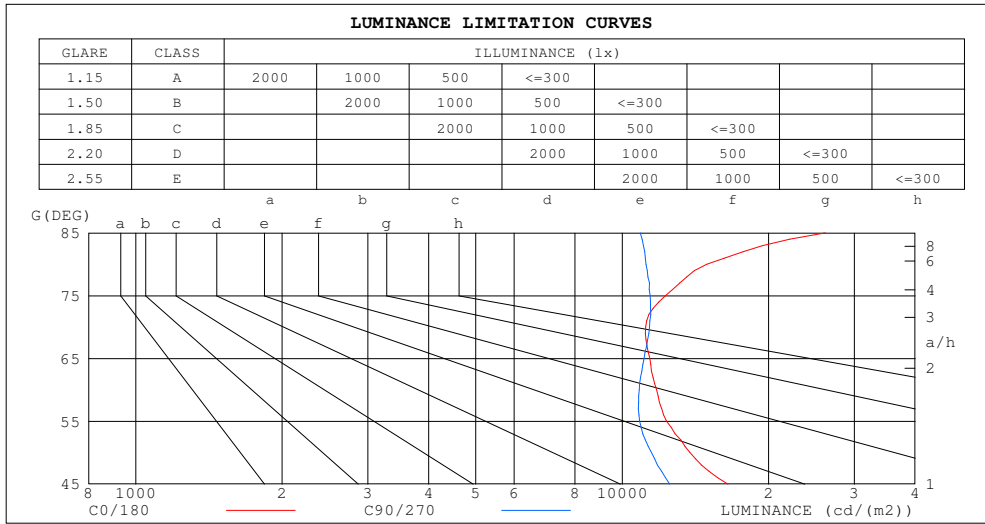
%lamp = 85.0%

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 20DEG
 Operators: LITPA
 Test Date: 17 April 2019

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
 Humidity: 65.0%
 Test Distance: 5.680m [K=1.0000]
 Remarks: TCA-65W-VS
 HELVAR LL1X70

LUMINANCE LIMITATION CURVES

Test:U:230.26V I:0.2851A P:64.538W PF:0.9832 Freq:50.01Hz Lamp Flux:6679.48x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	26153	10895
80	14929	11199
75	12279	11422
70	11172	11382
65	11392	11096
60	11762	10846
55	12337	10860
50	13781	11479
45	16488	12525

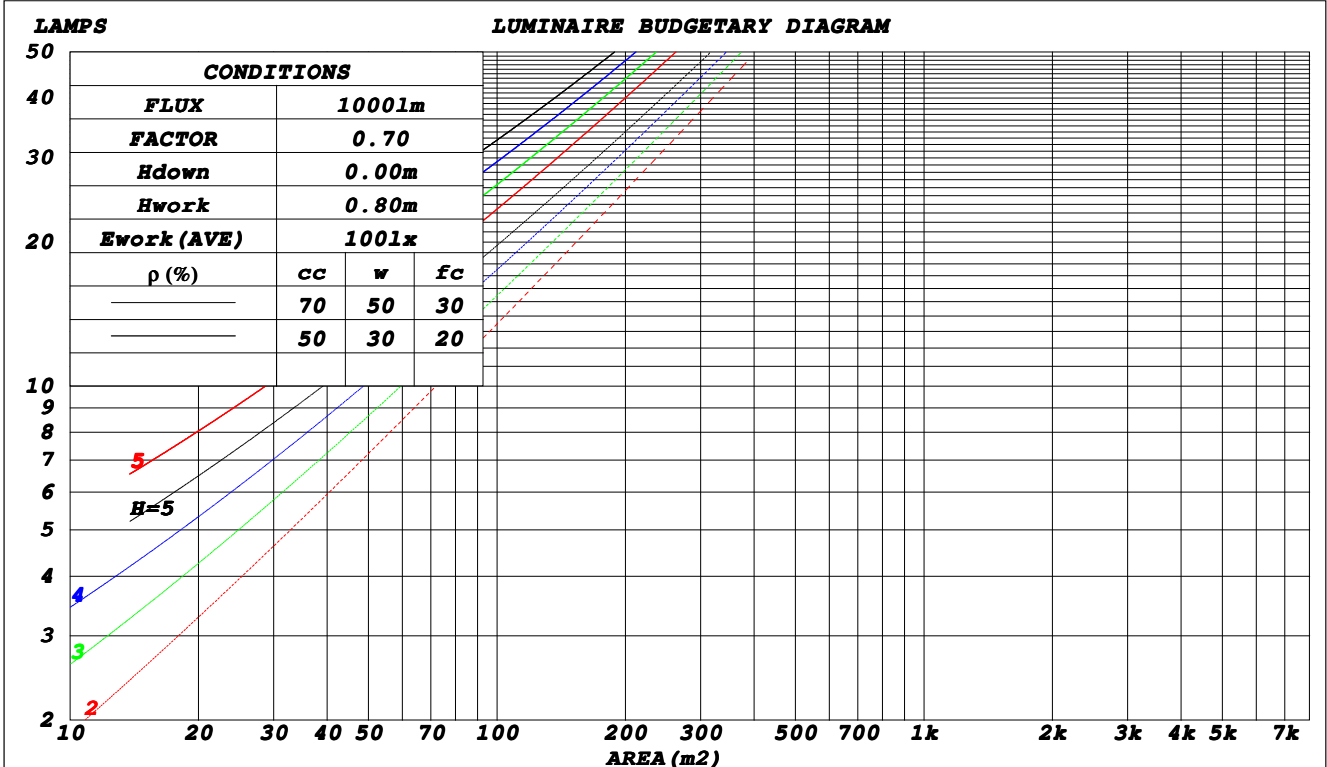
C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 17 April 2019

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity: 65.0%
Test Distance: 5.680m [K=1.0000]
Remarks: TCA-65W-VS
HELVAR LL1X70

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:230.26V I:0.2851A P:64.538W PF:0.9832 Freq:50.01Hz Lamp Flux:6679.48x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

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 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	1.00
1.0	1.05	1.01	.97	1.03	.99	.96	.98	.95	.93	.95	.92	.90	.91	.89	.87	.85
2.0	.93	.87	.82	.91	.85	.81	.88	.83	.79	.85	.80	.77	.82	.78	.75	.73
3.0	.83	.76	.70	.82	.75	.69	.79	.73	.68	.76	.71	.67	.73	.69	.66	.63
4.0	.75	.66	.60	.73	.66	.60	.71	.64	.59	.69	.63	.58	.66	.62	.58	.56
5.0	.67	.59	.53	.66	.58	.53	.64	.57	.52	.62	.56	.52	.61	.55	.51	.49
6.0	.61	.53	.47	.60	.52	.47	.59	.51	.46	.57	.51	.46	.55	.50	.45	.44
7.0	.56	.48	.42	.55	.47	.42	.54	.47	.41	.52	.46	.41	.51	.45	.41	.39
8.0	.51	.43	.38	.51	.43	.37	.49	.42	.37	.48	.42	.37	.47	.41	.37	.35
9.0	.47	.39	.34	.47	.39	.34	.45	.39	.34	.44	.38	.34	.43	.38	.33	.32
10.0	.44	.36	.31	.43	.36	.31	.42	.35	.31	.41	.35	.31	.40	.35	.30	.29



C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 17 April 2019

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity: 65.0%
Test Distance: 5.680m [K=1.0000]
Remarks: TCA-65W-VS
HELVAR LL1X70

WEC AND CCEC

Test:U:230.26V I:0.2851A P:64.538W PF:0.9832 Freq:50.01Hz Lamp Flux:6679.48x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

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	.289	.164	.052	.282	.161	.051	.269	.154	.049	.256	.148	.047	.245	.142	.046		
2.0	.266	.146	.045	.260	.143	.044	.249	.138	.043	.238	.134	.042	.228	.129	.041		
3.0	.246	.131	.039	.241	.129	.039	.231	.125	.038	.222	.121	.037	.213	.118	.036		
4.0	.228	.119	.035	.224	.117	.035	.215	.114	.034	.206	.111	.033	.199	.108	.033		
5.0	.212	.108	.031	.208	.107	.031	.200	.104	.031	.193	.102	.030	.186	.100	.030		
6.0	.198	.099	.028	.195	.098	.028	.188	.096	.028	.181	.094	.028	.175	.092	.027		
7.0	.186	.092	.026	.183	.091	.026	.176	.089	.026	.171	.087	.025	.165	.086	.025		
8.0	.175	.085	.024	.172	.085	.024	.166	.083	.024	.161	.082	.024	.156	.080	.023		
9.0	.165	.080	.022	.162	.079	.022	.157	.078	.022	.152	.076	.022	.148	.075	.022		
10.0	.156	.075	.021	.153	.074	.021	.149	.073	.021	.145	.072	.020	.141	.071	.020		

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	.179	.156	.136	.153	.134	.117	.105	.092	.081	.060	.053	.047	.019	.017	.015	
2.0	.169	.132	.101	.145	.114	.087	.099	.079	.061	.057	.046	.036	.018	.015	.012	
3.0	.160	.114	.078	.137	.098	.067	.094	.068	.047	.054	.040	.028	.017	.013	.009	
4.0	.152	.101	.061	.130	.087	.053	.090	.061	.038	.052	.035	.022	.017	.012	.007	
5.0	.144	.090	.050	.124	.078	.043	.085	.054	.031	.049	.032	.018	.016	.010	.006	
6.0	.137	.081	.041	.118	.070	.036	.081	.049	.025	.047	.029	.015	.015	.009	.005	
7.0	.131	.074	.035	.112	.064	.030	.078	.045	.022	.045	.027	.013	.015	.009	.004	
8.0	.124	.069	.030	.107	.059	.026	.074	.042	.019	.043	.025	.011	.014	.008	.004	
9.0	.119	.064	.026	.102	.055	.023	.071	.039	.016	.041	.023	.010	.013	.008	.003	
10.0	.114	.059	.023	.098	.052	.020	.068	.036	.014	.040	.021	.009	.013	.007	.003	

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 20DEG
 Operators: LITPA
 Test Date: 17 April 2019

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
 Humidity: 65.0%
 Test Distance: 5.680m [K=1.0000]
 Remarks: TCA-65W-VS
 HELVAR LL1X70

UGR(Unified Glare Rating) Table

Test:U:230.26V I:0.2851A P:64.538W PF:0.9832 Freq:50.01Hz Lamp Flux:6679.48x1 lm											
NAME: TCA					TYPE:LED			WEIGHT:3.2kg			
SPEC.:65W					DIM.: 68mmX1430mmX78mm			SERIAL No.:			
MFR.: LITPA AYDINLATMA					SUR.:			Shielding Angle:			
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	2H	21.5	22.9	21.7	23.1	23.3	20.8	22.2	21.0	22.4	22.5
	3H	22.5	23.8	22.8	24.0	24.2	21.9	23.2	22.2	23.4	23.7
	4H	23.1	24.3	23.4	24.5	24.8	22.5	23.7	22.8	24.0	24.2
	6H	23.8	24.9	24.1	25.2	25.4	23.1	24.2	23.4	24.5	24.7
	8H	24.2	25.3	24.5	25.6	25.9	23.3	24.4	23.6	24.7	24.9
	12H	24.7	25.8	25.1	26.1	26.4	23.4	24.5	23.8	24.8	25.1
4H	2H	21.8	23.0	22.1	23.3	23.5	21.2	22.4	21.5	22.7	22.9
	3H	23.0	24.1	23.4	24.4	24.7	22.6	23.7	23.0	24.0	24.3
	4H	23.8	24.8	24.2	25.1	25.4	23.4	24.4	23.7	24.7	25.0
	6H	24.8	25.6	25.2	26.0	26.3	24.1	25.0	24.5	25.3	25.7
	8H	25.3	26.1	25.7	26.5	26.9	24.4	25.2	24.8	25.6	25.9
	12H	26.0	26.8	26.5	27.2	27.6	24.6	25.4	25.0	25.7	26.1
8H	4H	24.1	24.9	24.5	25.3	25.7	23.7	24.5	24.1	24.9	25.3
	6H	25.3	26.0	25.7	26.4	26.8	24.6	25.3	25.1	25.7	26.2
	8H	26.1	26.7	26.5	27.1	27.5	25.1	25.7	25.5	26.1	26.6
	12H	27.0	27.6	27.5	28.0	28.5	25.4	26.0	25.9	26.4	26.9
12H	4H	24.1	24.9	24.6	25.3	25.7	23.8	24.5	24.2	24.9	25.3
	6H	25.4	26.0	25.9	26.4	26.9	24.8	25.4	25.3	25.8	26.3
	8H	26.3	26.8	26.8	27.2	27.7	25.3	25.8	25.8	26.3	26.8
Variations with the observer position at spacings:											
S = 1.0H	+ 0.4 / - 0.4					+ 0.5 / - 0.3					
1.5H	+ 0.3 / - 0.3					+ 0.5 / - 0.5					
2.0H	+ 0.2 / - 0.2					+ 0.4 / - 0.4					

UTILIZATION FACTORS TABLE

Test:U:230.26V I:0.2851A P:64.538W PF:0.9832 Freq:50.01Hz Lamp Flux:6679.48x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

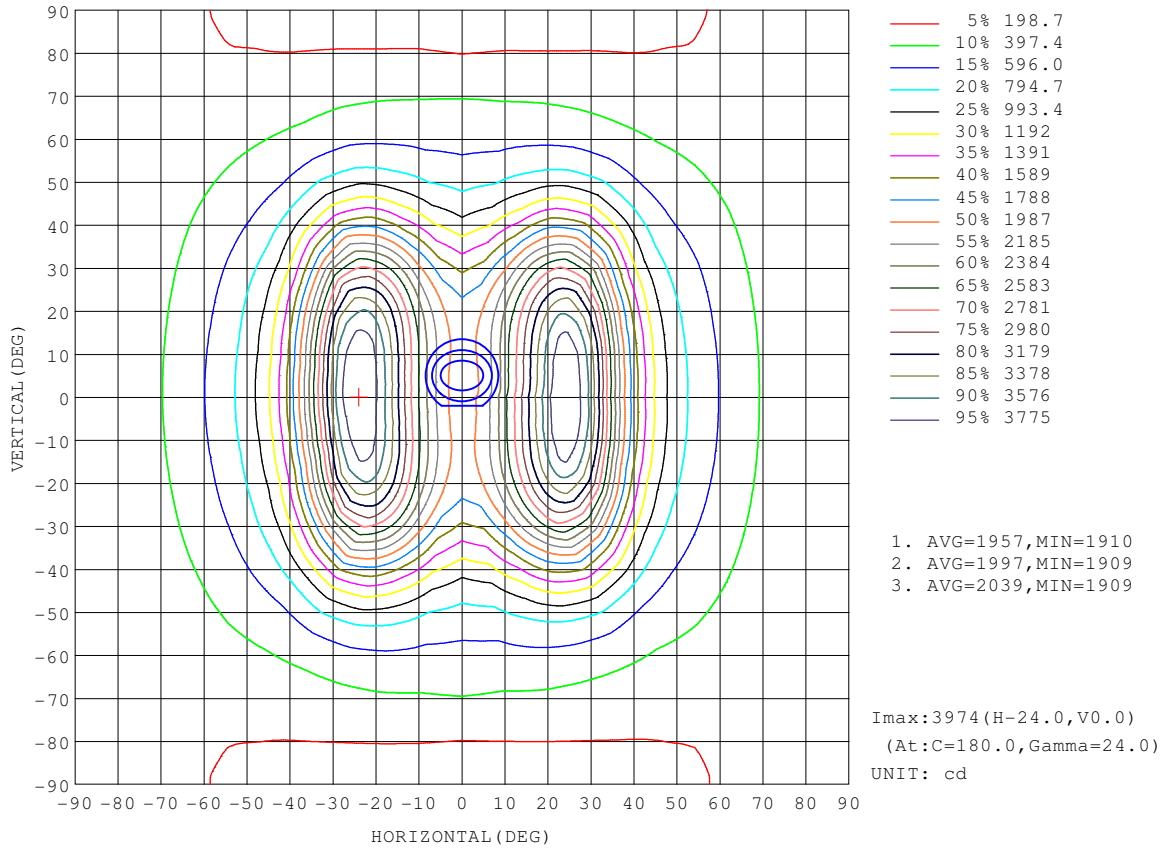
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	66	55	49	65	55	49	64	55	49	43
0.80	75	65	59	74	65	58	72	64	58	52
1.00	82	73	67	81	72	66	79	73	66	60
1.25	89	80	74	87	79	73	85	78	72	66
1.50	93	84	78	91	84	78	89	82	77	70
2.00	99	91	86	97	90	85	94	88	83	76
2.50	102	95	90	100	94	89	96	91	87	79
3.00	104	98	94	102	97	93	99	94	90	82
4.00	108	103	99	106	101	97	101	98	95	86
5.00	110	106	102	107	104	100	103	100	97	88
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 20DEG
 Operators: LITPA
 Test Date: 17 April 2019

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
 Humidity: 65.0%
 Test Distance: 5.680m [K=1.0000]
 Remarks: TCA-65W-VS
 HELVAR LL1X70

ISOCANDELA DIAGRAM

Test:U:230.26V I:0.2851A P:64.538W PF:0.9832 Freq:50.01Hz Lamp Flux:6679.48x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

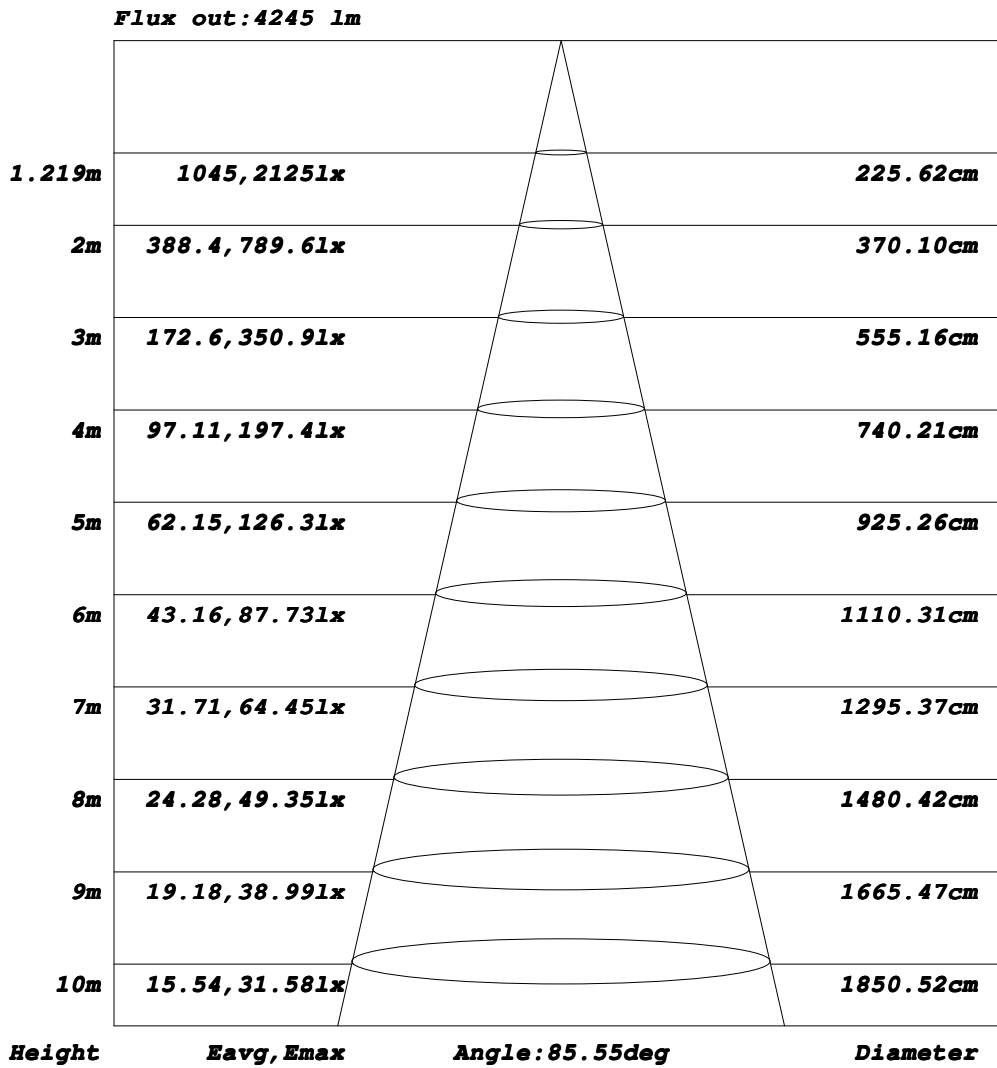


C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:20DEG
Operators:LITPA
Test Date:17 April 2019

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity:65.0%
Test Distance:5.680m [K=1.0000]
Remarks: TCA-65W-VS
HELVAR LL1X70

AAI Figure

Test:U:230.26V I:0.2851A P:64.538W PF:0.9832 Freq:50.01Hz Lamp Flux:6679.48x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:



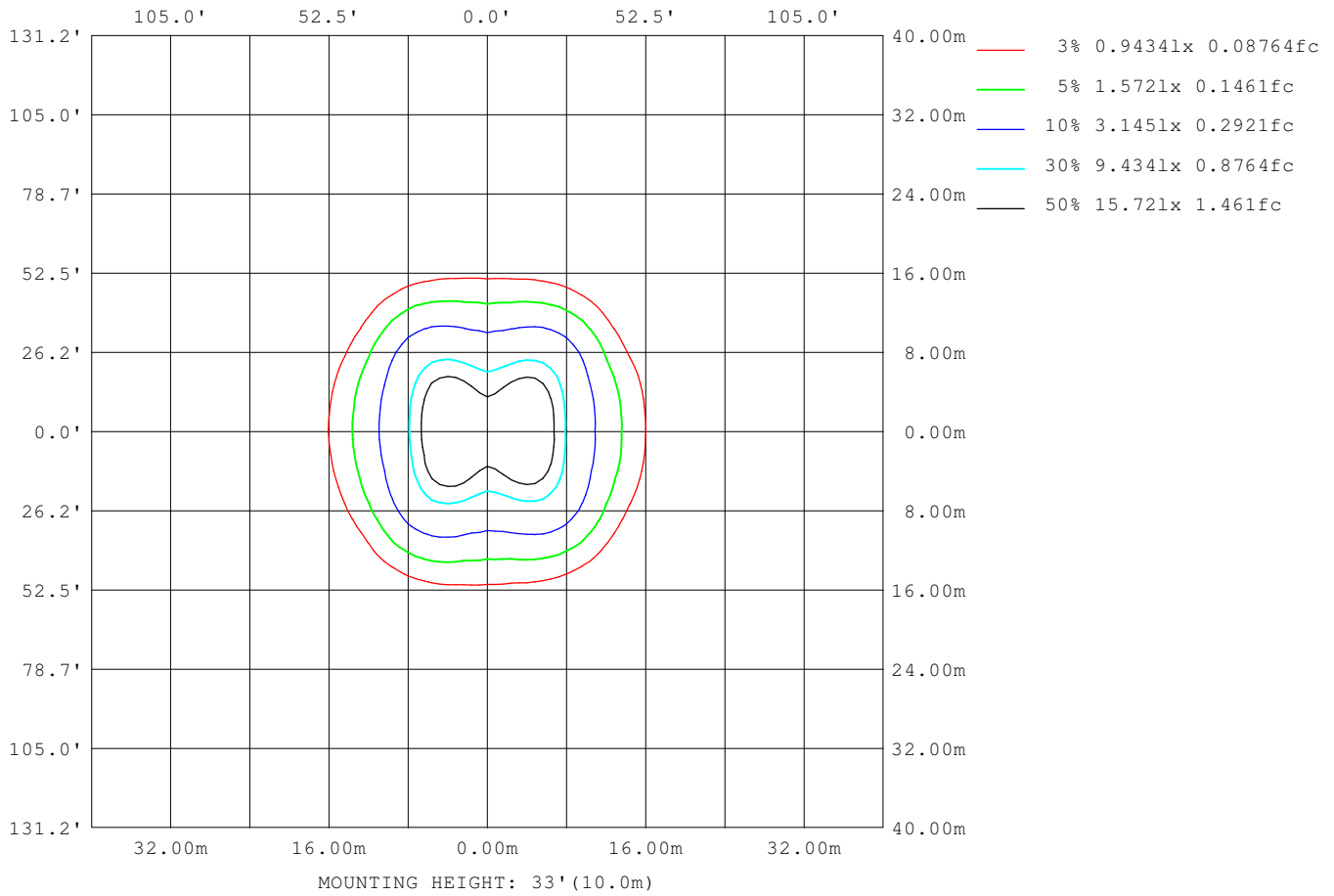
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:20DEG
Operators:LITPA
Test Date:17 April 2019

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity:65.0%
Test Distance:5.680m [K=1.0000]
Remarks: TCA-65W-VS
HELVAR LL1X70

ISOLUX DIAGRAM

Test:U:230.26V I:0.2851A P:64.538W PF:0.9832 Freq:50.01Hz Lamp Flux:6679.48x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:



C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 17 April 2019

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity: 65.0%
Test Distance: 5.680m [K=1.0000]
Remarks: TCA-65W-VS
HELVAR LL1X70

LED Avg.L Report

Test:U:230.26V I:0.2851A P:64.538W PF:0.9832 Freq:50.01Hz Lamp Flux:6679.48x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

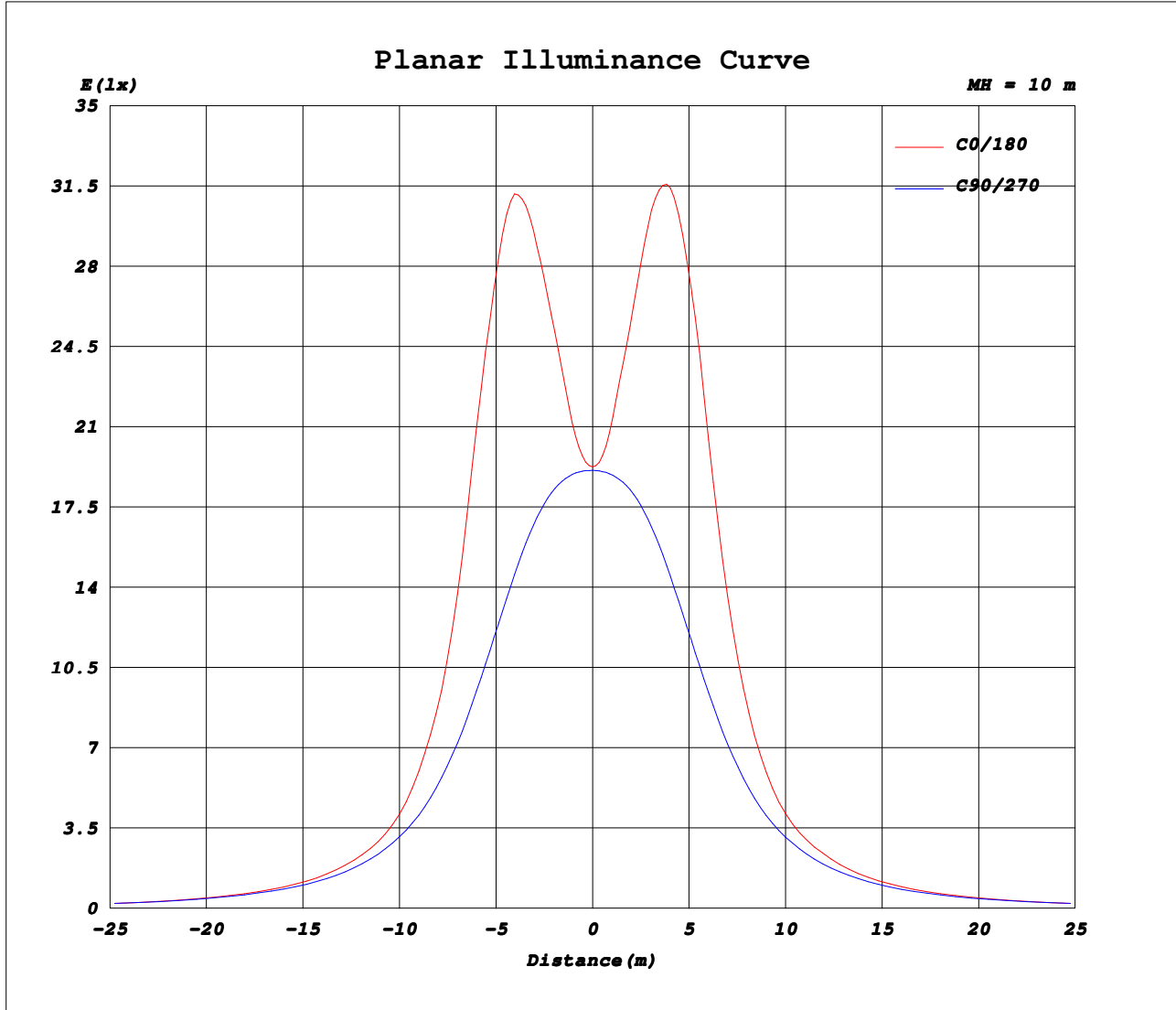
AvgL	cd/m2
L_0~180 (65) av	11392
L_0~180 (75) av	12376
L_0~180 (85) av	26605
L_90~270 (65) av	11051
L_90~270 (75) av	11422
L_90~270 (85) av	10731
L_45 (65) av	11475
L_45 (75) av	11659
L_45 (85) av	20249

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:20DEG
Operators:LITPA
Test Date:17 April 2019

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity:65.0%
Test Distance:5.680m [K=1.0000]
Remarks: TCA-65W-VS
HELVAR LL1X70

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 17 April 2019

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity: 65.0%
Test Distance: 5.680m [K=1.0000]
Remarks: TCA-65W-VS
 HELVAR LL1X70

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:230.26V I:0.2851A P:64.538W PF:0.9832 Freq:50.01Hz Lamp Flux:6679.48x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

Table--1

UNIT: cd

[illegible]

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 17 April 2019

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity:65.0%
Test Distance:5.680m [K=1.0000]
Remarks: TCA-65W-VS
HELVAR LL1X70

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:230.26V I:0.2851A P:64.538W PF:0.9832 Freq:50.01Hz Lamp Flux:6679.48x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

Table--2

UNIT: cd

[illegible]

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 17 April 2019

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity:65.0%
Test Distance:5.680m [K=1.0000]
Remarks: TCA-65W-VS
HELVAR LL1X70