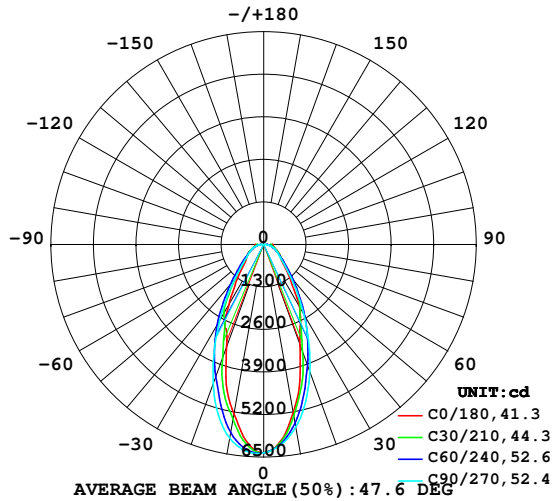


## LUMINAIRE PHOTOMETRIC TEST REPORT

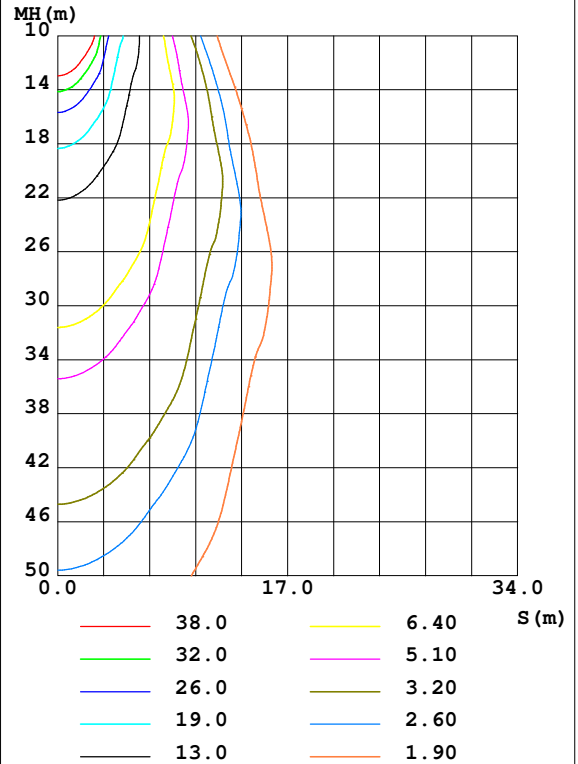
Test:U:230.22V I:0.2851A P:64.535W PF:0.9832 Freq:50.01Hz Lamp Flux:6730.73x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 104.30 lm/W			
MODEL	TCA	I <sub>max</sub> (cd)	6391	S/MH (C0/180)	0.65
NOMINAL POWER (W)	65W	LOR (%)	100.0	S/MH (C90/270)	0.83
RATED VOLTAGE (V)	220.0	TOTAL FLUX (lm)	6730.7	η UP, DN (C0-180)	0.0, 48.5
NOMINAL FLUX (lm)	6730.73	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 51.5
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	0.75
TEST VOLTAGE (V)	220	η down (%)	100.0	CIBSE SHR MAX	0.85

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:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	5221	5437	5667	5272	5253	5623	6011	5650	0- 10	565.3	565.3	8.4, 8.4
20	3258	3769	4133	3736	3333	4101	4523	4003	10- 20	1308	1873	27.8, 27.8
30	2190	2248	2455	2261	2148	2443	2701	2396	20- 30	1402	3275	48.7, 48.7
40	1163	1448	1263	1472	1143	1595	1383	1562	30- 40	1156	4431	65.8, 65.8
50	693.5	850.3	711.2	833.3	703.7	904.1	758.1	907.2	40- 50	801.8	5233	77.8, 77.8
60	539.3	511.6	491.5	507.2	547.3	536.4	512.4	542.4	50- 60	570.9	5804	86.2, 86.2
70	380.6	335.8	343.7	335.7	377.1	350.0	362.0	353.2	60- 70	430.5	6235	92.6, 92.6
80	268.7	216.5	169.2	214.0	266.2	224.1	184.9	230.9	70- 80	303.0	6538	97.1, 97.1
90	261.6	149.8	10.27	155.1	265.3	151.4	12.36	159.4	80- 90	193.0	6731	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): 4872.2 lm

%lum = 72.4%

%lamp = 72.4%

Conical surface Flux(120deg): 5804.2 lm

%lum = 86.2%

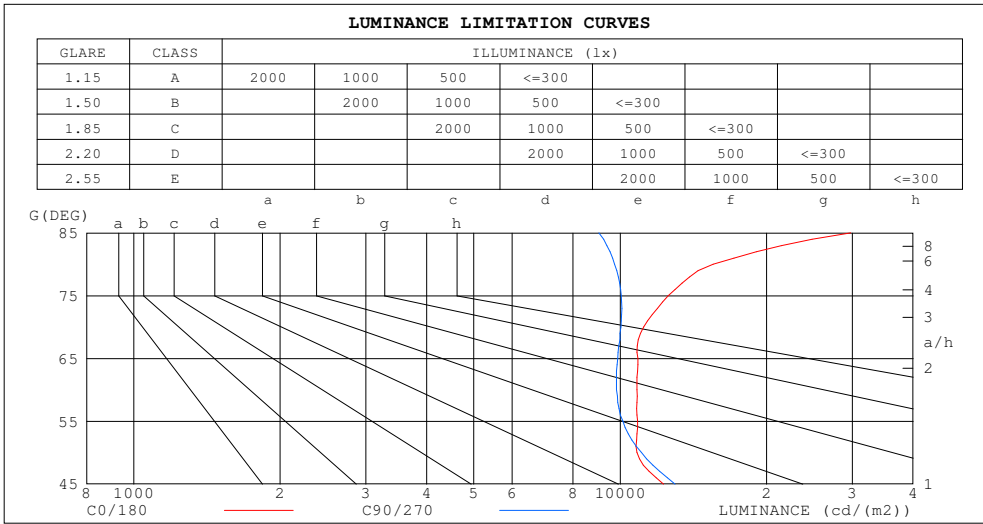
%lamp = 86.2%

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

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  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:230.22V I:0.2851A P:64.535W PF:0.9832 Freq:50.01Hz Lamp Flux:6730.73x1 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	29807	9045
80	15534	9734
75	12568	10057
70	11174	10041
65	10877	9884
60	10829	9822
55	10854	10124
50	10833	11054
45	12277	12976

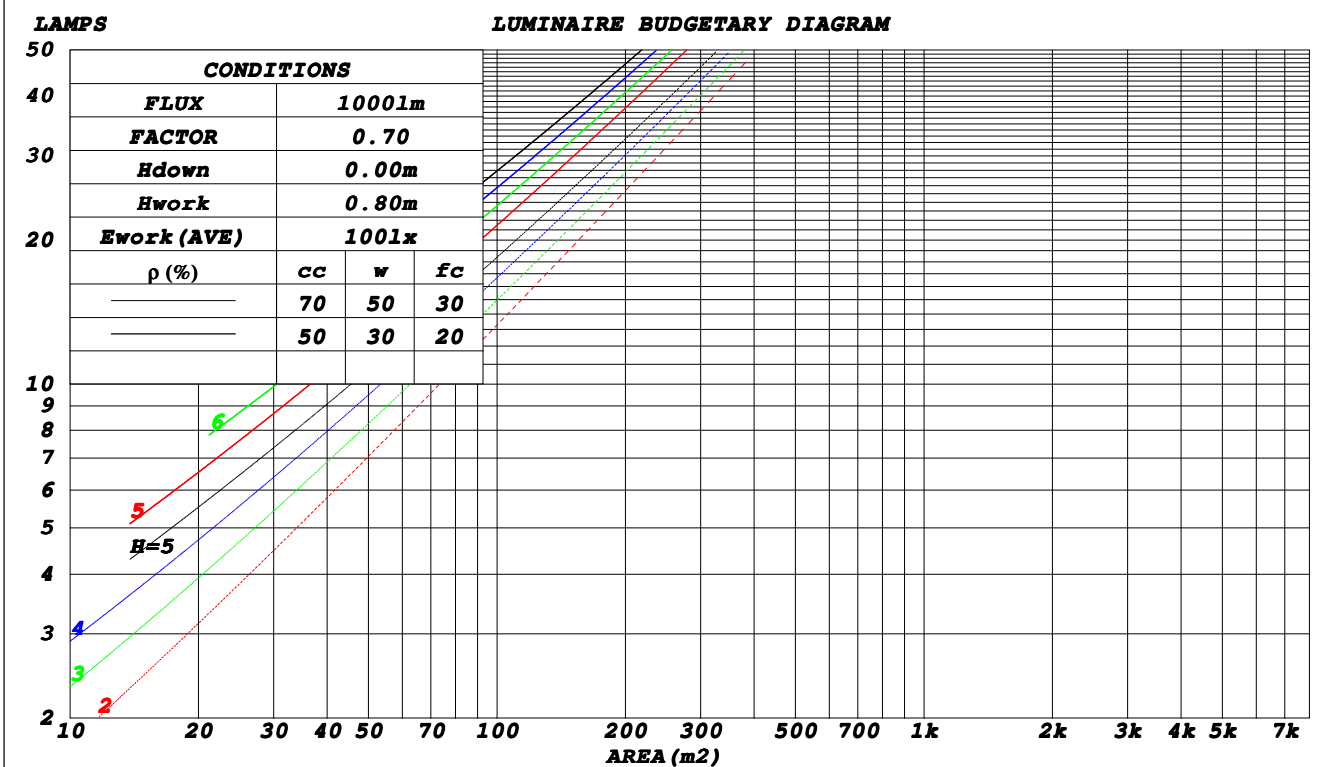
**C Range: 0 - 360DEG**  
**C Interval: 10.0DEG**  
**Test Speed: HIGH**  
**Temperature: 20DEG**  
**Operators: LITPA**  
**Test Date: 17 April 2019**

**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:230.22V I:0.2851A P:64.535W PF:0.9832 Freq:50.01Hz Lamp Flux:6730.73x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

$\rho_{cc}$	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															



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

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  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:230.22V I:0.2851A P:64.535W PF:0.9832 Freq:50.01Hz Lamp Flux:6730.73x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

$\rho_{cc}$	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	.267	.152	.048	.260	.148	.047	.247	.142	.045	.235	.136	.044	.224	.130	.042		
2.0	.244	.134	.041	.238	.131	.040	.227	.126	.039	.216	.121	.038	.207	.117	.037		
3.0	.224	.119	.036	.219	.117	.035	.209	.113	.034	.200	.110	.034	.192	.106	.033		
4.0	.207	.108	.032	.203	.106	.031	.194	.103	.031	.186	.100	.030	.179	.097	.030		
5.0	.192	.098	.028	.188	.097	.028	.181	.094	.028	.174	.092	.027	.167	.089	.027		
6.0	.180	.090	.026	.176	.089	.026	.169	.087	.025	.163	.085	.025	.157	.083	.025		
7.0	.168	.083	.024	.165	.082	.023	.159	.080	.023	.154	.079	.023	.148	.077	.023		
8.0	.158	.077	.022	.155	.077	.022	.150	.075	.021	.145	.074	.021	.141	.072	.021		
9.0	.149	.072	.020	.147	.072	.020	.142	.070	.020	.138	.069	.020	.133	.068	.020		
10.0	.141	.068	.019	.139	.067	.019	.135	.066	.019	.131	.065	.018	.127	.064	.018		

$\rho_{cc}$	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	.177	.157	.138	.152	.134	.119	.104	.092	.082	.060	.053	.048	.019	.017	.015	
2.0	.166	.132	.104	.142	.114	.090	.097	.079	.063	.056	.046	.037	.018	.015	.012	
3.0	.156	.114	.081	.133	.098	.070	.092	.068	.049	.053	.040	.029	.017	.013	.009	
4.0	.146	.100	.065	.126	.086	.056	.086	.060	.040	.050	.035	.023	.016	.011	.008	
5.0	.138	.089	.053	.119	.077	.046	.082	.054	.032	.047	.032	.019	.015	.010	.006	
6.0	.131	.080	.044	.112	.070	.038	.078	.049	.027	.045	.029	.016	.015	.009	.005	
7.0	.124	.073	.037	.107	.063	.033	.074	.044	.023	.043	.026	.014	.014	.009	.005	
8.0	.118	.067	.032	.101	.058	.028	.070	.041	.020	.041	.024	.012	.013	.008	.004	
9.0	.112	.062	.028	.096	.054	.025	.067	.038	.017	.039	.022	.010	.013	.007	.003	
10.0	.107	.058	.025	.092	.050	.022	.064	.035	.015	.037	.021	.009	.012	.007	.003	

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

**$\gamma$  Range:** 0 - 90DEG  
 **$\gamma$  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:230.22V I:0.2851A P:64.535W PF:0.9832 Freq:50.01Hz Lamp Flux:6730.73x1 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		19.6	20.8	19.8	21.0	21.2	19.4	20.6	19.6	20.8	21.0
3H		21.1	22.3	21.4	22.5	22.7	20.7	21.8	21.0	22.1	22.3
4H		22.0	23.1	22.3	23.4	23.6	21.3	22.4	21.6	22.7	22.9
6H		23.0	24.1	23.3	24.3	24.6	21.9	23.0	22.2	23.2	23.5
8H		23.6	24.6	24.0	24.9	25.2	22.1	23.2	22.5	23.4	23.7
12H		24.4	25.4	24.8	25.7	26.0	22.3	23.3	22.6	23.6	23.8
4H 2H		20.0	21.1	20.3	21.4	21.6	19.9	21.0	20.2	21.2	21.5
3H		21.9	22.8	22.2	23.1	23.4	21.4	22.4	21.7	22.7	22.9
4H		23.0	23.9	23.3	24.2	24.5	22.2	23.1	22.6	23.4	23.7
6H		24.2	25.0	24.6	25.3	25.7	23.0	23.8	23.4	24.1	24.5
8H		24.9	25.7	25.3	26.0	26.4	23.3	24.0	23.7	24.4	24.8
12H		25.9	26.5	26.3	26.9	27.3	23.5	24.2	23.9	24.6	25.0
8H 4H		23.3	24.0	23.7	24.4	24.8	22.6	23.4	23.0	23.7	24.1
6H		24.7	25.4	25.2	25.8	26.2	23.6	24.2	24.0	24.6	25.1
8H		25.7	26.2	26.1	26.7	27.1	24.1	24.6	24.5	25.0	25.5
12H		26.9	27.4	27.4	27.8	28.3	24.4	24.9	24.9	25.3	25.8
12H 4H		23.3	24.0	23.7	24.4	24.8	22.7	23.4	23.2	23.8	24.2
6H		24.9	25.4	25.3	25.8	26.3	23.8	24.4	24.3	24.8	25.2
8H		25.9	26.4	26.4	26.8	27.3	24.3	24.8	24.8	25.3	25.7
Variations with the observer position at spacings:											
S = 1.0H		+ 0.2 / - 0.2				+ 0.3 / - 0.3					
1.5H		+ 0.1 / - 0.2				+ 0.2 / - 0.2					
2.0H		+ 0.2 / - 0.3				+ 0.2 / - 0.2					

CIE Pub.117, 6731 lm Total Lamp Luminous Flux Corrected ( $8\log(F/F_0) = 6.6$ )

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

## UTILIZATION FACTORS TABLE

Test:U:230.22V I:0.2851A P:64.535W PF:0.9832 Freq:50.01Hz Lamp Flux:6730.73x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

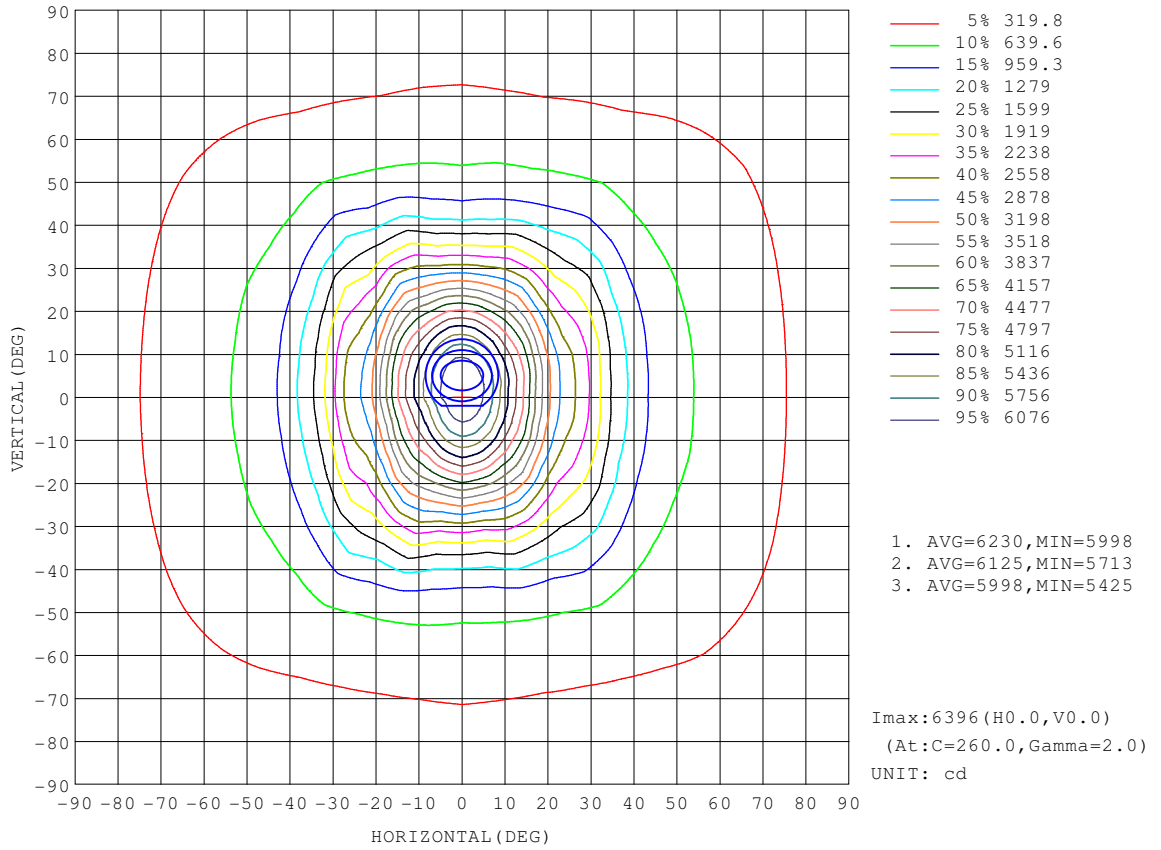
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	71	61	56	70	61	56	69	61	56	50
0.80	79	70	64	79	70	64	77	69	64	58
1.00	86	77	71	85	77	71	83	77	71	65
1.25	91	83	78	90	83	77	88	81	76	70
1.50	95	88	82	94	87	82	91	85	81	74
2.00	100	93	88	99	92	88	95	90	86	79
2.50	103	97	92	101	96	91	98	93	89	82
3.00	106	100	96	104	99	95	100	96	92	85
4.00	109	104	100	107	102	99	103	99	96	88
5.00	111	107	103	108	105	102	104	101	99	90
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:230.22V I:0.2851A P:64.535W PF:0.9832 Freq:50.01Hz Lamp Flux:6730.73x1 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

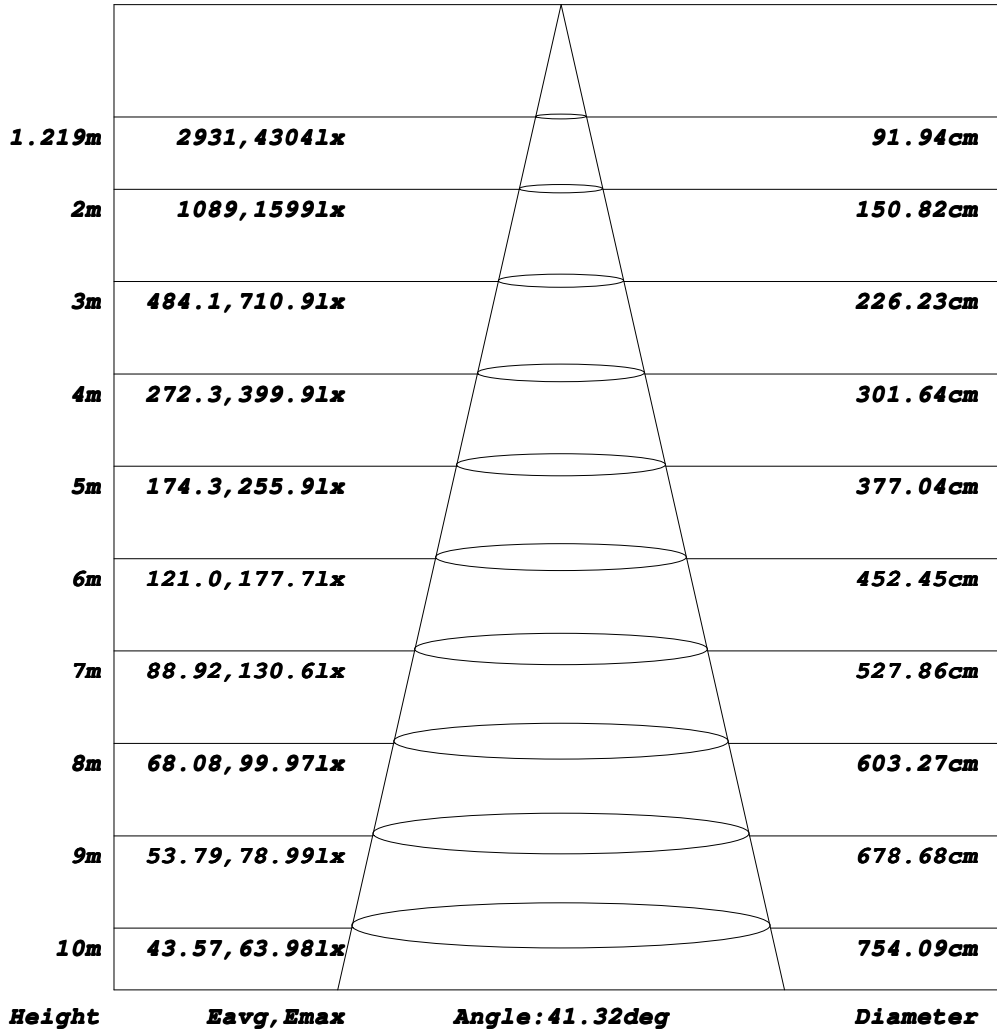
γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.400  
Humidity:65.0%  
Test Distance:5.680m [K=1.0000]  
Remarks: TCA-65W-VS  
HELVAR LL1X70



## AAI Figure

Test:U:230.22V I:0.2851A P:64.535W PF:0.9832 Freq:50.01Hz Lamp Flux:6730.73x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

Flux out:2017 lm



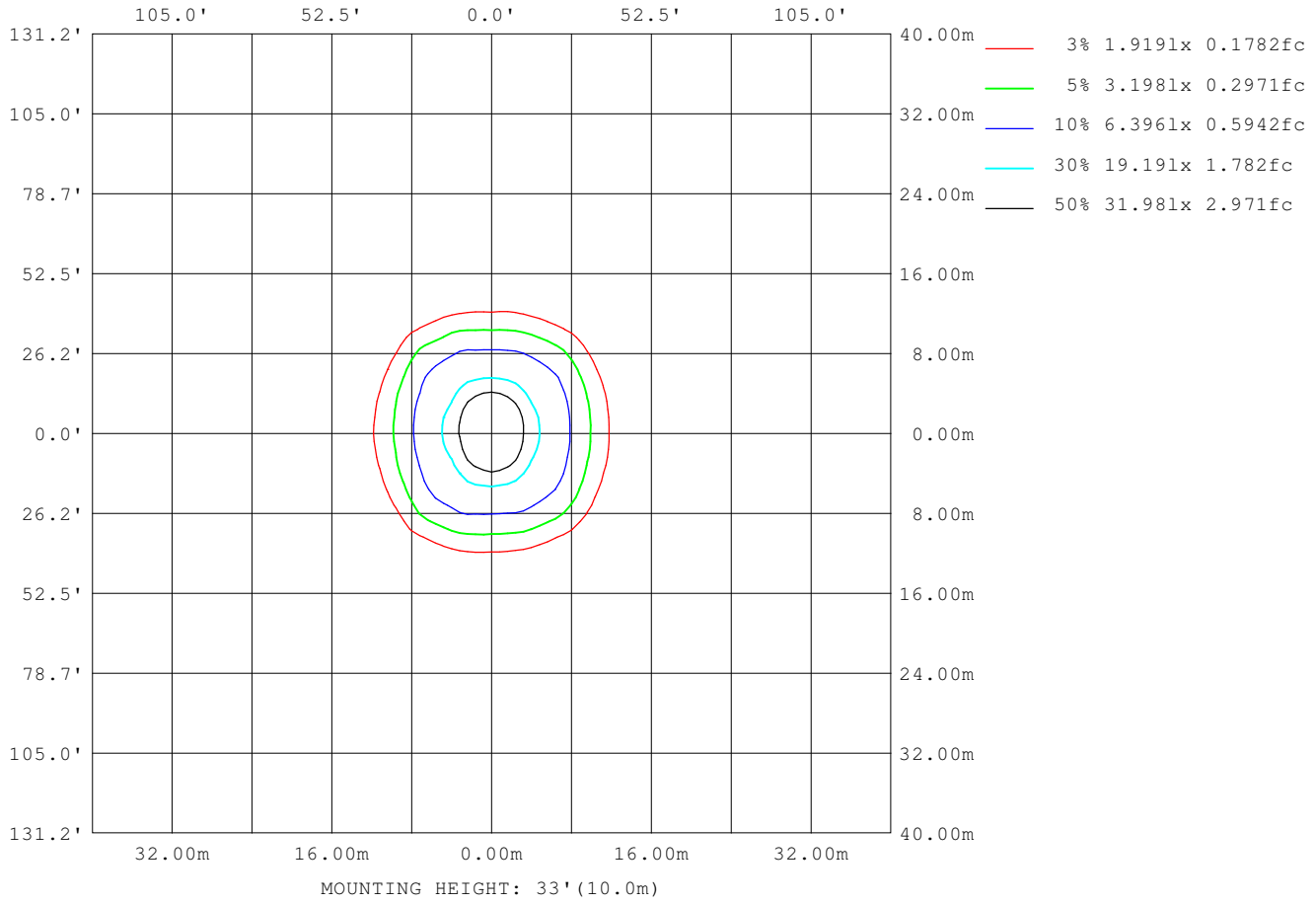
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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:230.22V I:0.2851A P:64.535W PF:0.9832 Freq:50.01Hz Lamp Flux:6730.73x1 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:230.22V I:0.2851A P:64.535W PF:0.9832 Freq:50.01Hz Lamp Flux:6730.73x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:65W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

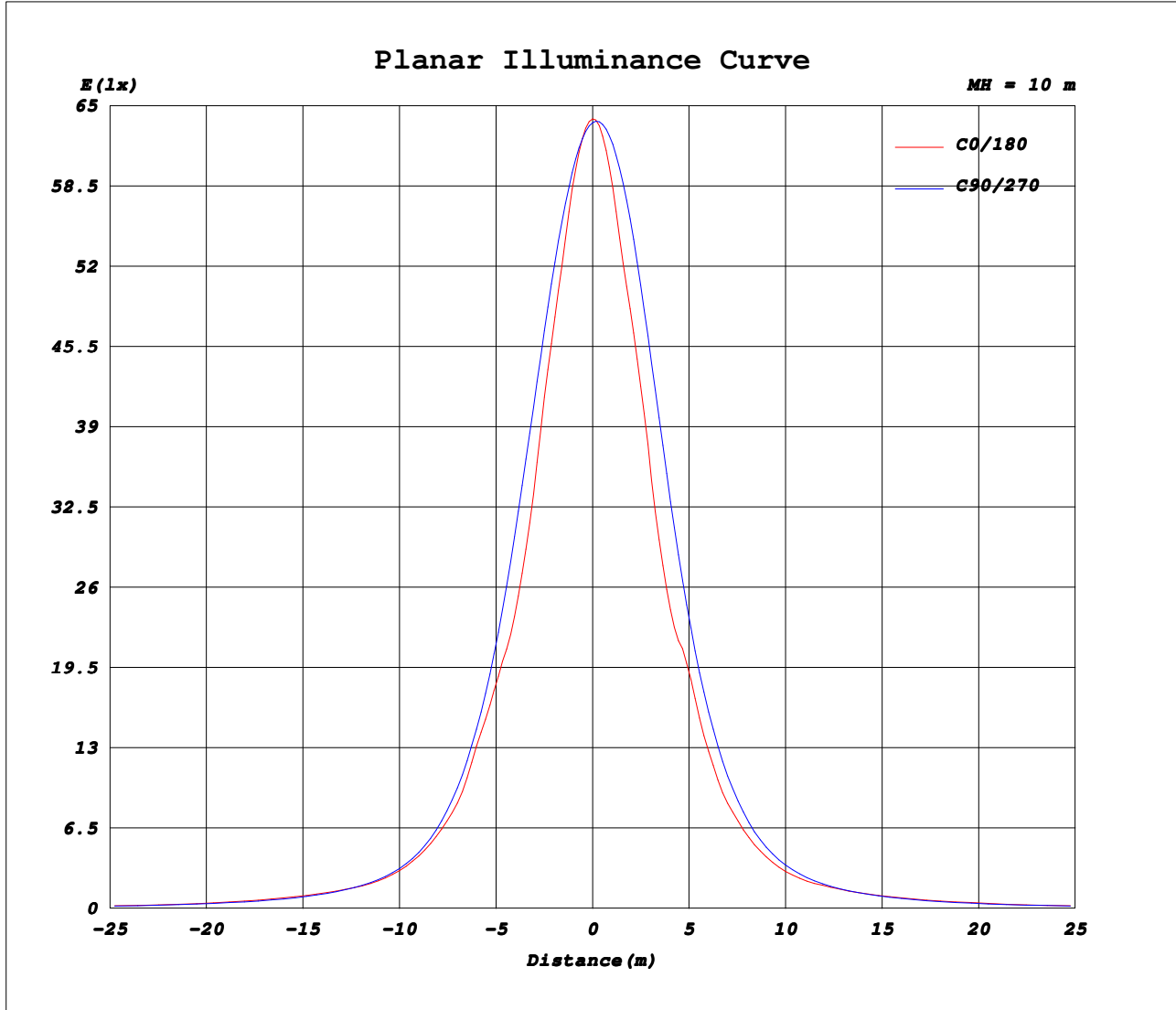
AvgL	cd/m2
L_0~180 (65) av	10919
L_0~180 (75) av	12376
L_0~180 (85) av	29719
L_90~270 (65) av	10106
L_90~270 (75) av	10428
L_90~270 (85) av	9745
L_45 (65) av	10014
L_45 (75) av	10838
L_45 (85) av	19455

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

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  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:230.22V I:0.2851A P:64.535W PF:0.9832 Freq:50.01Hz Lamp Flux:6730.73x1 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:230.22V I:0.2851A P:64.535W PF:0.9832 Freq:50.01Hz Lamp Flux:6730.73x1 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**