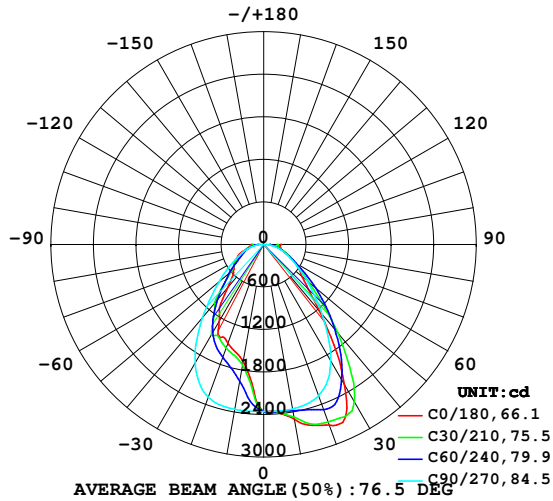


LUMINAIRE PHOTOMETRIC TEST REPORT

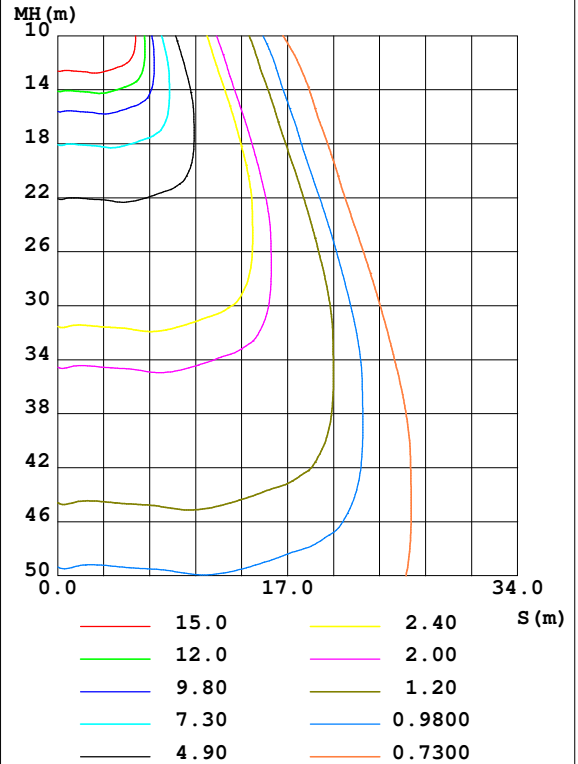
Test:U:230.24V I:0.1922A P:42.797W PF:0.9673 Freq:50.01Hz Lamp Flux:4833.45x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 112.94 lm/W			
MODEL	TCA	I _{max} (cd)	2771	S/MH (C0/180)	0.78
NOMINAL POWER (W)	45W	LOR (%)	100.0	S/MH (C90/270)	1.20
RATED VOLTAGE (V)	220.0	TOTAL FLUX (lm)	4833.5	η UP, DN (C0-180)	0.0, 49.9
NOMINAL FLUX (lm)	4833.45	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 50.1
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	1.00
TEST VOLTAGE (V)	220	η down (%)	100.0	CIBSE SHR MAX	1.15

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: 16 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-45W-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	2506	2428	2356	1795	1677	1817	2362	2433	0- 10	211.9	211.9	4.38,4.38
20	2711	2603	2269	1615	1482	1617	2292	2628	10- 20	606.1	817.9	16.9,16.9
30	2277	2423	1893	1429	1256	1420	1932	2473	20- 30	936.0	1754	36.3,36.3
40	1216	1774	1281	1078	792.0	1095	1341	1859	30- 40	987.5	2741	56.7,56.7
50	712.4	958.6	796.7	659.6	552.6	673.8	823.1	1025	40- 50	755.9	3497	72.4,72.4
60	507.3	509.4	486.2	407.1	460.0	418.2	499.5	540.9	50- 60	534.7	4032	83.4,83.4
70	301.2	305.4	298.4	274.3	338.3	281.5	303.7	321.0	60- 70	382.3	4414	91.3,91.3
80	236.7	183.0	143.8	175.5	203.9	181.1	149.3	192.2	70- 80	256.6	4671	96.6,96.6
90	242.9	146.1	8.706	118.0	174.2	119.4	9.314	145.8	80- 90	162.6	4833	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): 3153 lm

%lum = 65.2%

%lamp = 65.2%

Conical surface Flux(120deg): 4032 lm

%lum = 83.4%

%lamp = 83.4%

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:20DEG
 Operators:LITPA
 Test Date:16 April 2019

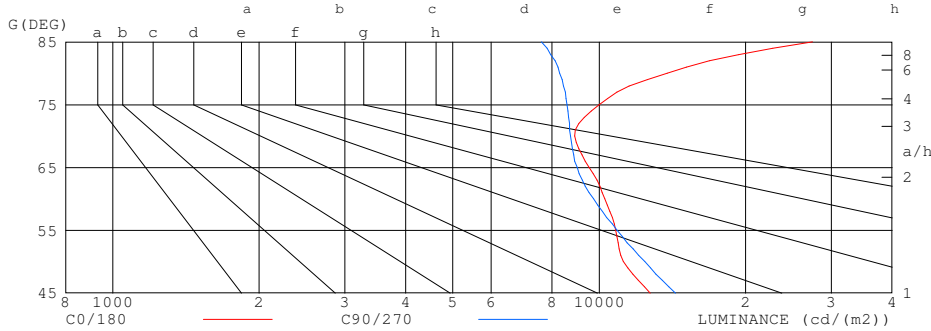
γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.400
 Humidity:65.0%
 Test Distance:5.680m [K=1.0000]
 Remarks: TCA-45W-VS
 HELVAR LL1X70

LUMINANCE LIMITATION CURVES

Test:U:230.24V I:0.1922A P:42.797W PF:0.9673 Freq:50.01Hz Lamp Flux:4833.45x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

LUMINANCE LIMITATION CURVES

GLARE	CLASS	ILLUMINANCE (lx)							
1.15	A	2000	1000	500	<=300				
1.50	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.20	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	27440	7611
80	13792	8290
75	10005	8589
70	8911	8733
65	9538	9015
60	10268	9733
55	10805	10871
50	11215	12406
45	12734	14360

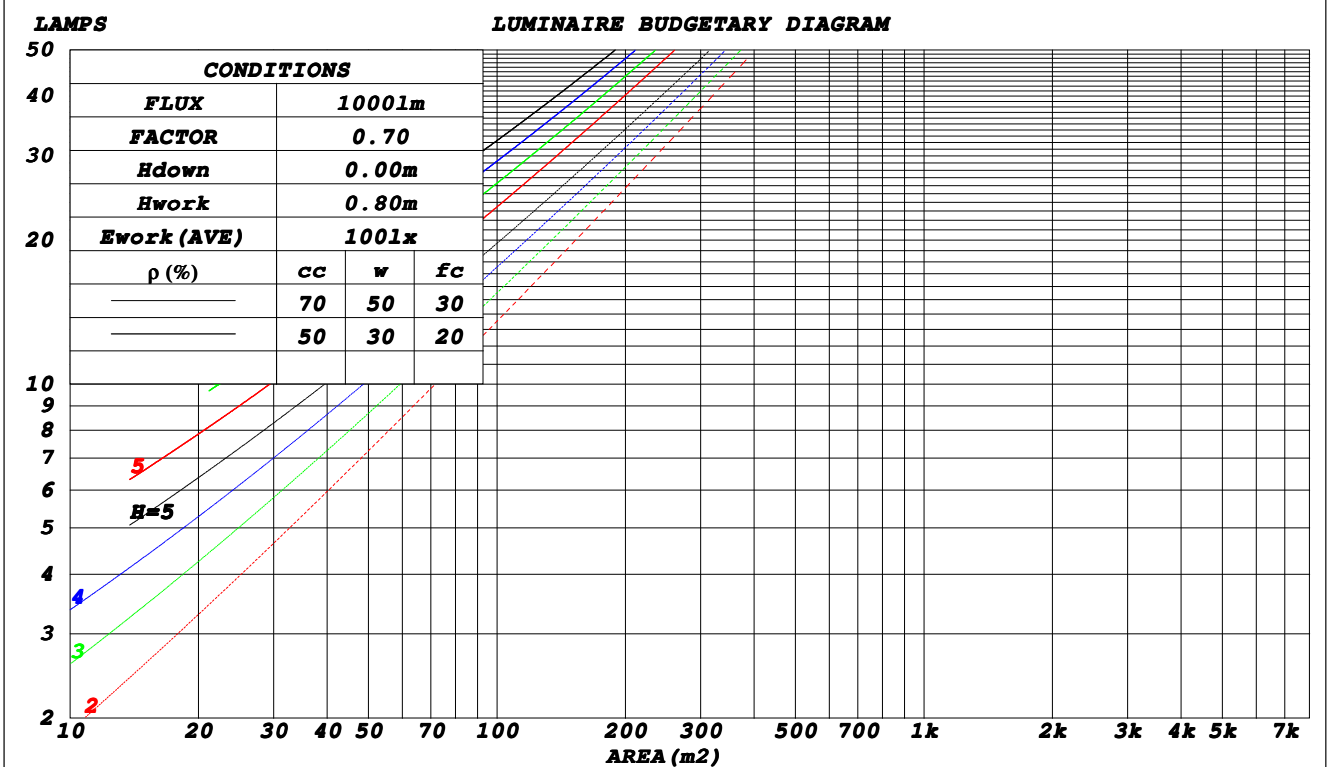
C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16 April 2019

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-45W-VS
HELVAR LL1X70

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:230.24V I:0.1922A P:42.797W PF:0.9673 Freq:50.01Hz Lamp Flux:4833.45x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	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	1.02	.99	.95	.98	.95	.92	.94	.92	.89	.91	.89	.87	.85
2.0	.93	.86	.81	.91	.85	.80	.87	.82	.78	.84	.80	.76	.81	.78	.75	.73
3.0	.83	.75	.69	.81	.74	.69	.78	.72	.67	.76	.71	.66	.73	.69	.65	.63
4.0	.74	.66	.60	.73	.66	.60	.71	.64	.59	.68	.63	.58	.66	.61	.57	.55
5.0	.67	.59	.53	.66	.58	.53	.64	.57	.52	.62	.56	.52	.61	.55	.51	.49
6.0	.61	.53	.47	.60	.53	.47	.59	.52	.46	.57	.51	.46	.56	.50	.46	.44
7.0	.56	.48	.42	.55	.48	.42	.54	.47	.42	.53	.46	.42	.51	.46	.41	.39
8.0	.52	.44	.38	.51	.43	.38	.50	.43	.38	.49	.42	.38	.47	.42	.37	.36
9.0	.48	.40	.35	.47	.40	.35	.46	.39	.35	.45	.39	.34	.44	.38	.34	.32
10.0	.44	.37	.32	.44	.37	.32	.43	.36	.32	.42	.36	.32	.41	.35	.31	.30



C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16 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-45W-VS
HELVAR LL1X70

WEC AND CCEC

Test:U:230.24V I:0.1922A P:42.797W PF:0.9673 Freq:50.01Hz Lamp Flux:4833.45x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	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	.295	.168	.053	.288	.164	.052	.274	.157	.050	.262	.151	.049	.251	.146	.047		
2.0	.270	.148	.045	.263	.145	.045	.252	.140	.044	.241	.135	.042	.232	.131	.041		
3.0	.248	.132	.040	.243	.130	.039	.232	.126	.038	.223	.122	.038	.214	.119	.037		
4.0	.229	.119	.035	.224	.117	.035	.215	.114	.034	.207	.111	.034	.199	.108	.033		
5.0	.212	.108	.031	.208	.107	.031	.200	.104	.031	.193	.102	.030	.186	.099	.030		
6.0	.198	.099	.028	.194	.098	.028	.187	.096	.028	.181	.094	.028	.175	.092	.027		
7.0	.185	.091	.026	.182	.091	.026	.175	.089	.026	.170	.087	.025	.164	.085	.025		
8.0	.174	.085	.024	.171	.084	.024	.165	.082	.024	.160	.081	.023	.155	.080	.023		
9.0	.163	.079	.022	.161	.078	.022	.156	.077	.022	.151	.076	.022	.147	.074	.022		
10.0	.154	.074	.021	.152	.073	.020	.147	.072	.020	.143	.071	.020	.139	.070	.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	.077	.137	.098	.067	.094	.068	.047	.054	.040	.028	.018	.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	.026	.047	.029	.015	.015	.009	.005	
7.0	.130	.074	.035	.112	.064	.031	.077	.045	.022	.045	.027	.013	.015	.009	.004	
8.0	.124	.068	.030	.107	.059	.026	.074	.042	.019	.043	.025	.011	.014	.008	.004	
9.0	.118	.063	.026	.102	.055	.023	.071	.039	.016	.041	.023	.010	.013	.007	.003	
10.0	.113	.059	.023	.097	.051	.020	.067	.036	.015	.039	.021	.009	.013	.007	.003	

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16 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-45W-VS
 HELVAR LL1X70

UGR(Unified Glare Rating) Table

Test:U:230.24V I:0.1922A P:42.797W PF:0.9673 Freq:50.01Hz Lamp Flux:4833.45x1 lm										
NAME: TCA					TYPE:LED			WEIGHT:3.2kg		
SPEC.:45W					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				
x = 2H y = 2H						Viewed endwise				
3H						21.0	22.4	21.2	22.5	22.7
4H						22.0	23.3	22.3	23.5	23.8
6H						22.6	23.9	22.9	24.1	24.3
8H						23.5	24.6	23.8	24.9	25.2
12H						23.0	24.1	23.4	24.4	24.7
4H						24.9	25.9	25.2	26.2	26.5
2H						21.3	22.6	21.6	22.8	23.0
3H						21.9	23.2	22.2	23.4	23.7
4H						22.4	23.6	22.7	23.9	24.1
6H						22.9	24.0	23.2	24.3	24.5
8H						23.0	24.1	23.4	24.4	24.7
12H						23.1	24.2	23.5	24.5	24.8
8H						21.3	22.5	21.6	22.8	23.0
6H						22.6	23.7	23.0	24.0	24.3
4H						23.2	24.2	23.6	24.5	24.8
6H						23.8	24.7	24.2	25.0	25.4
8H						24.1	24.9	24.5	25.2	25.6
12H						24.2	25.0	24.7	25.4	25.8
8H						23.7	24.5	24.1	24.9	25.3
6H						24.3	25.0	24.8	25.4	25.8
8H						24.7	25.3	25.2	25.7	26.2
12H						25.0	25.5	25.5	26.0	26.5
12H						23.8	24.5	24.2	24.9	25.3
6H						24.5	25.1	25.0	25.5	26.0
8H						24.9	25.5	25.4	25.9	26.4
Variations with the observer position at spacings:										
S = 1.0H		+ 0.3 / - 0.3				+ 0.4 / - 0.4				
1.5H		+ 0.1 / - 0.3				+ 0.2 / - 0.4				
2.0H		+ 0.1 / - 0.3				+ 0.4 / - 0.5				

UTILIZATION FACTORS TABLE

Test:U:230.24V I:0.1922A P:42.797W PF:0.9673 Freq:50.01Hz Lamp Flux:4833.45x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

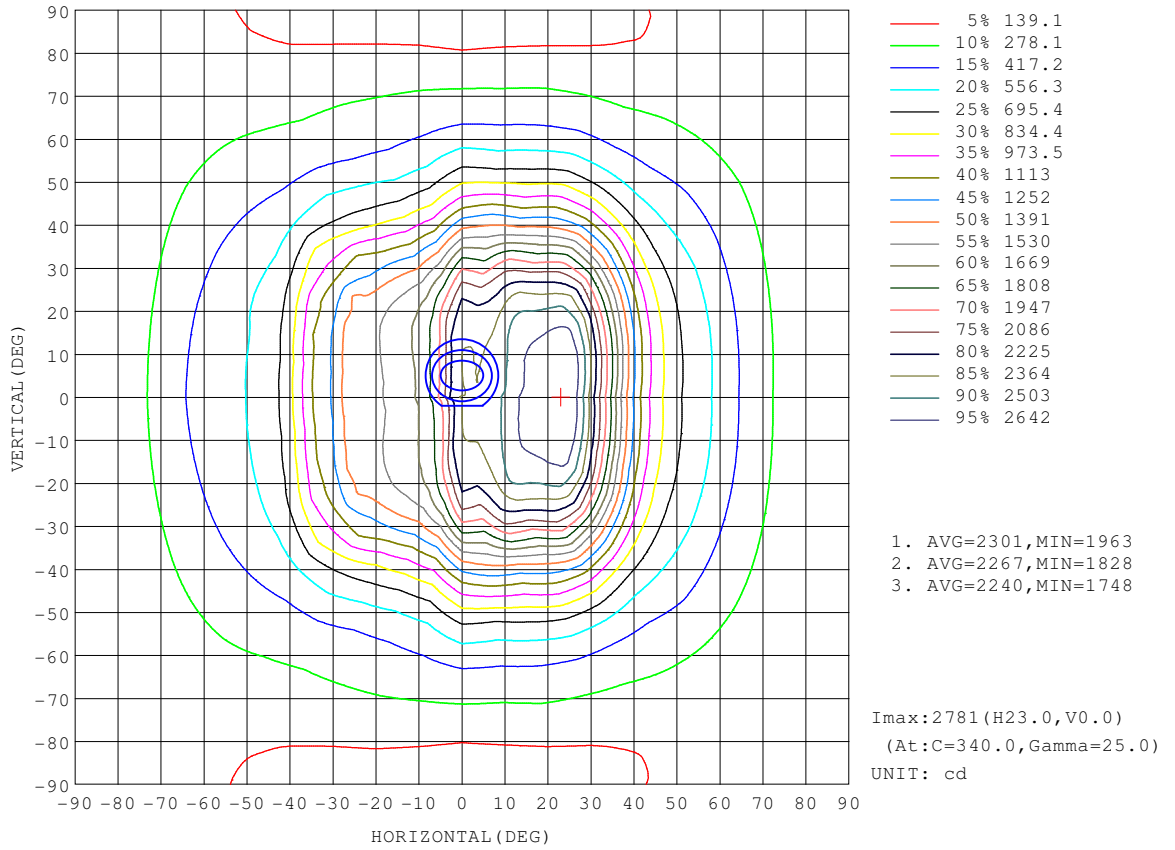
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	65	55	48	64	54	48	63	54	48	42
0.80	74	64	58	73	64	57	72	63	57	51
1.00	82	72	66	81	71	65	79	72	65	58
1.25	88	79	72	87	78	72	84	77	71	65
1.50	92	84	77	91	83	77	88	81	76	69
2.00	98	90	85	96	89	84	93	87	82	75
2.50	101	94	89	99	93	88	96	90	86	78
3.00	104	98	93	102	96	92	98	93	90	81
4.00	107	102	98	105	100	97	101	97	94	85
5.00	110	105	101	107	103	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: 16 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-45W-VS
 HELVAR LL1X70

ISOCANDELA DIAGRAM

Test:U:230.24V I:0.1922A P:42.797W PF:0.9673 Freq:50.01Hz Lamp Flux:4833.45x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

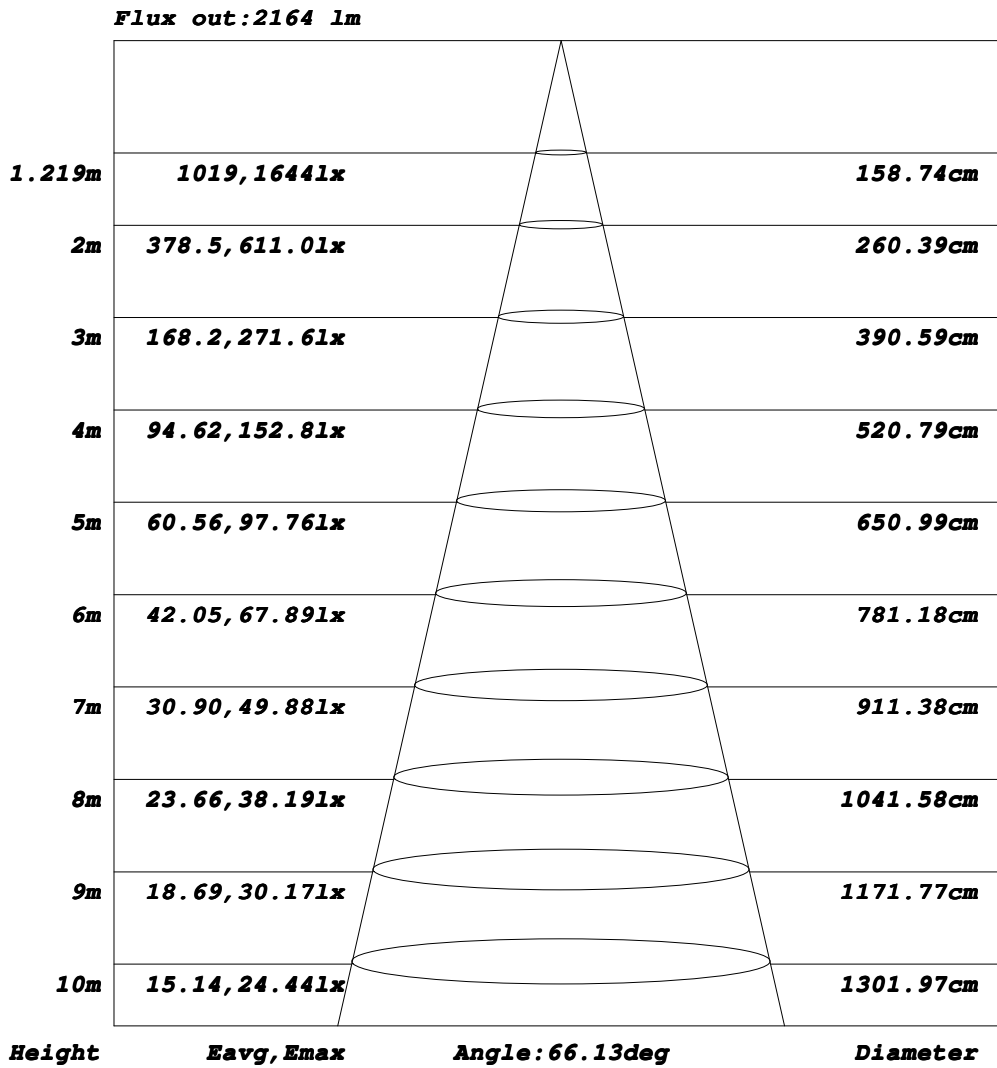


C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:20DEG
Operators:LITPA
Test Date:16 April 2019

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-45W-VS
HELVAR LL1X70

AAI Figure

Test:U:230.24V I:0.1922A P:42.797W PF:0.9673 Freq:50.01Hz Lamp Flux:4833.45x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:



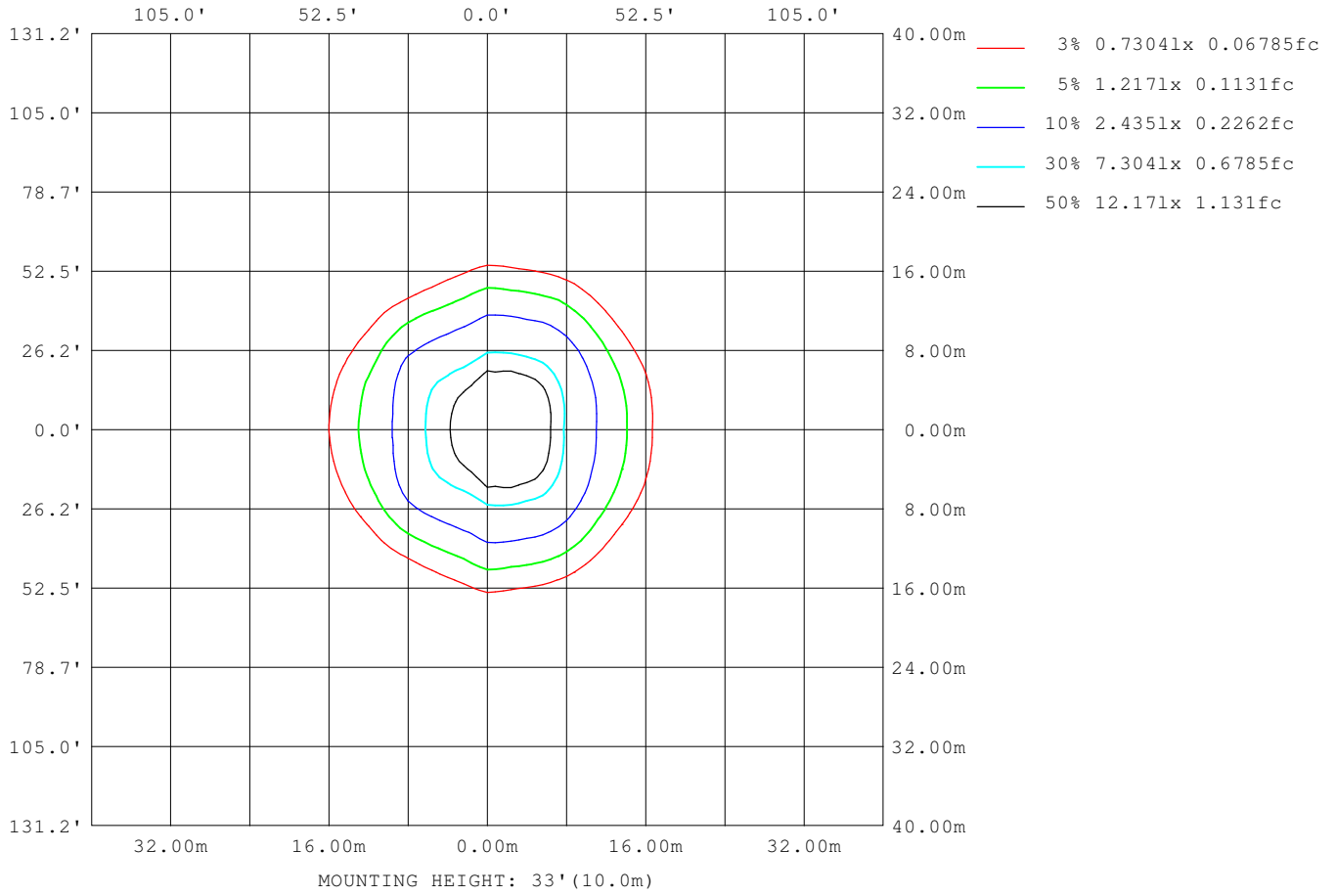
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16 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-45W-VS
HELVAR LL1X70

ISOLUX DIAGRAM

Test:U:230.24V I:0.1922A P:42.797W PF:0.9673 Freq:50.01Hz Lamp Flux:4833.45x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	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: 16 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-45W-VS
HELVAR LL1X70

LED Avg.L Report

Test:U:230.24V I:0.1922A P:42.797W PF:0.9673 Freq:50.01Hz Lamp Flux:4833.45x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

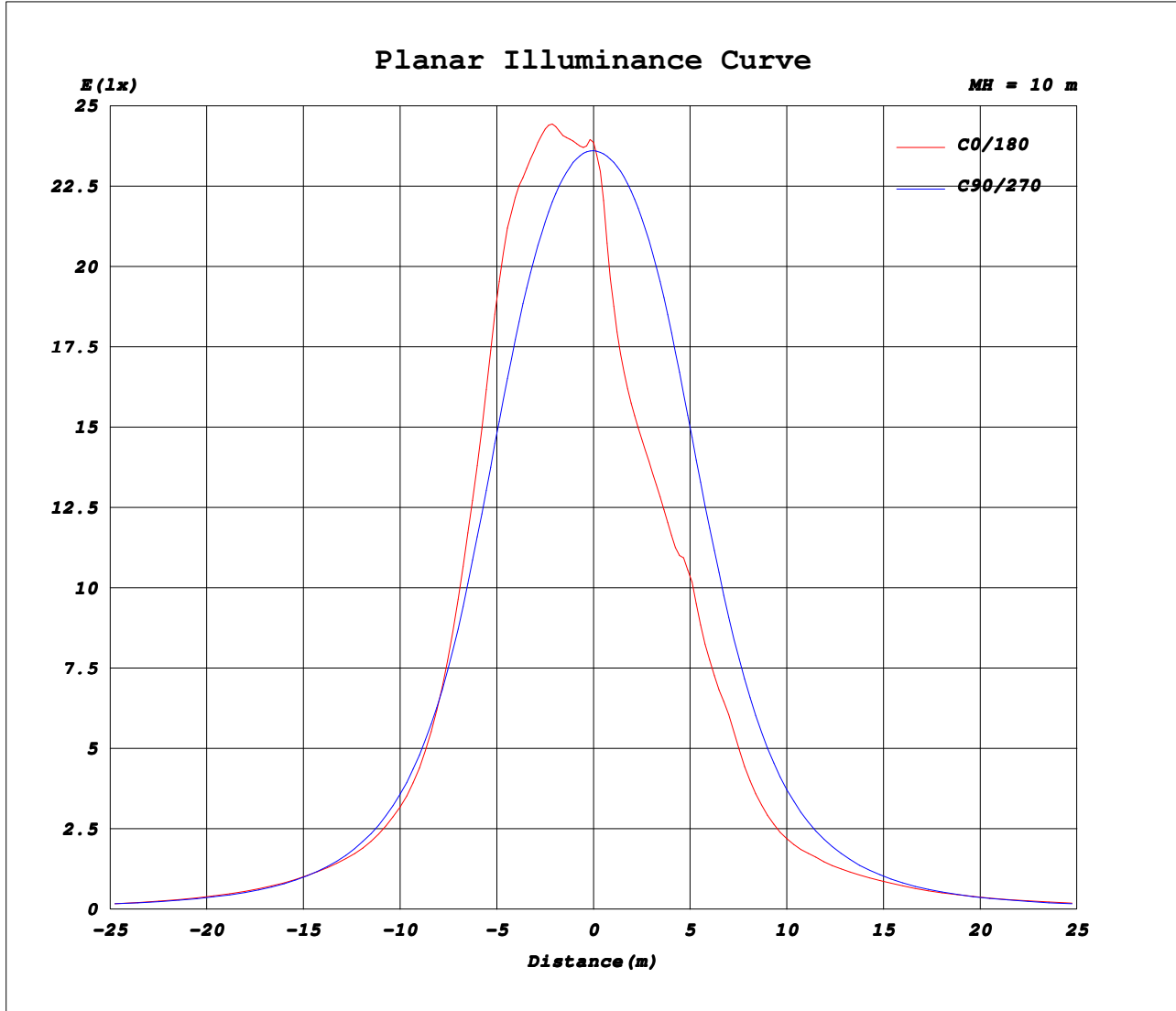
AvgL	cd/m2
L_0~180 (65) av	9494
L_0~180 (75) av	9730
L_0~180 (85) av	24017
L_90~270 (65) av	9081
L_90~270 (75) av	8694
L_90~270 (85) av	7909
L_45 (65) av	8698
L_45 (75) av	9096
L_45 (85) av	16501

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:20DEG
Operators:LITPA
Test Date:16 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-45W-VS
HELVAR LL1X70

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16 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-45W-VS
 HELVAR LL1X70

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:230.24V I:0.1922A P:42.797W PF:0.9673 Freq:50.01Hz Lamp Flux:4833.45x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	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: 16 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-45W-VS
HELVAR LL1X70

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:230.24V I:0.1922A P:42.797W PF:0.9673 Freq:50.01Hz Lamp Flux:4833.45x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	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: 16 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-45W-VS
HELVAR LLLX70