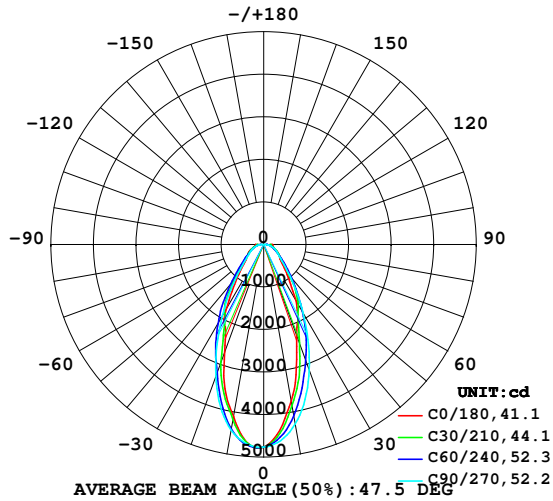


LUMINAIRE PHOTOMETRIC TEST REPORT

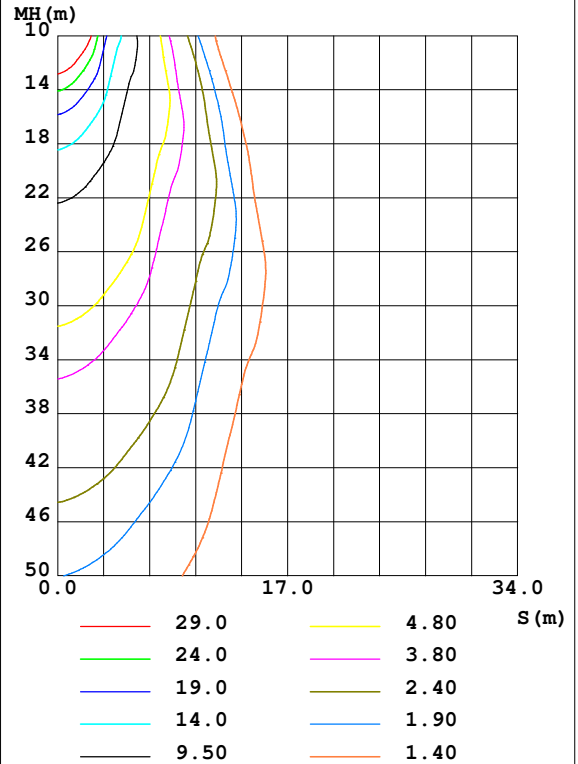
Test:U:230.31V I:0.1923A P:42.832W PF:0.9673 Freq:50.01Hz Lamp Flux:5007.06x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 116.90 lm/W			
MODEL	TCA	I _{max} (cd)	4789	S/MH (C0/180)	0.70
NOMINAL POWER (W)	45W	LOR (%)	100.0	S/MH (C90/270)	0.82
RATED VOLTAGE (V)	220.0	TOTAL FLUX (lm)	5007.1	η UP, DN (C0-180)	0.0, 48.8
NOMINAL FLUX (lm)	5007.06	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 51.2
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: 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	3734	3957	4286	4120	4106	4301	4429	4041	0- 10	422.8	422.8	8.44, 8.44
20	2281	2720	3136	2964	2692	3143	3296	2791	10- 20	976.2	1399	27.9, 27.9
30	1520	1625	1858	1775	1761	1884	1960	1680	20- 30	1044	2443	48.8, 48.8
40	799.4	1055	951.1	1151	923.8	1213	1006	1103	30- 40	859.6	3303	66, 66
50	498.2	610.6	531.4	656.6	534.3	701.5	554.1	635.4	40- 50	594.7	3897	77.8, 77.8
60	383.5	369.9	365.0	388.5	419.0	410.2	377.7	386.4	50- 60	422.9	4320	86.3, 86.3
70	270.9	242.3	254.7	255.9	292.2	266.9	268.7	253.1	60- 70	318.8	4639	92.7, 92.7
80	197.5	153.8	124.8	165.3	203.5	172.9	138.6	163.6	70- 80	224.5	4864	97.1, 97.1
90	197.1	112.6	7.579	116.0	195.7	112.7	10.27	117.4	80- 90	143.4	5007	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): 3629.8 lm

%lum = 72.5%

%lamp = 72.5%

Conical surface Flux(120deg): 4320.3 lm

%lum = 86.3%

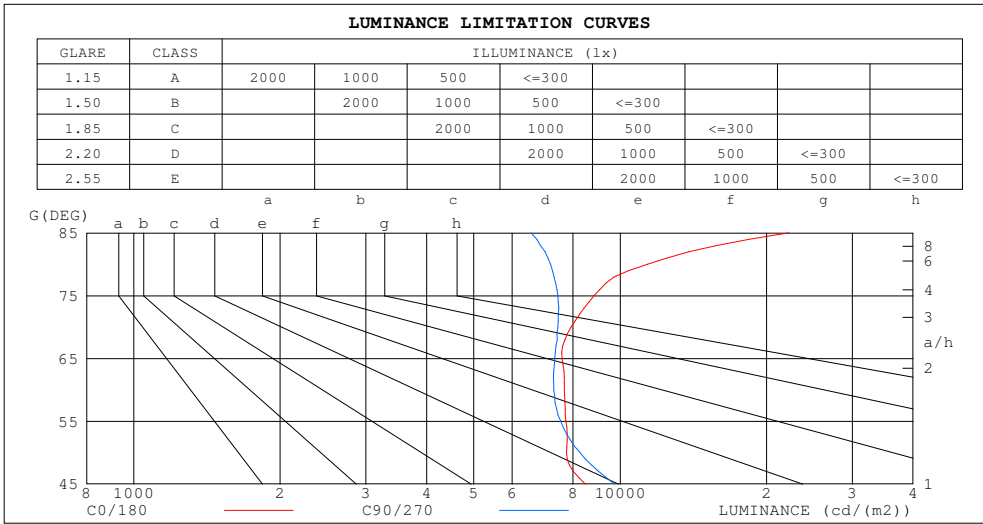
%lamp = 86.3%

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:230.31V I:0.1923A P:42.832W PF:0.9673 Freq:50.01Hz Lamp Flux:5007.06x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	22188	6559
80	11378	7188
75	8845	7445
70	7925	7447
65	7595	7340
60	7673	7301
55	7731	7545
50	7754	8268
45	8488	9740

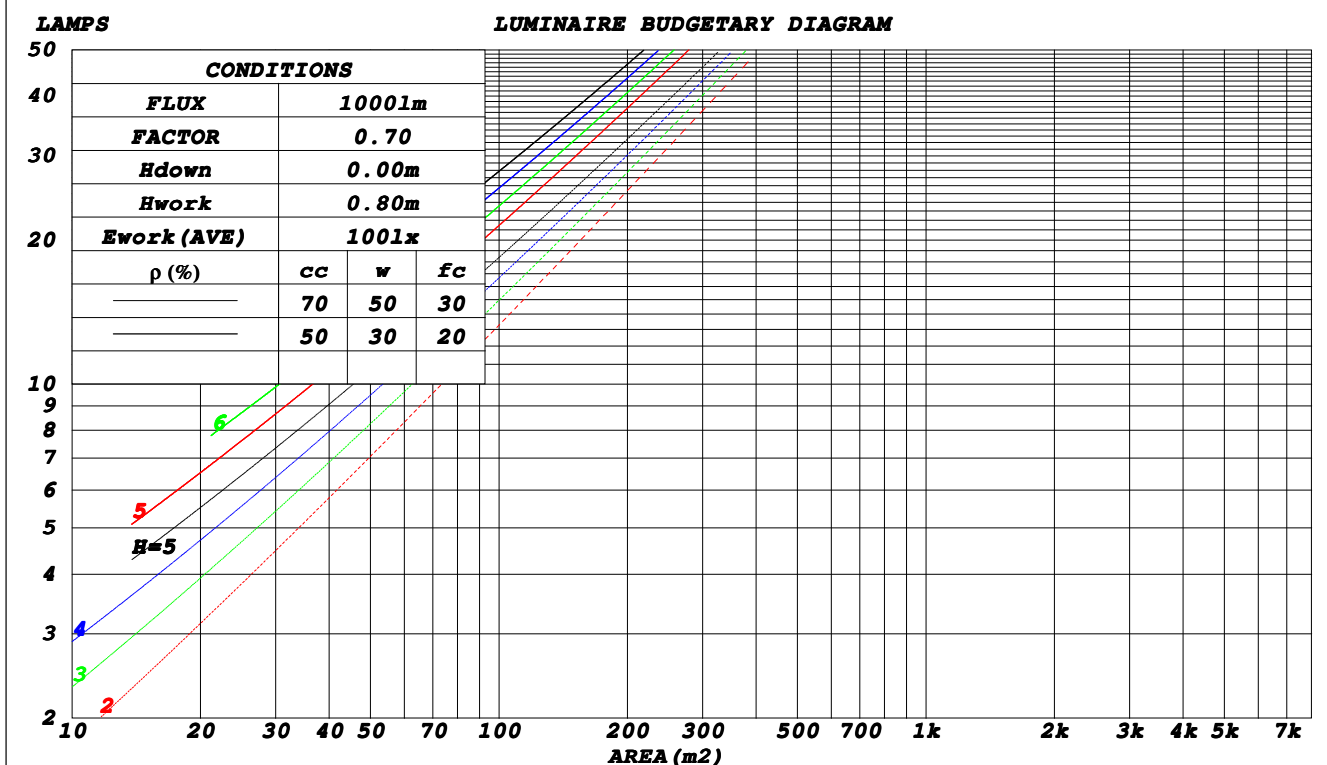
C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16 April 2019

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:230.31V I:0.1923A P:42.832W PF:0.9673 Freq:50.01Hz Lamp Flux:5007.06x1 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	1.06	1.02	.99	1.04	1.01	.97	.00	.97	.94	.96	.94	.92	.92	.91	.89	.87
2.0	.95	.90	.85	.94	.88	.84	.90	.86	.82	.87	.83	.80	.84	.81	.78	.76
3.0	.87	.80	.74	.85	.79	.74	.82	.77	.72	.80	.75	.71	.77	.73	.70	.68
4.0	.79	.72	.66	.78	.71	.66	.75	.70	.65	.73	.68	.64	.71	.67	.63	.61
5.0	.73	.65	.60	.72	.65	.59	.70	.63	.59	.68	.62	.58	.66	.61	.58	.56
6.0	.67	.60	.54	.66	.59	.54	.65	.58	.54	.63	.57	.53	.62	.57	.53	.51
7.0	.62	.55	.50	.62	.55	.49	.60	.54	.49	.59	.53	.49	.58	.52	.49	.47
8.0	.58	.51	.46	.57	.51	.46	.56	.50	.45	.55	.49	.45	.54	.49	.45	.43
9.0	.54	.47	.43	.54	.47	.42	.53	.47	.42	.52	.46	.42	.51	.46	.42	.40
10.0	.51	.44	.40	.51	.44	.40	.50	.44	.39	.49	.43	.39	.48	.43	.39	.38



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:230.31V I:0.1923A P:42.832W PF:0.9673 Freq:50.01Hz Lamp Flux:5007.06x1 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	.267	.152	.048	.260	.148	.047	.247	.142	.045	.235	.135	.043	.224	.130	.042		
2.0	.243	.133	.041	.237	.131	.040	.226	.126	.039	.216	.121	.038	.206	.117	.037		
3.0	.224	.119	.036	.219	.117	.035	.209	.113	.034	.200	.109	.034	.191	.106	.033		
4.0	.207	.108	.032	.202	.106	.031	.194	.103	.031	.186	.100	.030	.178	.097	.030		
5.0	.192	.098	.028	.188	.097	.028	.181	.094	.028	.174	.092	.027	.167	.089	.027		
6.0	.179	.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	.153	.079	.023	.148	.077	.023		
8.0	.158	.077	.022	.155	.076	.022	.150	.075	.021	.145	.073	.021	.140	.072	.021		
9.0	.149	.072	.020	.147	.071	.020	.142	.070	.020	.137	.069	.020	.133	.068	.020		
10.0	.141	.068	.019	.139	.067	.019	.135	.066	.019	.131	.065	.018	.127	.064	.018		

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	.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	.069	.038	.077	.049	.027	.045	.029	.016	.015	.009	.005	
7.0	.124	.073	.037	.106	.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: 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:230.31V I:0.1923A P:42.832W PF:0.9673 Freq:50.01Hz Lamp Flux:5007.06x1 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					Viewed endwise				
x = 2H y = 2H	18.2	19.5	18.5	19.6	19.8	18.3	19.5	18.5	19.7	19.9
3H	19.8	20.9	20.1	21.2	21.4	19.6	20.7	19.9	21.0	21.2
4H	20.7	21.8	21.0	22.0	22.3	20.3	21.4	20.5	21.6	21.8
6H	21.7	22.7	22.0	23.0	23.2	20.8	21.9	21.1	22.1	22.4
8H	22.3	23.3	22.6	23.6	23.9	21.0	22.0	21.4	22.3	22.6
12H	23.2	24.1	23.5	24.4	24.7	21.2	22.2	21.5	22.4	22.7
4H 2H	18.7	19.8	19.0	20.0	20.3	18.8	19.9	19.1	20.1	20.3
3H	20.5	21.5	20.9	21.8	22.1	20.3	21.2	20.6	21.5	21.8
4H	21.6	22.5	22.0	22.8	23.2	21.1	22.0	21.5	22.3	22.6
6H	22.8	23.6	23.2	24.0	24.3	21.8	22.6	22.2	23.0	23.3
8H	23.6	24.4	24.0	24.7	25.1	22.1	22.9	22.6	23.2	23.6
12H	24.6	25.3	25.1	25.7	26.1	22.4	23.0	22.8	23.4	23.8
8H 4H	22.0	22.7	22.4	23.1	23.4	21.5	22.2	21.9	22.6	23.0
6H	23.4	24.0	23.9	24.4	24.9	22.5	23.1	22.9	23.5	23.9
8H	24.4	24.9	24.9	25.4	25.8	22.9	23.4	23.3	23.9	24.3
12H	25.7	26.2	26.2	26.6	27.1	23.2	23.7	23.7	24.1	24.6
12H 4H	22.0	22.7	22.4	23.1	23.5	21.6	22.3	22.0	22.6	23.0
6H	23.5	24.1	24.0	24.5	25.0	22.6	23.2	23.1	23.6	24.1
8H	24.6	25.1	25.1	25.5	26.0	23.1	23.6	23.6	24.1	24.5
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.2					+ 0.3 / - 0.3				
1.5H	+ 0.1 / - 0.2					+ 0.3 / - 0.2				
2.0H	+ 0.2 / - 0.3					+ 0.3 / - 0.2				

CIE Pub.117, 5007 lm Total Lamp Luminous Flux Corrected ($8\log(F/F_0) = 5.6$)

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

UTILIZATION FACTORS TABLE

Test:U:230.31V I:0.1923A P:42.832W PF:0.9673 Freq:50.01Hz Lamp Flux:5007.06x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

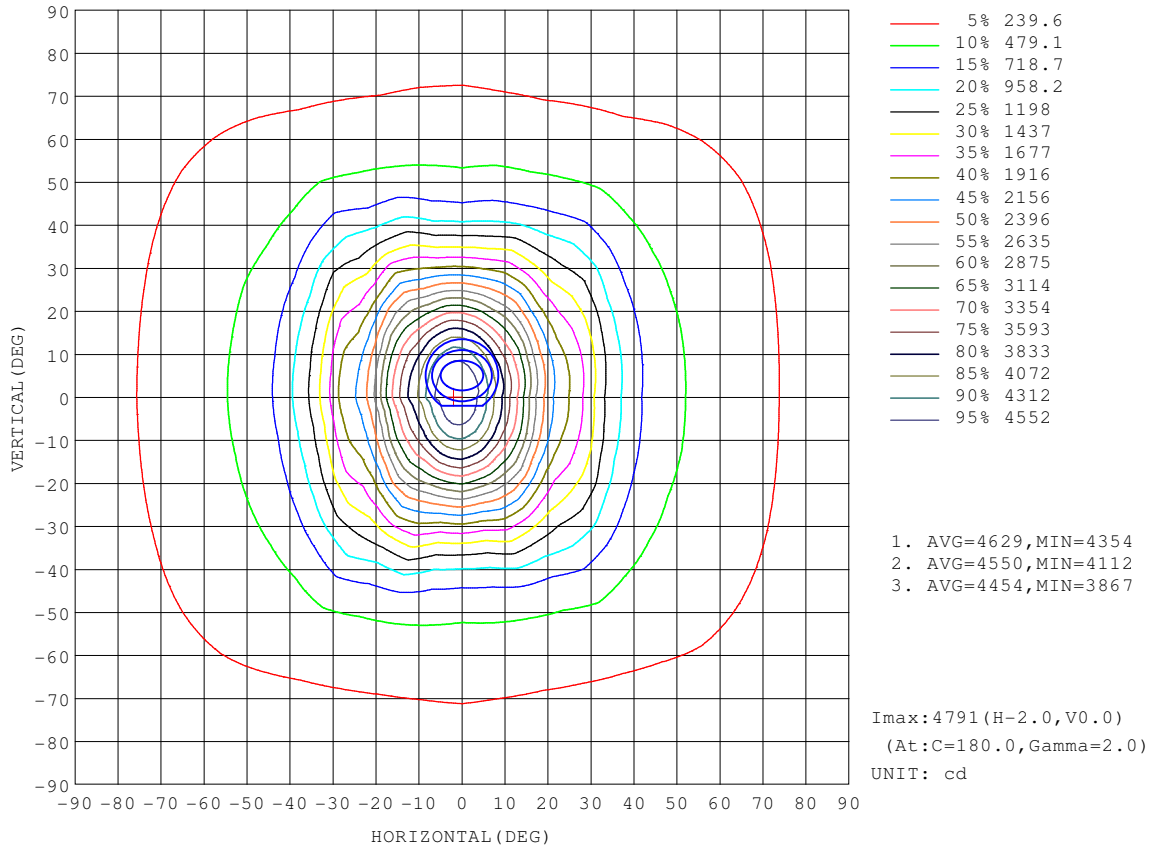
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	71	61	56	70	61	56	69	61	56	50
0.80	79	70	65	79	70	64	77	69	64	59
1.00	86	77	71	85	77	71	83	77	71	65
1.25	92	83	78	90	83	77	88	81	76	70
1.50	95	88	82	94	87	82	91	85	81	74
2.00	100	94	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: 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:230.31V I:0.1923A P:42.832W PF:0.9673 Freq:50.01Hz Lamp Flux:5007.06x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

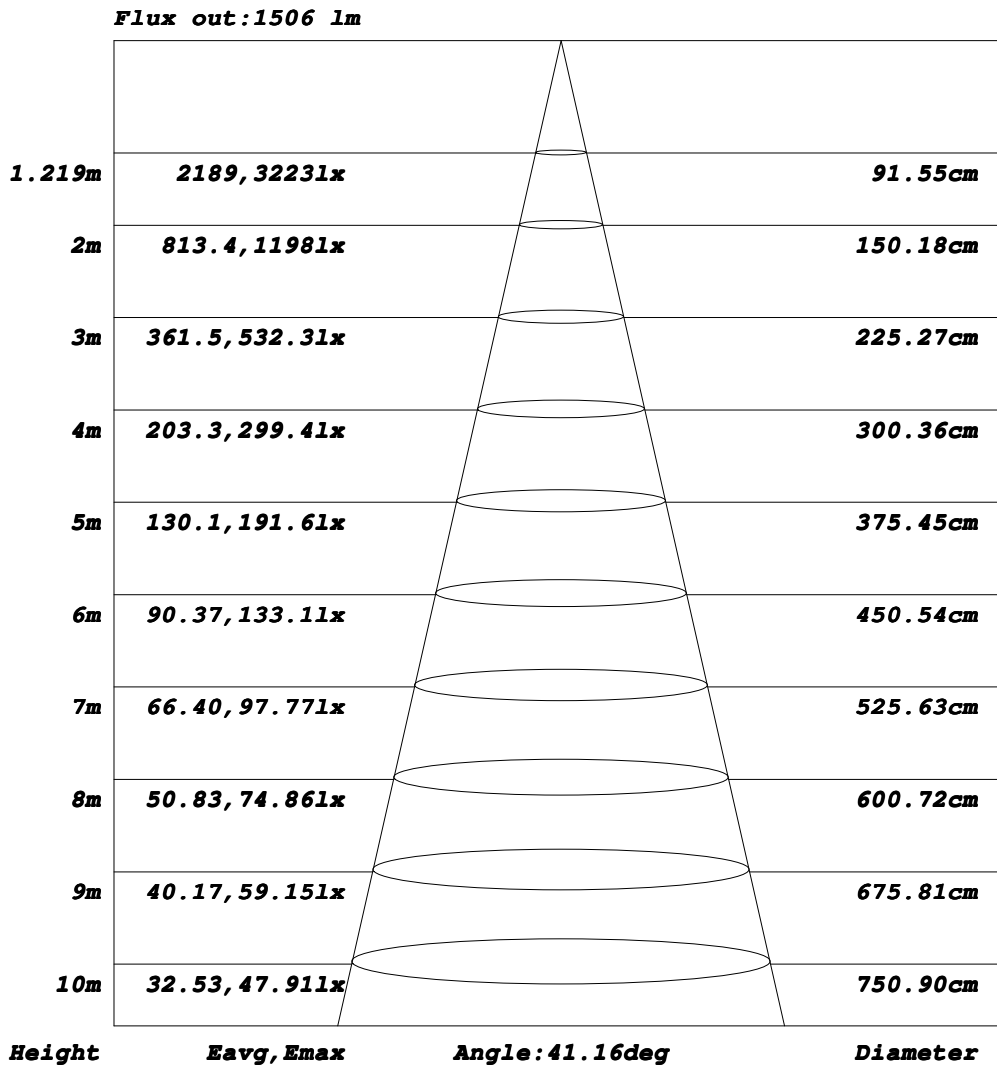


C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:20DEG
Operators:LITPA
Test Date:16 April 2019

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:230.31V I:0.1923A P:42.832W PF:0.9673 Freq:50.01Hz Lamp Flux:5007.06x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:



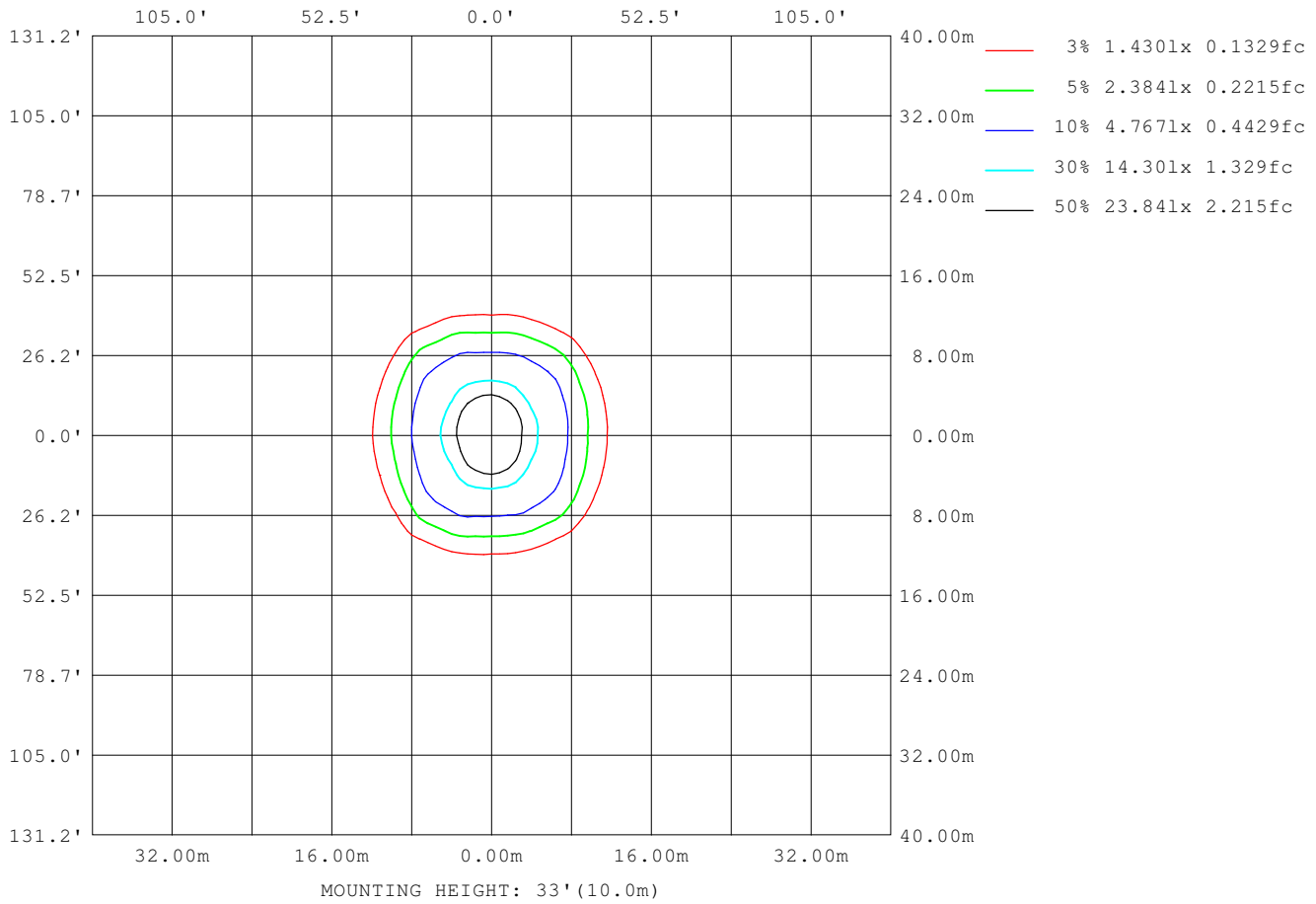
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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:230.31V I:0.1923A P:42.832W PF:0.9673 Freq:50.01Hz Lamp Flux:5007.06x1 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:230.31V I:0.1923A P:42.832W PF:0.9673 Freq:50.01Hz Lamp Flux:5007.06x1 lm		
NAME: TCA	TYPE:LED	WEIGHT:3.2kg
SPEC.:45W	DIM.: 68mmX1430mmX78mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

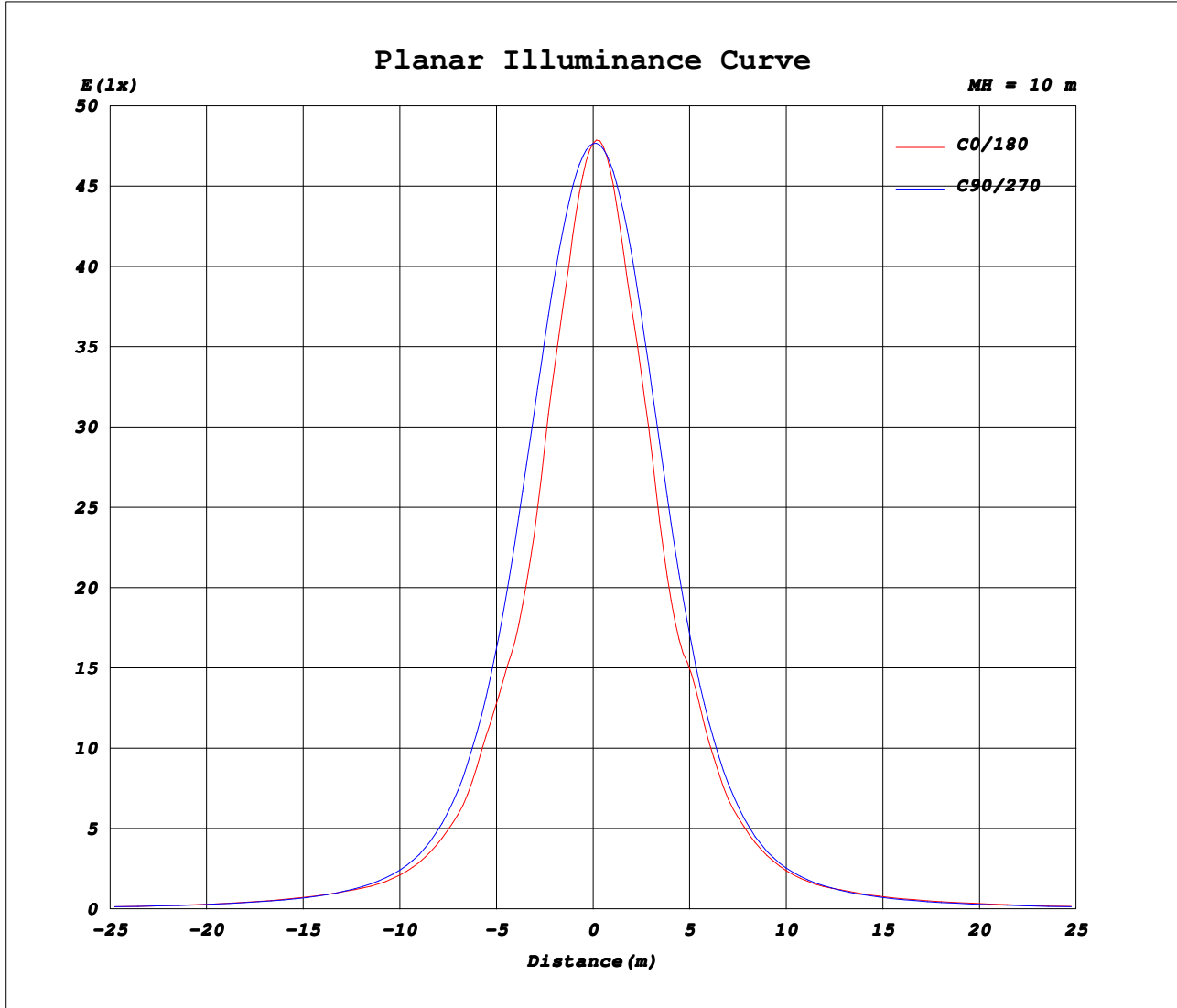
AvgL	cd/m2
L_0~180 (65) av	8140
L_0~180 (75) av	9147
L_0~180 (85) av	22069
L_90~270 (65) av	7487
L_90~270 (75) av	7745
L_90~270 (85) av	7293
L_45 (65) av	7417
L_45 (75) av	8025
L_45 (85) av	14458

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:230.31V I:0.1923A P:42.832W PF:0.9673 Freq:50.01Hz Lamp Flux:5007.06x1 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 LLLX70

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:230.31V I:0.1923A P:42.832W PF:0.9673 Freq:50.01Hz Lamp Flux:5007.06x1 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 LL1X70