

Goniophotometric Test Report

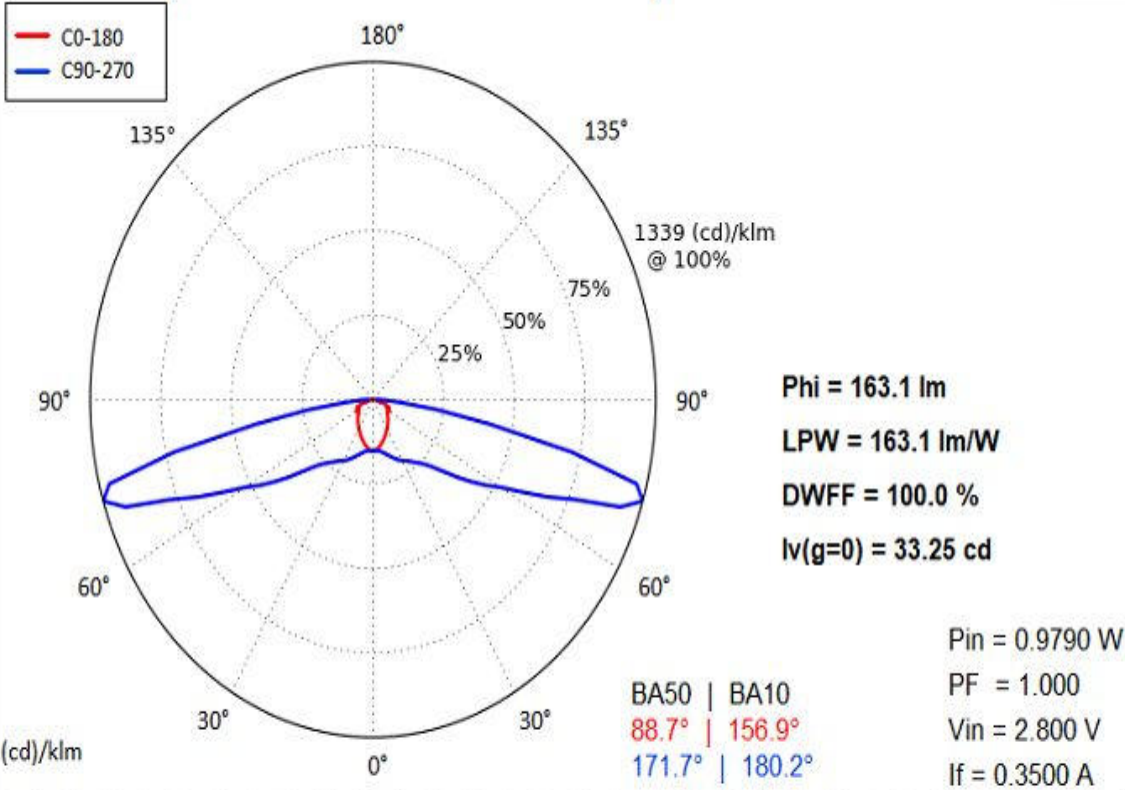


Table. Measurement results of the main luminous parameters

Luminous flux	Input power	Luminous efficacy	LOR	DWFF	Luminous intensity (g=0)
163.1 lm	1 W	163.1 lm/W	100.0 %	100.0 %	33.25 cd

Table. Electrical parameters during the light measurements.

	Pin	PF	Vin	If
Value	0.9790 W	1.000	2.800 V	0.3500 A
St.dev.	0.00 %	0.00 %	0.00 %	0.00 %

Table. Maximum Luminous Intensity and its direction

Iv	g	C plane
218 cd	72.5°	90.0°

Table. Beam widths at two perpendicular planes

	Beam angle, FWHM, 50 % (deg)	Beam angle, 10% (deg)	Effective beam direction from g=0
C0-180	88.7°	156.9°	0.0°
C90-270	171.7°	180.2°	-0.0°

Figure. Polar curve of the angular Luminous Intesity distribution at two perpendicular C planes and at C plane with maximum Luminous Intesity.

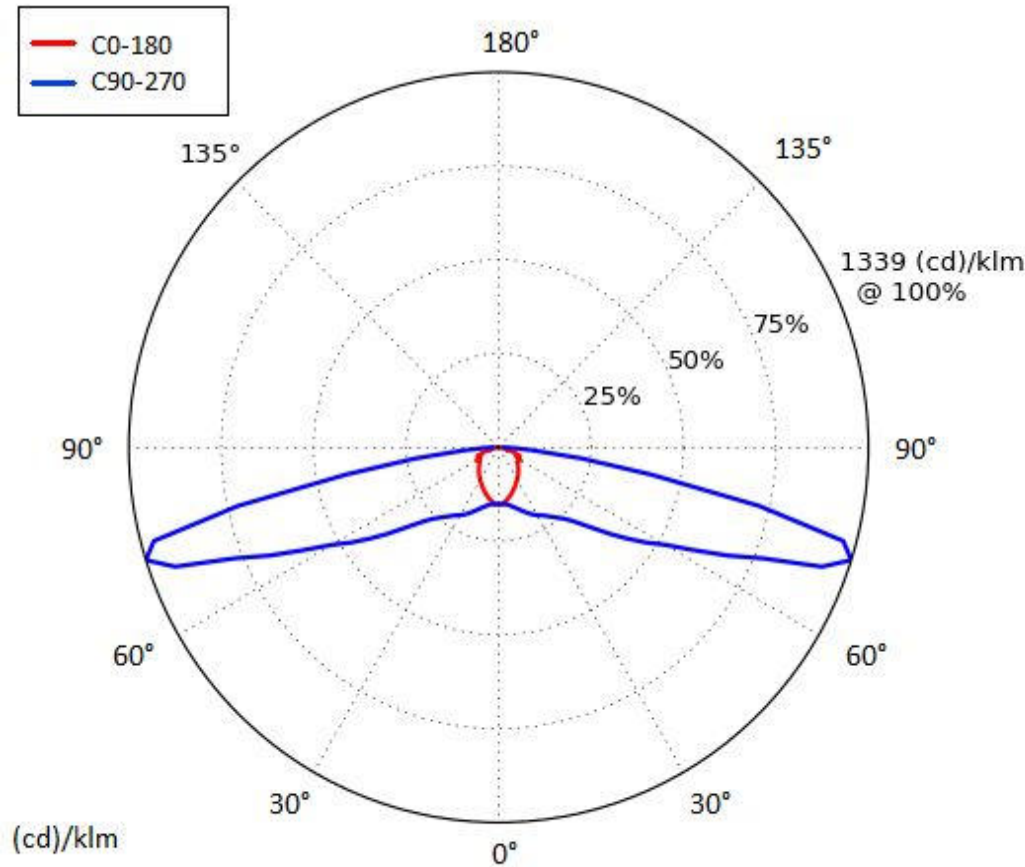
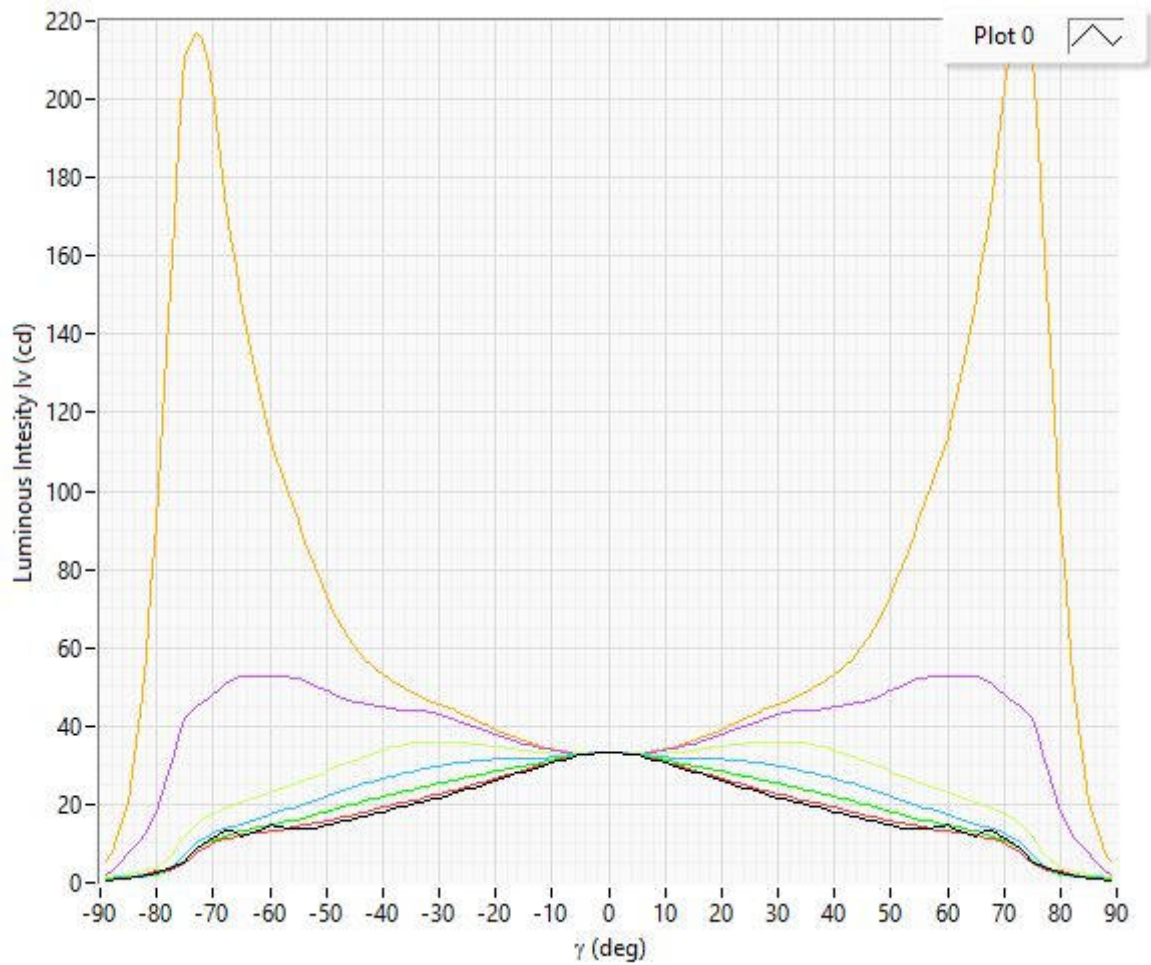


Figure. Luminous Intesity distribution in cartesian diagram at all measured C planes.



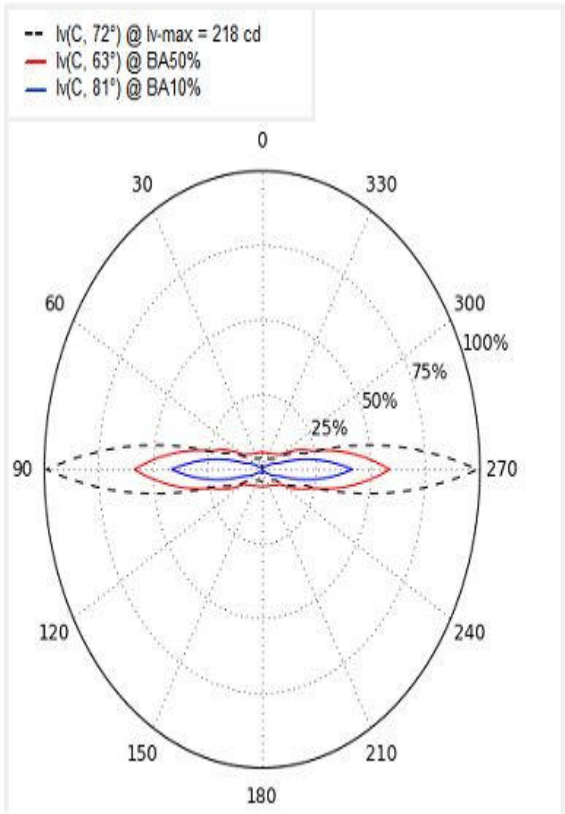


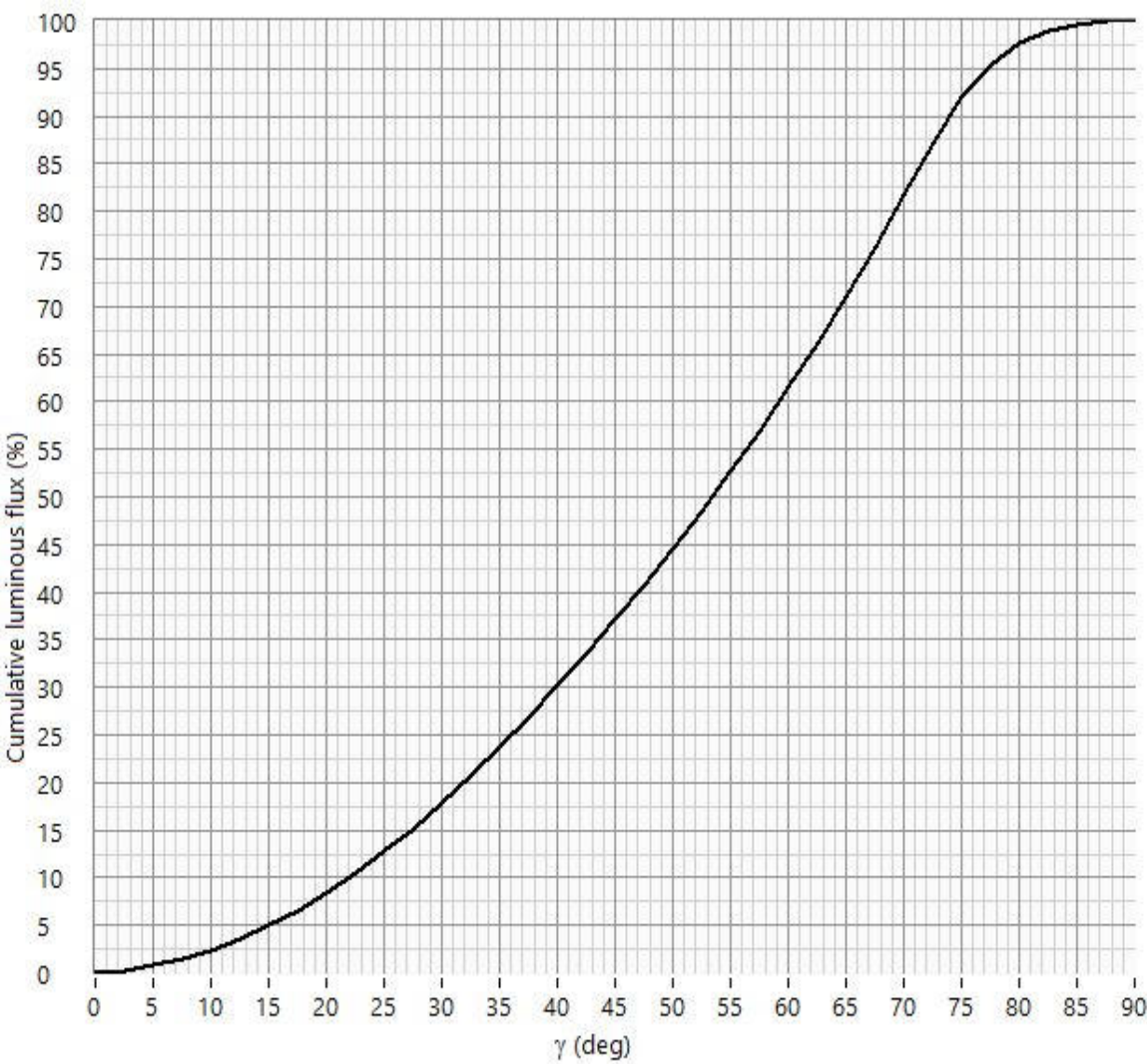
Table. Zonal lumen summary

	Lumens	Relative lumens (%)
0-20	13.72	8.41
0-30	29.15	17.87
0-40	49.18	30.15
0-60	100.30	61.50
0-80	159.20	97.61
0-90	163.10	100.00
10-90	159.18	97.60
20-40	35.46	21.74
20-50	58.95	36.14
40-70	84.02	51.51
40-90	113.92	69.85
60-80	58.90	36.11
60-90	62.80	38.50
70-80	26.00	15.94
80-90	3.90	2.39
90-110	0.00	0.00
90-120	0.00	0.00
90-130	0.00	0.00
90-150	0.00	0.00
90-180	0.00	0.00
110-180	0.00	0.00
0-180	163.10	100.00
	3.92	2.40

Table. Cumulative and Zonal luminous flux

gamma (deg)	Zone Flux (lm)	Sum Flux (lm)	Zone Flux (%)	Sum Flux (%)
0	0.04969	0.04969	0.03047	0.03047
2.5	0.3956	0.4453	0.2426	0.273
5	0.7863	1.232	0.4821	0.7552
7.5	1.161	2.393	0.712	1.467
10	1.532	3.925	0.9395	2.407
12.5	1.901	5.826	1.166	3.572
15	2.266	8.092	1.39	4.962
17.5	2.633	10.72	1.614	6.576
20	2.995	13.72	1.836	8.413
22.5	3.35	17.07	2.054	10.47
25	3.696	20.77	2.266	12.73
27.5	4.032	24.8	2.472	15.21
30	4.355	29.15	2.67	17.88
32.5	4.641	33.79	2.846	20.72
35	4.894	38.69	3.001	23.72
37.5	5.133	43.82	3.147	26.87
40	5.357	49.18	3.285	30.16
42.5	5.559	54.74	3.409	33.56
45	5.756	60.49	3.529	37.09
47.5	5.972	66.46	3.662	40.76
50	6.206	72.67	3.805	44.56
52.5	6.477	79.15	3.972	48.53
55	6.76	85.91	4.145	52.68
57.5	7.06	92.97	4.329	57.01
60	7.33	100.3	4.495	61.5
62.5	7.633	107.9	4.68	66.18
65	8.035	116	4.927	71.11
67.5	8.392	124.4	5.146	76.25
70	8.863	133.2	5.435	81.69
72.5	8.875	142.1	5.442	87.13
75	7.914	150	4.853	91.98
77.5	5.709	155.7	3.5	95.48
80	3.46	159.2	2.122	97.6
82.5	2.04	161.2	1.251	98.86
85	1.117	162.3	0.6851	99.54
87.5	0.5945	162.9	0.3646	99.91
90	0.1543	163.1	0.09459	100

Figure. Cumulative luminous flux



Söllner diagram (EN 12464) - Luminance

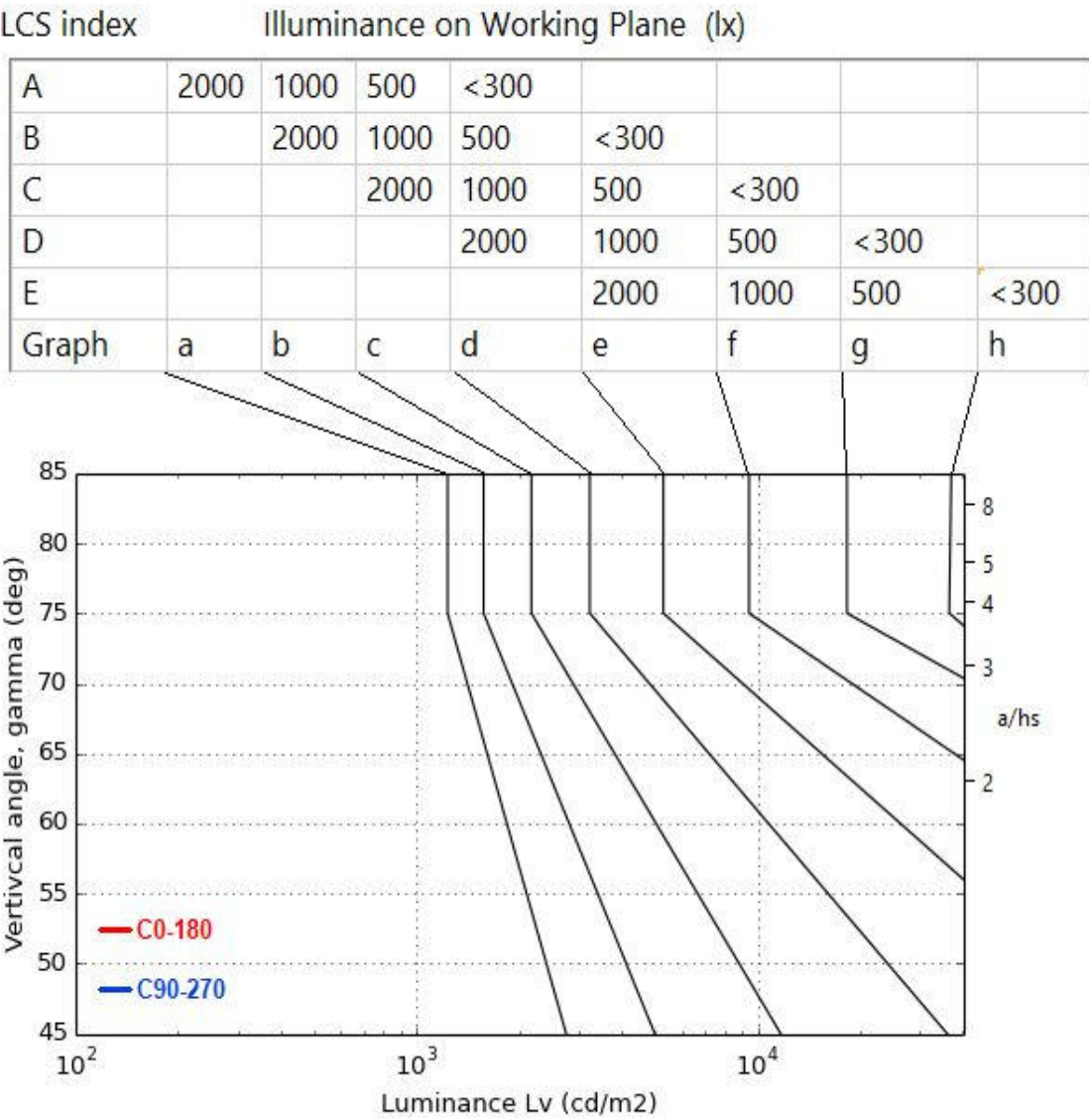


Table. Luminance [Lv] = cd/m2

	C 0	C 45	C 90
γ 0	661177	661177	661177
γ 45	349803	525354	1283572
γ 55	323310	467500	2206889
γ 65	335717	420920	4168224
γ 75	185227	245268	7400831
γ 85	53223	80561	1013410

UGR table (CIE 190)

Ceiling		70	70	50	50	30		70	70	50	50	30
Walls		50	30	50	30	30		50	30	50	30	30
Floor		20	20	20	20	20		20	20	20	20	20
Room size		Viewing direction at right angles to lamp axis						Viewing direction parallel to lamp axis				
	X Y											
	2H	2H	29.7	31.5	30.1	31.9	32.2	37.9	39.8	38.3	40.1	40.4
		3H	31.9	33.6	32.3	33.9	34.3	44.2	45.9	44.5	46.2	46.6
		4H	32.3	34.0	32.7	34.3	34.7	47.6	49.2	48.0	49.6	50.0
		6H	32.5	34.0	32.9	34.4	34.8	49.1	50.7	49.5	51.0	51.4
		8H	32.5	34.0	33.0	34.4	34.8	49.4	50.9	49.8	51.3	51.7
		12H	32.6	34.0	33.0	34.4	34.8	49.5	50.9	49.9	51.3	51.7
	4H	2H	30.8	32.4	31.2	32.8	33.2	37.9	39.5	38.3	39.9	40.2
		3H	33.0	34.4	33.4	34.8	35.2	44.1	45.5	44.5	45.9	46.3
		4H	33.4	34.7	33.9	35.1	35.6	47.5	48.8	47.9	49.2	49.7
		6H	33.7	34.8	34.1	35.3	35.7	49.1	50.2	49.5	50.7	51.1
		8H	33.7	34.8	34.2	35.3	35.7	49.4	50.5	49.8	50.9	51.4
		12H	33.8	34.8	34.3	35.2	35.7	49.5	50.5	50.0	51.0	51.5
	8H	4H	34.0	35.1	34.5	35.5	36.0	47.5	48.6	47.9	49.0	49.5
		6H	34.3	35.2	34.8	35.7	36.1	49.0	49.9	49.5	50.4	50.9
		8H	34.4	35.2	34.8	35.7	36.1	49.3	50.2	49.8	50.7	51.1
		12H	34.4	35.1	34.9	35.6	36.2	49.5	50.2	50.0	50.7	51.3
	12H	4H	34.2	35.2	34.7	35.6	36.1	47.5	48.5	47.9	48.9	49.4
		6H	34.4	35.3	34.9	35.7	36.2	49.0	49.8	49.5	50.3	50.8
		8H	34.5	35.3	35.0	35.7	36.3	49.3	50.1	49.8	50.6	51.1

Figure. Number of luminaires in different sizes of rectangular spaces.

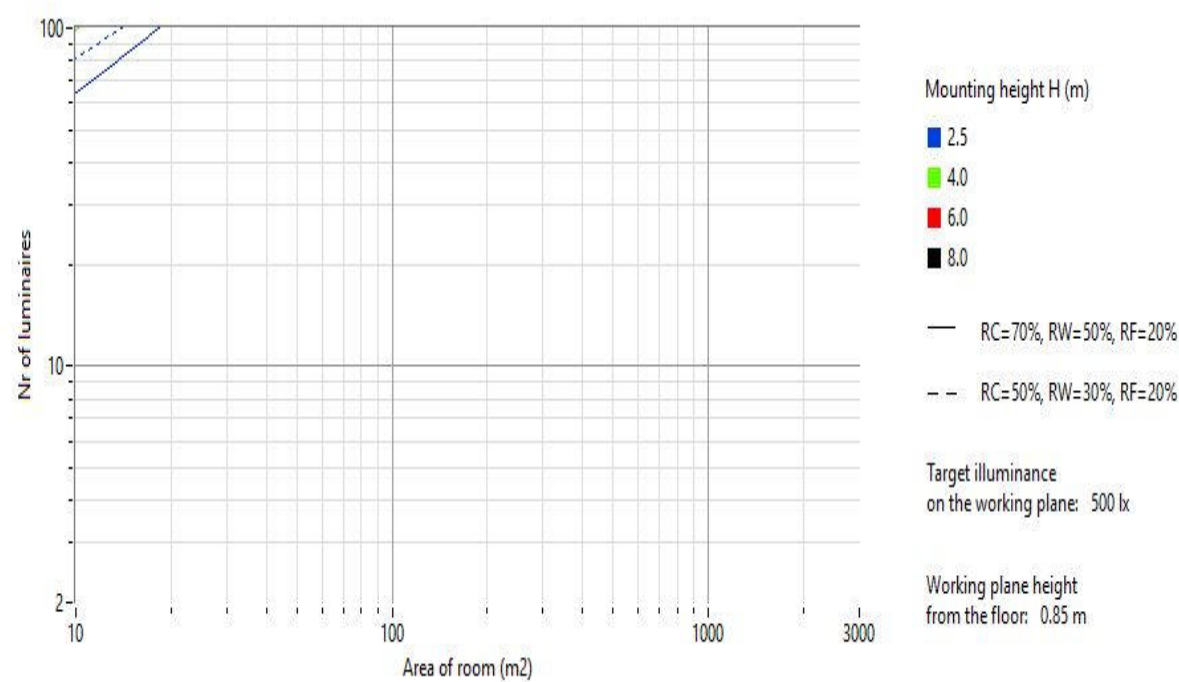


Table. Coefficient of Utilization (CU).

RC	80				70				50			30			10		
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RF / RCR	20				20				20			20			20		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102
1	86	80	76	71	87	82	77	73	84	80	76	85	82	79	87	84	82
2	80	71	63	56	80	71	64	57	71	65	59	71	66	61	72	67	63
3	74	62	53	46	73	62	53	46	61	54	47	61	54	48	60	55	49
4	69	55	45	38	67	55	45	38	54	46	39	53	46	40	52	46	40
5	64	49	39	32	62	49	39	32	48	39	33	47	39	33	46	39	34
6	59	44	35	28	58	44	35	28	43	34	28	42	34	28	41	34	29
7	55	40	31	24	54	40	31	24	39	31	24	38	30	25	37	30	25
8	51	37	28	21	50	36	28	21	35	27	22	35	27	22	34	27	22
9	48	34	25	19	47	33	25	19	33	25	19	32	25	19	31	24	19
10	45	31	23	17	44	31	23	17	30	23	17	29	22	17	29	22	17

Table. Wall Exitance Coefficients (WEC).

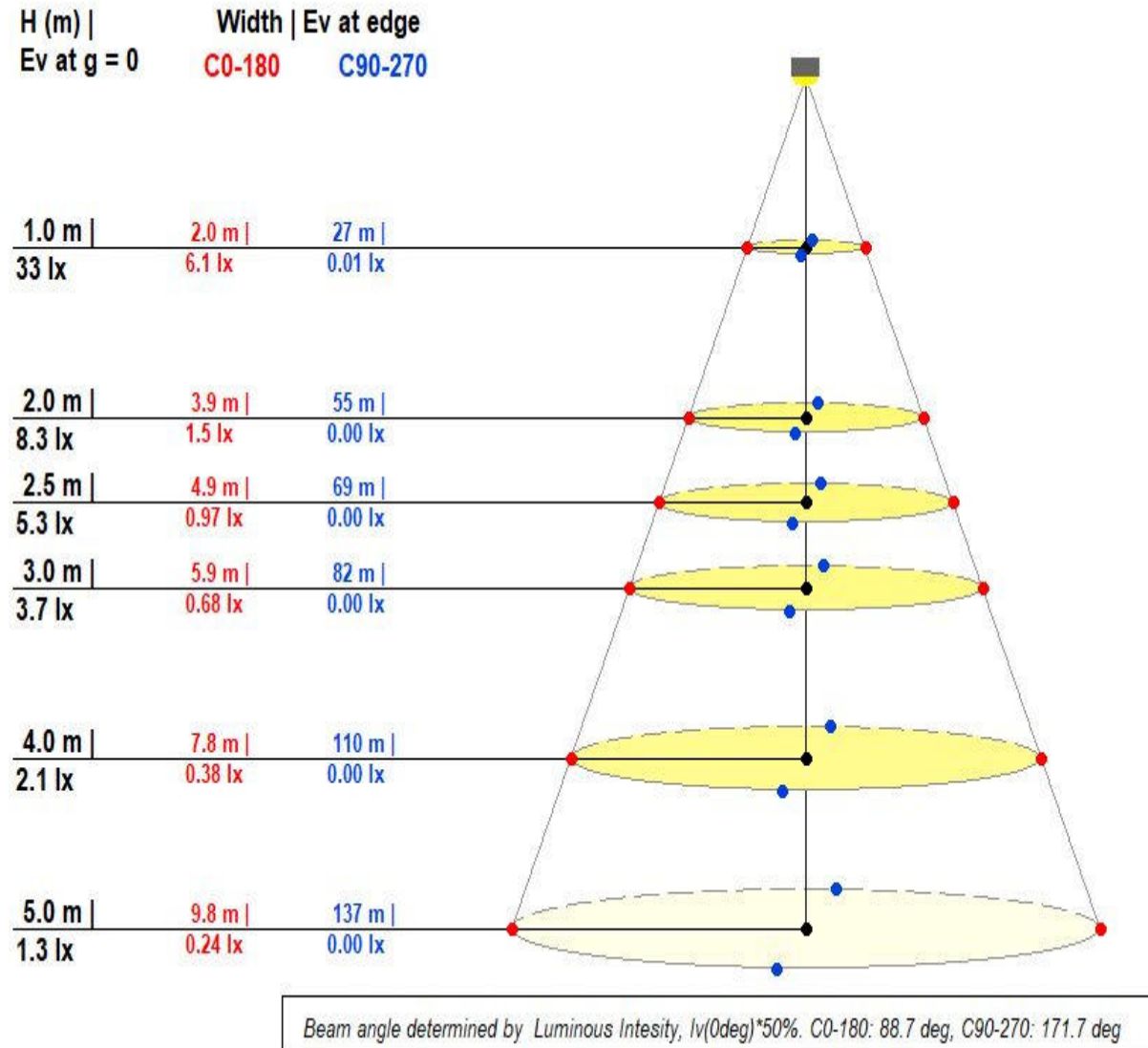
RC	80				70				50			30			10		
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RF / RCR	20				20				20			20			20		
1	59.5	40.2	22.8	7.2	58.2	39.4	22.5	7.1	38.1	21.8	7.0	36.8	21.2	6.8	35.6	20.7	6.7
2	56.9	36.8	20.2	6.2	55.6	36.1	19.9	6.1	34.9	19.4	6.0	33.8	18.9	5.9	32.7	18.5	5.8
3	53.0	33.0	17.6	5.3	51.6	32.4	17.4	5.2	31.3	17.0	5.2	30.3	16.6	5.1	29.3	16.2	5.0
4	49.1	29.6	15.4	4.5	47.7	29.1	15.2	4.5	28.1	14.9	4.5	27.2	14.6	4.4	26.4	14.3	4.4
5	45.5	26.8	13.6	4.0	44.3	26.3	13.5	3.9	25.4	13.2	3.9	24.6	13.0	3.9	23.8	12.7	3.8
6	42.5	24.4	12.2	3.5	41.3	23.9	12.1	3.5	23.2	11.9	3.5	22.4	11.7	3.4	21.8	11.5	3.4
7	39.7	22.3	11.0	3.1	38.6	22.0	10.9	3.1	21.3	10.8	3.1	20.6	10.6	3.1	20.0	10.4	3.1
8	37.3	20.6	10.1	2.8	36.3	20.3	10.0	2.8	19.6	9.8	2.8	19.1	9.7	2.8	18.5	9.5	2.8
9	35.2	19.1	9.2	2.6	34.2	18.8	9.2	2.6	18.3	9.0	2.6	17.7	8.9	2.5	17.2	8.8	2.5
10	33.3	17.8	8.5	2.4	32.4	17.5	8.5	2.4	17.0	8.3	2.4	16.6	8.2	2.3	16.1	8.1	2.3

Table. Ceiling Cavity Exitance Coefficients (CCEC).

RC	80				70				50			30			10		
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RF / RCR	20				20				20			20			20		
1	22.2	18.7	15.5	12.7	18.9	16.0	13.3	10.9	10.9	9.2	7.6	6.3	5.3	4.4	2.0	1.7	1.4
2	24.4	18.2	13.2	8.9	20.8	15.6	11.3	7.7	10.7	7.8	5.4	6.2	4.6	3.1	2.0	1.5	1.0
3	25.5	17.6	11.5	6.6	21.7	15.1	9.9	5.7	10.4	6.9	4.0	6.0	4.0	2.4	1.9	1.3	0.8
4	25.9	16.8	10.2	5.1	22.0	14.5	8.8	4.5	9.9	6.1	3.1	5.8	3.6	1.9	1.9	1.2	0.6
5	25.8	16.0	9.2	4.2	21.9	13.8	8.0	3.6	9.5	5.6	2.6	5.5	3.3	1.5	1.8	1.1	0.5
6	25.4	15.2	8.4	3.5	21.6	13.1	7.3	3.0	9.0	5.1	2.1	5.2	3.0	1.3	1.7	1.0	0.4
7	24.9	14.5	7.7	3.0	21.1	12.4	6.7	2.6	8.6	4.7	1.8	5.0	2.8	1.1	1.6	0.9	0.4
8	24.2	13.7	7.1	2.6	20.6	11.8	6.2	2.3	8.2	4.3	1.6	4.8	2.6	1.0	1.5	0.8	0.3
9	23.5	13.0	6.6	2.3	20.0	11.2	5.8	2.0	7.8	4.1	1.4	4.5	2.4	0.9	1.5	0.8	0.3
10	22.7	12.4	6.2	2.1	19.4	10.7	5.4	1.8	7.4	3.8	1.3	4.3	2.2	0.8	1.4	0.7	0.3

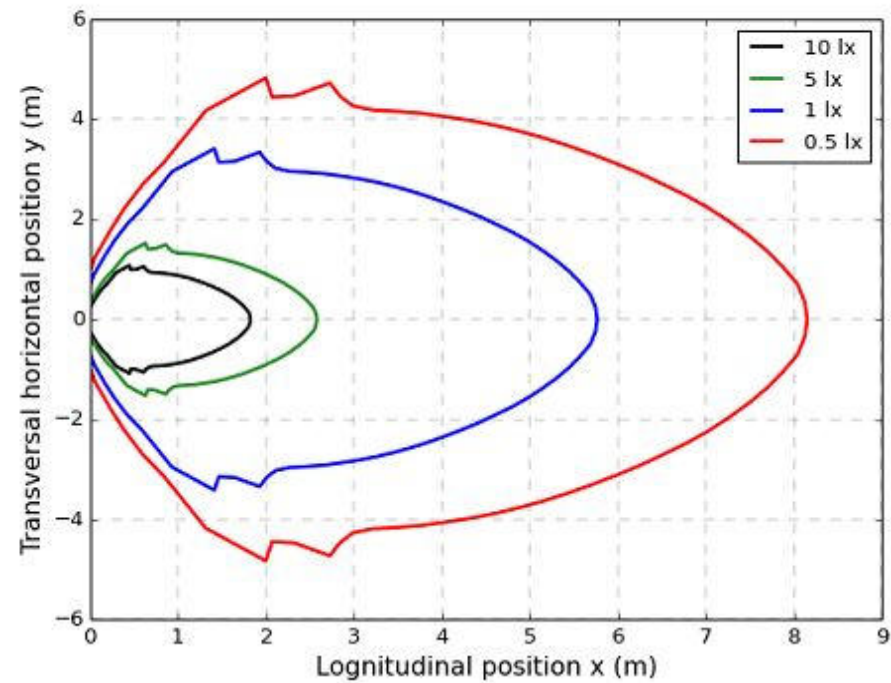
CONE DIAGRAM

- Cone is limited by the beam angle at the planes of C0 and C90
- H = Mounting Height
- D = Cone diameter
- Ev Edge = Illuminance at the edge of the cone of the C0/90 plane
- Ev Center = Illuminance at the center of the cone

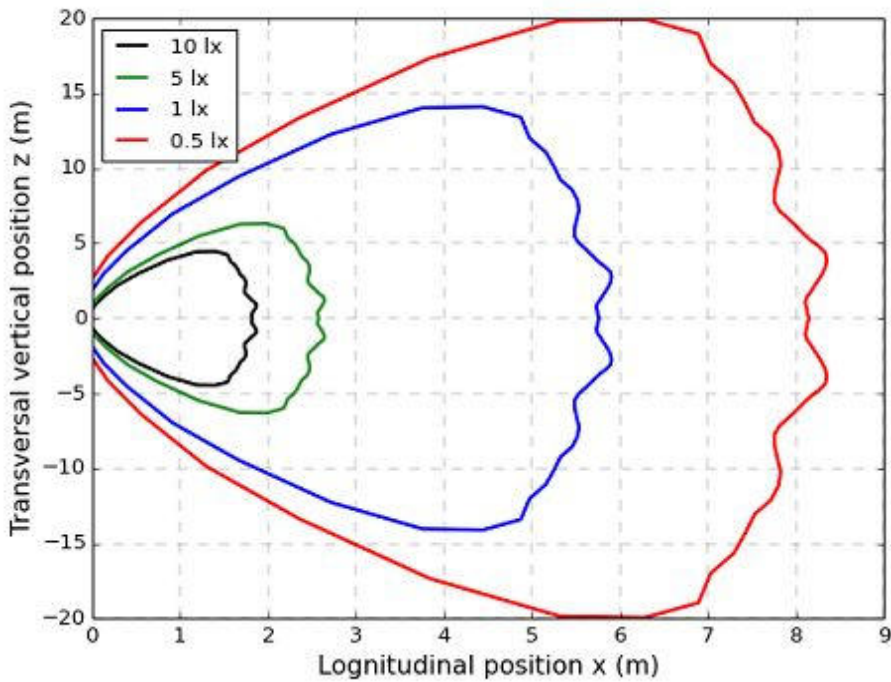


LOGNITUDINAL ISOLUX CURVES

Horizontal



Vertical



Illumination uniformity figures at the perpendicular plane to the lamp axis.

Mounting height of 2.50 m.

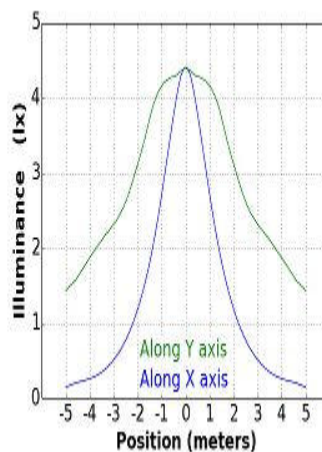
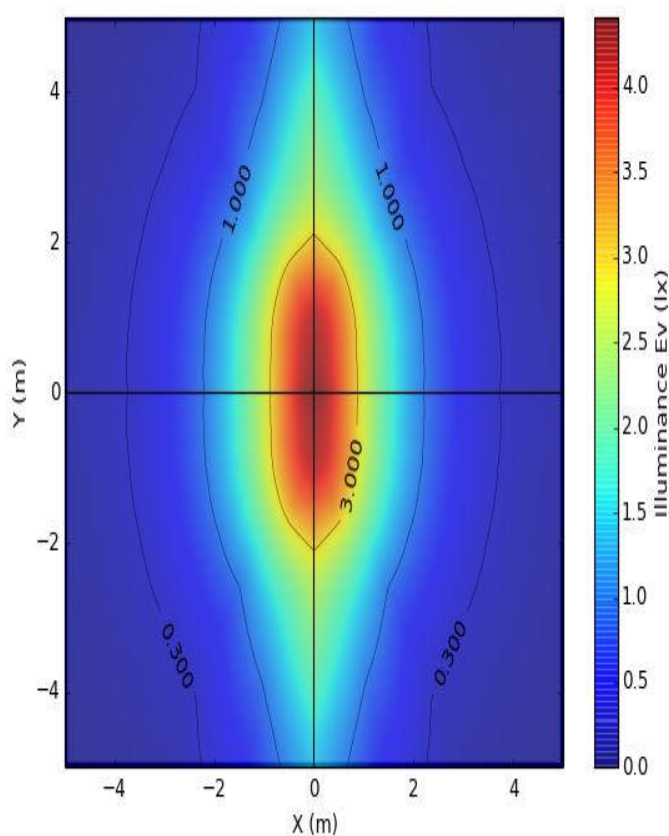
Lamp center position $x = 0.0$ m, $y = 0.0$ m.

C rotation of 0.0 deg. Gamma rotation of 0.0 deg.

Maintenance factor = 0.80.

Nr of lamps: X = 1 pcs, Y = 1 pcs.

Distance between lamps: X = 0.00 meters, Y = 0.00 meters.



Average Ev:	0.901 lx
Uniformity:	6.69 %
Max Ev:	4.41 lx
Min Ev:	0.0603 lx

Power Consumption: 1 W