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Photometric Test Report

Job Ref.	42 / 5482
Report Ref.	42 / 5482 / 54823a
Report Date	2002.12.30
Customer	Encapsulite
Luminaire catalog No.	MT50 IP68 21W CLEAR
Luminaire description	linear cylindrical luminaire with clear cover data derived from range test series
Lamp description	21W T5 850mm HE
Lamp lumen output	1900lm
No. of lamps in luminaire	1
width of luminaire	0.050m
length of luminaire	0.960m
height of luminaire	0.050m

The luminaire has been treated as though it has 2 planes of symmetry through the 0°/180° plane and the 90°/270° plane.

Index to report

All measurements taken in accordance with BS5225.

The photometric centre of the luminaire was taken as the centre of the lamp.

The photometric nadir was taken to be perpedicular to the front face of the reflector.

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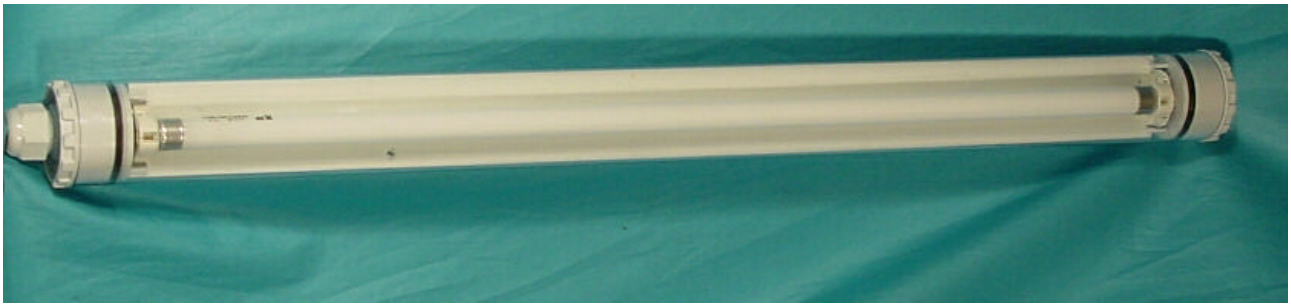

Light Output Ratios	Up	0.13
	Down	0.87
	Total	1.00

Lighting design calculations should be performed using an initial (100 hour) lumen output of 1900 lm

Spacing to Height Ratios	SHR NOM	1.75
	SHR MAX	1.83
	SHR MAX TRANS	2.43

Utilisation Factors UF(F) Standard Presentation SHR NOM = 1.75

Room Reflectances			Room Index								
C	W	F	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
.70	.50	.20	N/A	.57	.64	.69	.76	.81	.85	.90	.93
	.30		N/A	.48	.55	.61	.69	.74	.78	.84	.89
	.10		N/A	.42	.49	.54	.62	.68	.73	.80	.84
.50	.50	.20	N/A	.53	.59	.64	.71	.75	.79	.84	.87
	.30		N/A	.46	.52	.57	.65	.70	.74	.79	.83
	.10		N/A	.40	.47	.52	.59	.65	.69	.75	.79
.30	.50	.20	N/A	.50	.56	.60	.66	.70	.73	.78	.81
	.30		N/A	.44	.50	.54	.61	.65	.69	.74	.77
	.10		N/A	.39	.45	.49	.56	.61	.65	.71	.74
.00	.00	.00	N/A	.35	.40	.44	.51	.55	.59	.64	.67
BZ Class			N/A	6	6	6	6	6	6	6	6

CIE Flux code	33 / 61 / 83 / 87 / 100
CIE Room Index	0.60 0.80 1.00 1.25 1.50 2.00 2.50 3.00 4.00 5.00 10.0 20.0
CIE DRR	0.21 0.28 0.34 0.41 0.46 0.54 0.60 0.65 0.70 0.74 0.81 0.85
CIE class	7 / 7 / 7 / 8 / 8 / 8 / 8 / 8 / 8 / 8 / 9 / -
Flux Fraction Ratio	0.14
DIN Class	1.00 B

Calculated in accordance with CIBSE Technical Memorandum No. 5 1980
In accordance with TM5, this UF table is valid for values of SHR from 0.5 below SHR NOM to 0.5 above SHR NOM. SHR MAX is a separate limitation.
Reflectances given in the UF table are the effective reflectances of the ceiling cavity, walls and floor cavity, and must be determined for the actual room in which the luminaire will be used.
UF(F),UF(W), and UF(C) for 0% reflectance of the room surfaces are equivalent to DF(F),DF(W) and DF(C) respectively.

Average Luminous Intensities (cd/Klm)

Angle	Transverse plane	Axial plane	Average all planes
0°	199.98	199.98	199.98
5°	200.21	199.29	199.52
10°	200.35	196.58	197.52
15°	200.53	191.89	194.10
20°	200.48	185.73	189.64
25°	200.02	177.60	184.01
30°	199.11	167.35	176.84
35°	197.78	155.68	168.36
40°	196.46	142.58	159.17
45°	195.45	127.78	149.04
50°	195.32	112.94	138.47
55°	194.45	95.43	127.97
60°	192.16	78.30	117.15
65°	188.23	60.10	107.91
70°	182.70	41.17	98.10
75°	174.11	24.30	87.07
80°	162.18	10.57	73.77
85°	149.24	2.20	59.62
90°	142.20	0.00	50.31
95°	139.82	0.00	43.33
100°	124.74	0.00	16.12
105°	102.71	0.00	1.45
110°	22.95	0.00	0.53
115°	0.87	0.00	0.21
120°	0.50	0.00	0.16
125°	0.00	0.00	0.00
130°	0.00	0.00	0.00
135°	0.00	0.00	0.00
140°	0.00	0.00	0.00
145°	0.00	0.00	0.00
150°	0.00	0.00	0.00
155°	0.00	0.00	0.00
160°	0.00	0.00	0.00
165°	0.00	0.00	0.00
170°	0.00	0.00	0.00
175°	0.00	0.00	0.00
180°	0.00	0.00	0.00

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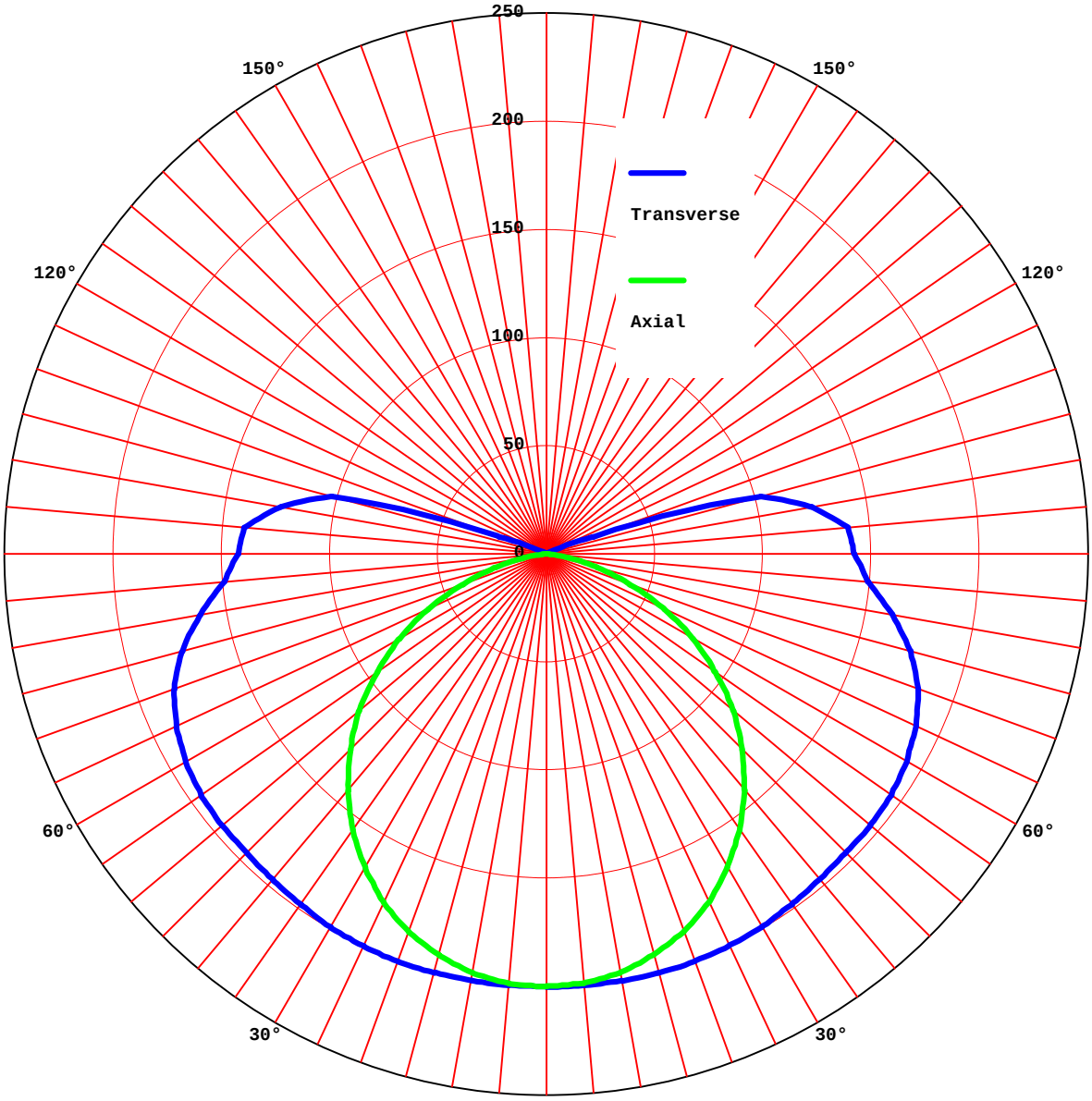
Luminous Intensities (cd/Klm)



Angle	Aspect Factors	
	Parallel plane	Perpendicular plane
0°	0.000	0.000
5°	0.087	0.004
10°	0.173	0.015
15°	0.255	0.033
20°	0.334	0.058
25°	0.407	0.089
30°	0.474	0.123
35°	0.533	0.161
40°	0.585	0.201
45°	0.628	0.241
50°	0.664	0.279
55°	0.692	0.315
60°	0.712	0.347
65°	0.726	0.374
70°	0.734	0.394
75°	0.739	0.408
80°	0.740	0.416
85°	0.741	0.418
90°	0.741	0.419

Zonal fluxes (Lumens)

Zone	% lamp	% luminaire
0°- 10°	1.9%	1.9%
10°- 20°	5.6%	5.6%
20°- 30°	8.8%	8.8%
30°- 40°	11.2%	11.2%
40°- 50°	12.7%	12.7%
50°- 60°	13.4%	13.4%
60°- 70°	13.2%	13.2%
70°- 80°	11.9%	11.9%
80°- 90°	9.4%	9.5%
90°-100°	8.2%	8.2%
100°-110°	4.4%	4.4%
110°-120°	0.0%	0.0%
120°-130°	0.0%	0.0%
130°-140°	0.0%	0.0%
140°-150°	0.0%	0.0%
150°-160°	0.0%	0.0%
160°-170°	0.0%	0.0%
170°-180°	0.0%	0.0%

Average Luminous Intensities (cd/Klm)

Angles	0°	30°	60°	90°	120°	150°
0°	200.0	200.0	200.0	200.0	200.0	200.0
5°	200.2	199.9	199.5	199.3	199.5	199.9
10°	200.3	199.6	197.5	196.6	197.5	199.6
15°	200.5	198.7	194.1	191.9	194.1	198.7
20°	200.5	197.1	189.6	185.7	189.6	197.1
25°	200.0	194.8	184.0	177.6	184.0	194.8
30°	199.1	192.3	176.8	167.3	176.8	192.3
35°	197.8	188.6	168.4	155.7	168.4	188.6
40°	196.5	185.0	159.2	142.6	159.2	185.0
45°	195.5	181.1	149.0	127.8	149.0	181.1
50°	195.3	177.9	138.5	112.9	138.5	177.9
55°	194.4	175.1	128.0	95.4	128.0	175.1
60°	192.2	171.7	117.1	78.3	117.1	171.7
65°	188.2	166.3	107.9	60.1	107.9	166.3
70°	182.7	159.4	98.1	41.2	98.1	159.4
75°	174.1	150.4	87.1	24.3	87.1	150.4
80°	162.2	138.9	73.8	10.6	73.8	138.9
85°	149.2	124.3	59.6	2.2	59.6	124.3
90°	142.2	117.0	50.3	0.0	50.3	117.0
95°	139.8	113.0	43.3	0.0	43.3	113.0
100°	124.7	97.8	16.1	0.0	16.1	97.8
105°	102.7	71.9	1.4	0.0	1.4	71.9
110°	22.9	1.0	0.5	0.0	0.5	1.0
115°	0.9	0.5	0.2	0.0	0.2	0.5
120°	0.5	0.5	0.2	0.0	0.2	0.5
125°	0.0	0.0	0.0	0.0	0.0	0.0
130°	0.0	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0	0.0
145°	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0

Average Luminous Intensities (cd/Klm)

Angles	180°	210°	240°	270°	300°	330°
0°	200.0	200.0	200.0	200.0	200.0	200.0
5°	200.2	199.9	199.5	199.3	199.5	199.9
10°	200.3	199.6	197.5	196.6	197.5	199.6
15°	200.5	198.7	194.1	191.9	194.1	198.7
20°	200.5	197.1	189.6	185.7	189.6	197.1
25°	200.0	194.8	184.0	177.6	184.0	194.8
30°	199.1	192.3	176.8	167.3	176.8	192.3
35°	197.8	188.6	168.4	155.7	168.4	188.6
40°	196.5	185.0	159.2	142.6	159.2	185.0
45°	195.5	181.1	149.0	127.8	149.0	181.1
50°	195.3	177.9	138.5	112.9	138.5	177.9
55°	194.4	175.1	128.0	95.4	128.0	175.1
60°	192.2	171.7	117.1	78.3	117.1	171.7
65°	188.2	166.3	107.9	60.1	107.9	166.3
70°	182.7	159.4	98.1	41.2	98.1	159.4
75°	174.1	150.4	87.1	24.3	87.1	150.4
80°	162.2	138.9	73.8	10.6	73.8	138.9
85°	149.2	124.3	59.6	2.2	59.6	124.3
90°	142.2	117.0	50.3	0.0	50.3	117.0
95°	139.8	113.0	43.3	0.0	43.3	113.0
100°	124.7	97.8	16.1	0.0	16.1	97.8
105°	102.7	71.9	1.4	0.0	1.4	71.9
110°	22.9	1.0	0.5	0.0	0.5	1.0
115°	0.9	0.5	0.2	0.0	0.2	0.5
120°	0.5	0.5	0.2	0.0	0.2	0.5
125°	0.0	0.0	0.0	0.0	0.0	0.0
130°	0.0	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0	0.0
145°	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0

Non Averaged Luminous Intensities (cd/Klm)

Angles	0°	30°	60°	90°	120°	150°
0°	200.0	200.0	200.0	200.0	200.0	200.0
5°	200.0	199.8	199.6	199.3	199.8	200.1
10°	199.9	199.5	197.7	196.8	198.2	200.2
15°	199.7	198.3	194.4	192.1	195.1	199.7
20°	199.5	196.9	189.9	186.3	190.7	198.3
25°	199.0	194.7	184.1	178.2	185.4	196.2
30°	198.0	191.9	177.1	168.3	178.4	193.6
35°	196.5	188.6	168.5	156.1	169.5	190.3
40°	195.1	185.0	160.3	143.8	160.6	186.5
45°	194.1	181.2	149.8	128.9	150.4	182.7
50°	193.9	177.8	139.9	114.6	139.8	179.5
55°	192.7	174.8	129.3	96.6	128.9	176.8
60°	190.7	171.6	118.4	79.2	118.5	173.3
65°	186.8	166.1	109.2	61.5	108.6	168.2
70°	181.7	159.5	99.4	42.0	98.4	161.0
75°	173.0	150.6	88.5	26.3	87.5	151.7
80°	161.2	140.2	74.2	10.9	74.3	139.7
85°	147.5	127.1	62.0	2.6	59.3	125.0
90°	140.3	116.6	51.5	0.0	49.5	118.0
95°	137.0	111.9	45.4	0.0	43.5	115.6
100°	122.5	98.1	25.3	0.0	14.1	99.5
105°	103.2	79.2	1.9	0.0	1.5	71.7
110°	23.0	0.9	0.6	0.0	0.4	0.9
115°	0.9	0.5	0.3	0.0	0.1	0.5
120°	0.4	0.4	0.2	0.0	0.1	0.5
125°	0.0	0.0	0.0	0.0	0.0	0.0
130°	0.0	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0	0.0
145°	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0

Non Averaged Luminous Intensities (cd/Klm)

Angles	180°	210°	240°	270°	300°	330°
0°	200.0	200.0	200.0	200.0	200.0	200.0
5°	200.4	200.1	199.3	199.2	199.3	199.7
10°	200.8	199.9	197.2	196.4	197.0	198.8
15°	201.3	199.1	193.8	191.7	193.0	197.7
20°	201.4	197.6	189.2	185.2	188.8	195.6
25°	201.1	194.9	183.5	177.0	183.0	193.4
30°	200.3	192.4	176.5	166.4	175.4	191.3
35°	199.1	188.8	168.2	155.3	167.1	186.6
40°	197.8	185.6	158.7	141.4	157.1	182.9
45°	196.8	181.7	148.7	126.7	147.1	178.9
50°	196.7	178.1	138.3	111.3	135.8	176.1
55°	196.1	175.6	127.4	94.3	126.3	173.1
60°	193.6	171.9	116.9	77.4	114.8	170.0
65°	189.7	166.7	107.7	58.7	106.2	164.0
70°	183.7	159.6	98.2	40.3	96.3	157.4
75°	175.2	150.8	87.1	22.3	85.2	148.5
80°	163.1	139.2	74.5	10.3	72.1	136.6
85°	151.0	124.8	59.5	1.8	57.6	120.5
90°	144.1	118.7	51.6	0.0	48.6	114.7
95°	142.7	115.7	43.4	0.0	41.0	108.9
100°	127.0	98.8	10.6	0.0	14.5	94.7
105°	102.3	68.8	1.5	0.0	0.9	67.9
110°	22.9	1.0	0.6	0.0	0.5	1.1
115°	0.8	0.5	0.2	0.0	0.3	0.6
120°	0.6	0.5	0.2	0.0	0.2	0.6
125°	0.0	0.0	0.0	0.0	0.0	0.0
130°	0.0	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0	0.0
145°	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0

Uncorrected Glare Indices

Reflectance of Ceiling	.70	.70	.50	.50	.30	.70	.70	.50	.50	.30
Wall	.50	.30	.50	.30	.30	.50	.30	.50	.30	.30
Floor Cavity	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
Room dimension X Y	Viewed crosswise 0°					Viewed endwise 90°				
2H 2H	16.6	18.5	17.2	19.2	19.9	13.0	14.9	13.7	15.6	16.4
3H	20.0	21.8	20.7	22.5	23.3	15.0	16.7	15.7	17.4	18.2
4H	21.7	23.4	22.4	24.1	24.9	15.6	17.3	16.3	18.0	18.8
6H	23.5	25.1	24.2	25.8	26.7	16.1	17.6	16.8	18.4	19.2
8H	24.4	25.9	25.1	26.6	27.5	16.1	17.7	16.8	18.4	19.2
12H	25.3	26.7	26.0	27.5	28.4	16.1	17.6	16.9	18.4	19.2
4H 2H	17.6	19.2	18.3	20.0	20.8	15.2	16.9	15.9	17.6	18.4
3H	21.4	22.9	22.1	23.6	24.5	17.6	19.0	18.3	19.8	20.7
4H	23.4	24.7	24.1	25.5	26.4	18.6	19.9	19.3	20.7	21.6
6H	25.3	26.5	26.1	27.3	28.2	19.2	20.4	20.0	21.2	22.1
8H	26.3	27.5	27.1	28.3	29.2	19.4	20.6	20.2	21.4	22.3
12H	27.4	28.5	28.2	29.2	30.2	19.5	20.6	20.3	21.4	22.4
8H 4H	24.0	25.2	24.8	26.0	26.9	20.7	21.9	21.5	22.7	23.6
6H	26.3	27.3	27.1	28.1	29.0	21.7	22.7	22.5	23.5	24.5
8H	27.6	28.5	28.4	29.3	30.3	22.2	23.1	23.1	24.0	24.9
12H	28.9	29.7	29.7	30.5	31.5	22.5	23.3	23.4	24.2	25.1
12H 4H	24.2	25.3	25.0	26.0	27.0	21.6	22.7	22.4	23.5	24.4
6H	26.6	27.5	27.4	28.4	29.3	22.9	23.8	23.8	24.7	25.6
8H	28.0	28.7	28.8	29.6	30.5	23.5	24.3	24.4	25.2	26.1

Calculated in accordance with CIBSE Technical Memorandum No. 10 1985

Comments

It is recommended that point to point calculations are used when designing lighting schemes in order to accurately predict uniformity. Data files in various formats are available to allow easy transfer of this data to a computer. Please enquire for details.

Quick Design Table

Based on: reflectances of Ceiling = 0.5
Wall = 0.5
Floor = 0.2
Room Index = 2.00
lamp output = 1900 lumens
ballast lumen factor = 1.00

To achieve an Illuminance of 100 lux

Surface Area (m^2)	20	30	40	50	80	100	200	300	500
No. of luminaires	1.5	2.2	3.0	3.7	5.9	7.4	14.9	22.3	37.2

Luminance values

Using a lamp with an initial (100 hour) output of 1900 lm

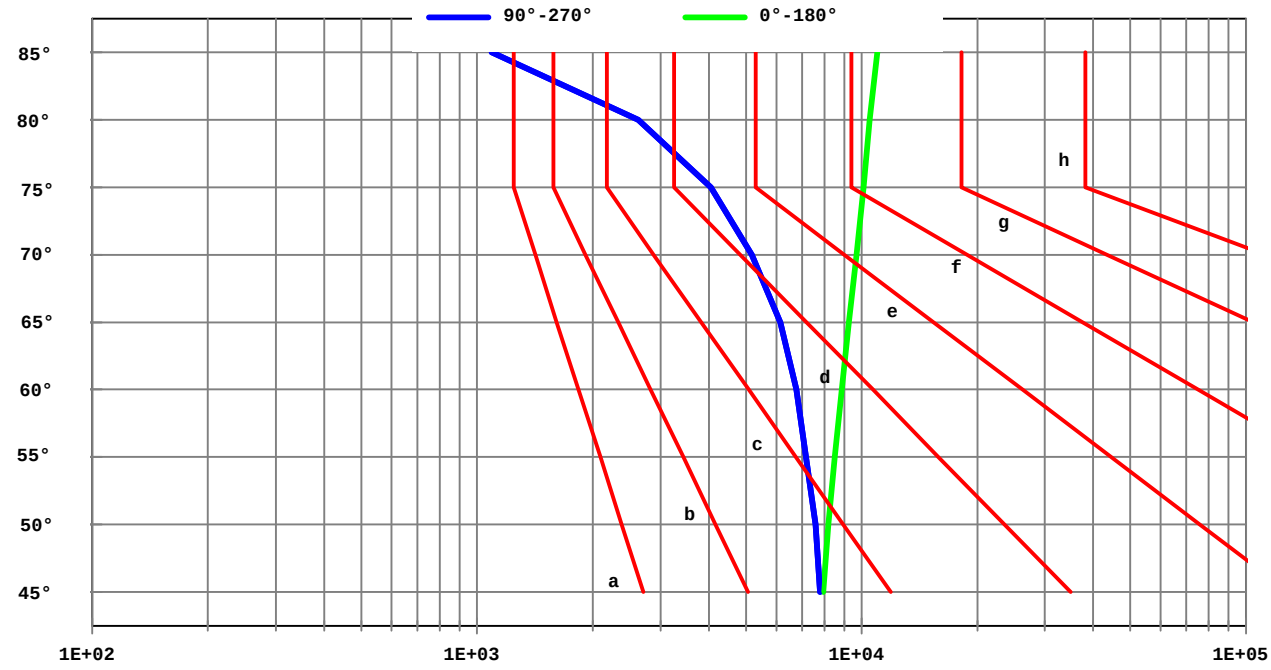
Averaged Luminance values (cd/m^2)

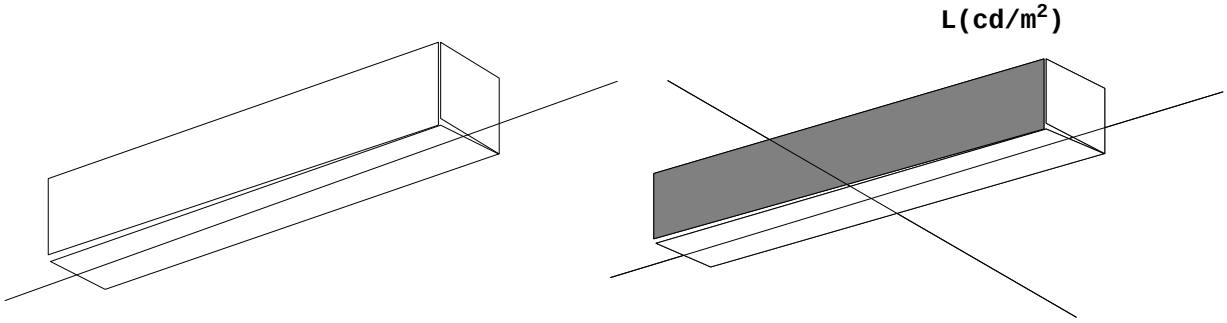
Angle	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
45°	7957	7719	7281	7804	7281	7719	7957	7719	7281	7804	7281	7719
50°	8222	7882	7167	7587	7167	7882	8222	7882	7167	7587	7167	7882
55°	8540	8144	7099	7185	7099	8144	8540	8144	7099	7185	7099	8144
60°	8894	8475	7060	6762	7060	8475	8894	8475	7060	6762	7060	8475
65°	9281	8808	7178	6140	7178	8808	9281	8808	7178	6140	7178	8808
70°	9718	9188	7343	5198	7343	9188	9718	9188	7343	5198	7343	9188
75°	10135	9591	7515	4054	7515	9591	10135	9591	7515	4054	7515	9591
80°	10514	9997	7587	2628	7587	9997	10514	9997	7587	2628	7587	9997
85°	11011	10354	7657	1092	7657	10354	11011	10354	7657	1092	7657	10354

Non Averaged Luminance values (cd/m^2)

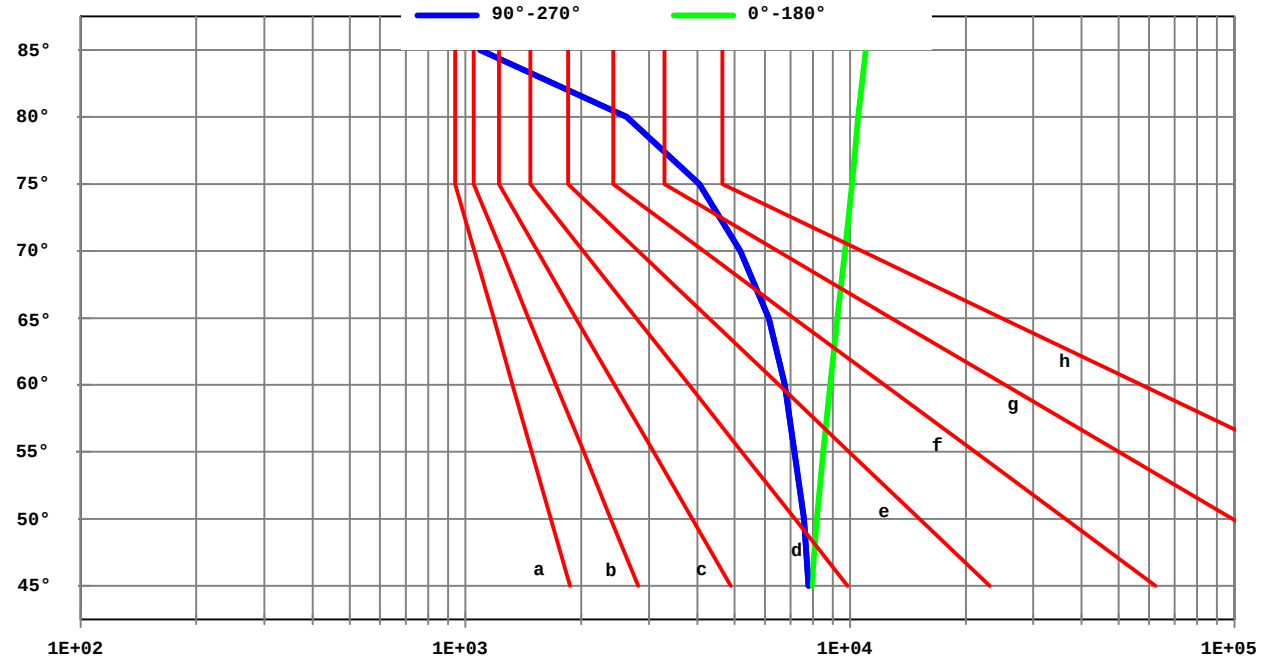
Angle	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
45°	7903	7722	7321	7870	7350	7787	8012	7741	7266	7737	7188	7626
50°	8164	7879	7239	7700	7238	7956	8280	7891	7159	7475	7031	7802
55°	8466	8131	7174	7273	7150	8224	8615	8169	7066	7096	7008	8053
60°	8827	8468	7136	6836	7139	8554	8960	8485	7044	6688	6921	8392
65°	9210	8799	7261	6285	7222	8912	9352	8832	7162	5996	7066	8690
70°	9662	9196	7443	5308	7368	9283	9773	9200	7350	5087	7210	9073
75°	10074	9605	7642	4392	7550	9675	10197	9615	7514	3716	7356	9468
80°	10453	10086	7635	2705	7643	10056	10576	10018	7657	2551	7414	9829
85°	10882	10581	7969	1268	7619	10406	11140	10395	7648	916	7393	10033

Glare Rating	Quality Class	Service values of 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
		a	b	c	d	e	f	g	h





Glare Rating	Quality Class	Service values of 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
		a	b	c	d	e	f	g	h



$L(cd/m^2)$