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Photometric Report

Job / Report / Date	42 / 10692 / 10692-2a / 2013.06.17
Customer	Encapsulite International Ltd.
Luminaire Range	MT50 IP68
Luminaire catalog No.	MT50 14W
Luminaire description	linear cylindrical luminaire with clear cover data derived from range test series
Lamp description	14W/840 HE Osram Lumilux
Lamp lumen output	1,200 lm
Lamp quantity	1

Photometric Report

- Pictures
- Luminaire information
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- Polar Curves
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- Principal Axes Intensities
- Light Output Ratios & CIBSE TM5 Results
- Aspect Factors
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Job / Report / Date

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Customer

Encapsulite International Ltd.

Luminaire Range

MT50 IP68

Luminaire catalog No.

MT50 14W

Luminaire description

linear cylindrical luminaire
with clear cover

data derived from range test series

Lamp description

14W/840 HE Osram Lumilux

Lamp lumen output

1,200 lm

Lamp quantity

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Helvar
www.helvar.com

ELECTRONIC BALLAST EL1x14-35s
220-240V 0/50-60Hz



T5:14W 0.08-0.06A λ 0.96

T5:21,28,35W 0.18-0.09A λ 0.98

ta = -20...+50°C

75



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Luminaire physical characteristics

Overall Dimensions

Length	660mm
Width	50mm
Height	50mm

Visible Dimensions when installed

Length	660mm
Width	50mm
Height	50mm

Luminous Dimensions

Length	575mm
Width	50mm
Height 0°	25mm
Height 90°	0mm
Height 180°	25mm
Height 270°	0mm

Luminous Areas

Base	0.02875m ²
Sides	0.014375m ² (0°/180° azimuth)
Ends	0m ² (90°/270° azimuth)

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Report Basis

All measurements taken in accordance with EN13032.

Lamp tests were performed with the lamps in a horizontal orientation.

Luminaire tests were performed with the lamps in a horizontal orientation.

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

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

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

The lumen output, light output ratio (LORL) and power consumption of the luminaire were determined at 25°C after 100 hours pre-conditioning.

Lamps used for test were provided by the customer.

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Electrical input & Photometric output characteristics

Control gear

1 * Helvar EL1x14-35S

Ballast Voltage Range 220-240V
Ballast Current Range .06-.08A
Ballast Power Factor 0.96

Sample	Voltage (V)	Current (mA)	Power Factor	Power (W)	VA	Output (lm)	% of Nominal	Efficacy (lm/W)
Luminaire	230.0	73.1	0.928	15.6	16.8	977	81%	62.6
Lamp	230.0	75.2	0.932	16.1	17.3	1,078	90%	66.9

Electrical characteristics at 25°C

Ballast Nominal	230V	69.6mA	0.96PF	15.4W	16.0VA
Lamp Nominal	230V	60.9mA	1.00PF	14.0W	14.0VA
Luminaire	230V	73.1mA	0.93PF	15.6W	16.8VA
Lamp	230V	75.2mA	0.93PF	16.1W	17.3VA

Measured Electrical characteristics relative to Ballast Nominal

Luminaire	Current	105%	Power	102%	VA	105%
Lamp	Current	108%	Power	105%	VA	108%

Measured Electrical characteristics relative to Lamp Nominal

Luminaire	Current	120%	Power	111%	VA	120%
Lamp	Current	123%	Power	115%	VA	123%

Lumen Output figures used in this report (lumens)

Nominal Lamp Output	1,200
Measured Luminaire Output	977
Measured Lamp Output	1,078

Measured Lumen Output characteristics relative to Lamp Nominal Total

Luminaire	81%
Lamp	90%

Measured luminous efficacy at 25°C

Luminaire	62.6 lm/W
Lamp	66.9 lm/W

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The light output ratio of the luminaire was measured as 0.907 at 25°C.
This is the ratio of the output of the luminaire to the output of the lamp.

The measured lumen output of the luminaire was 977 lumens at 25°C.
This figure can be related to the nominal lumen output of the lamp quoted by the manufacturer of 1,200 lumens, to give a nominal light output ratio of 0.814.

The measured lumen output of the lamp was 1,078 lumens at 25°C.
This figure can be related to the nominal lumen output of the lamp quoted by the manufacturer of 1,200 lumens, to give a nominal BLF of 0.898.

For lighting design calculations:

A light output ratio of 1 should be used in conjunction with the measured lumen output of the luminaire of 977 lumens.

or

The nominal light output ratio of 0.814 should be used in conjunction with the nominal lumen output of the lamp of 1,200 lumens.

or

The measured light output ratio of 0.907 should be used in conjunction with the measured lumen output of the lamp of 1,078 lumens.

or

The measured light output ratio of 0.907 should be used in conjunction with the nominal lumen output of the lamp of 1,200 lumens and the nominal BLF of 0.898.

This report is based on the following parameters:

The Light Output Ratio is the nominal value of 0.814.

The lamp output is the nominal value of 1,200 lumens.

There is 1 lamp in the luminaire.

No measurements relating to the ballast factor of the control gear were made.

The nominal ballast factor represented by the ratio of the measured lumen output of the lamp to the declared lumen output has been incorporated into the nominal Light Output Ratio figure. The resultant nominal LOR allows lighting calculations to be performed using the declared lamp output without having to incorporate a separate BLF calculation to allow for deviation from the nominal output due to thermal and gear effects.

If the measured LOR figure is used, the measured lumen output of the lamp should be used to perform lighting calculations. If the nominal lamp output is used with the measured LOR figure, an allowance should be made for any deviation of the lamp and gear combination from the published lumen output, represented by the nominal BLF.

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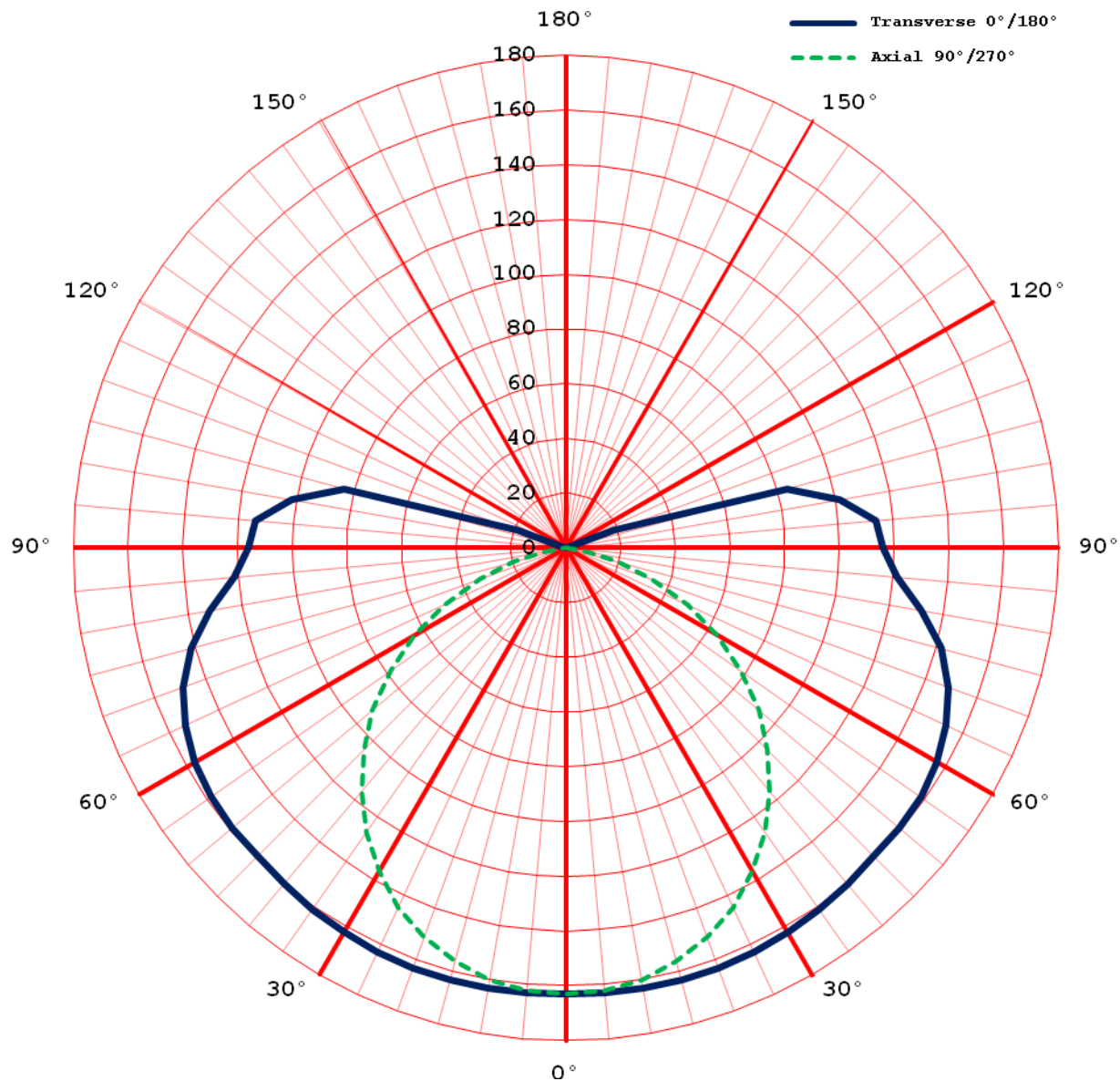
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Average Principal Axes Luminous Intensities (cd/klm)



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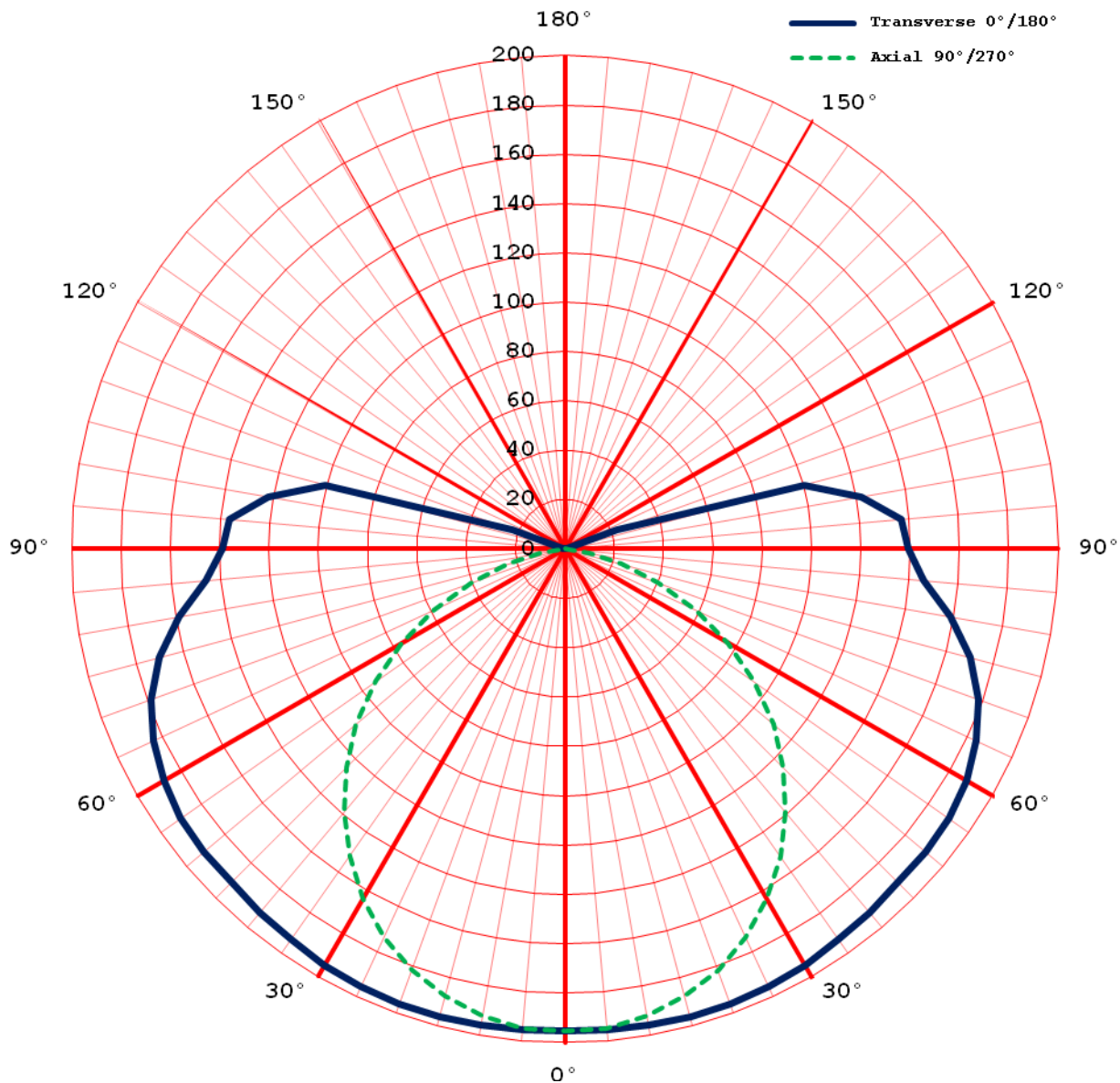
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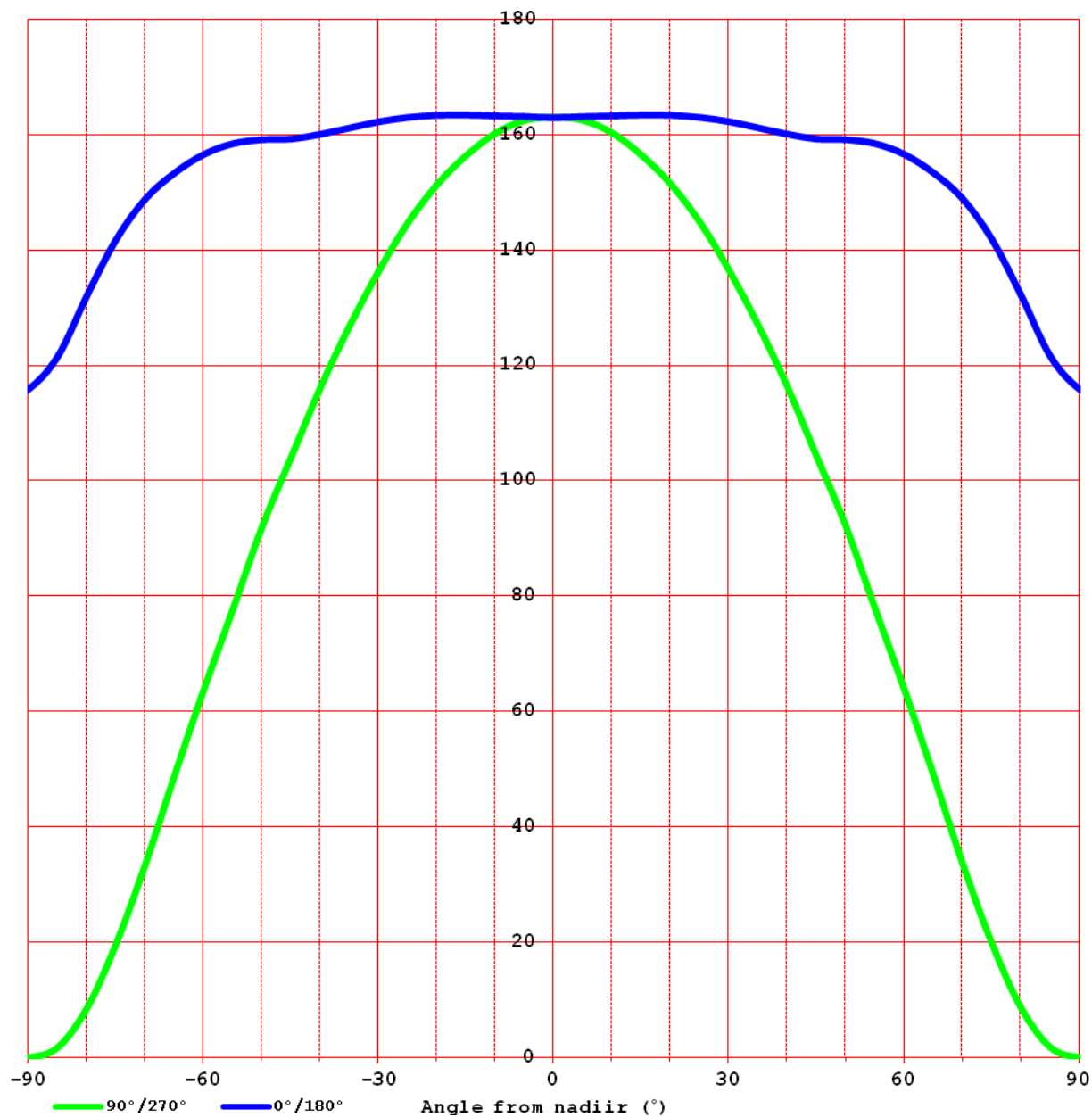
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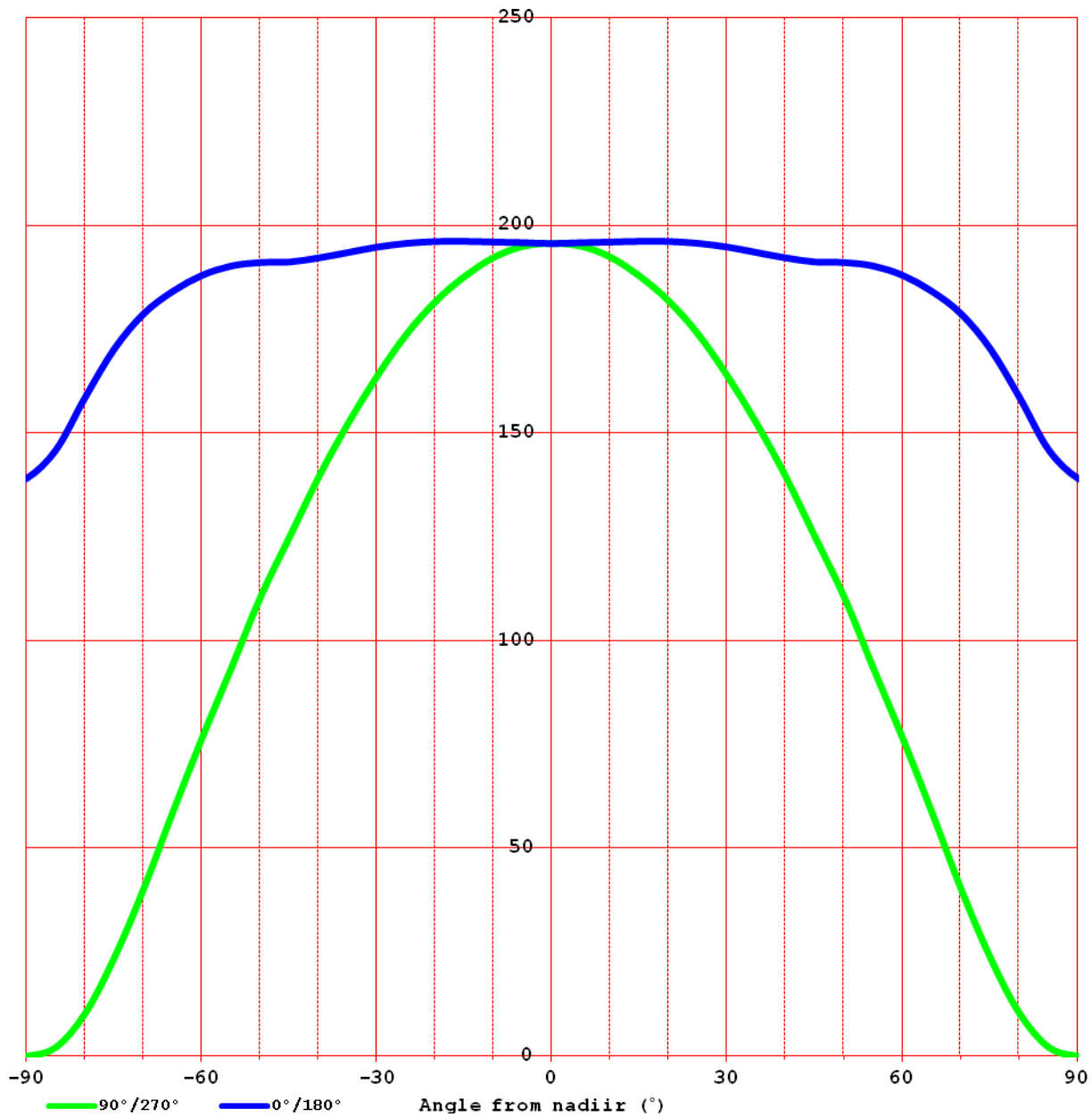
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Average Luminous Intensities (cd/Klm)

Angle	Transverse plane	Axial plane
0°	162.99	162.99
5°	163.18	162.43
10°	163.29	160.22
15°	163.44	156.40
20°	163.40	151.38
25°	163.03	144.75
30°	162.28	136.40
35°	161.20	126.89
40°	160.12	116.21
45°	159.30	104.15
50°	159.19	92.05
55°	158.48	77.78
60°	156.62	63.82
65°	153.42	48.98
70°	148.91	33.55
75°	141.91	19.80
80°	132.18	8.61
85°	121.64	1.80
90°	115.90	0.00
95°	113.96	0.00
100°	101.67	0.00
105°	83.71	0.00
110°	18.70	0.00
115°	0.71	0.00
120°	0.41	0.00
125°	0.00	0.00
130°	0.00	0.00
135°	0.00	0.00
140°	0.00	0.00
145°	0.00	0.00
150°	0.00	0.00
155°	0.00	0.00
160°	0.00	0.00
165°	0.00	0.00
170°	0.00	0.00
175°	0.00	0.00
180°	0.00	0.00

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Average Luminous Intensities (cd)

Angle	Transverse plane	Axial plane
0°	195.59	195.59
5°	195.82	194.92
10°	195.95	192.27
15°	196.13	187.68
20°	196.08	181.66
25°	195.64	173.70
30°	194.74	163.68
35°	193.44	152.27
40°	192.15	139.45
45°	191.16	124.98
50°	191.03	110.46
55°	190.18	93.34
60°	187.94	76.58
65°	184.10	58.78
70°	178.69	40.26
75°	170.29	23.76
80°	158.62	10.34
85°	145.96	2.16
90°	139.08	0.00
95°	136.75	0.00
100°	122.00	0.00
105°	100.46	0.00
110°	22.44	0.00
115°	0.85	0.00
120°	0.49	0.00
125°	0.00	0.00
130°	0.00	0.00
135°	0.00	0.00
140°	0.00	0.00
145°	0.00	0.00
150°	0.00	0.00
155°	0.00	0.00
160°	0.00	0.00
165°	0.00	0.00
170°	0.00	0.00
175°	0.00	0.00
180°	0.00	0.00

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Light Output Ratios Up 0.10
Down 0.71
Total 0.81

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	.46	.52	.56	.62	.66	.69	.73	.76
	.30		N/A	.39	.45	.49	.56	.60	.64	.69	.72
	.10		N/A	.34	.40	.44	.51	.56	.59	.65	.69
.50	.50	.20	N/A	.44	.48	.52	.58	.61	.64	.68	.71
	.30		N/A	.38	.43	.47	.53	.57	.60	.64	.67
	.10		N/A	.33	.38	.42	.48	.53	.56	.61	.65
.30	.50	.20	N/A	.41	.45	.49	.54	.57	.60	.63	.66
	.30		N/A	.36	.40	.44	.50	.53	.56	.60	.63
	.10		N/A	.32	.36	.40	.46	.50	.53	.58	.61
.00	.00	.00	N/A	.28	.33	.36	.41	.45	.48	.52	.55
BZ Class			N/A	6	6	6	6	6	6	6	6

CIE Flux code 33 / 61 / 83 / 87 / 81

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 0.81 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.

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Lamp description

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Lamp lumen output

1,200 lm

Lamp quantity

1

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

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Zonal Flux Calculations

Angles	Individual	Cumulative
0° - 5°	0.5%	0.5%
5° - 10°	1.4%	1.9%
10° - 15°	2.3%	4.2%
15° - 20°	3.2%	7.5%
20° - 25°	4.0%	11.5%
25° - 30°	4.7%	16.2%
30° - 35°	5.3%	21.5%
35° - 40°	5.8%	27.4%
40° - 45°	6.2%	33.6%
45° - 50°	6.5%	40.1%
50° - 55°	6.7%	46.7%
55° - 60°	6.7%	53.5%
60° - 65°	6.7%	60.1%
65° - 70°	6.5%	66.6%
70° - 75°	6.2%	72.8%
75° - 80°	5.7%	78.5%
80° - 85°	5.1%	83.5%
85° - 90°	4.6%	88.1%
90° - 95°	4.2%	92.3%
95° - 100°	3.6%	96.0%
100° - 105°	2.7%	98.7%
105° - 110°	1.2%	99.9%
110° - 115°	0.1%	100.0%
115° - 120°	0.0%	100.0%
120° - 125°	0.0%	100.0%
125° - 130°	0.0%	100.0%
130° - 135°	0.0%	100.0%
135° - 140°	0.0%	100.0%
140° - 145°	0.0%	100.0%
145° - 150°	0.0%	100.0%
150° - 155°	0.0%	100.0%
155° - 160°	0.0%	100.0%
160° - 165°	0.0%	100.0%
165° - 170°	0.0%	100.0%
170° - 175°	0.0%	100.0%
175° - 180°	0.0%	100.0%

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Averaged Luminance Values (cd/m²)

Elevation(°)	Azimuth(°)						
	0.0°	30.0°	60.0°	90.0°	120.0°	150.0°	180.0°
45°	6269	6081	5736	6148	5736	6081	6269
50°	6477	6210	5646	5977	5646	6210	6477
55°	6728	6416	5593	5660	5593	6416	6728
60°	7007	6677	5562	5327	5562	6677	7007
65°	7312	6939	5655	4838	5655	6939	7312
70°	7656	7239	5785	4095	5785	7239	7656
75°	7985	7556	5921	3194	5921	7556	7985
80°	8283	7876	5978	2070	5978	7876	8283
85°	8675	8157	6032	860	6032	8157	8675
	180.0°	210.0°	240.0°	270.0°	300.0°	330.0°	0.0°
45°	6269	6081	5736	6148	5736	6081	6269
50°	6477	6210	5646	5977	5646	6210	6477
55°	6728	6416	5593	5660	5593	6416	6728
60°	7007	6677	5562	5327	5562	6677	7007
65°	7312	6939	5655	4838	5655	6939	7312
70°	7656	7239	5785	4095	5785	7239	7656
75°	7985	7556	5921	3194	5921	7556	7985
80°	8283	7876	5978	2070	5978	7876	8283
85°	8675	8157	6032	860	6032	8157	8675

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Non averaged Luminance Values (cd/m²)

Elevation(°)

Azimuth(°)

	0.0°	30.0°	60.0°	90.0°	120.0°	150.0°	180.0°
45°	6226	6083	5767	6200	5790	6135	6312
50°	6432	6207	5703	6066	5702	6268	6523
55°	6669	6406	5652	5730	5633	6479	6787
60°	6954	6671	5622	5385	5624	6739	7059
65°	7256	6932	5720	4951	5690	7021	7368
70°	7612	7245	5863	4182	5804	7314	7699
75°	7936	7567	6020	3460	5948	7622	8033
80°	8235	7946	6015	2131	6021	7922	8332
85°	8573	8336	6278	999	6002	8198	8777
	180.0°	210.0°	240.0°	270.0°	300.0°	330.0°	0.0°
45°	6312	6099	5724	6096	5663	6008	6226
50°	6523	6217	5640	5889	5539	6147	6432
55°	6787	6435	5567	5591	5521	6344	6669
60°	7059	6685	5549	5269	5453	6611	6954
65°	7368	6958	5642	4724	5567	6846	7256
70°	7699	7248	5790	4008	5680	7148	7612
75°	8033	7575	5920	2927	5795	7459	7936
80°	8332	7892	6033	2010	5841	7744	8235
85°	8777	8190	6025	721	5824	7904	8573

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Averaged Luminance Values (cd/m²/klm)

Elevation(°)

Azimuth(°)

	0.0°	30.0°	60.0°	90.0°	120.0°	150.0°	180.0°
45°	5224	5068	4780	5123	4780	5068	5224
50°	5398	5175	4705	4981	4705	5175	5398
55°	5607	5347	4661	4717	4661	5347	5607
60°	5839	5564	4635	4439	4635	5564	5839
65°	6093	5783	4712	4031	4712	5783	6093
70°	6380	6032	4820	3412	4820	6032	6380
75°	6654	6296	4934	2661	4934	6296	6654
80°	6903	6563	4981	1725	4981	6563	6903
85°	7229	6797	5027	717	5027	6797	7229
	180.0°	210.0°	240.0°	270.0°	300.0°	330.0°	0.0°
45°	5224	5068	4780	5123	4780	5068	5224
50°	5398	5175	4705	4981	4705	5175	5398
55°	5607	5347	4661	4717	4661	5347	5607
60°	5839	5564	4635	4439	4635	5564	5839
65°	6093	5783	4712	4031	4712	5783	6093
70°	6380	6032	4820	3412	4820	6032	6380
75°	6654	6296	4934	2661	4934	6296	6654
80°	6903	6563	4981	1725	4981	6563	6903
85°	7229	6797	5027	717	5027	6797	7229

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Customer

Encapsulite International Ltd.

Luminaire Range

MT50 IP68

Luminaire catalog No.

MT50 14W

Luminaire description

linear cylindrical luminaire
with clear cover

data derived from range test series

Lamp description

14W/840 HE Osram Lumilux

Lamp lumen output

1,200 lm

Lamp quantity

1

Non averaged Luminance Values (cd/m²/klm)

Elevation(°)

Azimuth(°)

	0.0°	30.0°	60.0°	90.0°	120.0°	150.0°	180.0°
45°	5188	5070	4806	5167	4825	5112	5260
50°	5360	5173	4752	5055	4752	5223	5436
55°	5558	5338	4710	4775	4694	5399	5656
60°	5795	5559	4685	4488	4687	5616	5882
65°	6047	5777	4767	4126	4742	5851	6140
70°	6343	6037	4886	3485	4837	6095	6416
75°	6614	6306	5017	2883	4956	6352	6694
80°	6863	6622	5013	1776	5017	6602	6943
85°	7144	6947	5232	832	5002	6832	7314
	180.0°	210.0°	240.0°	270.0°	300.0°	330.0°	0.0°
45°	5260	5082	4770	5080	4719	5006	5188
50°	5436	5181	4700	4907	4616	5122	5360
55°	5656	5363	4639	4659	4601	5287	5558
60°	5882	5571	4624	4391	4544	5509	5795
65°	6140	5799	4702	3936	4639	5705	6047
70°	6416	6040	4825	3340	4734	5956	6343
75°	6694	6313	4933	2439	4830	6216	6614
80°	6943	6577	5027	1675	4868	6453	6863
85°	7314	6825	5021	601	4854	6587	7144

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Customer Encapsulite International Ltd.
Luminaire Range MT50 IP68
Luminaire catalog No. MT50 14W
Luminaire description linear cylindrical luminaire
with clear cover
data derived from range test series
Lamp description 14W/840 HE Osram Lumilux
Lamp lumen output 1,200 lm
Lamp quantity 1

Maximum Non averaged Luminance Values (cd/m²)

Elevation(°)

Maximum Azimuth Angle

45°	6312	180°
50°	6523	180°
55°	6787	180°
60°	7059	180°
65°	7368	180°
70°	7699	180°
75°	8033	180°
80°	8332	180°
85°	8777	180°

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Luminaire catalog No. MT50 14W
Luminaire description linear cylindrical luminaire
with clear cover
data derived from range test series
Lamp description 14W/840 HE Osram Lumilux
Lamp lumen output 1,200 lm
Lamp quantity 1

VDT Luminance Information

BS EN 12464 (2002) / CIBSE LG7 (2005) / CIBSE LG3 (2001)

Permitted Usage according to Screen Type and Luminance Limit Angle	Limiting luminance (cd/m ²)	Use permitted at Luminance Limit Angle(°)	
		55°	65°
Screen Type III (No screen treatment) used with some negative polarity software	200	NO	NO
Screen Type I and II (Good or moderate screen treatment) used with some negative polarity software	500	NO	NO
Screen Type III (No screen treatment) used with only positive polarity software	1000	NO	NO
Screen Type I and II (Good or moderate screen treatment) used with only positive polarity software	1500	NO	NO

VDT Luminance Information

BS EN 12464 (2011) / CIBSE LG7 (2012)

Permitted Usage according to Screen Type and Luminance Limit Angle	Limiting luminance (cd/m ²)	Use permitted at Luminance Limit Angle(°)	
		55°	65°
Medium luminance screen (L <= 200 cdm ²) Case B negative polarity and/or higher requirements	1000	-	NO
Medium luminance screen (L <= 200 cdm ²) Case A positive polarity and normal requirements	1500	-	NO
High luminance screen (L > 200 cd/m ²) Case B negative polarity and/or higher requirements	1500	-	NO
High luminance screen (L > 200 cd/m ²) Case A positive polarity and normal requirements	3000	-	NO

Customer Encapsulite International Ltd.
 Luminaire Range MT50 IP68
 Luminaire catalog No. MT50 14W
 Luminaire description linear cylindrical luminaire
 with clear cover
 data derived from range test series
 Lamp description 14W/840 HE Osram Lumilux
 Lamp lumen output 1,200 lm
 Lamp quantity 1

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		Viewed crosswise					Viewed endwise				
X Y		0°					90°				
2H 2H	17.5	19.4	18.2	20.1	20.9	14.0	15.9	14.6	16.5	17.3	
3H	21.0	22.8	21.7	23.5	24.3	15.9	17.7	16.6	18.4	19.2	
4H	22.7	24.4	23.4	25.1	25.9	16.6	18.2	17.3	19.0	19.8	
6H	24.5	26.0	25.2	26.8	27.6	17.0	18.6	17.7	19.3	20.1	
8H	25.3	26.8	26.0	27.6	28.4	17.1	18.6	17.8	19.3	20.2	
12H	26.2	27.7	26.9	28.4	29.3	17.1	18.6	17.8	19.3	20.2	
4H 2H	18.5	20.2	19.2	20.9	21.7	16.2	17.8	16.9	18.6	19.4	
3H	22.3	23.8	23.0	24.5	25.4	18.5	20.0	19.2	20.7	21.6	
4H	24.3	25.6	25.1	26.4	27.3	19.5	20.8	20.3	21.6	22.5	
6H	26.2	27.5	27.0	28.3	29.1	20.1	21.4	20.9	22.2	23.0	
8H	27.3	28.4	28.0	29.2	30.1	20.4	21.5	21.1	22.3	23.2	
12H	28.3	29.4	29.1	30.2	31.1	20.5	21.6	21.3	22.4	23.3	
8H 4H	25.0	26.1	25.8	26.9	27.8	21.7	22.8	22.4	23.6	24.5	
6H	27.2	28.2	28.0	29.0	30.0	22.7	23.7	23.5	24.5	25.4	
8H	28.5	29.4	29.4	30.3	31.2	23.2	24.1	24.0	24.9	25.8	
12H	29.8	30.6	30.7	31.5	32.4	23.5	24.2	24.3	25.1	26.1	
12H 4H	25.1	26.2	25.9	27.0	27.9	22.6	23.6	23.4	24.4	25.4	
6H	27.6	28.4	28.4	29.3	30.2	23.9	24.8	24.7	25.6	26.6	
8H	28.9	29.7	29.7	30.5	31.5	24.5	25.2	25.3	26.1	27.1	

Calculated in accordance with CIBSE Technical Memorandum No. 10 1985

Customer

Encapsulite International Ltd.

Luminaire Range

MT50 IP68

Luminaire catalog No.

MT50 14W

Luminaire description

linear cylindrical luminaire
with clear cover

data derived from range test series

Lamp description

14W/840 HE Osram Lumilux

Lamp lumen output

1,200 lm

Lamp quantity

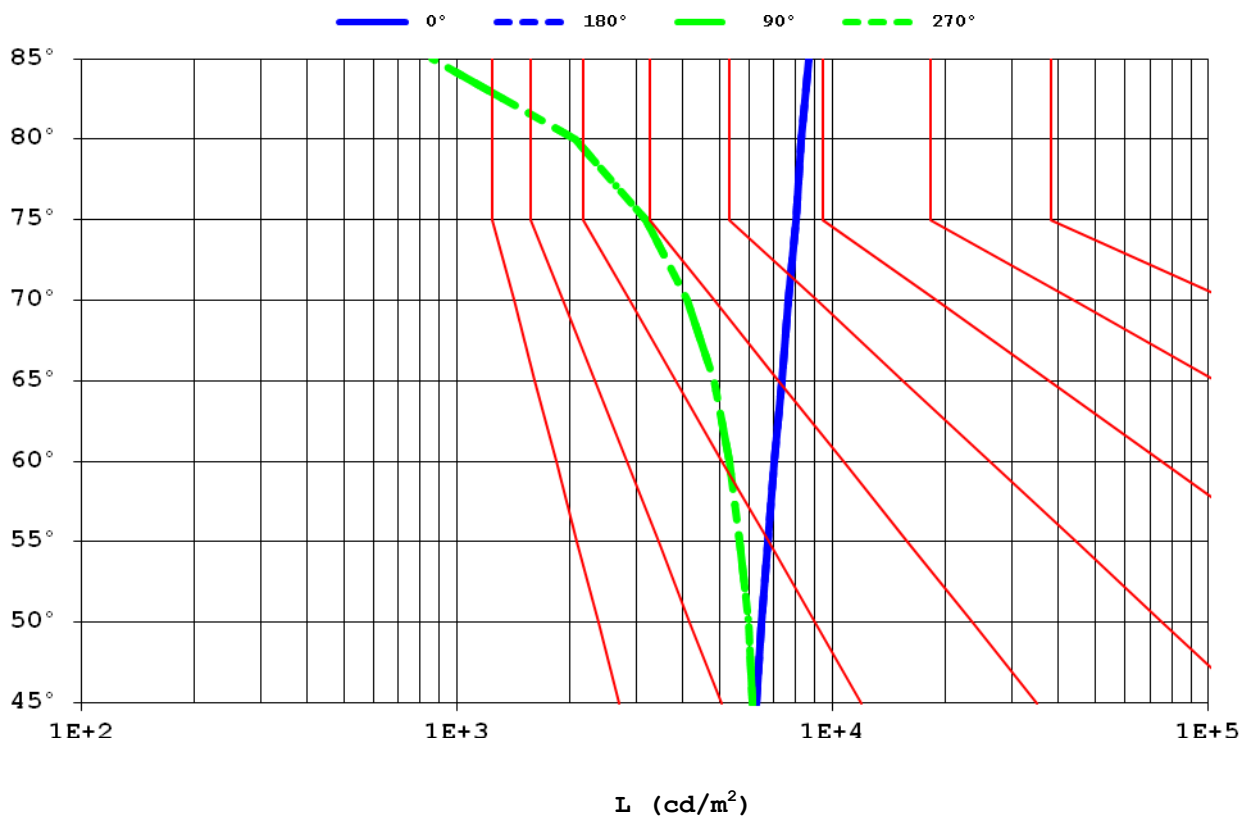
1

CIE Glare Limiting (Soellnor) Diagram

Glare Quality
Rating Class

Service values of illuminance

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



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Customer	Encapsulite International Ltd.
Luminaire Range	MT50 IP68
Luminaire catalog No.	MT50 14W
Luminaire description	linear cylindrical luminaire with clear cover data derived from range test series
Lamp description	14W/840 HE Osram Lumilux
Lamp lumen output	1,200 lm
Lamp quantity	1

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.

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Customer Encapsulite International Ltd.
Luminaire Range MT50 IP68
Luminaire catalog No. MT50 14W
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Lamp description 14W/840 HE Osram Lumilux
Lamp lumen output 1,200 lm
Lamp quantity 1

Quick Design Table

Based on: reflectances of Ceiling = 0.5
Wall = 0.5
Floor = 0.2
Room Index = 2.00
lamp output = 1200 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	2.9	4.3	5.8	7.2	11.6	14.4	28.9	43.3	72.2