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VAT Registration Number: GB 661 1596 34

Photometric Report

Job / Report / Date

42 / 10685 / 10685-10a / 2013.05.24

Customer

Encapsulite International Ltd.

Luminaire catalog No.

MT360/SC/14W

Luminaire description

linear IP67 twin T5 fluorescent Direct/Indirect luminaire
with satin cover

Lamp description

HE 14W/840 OSRAM Lumilux Cool White

Lamp lumen output

1,200 lm

Lamps quantity

2

Photometric Report

Pictures

Luminaire information

Report basis

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Zonal Flux Calculations

Luminance calculations

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CIE Glare Limiting (Soellnor) Diagram

Comments

Quick Design Table

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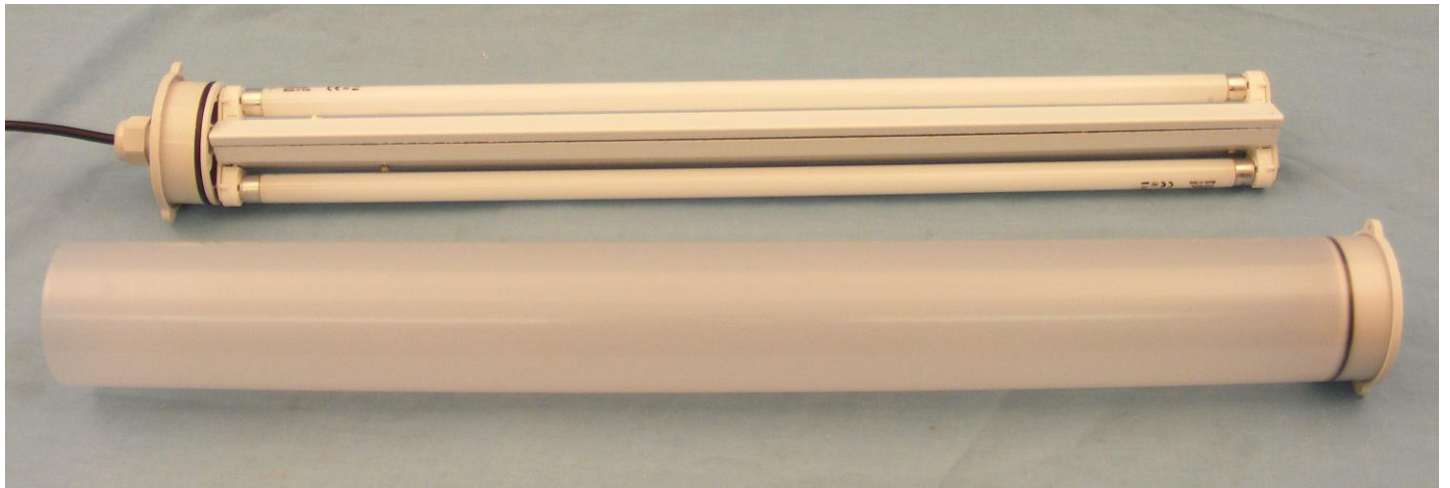
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Helvar
www.helvar.com



ELECTRONIC BALLAST EL2x14-35s
220-240V 0/50-60Hz

T5: 14,21,28,35W 0.35-0.15A λ 0.98
 $t_a = -20...+50^\circ \text{C}$

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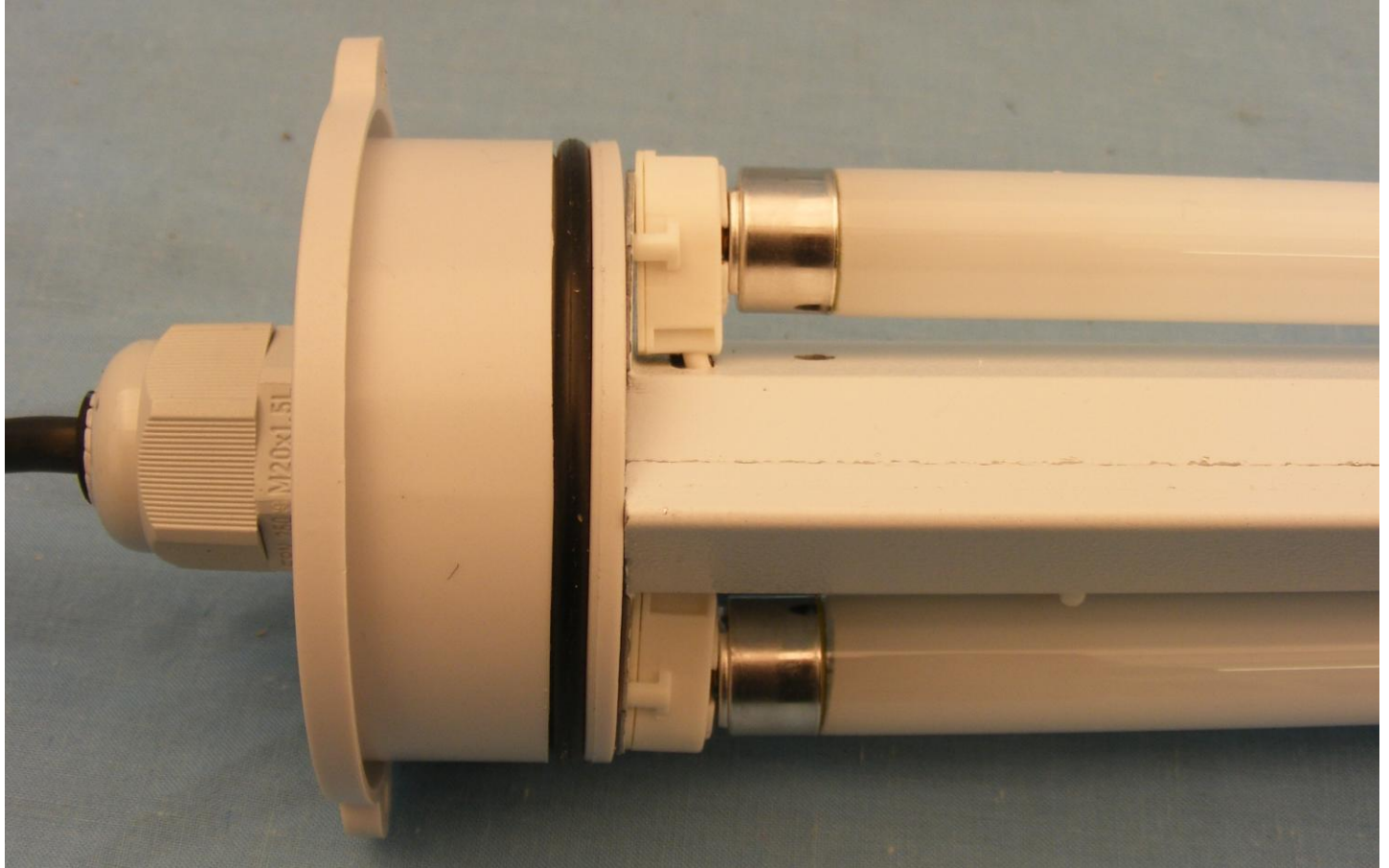
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Luminaire physical characteristics

Overall Dimensions

Length	635mm
Width	75mm
Height	75mm

Visible Dimensions when installed

Length	635mm
Width	75mm
Height	75mm

Luminous Dimensions

Length	575mm
Width	69mm
Height 0°	69mm
Height 90°	69mm
Height 180°	69mm
Height 270°	69mm

Luminous Areas

Base	0.039675m ²
Sides	0.039675m ² (0°/180° azimuth)
Ends	0.004761m 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 and geartray in a horizontal orientation.

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

The photometric nadir was taken to be perpendicular to the geartray.

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 EL2x14-35s

Ballast Voltage Range 220-240V

Ballast Current Range 0.15-0.35A

Ballast Power Factor 0.98

Sample	Voltage (V)	Current (mA)	Power Factor	Power (W)	VA	Output (lm)	% of Nominal	Efficacy (lm/W)
Luminaire	230.0	136.3	0.959	30.1	31.3	1,793	75%	59.7
Lamp	230.0	147.4	0.966	32.8	33.9	1,094	91%	33.4
Lamp 2	230.0	146.7	0.965	32.6	33.8	1,125	94%	34.5
Lamp Average	230.0	147.1	0.966	32.7	33.8	1,109	92%	34.0
Lamp Total	230.0	147.1	0.966	32.7	33.8	2,219	92%	67.9

Electrical characteristics at 25°C

Ballast Nominal	230V	156.5mA	0.98PF	35.3W	36.0VA
Lamp Nominal	230V	121.7mA	1.00PF	28.0W	28.0VA
Luminaire	230V	136.3mA	0.96PF	30.1W	31.3VA
Lamp Total	230V	147.1mA	0.97PF	32.7W	33.8VA

Measured Electrical characteristics relative to Ballast Nominal

Luminaire	Current	87%	Power	85%	VA	87%
Lamp Total	Current	94%	Power	93%	VA	94%

Measured Electrical characteristics relative to Lamp Nominal

Luminaire	Current	112%	Power	107%	VA	112%
Lamp Total	Current	121%	Power	117%	VA	121%

Lumen Output figures used in this report (lumens)

Nominal Lamp Total Output	2,400
Measured Luminaire Output	1,793
Measured Lamp Total Output	2,219

Measured Lumen Output characteristics relative to Lamp Nominal Total

Luminaire	75%
Lamp Total	92%

Measured luminous efficacy at 25°C

Luminaire	59.7 lm/W
Lamp Total	67.9 lm/W

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Lamp lumen output	1,200 lm
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The light output ratio of the luminaire was measured as 0.808 at 25°C.
This is the ratio of the output of the luminaire to the output of the sum of the lamps.

The measured lumen output of the luminaire was 1,793 lumens at 25°C.
This figure can be related to the total nominal lumen output of the lamps quoted by the manufacturer of 2,400 ($2 * 1,200$) lumens, to give a nominal light output ratio of 0.747.

The total measured lumen output of the lamps and gear combination and gear combination was 2,219 lumens at 25°C.
The average of the measured lumen output of the lamps was therefore 1,109 lumens at 25°C.
This figure can be related to the total nominal lumen output of the lamps quoted by the manufacturer of 2,400 ($2 * 1,200$) lumens, to give a nominal BLF of 0.924.

For lighting design calculations:

A light output ratio of 1 should be used in conjunction with the measured lumen output of the luminaire of 1,793 lumens.

or

The nominal light output ratio of 0.747 should be used in conjunction with the nominal lumen output of the lamps of 2,400 ($2 * 1,200$) lumens.

or

The measured light output ratio of 0.808 should be used in conjunction with the total measured lumen output of the lamps of 2,219 ($2 * 1,109$) lumens.

or

The measured light output ratio of 0.808 should be used in conjunction with the nominal lumen output of the lamps of 2,400 ($2 * 1,200$) lumens and the nominal BLF of 0.924.

This report is based on the following parameters:

The Light Output Ratio is the nominal value of 0.747.

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

There are 2 lamps 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 lamps 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 from the published lumen output, represented by the nominal BLF.

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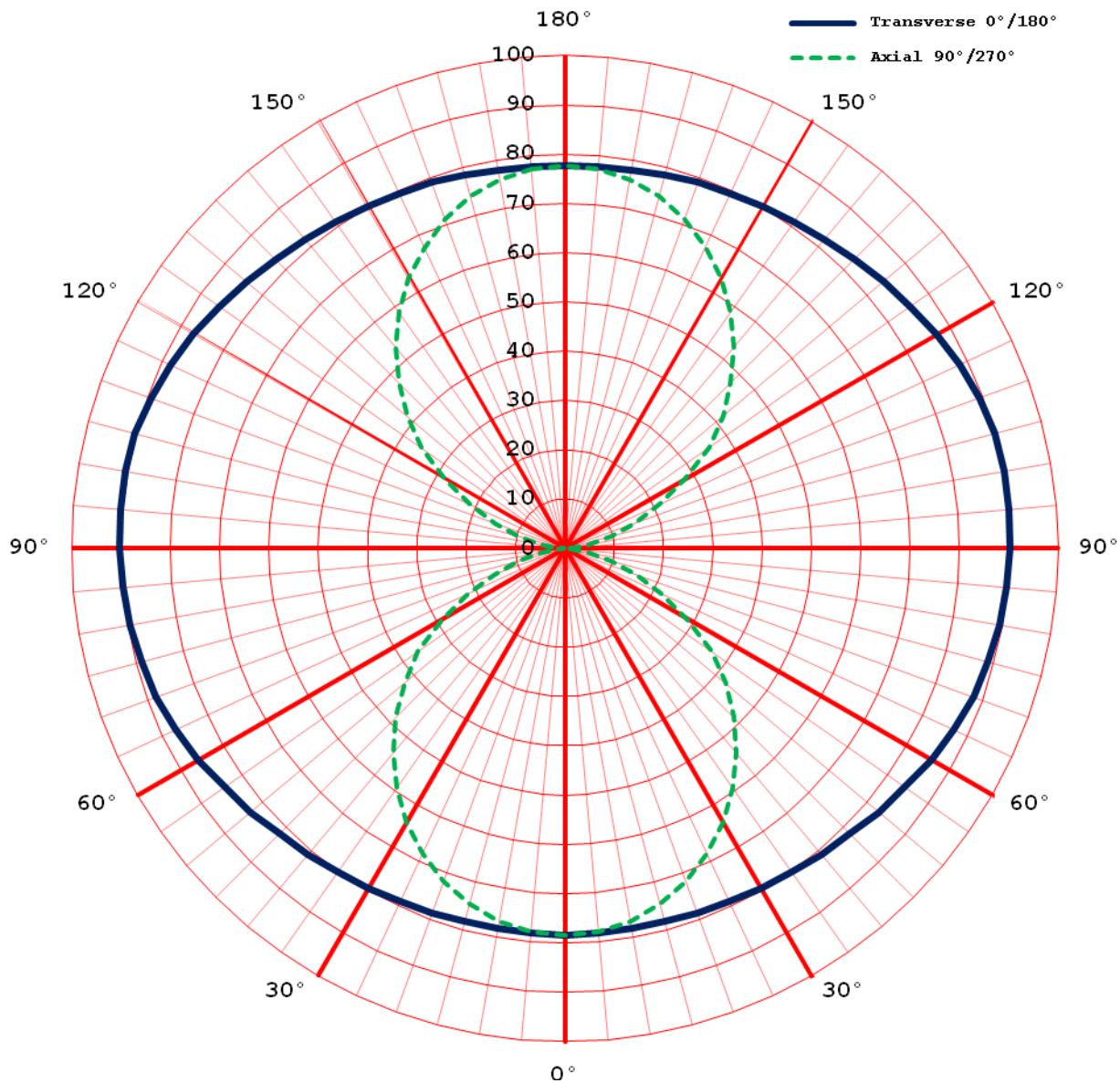
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Lamps quantity

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Average Principal Axes Luminous Intensities (cd/klm)



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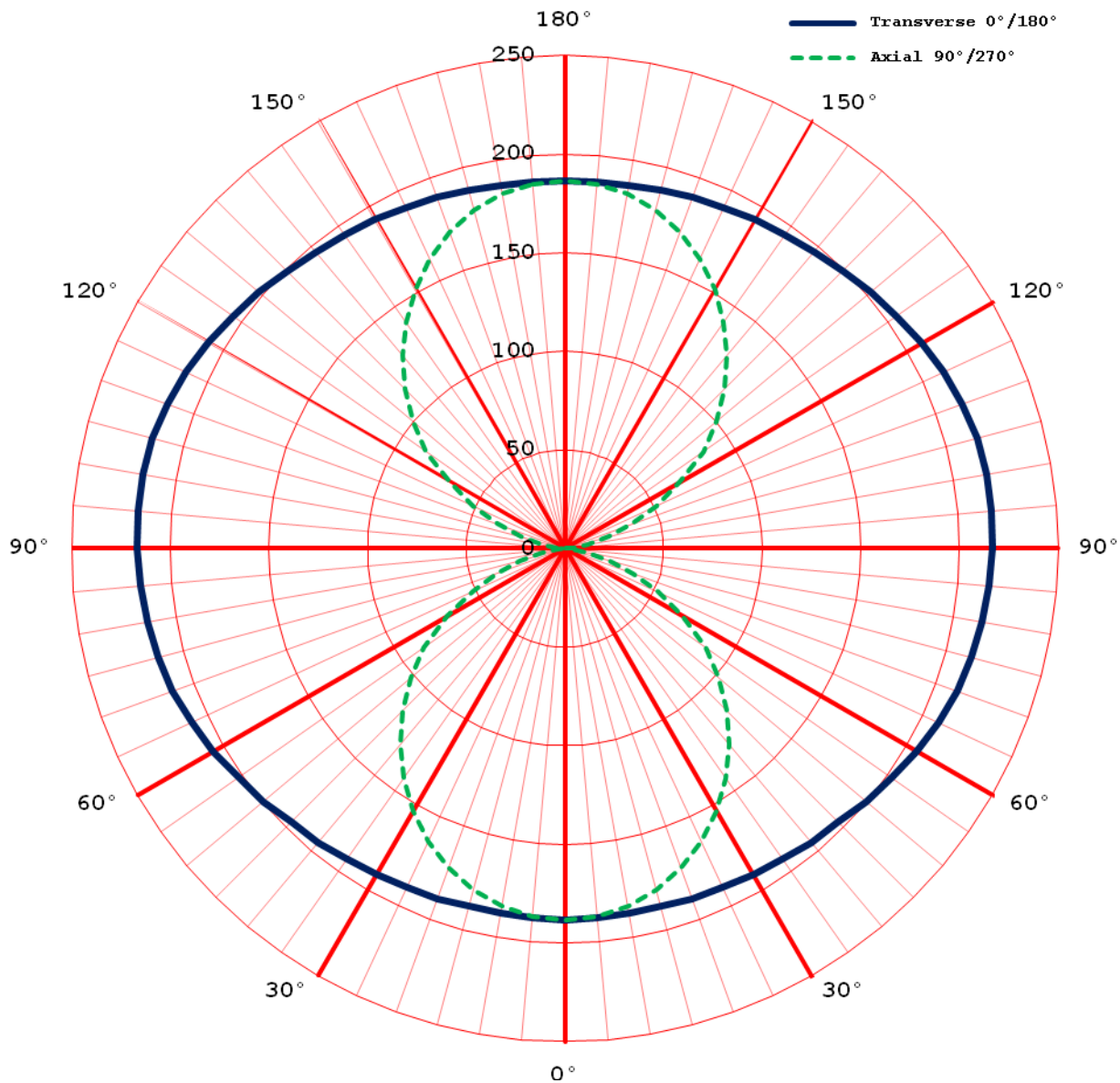
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Lamps quantity

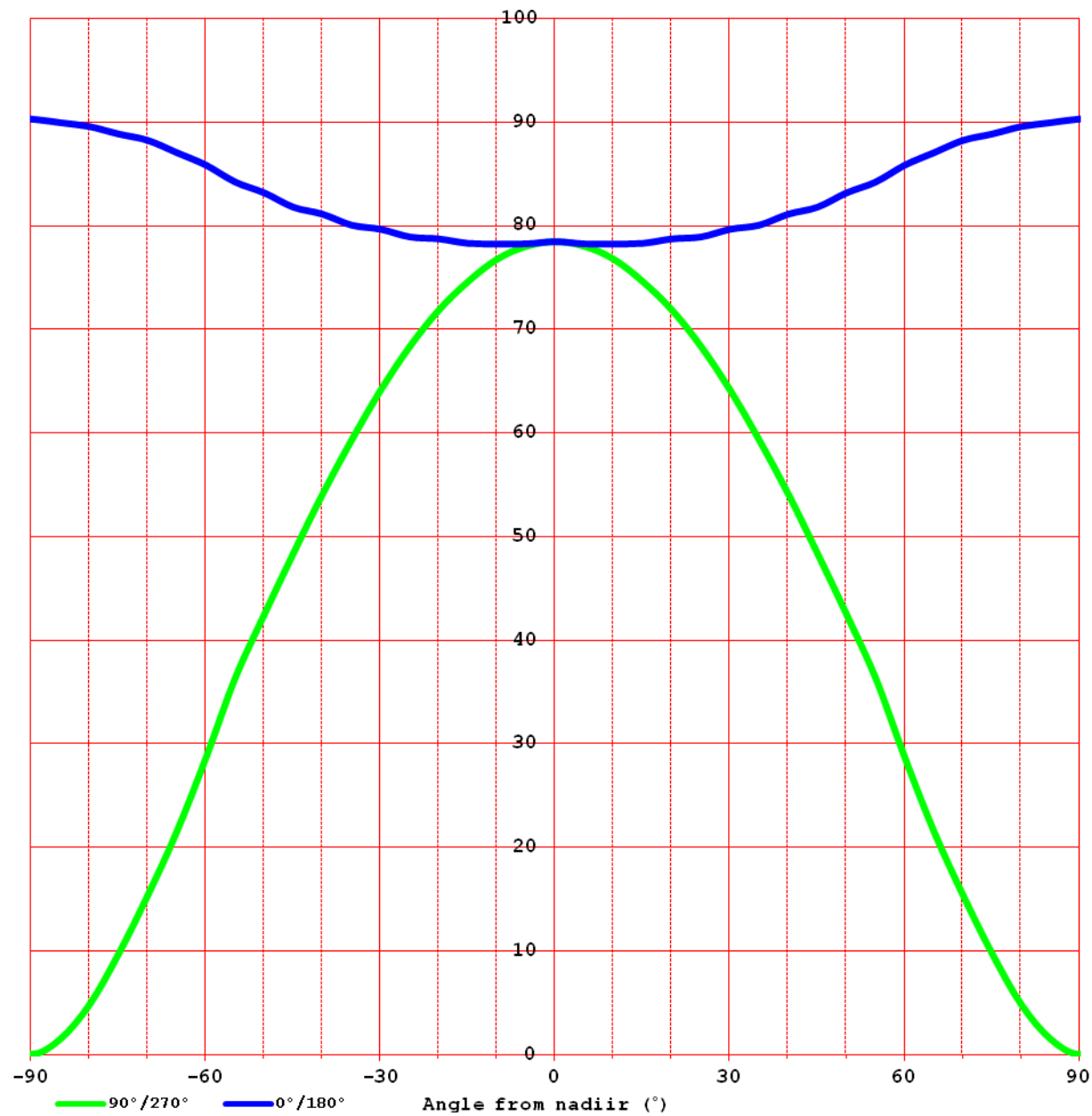
2

Average Principal Axes Luminous Intensities (cd)



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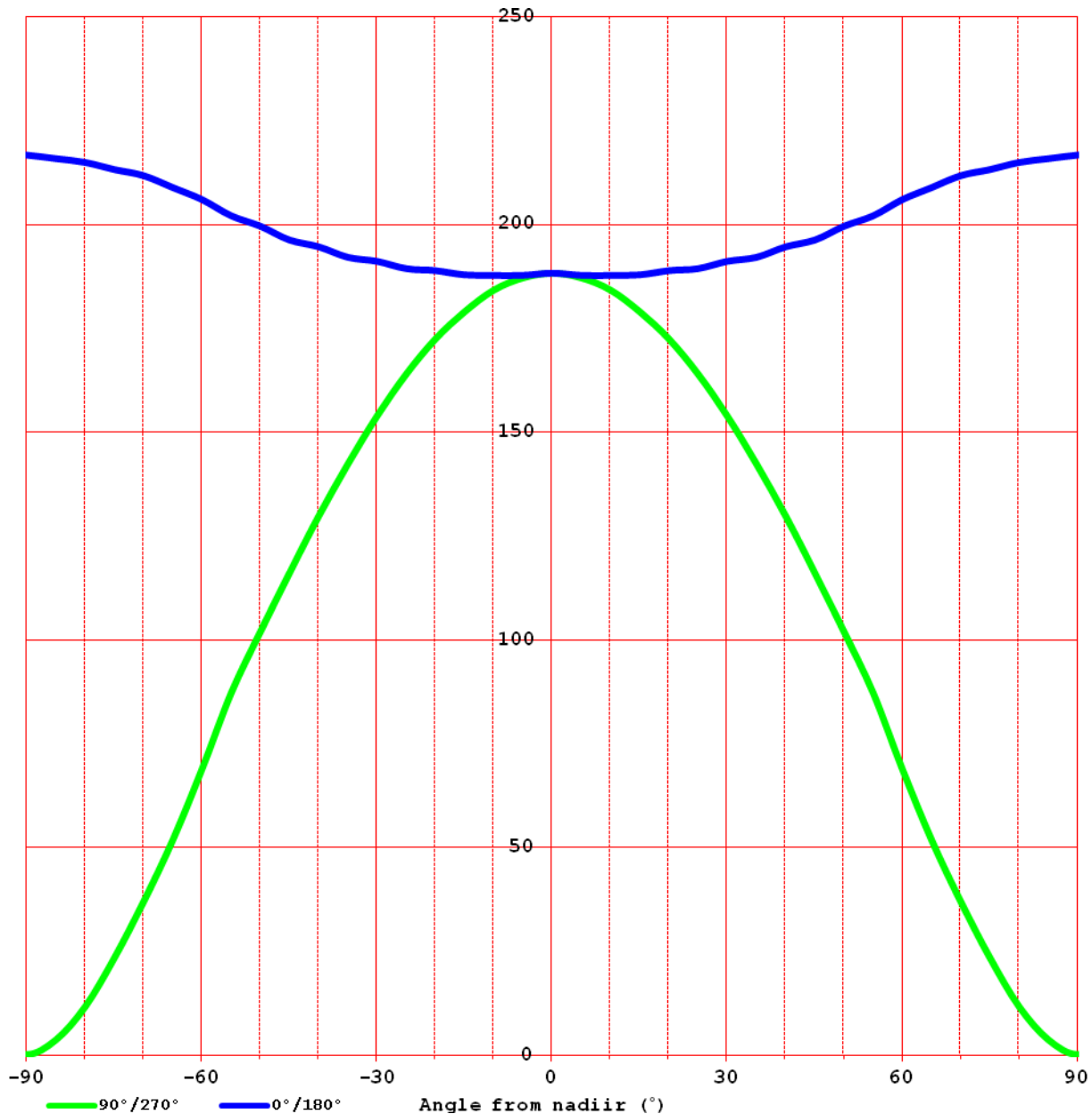
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Average Luminous Intensities (cd/Klm)

Angle	Transverse plane	Axial plane
0°	78.430	78.430
5°	78.211	77.976
10°	78.200	76.744
15°	78.264	74.583
20°	78.690	71.843
25°	78.885	68.321
30°	79.619	64.112
35°	80.021	59.294
40°	81.079	54.076
45°	81.756	48.369
50°	83.140	42.462
55°	84.191	36.320
60°	85.815	28.671
65°	87.015	21.561
70°	88.211	15.380
75°	88.820	9.748
80°	89.543	4.849
85°	89.919	1.527
90°	90.280	0.044
95°	90.480	1.580
100°	90.507	4.848
105°	90.186	9.628
110°	89.386	15.111
115°	88.221	21.328
120°	86.980	28.147
125°	85.517	35.651
130°	84.279	41.822
135°	82.855	47.572
140°	81.881	53.260
145°	80.819	58.486
150°	80.170	63.282
155°	79.397	67.426
160°	79.002	71.112
165°	78.386	73.916
170°	77.848	76.021
175°	77.671	77.297
180°	77.732	77.732

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Average Luminous Intensities (cd)

Angle	Transverse plane	Axial plane
0°	188.233	188.233
5°	187.706	187.143
10°	187.680	184.186
15°	187.835	178.999
20°	188.856	172.423
25°	189.324	163.969
30°	191.086	153.870
35°	192.051	142.306
40°	194.589	129.782
45°	196.215	116.085
50°	199.536	101.908
55°	202.058	87.167
60°	205.955	68.810
65°	208.837	51.746
70°	211.706	36.912
75°	213.168	23.395
80°	214.902	11.638
85°	215.806	3.665
90°	216.671	0.106
95°	217.151	3.792
100°	217.217	11.635
105°	216.448	23.106
110°	214.525	36.267
115°	211.730	51.187
120°	208.751	67.553
125°	205.242	85.561
130°	202.269	100.374
135°	198.852	114.172
140°	196.514	127.825
145°	193.966	140.367
150°	192.409	151.878
155°	190.552	161.821
160°	189.605	170.669
165°	188.125	177.398
170°	186.836	182.450
175°	186.411	185.513
180°	186.557	186.557

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Light Output Ratios	Up	0.37
	Down	0.38
	Total	0.75

Spacing to Height Ratios	SHR NOM	1.75
	SHR MAX	1.89
	SHR MAX TRANS	2.61

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	.37	.41	.45	.50	.53	.56	.59	.62	
	.30		N/A	.31	.36	.39	.45	.49	.52	.56	.58	
	.10		N/A	.27	.31	.35	.41	.45	.48	.52	.56	
.50	.50	.20	N/A	.31	.35	.38	.42	.45	.47	.50	.52	
	.30		N/A	.27	.31	.34	.38	.41	.44	.47	.49	
	.10		N/A	.23	.27	.30	.35	.38	.41	.45	.47	
.30	.50	.20	N/A	.26	.29	.31	.35	.37	.39	.41	.43	
	.30		N/A	.22	.26	.28	.32	.34	.36	.39	.41	
	.10		N/A	.20	.23	.25	.29	.32	.34	.37	.39	
.00	.00	.00	N/A	.14	.16	.18	.20	.22	.24	.26	.28	
BZ Class			N/A	6	7	7	7	7	7	7	7	

CIE Flux code 30 / 56 / 79 / 50 / 75

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	0.26	0.32	0.38	0.43	0.51	0.57	0.60	0.65	0.66	0.68	0.65					
CIE class	8	/	8	/	8	/	8	/	8	/	9	/	9	/	-	/	-

Flux Fraction Ratio 0.98
DIN Class 0.75 C

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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Lamps quantity

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Angle

Aspect Factors

	Parallel plane	Perpendicular plane
0°	0.000	0.000
5°	0.087	0.004
10°	0.172	0.015
15°	0.254	0.033
20°	0.332	0.058
25°	0.404	0.088
30°	0.469	0.122
35°	0.527	0.158
40°	0.577	0.197
45°	0.619	0.235
50°	0.653	0.273
55°	0.680	0.307
60°	0.700	0.338
65°	0.712	0.363
70°	0.720	0.382
75°	0.724	0.395
80°	0.726	0.403
85°	0.727	0.406
90°	0.727	0.407

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Zonal Flux Calculations

Angles	Individual	Cumulative
0° - 5°	0.3%	0.3%
5° - 10°	0.7%	1.0%
10° - 15°	1.2%	2.2%
15° - 20°	1.7%	3.9%
20° - 25°	2.1%	6.0%
25° - 30°	2.5%	8.5%
30° - 35°	2.8%	11.3%
35° - 40°	3.1%	14.3%
40° - 45°	3.3%	17.6%
45° - 50°	3.5%	21.1%
50° - 55°	3.6%	24.8%
55° - 60°	3.7%	28.4%
60° - 65°	3.7%	32.2%
65° - 70°	3.7%	35.9%
70° - 75°	3.7%	39.6%
75° - 80°	3.7%	43.2%
80° - 85°	3.6%	46.8%
85° - 90°	3.6%	50.4%
90° - 95°	3.5%	53.9%
95° - 100°	3.6%	57.5%
100° - 105°	3.6%	61.1%
105° - 110°	3.6%	64.7%
110° - 115°	3.6%	68.4%
115° - 120°	3.6%	72.0%
120° - 125°	3.6%	75.6%
125° - 130°	3.5%	79.2%
130° - 135°	3.4%	82.6%
135° - 140°	3.3%	85.8%
140° - 145°	3.0%	88.9%
145° - 150°	2.8%	91.6%
150° - 155°	2.4%	94.1%
155° - 160°	2.1%	96.1%
160° - 165°	1.7%	97.8%
165° - 170°	1.2%	99.0%
170° - 175°	0.7%	99.8%
175° - 180°	0.2%	100.0%

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Averaged Luminance Values (cd/m²)

Elevation(°)

Azimuth(°)

	0.0°	15.0°	30.0°	45.0°	60.0°	75.0°	90.0°
45°	3497	3344	3341	3186	3075	3148	3695
50°	3570	3395	3359	3136	2947	2947	3496
55°	3657	3434	3394	3102	2819	2726	3270
60°	3800	3524	3454	3088	2683	2426	2872
65°	3961	3620	3538	3112	2591	2160	2454
70°	4163	3791	3667	3173	2548	1950	2046
75°	4387	3978	3830	3275	2528	1762	1574
80°	4676	4210	4026	3430	2558	1628	1005
85°	5021	4486	4279	3661	2687	1516	447
	90.0°	105.0°	120.0°	135.0°	150.0°	165.0°	180.0°
45°	3695	3148	3075	3186	3341	3344	3497
50°	3496	2947	2947	3136	3359	3395	3570
55°	3270	2726	2819	3102	3394	3434	3657
60°	2872	2426	2683	3088	3454	3524	3800
65°	2454	2160	2591	3112	3538	3620	3961
70°	2046	1950	2548	3173	3667	3791	4163
75°	1574	1762	2528	3275	3830	3978	4387
80°	1005	1628	2558	3430	4026	4210	4676
85°	447	1516	2687	3661	4279	4486	5021
	180.0°	195.0°	210.0°	225.0°	240.0°	255.0°	270.0°
45°	3497	3344	3341	3186	3075	3148	3695
50°	3570	3395	3359	3136	2947	2947	3496
55°	3657	3434	3394	3102	2819	2726	3270
60°	3800	3524	3454	3088	2683	2426	2872
65°	3961	3620	3538	3112	2591	2160	2454
70°	4163	3791	3667	3173	2548	1950	2046
75°	4387	3978	3830	3275	2528	1762	1574
80°	4676	4210	4026	3430	2558	1628	1005
85°	5021	4486	4279	3661	2687	1516	447
	270.0°	285.0°	300.0°	315.0°	330.0°	345.0°	0.0°
45°	3695	3148	3075	3186	3341	3344	3497
50°	3496	2947	2947	3136	3359	3395	3570
55°	3270	2726	2819	3102	3394	3434	3657
60°	2872	2426	2683	3088	3454	3524	3800
65°	2454	2160	2591	3112	3538	3620	3961
70°	2046	1950	2548	3173	3667	3791	4163
75°	1574	1762	2528	3275	3830	3978	4387
80°	1005	1628	2558	3430	4026	4210	4676
85°	447	1516	2687	3661	4279	4486	5021

Customer Encapsulite International Ltd.
 Luminaire catalog No. MT360/SC/14W
 Luminaire description linear IP67 twin T5 fluorescent Direct/Indirect luminaire
 with satin cover
 Lamp description HE 14W/840 OSRAM Lumilux Cool White
 Lamp lumen output 1,200 lm
 Lamps quantity 2

Non averaged Luminance Values (cd/m²)

Elevation(°)	Azimuth(°)						
	0.0°	15.0°	30.0°	45.0°	60.0°	75.0°	90.0°
45°	3341	3197	3214	3082	3007	3111	3696
50°	3395	3229	3218	3026	2871	2915	3496
55°	3474	3263	3248	2986	2732	2695	3265
60°	3628	3389	3330	2980	2620	2400	2870
65°	3812	3533	3451	3012	2536	2157	2444
70°	4045	3743	3616	3089	2495	1949	2052
75°	4293	3963	3809	3205	2479	1772	1575
80°	4595	4252	4052	3378	2521	1604	1021
85°	4939	4565	4340	3621	2659	1485	458
	90.0°	105.0°	120.0°	135.0°	150.0°	165.0°	180.0°
45°	3696	3205	3162	3309	3492	3505	3653
50°	3496	3005	3037	3273	3524	3577	3745
55°	3265	2788	2915	3253	3568	3626	3839
60°	2870	2486	2767	3233	3612	3683	3972
65°	2444	2197	2667	3246	3676	3732	4110
70°	2052	1983	2621	3289	3778	3860	4281
75°	1575	1792	2593	3368	3926	4009	4481
80°	1021	1673	2610	3502	4078	4200	4756
85°	458	1562	2728	3724	4298	4458	5103
	180.0°	195.0°	210.0°	225.0°	240.0°	255.0°	270.0°
45°	3653	3475	3459	3266	3131	3161	3693
50°	3745	3543	3489	3224	3004	2958	3496
55°	3839	3589	3537	3191	2876	2736	3275
60°	3972	3662	3589	3171	2724	2432	2874
65°	4110	3721	3655	3186	2621	2156	2465
70°	4281	3867	3762	3230	2573	1934	2040
75°	4481	4026	3900	3311	2545	1743	1572
80°	4756	4251	4090	3454	2570	1621	989
85°	5103	4527	4345	3682	2701	1520	435
	270.0°	285.0°	300.0°	315.0°	330.0°	345.0°	0.0°
45°	3693	3116	2999	3086	3200	3200	3341
50°	3496	2907	2875	3022	3204	3229	3395
55°	3275	2686	2752	2978	3223	3258	3474
60°	2874	2385	2622	2969	3283	3361	3628
65°	2465	2129	2541	3004	3372	3496	3812
70°	2040	1933	2505	3086	3514	3695	4045
75°	1572	1741	2495	3216	3687	3913	4293
80°	989	1613	2532	3384	3883	4137	4595
85°	435	1497	2661	3619	4135	4394	4939

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 Lamp description HE 14W/840 OSRAM Lumilux Cool White
 Lamp lumen output 1,200 lm
 Lamps quantity 2

Averaged Luminance Values (cd/m²/klm)

Elevation(°)

Azimuth(°)

	0.0°	15.0°	30.0°	45.0°	60.0°	75.0°	90.0°
45°	1457	1393	1392	1327	1281	1312	1539
50°	1487	1414	1399	1307	1228	1228	1457
55°	1524	1431	1414	1293	1175	1136	1363
60°	1583	1468	1439	1287	1118	1011	1197
65°	1650	1509	1474	1297	1080	900	1023
70°	1735	1580	1528	1322	1062	812	852
75°	1828	1657	1596	1365	1053	734	656
80°	1948	1754	1677	1429	1066	678	419
85°	2092	1869	1783	1526	1120	632	186
	90.0°	105.0°	120.0°	135.0°	150.0°	165.0°	180.0°
45°	1539	1312	1281	1327	1392	1393	1457
50°	1457	1228	1228	1307	1399	1414	1487
55°	1363	1136	1175	1293	1414	1431	1524
60°	1197	1011	1118	1287	1439	1468	1583
65°	1023	900	1080	1297	1474	1509	1650
70°	852	812	1062	1322	1528	1580	1735
75°	656	734	1053	1365	1596	1657	1828
80°	419	678	1066	1429	1677	1754	1948
85°	186	632	1120	1526	1783	1869	2092
	180.0°	195.0°	210.0°	225.0°	240.0°	255.0°	270.0°
45°	1457	1393	1392	1327	1281	1312	1539
50°	1487	1414	1399	1307	1228	1228	1457
55°	1524	1431	1414	1293	1175	1136	1362
60°	1583	1468	1439	1287	1118	1011	1197
65°	1650	1509	1474	1297	1080	900	1023
70°	1735	1580	1528	1322	1062	812	852
75°	1828	1657	1596	1365	1053	734	656
80°	1948	1754	1677	1429	1066	678	419
85°	2092	1869	1783	1526	1120	632	186
	270.0°	285.0°	300.0°	315.0°	330.0°	345.0°	0.0°
45°	1539	1312	1281	1327	1392	1393	1457
50°	1457	1228	1228	1307	1399	1414	1487
55°	1362	1136	1175	1293	1414	1431	1524
60°	1197	1011	1118	1287	1439	1468	1583
65°	1023	900	1080	1297	1474	1509	1650
70°	852	812	1062	1322	1528	1580	1735
75°	656	734	1053	1365	1596	1657	1828
80°	419	678	1066	1429	1677	1754	1948
85°	186	632	1120	1526	1783	1869	2092

Customer Encapsulite International Ltd.
 Luminaire catalog No. MT360/SC/14W
 Luminaire description linear IP67 twin T5 fluorescent Direct/Indirect luminaire with satin cover
 Lamp description HE 14W/840 OSRAM Lumilux Cool White
 Lamp lumen output 1,200 lm
 Lamps quantity 2

Non averaged Luminance Values (cd/m²/klm)

Elevation(°)

Azimuth(°)

	0.0°	15.0°	30.0°	45.0°	60.0°	75.0°	90.0°
45°	1392	1332	1339	1284	1253	1296	1540
50°	1415	1345	1341	1261	1196	1215	1457
55°	1448	1359	1353	1244	1138	1123	1360
60°	1512	1412	1387	1242	1092	1000	1196
65°	1588	1472	1438	1255	1057	899	1018
70°	1685	1560	1506	1287	1040	812	855
75°	1789	1651	1587	1336	1033	738	656
80°	1915	1772	1688	1408	1051	668	425
85°	2058	1902	1808	1509	1108	619	191
	90.0°	105.0°	120.0°	135.0°	150.0°	165.0°	180.0°
45°	1540	1336	1318	1379	1455	1461	1522
50°	1457	1252	1265	1364	1468	1490	1560
55°	1360	1162	1215	1355	1487	1511	1600
60°	1196	1036	1153	1347	1505	1535	1655
65°	1018	916	1111	1352	1532	1555	1713
70°	855	826	1092	1371	1574	1608	1784
75°	656	747	1081	1403	1636	1670	1867
80°	425	697	1088	1459	1699	1750	1982
85°	191	651	1137	1552	1791	1858	2126
	180.0°	195.0°	210.0°	225.0°	240.0°	255.0°	270.0°
45°	1522	1448	1441	1361	1304	1317	1539
50°	1560	1476	1454	1343	1252	1233	1457
55°	1600	1495	1474	1330	1199	1140	1365
60°	1655	1526	1496	1321	1135	1013	1197
65°	1713	1550	1523	1327	1092	898	1027
70°	1784	1611	1567	1346	1072	806	850
75°	1867	1678	1625	1379	1060	726	655
80°	1982	1771	1704	1439	1071	675	412
85°	2126	1886	1810	1534	1126	633	181
	270.0°	285.0°	300.0°	315.0°	330.0°	345.0°	0.0°
45°	1539	1298	1250	1286	1333	1333	1392
50°	1457	1211	1198	1259	1335	1345	1415
55°	1365	1119	1147	1241	1343	1358	1448
60°	1197	994	1092	1237	1368	1400	1512
65°	1027	887	1059	1252	1405	1457	1588
70°	850	805	1044	1286	1464	1540	1685
75°	655	726	1039	1340	1536	1631	1789
80°	412	672	1055	1410	1618	1724	1915
85°	181	624	1109	1508	1723	1831	2058

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Customer Encapsulite International Ltd.
Luminaire catalog No. MT360/SC/14W
Luminaire description linear IP67 twin T5 fluorescent Direct/Indirect luminaire
with satin cover
Lamp description HE 14W/840 OSRAM Lumilux Cool White
Lamp lumen output 1,200 lm
Lamps quantity 2

Maximum Non averaged Luminance Values (cd/m²)

Elevation(°)

Maximum Azimuth Angle

45°	3696	90°
50°	3745	180°
55°	3839	180°
60°	3972	180°
65°	4110	180°
70°	4281	180°
75°	4481	180°
80°	4756	180°
85°	5103	180°

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Lamp lumen output 1,200 lm
Lamps quantity 2

VDI 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

VDI 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

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Customer

Encapsulite International Ltd.

Luminaire catalog No.

MT360/SC/14W

Luminaire description

linear IP67 twin T5 fluorescent Direct/Indirect luminaire
with satin cover

Lamp description

HE 14W/840 OSRAM Lumilux Cool White

Lamp lumen output

1,200 lm

Lamps quantity

2

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°

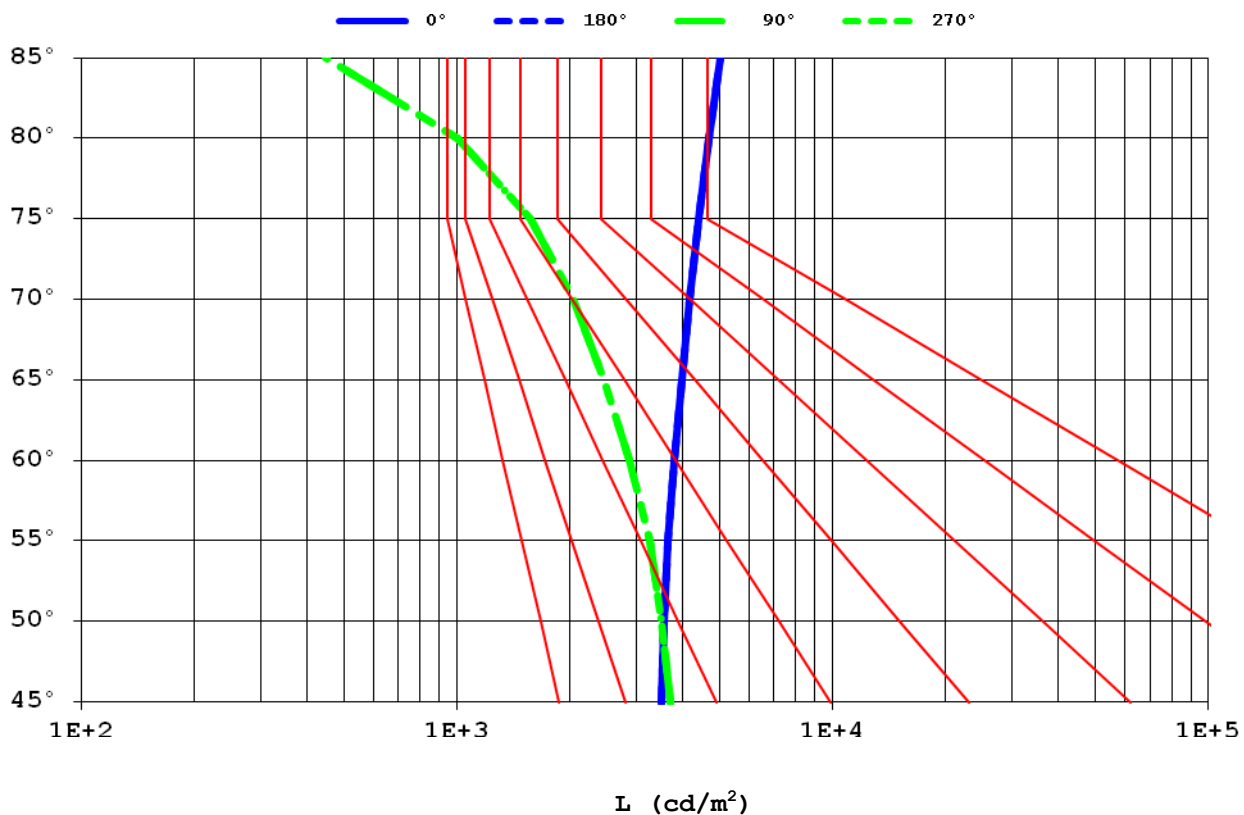
2H 2H	10.0	11.2	11.1	12.4	14.0	5.6	6.8	6.7	8.0	9.5
3H	13.6	14.7	14.8	15.9	17.5	7.3	8.5	8.5	9.7	11.3
4H	15.4	16.4	16.6	17.7	19.3	8.0	9.0	9.1	10.2	11.8
6H	17.3	18.3	18.5	19.6	21.2	8.4	9.4	9.6	10.6	12.3
8H	18.3	19.3	19.5	20.5	22.1	8.5	9.5	9.7	10.7	12.3
12H	19.3	20.3	20.5	21.5	23.1	8.5	9.5	9.7	10.7	12.3
4H 2H	10.8	11.9	12.0	13.1	14.7	7.9	9.0	9.1	10.2	11.8
3H	14.8	15.7	16.0	16.9	18.6	10.0	11.0	11.2	12.2	13.8
4H	16.9	17.7	18.1	19.0	20.6	10.9	11.8	12.2	13.0	14.7
6H	19.0	19.8	20.2	21.0	22.7	11.6	12.4	12.8	13.6	15.3
8H	20.1	20.8	21.4	22.1	23.8	11.8	12.6	13.1	13.8	15.5
12H	21.4	22.0	22.6	23.3	25.0	12.0	12.7	13.3	13.9	15.6
8H 4H	17.4	18.2	18.7	19.4	21.1	13.4	14.2	14.7	15.4	17.1
6H	19.9	20.5	21.1	21.8	23.5	14.4	15.0	15.7	16.3	18.0
8H	21.3	21.9	22.6	23.2	24.9	14.9	15.5	16.2	16.8	18.4
12H	22.8	23.3	24.1	24.6	26.2	15.2	15.7	16.5	17.0	18.7
12H 4H	17.5	18.2	18.8	19.5	21.2	14.5	15.2	15.8	16.5	18.2
6H	20.2	20.7	21.4	22.0	23.7	15.8	16.4	17.1	17.7	19.4
8H	21.6	22.1	22.9	23.4	25.1	16.4	16.9	17.7	18.2	19.9

Calculated in accordance with CIBSE Technical Memorandum No. 10 1985

Customer Encapsulite International Ltd.
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Luminaire description linear IP67 twin T5 fluorescent Direct/Indirect luminaire
with satin cover
Lamp description HE 14W/840 OSRAM Lumilux Cool White
Lamp lumen output 1,200 lm
Lamps quantity 2

CIE Glare Limiting (Soellnor) Diagram

Glare Rating	Quality 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 catalog No.	MT360/SC/14W
Luminaire description	linear IP67 twin T5 fluorescent Direct/Indirect luminaire with satin cover
Lamp description	HE 14W/840 OSRAM Lumilux Cool White
Lamp lumen output	1,200 lm
Lamps quantity	2

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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with satin cover
Lamp description HE 14W/840 OSRAM Lumilux Cool White
Lamp lumen output 1,200 lm
Lamps quantity 2

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	2.0	3.0	4.0	5.0	8.0	9.9	19.9	29.8	49.7