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Registered in England: Company Number 3021552
VAT Registration Number: GB 661 1596 34

# Photometric Report

| | |
|---|---|
| **Job / Report / Date** | **42 / 10692 / 10692-20a / 2013.06.17** |
| **Customer** | **Encapsulite International Ltd.** |
| **Luminaire Range** | **MT70 IP68** |
| **Luminaire catalog No.** | **MT70 SC 30W** |
| **Luminaire description** | **linear cylindrical luminaire<br>with opal cover<br>data derived from range test series** |
| **Source description** | **30W/840 L Osram** |
| **Source lumen output** | **2,400 lm** |
| **Source quantity** | **1** |

**Photometric Report**

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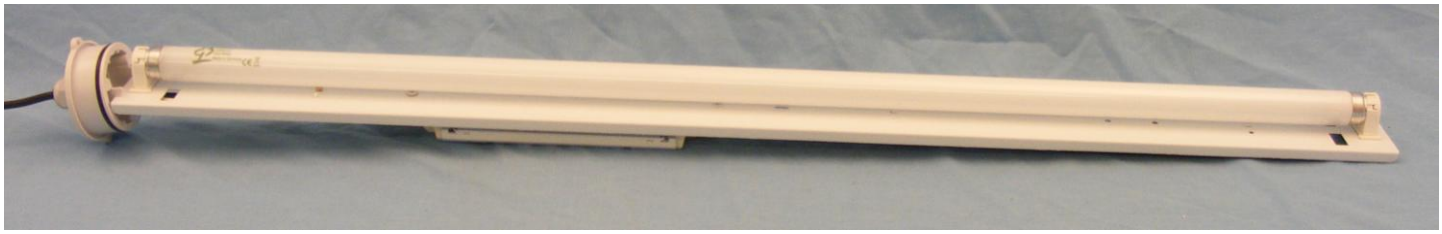

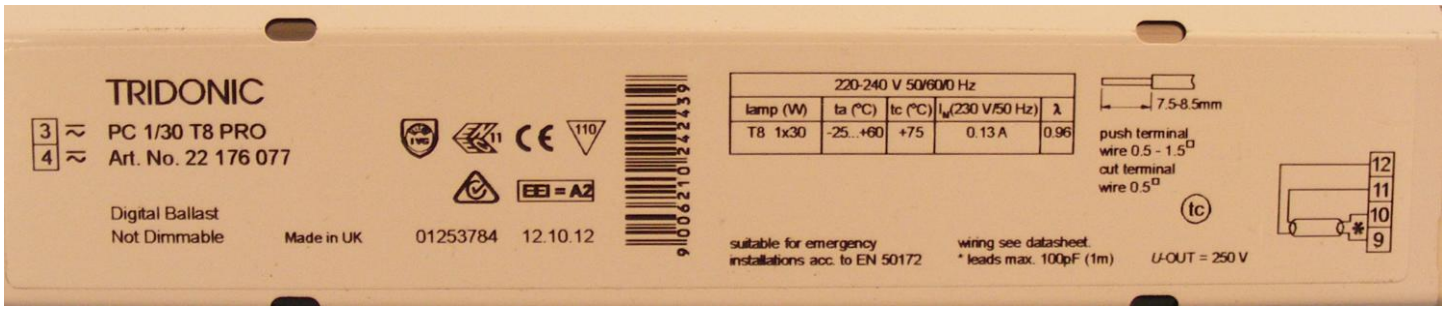


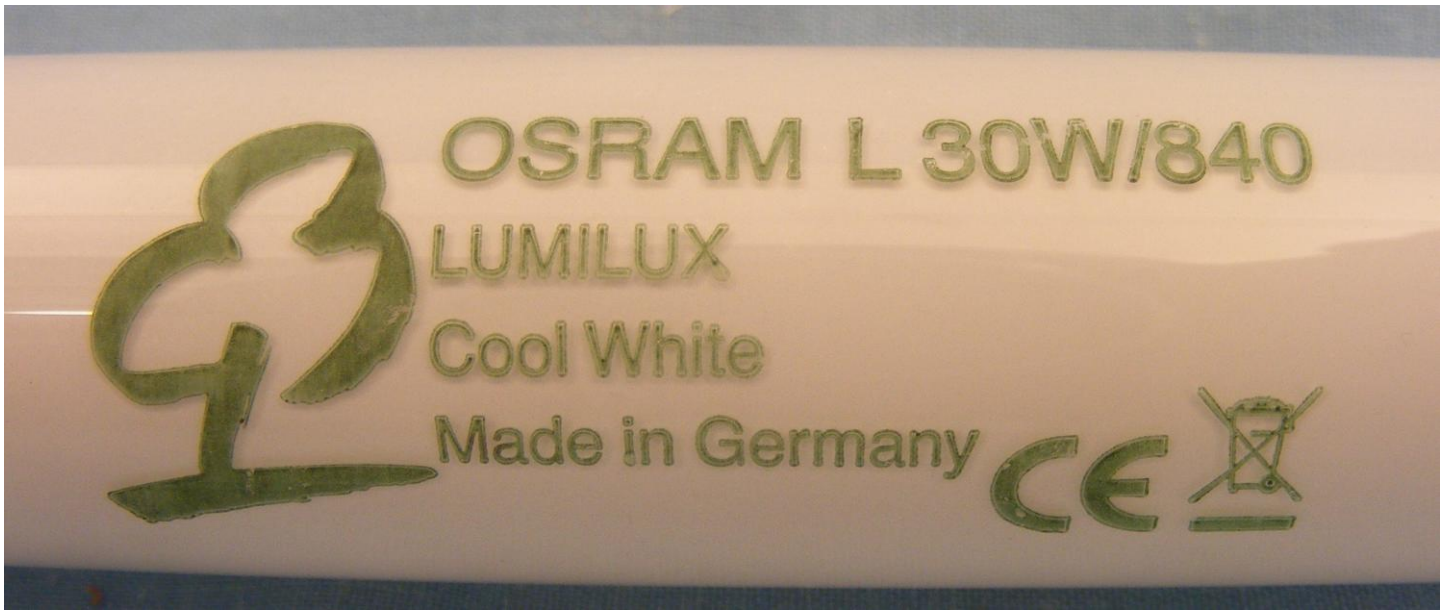

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**Luminaire physical characteristics**

**Overall Dimensions**

| | |
|---|---|
| **Length** | **1008mm** |
| **Width** | **70mm** |
| **Height** | **70mm** |

**Visible Dimensions when installed**

| | |
|---|---|
| **Length** | **1008mm** |
| **Width** | **70mm** |
| **Height** | **70mm** |

**Luminous Dimensions**

| | |
|---|---|
| **Length** | **942mm** |
| **Width** | **70mm** |
| **Height 0°** | **35mm** |
| **Height 90°** | **0mm** |
| **Height 180°** | **35mm** |
| **Height 270°** | **0mm** |

**Luminous Areas**

| | |
|---|---|
| **Base** | **0.06594$m^2$** |
| **Sides** | **0.03297$m^2$ ( 0°/180° azimuth)** |
| **Ends** | **0$m^2$ (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 no planes of symmetry.**

**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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| Source quantity | 1 |

## Electrical input & Photometric output characteristics

Control gear
1 * Tridonic PC 1/30 T8 PRO

| | |
|---|---|
| Ballast Voltage Range | 220-240V |
| Ballast Current Range | 0.13A |
| 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 | 125.2 | 0.960 | 27.6 | 28.8 | 1,656 | 69% | 59.9 |
| Lamp | 230.0 | 135.3 | 0.964 | 30.0 | 31.1 | 2,196 | 91% | 73.2 |

Electrical characteristics at 25°C

| | | | | | |
|---|---|---|---|---|---|
| Ballast Nominal | 230V | 130.0mA | 0.96PF | 28.7W | 29.9VA |
| Lamp Nominal | 230V | 130.4mA | 1.00PF | 30.0W | 30.0VA |
| Luminaire | 230V | 125.2mA | 0.96PF | 27.6W | 28.8VA |
| Lamp | 230V | 135.3mA | 0.96PF | 30.0W | 31.1VA |

Measured Electrical characteristics relative to Ballast Nominal

| | | | | | |
|---|---|---|---|---|---|
| Luminaire | Current | 96% | Power | 96% | VA 96% |
| Lamp | Current | 104% | Power | 104% | VA 104% |

Measured Electrical characteristics relative to Lamp Nominal

| | | | | | |
|---|---|---|---|---|---|
| Luminaire | Current | 96% | Power | 92% | VA 96% |
| Lamp | Current | 104% | Power | 100% | VA 104% |

Lumen Output figures used in this report (lumens)

| | |
|---|---|
| Nominal Lamp Output | 2,400 |
| Measured Luminaire Output | 1,656 |
| Measured Lamp Output | 2,196 |

Measured Lumen Output characteristics relative to Lamp Nominal Total

| | |
|---|---|
| Luminaire | 69% |
| Lamp | 91% |

Measured luminous efficacy at 25°C

| | |
|---|---|
| Luminaire | 59.9 lm/W |
| Lamp | 73.2 lm/W |

| | |
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The light output ratio of the luminaire was measured as 0.754 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 1,656 lumens at 25°C.
This figure can be related to the nominal lumen output of the lamp quoted by the manufacturer of 2,400 lumens, to give a nominal light output ratio of 0.690.

The measured lumen output of the lamp was 2,196 lumens at 25°C.
This figure can be related to the nominal lumen output of the lamp quoted by the manufacturer of 2,400 lumens, to give a nominal BLF of 0.915.

For lighting design calculations:
A light output ratio of 1 should be used in conjunction with the measured lumen output of the luminaire of 1,656 lumens.
or
The nominal light output ratio of 0.690 should be used in conjunction with the nominal lumen output of the lamp of 2,400 lumens.
or
The measured light output ratio of 0.754 should be used in conjunction with the measured lumen output of the lamp of 2,196 lumens.
or
The measured light output ratio of 0.754 should be used in conjunction with the nominal lumen output of the lamp of 2,400 lumens and the nominal BLF of 0.915.

This report is based on the following parameters:
- The Light Output Ratio is the nominal value of 0.690.
- The lamp output is the nominal value of 2,400 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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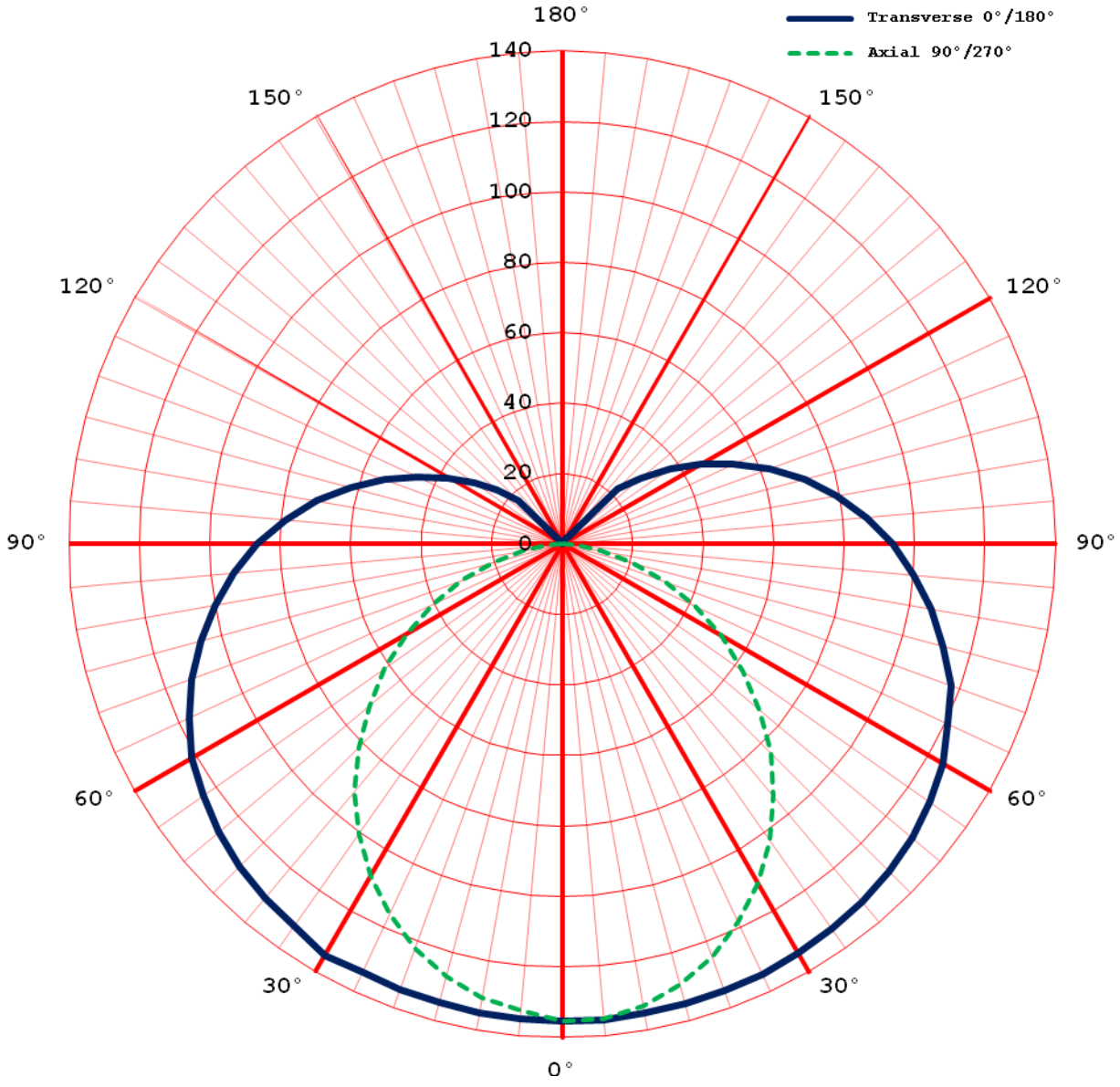
**Average Principal Axes Luminous Intensities (cd/klm)**



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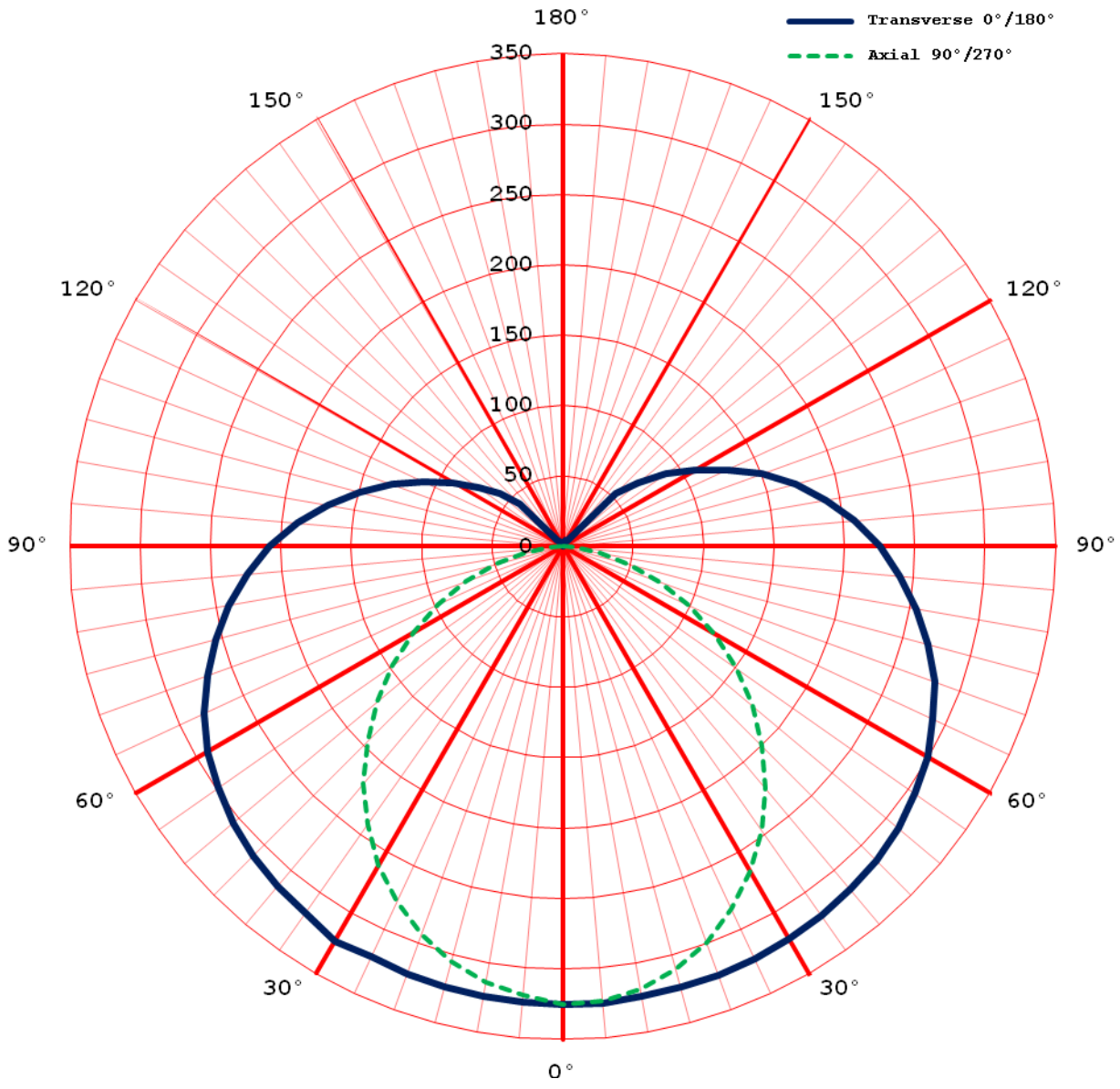

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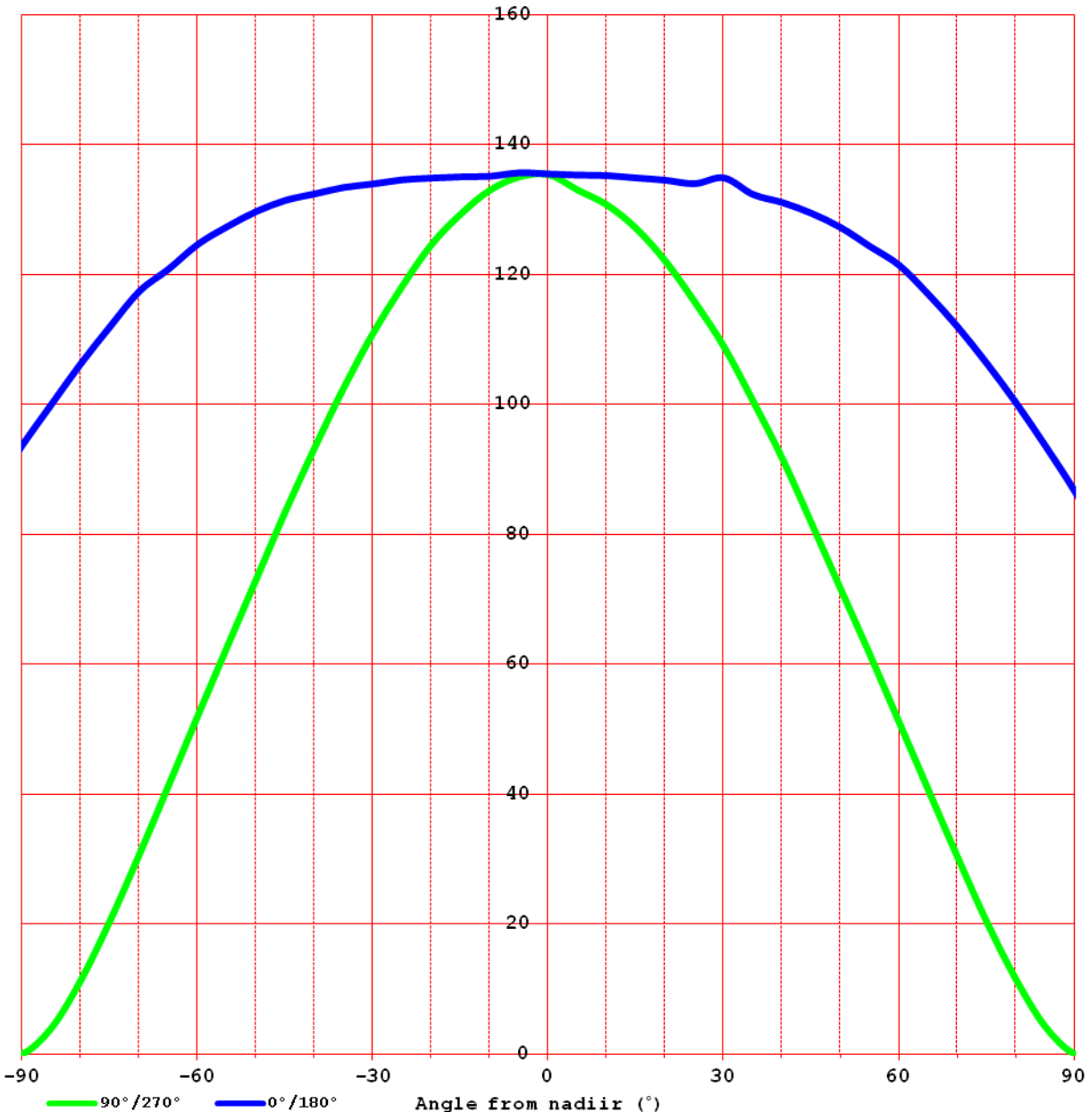

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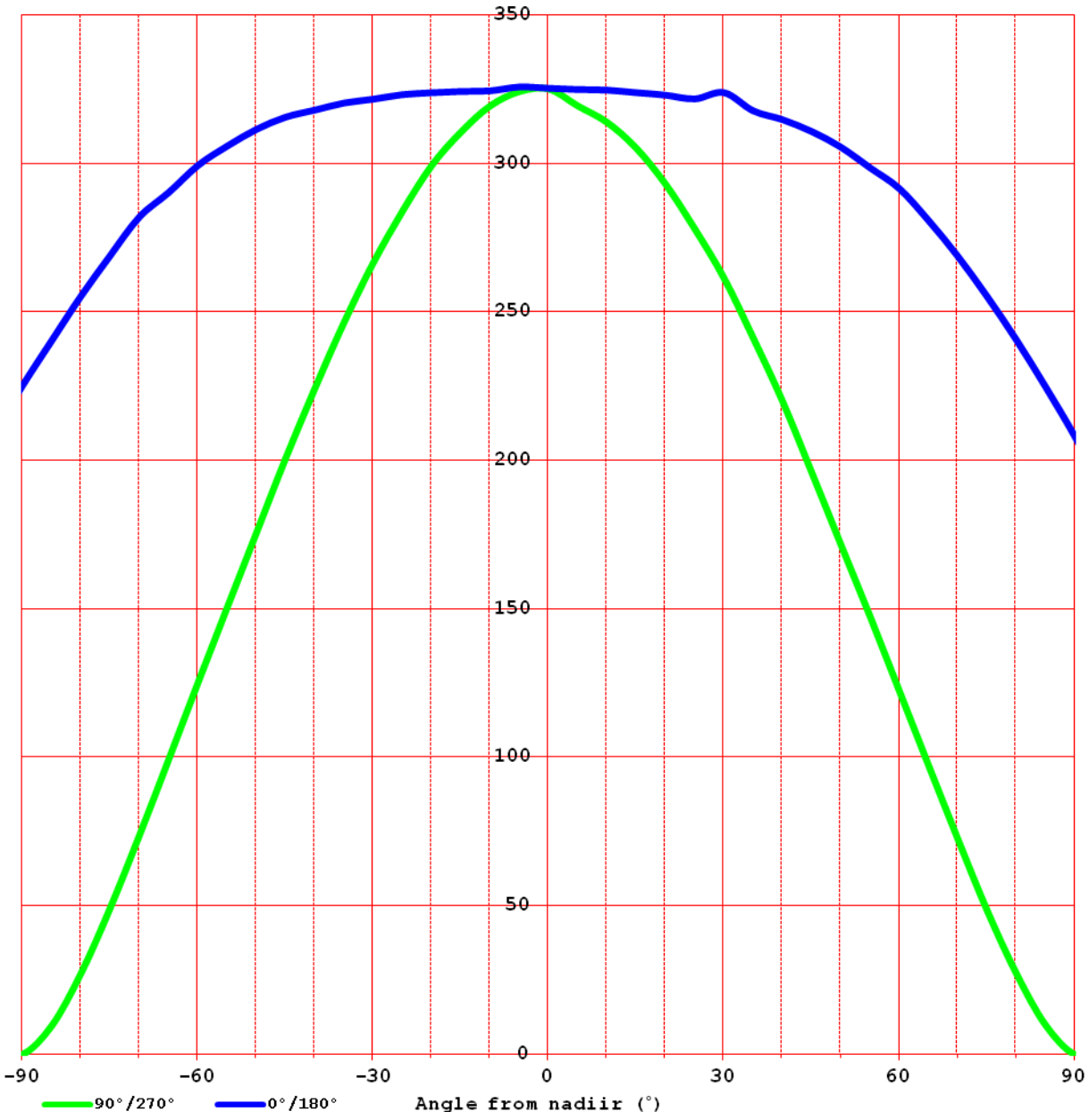

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Average Luminous Intensities (cd/Klm)

| Angle | Transverse plane | | Axial plane | |
|---|---|---|---|---|
| | 0° | 180° | 90° | 270° |
| 0° | 135.48 | 135.48 | 135.48 | 135.48 |
| 5° | 135.31 | 135.66 | 133.09 | 135.11 |
| 10° | 135.22 | 135.12 | 130.79 | 133.10 |
| 15° | 134.87 | 135.03 | 127.17 | 129.42 |
| 20° | 134.51 | 134.85 | 122.13 | 124.74 |
| 25° | 133.99 | 134.58 | 115.85 | 118.32 |
| 30° | 134.87 | 133.95 | 108.95 | 111.07 |
| 35° | 132.31 | 133.40 | 100.55 | 102.71 |
| 40° | 131.08 | 132.41 | 91.71 | 93.44 |
| 45° | 129.41 | 131.42 | 81.71 | 83.62 |
| 50° | 127.21 | 129.70 | 71.54 | 73.16 |
| 55° | 124.31 | 127.35 | 61.46 | 62.69 |
| 60° | 121.41 | 124.64 | 51.03 | 52.14 |
| 65° | 116.92 | 120.85 | 40.59 | 41.40 |
| 70° | 111.90 | 117.42 | 30.24 | 30.75 |
| 75° | 106.27 | 112.00 | 20.25 | 20.56 |
| 80° | 100.20 | 106.31 | 11.41 | 11.38 |
| 85° | 93.61 | 100.08 | 4.16 | 4.04 |
| 90° | 86.66 | 93.75 | 0.00 | 0.00 |
| 95° | 78.83 | 86.80 | 0.00 | 0.00 |
| 100° | 70.64 | 79.21 | 0.00 | 0.00 |
| 105° | 62.02 | 71.35 | 0.00 | 0.00 |
| 110° | 53.58 | 62.59 | 0.00 | 0.00 |
| 115° | 45.31 | 53.83 | 0.00 | 0.00 |
| 120° | 37.57 | 45.34 | 0.00 | 0.00 |
| 125° | 30.44 | 37.39 | 0.00 | 0.00 |
| 130° | 24.19 | 29.26 | 0.00 | 0.00 |
| 135° | 17.68 | 22.22 | 0.00 | 0.00 |
| 140° | 2.46 | 2.62 | 0.00 | 0.00 |
| 145° | 1.85 | 1.99 | 0.00 | 0.00 |
| 150° | 0.00 | 1.99 | 0.00 | 0.00 |
| 155° | 0.00 | 0.00 | 0.00 | 0.00 |
| 160° | 0.00 | 0.00 | 0.00 | 0.00 |
| 165° | 0.00 | 0.00 | 0.00 | 0.00 |
| 170° | 0.00 | 0.00 | 0.00 | 0.00 |
| 175° | 0.00 | 0.00 | 0.00 | 0.00 |
| 180° | 0.00 | 0.00 | 0.00 | 0.00 |

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Average Luminous Intensities (cd)

| Angle | Transverse plane | | Axial plane | |
|---|---|---|---|---|
| | 0° | 180° | 90° | 270° |
| 0° | 325.16 | 325.16 | 325.16 | 325.16 |
| 5° | 324.73 | 325.59 | 319.43 | 324.28 |
| 10° | 324.52 | 324.29 | 313.91 | 319.43 |
| 15° | 323.68 | 324.07 | 305.21 | 310.62 |
| 20° | 322.83 | 323.64 | 293.11 | 299.38 |
| 25° | 321.57 | 322.99 | 278.04 | 283.96 |
| 30° | 323.68 | 321.47 | 261.48 | 266.56 |
| 35° | 317.56 | 320.17 | 241.32 | 246.51 |
| 40° | 314.60 | 317.79 | 220.10 | 224.26 |
| 45° | 310.59 | 315.40 | 196.11 | 200.69 |
| 50° | 305.31 | 311.28 | 171.70 | 175.58 |
| 55° | 298.34 | 305.65 | 147.51 | 150.46 |
| 60° | 291.37 | 299.14 | 122.46 | 125.13 |
| 65° | 280.61 | 290.04 | 97.42 | 99.35 |
| 70° | 268.57 | 281.80 | 72.59 | 73.80 |
| 75° | 255.06 | 268.80 | 48.60 | 49.35 |
| 80° | 240.49 | 255.14 | 27.38 | 27.32 |
| 85° | 224.65 | 240.18 | 9.98 | 9.69 |
| 90° | 207.97 | 225.01 | 0.00 | 0.00 |
| 95° | 189.18 | 208.32 | 0.00 | 0.00 |
| 100° | 169.55 | 190.11 | 0.00 | 0.00 |
| 105° | 148.85 | 171.25 | 0.00 | 0.00 |
| 110° | 128.58 | 150.22 | 0.00 | 0.00 |
| 115° | 108.74 | 129.20 | 0.00 | 0.00 |
| 120° | 90.16 | 108.82 | 0.00 | 0.00 |
| 125° | 73.05 | 89.74 | 0.00 | 0.00 |
| 130° | 58.06 | 70.23 | 0.00 | 0.00 |
| 135° | 42.44 | 53.33 | 0.00 | 0.00 |
| 140° | 5.91 | 6.29 | 0.00 | 0.00 |
| 145° | 4.43 | 4.77 | 0.00 | 0.00 |
| 150° | 0.00 | 4.77 | 0.00 | 0.00 |
| 155° | 0.00 | 0.00 | 0.00 | 0.00 |
| 160° | 0.00 | 0.00 | 0.00 | 0.00 |
| 165° | 0.00 | 0.00 | 0.00 | 0.00 |
| 170° | 0.00 | 0.00 | 0.00 | 0.00 |
| 175° | 0.00 | 0.00 | 0.00 | 0.00 |
| 180° | 0.00 | 0.00 | 0.00 | 0.00 |

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| Source lumen output | 2,400 lm |
| Source quantity | 1 |

| | | |
|---|---|---|
| Light Output Ratios | Up | 0.13 |
| | Down | 0.56 |
| | Total | 0.69 |
| Spacing to Height Ratios | SHR NOM | 1.75 |
| | SHR MAX | 1.82 |
| | SHR MAX TRANS | 2.38 |
| | SHR MAX TRANS 0° | 2.36 |
| | SHR MAX TRANS 180° | 2.39 |

Please see the comments section for further information.

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 | .39 | .44 | .47 | .52 | .55 | .58 | .61 | .63 |
| | .30 | | N/A | .33 | .38 | .42 | .47 | .51 | .54 | .58 | .60 |
| | .10 | | N/A | .29 | .34 | .37 | .43 | .47 | .50 | .54 | .57 |
| .50 | .50 | .20 | N/A | .36 | .40 | .43 | .48 | .51 | .53 | .56 | .58 |
| | .30 | | N/A | .31 | .36 | .39 | .44 | .47 | .50 | .53 | .56 |
| | .10 | | N/A | .28 | .32 | .35 | .40 | .44 | .47 | .51 | .53 |
| .30 | .50 | .20 | N/A | .34 | .37 | .40 | .44 | .47 | .49 | .51 | .53 |
| | .30 | | N/A | .30 | .33 | .36 | .41 | .44 | .46 | .49 | .51 |
| | .10 | | N/A | .26 | .30 | .33 | .38 | .41 | .43 | .47 | .49 |
| .00 | .00 | .00 | N/A | .23 | .27 | .29 | .33 | .36 | .38 | .41 | .43 |
| BZ Class | | | N/A | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |

CIE Flux code 34 / 62 / 84 / 82 / 69

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0.22 | 0.29 | 0.36 | 0.42 | 0.47 | 0.56 | 0.61 | 0.65 | 0.71 | 0.74 | 0.80 | 0.82 |
| CIE class | 7 / | 7 / | 7 / | 7 / | 7 / | 7 / | 7 / | 7 / | 8 / | 8 / | 9 / | - |

Flux Fraction Ratio 0.22
DIN Class 0.69 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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**Angle** **Aspect Factors**

| | Parallel plane | Perpendicular plane |
|---|---|---|
| 0° | 0.000 | 0.000 |
| 5° | 0.086 | 0.004 |
| 10° | 0.171 | 0.015 |
| 15° | 0.252 | 0.033 |
| 20° | 0.328 | 0.057 |
| 25° | 0.399 | 0.086 |
| 30° | 0.463 | 0.120 |
| 35° | 0.520 | 0.156 |
| 40° | 0.569 | 0.194 |
| 45° | 0.610 | 0.231 |
| 50° | 0.644 | 0.268 |
| 55° | 0.670 | 0.302 |
| 60° | 0.689 | 0.332 |
| 65° | 0.703 | 0.358 |
| 70° | 0.712 | 0.379 |
| 75° | 0.716 | 0.395 |
| 80° | 0.719 | 0.405 |
| 85° | 0.719 | 0.410 |
| 90° | 0.719 | 0.411 |

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Non averaged Luminous Intensities (Cd/Klm)

| Elevation(°) | Azimuth(°) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0.0° | 30.0° | 60.0° | 90.0° | 120.0° | 150.0° | 180.0° |
| 0° | 135.48 | 135.48 | 135.48 | 135.48 | 135.48 | 135.48 | 135.48 |
| 5° | 135.31 | 136.29 | 134.86 | 133.09 | 135.12 | 135.12 | 135.66 |
| 10° | 135.22 | 135.48 | 132.82 | 130.79 | 133.41 | 134.58 | 135.12 |
| 15° | 134.87 | 134.32 | 129.72 | 127.17 | 130.71 | 133.86 | 135.03 |
| 20° | 134.51 | 132.88 | 125.99 | 122.13 | 126.93 | 132.59 | 134.85 |
| 25° | 133.99 | 131.00 | 121.21 | 115.85 | 122.61 | 130.97 | 134.58 |
| 30° | 134.87 | 128.75 | 115.80 | 108.95 | 117.48 | 128.89 | 133.95 |
| 35° | 132.31 | 125.79 | 109.68 | 100.55 | 110.73 | 126.45 | 133.40 |
| 40° | 131.08 | 122.92 | 101.97 | 91.71 | 103.88 | 123.74 | 132.41 |
| 45° | 129.41 | 119.15 | 94.61 | 81.71 | 96.41 | 120.49 | 131.42 |
| 50° | 127.21 | 115.11 | 86.54 | 71.54 | 88.67 | 117.06 | 129.70 |
| 55° | 124.31 | 110.63 | 78.56 | 61.46 | 80.93 | 113.08 | 127.35 |
| 60° | 121.41 | 105.69 | 70.31 | 51.03 | 72.83 | 108.75 | 124.64 |
| 65° | 116.92 | 100.40 | 62.24 | 40.59 | 65.18 | 104.05 | 120.85 |
| 70° | 111.90 | 94.66 | 54.26 | 30.24 | 57.70 | 98.81 | 117.42 |
| 75° | 106.27 | 86.49 | 46.90 | 20.25 | 50.14 | 93.12 | 112.00 |
| 80° | 100.20 | 82.01 | 39.99 | 11.41 | 43.30 | 87.16 | 106.31 |
| 85° | 93.61 | 75.28 | 33.69 | 4.16 | 36.91 | 80.75 | 100.08 |
| 90° | 86.66 | 68.46 | 28.02 | 0.00 | 31.51 | 73.97 | 93.75 |
| 95° | 78.83 | 61.64 | 23.41 | 0.00 | 26.74 | 68.01 | 86.80 |
| 100° | 70.64 | 54.64 | 19.51 | 0.00 | 22.87 | 61.15 | 79.21 |
| 105° | 62.02 | 47.64 | 16.14 | 0.00 | 19.26 | 54.37 | 71.35 |
| 110° | 53.58 | 40.82 | 13.39 | 0.00 | 16.47 | 48.59 | 62.59 |
| 115° | 45.31 | 34.63 | 10.91 | 0.00 | 13.50 | 41.19 | 53.83 |
| 120° | 37.57 | 28.89 | 2.84 | 0.00 | 3.42 | 33.87 | 45.34 |
| 125° | 30.44 | 22.88 | 1.68 | 0.00 | 1.80 | 28.09 | 37.39 |
| 130° | 24.19 | 17.94 | 1.06 | 0.00 | 1.35 | 22.31 | 29.26 |
| 135° | 17.68 | 4.31 | 0.98 | 0.00 | 0.99 | 3.61 | 22.22 |
| 140° | 2.46 | 1.70 | 0.71 | 0.00 | 0.00 | 0.90 | 2.62 |
| 145° | 1.85 | 1.17 | 0.27 | 0.00 | 0.00 | 1.81 | 1.99 |
| 150° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.99 |
| 155° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 160° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 165° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 170° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 175° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 180° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | |
|---|---|
| Job / Report / Date | 42 / 10692 / 10692-20a / 2013.06.17 |
| Customer | Encapsulite International Ltd. |
| Luminaire Range | MT70 IP68 |
| Luminaire catalog No. | MT70 SC 30W |
| Luminaire description | linear cylindrical luminaire<br>with opal cover<br>data derived from range test series |
| Source description | 30W/840 L Osram |
| Source lumen output | 2,400 lm |
| Source quantity | 1 |

Non averaged Luminous Intensities (Cd/Klm)

| Elevation(°) | Azimuth(°) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 180.0° | 210.0° | 240.0° | 270.0° | 300.0° | 330.0° | 0.0° |
| 0° | 135.48 | 135.48 | 135.48 | 135.48 | 135.48 | 135.48 | 135.48 |
| 5° | 135.66 | 135.39 | 135.12 | 135.11 | 135.02 | 135.67 | 135.31 |
| 10° | 135.12 | 134.94 | 133.49 | 133.10 | 133.74 | 135.11 | 135.22 |
| 15° | 135.03 | 133.86 | 130.42 | 129.42 | 131.17 | 134.28 | 134.87 |
| 20° | 134.85 | 132.32 | 126.53 | 124.74 | 127.40 | 132.99 | 134.51 |
| 25° | 134.58 | 130.61 | 121.92 | 118.32 | 122.72 | 131.61 | 133.99 |
| 30° | 133.95 | 127.72 | 115.96 | 111.07 | 117.40 | 129.49 | 134.87 |
| 35° | 133.40 | 125.65 | 109.63 | 102.71 | 110.97 | 126.35 | 132.31 |
| 40° | 132.41 | 121.95 | 102.49 | 93.44 | 104.73 | 123.40 | 131.08 |
| 45° | 131.42 | 119.43 | 95.44 | 83.62 | 96.29 | 119.90 | 129.41 |
| 50° | 129.70 | 115.91 | 87.67 | 73.16 | 87.57 | 115.93 | 127.21 |
| 55° | 127.35 | 112.12 | 79.81 | 62.69 | 80.13 | 111.23 | 124.31 |
| 60° | 124.64 | 107.88 | 71.94 | 52.14 | 71.78 | 106.25 | 121.41 |
| 65° | 120.85 | 102.83 | 64.17 | 41.40 | 63.89 | 100.71 | 116.92 |
| 70° | 117.42 | 98.05 | 56.49 | 30.75 | 55.62 | 94.99 | 111.90 |
| 75° | 112.00 | 92.64 | 49.35 | 20.56 | 48.10 | 88.54 | 106.27 |
| 80° | 106.31 | 86.77 | 42.66 | 11.38 | 41.03 | 81.71 | 100.20 |
| 85° | 100.08 | 80.55 | 36.51 | 4.04 | 34.51 | 74.89 | 93.61 |
| 90° | 93.75 | 74.33 | 31.36 | 0.00 | 28.82 | 68.06 | 86.66 |
| 95° | 86.80 | 67.92 | 26.75 | 0.00 | 24.69 | 61.24 | 78.83 |
| 100° | 79.21 | 61.52 | 23.05 | 0.00 | 20.10 | 53.95 | 70.64 |
| 105° | 71.35 | 54.66 | 19.79 | 0.00 | 16.43 | 46.67 | 62.02 |
| 110° | 62.59 | 47.99 | 16.90 | 0.00 | 13.86 | 39.75 | 53.58 |
| 115° | 53.83 | 41.04 | 14.10 | 0.00 | 10.92 | 33.39 | 45.31 |
| 120° | 45.34 | 34.73 | 3.71 | 0.00 | 3.49 | 27.58 | 37.57 |
| 125° | 37.39 | 28.32 | 2.08 | 0.00 | 1.38 | 22.32 | 30.44 |
| 130° | 29.26 | 22.82 | 1.72 | 0.00 | 1.10 | 17.43 | 24.19 |
| 135° | 22.22 | 4.69 | 1.08 | 0.00 | 0.92 | 3.87 | 17.68 |
| 140° | 2.62 | 1.98 | 0.00 | 0.00 | 0.00 | 1.75 | 2.46 |
| 145° | 1.99 | 1.53 | 0.00 | 0.00 | 0.00 | 1.29 | 1.85 |
| 150° | 1.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 155° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 160° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 165° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 170° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 175° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 180° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | |
|---|---|
| Job / Report / Date | 42 / 10692 / 10692-20a / 2013.06.17 |
| Customer | Encapsulite International Ltd. |
| Luminaire Range | MT70 IP68 |
| Luminaire catalog No. | MT70 SC 30W |
| Luminaire description | linear cylindrical luminaire<br>with opal cover<br>data derived from range test series |
| Source description | 30W/840 L Osram |
| Source lumen output | 2,400 lm |
| Source quantity | 1 |

Non averaged Luminous Intensities (Cd)

| Elevation(°) | Azimuth(°) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0.0° | 30.0° | 60.0° | 90.0° | 120.0° | 150.0° | 180.0° |
| 0° | 325.16 | 325.16 | 325.16 | 325.16 | 325.16 | 325.16 | 325.16 |
| 5° | 324.73 | 327.09 | 323.67 | 319.43 | 324.29 | 324.29 | 325.59 |
| 10° | 324.52 | 325.16 | 318.77 | 313.91 | 320.19 | 322.99 | 324.29 |
| 15° | 323.68 | 322.36 | 311.32 | 305.21 | 313.71 | 321.25 | 324.07 |
| 20° | 322.83 | 318.91 | 302.39 | 293.11 | 304.63 | 318.22 | 323.64 |
| 25° | 321.57 | 314.39 | 290.90 | 278.04 | 294.26 | 314.32 | 322.99 |
| 30° | 323.68 | 309.01 | 277.91 | 261.48 | 281.95 | 309.33 | 321.47 |
| 35° | 317.56 | 301.90 | 263.23 | 241.32 | 265.74 | 303.48 | 320.17 |
| 40° | 314.60 | 295.01 | 244.72 | 220.10 | 249.32 | 296.98 | 317.79 |
| 45° | 310.59 | 285.97 | 227.06 | 196.11 | 231.39 | 289.17 | 315.40 |
| 50° | 305.31 | 276.28 | 207.69 | 171.70 | 212.81 | 280.93 | 311.28 |
| 55° | 298.34 | 265.51 | 188.54 | 147.51 | 194.23 | 271.40 | 305.65 |
| 60° | 291.37 | 253.66 | 168.75 | 122.46 | 174.79 | 260.99 | 299.14 |
| 65° | 280.61 | 240.96 | 149.38 | 97.42 | 156.42 | 249.72 | 290.04 |
| 70° | 268.57 | 227.18 | 130.23 | 72.59 | 138.49 | 237.15 | 281.80 |
| 75° | 255.06 | 207.58 | 112.57 | 48.60 | 120.34 | 223.49 | 268.80 |
| 80° | 240.49 | 196.82 | 95.97 | 27.38 | 103.92 | 209.18 | 255.14 |
| 85° | 224.65 | 180.67 | 80.86 | 9.98 | 88.58 | 193.79 | 240.18 |
| 90° | 207.97 | 164.30 | 67.24 | 0.00 | 75.62 | 177.54 | 225.01 |
| 95° | 189.18 | 147.94 | 56.18 | 0.00 | 64.17 | 163.23 | 208.32 |
| 100° | 169.55 | 131.14 | 46.82 | 0.00 | 54.88 | 146.75 | 190.11 |
| 105° | 148.85 | 114.34 | 38.73 | 0.00 | 46.23 | 130.50 | 171.25 |
| 110° | 128.58 | 97.98 | 32.13 | 0.00 | 39.54 | 116.62 | 150.22 |
| 115° | 108.74 | 83.12 | 26.17 | 0.00 | 32.41 | 98.85 | 129.20 |
| 120° | 90.16 | 69.34 | 6.81 | 0.00 | 8.21 | 81.29 | 108.82 |
| 125° | 73.05 | 54.91 | 4.04 | 0.00 | 4.32 | 67.42 | 89.74 |
| 130° | 58.06 | 43.07 | 2.55 | 0.00 | 3.24 | 53.54 | 70.23 |
| 135° | 42.44 | 10.34 | 2.34 | 0.00 | 2.38 | 8.67 | 53.33 |
| 140° | 5.91 | 4.09 | 1.70 | 0.00 | 0.00 | 2.17 | 6.29 |
| 145° | 4.43 | 2.80 | 0.64 | 0.00 | 0.00 | 4.34 | 4.77 |
| 150° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.77 |
| 155° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 160° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 165° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 170° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 175° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 180° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

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|---|---|
| Job / Report / Date | 42 / 10692 / 10692-20a / 2013.06.17 |
| Customer | Encapsulite International Ltd. |
| Luminaire Range | MT70 IP68 |
| Luminaire catalog No. | MT70 SC 30W |
| Luminaire description | linear cylindrical luminaire<br>with opal cover<br>data derived from range test series |
| Source description | 30W/840 L Osram |
| Source lumen output | 2,400 lm |
| Source quantity | 1 |

Non averaged Luminous Intensities (Cd)

| Elevation(°) | Azimuth(°) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 180.0° | 210.0° | 240.0° | 270.0° | 300.0° | 330.0° | 0.0° |
| 0° | 325.16 | 325.16 | 325.16 | 325.16 | 325.16 | 325.16 | 325.16 |
| 5° | 325.59 | 324.94 | 324.29 | 324.28 | 324.05 | 325.60 | 324.73 |
| 10° | 324.29 | 323.86 | 320.38 | 319.43 | 320.97 | 324.27 | 324.52 |
| 15° | 324.07 | 321.26 | 313.01 | 310.62 | 314.80 | 322.28 | 323.68 |
| 20° | 323.64 | 317.58 | 303.68 | 299.38 | 305.77 | 319.18 | 322.83 |
| 25° | 322.99 | 313.47 | 292.62 | 283.96 | 294.54 | 315.86 | 321.57 |
| 30° | 321.47 | 306.54 | 278.30 | 266.56 | 281.76 | 310.77 | 323.68 |
| 35° | 320.17 | 301.56 | 263.12 | 246.51 | 266.34 | 303.24 | 317.56 |
| 40° | 317.79 | 292.68 | 245.98 | 224.26 | 251.36 | 296.16 | 314.60 |
| 45° | 315.40 | 286.62 | 229.06 | 200.69 | 231.09 | 287.75 | 310.59 |
| 50° | 311.28 | 278.18 | 210.41 | 175.58 | 210.16 | 278.23 | 305.31 |
| 55° | 305.65 | 269.09 | 191.54 | 150.46 | 192.32 | 266.94 | 298.34 |
| 60° | 299.14 | 258.91 | 172.66 | 125.13 | 172.27 | 254.99 | 291.37 |
| 65° | 290.04 | 246.79 | 154.01 | 99.35 | 153.33 | 241.71 | 280.61 |
| 70° | 281.80 | 235.32 | 135.57 | 73.80 | 133.50 | 227.99 | 268.57 |
| 75° | 268.80 | 222.33 | 118.44 | 49.35 | 115.43 | 212.49 | 255.06 |
| 80° | 255.14 | 208.26 | 102.38 | 27.32 | 98.47 | 196.11 | 240.49 |
| 85° | 240.18 | 193.32 | 87.63 | 9.69 | 82.83 | 179.73 | 224.65 |
| 90° | 225.01 | 178.38 | 75.27 | 0.00 | 69.17 | 163.35 | 207.97 |
| 95° | 208.32 | 163.01 | 64.21 | 0.00 | 59.26 | 146.97 | 189.18 |
| 100° | 190.11 | 147.64 | 55.31 | 0.00 | 48.24 | 129.49 | 169.55 |
| 105° | 171.25 | 131.19 | 47.50 | 0.00 | 39.43 | 112.00 | 148.85 |
| 110° | 150.22 | 115.17 | 40.56 | 0.00 | 33.26 | 95.40 | 128.58 |
| 115° | 129.20 | 98.50 | 33.84 | 0.00 | 26.22 | 80.13 | 108.74 |
| 120° | 108.82 | 83.35 | 8.89 | 0.00 | 8.37 | 66.18 | 90.16 |
| 125° | 89.74 | 67.98 | 4.99 | 0.00 | 3.30 | 53.57 | 73.05 |
| 130° | 70.23 | 54.77 | 4.12 | 0.00 | 2.64 | 41.83 | 58.06 |
| 135° | 53.33 | 11.26 | 2.60 | 0.00 | 2.20 | 9.30 | 42.44 |
| 140° | 6.29 | 4.76 | 0.00 | 0.00 | 0.00 | 4.21 | 5.91 |
| 145° | 4.77 | 3.68 | 0.00 | 0.00 | 0.00 | 3.10 | 4.43 |
| 150° | 4.77 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 155° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 160° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 165° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 170° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 175° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 180° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | |
|---|---|
| Job / Report / Date | 42 / 10692 / 10692-20a / 2013.06.17 |
| Customer | Encapsulite International Ltd. |
| Luminaire Range | MT70 IP68 |
| Luminaire catalog No. | MT70 SC 30W |
| Luminaire description | linear cylindrical luminaire<br>with opal cover<br>data derived from range test series |
| Source description | 30W/840 L Osram |
| Source lumen output | 2,400 lm |
| Source quantity | 1 |

Individual Zonal Flux Calculations

| Angles | Total | Backward | Forward |
|---|---|---|---|
| 0° - 5° | 0.5% | 0.2% | 0.2% |
| 5° - 10° | 1.4% | 0.7% | 0.7% |
| 10° - 15° | 2.3% | 1.1% | 1.1% |
| 15° - 20° | 3.1% | 1.6% | 1.6% |
| 20° - 25° | 3.9% | 1.9% | 1.9% |
| 25° - 30° | 4.6% | 2.3% | 2.3% |
| 30° - 35° | 5.1% | 2.6% | 2.6% |
| 35° - 40° | 5.6% | 2.8% | 2.8% |
| 40° - 45° | 5.9% | 3.0% | 2.9% |
| 45° - 50° | 6.1% | 3.1% | 3.0% |
| 50° - 55° | 6.2% | 3.1% | 3.1% |
| 55° - 60° | 6.2% | 3.1% | 3.1% |
| 60° - 65° | 6.0% | 3.0% | 3.0% |
| 65° - 70° | 5.8% | 2.9% | 2.8% |
| 70° - 75° | 5.4% | 2.8% | 2.6% |
| 75° - 80° | 5.0% | 2.6% | 2.4% |
| 80° - 85° | 4.6% | 2.4% | 2.2% |
| 85° - 90° | 4.1% | 2.1% | 2.0% |
| 90° - 95° | 3.7% | 1.9% | 1.8% |
| 95° - 100° | 3.3% | 1.7% | 1.5% |
| 100° - 105° | 2.8% | 1.5% | 1.3% |
| 105° - 110° | 2.4% | 1.3% | 1.1% |
| 110° - 115° | 2.0% | 1.1% | 0.9% |
| 115° - 120° | 1.5% | 0.8% | 0.7% |
| 120° - 125° | 1.1% | 0.6% | 0.5% |
| 125° - 130° | 0.8% | 0.5% | 0.4% |
| 130° - 135° | 0.5% | 0.3% | 0.2% |
| 135° - 140° | 0.2% | 0.1% | 0.1% |
| 140° - 145° | 0.0% | 0.0% | 0.0% |
| 145° - 150° | 0.0% | 0.0% | 0.0% |
| 150° - 155° | 0.0% | 0.0% | 0.0% |
| 155° - 160° | 0.0% | 0.0% | 0.0% |
| 160° - 165° | 0.0% | 0.0% | 0.0% |
| 165° - 170° | 0.0% | 0.0% | 0.0% |
| 170° - 175° | 0.0% | 0.0% | 0.0% |
| 175° - 180° | 0.0% | 0.0% | 0.0% |

| | |
|---|---|
| Job / Report / Date | 42 / 10692 / 10692-20a / 2013.06.17 |
| Customer | Encapsulite International Ltd. |
| Luminaire Range | MT70 IP68 |
| Luminaire catalog No. | MT70 SC 30W |
| Luminaire description | linear cylindrical luminaire<br>with opal cover<br>data derived from range test series |
| Source description | 30W/840 L Osram |
| Source lumen output | 2,400 lm |
| Source quantity | 1 |

Cumulative Zonal Flux Calculations

| Angles | Total | Backward | Forward |
|---|---|---|---|
| 0° - 5° | 0.5% | 0.2% | 0.2% |
| 5° - 10° | 1.9% | 0.9% | 0.9% |
| 10° - 15° | 4.2% | 2.1% | 2.1% |
| 15° - 20° | 7.3% | 3.6% | 3.6% |
| 20° - 25° | 11.2% | 5.6% | 5.6% |
| 25° - 30° | 15.7% | 7.9% | 7.9% |
| 30° - 35° | 20.9% | 10.4% | 10.4% |
| 35° - 40° | 26.4% | 13.2% | 13.2% |
| 40° - 45° | 32.3% | 16.2% | 16.2% |
| 45° - 50° | 38.5% | 19.2% | 19.2% |
| 50° - 55° | 44.6% | 22.4% | 22.3% |
| 55° - 60° | 50.8% | 25.5% | 25.3% |
| 60° - 65° | 56.8% | 28.5% | 28.3% |
| 65° - 70° | 62.6% | 31.4% | 31.1% |
| 70° - 75° | 68.0% | 34.2% | 33.8% |
| 75° - 80° | 73.0% | 36.8% | 36.2% |
| 80° - 85° | 77.6% | 39.1% | 38.4% |
| 85° - 90° | 81.7% | 41.2% | 40.4% |
| 90° - 95° | 85.3% | 43.2% | 42.2% |
| 95° - 100° | 88.6% | 44.9% | 43.7% |
| 100° - 105° | 91.4% | 46.4% | 45.0% |
| 105° - 110° | 93.8% | 47.7% | 46.1% |
| 110° - 115° | 95.8% | 48.8% | 47.0% |
| 115° - 120° | 97.3% | 49.6% | 47.7% |
| 120° - 125° | 98.5% | 50.2% | 48.2% |
| 125° - 130° | 99.3% | 50.7% | 48.6% |
| 130° - 135° | 99.8% | 51.0% | 48.8% |
| 135° - 140° | 99.9% | 51.0% | 48.9% |
| 140° - 145° | 100.0% | 51.1% | 48.9% |
| 145° - 150° | 100.0% | 51.1% | 48.9% |
| 150° - 155° | 100.0% | 51.1% | 48.9% |
| 155° - 160° | 100.0% | 51.1% | 48.9% |
| 160° - 165° | 100.0% | 51.1% | 48.9% |
| 165° - 170° | 100.0% | 51.1% | 48.9% |
| 170° - 175° | 100.0% | 51.1% | 48.9% |
| 175° - 180° | 100.0% | 51.1% | 48.9% |

| | |
|---|---|
| Job / Report / Date | 42 / 10692 / 10692-20a / 2013.06.17 |
| Customer | Encapsulite International Ltd. |
| Luminaire Range | MT70 IP68 |
| Luminaire catalog No. | MT70 SC 30W |
| Luminaire description | linear cylindrical luminaire<br>with opal cover<br>data derived from range test series |
| Source description | 30W/840 L Osram |
| Source lumen output | 2,400 lm |
| Source quantity | 1 |

Non averaged Luminance Values ($cd/m^2$)

| Elevation(°) | Azimuth(°) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0.0° | 30.0° | 60.0° | 90.0° | 120.0° | 150.0° | 180.0° |
| 45° | 4441 | 4280 | 3896 | 4206 | 3970 | 4328 | 4510 |
| 50° | 4514 | 4299 | 3775 | 4051 | 3868 | 4372 | 4602 |
| 55° | 4602 | 4338 | 3673 | 3900 | 3784 | 4434 | 4715 |
| 60° | 4736 | 4396 | 3572 | 3714 | 3699 | 4523 | 4862 |
| 65° | 4859 | 4483 | 3490 | 3496 | 3654 | 4646 | 5022 |
| 70° | 5017 | 4600 | 3423 | 3219 | 3640 | 4802 | 5264 |
| 75° | 5215 | 4649 | 3412 | 2848 | 3648 | 5006 | 5495 |
| 80° | 5476 | 4974 | 3467 | 2391 | 3754 | 5287 | 5809 |
| 85° | 5821 | 5284 | 3648 | 1736 | 3996 | 5668 | 6224 |

| | 180.0° | 210.0° | 240.0° | 270.0° | 300.0° | 330.0° | 0.0° |
|---|---|---|---|---|---|---|---|
| 45° | 4510 | 4290 | 3930 | 4304 | 3965 | 4307 | 4441 |
| 50° | 4602 | 4329 | 3825 | 4142 | 3820 | 4330 | 4514 |
| 55° | 4715 | 4396 | 3732 | 3978 | 3747 | 4361 | 4602 |
| 60° | 4862 | 4487 | 3655 | 3795 | 3646 | 4419 | 4736 |
| 65° | 5022 | 4592 | 3598 | 3565 | 3582 | 4497 | 4859 |
| 70° | 5264 | 4765 | 3564 | 3272 | 3509 | 4617 | 5017 |
| 75° | 5495 | 4980 | 3590 | 2891 | 3499 | 4759 | 5215 |
| 80° | 5809 | 5263 | 3698 | 2386 | 3557 | 4956 | 5476 |
| 85° | 6224 | 5654 | 3953 | 1687 | 3736 | 5257 | 5821 |

| | |
|---|---|
| Job / Report / Date | 42 / 10692 / 10692-20a / 2013.06.17 |
| Customer | Encapsulite International Ltd. |
| Luminaire Range | MT70 IP68 |
| Luminaire catalog No. | MT70 SC 30W |
| Luminaire description | linear cylindrical luminaire<br>with opal cover<br>data derived from range test series |
| Source description | 30W/840 L Osram |
| Source lumen output | 2,400 lm |
| Source quantity | 1 |

Non averaged Luminance Values ($cd/m^2/klm$)

| Elevation(°) | Azimuth(°) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0.0° | 30.0° | 60.0° | 90.0° | 120.0° | 150.0° | 180.0° |
| 45° | 1850 | 1783 | 1623 | 1753 | 1654 | 1803 | 1879 |
| 50° | 1881 | 1791 | 1573 | 1688 | 1612 | 1822 | 1917 |
| 55° | 1917 | 1807 | 1531 | 1625 | 1577 | 1847 | 1964 |
| 60° | 1973 | 1832 | 1488 | 1548 | 1541 | 1885 | 2026 |
| 65° | 2025 | 1868 | 1454 | 1457 | 1523 | 1936 | 2093 |
| 70° | 2090 | 1917 | 1426 | 1341 | 1517 | 2001 | 2193 |
| 75° | 2173 | 1937 | 1422 | 1187 | 1520 | 2086 | 2290 |
| 80° | 2282 | 2072 | 1444 | 996 | 1564 | 2203 | 2421 |
| 85° | 2426 | 2202 | 1520 | 723 | 1665 | 2362 | 2593 |

| | 180.0° | 210.0° | 240.0° | 270.0° | 300.0° | 330.0° | 0.0° |
|---|---|---|---|---|---|---|---|
| 45° | 1879 | 1787 | 1638 | 1793 | 1652 | 1794 | 1850 |
| 50° | 1917 | 1804 | 1594 | 1726 | 1592 | 1804 | 1881 |
| 55° | 1964 | 1832 | 1555 | 1658 | 1561 | 1817 | 1917 |
| 60° | 2026 | 1870 | 1523 | 1581 | 1519 | 1841 | 1973 |
| 65° | 2093 | 1913 | 1499 | 1486 | 1492 | 1874 | 2025 |
| 70° | 2193 | 1985 | 1485 | 1363 | 1462 | 1924 | 2090 |
| 75° | 2290 | 2075 | 1496 | 1205 | 1458 | 1983 | 2173 |
| 80° | 2421 | 2193 | 1541 | 994 | 1482 | 2065 | 2282 |
| 85° | 2593 | 2356 | 1647 | 703 | 1557 | 2190 | 2426 |

| | |
|---|---|
| **Job / Report / Date** | **42 / 10692 / 10692-20a / 2013.06.17** |
| **Customer** | **Encapsulite International Ltd.** |
| **Luminaire Range** | **MT70 IP68** |
| **Luminaire catalog No.** | **MT70 SC 30W** |
| **Luminaire description** | **linear cylindrical luminaire<br>with opal cover<br>data derived from range test series** |
| **Source description** | **30W/840 L Osram** |
| **Source lumen output** | **2,400 lm** |
| **Source quantity** | **1** |

**Maximum Non averaged Luminance Values (cd/m$^2$)**

| Elevation(°) | Maximum | Azimuth Angle |
|---|---|---|
| 45° | 4510 | 180° |
| 50° | 4602 | 180° |
| 55° | 4715 | 180° |
| 60° | 4862 | 180° |
| 65° | 5022 | 180° |
| 70° | 5264 | 180° |
| 75° | 5495 | 180° |
| 80° | 5809 | 180° |
| 85° | 6224 | 180° |

| | |
|---|---|
| Job / Report / Date | 42 / 10692 / 10692-20a / 2013.06.17 |
| Customer | Encapsulite International Ltd. |
| Luminaire Range | MT70 IP68 |
| Luminaire catalog No. | MT70 SC 30W |
| Luminaire description | linear cylindrical luminaire<br>with opal cover<br>data derived from range test series |
| Source description | 30W/840 L Osram |
| Source lumen output | 2,400 lm |
| Source 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<br>(No screen treatment)<br>used with some negative polarity software | 200 | NO | NO |
| Screen Type I and II<br>(Good or moderate screen treatment)<br>used with some negative polarity software | 500 | NO | NO |
| Screen Type III<br>(No screen treatment)<br>used with only positive polarity software | 1000 | NO | NO |
| Screen Type I and II<br>(Good or moderate screen treatment)<br>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 $cdm^2$ )<br>Case B<br>negative polarity and/or higher requirements | 1000 | - | NO |
| Medium luminance screen ( L <= 200 $cdm^2$ )<br>Case A<br>positive polarity and normal requirements | 1500 | - | NO |
| High luminance screen ( L > 200 cd/m2 )<br>Case B<br>negative polarity and/or higher requirements | 1500 | - | NO |
| High luminance screen ( L > 200 cd/m2 )<br>Case A<br>positive polarity and normal requirements | 3000 | - | NO |

| | |
|---|---|
| Job / Report / Date | 42 / 10692 / 10692-20a / 2013.06.17 |
| Customer | Encapsulite International Ltd. |
| Luminaire Range | MT70 IP68 |
| Luminaire catalog No. | MT70 SC 30W |
| Luminaire description | linear cylindrical luminaire<br>with opal cover<br>data derived from range test series |
| Source description | 30W/840 L Osram |
| Source lumen output | 2,400 lm |
| Source 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 | 13.4 | 15.1 | 14.2 | 15.9 | 16.8 | 9.8 | 11.5 | 10.5 | 12.3 | 13.2 |
| | 3H | 16.7 | 18.3 | 17.5 | 19.2 | 20.1 | 11.8 | 13.4 | 12.6 | 14.2 | 15.1 |
| | 4H | 18.4 | 19.9 | 19.2 | 20.7 | 21.7 | 12.5 | 14.0 | 13.3 | 14.9 | 15.8 |
| | 6H | 20.1 | 21.6 | 20.9 | 22.4 | 23.4 | 13.1 | 14.5 | 13.9 | 15.3 | 16.3 |
| | 8H | 21.0 | 22.4 | 21.8 | 23.2 | 24.2 | 13.2 | 14.6 | 14.0 | 15.4 | 16.4 |
| | 12H | 21.9 | 23.3 | 22.7 | 24.1 | 25.1 | 13.3 | 14.6 | 14.1 | 15.5 | 16.5 |
| 4H | 2H | 14.3 | 15.8 | 15.1 | 16.6 | 17.6 | 11.9 | 13.4 | 12.7 | 14.3 | 15.2 |
| | 3H | 17.9 | 19.3 | 18.8 | 20.2 | 21.1 | 14.1 | 15.5 | 15.0 | 16.3 | 17.3 |
| | 4H | 19.9 | 21.1 | 20.7 | 22.0 | 23.0 | 15.1 | 16.4 | 16.0 | 17.2 | 18.2 |
| | 6H | 21.8 | 22.9 | 22.7 | 23.8 | 24.8 | 15.8 | 16.9 | 16.7 | 17.8 | 18.9 |
| | 8H | 22.8 | 23.9 | 23.7 | 24.8 | 25.8 | 16.1 | 17.2 | 17.0 | 18.1 | 19.1 |
| | 12H | 23.9 | 24.9 | 24.8 | 25.8 | 26.9 | 16.3 | 17.3 | 17.2 | 18.2 | 19.2 |
| 8H | 4H | 20.5 | 21.5 | 21.4 | 22.4 | 23.5 | 17.2 | 18.2 | 18.1 | 19.1 | 20.2 |
| | 6H | 22.7 | 23.6 | 23.6 | 24.5 | 25.6 | 18.2 | 19.1 | 19.1 | 20.0 | 21.1 |
| | 8H | 24.1 | 24.9 | 25.0 | 25.8 | 26.9 | 18.7 | 19.5 | 19.6 | 20.5 | 21.5 |
| | 12H | 25.4 | 26.1 | 26.3 | 27.1 | 28.1 | 19.1 | 19.8 | 20.0 | 20.7 | 21.8 |
| 12H | 4H | 20.6 | 21.6 | 21.5 | 22.5 | 23.6 | 18.1 | 19.1 | 19.0 | 20.0 | 21.1 |
| | 6H | 23.0 | 23.8 | 23.9 | 24.8 | 25.9 | 19.4 | 20.2 | 20.3 | 21.2 | 22.2 |
| | 8H | 24.4 | 25.1 | 25.3 | 26.1 | 27.1 | 20.0 | 20.7 | 20.9 | 21.7 | 22.7 |

Calculated in accordance with CIBSE Technical Memorandum No. 10 1985

| | |
|---|---|
| Job / Report / Date | 42 / 10692 / 10692-20a / 2013.06.17 |
| Customer | Encapsulite International Ltd. |
| Luminaire Range | MT70 IP68 |
| Luminaire catalog No. | MT70 SC 30W |
| Luminaire description | linear cylindrical luminaire<br>with opal cover<br>data derived from range test series |
| Source description | 30W/840 L Osram |
| Source lumen output | 2,400 lm |
| Source 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 |

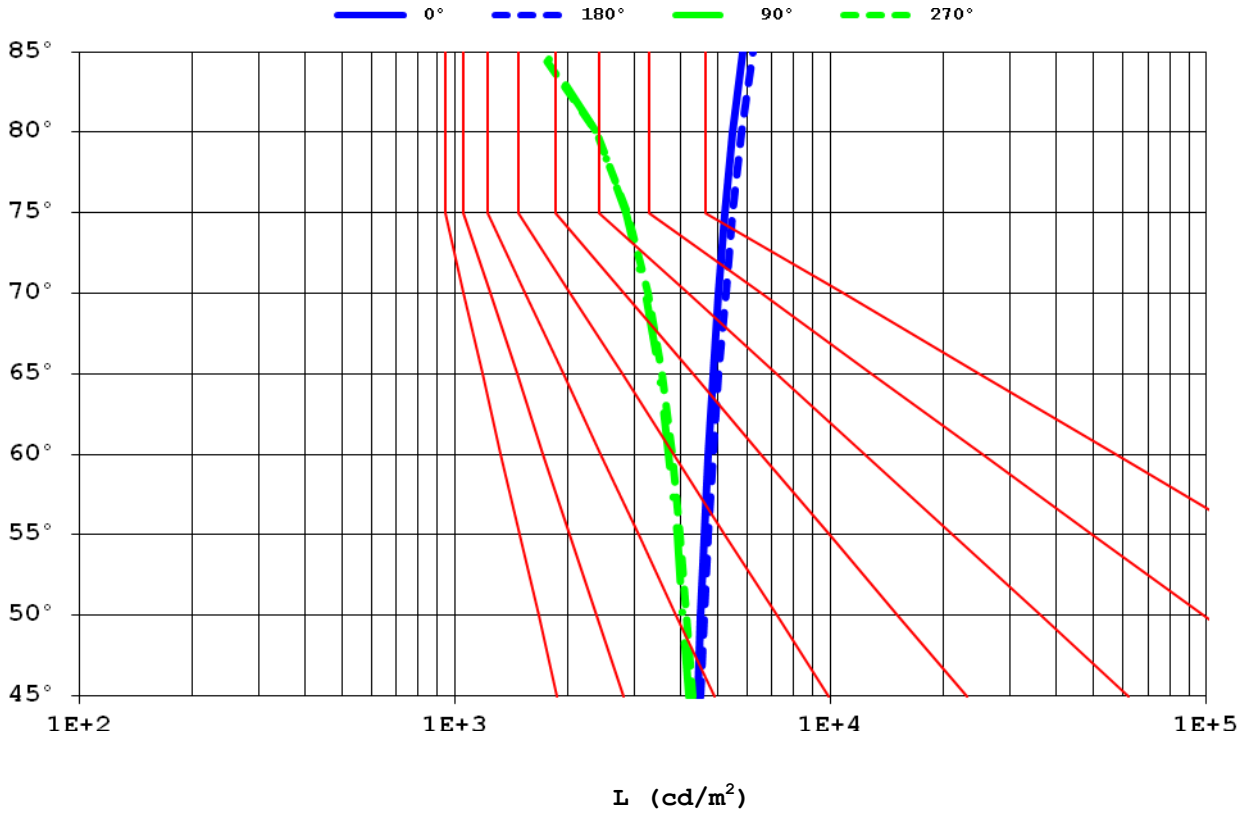
| Room dimension | | Viewed crosswise 180° | | | | | Viewed endwise 270° | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X | Y | | | | | | | | | | |
| 2H | 2H | 13.5 | 15.3 | 14.3 | 16.1 | 17.0 | 9.9 | 11.6 | 10.6 | 12.4 | 13.3 |
| | 3H | 17.0 | 18.6 | 17.7 | 19.4 | 20.3 | 11.8 | 13.5 | 12.6 | 14.3 | 15.2 |
| | 4H | 18.6 | 20.2 | 19.4 | 21.0 | 21.9 | 12.6 | 14.1 | 13.4 | 14.9 | 15.9 |
| | 6H | 20.4 | 21.9 | 21.3 | 22.7 | 23.7 | 13.1 | 14.6 | 13.9 | 15.4 | 16.4 |
| | 8H | 21.3 | 22.7 | 22.1 | 23.6 | 24.6 | 13.2 | 14.7 | 14.1 | 15.5 | 16.5 |
| | 12H | 22.3 | 23.6 | 23.1 | 24.5 | 25.5 | 13.3 | 14.7 | 14.1 | 15.5 | 16.5 |
| 4H | 2H | 14.4 | 16.0 | 15.2 | 16.8 | 17.7 | 11.9 | 13.5 | 12.7 | 14.3 | 15.2 |
| | 3H | 18.2 | 19.5 | 19.0 | 20.4 | 21.4 | 14.2 | 15.5 | 15.0 | 16.4 | 17.4 |
| | 4H | 20.2 | 21.4 | 21.0 | 22.3 | 23.3 | 15.2 | 16.4 | 16.0 | 17.3 | 18.3 |
| | 6H | 22.1 | 23.3 | 23.0 | 24.2 | 25.2 | 15.9 | 17.0 | 16.7 | 17.9 | 18.9 |
| | 8H | 23.2 | 24.2 | 24.1 | 25.1 | 26.2 | 16.1 | 17.2 | 17.0 | 18.1 | 19.1 |
| | 12H | 24.3 | 25.3 | 25.2 | 26.2 | 27.3 | 16.3 | 17.3 | 17.2 | 18.2 | 19.3 |
| 8H | 4H | 20.8 | 21.8 | 21.7 | 22.7 | 23.8 | 17.2 | 18.3 | 18.1 | 19.2 | 20.2 |
| | 6H | 23.1 | 24.0 | 24.0 | 24.9 | 26.0 | 18.2 | 19.1 | 19.1 | 20.0 | 21.1 |
| | 8H | 24.4 | 25.2 | 25.3 | 26.2 | 27.3 | 18.7 | 19.5 | 19.7 | 20.5 | 21.6 |
| | 12H | 25.8 | 26.5 | 26.7 | 27.5 | 28.5 | 19.1 | 19.8 | 20.0 | 20.7 | 21.8 |
| 12H | 4H | 20.9 | 21.9 | 21.8 | 22.8 | 23.9 | 18.1 | 19.1 | 19.0 | 20.0 | 21.1 |
| | 6H | 23.4 | 24.2 | 24.3 | 25.1 | 26.2 | 19.4 | 20.2 | 20.3 | 21.2 | 22.3 |
| | 8H | 24.8 | 25.5 | 25.7 | 26.4 | 27.5 | 20.0 | 20.7 | 20.9 | 21.7 | 22.8 |

Calculated in accordance with CIBSE Technical Memorandum No. 10 1985

| | |
|---|---|
| Job / Report / Date | 42 / 10692 / 10692-20a / 2013.06.17 |
| Customer | Encapsulite International Ltd. |
| Luminaire Range | MT70 IP68 |
| Luminaire catalog No. | MT70 SC 30W |
| Luminaire description | linear cylindrical luminaire<br>with opal cover<br>data derived from range test series |
| Source description | 30W/840 L Osram |
| Source lumen output | 2,400 lm |
| Source quantity | 1 |

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 |



| | |
|---|---|
| **Job / Report / Date** | **42 / 10692 / 10692-20a / 2013.06.17** |
| **Customer** | **Encapsulite International Ltd.** |
| **Luminaire Range** | **MT70 IP68** |
| **Luminaire catalog No.** | **MT70 SC 30W** |
| **Luminaire description** | **linear cylindrical luminaire<br>with opal cover<br>data derived from range test series** |
| **Source description** | **30W/840 L Osram** |
| **Source lumen output** | **2,400 lm** |
| **Source quantity** | **1** |

**Comments**

**Lumen method calculations using Utilisation Factor tables are based on the assumption that luminaires are di-symmetric, this is not the case with this luminaire. Any calculations for this luminaire using the Lumen method should be treated with caution.**

**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.**

| | |
|---|---|
| **Job / Report / Date** | **42 / 10692 / 10692-20a / 2013.06.17** |
| **Customer** | **Encapsulite International Ltd.** |
| **Luminaire Range** | **MT70 IP68** |
| **Luminaire catalog No.** | **MT70 SC 30W** |
| **Luminaire description** | **linear cylindrical luminaire<br>with opal cover<br>data derived from range test series** |
| **Source description** | **30W/840 L Osram** |
| **Source lumen output** | **2,400 lm** |
| **Source quantity** | **1** |

**Quick Design Table**

**Based on: reflectances of Ceiling = 0.5**
**Wall = 0.5**
**Floor = 0.2**
**Room Index = 2.00**
**lamp output = 2400 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** | **1.7** | **2.6** | **3.5** | **4.4** | **7.0** | **8.7** | **17.4** | **26.2** | **43.6** |