

Report No.:

Test Time: 21.08.2020 20:48

## Luminaire Property

Luminaire Manufacturer:

Luminaire Description: FI 170 2x40LED 24W 4000K opal

Luminous Length (mm): 605

Luminous Width (mm): 172

Luminous Height (mm): 203

Voltage: 221.5 V

Current: 0.112 A

Power: 23.98 W

Power Factor: 0.964

## Photometric Results

CIE Class: Direct

Measurement Flux: 2363.9 lm

Downward Ratio: 99%

Total Rated Lamp Lumens: 2363.9 lm

Efficiency: 100%

Upward Ratio: 1%

Field Angle(C0/C180,C90/C270,C45/C225,C135/315): 164.7, 162.2, 163.1, 163.3

Beam Angle(C0/C180,C90/C270,C45/C225,C135/315): 112.3, 112.1, 112.3, 112.3

Luminaire Efficacy Rating (LER): 98.63

Central Intensity: 815.73 cd

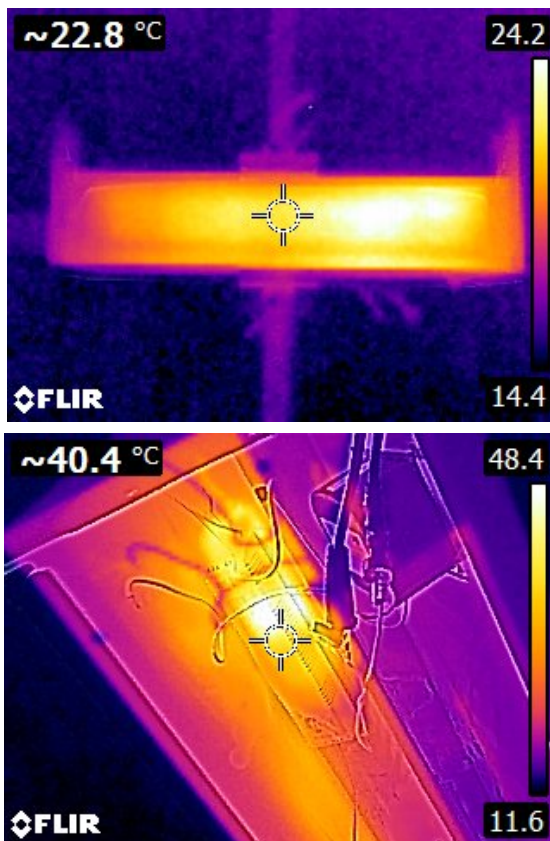
Max. Intensity: 819.77 cd

Pos of Max. Intensity: H337.5 V2

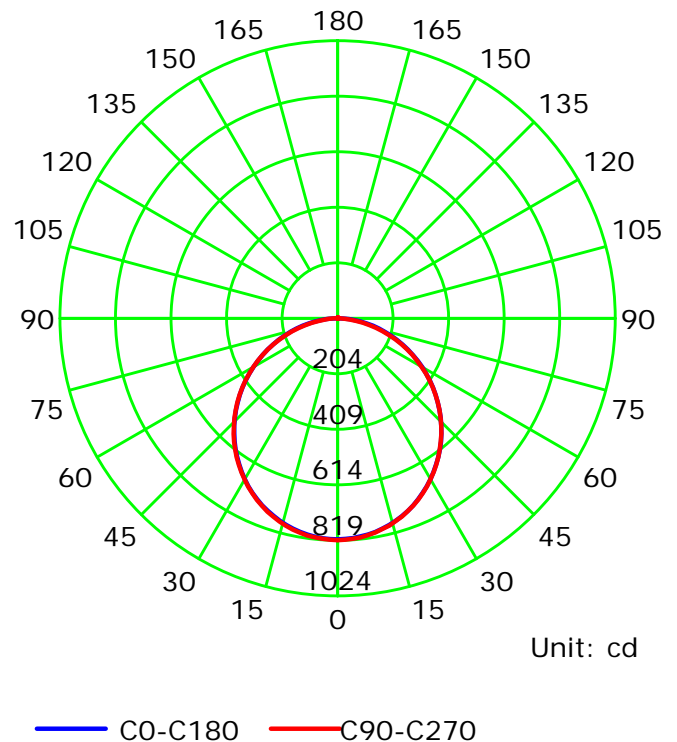
S/MH(C0/C180): 1.25

S/MH(C90/C270): 1.25

Termogramma



Luminous Intensity Distribution Curve



C Plane (°):0.0-360.0: 22.5

Test Lab:

Test Type: TYPE C

Temperature:

Operator:

Gamma Plane (°):0.0-180.0:2.0

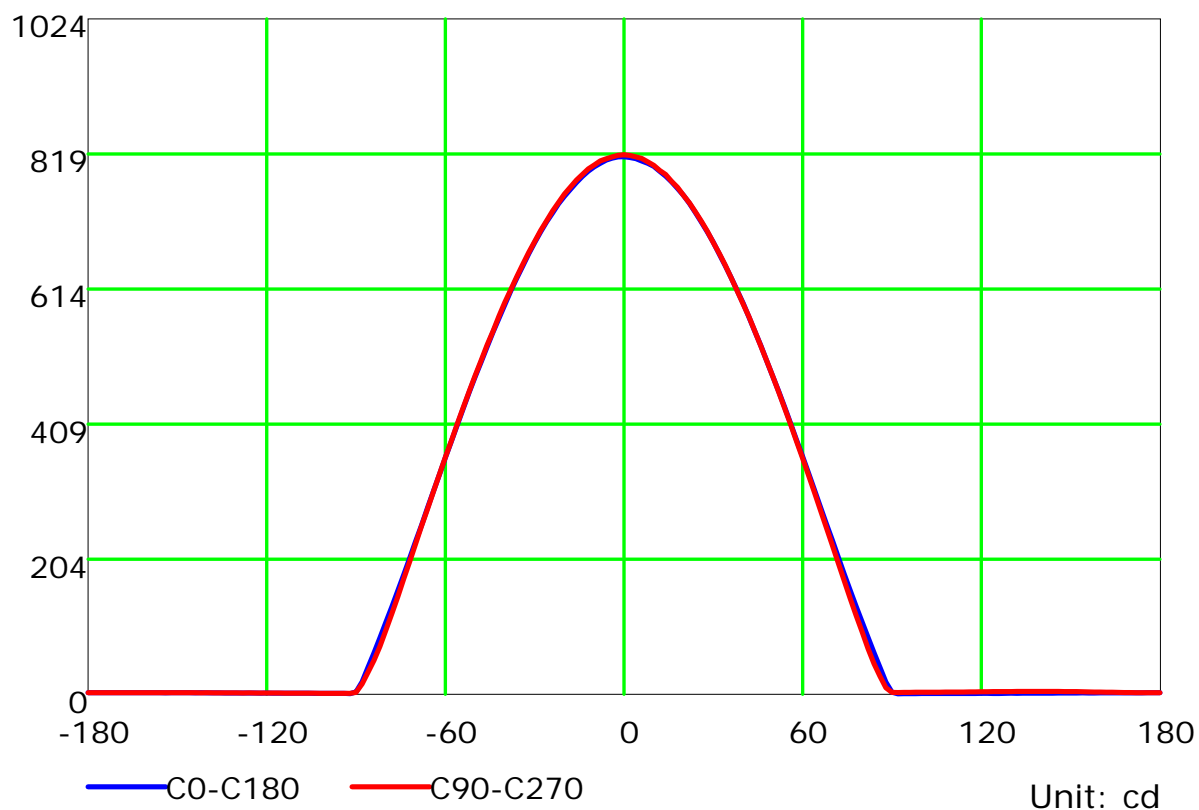
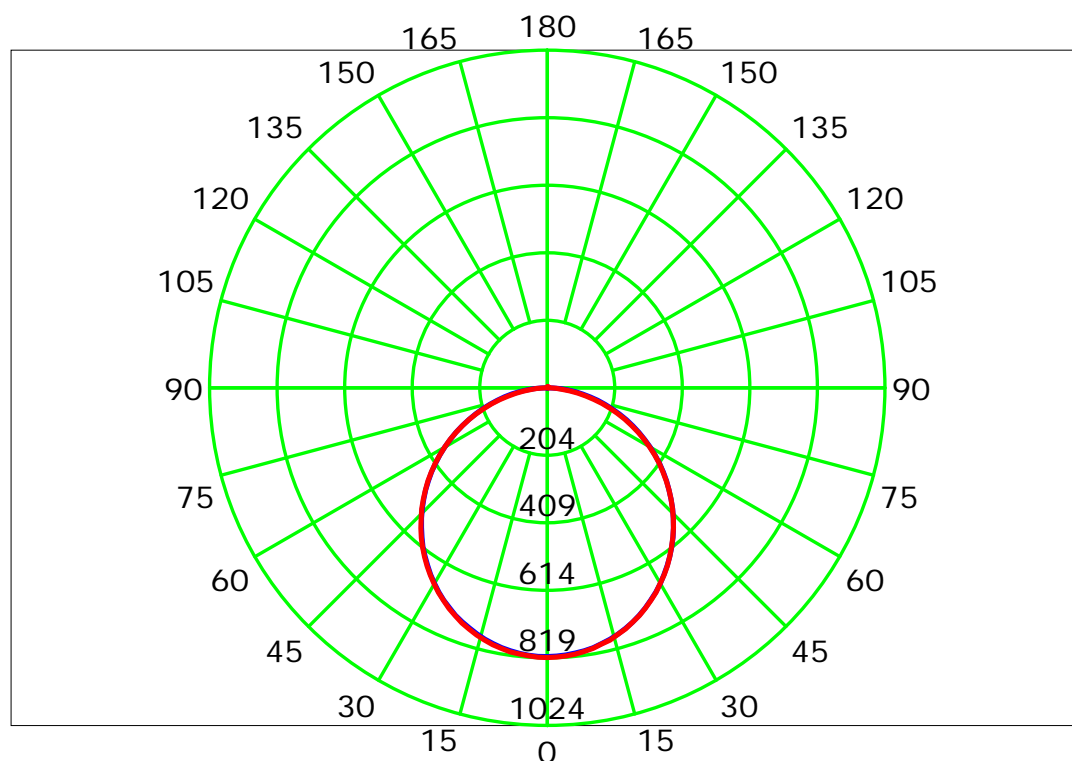
Test Device: LSG-1800B

Distance: 12.677 m

Humidity:

Inspector:

## Luminous Intensity Distribution Curve



C Plane (°): 0.0-360.0: 22.5

Test Lab:

Test Type: TYPE C

Temperature:

Operator:

Gamma Plane (°): 0.0-180.0: 2.0

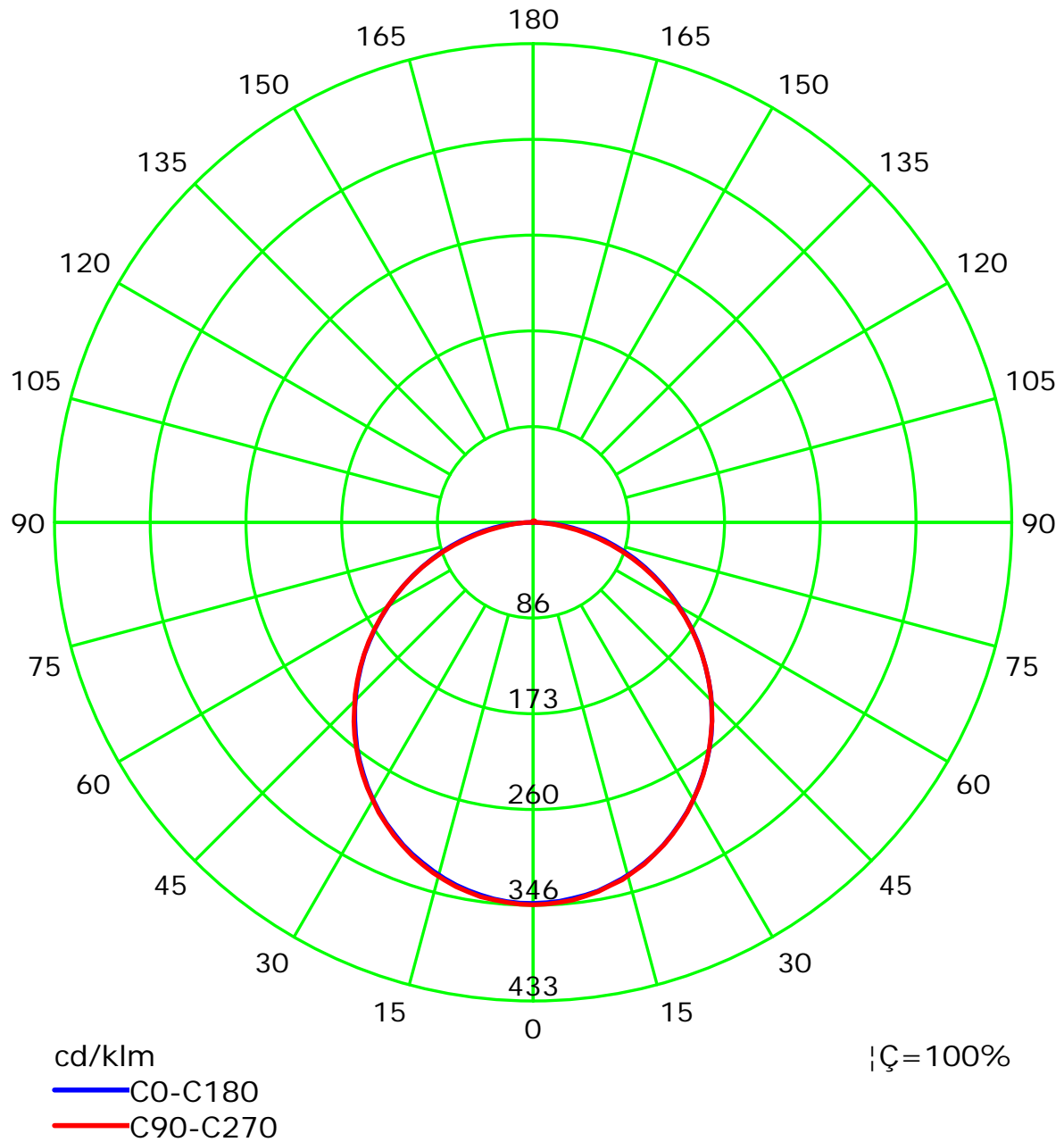
Test Device: LSG-1800B

Distance: 12.677 m

Humidity:

Inspector:

## Luminous Intensity Distribution Curve(cd/klm)



C Plane (°): 0.0-360.0: 22.5

Test Lab:

Test Type: TYPE C

Temperature:

Operator:

Gamma Plane (°): 0.0-180.0: 2.0

Test Device: LSG-1800B

Distance: 12.677 m

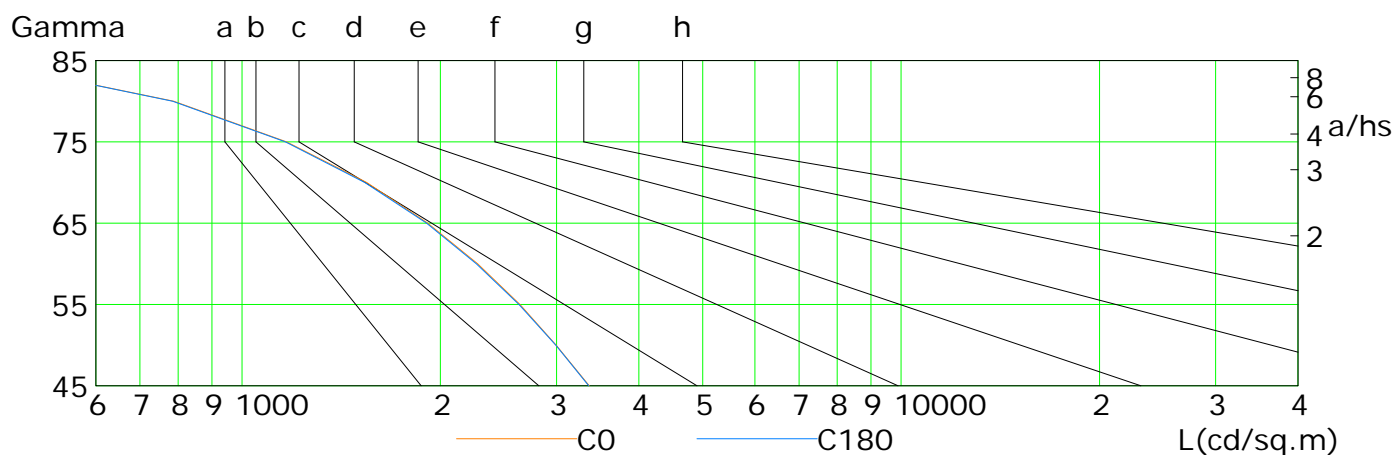
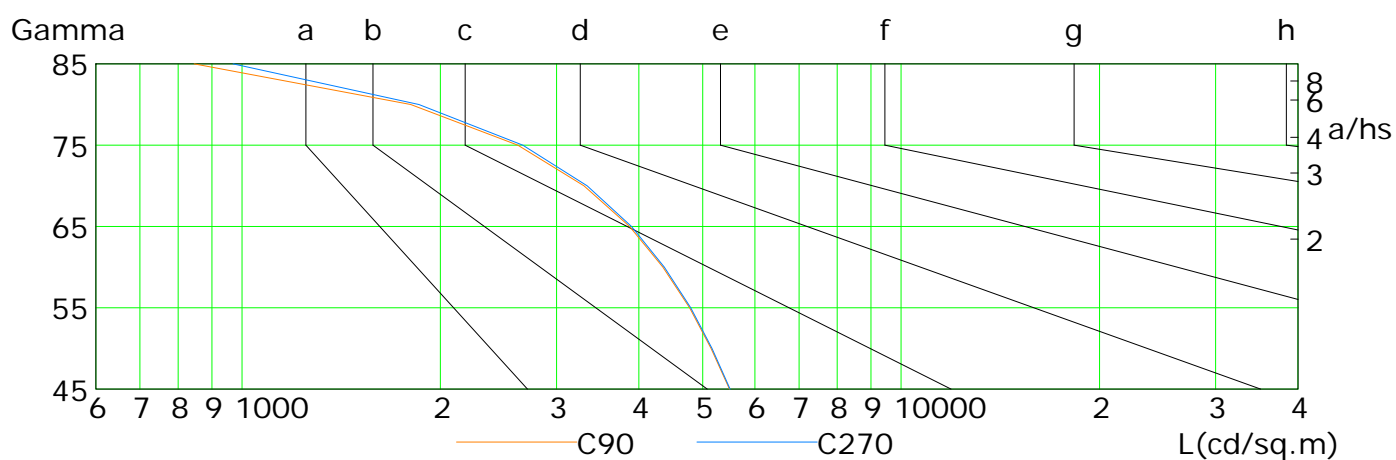
Humidity:

Inspector:

## Lum Limit Curve

| Dazzle | Quality | 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/sq.m) | G45  | G50  | G55  | G60  | G65  | G70  | G75  | G80  | G85 |
|------------|------|------|------|------|------|------|------|------|-----|
| C0         | 3364 | 2995 | 2639 | 2278 | 1913 | 1546 | 1168 | 787  | 395 |
| C90        | 5488 | 5149 | 4776 | 4351 | 3873 | 3302 | 2621 | 1803 | 846 |
| C180       | 3357 | 2993 | 2631 | 2267 | 1905 | 1536 | 1163 | 784  | 396 |
| C270       | 5501 | 5165 | 4793 | 4372 | 3899 | 3339 | 2667 | 1855 | 969 |

C Plane (°):0.0-360.0: 22.5

Test Lab:

Test Type: TYPE C

Temperature:

Operator:

Gamma Plane (°):0.0-180.0:2.0

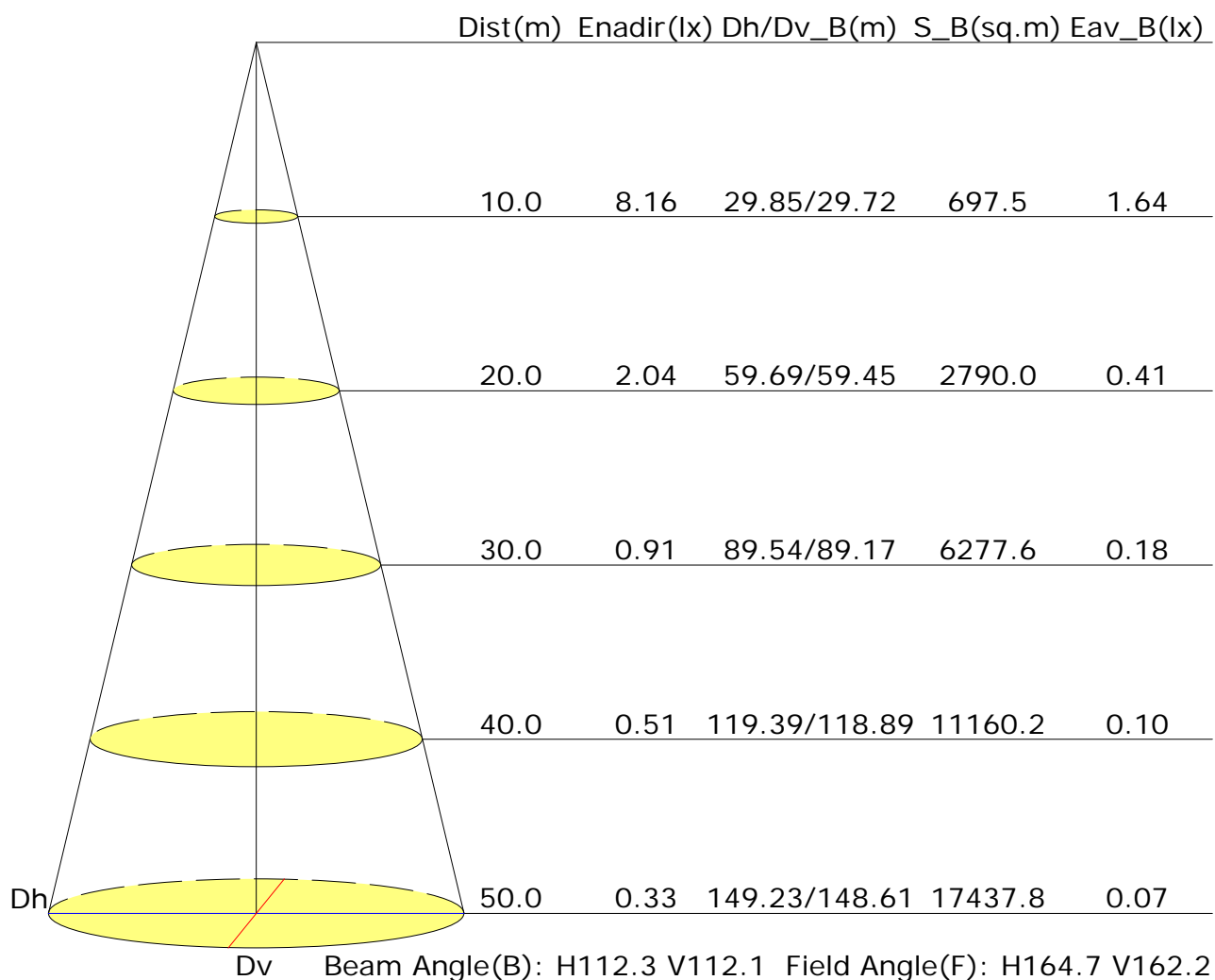
Test Device: LSG-1800B

Distance: 12.677 m

Humidity:

Inspector:

## Illuminance at a Distance



## UGR Table

|  |                  |      |      |      |      |                |      |      |      |      |
|--|------------------|------|------|------|------|----------------|------|------|------|------|
| Reflectance:                                       |                  |      |      |      |      |                |      |      |      |      |
| Ceiling (cavity)                                   | 0.7              | 0.7  | 0.5  | 0.5  | 0.3  | 0.7            | 0.7  | 0.5  | 0.5  | 0.3  |
| Wall   | 0.5              | 0.3  | 0.5  | 0.3  | 0.3  | 0.5            | 0.3  | 0.5  | 0.3  | 0.3  |
| Reference plane                                    | 0.2              | 0.2  | 0.2  | 0.2  | 0.2  | 0.2            | 0.2  | 0.2  | 0.2  | 0.2  |
| Room dimensions                                    | Viewed crosswise |      |      |      |      | Viewed endwise |      |      |      |      |
| X=2H Y=2H  | 15.9             | 17.3 | 16.2 | 17.6 | 17.8 | 17.1           | 18.5 | 17.4 | 18.7 | 19.0 |
| 3H   | 17.1             | 18.4 | 17.4 | 18.6 | 18.9 | 18.4           | 19.7 | 18.8 | 20.0 | 20.3 |
| 4H   | 17.5             | 18.7 | 17.8 | 19.0 | 19.3 | 18.9           | 20.1 | 19.3 | 20.4 | 20.7 |
| 6H   | 17.7             | 18.9 | 18.1 | 19.2 | 19.5 | 19.2           | 20.3 | 19.6 | 20.7 | 21.0 |
| 8H   | 17.8             | 18.9 | 18.2 | 19.2 | 19.6 | 19.3           | 20.4 | 19.7 | 20.7 | 21.1 |
| 12H  | 17.8             | 18.9 | 18.2 | 19.2 | 19.6 | 19.3           | 20.4 | 19.7 | 20.7 | 21.1 |
| X=4H Y=2H  | 16.5             | 17.7 | 16.9 | 18.0 | 18.3 | 17.4           | 18.6 | 17.8 | 18.9 | 19.2 |
| 3H   | 17.8             | 18.9 | 18.2 | 19.2 | 19.6 | 18.9           | 20.0 | 19.3 | 20.3 | 20.7 |
| 4H   | 18.3             | 19.3 | 18.8 | 19.6 | 20.0 | 19.5           | 20.5 | 20.0 | 20.8 | 21.2 |
| 6H   | 18.7             | 19.5 | 19.1 | 19.9 | 20.3 | 19.9           | 20.8 | 20.4 | 21.2 | 21.6 |
| 8H   | 18.8             | 19.5 | 19.2 | 20.0 | 20.4 | 20.0           | 20.8 | 20.5 | 21.2 | 21.6 |
| 12H  | 18.8             | 19.5 | 19.3 | 19.9 | 20.4 | 20.1           | 20.8 | 20.6 | 21.2 | 21.7 |
| X=8H Y=4H  | 18.6             | 19.3 | 19.0 | 19.7 | 20.2 | 19.7           | 20.4 | 20.1 | 20.8 | 21.3 |
| 6H   | 19.0             | 19.6 | 19.5 | 20.1 | 20.5 | 20.1           | 20.7 | 20.6 | 21.2 | 21.7 |
| 8H   | 19.1             | 19.7 | 19.6 | 20.2 | 20.7 | 20.3           | 20.8 | 20.8 | 21.3 | 21.8 |
| 12H  | 19.2             | 19.7 | 19.7 | 20.2 | 20.7 | 20.4           | 20.8 | 20.9 | 21.3 | 21.8 |
| X=12H Y=4H   | 18.6             | 19.2 | 19.0 | 19.7 | 20.1 | 19.6           | 20.3 | 20.1 | 20.8 | 21.2 |
| 6H   | 19.0             | 19.6 | 19.5 | 20.0 | 20.5 | 20.1           | 20.7 | 20.6 | 21.2 | 21.7 |
| 8H   | 19.2             | 19.7 | 19.7 | 20.1 | 20.7 | 20.3           | 20.8 | 20.8 | 21.3 | 21.8 |
| Variations with the observer position at spacings: |                  |      |      |      |      |                |      |      |      |      |
| S=1.0H   | +0.2/-0.2        |      |      |      |      | +0.1/-0.1      |      |      |      |      |
| S=1.5H   | +0.4/-0.7        |      |      |      |      | +0.4/-0.5      |      |      |      |      |
| S=2.0H   | +0.7/-1.2        |      |      |      |      | +0.9/-1.2      |      |      |      |      |

Calculate in accordance with CIE Pub.117. The table is revised with  $2364\text{lm}$  ( $8\log(F/F_0) = 3.0$ ).

## Utilisation Factor Table(Floor cavity)

| Utilisation Factors UF(F)  |      |       | SHR NOM = 1.25 |      |      |      |      |      |      |      |      |  |
|--|------|-------|----------------|------|------|------|------|------|------|------|------|--|
| Room Reflectance   |      |       | Room Index(RI) |      |      |      |      |      |      |      |      |  |
| Ceiling  | Wall | Floor | 0.75           | 1.00 | 1.25 | 1.50 | 2.00 | 2.50 | 3.00 | 4.00 | 5.00 |  |
| 0.70   | 0.50 | 0.20  | 0.56           | 0.66 | 0.74 | 0.79 | 0.86 | 0.92 | 0.95 | 1.00 | 1.03 |  |
|  | 0.30 |       | 0.48           | 0.58 | 0.66 | 0.72 | 0.80 | 0.86 | 0.90 | 0.95 | 0.99 |  |
|  | 0.20 |       | 0.42           | 0.53 | 0.60 | 0.66 | 0.75 | 0.81 | 0.85 | 0.92 | 0.96 |  |
| 0.50   | 0.50 | 0.20  | 0.54           | 0.64 | 0.71 | 0.76 | 0.83 | 0.88 | 0.91 | 0.96 | 0.98 |  |
|  | 0.30 |       | 0.47           | 0.57 | 0.64 | 0.70 | 0.78 | 0.83 | 0.87 | 0.92 | 0.95 |  |
|  | 0.20 |       | 0.42           | 0.52 | 0.59 | 0.65 | 0.73 | 0.79 | 0.83 | 0.89 | 0.93 |  |
| 0.30   | 0.50 | 0.20  | 0.53           | 0.62 | 0.69 | 0.73 | 0.80 | 0.85 | 0.88 | 0.92 | 0.94 |  |
|  | 0.30 |       | 0.46           | 0.56 | 0.63 | 0.68 | 0.76 | 0.81 | 0.84 | 0.89 | 0.92 |  |
|  | 0.20 |       | 0.41           | 0.51 | 0.58 | 0.64 | 0.72 | 0.77 | 0.81 | 0.86 | 0.90 |  |
| 0.00   | 0.00 | 0.00  | 0.39           | 0.49 | 0.56 | 0.61 | 0.68 | 0.73 | 0.77 | 0.82 | 0.85 |  |
| Rating: 24W Photometrically tested without ceiling board.<br>Multiply UF values by service correction factors<br>Calculate in accordance with CIBSE Technical Memorandum NO.5 1980 |      |       |                |      |      |      |      |      |      |      |      |  |

## Utilisation Factor Table(Wall)

| Utilisation Factors UF(W)  |      |       | SHR NOM = 1.25 |      |      |      |      |      |      |      |      |  |
|--|------|-------|----------------|------|------|------|------|------|------|------|------|--|
| Room Reflectance   |      |       | Room Index(RI) |      |      |      |      |      |      |      |      |  |
| Ceiling  | Wall | Floor | 0.75           | 1.00 | 1.25 | 1.50 | 2.00 | 2.50 | 3.00 | 4.00 | 5.00 |  |
| 0.70   | 0.50 | 0.20  | 1.01           | 0.83 | 0.71 | 0.62 | 0.50 | 0.41 | 0.35 | 0.27 | 0.22 |  |
|  | 0.30 |       | 0.84           | 0.71 | 0.62 | 0.55 | 0.45 | 0.38 | 0.33 | 0.26 | 0.21 |  |
|  | 0.20 |       | 0.72           | 0.62 | 0.55 | 0.49 | 0.41 | 0.35 | 0.31 | 0.24 | 0.20 |  |
| 0.50   | 0.50 | 0.20  | 0.97           | 0.80 | 0.68 | 0.59 | 0.48 | 0.43 | 0.34 | 0.26 | 0.21 |  |
|  | 0.30 |       | 0.82           | 0.70 | 0.60 | 0.53 | 0.43 | 0.36 | 0.32 | 0.25 | 0.20 |  |
|  | 0.20 |       | 0.71           | 0.61 | 0.54 | 0.48 | 0.40 | 0.34 | 0.30 | 0.24 | 0.20 |  |
| 0.30   | 0.50 | 0.20  | 0.94           | 0.77 | 0.66 | 0.57 | 0.45 | 0.38 | 0.32 | 0.25 | 0.20 |  |
|  | 0.30 |       | 0.80           | 0.68 | 0.59 | 0.52 | 0.42 | 0.35 | 0.30 | 0.24 | 0.20 |  |
|  | 0.20 |       | 0.70           | 0.61 | 0.53 | 0.47 | 0.39 | 0.33 | 0.29 | 0.23 | 0.19 |  |
| 0.00   | 0.00 | 0.00  | 0.60           | 0.51 | 0.44 | 0.39 | 0.31 | 0.26 | 0.23 | 0.18 | 0.15 |  |
| Rating: 24W Photometrically tested without ceiling board.<br>Multiply UF values by service correction factors<br>Calculate in accordance with CIBSE Technical Memorandum NO.5 1980 |      |       |                |      |      |      |      |      |      |      |      |  |



## Utilisation Factor Table(Ceiling cavity)

| Utilisation Factors UF(C)   |      |       | SHR NOM = 1.25 |      |      |      |      |      |      |      |      |
|---|------|-------|----------------|------|------|------|------|------|------|------|------|
| Room Reflectance  |      |       | Room Index(RI) |      |      |      |      |      |      |      |      |
| Ceiling   | Wall | Floor | 0.75           | 1.00 | 1.25 | 1.50 | 2.00 | 2.50 | 3.00 | 4.00 | 5.00 |
| 0.70  | 0.50 | 0.20  | 0.17           | 0.18 | 0.19 | 0.20 | 0.21 | 0.21 | 0.22 | 0.22 | 0.23 |
|   | 0.30 |       | 0.10           | 0.12 | 0.13 | 0.14 | 0.16 | 0.17 | 0.18 | 0.19 | 0.20 |
|   | 0.20 |       | 0.05           | 0.07 | 0.08 | 0.10 | 0.12 | 0.13 | 0.14 | 0.16 | 0.17 |
| 0.50  | 0.50 | 0.20  | 0.17           | 0.18 | 0.19 | 0.19 | 0.20 | 0.20 | 0.21 | 0.21 | 0.22 |
|   | 0.30 |       | 0.10           | 0.12 | 0.13 | 0.14 | 0.15 | 0.16 | 0.17 | 0.18 | 0.19 |
|   | 0.20 |       | 0.05           | 0.07 | 0.08 | 0.09 | 0.11 | 0.13 | 0.14 | 0.16 | 0.17 |
| 0.30  | 0.50 | 0.20  | 0.16           | 0.17 | 0.18 | 0.18 | 0.19 | 0.20 | 0.20 | 0.20 | 0.21 |
|   | 0.30 |       | 0.10           | 0.11 | 0.12 | 0.13 | 0.15 | 0.16 | 0.17 | 0.18 | 0.18 |
|   | 0.20 |       | 0.05           | 0.07 | 0.08 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 |
| 0.00  | 0.00 | 0.00  | 0.01           | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| <p>Rating: 24W Photometrically tested without ceiling board.</p> <p>Multiply UF values by service correction factors</p> <p>Calculate in accordance with CIBSE Technical Memorandum NO.5 1980</p> |      |       |                |      |      |      |      |      |      |      |      |