

Report No.:

Test Time: 03.08.2020 16:03

## Luminaire Property

Luminaire Manufacturer:

Luminaire Description: FFD 111 220W 5000K 90 rp Ex

Number of Lamps: 1

Luminous Length (mm): 400 mm

Luminous Height (mm): 153 mm

Current: 1.016 A

Power Factor: 0.980

Lumens per Lamp: 23454.1 lm

Luminous Width (mm): 400 mm

Voltage: 221.5 V

Power: 220.63 W

## Photometric Results

CIE Class: Direct

Measurement Flux: 23454.1 lm

Downward Ratio: 99.64%

Field Angle(C0/C180,C90/C270,C45/C225,C135/315): 129.3, 128.2, 127.9, 126.9

Beam Angle(C0/C180,C90/C270,C45/C225,C135/315): 82.3, 82.6, 83.1, 82.0

Luminaire Efficacy Rating (LER): 106.36

Max. Intensity: 12850.3 cd

S/MH(C0/C180): 1.43

Total Rated Lamp Lumens: 23454.1 lm

Efficiency: 100.00%

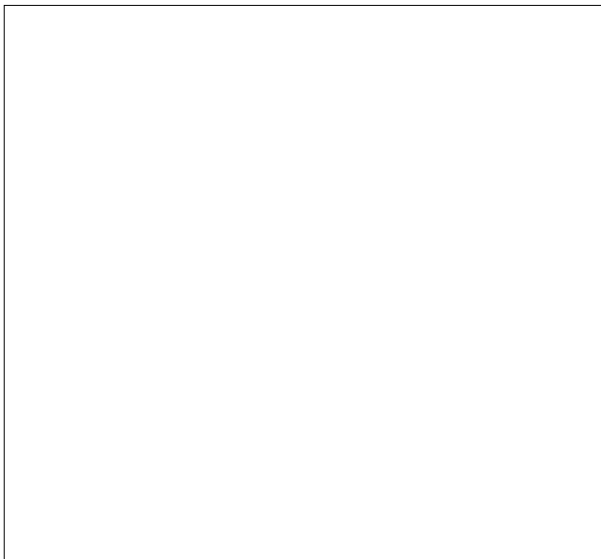
Upward Ratio: 0.36%

Central Intensity: 10750.67 cd

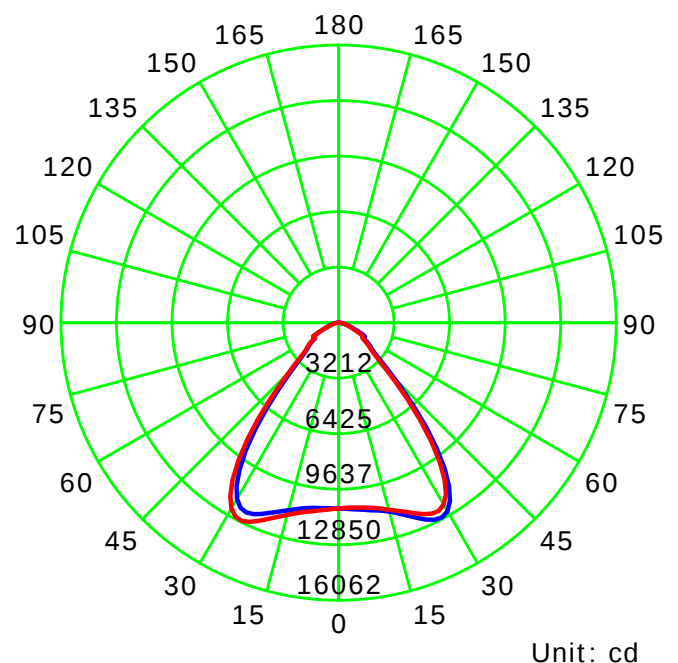
Pos of Max. Intensity: H337.5 V28

S/MH(C90/C270): 1.44

Picture Of Luminaire



Luminous Intensity Distribution Curve



— C0-C180 — C90-C270

C Plane (°):0.0-360.0: 22.5

Test Lab:

Test Type: TYPE C

Temperature:

Operator:

Gamma Plane (°):0.0-180.0:2.0

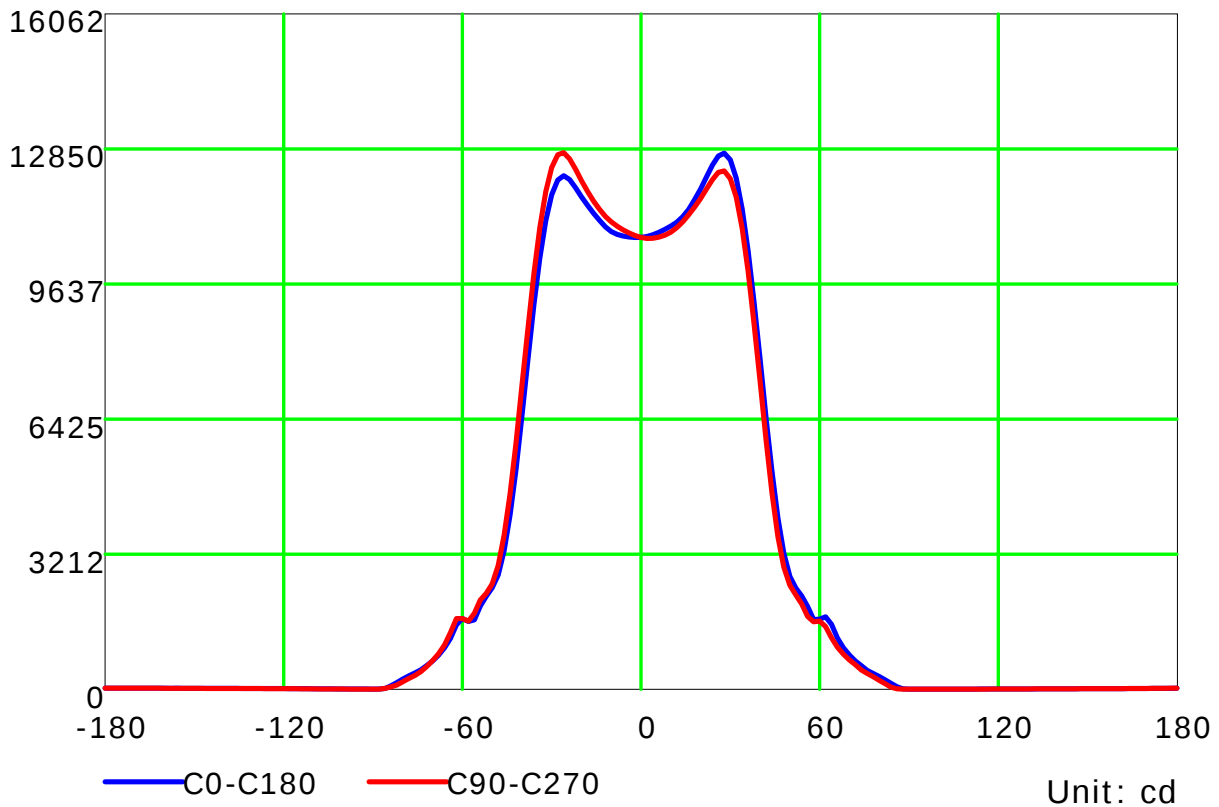
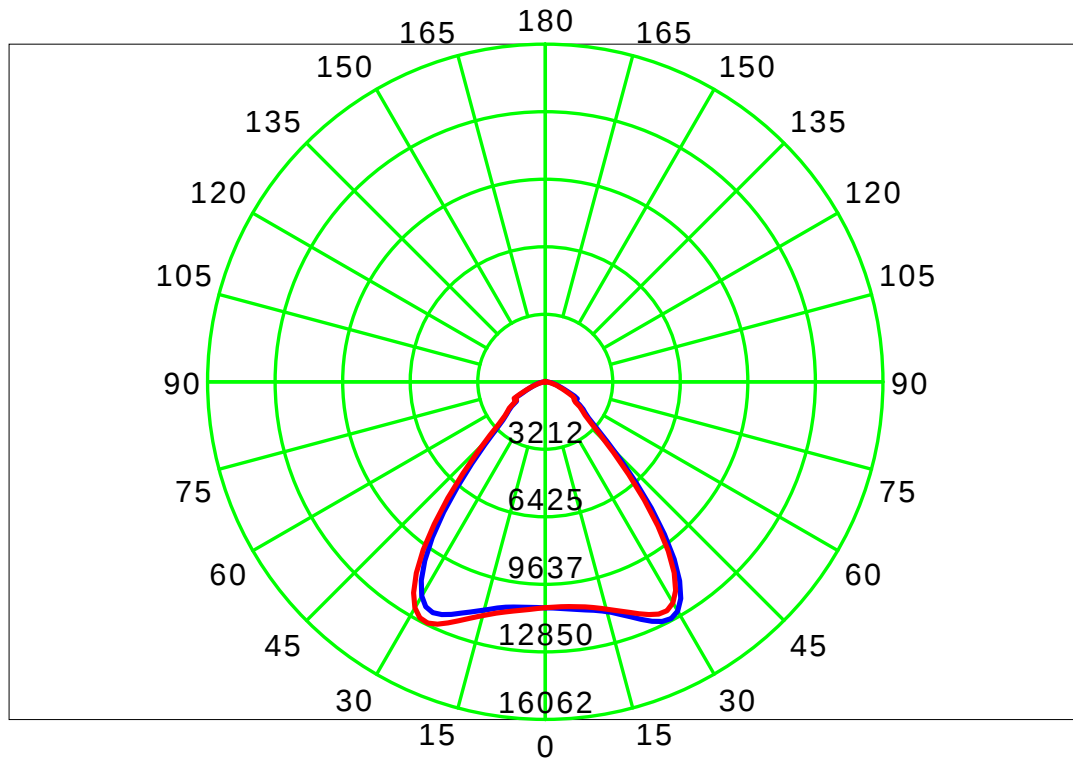
Test Device: LSG-1800B

Distance: 12.677 m

Humidity:

Inspector:

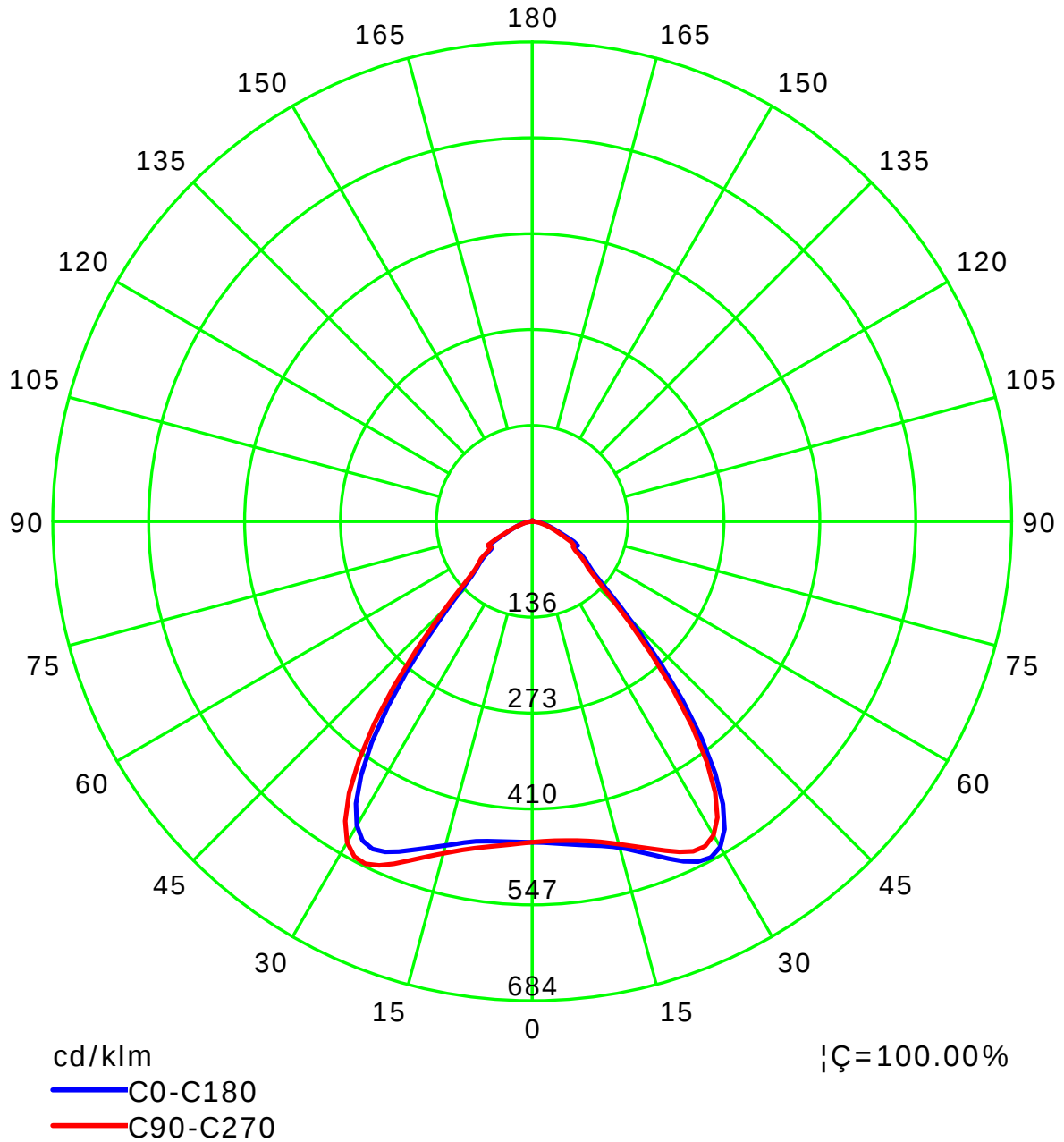
## Luminous Intensity Distribution Curve



C Plane (°):0.0-360.0: 22.5  
Test Lab:  
Test Type: TYPE C  
Temperature:  
Operator:

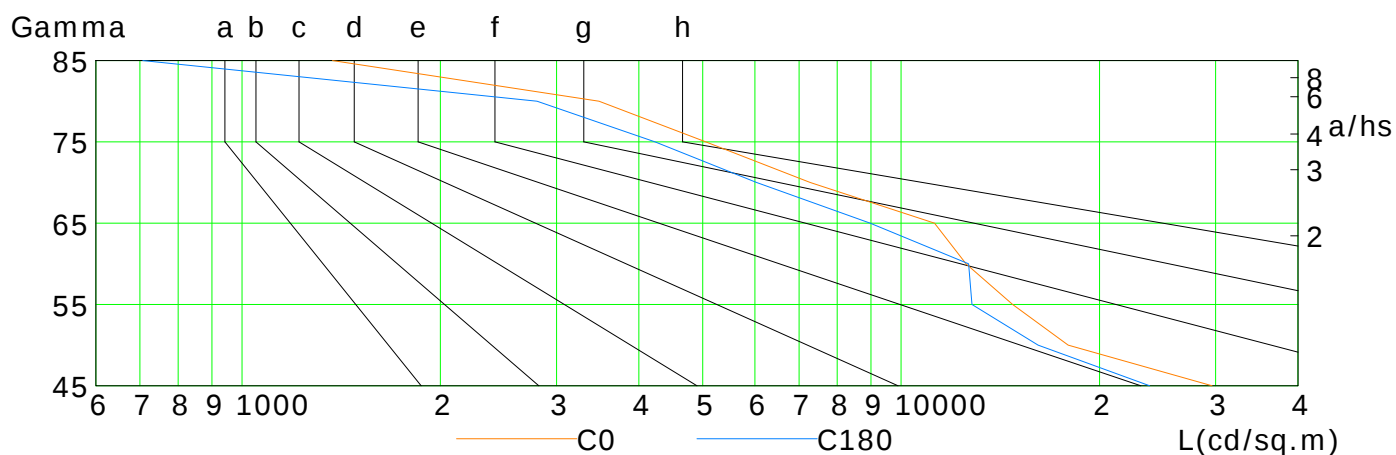
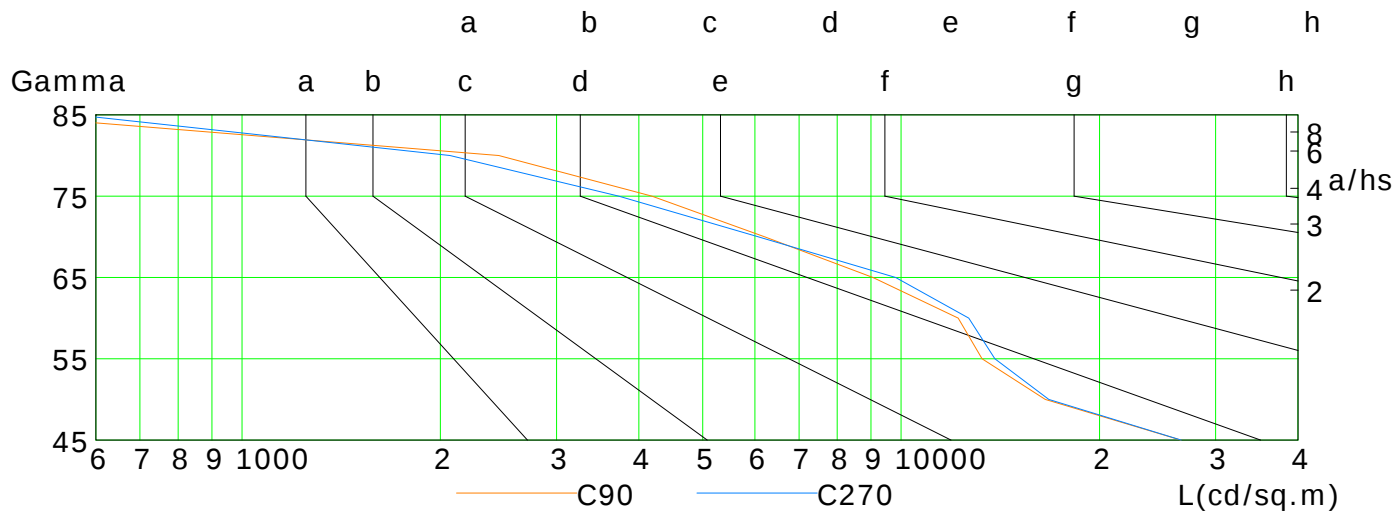
Gamma Plane (°):0.0-180.0:2.0  
Test Device: LSG-1800B  
Distance: 12.677 m  
Humidity:  
Inspector:

## Luminous Intensity Distribution Curve(cd / klm)



## 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 |



| L(cd/sq.m) | G45   | G50   | G55   | G60   | G65   | G70  | G75  | G80  | G85  |
|------------|-------|-------|-------|-------|-------|------|------|------|------|
| C0         | 29636 | 17926 | 14761 | 12545 | 11237 | 7279 | 5053 | 3480 | 1371 |
| C90        | 26566 | 16543 | 13267 | 12206 | 9059  | 6208 | 4189 | 2452 | 426  |
| C180       | 23820 | 16138 | 12809 | 12659 | 8972  | 6035 | 4232 | 2803 | 707  |
| C270       | 26603 | 16753 | 13872 | 12668 | 9807  | 6072 | 3731 | 2068 | 560  |

C Plane (°):0.0-360.0: 22.5

Test Lab:

Test Type: TYPE C

Temperature:

Operator:

Gamma Plane (°):0.0-180.0:2.0

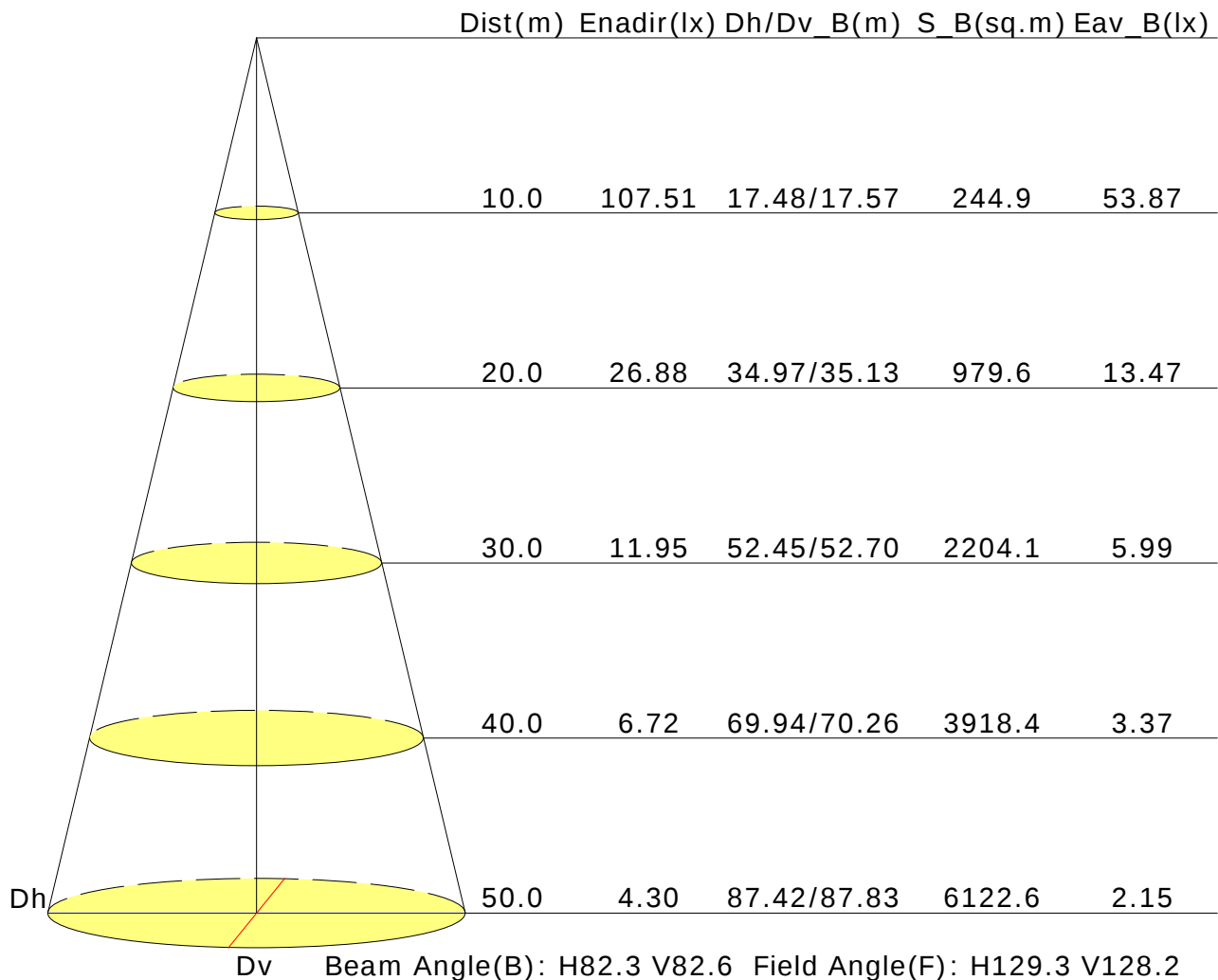
Test Device: LSG-1800B

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                                          | 21.5             | 22.7 | 21.8 | 22.9 | 23.2 | 21.3           | 22.4 | 21.5 | 22.6 | 22.9 |
| 3H                                                 | 22.0             | 23.1 | 22.3 | 23.3 | 23.6 | 21.7           | 22.7 | 22.0 | 23.0 | 23.2 |
| 4H                                                 | 22.2             | 23.1 | 22.5 | 23.4 | 23.7 | 21.8           | 22.7 | 22.1 | 23.0 | 23.3 |
| 6H                                                 | 22.2             | 23.1 | 22.6 | 23.4 | 23.8 | 21.8           | 22.7 | 22.2 | 23.0 | 23.3 |
| 8H                                                 | 22.2             | 23.1 | 22.6 | 23.4 | 23.8 | 21.8           | 22.6 | 22.1 | 23.0 | 23.3 |
| 12H                                                | 22.2             | 23.1 | 22.6 | 23.4 | 23.7 | 21.7           | 22.6 | 22.1 | 22.9 | 23.2 |
| X=4H Y=2H                                          | 21.6             | 22.6 | 22.0 | 22.9 | 23.2 | 21.4           | 22.4 | 21.7 | 22.6 | 22.9 |
| 3H                                                 | 22.3             | 23.2 | 22.7 | 23.5 | 23.8 | 22.0           | 22.8 | 22.4 | 23.2 | 23.5 |
| 4H                                                 | 22.6             | 23.4 | 23.0 | 23.7 | 24.1 | 22.2           | 23.0 | 22.6 | 23.3 | 23.7 |
| 6H                                                 | 22.8             | 23.5 | 23.2 | 23.8 | 24.2 | 22.4           | 23.0 | 22.8 | 23.4 | 23.8 |
| 8H                                                 | 22.8             | 23.4 | 23.3 | 23.8 | 24.3 | 22.3           | 22.9 | 22.8 | 23.3 | 23.8 |
| 12H                                                | 22.8             | 23.4 | 23.3 | 23.8 | 24.2 | 22.3           | 22.9 | 22.8 | 23.3 | 23.7 |
| X=8H Y=4H                                          | 22.7             | 23.3 | 23.2 | 23.7 | 24.2 | 22.4           | 23.0 | 22.8 | 23.4 | 23.8 |
| 6H                                                 | 23.0             | 23.5 | 23.5 | 24.0 | 24.4 | 22.6           | 23.1 | 23.1 | 23.5 | 24.0 |
| 8H                                                 | 23.1             | 23.5 | 23.6 | 24.0 | 24.5 | 22.6           | 23.0 | 23.1 | 23.5 | 24.0 |
| 12H                                                | 23.1             | 23.5 | 23.6 | 24.0 | 24.5 | 22.6           | 23.0 | 23.1 | 23.4 | 23.9 |
| X=12H Y=4H                                         | 22.7             | 23.3 | 23.2 | 23.7 | 24.1 | 22.4           | 22.9 | 22.8 | 23.3 | 23.8 |
| 6H                                                 | 23.0             | 23.5 | 23.5 | 23.9 | 24.4 | 22.6           | 23.0 | 23.1 | 23.5 | 24.0 |
| 8H                                                 | 23.1             | 23.5 | 23.6 | 24.0 | 24.5 | 22.6           | 23.0 | 23.1 | 23.5 | 24.0 |
| Variations with the observer position at spacings: |                  |      |      |      |      |                |      |      |      |      |
| S=1.0H                                             | +1.1/-1.3        |      |      |      |      | +1.2/-1.4      |      |      |      |      |
| S=1.5H                                             | +2.7/-1.7        |      |      |      |      | +2.8/-1.7      |      |      |      |      |
| S=2.0H                                             | +4.1/-2.3        |      |      |      |      | +4.3/-2.5      |      |      |      |      |

Calculate in accordance with CIE Pub.117. The table is revised with 23454lm ( $8\log(F/F_0) = 11.0$ ).

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:

## 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  | 0.73           | 0.81 | 0.87 | 0.91 | 0.96 | 1.00 | 1.02 | 1.05 | 1.07 |  |
|                                                                                                                                                                                                   | 0.30 |       | 0.67           | 0.75 | 0.81 | 0.86 | 0.92 | 0.96 | 0.99 | 1.02 | 1.05 |  |
|                                                                                                                                                                                                   | 0.20 |       | 0.62           | 0.71 | 0.77 | 0.82 | 0.88 | 0.92 | 0.95 | 1.00 | 1.03 |  |
| 0.50                                                                                                                                                                                              | 0.50 | 0.20  | 0.71           | 0.79 | 0.84 | 0.88 | 0.93 | 0.96 | 0.99 | 1.02 | 1.03 |  |
|                                                                                                                                                                                                   | 0.30 |       | 0.66           | 0.74 | 0.80 | 0.84 | 0.89 | 0.93 | 0.96 | 0.99 | 1.01 |  |
|                                                                                                                                                                                                   | 0.20 |       | 0.62           | 0.70 | 0.76 | 0.80 | 0.86 | 0.90 | 0.93 | 0.97 | 0.99 |  |
| 0.30                                                                                                                                                                                              | 0.50 | 0.20  | 0.70           | 0.77 | 0.82 | 0.86 | 0.90 | 0.93 | 0.95 | 0.98 | 0.99 |  |
|                                                                                                                                                                                                   | 0.30 |       | 0.65           | 0.73 | 0.78 | 0.82 | 0.87 | 0.91 | 0.93 | 0.96 | 0.98 |  |
|                                                                                                                                                                                                   | 0.20 |       | 0.62           | 0.70 | 0.75 | 0.79 | 0.85 | 0.88 | 0.91 | 0.94 | 0.96 |  |
| 0.00                                                                                                                                                                                              | 0.00 | 0.00  | 0.60           | 0.67 | 0.73 | 0.76 | 0.81 | 0.85 | 0.87 | 0.90 | 0.92 |  |
| <p>Rating:221W 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> |      |       |                |      |      |      |      |      |      |      |      |  |

## 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  | 0.75           | 0.61 | 0.51 | 0.44 | 0.35 | 0.29 | 0.25 | 0.19 | 0.16 |  |
|                                                                                                                                                                                                   | 0.30 |       | 0.63           | 0.52 | 0.45 | 0.39 | 0.32 | 0.27 | 0.23 | 0.18 | 0.15 |  |
|                                                                                                                                                                                                   | 0.20 |       | 0.54           | 0.46 | 0.40 | 0.35 | 0.29 | 0.25 | 0.21 | 0.17 | 0.14 |  |
| 0.50                                                                                                                                                                                              | 0.50 | 0.20  | 0.72           | 0.58 | 0.49 | 0.42 | 0.33 | 0.31 | 0.23 | 0.18 | 0.14 |  |
|                                                                                                                                                                                                   | 0.30 |       | 0.61           | 0.50 | 0.43 | 0.38 | 0.30 | 0.25 | 0.22 | 0.17 | 0.14 |  |
|                                                                                                                                                                                                   | 0.20 |       | 0.53           | 0.45 | 0.39 | 0.34 | 0.28 | 0.23 | 0.20 | 0.16 | 0.13 |  |
| 0.30                                                                                                                                                                                              | 0.50 | 0.20  | 0.70           | 0.55 | 0.46 | 0.40 | 0.31 | 0.26 | 0.22 | 0.17 | 0.14 |  |
|                                                                                                                                                                                                   | 0.30 |       | 0.59           | 0.49 | 0.41 | 0.36 | 0.29 | 0.24 | 0.20 | 0.16 | 0.13 |  |
|                                                                                                                                                                                                   | 0.20 |       | 0.52           | 0.44 | 0.38 | 0.33 | 0.27 | 0.22 | 0.19 | 0.15 | 0.13 |  |
| 0.00                                                                                                                                                                                              | 0.00 | 0.00  | 0.40           | 0.32 | 0.27 | 0.23 | 0.19 | 0.15 | 0.13 | 0.10 | 0.08 |  |
| <p>Rating:221W 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> |      |       |                |      |      |      |      |      |      |      |      |  |

## 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  | 0.15           | 0.16 | 0.17 | 0.18 | 0.19 | 0.20 | 0.20 | 0.21 | 0.22 |  |
|                                                                                                                                                                                                   | 0.30 |       | 0.09           | 0.11 | 0.13 | 0.14 | 0.15 | 0.17 | 0.18 | 0.19 | 0.20 |  |
|                                                                                                                                                                                                   | 0.20 |       | 0.06           | 0.08 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.17 | 0.18 |  |
| 0.50                                                                                                                                                                                              | 0.50 | 0.20  | 0.14           | 0.15 | 0.16 | 0.17 | 0.18 | 0.19 | 0.19 | 0.20 | 0.21 |  |
|                                                                                                                                                                                                   | 0.30 |       | 0.09           | 0.11 | 0.12 | 0.13 | 0.15 | 0.16 | 0.17 | 0.18 | 0.19 |  |
|                                                                                                                                                                                                   | 0.20 |       | 0.06           | 0.07 | 0.09 | 0.10 | 0.12 | 0.14 | 0.15 | 0.16 | 0.17 |  |
| 0.30                                                                                                                                                                                              | 0.50 | 0.20  | 0.14           | 0.15 | 0.16 | 0.16 | 0.18 | 0.18 | 0.19 | 0.19 | 0.20 |  |
|                                                                                                                                                                                                   | 0.30 |       | 0.09           | 0.11 | 0.12 | 0.13 | 0.15 | 0.16 | 0.16 | 0.18 | 0.18 |  |
|                                                                                                                                                                                                   | 0.20 |       | 0.06           | 0.07 | 0.09 | 0.10 | 0.12 | 0.13 | 0.14 | 0.16 | 0.17 |  |
| 0.00                                                                                                                                                                                              | 0.00 | 0.00  | 0.00           | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |  |
| <p>Rating:221W 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> |      |       |                |      |      |      |      |      |      |      |      |  |