

Report No.: 1

Test Time: 31.01.2020 16:34

## Luminaire Property

Luminaire Manufacturer:

Luminaire Description: FW 150 HE 4x28LED 150W 5000K 40x90gr.

Luminous Length (mm): 404

Luminous Width (mm): 153

Luminous Height (mm): 80

Voltage: 221.4 V

Current: 0.699 A

Power: 151.55 W

Power Factor: 0.977

## Photometric Results

CIE Class: Direct

Measurement Flux: 20691.4 lm

Downward Ratio: 99%

Total Rated Lamp Lumens: 20691.4 lm

Efficiency: 100%

Upward Ratio: 1%

Field Angle(C0/C180,C90/C270,C45/C225,C135/315): 39.3, 144.6, 52.8, 50.2

Beam Angle(C0/C180,C90/C270,C45/C225,C135/315): 24.1, 83.3, 32.6, 31.3

Luminaire Efficacy Rating (LER): 136.58

Central Intensity: 27912.75 cd

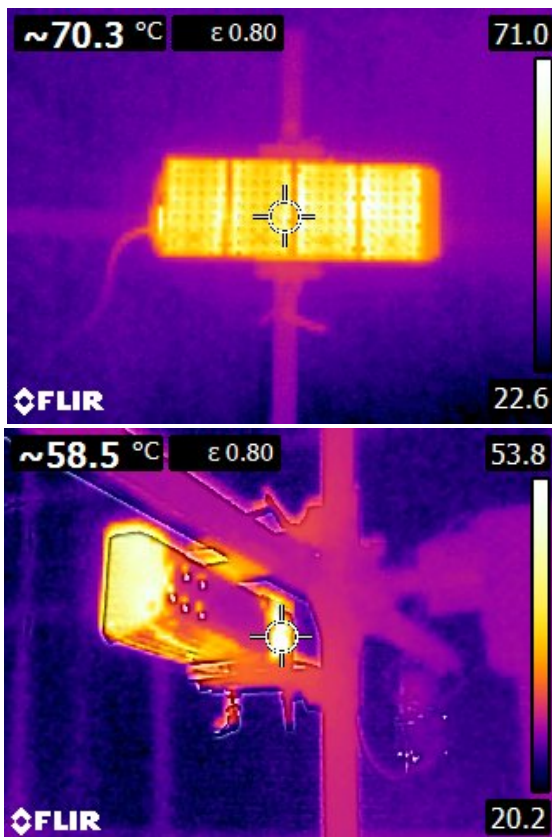
Max. Intensity: 28353.74 cd

Pos of Max. Intensity: H292.5 V3

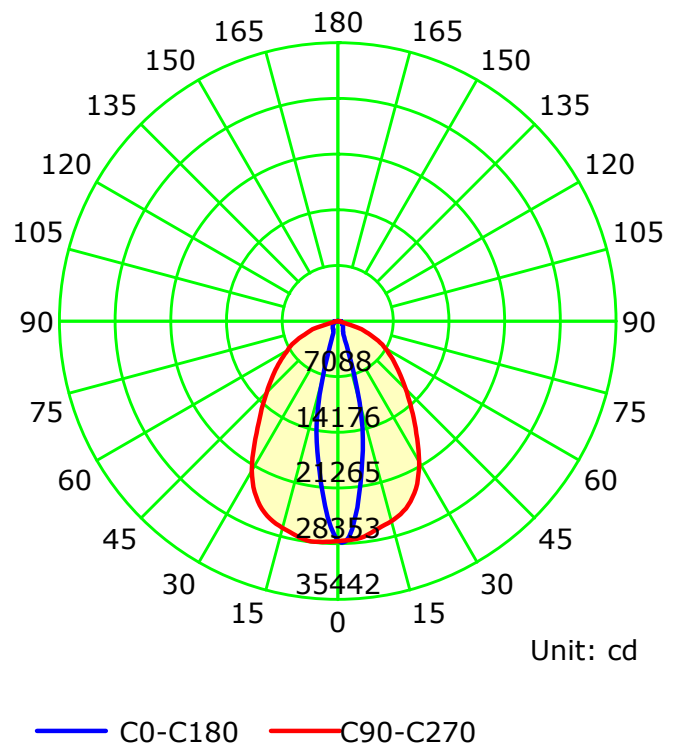
S/MH(C0/C180): 0.41

S/MH(C90/C270): 1.15

Termogramma



Luminous Intensity Distribution Curve



C Plane (°):0.0-360.0: 22.5

Test Lab:

Test Type: TYPE C

Temperature:

Operator:

Gamma Plane (°):0.0-180.0:1.0

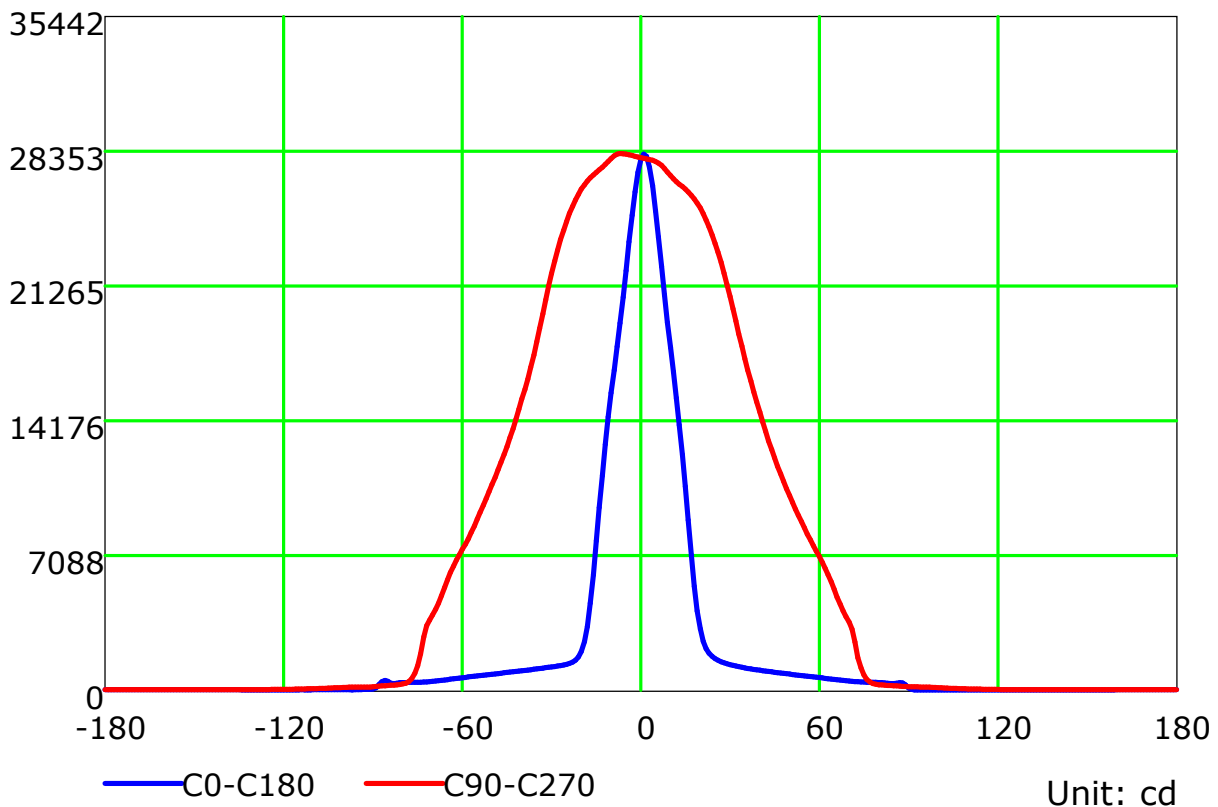
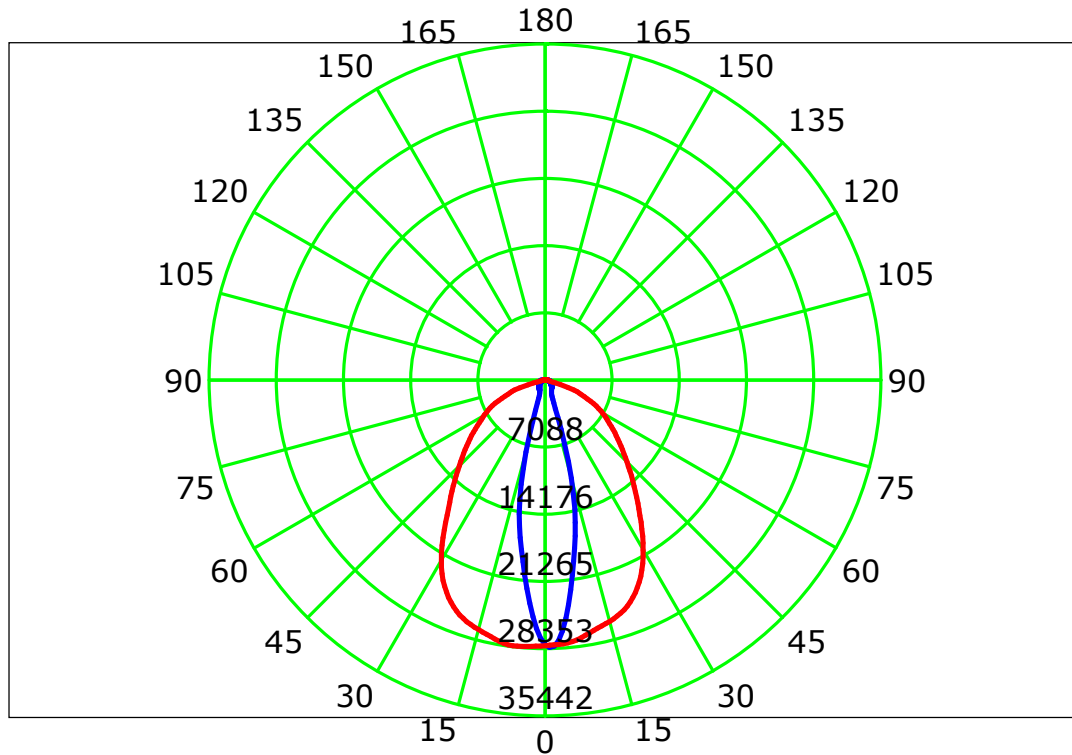
Test Device: LSG-1800B

Distance: 12.677 m

Humidity:

Inspector:

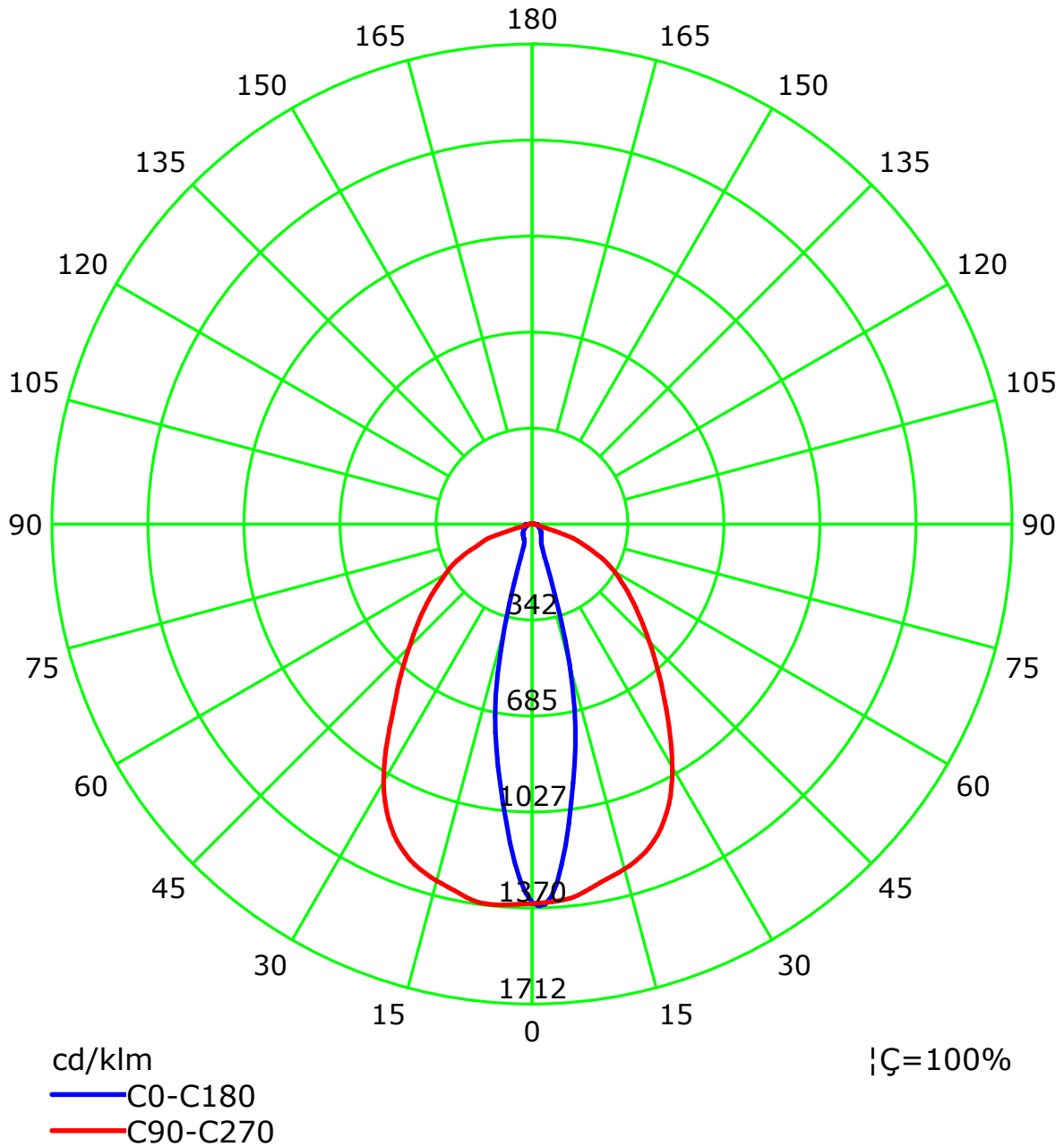
## Luminous Intensity Distribution Curve



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

Gamma Plane (°):0.0-180.0:1.0  
Test Device: LSG-1800B  
Distance: 12.677 m  
Humidity:  
Inspector:

## Luminous Intensity Distribution Curve(cd/klm)



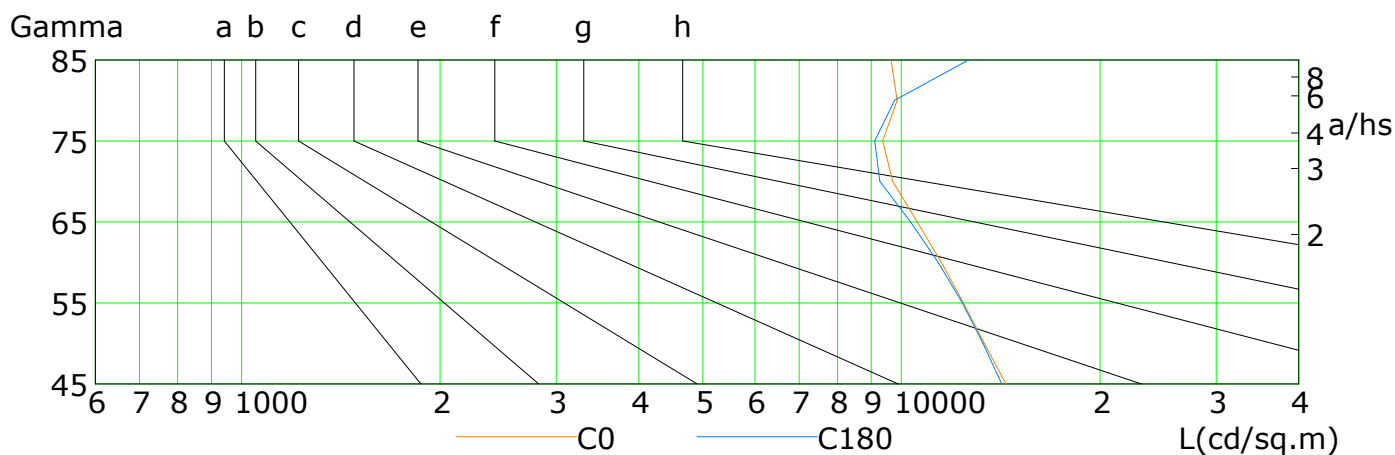
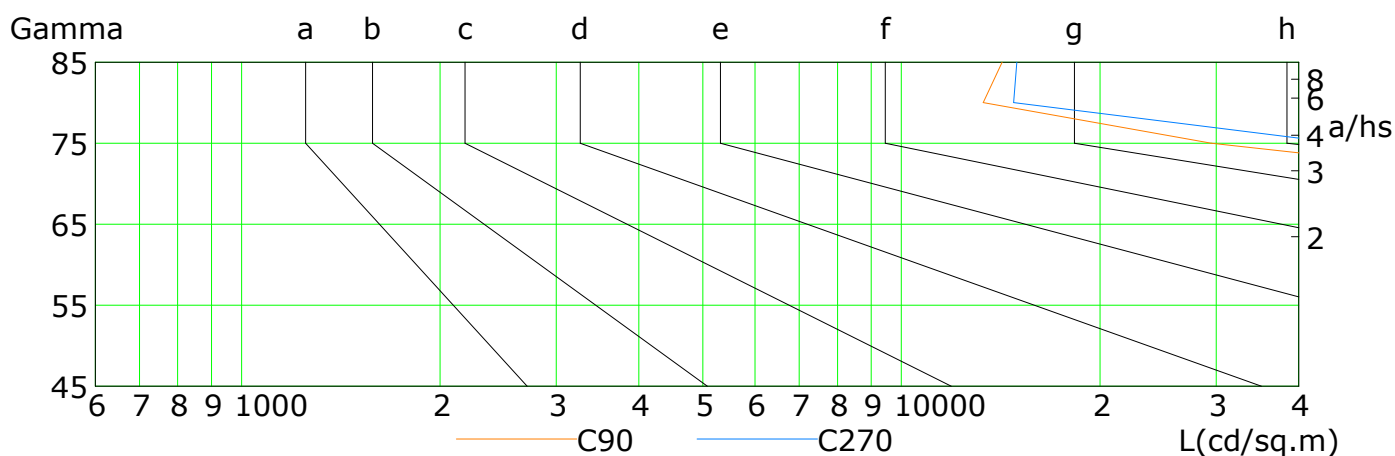
C Plane (°):0.0-360.0: 22.5  
Test Lab:  
Test Type: TYPE C  
Temperature:  
Operator:

Gamma Plane (°):0.0-180.0:1.0  
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

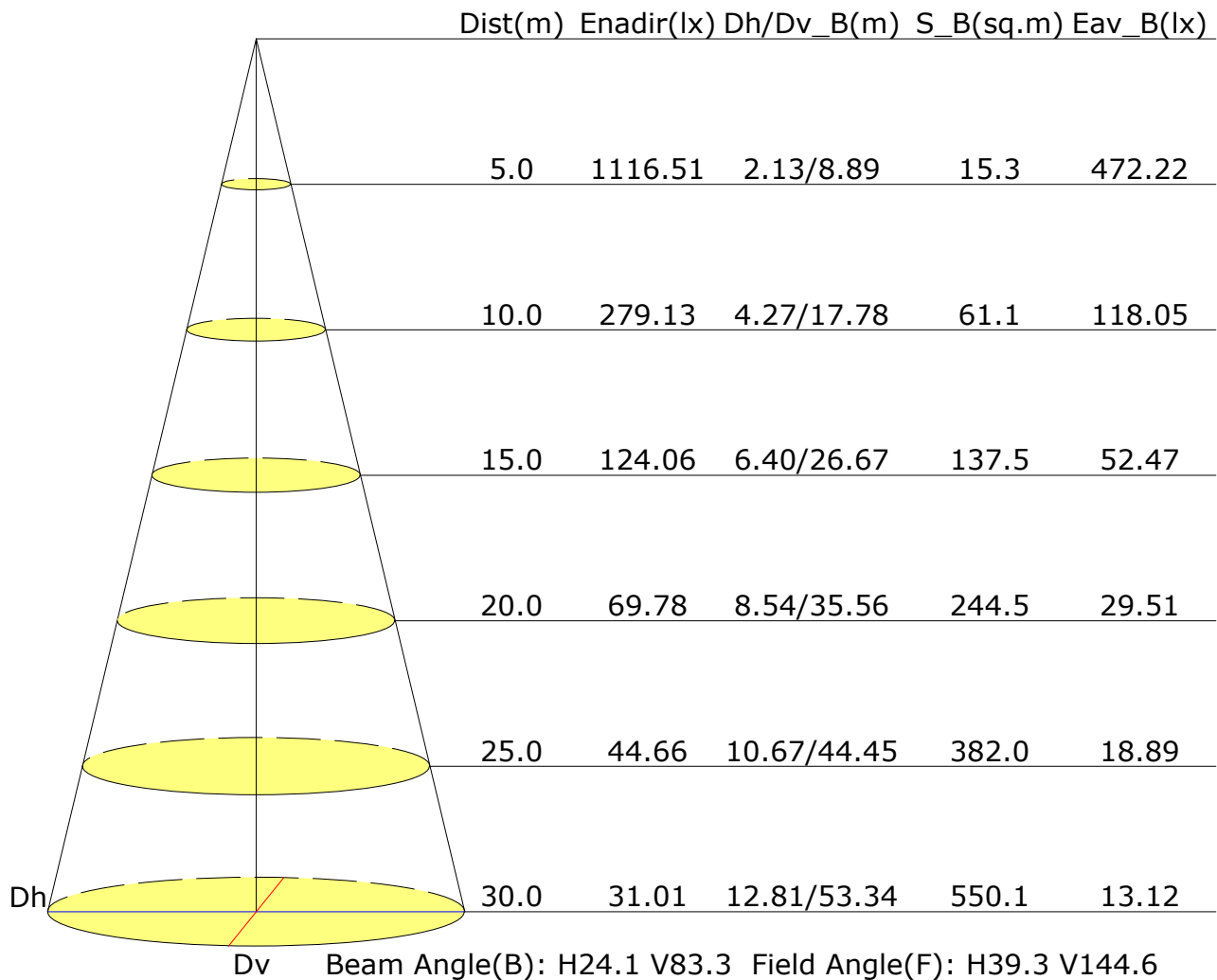


| L(cd/sq.m) | G45    | G50    | G55    | G60    | G65    | G70    | G75   | G80   | G85   |
|------------|--------|--------|--------|--------|--------|--------|-------|-------|-------|
| C0         | 14411  | 13347  | 12414  | 11491  | 10564  | 9694   | 9364  | 9848  | 9647  |
| C90        | 233724 | 208528 | 188115 | 169949 | 142999 | 110079 | 29519 | 13298 | 14218 |
| C180       | 14198  | 13283  | 12376  | 11361  | 10330  | 9270   | 9115  | 9765  | 12643 |
| C270       | 244972 | 220569 | 198394 | 178770 | 156179 | 121620 | 46620 | 14798 | 14956 |

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

Gamma Plane (°):0.0-180.0:1.0  
 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                                          | 16.3             | 17.3 | 16.6 | 17.6 | 17.8 | 29.6           | 30.7 | 29.9 | 30.9 | 31.2 |
| 3H                                                 | 17.7             | 18.6 | 18.0 | 18.9 | 19.2 | 31.0           | 31.9 | 31.3 | 32.2 | 32.5 |
| 4H                                                 | 18.4             | 19.3 | 18.7 | 19.6 | 19.9 | 31.2           | 32.1 | 31.5 | 32.4 | 32.7 |
| 6H                                                 | 19.1             | 20.0 | 19.5 | 20.3 | 20.6 | 31.1           | 32.0 | 31.5 | 32.3 | 32.6 |
| 8H                                                 | 19.5             | 20.3 | 19.9 | 20.7 | 21.0 | 31.1           | 31.9 | 31.5 | 32.3 | 32.6 |
| 12H                                                | 19.9             | 20.7 | 20.3 | 21.0 | 21.4 | 31.1           | 31.9 | 31.5 | 32.2 | 32.6 |
| X=4H Y=2H                                          | 17.6             | 18.5 | 18.0 | 18.8 | 19.1 | 29.4           | 30.3 | 29.8 | 30.6 | 30.9 |
| 3H                                                 | 18.9             | 19.7 | 19.3 | 20.1 | 20.4 | 30.8           | 31.6 | 31.2 | 31.9 | 32.3 |
| 4H                                                 | 19.6             | 20.3 | 20.0 | 20.7 | 21.1 | 31.0           | 31.7 | 31.4 | 32.1 | 32.5 |
| 6H                                                 | 20.4             | 21.0 | 20.8 | 21.4 | 21.8 | 31.0           | 31.6 | 31.4 | 32.0 | 32.4 |
| 8H                                                 | 20.8             | 21.3 | 21.2 | 21.8 | 22.2 | 31.0           | 31.5 | 31.4 | 32.0 | 32.4 |
| 12H                                                | 21.2             | 21.7 | 21.6 | 22.1 | 22.6 | 31.0           | 31.5 | 31.4 | 31.9 | 32.4 |
| X=8H Y=4H                                          | 20.0             | 20.5 | 20.4 | 20.9 | 21.4 | 30.9           | 31.5 | 31.4 | 31.9 | 32.3 |
| 6H                                                 | 20.8             | 21.2 | 21.2 | 21.7 | 22.2 | 30.9           | 31.4 | 31.4 | 31.8 | 32.3 |
| 8H                                                 | 21.2             | 21.6 | 21.7 | 22.1 | 22.6 | 30.9           | 31.3 | 31.4 | 31.8 | 32.3 |
| 12H                                                | 21.7             | 22.0 | 22.2 | 22.5 | 23.0 | 30.9           | 31.2 | 31.4 | 31.7 | 32.3 |
| X=12H Y=4H                                         | 20.0             | 20.5 | 20.5 | 20.9 | 21.4 | 30.9           | 31.4 | 31.3 | 31.8 | 32.3 |
| 6H                                                 | 20.8             | 21.2 | 21.3 | 21.7 | 22.2 | 30.9           | 31.3 | 31.4 | 31.7 | 32.3 |
| 8H                                                 | 21.3             | 21.6 | 21.8 | 22.1 | 22.6 | 30.9           | 31.2 | 31.4 | 31.7 | 32.2 |
| Variations with the observer position at spacings: |                  |      |      |      |      |                |      |      |      |      |
| S=1.0H                                             | +0.5/-0.4        |      |      |      |      | +1.1/-1.5      |      |      |      |      |
| S=1.5H                                             | +0.6/-0.8        |      |      |      |      | +2.4/-4.0      |      |      |      |      |
| S=2.0H                                             | +1.4/-1.2        |      |      |      |      | +3.9/-7.2      |      |      |      |      |

Calculate in accordance with CIE Pub.117. The table is revised with 20691lm ( $8\log(F/F_0) = 10.5$ ).

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

Gamma Plane (°):0.0-180.0:1.0  
 Test Device: LSG-1800B  
 Distance: 12.677 m  
 Humidity:  
 Inspector:

## Utilisation Factor Table(Floor cavity)

| Utilisation Factors UF(F)                                                                                                                                                          |      |       | SHR NOM = 0.75 |      |      |      |      |      |      |      |      |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|----------------|------|------|------|------|------|------|------|------|--|
| 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  | 0.71           | 0.79 | 0.85 | 0.89 | 0.95 | 0.99 | 1.02 | 1.05 | 1.07 |  |
|                                                                                                                                                                                    | 0.30 |       | 0.65           | 0.73 | 0.79 | 0.84 | 0.90 | 0.95 | 0.98 | 1.02 | 1.05 |  |
|                                                                                                                                                                                    | 0.20 |       | 0.60           | 0.69 | 0.75 | 0.80 | 0.86 | 0.91 | 0.94 | 0.99 | 1.02 |  |
| 0.50                                                                                                                                                                               | 0.50 | 0.20  | 0.69           | 0.77 | 0.83 | 0.87 | 0.92 | 0.95 | 0.98 | 1.01 | 1.03 |  |
|                                                                                                                                                                                    | 0.30 |       | 0.64           | 0.72 | 0.78 | 0.82 | 0.88 | 0.92 | 0.95 | 0.98 | 1.01 |  |
|                                                                                                                                                                                    | 0.20 |       | 0.60           | 0.68 | 0.74 | 0.78 | 0.84 | 0.89 | 0.92 | 0.96 | 0.99 |  |
| 0.30                                                                                                                                                                               | 0.50 | 0.20  | 0.68           | 0.75 | 0.80 | 0.84 | 0.89 | 0.92 | 0.94 | 0.97 | 0.99 |  |
|                                                                                                                                                                                    | 0.30 |       | 0.63           | 0.71 | 0.76 | 0.80 | 0.86 | 0.89 | 0.92 | 0.95 | 0.97 |  |
|                                                                                                                                                                                    | 0.20 |       | 0.59           | 0.67 | 0.73 | 0.77 | 0.83 | 0.87 | 0.89 | 0.93 | 0.95 |  |
| 0.00                                                                                                                                                                               | 0.00 | 0.00  | 0.57           | 0.65 | 0.70 | 0.74 | 0.79 | 0.83 | 0.85 | 0.88 | 0.90 |  |
| Rating:152W 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 = 0.75 |      |      |      |      |      |      |      |      |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|----------------|------|------|------|------|------|------|------|------|--|
| 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  | 0.79           | 0.65 | 0.55 | 0.48 | 0.38 | 0.31 | 0.27 | 0.21 | 0.17 |  |
|                                                                                                                                                                                    | 0.30 |       | 0.66           | 0.55 | 0.48 | 0.42 | 0.34 | 0.29 | 0.25 | 0.19 | 0.16 |  |
|                                                                                                                                                                                    | 0.20 |       | 0.56           | 0.48 | 0.42 | 0.38 | 0.31 | 0.26 | 0.23 | 0.18 | 0.15 |  |
| 0.50                                                                                                                                                                               | 0.50 | 0.20  | 0.75           | 0.62 | 0.52 | 0.45 | 0.36 | 0.33 | 0.25 | 0.19 | 0.16 |  |
|                                                                                                                                                                                    | 0.30 |       | 0.64           | 0.54 | 0.46 | 0.40 | 0.32 | 0.27 | 0.23 | 0.18 | 0.15 |  |
|                                                                                                                                                                                    | 0.20 |       | 0.55           | 0.47 | 0.41 | 0.37 | 0.30 | 0.25 | 0.22 | 0.17 | 0.14 |  |
| 0.30                                                                                                                                                                               | 0.50 | 0.20  | 0.73           | 0.59 | 0.49 | 0.43 | 0.33 | 0.28 | 0.23 | 0.18 | 0.15 |  |
|                                                                                                                                                                                    | 0.30 |       | 0.62           | 0.52 | 0.44 | 0.39 | 0.31 | 0.26 | 0.22 | 0.17 | 0.14 |  |
|                                                                                                                                                                                    | 0.20 |       | 0.54           | 0.46 | 0.40 | 0.35 | 0.29 | 0.24 | 0.21 | 0.16 | 0.14 |  |
| 0.00                                                                                                                                                                               | 0.00 | 0.00  | 0.42           | 0.35 | 0.30 | 0.26 | 0.20 | 0.17 | 0.14 | 0.11 | 0.09 |  |
| Rating:152W 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 = 0.75 |      |      |      |      |      |      |      |      |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|----------------|------|------|------|------|------|------|------|------|--|
| 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  | 0.16           | 0.17 | 0.18 | 0.19 | 0.20 | 0.21 | 0.22 | 0.22 | 0.23 |  |
|                                                                                                                                                                                    | 0.30 |       | 0.11           | 0.12 | 0.14 | 0.15 | 0.17 | 0.18 | 0.19 | 0.20 | 0.21 |  |
|                                                                                                                                                                                    | 0.20 |       | 0.07           | 0.08 | 0.10 | 0.11 | 0.13 | 0.15 | 0.16 | 0.18 | 0.19 |  |
| 0.50                                                                                                                                                                               | 0.50 | 0.20  | 0.15           | 0.17 | 0.18 | 0.18 | 0.20 | 0.20 | 0.21 | 0.21 | 0.22 |  |
|                                                                                                                                                                                    | 0.30 |       | 0.10           | 0.12 | 0.13 | 0.14 | 0.16 | 0.17 | 0.18 | 0.19 | 0.20 |  |
|                                                                                                                                                                                    | 0.20 |       | 0.07           | 0.08 | 0.10 | 0.11 | 0.13 | 0.15 | 0.16 | 0.17 | 0.18 |  |
| 0.30                                                                                                                                                                               | 0.50 | 0.20  | 0.15           | 0.16 | 0.17 | 0.18 | 0.19 | 0.19 | 0.20 | 0.20 | 0.21 |  |
|                                                                                                                                                                                    | 0.30 |       | 0.10           | 0.12 | 0.13 | 0.14 | 0.16 | 0.17 | 0.17 | 0.19 | 0.19 |  |
|                                                                                                                                                                                    | 0.20 |       | 0.07           | 0.08 | 0.10 | 0.11 | 0.13 | 0.14 | 0.15 | 0.17 | 0.18 |  |
| 0.00                                                                                                                                                                               | 0.00 | 0.00  | 0.01           | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |  |
| Rating:152W Photometrically tested without ceiling board.<br>Multiply UF values by service correction factors<br>Calculate in accordance with CIBSE Technical Memorandum NO.5 1980 |      |       |                |      |      |      |      |      |      |      |      |  |