

# HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

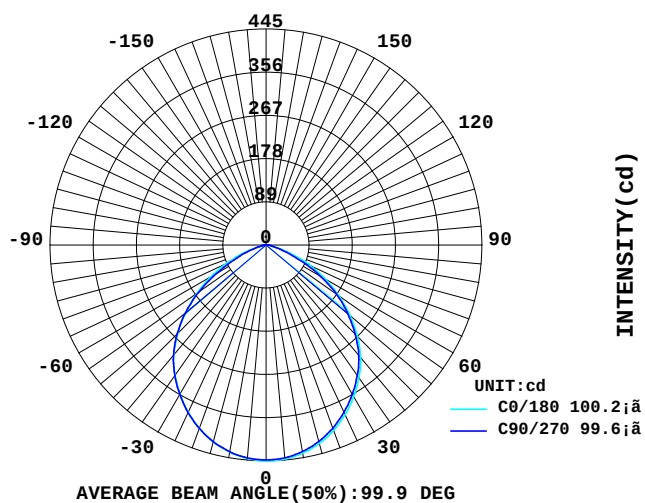
## LUMINAIRE PHOTOMETRIC TEST REPORT

Report number:

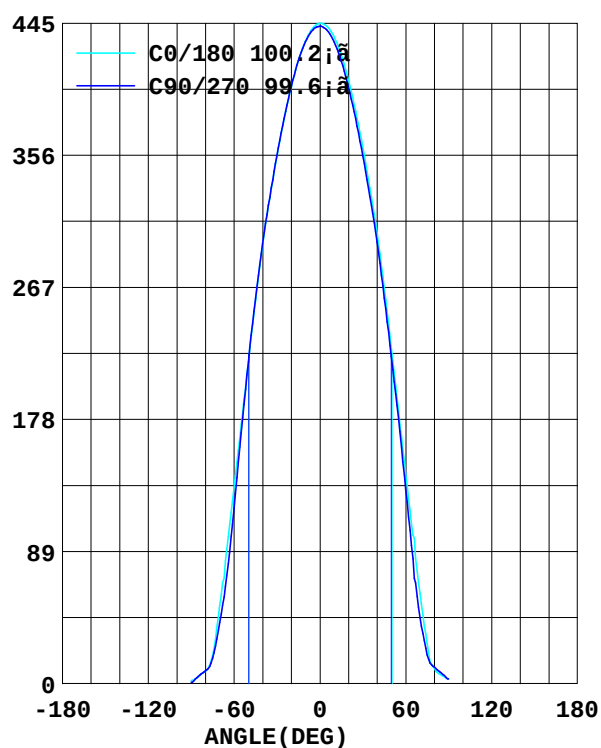
|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |

|                  |        |                    |        |                  |       |
|------------------|--------|--------------------|--------|------------------|-------|
| DATA OF LAMP     |        | Imax(cd)           | 445.4  | S/MH(C0/180)     | 1.19  |
| MODEL            | SMD    | EFFICIENCY(%)      | 100.0  | S/MH(C90/270)    | 1.20  |
| NOMINAL POWER(W) | 18     | TOTAL FLUX(lm)     | 1018.6 | Voltage(V)       | 231.3 |
| RATED VOLTAGE(V) | 232    | EFFICIENCY(lm/W)   | 57.5   | Current(A)       | 0.154 |
| NOMINAL FLUX(lm) | 1018.6 | $\eta$ up(%)       | 0.0    | Power(W)         | 17.73 |
| LAMPS QUANTITY   | 1      | $\eta$ down(%)     | 100.0  | Power Factor(PF) | 0.495 |
| TEST VOLTAGE(V)  | 231.4  | Effective Flux(lm) | 1018.6 | EEI              | 0.227 |

### LUMINOUS INTENSITY DISTRIBUTION



### LUMINOUS INTENSITY DISTRIBUTION



Test System:HOP00 HPG1600  
 Temperature:25.3DEG  
 Operators:  
 Test Date:10-18-2020

Test Set: 5.0deg/s C-Gamma (TYPE C)  
 Humidity:65.0%  
 Test Distance:5.150 m  
 Remarks:

## HOP00 GONIOPHOTOMETERS SYSTEM TEST REPORT

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### Color Temperature Data List

Report number:

|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |

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Temperature:25.3DEG  
Operators:  
Test Date:10-18-2020

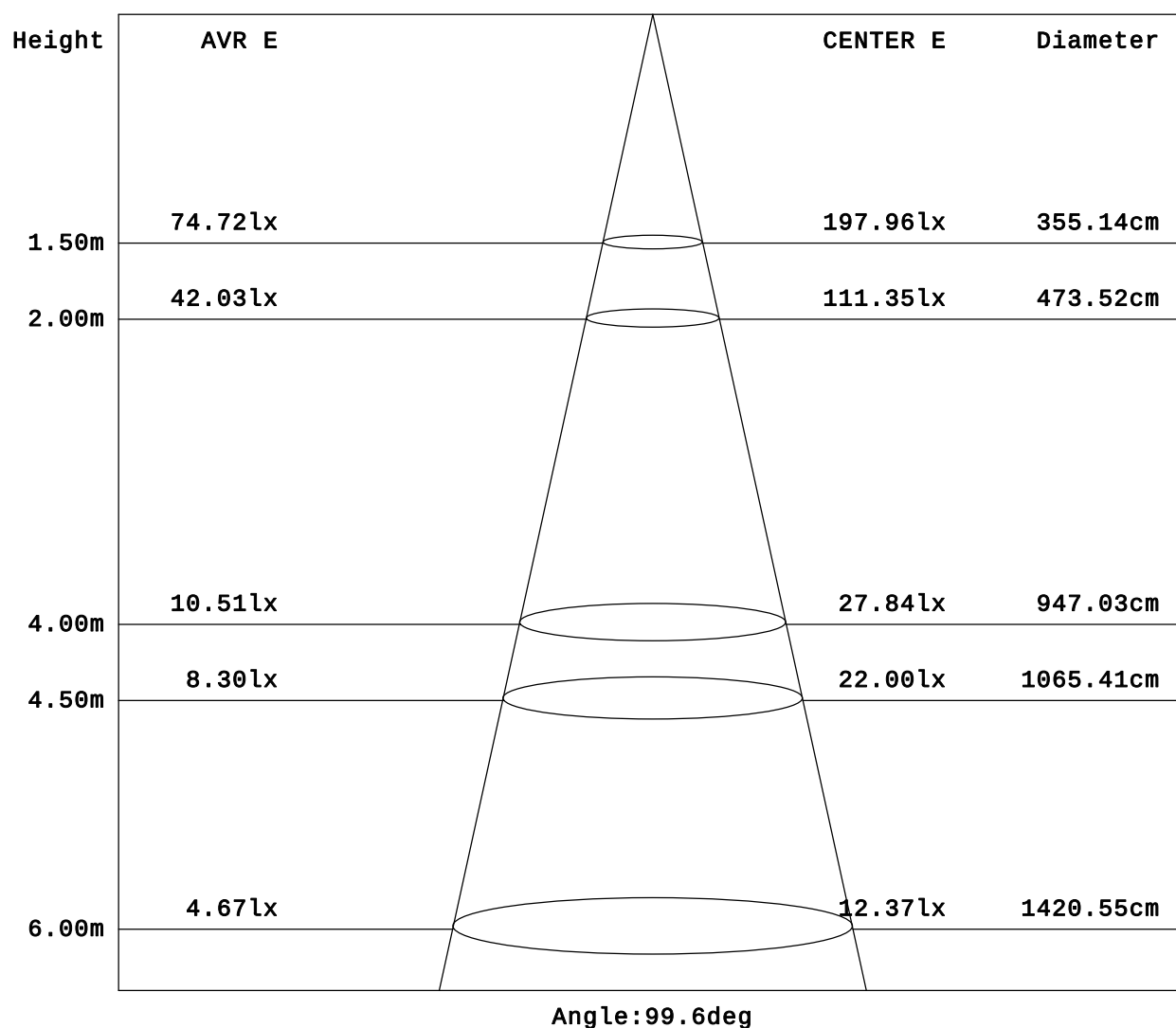
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Humidity:65.0%  
Test Distance:5.150 m  
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# HOP00 GONIOPHOTOMETERS SYSTEM TEST REPORT

## AVERAGE AND CENTER E Figure

Report number:

|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |



Test System:HOP00 HPG1600  
Temperature:25.3DEG  
Operators:  
Test Date:10-18-2020

Test Set: 5.0deg/s C-Gamma (TYPE C)  
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Test Distance:5.150 m  
Remarks:

# HOP00 GONIOPHOTOMETERS SYSTEM TEST REPORT

## ZONAL FLUX DIAGRAM

Report number:

|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |

| $\gamma$ | C0                    | C90   | C180  | C270  |  |  |  |  | $\gamma$ | zone     | total |
|----------|-----------------------|-------|-------|-------|--|--|--|--|----------|----------|-------|
| 5.0      | 442.0                 | 440.7 | 443.2 | 440.6 |  |  |  |  | 0- 5     | 10.59    | 10.59 |
| 10.0     | 433.5                 | 432.9 | 436.1 | 432.6 |  |  |  |  | 5- 10    | 31.32    | 41.91 |
| 15.0     | 420.3                 | 420.2 | 423.7 | 419.6 |  |  |  |  | 10- 15   | 50.70    | 92.61 |
| 20.0     | 402.4                 | 402.7 | 407.2 | 402.4 |  |  |  |  | 15- 20   | 67.95    | 160.5 |
| 25.0     | 380.5                 | 381.0 | 386.1 | 380.8 |  |  |  |  | 20- 25   | 82.40    | 242.9 |
| 30.0     | 355.7                 | 356.3 | 361.4 | 355.8 |  |  |  |  | 25- 30   | 93.55    | 336.5 |
| 35.0     | 327.6                 | 328.1 | 334.2 | 328.5 |  |  |  |  | 30- 35   | 101.1    | 437.6 |
| 40.0     | 295.7                 | 296.7 | 303.8 | 297.5 |  |  |  |  | 35- 40   | 104.9    | 542.6 |
| 45.0     | 258.0                 | 259.5 | 266.3 | 259.9 |  |  |  |  | 40- 45   | 103.6    | 646.2 |
| 50.0     | 216.6                 | 217.0 | 226.3 | 220.4 |  |  |  |  | 45- 50   | 97.22    | 743.4 |
| 55.0     | 174.0                 | 169.0 | 183.8 | 178.5 |  |  |  |  | 50- 55   | 86.22    | 829.6 |
| 60.0     | 132.2                 | 118.2 | 141.0 | 130.9 |  |  |  |  | 55- 60   | 70.88    | 900.5 |
| 65.0     | 90.41                 | 72.69 | 100.0 | 84.28 |  |  |  |  | 60- 65   | 52.65    | 953.2 |
| 70.0     | 52.85                 | 41.21 | 60.49 | 44.26 |  |  |  |  | 65- 70   | 34.24    | 987.4 |
| 75.0     | 19.01                 | 17.10 | 27.18 | 19.25 |  |  |  |  | 70- 75   | 17.92    | 1005  |
| 80.0     | 8.328                 | 8.566 | 10.15 | 11.16 |  |  |  |  | 75- 80   | 7.147    | 1013  |
| 85.0     | 4.747                 | 4.774 | 5.702 | 7.001 |  |  |  |  | 80- 85   | 4.050    | 1017  |
| 90.0     | 2.095                 | 0.928 | 3.076 | 3.235 |  |  |  |  | 85- 90   | 2.029    | 1019  |
| 95.0     |                       |       |       |       |  |  |  |  | 90- 95   |          |       |
| 100.0    |                       |       |       |       |  |  |  |  | 95-100   |          |       |
| 105.0    |                       |       |       |       |  |  |  |  | 100-105  |          |       |
| 110.0    |                       |       |       |       |  |  |  |  | 105-110  |          |       |
| 115.0    |                       |       |       |       |  |  |  |  | 110-115  |          |       |
| 120.0    |                       |       |       |       |  |  |  |  | 115-120  |          |       |
| 125.0    |                       |       |       |       |  |  |  |  | 120-125  |          |       |
| 130.0    |                       |       |       |       |  |  |  |  | 125-130  |          |       |
| 135.0    |                       |       |       |       |  |  |  |  | 130-135  |          |       |
| 140.0    |                       |       |       |       |  |  |  |  | 135-140  |          |       |
| 145.0    |                       |       |       |       |  |  |  |  | 140-145  |          |       |
| 150.0    |                       |       |       |       |  |  |  |  | 145-150  |          |       |
| 155.0    |                       |       |       |       |  |  |  |  | 150-155  |          |       |
| 160.0    |                       |       |       |       |  |  |  |  | 155-160  |          |       |
| 165.0    |                       |       |       |       |  |  |  |  | 160-165  |          |       |
| 170.0    |                       |       |       |       |  |  |  |  | 165-170  |          |       |
| 175.0    |                       |       |       |       |  |  |  |  | 170-175  |          |       |
| 180.0    |                       |       |       |       |  |  |  |  | 175-180  |          |       |
| DEG      | LUMINOUS INTENSITY:cd |       |       |       |  |  |  |  |          | UNIT: lm |       |

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 Operators:  
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Test Set: 5.0deg/s C-Gamma (TYPE C)  
 Humidity:65.0%  
 Test Distance:5.150 m  
 Remarks:

# HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

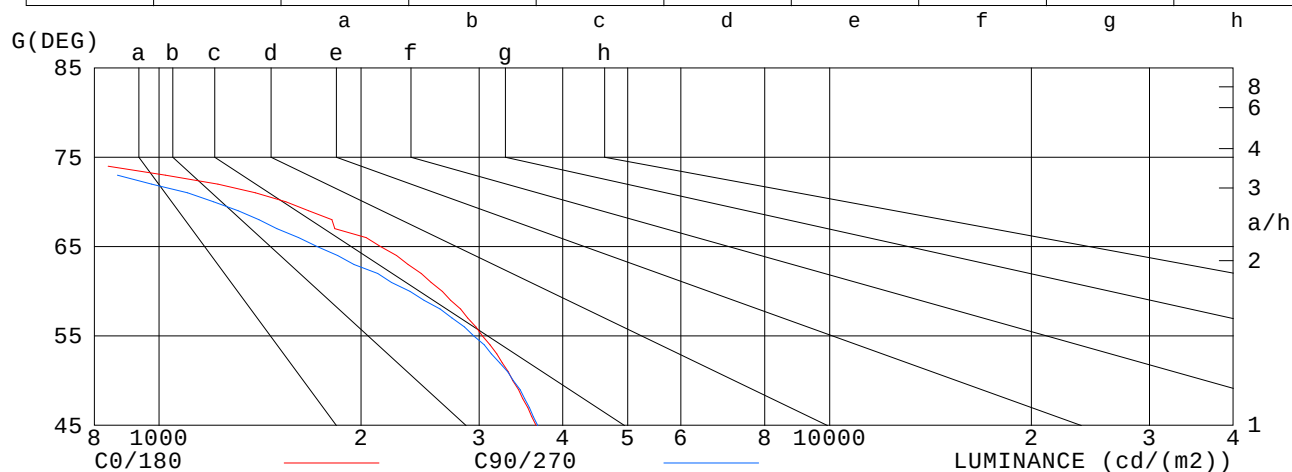
## LUMINANCE LIMITATION CURVES

Report number:

|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |

### LUMINANCE LIMITATION CURVES

| GLARE | CLASS | 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 |



| LUMINANCE cd/(m2) |        |         |
|-------------------|--------|---------|
| G( DEG )          | C0/180 | C90/270 |
| 85                | 545    | 548     |
| 80                | 480    | 493     |
| 75                | 735    | 661     |
| 70                | 1546   | 1205    |
| 65                | 2139   | 1720    |
| 60                | 2645   | 2366    |
| 55                | 3035   | 2947    |
| 50                | 3370   | 3376    |
| 45                | 3650   | 3671    |

Test System:HOP00 HPG1600  
 Temperature:25.3DEG  
 Operators:  
 Test Date:10-18-2020

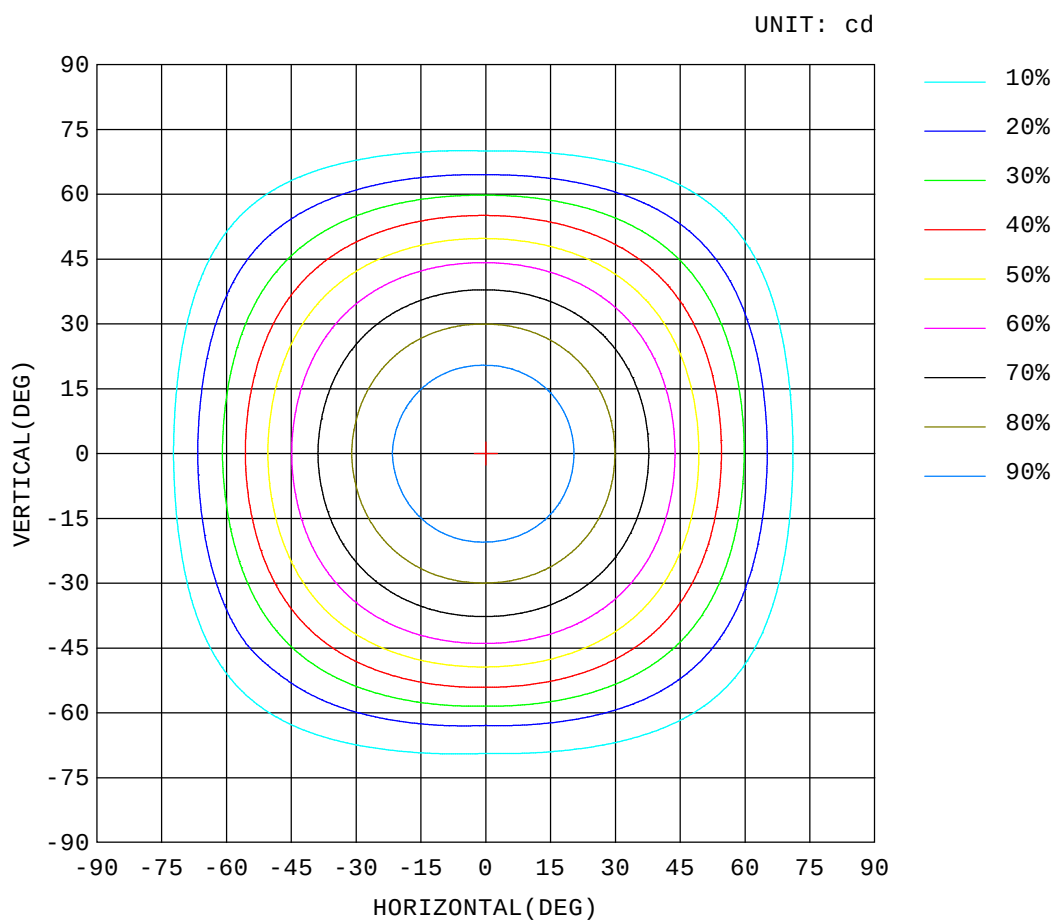
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 Humidity:65.0%  
 Test Distance:5.150 m  
 Remarks:

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## ISOCANDELA DIAGRAM

Report number:

|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |



Test System:HOP00 HPG1600  
Temperature:25.3DEG  
Operators:  
Test Date:10-18-2020

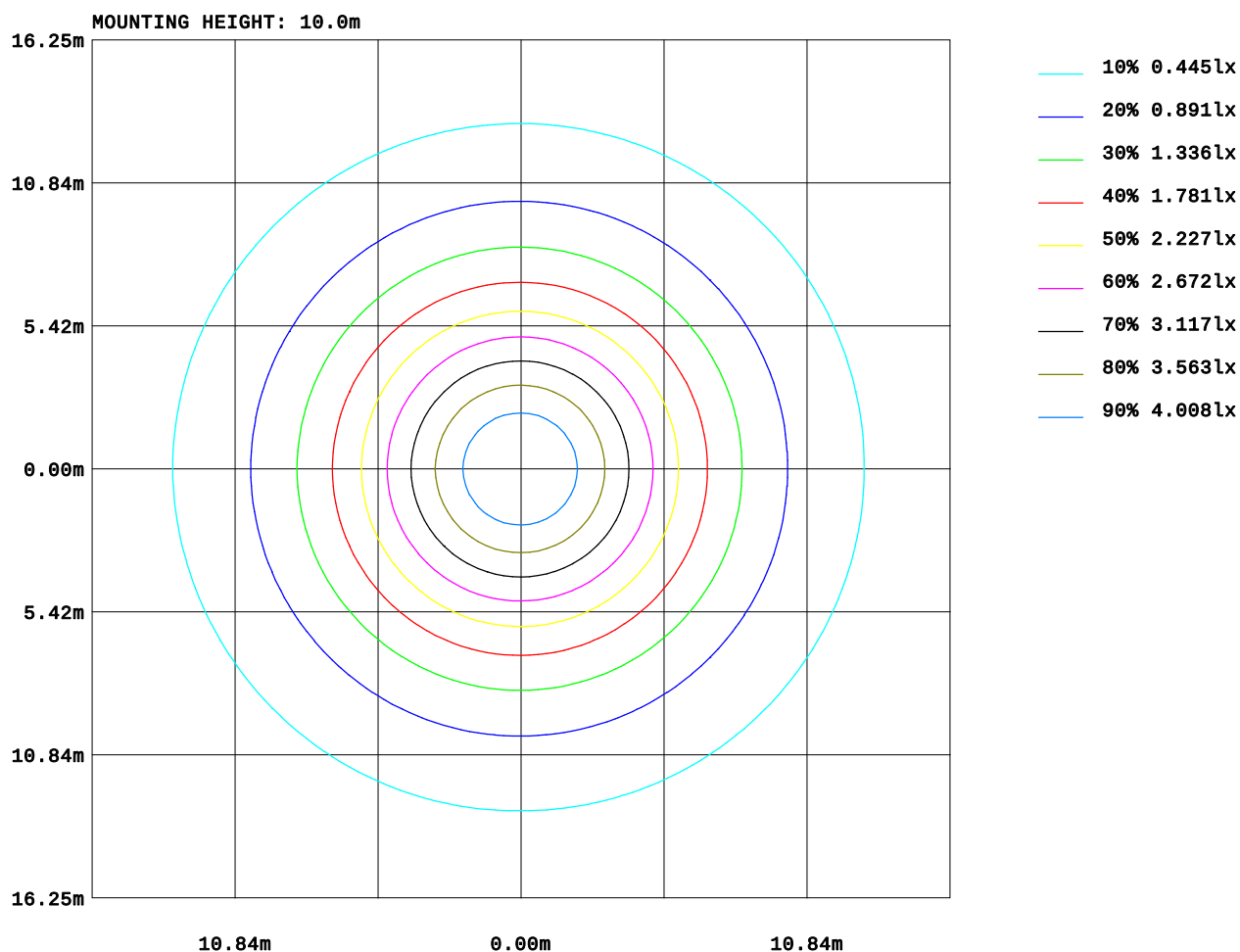
Test Set: 5.0deg/s C-Gamma (TYPE C)  
Humidity:65.0%  
Test Distance:5.150 m  
Remarks:

# HOP00 GONIOPHOTOMETERS SYSTEM TEST REPORT

## ISOLUX DIAGRAM

Report number:

|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |



Test System:HOP00 HPG1600  
Temperature:25.3DEG  
Operators:  
Test Date:10-18-2020

Test Set: 5.0deg/s C-Gamma (TYPE C)  
Humidity:65.0%  
Test Distance:5.150 m  
Remarks:

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## AREA LUMINOUS FLUX

Report number:

|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |

| 90             | AREA FLUX DIAGRAM |      |      |      |      |      |      |      |                  |      |      |      |      |      |      |      |      | UNIT:lm |      | Φ t  | Φ a |    |    |    |    |    |
|----------------|-------------------|------|------|------|------|------|------|------|------------------|------|------|------|------|------|------|------|------|---------|------|------|-----|----|----|----|----|----|
|                | 0.01              | 0.03 | 0.05 | 0.08 | 0.11 | 0.15 | 0.17 | 0.19 | 0.21             | 0.21 | 0.19 | 0.17 | 0.13 | 0.10 | 0.07 | 0.04 | 0.02 | 0.01    | 1.95 | 1.95 |     |    |    |    |    |    |
| 80             | 0.01              | 0.04 | 0.09 | 0.16 | 0.25 | 0.38 | 0.53 | 0.64 | 0.69             | 0.68 | 0.61 | 0.49 | 0.34 | 0.23 | 0.15 | 0.08 | 0.03 | 0.01    | 5.41 | 5.41 |     |    |    |    |    |    |
| 70             | 0.01              | 0.05 | 0.14 | 0.37 | 0.81 | 1.36 | 1.91 | 2.35 | 2.57             | 2.55 | 2.30 | 1.83 | 1.26 | 0.71 | 0.31 | 0.12 | 0.05 | 0.01    | 18.7 | 18.7 |     |    |    |    |    |    |
| 60             | 0.01              | 0.07 | 0.28 | 0.89 | 1.83 | 2.94 | 4.03 | 4.88 | 5.32             | 5.31 | 4.82 | 3.95 | 2.83 | 1.70 | 0.79 | 0.23 | 0.06 | 0.01    | 40.0 | 40.0 |     |    |    |    |    |    |
| 50             | 0.01              | 0.10 | 0.53 | 1.53 | 2.96 | 4.58 | 6.08 | 7.22 | 7.82             | 7.80 | 7.16 | 5.98 | 4.46 | 2.84 | 1.40 | 0.45 | 0.08 | 0.01    | 61.0 | 61.0 |     |    |    |    |    |    |
| 40             | 0.02              | 0.14 | 0.80 | 2.14 | 3.98 | 5.99 | 7.84 | 9.19 | 9.88             | 9.86 | 9.13 | 7.74 | 5.87 | 3.85 | 2.02 | 0.70 | 0.11 | 0.01    | 79.3 | 79.3 |     |    |    |    |    |    |
| 30             | 0.02              | 0.19 | 1.04 | 2.65 | 4.81 | 7.12 | 9.15 | 10.6 | 11.4             | 11.4 | 10.5 | 9.05 | 6.99 | 4.66 | 2.52 | 0.93 | 0.15 | 0.01    | 93.4 | 93.4 |     |    |    |    |    |    |
| VERTICAL (DEG) | 0.02              | 0.23 | 1.21 | 3.01 | 5.38 | 7.87 | 10.0 | 11.7 | 12.6             | 12.6 | 11.6 | 9.94 | 7.74 | 5.22 | 2.86 | 1.09 | 0.18 | 0.02    | 103  | 103  |     |    |    |    |    |    |
|                | 0.02              | 0.25 | 1.30 | 3.20 | 5.69 | 8.26 | 10.5 | 12.3 | 13.2             | 13.2 | 12.2 | 10.4 | 8.11 | 5.51 | 3.04 | 1.18 | 0.20 | 0.02    | 109  | 109  |     |    |    |    |    |    |
|                | 0.02              | 0.25 | 1.30 | 3.19 | 5.69 | 8.26 | 10.5 | 12.3 | 13.2             | 13.2 | 12.2 | 10.4 | 8.11 | 5.51 | 3.04 | 1.18 | 0.20 | 0.02    | 109  | 109  |     |    |    |    |    |    |
|                | 0.02              | 0.23 | 1.20 | 2.99 | 5.38 | 7.87 | 10.0 | 11.7 | 12.6             | 12.6 | 11.6 | 9.94 | 7.74 | 5.22 | 2.85 | 1.08 | 0.18 | 0.02    | 103  | 103  |     |    |    |    |    |    |
|                | 0.02              | 0.19 | 1.02 | 2.61 | 4.79 | 7.12 | 9.15 | 10.6 | 11.4             | 11.4 | 10.5 | 9.05 | 6.98 | 4.64 | 2.48 | 0.92 | 0.14 | 0.01    | 93.3 | 93.3 |     |    |    |    |    |    |
|                | 0.02              | 0.14 | 0.79 | 2.09 | 3.93 | 5.97 | 7.82 | 9.18 | 9.87             | 9.86 | 9.12 | 7.72 | 5.84 | 3.79 | 1.96 | 0.69 | 0.11 | 0.01    | 78.9 | 78.9 |     |    |    |    |    |    |
|                | 0.01              | 0.09 | 0.52 | 1.49 | 2.85 | 4.48 | 6.01 | 7.18 | 7.78             | 7.76 | 7.12 | 5.92 | 4.36 | 2.73 | 1.36 | 0.44 | 0.08 | 0.01    | 60.2 | 60.2 |     |    |    |    |    |    |
|                | 0.01              | 0.07 | 0.28 | 0.87 | 1.74 | 2.77 | 3.81 | 4.64 | 5.08             | 5.06 | 4.59 | 3.73 | 2.66 | 1.62 | 0.77 | 0.22 | 0.06 | 0.01    | 38.0 | 38.0 |     |    |    |    |    |    |
|                | 0.01              | 0.05 | 0.13 | 0.35 | 0.77 | 1.28 | 1.77 | 2.13 | 2.29             | 2.27 | 2.08 | 1.69 | 1.19 | 0.68 | 0.29 | 0.12 | 0.05 | 0.01    | 17.2 | 17.2 |     |    |    |    |    |    |
|                | 0.01              | 0.04 | 0.08 | 0.14 | 0.23 | 0.35 | 0.47 | 0.57 | 0.61             | 0.60 | 0.54 | 0.43 | 0.31 | 0.20 | 0.13 | 0.07 | 0.03 | 0.01    | 4.82 | 4.82 |     |    |    |    |    |    |
| -90            | 0.01              | 0.03 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.14             | 0.14 | 0.13 | 0.12 | 0.10 | 0.08 | 0.05 | 0.03 | 0.02 | 0.01    | 1.44 | 1.44 |     |    |    |    |    |    |
|                | -90               | -80  | -70  | -60  | -50  | -40  | -30  | -20  | HORIZONTAL( DEG) |      |      |      |      |      |      |      |      |         | 20   | 30   | 40  | 50 | 60 | 70 | 80 | 90 |
| Φ t            | 0.25              | 2.16 | 10.8 | 27.8 | 51.3 | 76.9 | 100  | 118  | 127              | 127  | 117  | 98.6 | 75.0 | 49.3 | 26.1 | 9.60 | 1.73 | 0.20    | 1019 |      |     |    |    |    |    |    |
| Φ a            | 0.25              | 2.16 | 10.8 | 27.8 | 51.3 | 76.9 | 100  | 118  | 127              | 127  | 117  | 98.6 | 75.0 | 49.3 | 26.1 | 9.60 | 1.73 | 0.20    |      | 1019 |     |    |    |    |    |    |

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Test Set: 5.0deg/s C-Gamma (TYPE C)  
 Humidity:65.0%  
 Test Distance:5.150 m  
 Remarks:



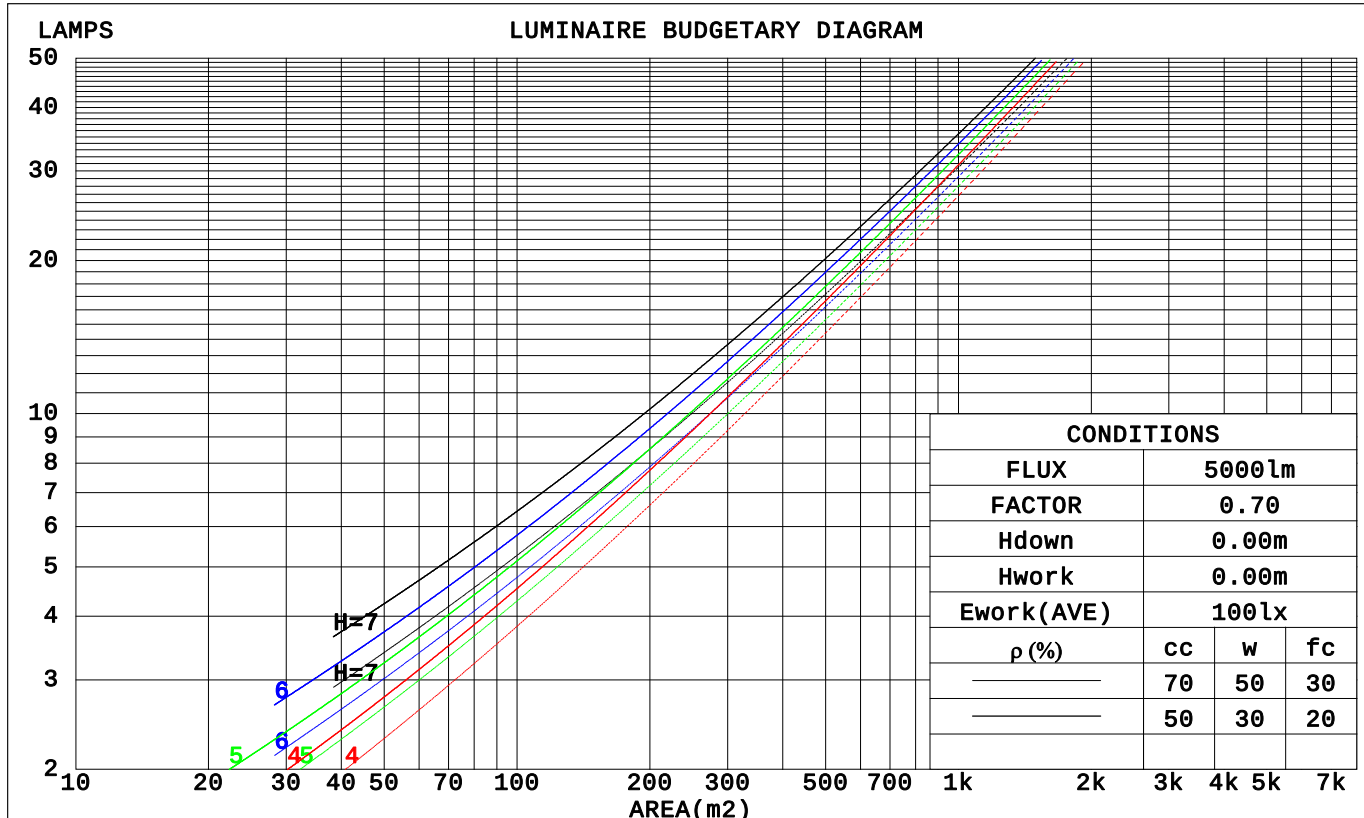
# HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

## CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Report number:

|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |

| ρcc | 80%                   |     |     | 70% |     |     | 50% |     |     | 30% |     |     | 10% |     |     | 0 |
|-----|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| ρw  | 50%                   | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 0 |
| ρfc | 20%                   |     |     | 20% |     |     | 20% |     |     | 20% |     |     | 20% |     |     | 0 |
| RCR | RCR:Room Cavity Ratio |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |



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## WEC AND CCEC

Report number:

|                |  |  |  |  |  |  |            |  |  |  |                            |  |  |  |
|----------------|--|--|--|--|--|--|------------|--|--|--|----------------------------|--|--|--|
| MANUFACTURER:  |  |  |  |  |  |  |            |  |  |  |                            |  |  |  |
| Address:       |  |  |  |  |  |  |            |  |  |  |                            |  |  |  |
| NAME: IP18W    |  |  |  |  |  |  | TYPE: 18   |  |  |  | WEIGHT:                    |  |  |  |
| SPECIFICATION: |  |  |  |  |  |  | DIMENSION: |  |  |  | SERIAL No.: LA/YE6L-990706 |  |  |  |

| $\rho_{cc}$ | 80%                   |      |      | 70%  |      |      | 50%                             |      |      | 30%  |      |      | 10%  |      |      | 0 |
|-------------|-----------------------|------|------|------|------|------|---------------------------------|------|------|------|------|------|------|------|------|---|
| $\rho_w$    | 50%                   | 30%  | 10%  | 50%  | 30%  | 10%  | 50%                             | 30%  | 10%  | 50%  | 30%  | 10%  | 50%  | 30%  | 10%  | 0 |
| $\rho_{fc}$ | 20%                   |      |      | 20%  |      |      | 20%                             |      |      | 20%  |      |      | 20%  |      |      | 0 |
| RCR         | RCR:Room Cavity Ratio |      |      |      |      |      | Wall Exitance Coefficients(WEC) |      |      |      |      |      |      |      |      |   |
| 0.0         |                       |      |      |      |      |      |                                 |      |      |      |      |      |      |      |      |   |
| 1.0         | .261                  | .148 | .047 | .254 | .145 | .046 | .241                            | .138 | .044 | .229 | .132 | .042 | .218 | .126 | .041 |   |
| 2.0         | .253                  | .139 | .043 | .247 | .136 | .042 | .236                            | .131 | .041 | .226 | .127 | .040 | .216 | .122 | .039 |   |
| 3.0         | .240                  | .128 | .038 | .235 | .126 | .038 | .225                            | .122 | .037 | .216 | .118 | .036 | .207 | .115 | .035 |   |
| 4.0         | .226                  | .117 | .034 | .221 | .116 | .034 | .212                            | .113 | .034 | .204 | .110 | .033 | .196 | .107 | .032 |   |
| 5.0         | .212                  | .108 | .031 | .207 | .107 | .031 | .200                            | .104 | .031 | .192 | .101 | .030 | .185 | .099 | .030 |   |
| 6.0         | .198                  | .099 | .028 | .195 | .098 | .028 | .188                            | .096 | .028 | .181 | .094 | .028 | .175 | .092 | .027 |   |
| 7.0         | .186                  | .092 | .026 | .183 | .091 | .026 | .177                            | .089 | .026 | .171 | .088 | .026 | .165 | .086 | .025 |   |
| 8.0         | .175                  | .086 | .024 | .172 | .085 | .024 | .167                            | .083 | .024 | .162 | .082 | .024 | .157 | .080 | .023 |   |
| 9.0         | .165                  | .080 | .022 | .163 | .079 | .022 | .158                            | .078 | .022 | .153 | .077 | .022 | .148 | .075 | .022 |   |
| 10.0        | .156                  | .075 | .021 | .154 | .074 | .021 | .149                            | .073 | .021 | .145 | .072 | .020 | .141 | .071 | .020 |   |

| $\rho_{CC}$ | 80%                   |      |      | 70%  |      |      | 50%                                        |      |      | 30%  |      |      | 10%  |      |      | 0 |
|-------------|-----------------------|------|------|------|------|------|--------------------------------------------|------|------|------|------|------|------|------|------|---|
| $\rho_W$    | 50%                   | 30%  | 10%  | 50%  | 30%  | 10%  | 50%                                        | 30%  | 10%  | 50%  | 30%  | 10%  | 50%  | 30%  | 10%  | 0 |
| $\rho_{fc}$ | 20%                   |      |      | 20%  |      |      | 20%                                        |      |      | 20%  |      |      | 20%  |      |      | 0 |
| RCR         | RCR:Room Cavity Ratio |      |      |      |      |      | Ceiling Cavity Exitance Coefficients(CCEC) |      |      |      |      |      |      |      |      |   |
| 0.0         | .190                  | .190 | .190 | .163 | .163 | .163 | .111                                       | .111 | .111 | .064 | .064 | .064 | .020 | .020 | .020 |   |
| 1.0         | .177                  | .157 | .138 | .151 | .134 | .119 | .104                                       | .092 | .082 | .060 | .053 | .048 | .019 | .017 | .015 |   |
| 2.0         | .167                  | .132 | .103 | .143 | .114 | .089 | .098                                       | .079 | .062 | .057 | .046 | .036 | .018 | .015 | .012 |   |
| 3.0         | .159                  | .114 | .079 | .136 | .098 | .068 | .093                                       | .068 | .048 | .054 | .040 | .028 | .017 | .013 | .009 |   |
| 4.0         | .151                  | .100 | .062 | .130 | .087 | .054 | .089                                       | .060 | .038 | .052 | .035 | .022 | .017 | .012 | .007 |   |
| 5.0         | .144                  | .090 | .050 | .124 | .078 | .043 | .085                                       | .054 | .031 | .049 | .032 | .018 | .016 | .010 | .006 |   |
| 6.0         | .137                  | .081 | .041 | .118 | .070 | .036 | .081                                       | .049 | .025 | .047 | .029 | .015 | .015 | .009 | .005 |   |
| 7.0         | .131                  | .074 | .035 | .112 | .064 | .030 | .078                                       | .045 | .022 | .045 | .027 | .013 | .015 | .009 | .004 |   |
| 8.0         | .125                  | .069 | .030 | .107 | .059 | .026 | .074                                       | .042 | .019 | .043 | .025 | .011 | .014 | .008 | .004 |   |
| 9.0         | .119                  | .064 | .026 | .103 | .055 | .023 | .071                                       | .039 | .016 | .041 | .023 | .010 | .013 | .008 | .003 |   |
| 10.0        | .114                  | .059 | .023 | .098 | .052 | .020 | .068                                       | .036 | .014 | .040 | .021 | .009 | .013 | .007 | .003 |   |

Test System:HOP00 HPG1600  
 Temperature:25.3DEG  
 Operators:  
 Test Date:10-18-2020

Test Set: 5.0deg/s C-Gamma (TYPE C)  
 Humidity:65.0%  
 Test Distance:5.150 m  
 Remarks:

# HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

## Uncorrected UGR Table

Report number:

|                                                    |                  |      |      |      |            |                |      |                            |      |      |
|----------------------------------------------------|------------------|------|------|------|------------|----------------|------|----------------------------|------|------|
| MANUFACTURER:                                      |                  |      |      |      |            |                |      |                            |      |      |
| Address:                                           |                  |      |      |      |            |                |      |                            |      |      |
| NAME: IP18W                                        |                  |      |      |      | TYPE: 18   |                |      | WEIGHT:                    |      |      |
| SPECIFICATION:                                     |                  |      |      |      | DIMENSION: |                |      | SERIAL No.: LA/YE6L-990706 |      |      |
| ceiling/cavity                                     | 0.7              | 0.7  | 0.5  | 0.5  | 0.3        | 0.7            | 0.7  | 0.5                        | 0.5  | 0.3  |
| walls                                              | 0.5              | 0.3  | 0.5  | 0.3  | 0.3        | 0.5            | 0.3  | 0.5                        | 0.3  | 0.3  |
| working 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                                      | 16.4             | 17.8 | 16.7 | 18.0 | 18.2       | 16.2           | 17.6 | 16.5                       | 17.8 | 18.0 |
| 3H                                                 | 17.0             | 18.3 | 17.3 | 18.5 | 18.8       | 16.6           | 17.9 | 16.9                       | 18.1 | 18.4 |
| 4H                                                 | 17.0             | 18.3 | 17.4 | 18.5 | 18.8       | 16.6           | 17.8 | 16.9                       | 18.1 | 18.3 |
| 6H                                                 | 17.0             | 18.1 | 17.3 | 18.4 | 18.7       | 16.6           | 17.7 | 16.9                       | 18.0 | 18.2 |
| 8H                                                 | 17.0             | 18.1 | 17.3 | 18.3 | 18.6       | 16.5           | 17.6 | 16.9                       | 17.9 | 18.2 |
| 12H                                                | 16.9             | 18.0 | 17.3 | 18.3 | 18.6       | 16.5           | 17.6 | 16.9                       | 17.9 | 18.2 |
| 4H 2H                                              | 16.7             | 17.9 | 17.0 | 18.1 | 18.4       | 16.5           | 17.7 | 16.8                       | 18.0 | 18.2 |
| 3H                                                 | 17.4             | 18.4 | 17.7 | 18.7 | 19.0       | 17.0           | 18.1 | 17.4                       | 18.3 | 18.6 |
| 4H                                                 | 17.4             | 18.4 | 17.8 | 18.7 | 19.0       | 17.0           | 18.0 | 17.4                       | 18.3 | 18.6 |
| 6H                                                 | 17.4             | 18.2 | 17.8 | 18.6 | 18.9       | 17.0           | 17.9 | 17.4                       | 18.2 | 18.6 |
| 8H                                                 | 17.4             | 18.2 | 17.8 | 18.5 | 18.9       | 17.0           | 17.8 | 17.4                       | 18.2 | 18.5 |
| 12H                                                | 17.4             | 18.1 | 17.8 | 18.5 | 18.9       | 17.0           | 17.7 | 17.4                       | 18.1 | 18.5 |
| 8H 4H                                              | 17.4             | 18.1 | 17.8 | 18.5 | 18.9       | 17.0           | 17.8 | 17.4                       | 18.1 | 18.5 |
| 6H                                                 | 17.4             | 18.0 | 17.8 | 18.4 | 18.8       | 17.0           | 17.6 | 17.4                       | 18.0 | 18.5 |
| 8H                                                 | 17.4             | 17.9 | 17.8 | 18.4 | 18.8       | 17.0           | 17.6 | 17.5                       | 18.0 | 18.5 |
| 12H                                                | 17.4             | 17.9 | 17.9 | 18.3 | 18.8       | 17.0           | 17.5 | 17.5                       | 18.0 | 18.4 |
| 12H 4H                                             | 17.3             | 18.0 | 17.8 | 18.4 | 18.8       | 17.0           | 17.7 | 17.4                       | 18.1 | 18.5 |
| 6H                                                 | 17.3             | 17.9 | 17.8 | 18.3 | 18.8       | 17.0           | 17.5 | 17.4                       | 18.0 | 18.4 |
| 8H                                                 | 17.4             | 17.8 | 17.8 | 18.3 | 18.8       | 17.0           | 17.5 | 17.5                       | 17.9 | 18.4 |
| Variations with the observer position at spacings: |                  |      |      |      |            |                |      |                            |      |      |
| S = 1.0H                                           | + 0.5 / - 0.6    |      |      |      |            | + 0.5 / - 0.6  |      |                            |      |      |
| 1.5H                                               | + 0.3 / - 0.6    |      |      |      |            | + 0.3 / - 0.6  |      |                            |      |      |
| 2.0H                                               | + 0.9 / - 1.0    |      |      |      |            | + 1.0 / - 1.3  |      |                            |      |      |

CIE Pub.117 Corrected 1019 lm Total Lamp Luminous Flux.(8log(F/F0) = 0.1)

Test System:HOP00 HPG1600  
 Temperature:25.3DEG  
 Operators:  
 Test Date:10-18-2020

Test Set: 5.0deg/s C-Gamma (TYPE C)  
 Humidity:65.0%  
 Test Distance:5.150 m  
 Remarks:

# HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

## UTILIZATION FACTORS TABLE

Report number:

|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |

| REFLECTANCE                      |                                                     |     |           |     |     |     |     |               |     |        |
|----------------------------------|-----------------------------------------------------|-----|-----------|-----|-----|-----|-----|---------------|-----|--------|
| Ceiling                          | 0.8                                                 | 0.8 | 0.8       | 0.7 | 0.7 | 0.7 | 0.5 | 0.5           | 0.5 | 0      |
| Walls                            | 0.7                                                 | 0.5 | 0.3       | 0.7 | 0.5 | 0.3 | 0.7 | 0.5           | 0.3 | 0      |
| Working plane                    | 0.2                                                 | 0.2 | 0.2       | 0.2 | 0.2 | 0.2 | 0.2 | 0.2           | 0.2 | 0      |
| ROOM INDEX                       | UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$ |     |           |     |     |     |     |               |     |        |
| k = 0.60                         | 62                                                  | 51  | 45        | 61  | 51  | 45  | 60  | 50            | 44  | 38     |
| 0.80                             | 72                                                  | 62  | 55        | 71  | 61  | 55  | 70  | 61            | 55  | 48     |
| 1.00                             | 81                                                  | 71  | 65        | 80  | 71  | 64  | 78  | 72            | 64  | 57     |
| 1.25                             | 88                                                  | 79  | 73        | 87  | 78  | 72  | 84  | 77            | 71  | 65     |
| 1.50                             | 93                                                  | 84  | 78        | 91  | 83  | 78  | 88  | 82            | 77  | 70     |
| 2.00                             | 99                                                  | 92  | 86        | 97  | 91  | 85  | 94  | 88            | 84  | 77     |
| 2.50                             | 102                                                 | 96  | 90        | 100 | 94  | 90  | 97  | 92            | 88  | 80     |
| 3.00                             | 105                                                 | 99  | 95        | 103 | 98  | 94  | 99  | 95            | 91  | 84     |
| 4.00                             | 109                                                 | 104 | 100       | 106 | 102 | 98  | 102 | 99            | 96  | 87     |
| 5.00                             | 111                                                 | 106 | 103       | 108 | 105 | 101 | 104 | 101           | 98  | 90     |
| ROOM INDEX                       | UF(total)                                           |     |           |     |     |     |     |               |     | Direct |
| According to DIN EN 13032-2 2004 |                                                     |     | Suspended |     |     |     |     | SHRNOM = 1.25 |     |        |

Test System:HOP00 HPG1600  
 Temperature:25.3DEG  
 Operators:  
 Test Date:10-18-2020

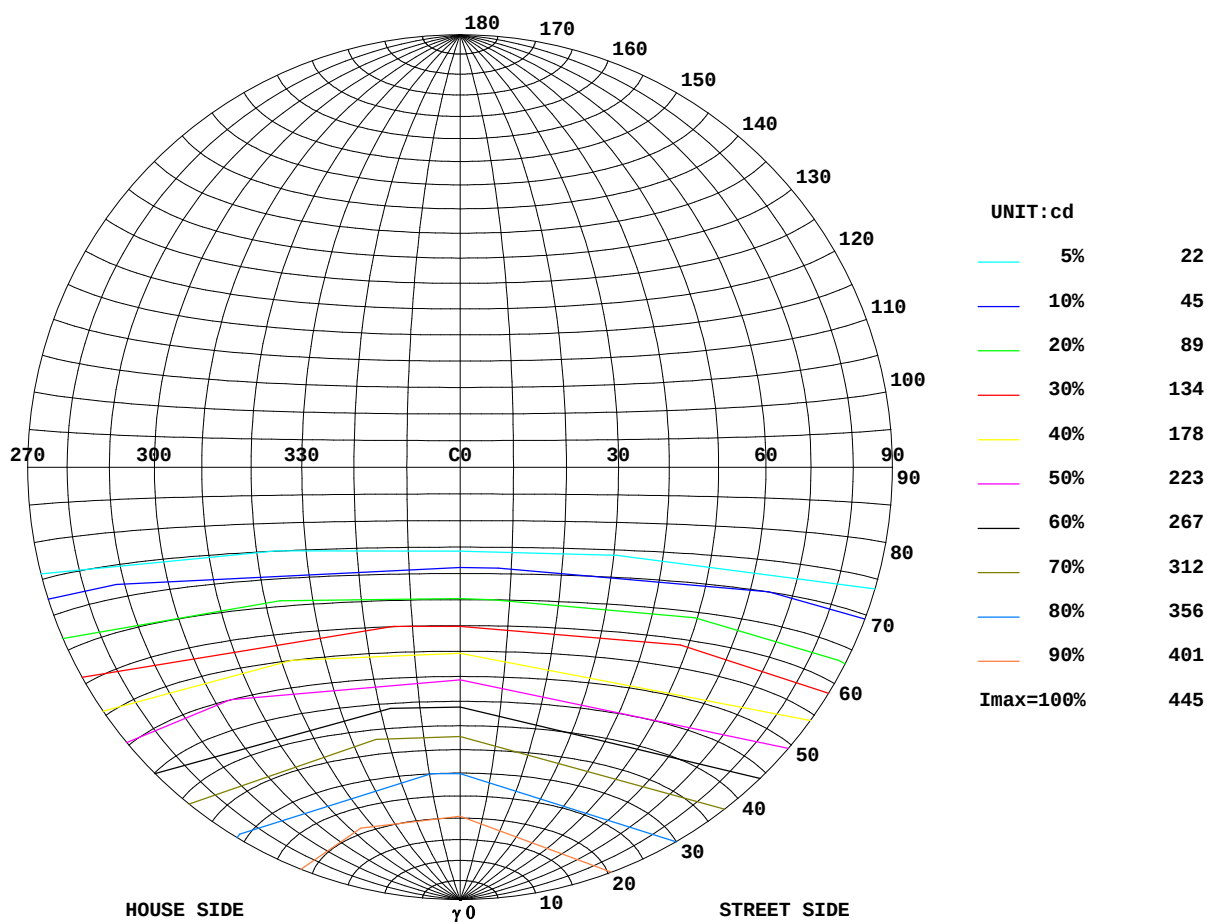
Test Set: 5.0deg/s C-Gamma (TYPE C)  
 Humidity:65.0%  
 Test Distance:5.150 m  
 Remarks:

# HOP00 GONIOPHOTOMETERS SYSTEM TEST REPORT

## ISOCANDELA DIAGRAM

Report number:

|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |



Test System:HOP00 HPG1600  
Temperature:25.3DEG  
Operators:  
Test Date:10-18-2020

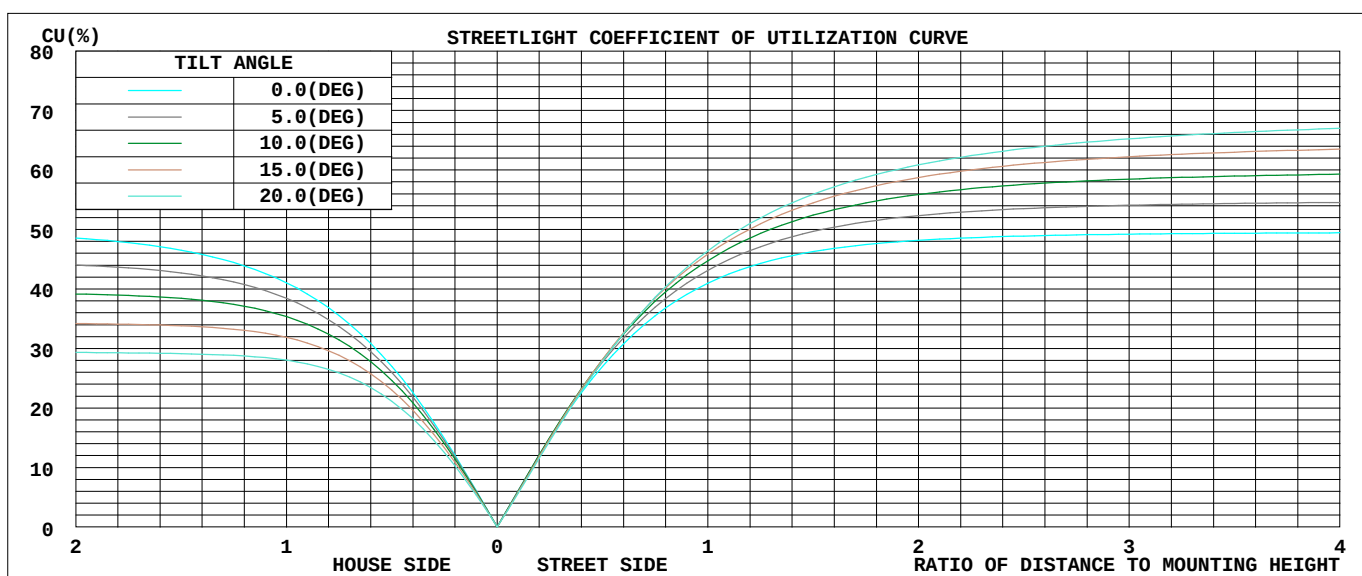
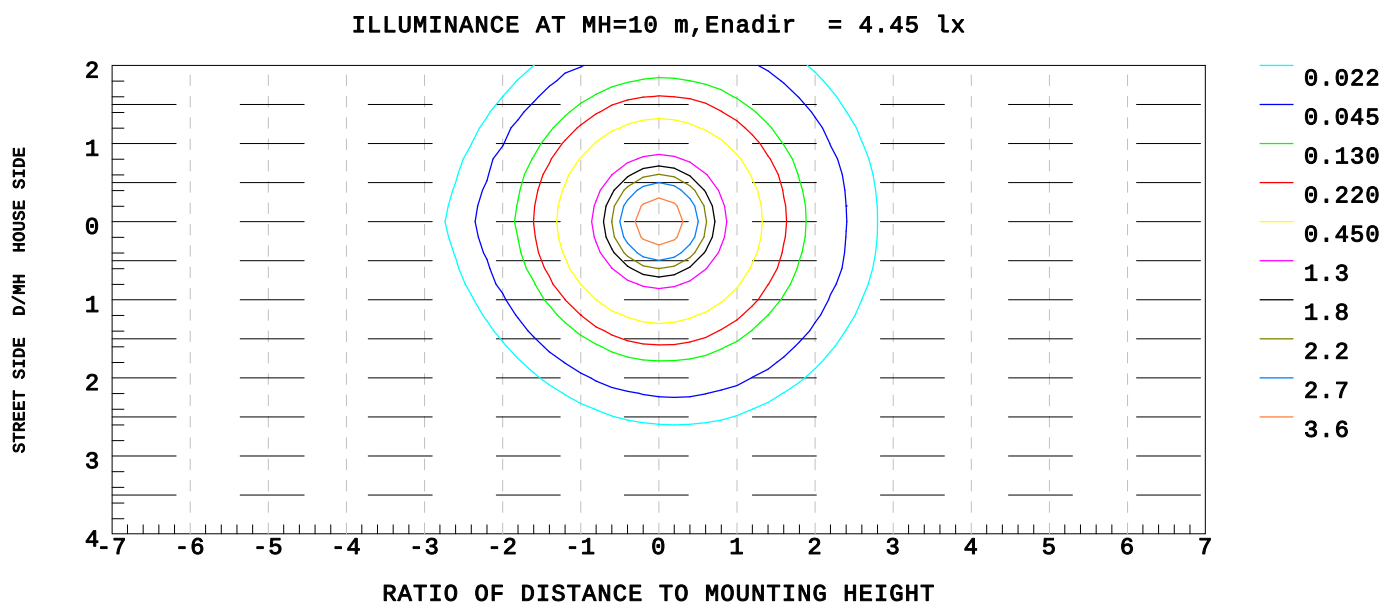
Test Set: 5.0deg/s C-Gamma (TYPE C)  
Humidity:65.0%  
Test Distance:5.150 m  
Remarks:

# HOP00 GONIOPHOTOMETERS SYSTEM TEST REPORT

## ISOLUX DIAGRAM

Report number:

|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |



Test System:HOP00 HPG1600  
Temperature:25.3DEG  
Operators:  
Test Date:10-18-2020

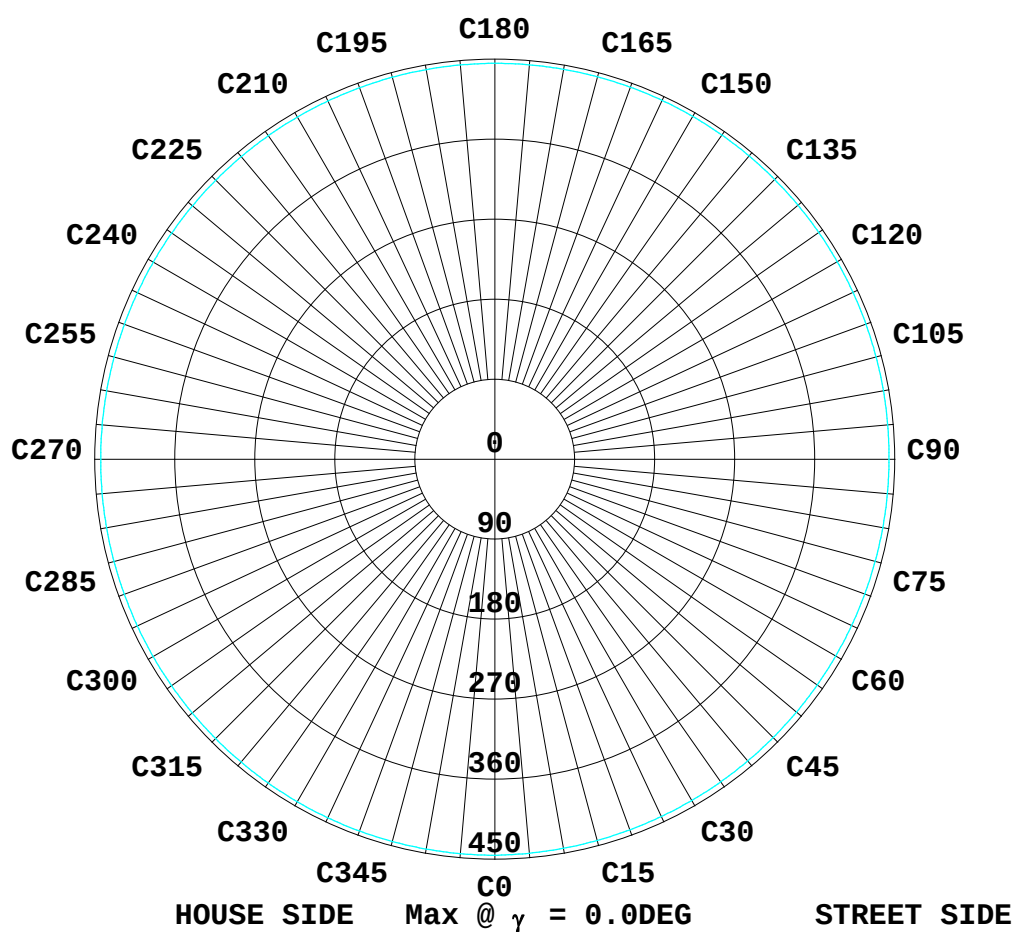
Test Set: 5.0deg/s C-Gamma (TYPE C)  
Humidity:65.0%  
Test Distance:5.150 m  
Remarks:

# HOP00 GONIOPHOTOMETERS SYSTEM TEST REPORT

## ISOCANDELA DIAGRAM

Report number:

|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |



Test System:HOP00 HPG1600  
Temperature:25.3DEG  
Operators:  
Test Date:10-18-2020

Test Set: 5.0deg/s C-Gamma (TYPE C)  
Humidity:65.0%  
Test Distance:5.150 m  
Remarks:

# HOP00 GONIOPHOTOMETERS SYSTEM TEST REPORT

## LUMINOUS DISTRIBUTION INTENSITY DATA

Report number:

|                |            |                            |
|----------------|------------|----------------------------|
| MANUFACTURER:  |            |                            |
| Address:       |            |                            |
| NAME: IP18W    | TYPE: 18   | WEIGHT:                    |
| SPECIFICATION: | DIMENSION: | SERIAL No.: LA/YE6L-990706 |

UNIT: cd

| $\gamma$ (DEG) | C (DEG) |      |      |      |
|----------------|---------|------|------|------|
|                | 0       | 90   | 180  | 270  |
| 0.0            | 445     | 443  | 445  | 443  |
| 5.0            | 442     | 441  | 443  | 441  |
| 10.0           | 434     | 433  | 436  | 433  |
| 15.0           | 420     | 420  | 424  | 420  |
| 20.0           | 402     | 403  | 407  | 402  |
| 25.0           | 381     | 381  | 386  | 381  |
| 30.0           | 356     | 356  | 361  | 356  |
| 35.0           | 328     | 328  | 334  | 329  |
| 40.0           | 296     | 297  | 304  | 298  |
| 45.0           | 258     | 260  | 266  | 260  |
| 50.0           | 217     | 217  | 226  | 220  |
| 55.0           | 174     | 169  | 184  | 179  |
| 60.0           | 132     | 118  | 141  | 131  |
| 65.0           | 90.4    | 72.6 | 100  | 84.2 |
| 70.0           | 52.8    | 41.2 | 60.4 | 44.2 |
| 75.0           | 19.0    | 17.1 | 27.1 | 19.2 |
| 80.0           | 8.32    | 8.56 | 10.1 | 11.1 |
| 85.0           | 4.74    | 4.77 | 5.70 | 7.00 |
| 90.0           | 2.09    | 0.93 | 3.07 | 3.23 |

Test System:HOP00 HPG1600  
Temperature:25.3DEG  
Operators:  
Test Date:10-18-2020

Test Set: 5.0deg/s C-Gamma (TYPE C)  
Humidity:65.0%  
Test Distance:5.150 m  
Remarks: