

## **Indoor Distribution Test Report**

# **Spectrum Lighting Inc.**

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## **Spectrum Lighting Photometric Lab**

### **Luminaire**

CY0820GV 27L 35K XX XX MW

Nom 8" diam x 20" H decorative cylindrical shaped luminaire

### **Test Number**

SP-00990

### **Test Date**

12/24/2019

The results contained in this report pertain only to this IES file.

### Summary of Results

#### Power

|             |      |
|-------------|------|
| Input Watts | 19 W |
|-------------|------|

#### Lumen Output

|               |             |
|---------------|-------------|
| Output Lumens | 2091        |
| Efficacy      | 110.06 lm/W |

#### Luminous Dimensions

|                 |       |
|-----------------|-------|
| 0° - 180° Size  | -0.67 |
| 90° - 270° Size | -0.67 |
| Height          | 1.67  |

#### Spacing Criterion

|                           |      |
|---------------------------|------|
| Two luminaires, plane 0°  | 0.52 |
| Two luminaires, plane 90° | 0.51 |
| Four luminaires           | 0.6  |

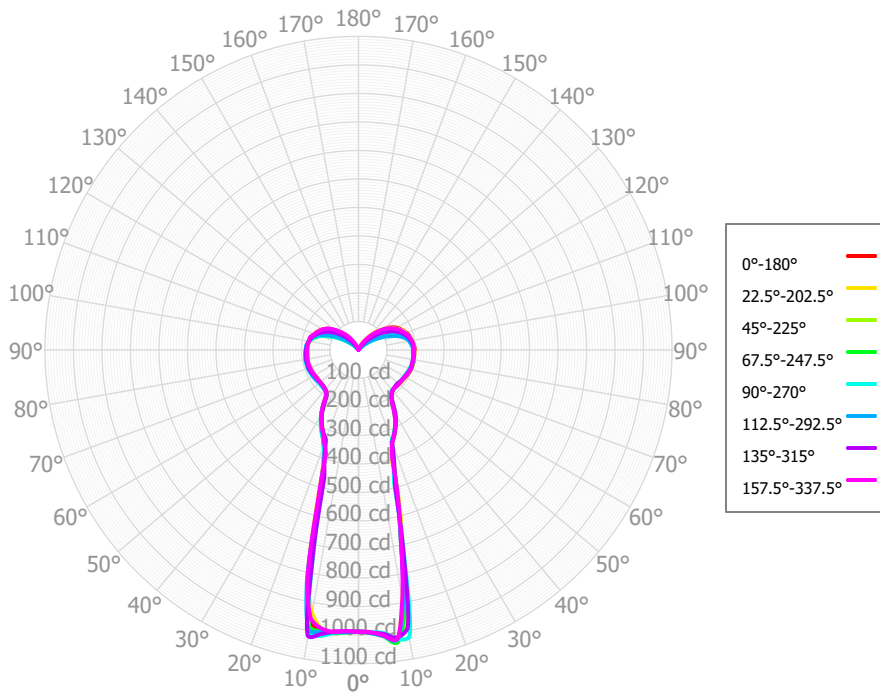
#### Full Beam Angle

|            |     |
|------------|-----|
| 0° - 180°  | 30° |
| 90° - 270° | 29° |

### IES File Header Contents

| Keyword   | Value   |
|-----------|---|
| TEST      | SP-00990  |
| TESTLAB   | Spectrum Lighting Photometric Lab, VLS-245-981              |
| MANUFAC   | Spectrum Lighting   |
| TESTDATE  | 12/24/2019  |
| ISSUEDATE | 4/7/2020  |
| LUMCAT    | CY0820GV 27L 35K XX XX MW                                   |
| LUMINAIRE | Nom 8" diam x 20" H decorative cylindrical shaped luminaire |
| LAMPCAT   | N/A   |
| LAMP      | N/A   |
| OTHER     | CCT Output Multipliers: 27K x 0.97, 30K x 0.99, 40K x 1.03  |
| OTHER     | Total luminaire wattage is approximate                      |
| OTHER     | This report prepared by Spectrum Lighting                   |
| _CRI      | 80+   |
| _CCTMULT  | 27K x 0.97, 30K x 0.99, 40K x 1.03                          |
| _LAMPMULT | 15L x 0.57  |

### Candela Polar Plot



### Zonal Lumen Summary

| Zone            | Lumens   | % Fixture | Zone              | Lumens   | % Fixture |
|-----------------|----------|-----------|-------------------|----------|-----------|
| 0.00° - 10.00°  | 96.26    | 4.60%     | 90.00° - 100.00°  | 202.51   | 9.68%     |
| 10.00° - 20.00° | 153.11   | 7.32%     | 100.00° - 110.00° | 182.10   | 8.71%     |
| 20.00° - 30.00° | 138.81   | 6.64%     | 100.00° - 120.00° | 321.93   | 15.39%    |
| 30.00° - 40.00° | 129.87   | 6.21%     | 120.00° - 130.00° | 88.76    | 4.24%     |
| 40.00° - 50.00° | 140.02   | 6.70%     | 130.00° - 140.00° | 44.28    | 2.12%     |
| 50.00° - 60.00° | 163.16   | 7.80%     | 140.00° - 150.00° | 15.79    | 0.76%     |
| 60.00° - 70.00° | 185.55   | 8.87%     | 150.00° - 160.00° | 3.19     | 0.15%     |
| 70.00° - 80.00° | 201.14   | 9.62%     | 160.00° - 170.00° | 0.49     | 0.02%     |
| 80.00° - 90.00° | 206.23   | 9.86%     | 170.00° - 180.00° | 0.13     | 0.01%     |
| 0.00° - 90.00°  | 1,414.15 | 67.62%    | 0.00° - 180.00°   | 2,091.22 | 100.00%   |

### Candela Distribution

|         | 0.00°    | 22.50°   | 45.00°   | 67.50°   | 90.00°   | 112.50° | 135.00°  | 157.50° | 180.00° | 202.50° | 225.00° | 247.50° | 270.00°  | 292.50°  | 315.00°  | 337.50°  | 360.00°  |
|---------|----------|----------|----------|----------|----------|---------|----------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|
| 0.00°   | 988.47   | 988.47   | 988.47   | 988.47   | 988.47   | 988.47  | 988.47   | 988.47  | 988.47  | 988.47  | 988.47  | 988.47  | 988.47   | 988.47   | 988.47   | 988.47   | 988.47   |
| 2.50°   | 992.28   | 993.33   | 992.11   | 992.91   | 991.65   | 990.28  | 988.74   | 986.81  | 989.95  | 989.41  | 991.74  | 991.11  | 991.83   | 994.73   | 992.61   | 991.03   | 992.28   |
| 5.00°   | 1,004.50 | 1,007.95 | 1,001.42 | 1,008.02 | 996.74   | 995.40  | 991.49   | 992.63  | 994.90  | 995.74  | 998.15  | 997.41  | 996.56   | 1,007.83 | 999.79   | 1,005.78 | 1,004.50 |
| 7.50°   | 1,025.05 | 1,025.28 | 1,025.53 | 1,036.27 | 1,021.78 | 998.22  | 1,005.20 | 986.25  | 988.03  | 987.36  | 996.00  | 995.60  | 1,011.21 | 1,027.41 | 1,017.04 | 1,025.26 | 1,025.05 |
| 10.00°  | 911.04   | 886.14   | 970.95   | 932.79   | 1,023.42 | 998.71  | 1,019.46 | 958.66  | 971.61  | 937.75  | 991.99  | 988.48  | 1,007.65 | 903.07   | 992.06   | 886.05   | 911.04   |
| 12.50°  | 688.28   | 717.17   | 714.28   | 696.95   | 741.36   | 838.78  | 741.45   | 830.21  | 804.50  | 826.19  | 757.48  | 803.36  | 734.47   | 685.65   | 727.86   | 690.34   | 688.28   |
| 15.00°  | 523.42   | 547.02   | 508.76   | 522.35   | 482.71   | 537.81  | 464.38   | 551.72  | 531.09  | 564.68  | 485.18  | 518.40  | 481.63   | 526.07   | 497.70   | 534.16   | 523.42   |
| 17.50°  | 400.05   | 376.69   | 413.51   | 402.44   | 408.16   | 387.63  | 398.41   | 381.56  | 400.40  | 379.02  | 403.01  | 397.58  | 412.07   | 399.50   | 415.85   | 389.52   | 400.05   |
| 20.00°  | 342.46   | 344.99   | 345.33   | 340.05   | 341.72   | 351.78  | 335.17   | 350.06  | 356.08  | 348.07  | 344.65  | 354.98  | 349.02   | 344.29   | 347.09   | 345.86   | 342.46   |
| 22.50°  | 325.32   | 326.47   | 326.63   | 321.98   | 324.27   | 325.41  | 318.26   | 323.49  | 327.68  | 320.92  | 321.32  | 328.00  | 329.75   | 323.69   | 325.82   | 326.88   | 325.32   |
| 25.00°  | 305.11   | 303.10   | 306.30   | 301.29   | 305.81   | 305.41  | 300.91   | 302.54  | 307.62  | 300.36  | 300.81  | 307.51  | 309.81   | 302.93   | 304.59   | 303.26   | 305.11   |
| 27.50°  | 283.27   | 279.44   | 283.37   | 278.86   | 282.74   | 283.28  | 279.16   | 281.28  | 284.89  | 279.40  | 278.98  | 285.53  | 286.54   | 282.10   | 283.48   | 278.74   | 283.27   |
| 30.00°  | 253.54   | 249.29   | 256.49   | 250.60   | 257.45   | 259.92  | 255.96   | 259.72  | 260.95  | 257.86  | 257.10  | 263.03  | 260.95   | 252.68   | 259.09   | 249.17   | 253.54   |
| 32.50°  | 220.18   | 219.26   | 224.17   | 218.91   | 224.03   | 230.67  | 222.99   | 232.38  | 230.55  | 232.41  | 225.41  | 231.69  | 226.23   | 220.24   | 226.68   | 218.88   | 220.18   |
| 35.00°  | 202.79   | 204.73   | 201.81   | 201.57   | 196.87   | 198.53  | 194.14   | 200.13  | 197.70  | 201.83  | 194.34  | 197.86  | 197.64   | 202.70   | 201.57   | 203.99   | 202.79   |
| 37.50°  | 191.56   | 190.72   | 191.32   | 191.37   | 188.98   | 186.63  | 187.20   | 184.37  | 186.04  | 184.41  | 187.36  | 186.93  | 189.27   | 189.47   | 192.07   | 190.70   | 191.56   |
| 40.00°  | 186.87   | 187.65   | 185.05   | 186.85   | 183.42   | 183.08  | 181.08   | 181.00  | 180.98  | 181.92  | 180.72  | 181.38  | 182.96   | 185.62   | 185.28   | 186.61   | 186.87   |
| 42.50°  | 184.27   | 184.78   | 183.26   | 184.72   | 183.75   | 180.98  | 178.38   | 178.43  | 178.43  | 179.36  | 178.93  | 180.15  | 182.24   | 183.94   | 183.37   | 183.08   | 184.27   |
| 45.00°  | 183.01   | 184.18   | 182.58   | 182.90   | 183.32   | 179.39  | 176.28   | 176.36  | 176.55  | 176.71  | 177.17  | 179.70  | 181.53   | 182.31   | 181.74   | 184.09   | 183.01   |
| 47.50°  | 182.12   | 183.92   | 182.92   | 181.20   | 181.21   | 178.72  | 176.13   | 175.52  | 175.82  | 175.09  | 175.65  | 178.80  | 180.85   | 180.69   | 180.53   | 185.18   | 182.12   |
| 50.00°  | 183.72   | 186.19   | 182.94   | 181.50   | 180.64   | 178.31  | 176.23   | 175.36  | 175.33  | 174.38  | 174.57  | 177.84  | 180.73   | 181.91   | 180.88   | 185.27   | 183.72   |
| 52.50°  | 185.84   | 188.09   | 182.72   | 182.41   | 182.96   | 179.82  | 177.01   | 175.77  | 174.97  | 174.60  | 176.41  | 178.94  | 181.71   | 183.51   | 183.38   | 185.36   | 185.84   |
| 55.00°  | 187.17   | 187.95   | 184.15   | 184.23   | 184.63   | 181.79  | 177.68   | 176.47  | 174.62  | 175.55  | 177.89  | 180.24  | 182.57   | 184.03   | 185.30   | 185.45   | 187.17   |
| 57.50°  | 188.38   | 188.11   | 186.73   | 186.28   | 185.29   | 183.21  | 178.10   | 176.92  | 175.96  | 176.91  | 177.55  | 181.16  | 183.22   | 184.45   | 186.56   | 185.76   | 188.38   |
| 60.00°  | 190.20   | 189.64   | 188.44   | 187.65   | 185.99   | 184.53  | 179.20   | 177.27  | 177.51  | 178.55  | 177.73  | 182.05  | 184.30   | 186.63   | 187.76   | 188.62   | 190.20   |
| 62.50°  | 192.10   | 191.12   | 189.63   | 188.89   | 186.76   | 185.23  | 181.61   | 178.52  | 178.39  | 179.24  | 180.02  | 183.81  | 185.99   | 188.92   | 188.88   | 191.22   | 192.10   |
| 65.00°  | 193.49   | 192.48   | 191.14   | 190.74   | 187.83   | 185.84  | 183.60   | 180.08  | 179.23  | 179.38  | 182.09  | 185.58  | 187.46   | 190.31   | 190.83   | 191.75   | 193.49   |
| 67.50°  | 194.83   | 193.79   | 192.81   | 192.67   | 189.27   | 187.01  | 184.85   | 180.75  | 179.86  | 180.18  | 183.47  | 187.14  | 188.65   | 191.67   | 193.52   | 192.49   | 194.83   |
| 70.00°  | 195.63   | 194.99   | 194.03   | 194.55   | 190.80   | 188.23  | 185.61   | 181.15  | 180.49  | 181.31  | 184.52  | 188.59  | 189.25   | 192.27   | 194.76   | 194.52   | 195.63   |
| 72.50°  | 196.41   | 195.92   | 195.04   | 196.42   | 192.41   | 188.07  | 185.63   | 181.46  | 181.81  | 182.65  | 184.71  | 187.89  | 189.20   | 192.86   | 194.86   | 196.00   | 196.41   |
| 75.00°  | 197.02   | 196.18   | 194.88   | 196.57   | 193.79   | 187.83  | 185.89   | 181.75  | 183.06  | 184.08  | 184.82  | 187.23  | 189.64   | 193.28   | 194.76   | 195.08   | 197.02   |
| 77.50°  | 197.60   | 196.36   | 194.28   | 196.62   | 194.96   | 188.09  | 186.48   | 182.10  | 182.10  | 183.46  | 184.75  | 186.93  | 190.53   | 193.63   | 194.52   | 194.31   | 197.60   |
| 80.00°  | 197.11   | 196.39   | 195.06   | 196.45   | 194.88   | 188.35  | 186.48   | 182.45  | 181.19  | 182.13  | 184.41  | 186.49  | 190.17   | 193.24   | 194.83   | 194.09   | 197.11   |
| 82.50°  | 196.65   | 195.97   | 196.26   | 196.24   | 193.80   | 188.09  | 185.82   | 181.84  | 180.79  | 181.29  | 183.56  | 185.04  | 188.75   | 192.77   | 195.47   | 194.09   | 196.65   |
| 85.00°  | 196.40   | 194.73   | 196.13   | 194.13   | 192.75   | 187.78  | 185.37   | 181.09  | 180.40  | 180.61  | 182.52  | 183.79  | 187.73   | 191.67   | 194.80   | 194.71   | 196.40   |
| 87.50°  | 196.23   | 193.90   | 195.66   | 192.12   | 191.72   | 186.30  | 185.12   | 180.86  | 180.04  | 180.72  | 181.17  | 183.68  | 187.01   | 190.77   | 193.48   | 194.93   | 196.23   |
| 90.00°  | 196.76   | 193.71   | 194.86   | 192.22   | 191.48   | 184.91  | 184.06   | 180.67  | 179.80  | 181.02  | 180.16  | 183.48  | 185.97   | 191.01   | 193.18   | 194.18   | 196.76   |
| 92.50°  | 196.91   | 193.15   | 193.99   | 192.15   | 191.69   | 184.39  | 182.30   | 180.01  | 180.32  | 179.70  | 179.67  | 182.92  | 184.73   | 190.61   | 193.32   | 193.60   | 196.91   |
| 95.00°  | 194.54   | 192.06   | 193.61   | 189.99   | 189.26   | 183.54  | 180.65   | 179.32  | 180.53  | 178.07  | 178.84  | 181.87  | 182.84   | 187.44   | 192.01   | 193.37   | 194.54   |
| 97.50°  | 192.22   | 191.17   | 193.32   | 187.43   | 185.45   | 180.24  | 179.09   | 178.26  | 179.19  | 177.51  | 177.56  | 179.11  | 180.59   | 184.20   | 190.16   | 192.28   | 192.22   |
| 100.00° | 190.13   | 190.50   | 190.89   | 181.83   | 180.78   | 176.84  | 176.82   | 177.19  | 177.63  | 177.08  | 174.92  | 175.50  | 176.58   | 180.71   | 186.91   | 189.63   | 190.13   |
| 102.50° | 187.96   | 188.12   | 188.22   | 175.98   | 175.72   | 172.95  | 174.10   | 176.43  | 175.18  | 174.87  | 170.77  | 169.42  | 171.73   | 175.69   | 183.23   | 186.94   | 187.96   |
| 105.00° | 185.44   | 183.96   | 181.70   | 168.70   | 168.58   | 168.22  | 170.10   | 175.40  | 172.36  | 172.49  | 166.17  | 162.42  | 164.69   | 166.35   | 178.31   | 184.17   | 185.44   |
| 107.50° | 182.44   | 179.93   | 174.90   | 160.61   | 160.67   | 159.81  | 165.38   | 169.68  | 168.37  | 168.36  | 161.14  | 153.18  | 156.77   | 156.01   | 173.09   | 179.98   | 182.44   |
| 110.00° | 177.88   | 175.99   | 168.28   | 148.91   | 148.69   | 150.28  | 159.07   | 164.05  | 164.43  | 164.13  | 155.40  | 142.35  | 144.86   | 143.23   | 166.39   | 173.85   | 177.88   |
| 112.50° | 173.06   | 171.12   | 161.66   | 136.37   | 135.41   | 136.80  | 151.99   | 159.32  | 160.65  | 159.66  | 149.08  | 128.29  | 131.59   | 129.60   | 159.40   | 168.17   | 173.06   |

### Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

|            |            |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>RCR</b> | <b>pfc</b> | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 0%    |
|            | <b>pcc</b> | 80%   | 80%   | 80%   | 80%   | 70%   | 70%   | 70%   | 70%   | 50%   | 50%   | 50%   | 30%   | 30%   | 30%   | 10%   | 10%   | 0%    |
|            | <b>pw</b>  | 70%   | 50%   | 30%   | 10%   | 70%   | 50%   | 30%   | 10%   | 50%   | 30%   | 10%   | 50%   | 30%   | 10%   | 50%   | 30%   | 30%   |
|            | <b>0</b>   | 2,328 | 2,328 | 2,328 | 2,328 | 2,195 | 2,195 | 2,195 | 2,195 | 1,947 | 1,947 | 1,947 | 1,721 | 1,721 | 1,721 | 1,512 | 1,512 | 1,414 |
|            | <b>1</b>   | 2,041 | 1,911 | 1,795 | 1,690 | 1,912 | 1,797 | 1,693 | 1,599 | 1,581 | 1,499 | 1,424 | 1,384 | 1,320 | 1,261 | 1,202 | 1,153 | 1,068 |
|            | <b>2</b>   | 1,837 | 1,639 | 1,476 | 1,338 | 1,716 | 1,541 | 1,394 | 1,270 | 1,355 | 1,238 | 1,137 | 1,184 | 1,092 | 1,011 | 1,026 | 955   | 882   |
|            | <b>3</b>   | 1,670 | 1,433 | 1,248 | 1,102 | 1,559 | 1,348 | 1,182 | 1,048 | 1,188 | 1,054 | 944   | 1,040 | 933   | 843   | 902   | 818   | 755   |
|            | <b>4</b>   | 1,531 | 1,270 | 1,079 | 933   | 1,429 | 1,197 | 1,024 | 890   | 1,058 | 917   | 806   | 929   | 815   | 723   | 810   | 719   | 664   |
|            | <b>5</b>   | 1,411 | 1,138 | 948   | 807   | 1,318 | 1,075 | 901   | 772   | 954   | 811   | 702   | 842   | 725   | 634   | 737   | 643   | 596   |
|            | <b>6</b>   | 1,307 | 1,030 | 844   | 710   | 1,223 | 974   | 804   | 680   | 869   | 727   | 622   | 770   | 653   | 564   | 678   | 583   | 541   |
|            | <b>7</b>   | 1,217 | 939   | 759   | 633   | 1,140 | 890   | 725   | 608   | 797   | 659   | 558   | 710   | 595   | 509   | 629   | 533   | 497   |
|            | <b>8</b>   | 1,137 | 862   | 689   | 570   | 1,068 | 819   | 659   | 548   | 737   | 602   | 506   | 659   | 546   | 464   | 587   | 493   | 461   |
|            | <b>9</b>   | 1,067 | 796   | 630   | 518   | 1,003 | 758   | 605   | 500   | 685   | 554   | 463   | 616   | 506   | 427   | 550   | 458   | 430   |
|            | <b>10</b>  | 1,005 | 740   | 581   | 475   | 946   | 705   | 558   | 459   | 640   | 514   | 427   | 578   | 471   | 395   | 519   | 429   | 403   |

### Cone of Light

| Mtg Height | Light Level | Beam Diameter |
|------------|-------------|---------------|
| 5.5 ft     | 32.7 fc     | 3.0 ft        |
| 6.5 ft     | 23.4 fc     | 3.5 ft        |
| 7.5 ft     | 17.6 fc     | 4.1 ft        |
| 8.0 ft     | 15.4 fc     | 4.3 ft        |
| 10.0 ft    | 9.9 fc      | 5.4 ft        |
| 12.0 ft    | 6.9 fc      | 6.5 ft        |
| 14.0 ft    | 5.0 fc      | 7.6 ft        |
| 16.0 ft    | 3.9 fc      | 8.7 ft        |
| 20.0 ft    | 2.5 fc      | 10.9 ft       |
| 24.0 ft    | 1.7 fc      | 13.0 ft       |
| 28.0 ft    | 1.3 fc      | 15.2 ft       |

### Average Luminaire Luminance [cd/m²]

|               | 0.00°  | 45.00° | 90.00° |
|---------------|--------|--------|--------|
| <b>0.00°</b>  | 30,178 | 30,178 | 30,178 |
| <b>45.00°</b> | 1,893  | 1,889  | 1,896  |
| <b>55.00°</b> | 1,801  | 1,772  | 1,776  |
| <b>65.00°</b> | 1,791  | 1,769  | 1,738  |
| <b>75.00°</b> | 1,809  | 1,790  | 1,780  |
| <b>85.00°</b> | 1,846  | 1,843  | 1,811  |

### UGR CIE 190:2010

| Ceiling reflectance |     | 0.7              | 0.7 | 0.5 | 0.5 | 0.3 | 0.7            | 0.7 | 0.5 | 0.5 | 0.3 |
|---------------------|-----|------------------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|
| Wall reflectance    |     | 0.5              | 0.3 | 0.5 | 0.3 | 0.3 | 0.5            | 0.3 | 0.5 | 0.3 | 0.3 |
| Plane reflectance   |     | 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 |     |     |     |     |
| 2H                  | 2H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 3H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 4H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 6H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 8H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 12H | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
| 4H                  | 2H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 3H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 4H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 6H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 8H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 12H | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
| 8H                  | 4H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 6H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 8H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 12H | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
| 12H                 | 4H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 6H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |
|                     | 8H  | -                | -   | -   | -   | -   | -              | -   | -   | -   | -   |

Corrected UGR values based on total output lumens

SHR = 1.0