

## Indoor Distribution Test Report

# Spectrum Lighting Inc.

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## Spectrum Lighting Photometric Lab

### Luminaire

CF04XXPC 30L 35K MD XX NL XX

Nom 4" diam Gamma Cylinder (damp location), MD optic, no lens

### Test Number

SP-01133

### Test Date

1/31/2020

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

### Summary of Results

#### Power

|             |        |
|-------------|--------|
| Input Watts | 20.4 W |
|-------------|--------|

#### Lumen Output

|               |             |
|---------------|-------------|
| Output Lumens | 2440        |
| Efficacy      | 119.63 lm/W |

#### Luminous Dimensions

|                 |       |
|-----------------|-------|
| 0° - 180° Size  | -0.33 |
| 90° - 270° Size | -0.33 |
| Height          | 0     |

#### Spacing Criterion

|                           |      |
|---------------------------|------|
| Two luminaires, plane 0°  | 0.43 |
| Two luminaires, plane 90° | 0.43 |
| Four luminaires           | 0.46 |

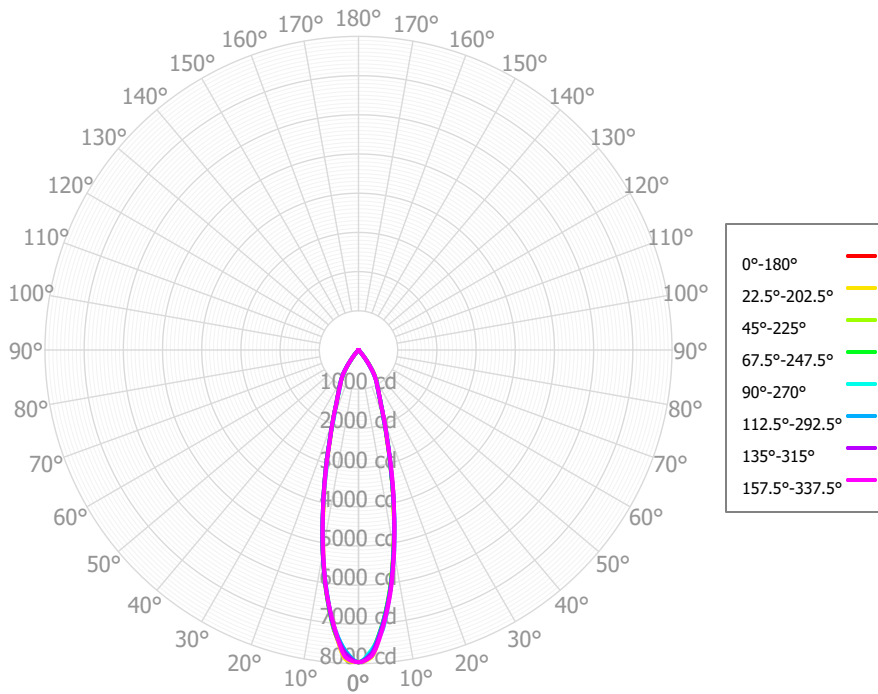
#### Full Beam Angle

|            |     |
|------------|-----|
| 0° - 180°  | 26° |
| 90° - 270° | 26° |

### IES File Header Contents

| Keyword   | Value  |
|-----------|--|
| TEST      | SP-01133   |
| TESTLAB   | Spectrum Lighting Photometric Lab, VLS-245-981   |
| MANUFAC   | Spectrum Lighting  |
| TESTDATE  | 1/31/2020  |
| ISSUEDATE | 2/16/2021  |
| LUMCAT    | CF04XXPC 30L 35K MD XX NL XX   |
| LUMINAIRE | Nom 4" diam Gamma Cylinder (damp location), MD optic, no lens                          |
| OTHER     | Beam Angle: 26 deg   |
| LAMPCAT   | N/A  |
| LAMP      | N/A  |
| OTHER     | CCT Output Multipliers: 27K x 0.972, 30K x 0.981, 40K x 1.04, 27HK x 0.78, 30HK x 0.82 |
| OTHER     | Total luminaire wattage is approximate   |
| OTHER     | This report prepared by Spectrum Lighting, scaled from 30L                             |
| _CRI      | 80   |
| _CCTMULT  | 27K x 0.972, 30K x 0.981, 40K x 1.04   |
| _CCTMULTA | 27HK x 0.78, 30HK x 0.82   |
| _LAMPMULT | 10L x 0.33, 15L x 0.49, 20L x 0.67   |

### Candela Polar Plot



### Zonal Lumen Summary

| Zone            | Lumens  | % Fixture | Zone              | Lumens  | % Fixture |
|-----------------|---------|-----------|-------------------|---------|-----------|
| 0.00° - 10.00°  | 620.50  | 25.43%    | 90.00° - 100.00°  | 0.00    | 0.00%     |
| 10.00° - 20.00° | 892.31  | 36.56%    | 100.00° - 110.00° | 0.00    | 0.00%     |
| 20.00° - 30.00° | 577.55  | 23.67%    | 100.00° - 120.00° | 0.00    | 0.00%     |
| 30.00° - 40.00° | 316.16  | 12.96%    | 120.00° - 130.00° | 0.00    | 0.00%     |
| 40.00° - 50.00° | 25.18   | 1.03%     | 130.00° - 140.00° | 0.00    | 0.00%     |
| 50.00° - 60.00° | 1.94    | 0.08%     | 140.00° - 150.00° | 0.00    | 0.00%     |
| 60.00° - 70.00° | 2.37    | 0.10%     | 150.00° - 160.00° | 0.00    | 0.00%     |
| 70.00° - 80.00° | 2.24    | 0.09%     | 160.00° - 170.00° | 0.00    | 0.00%     |
| 80.00° - 90.00° | 2.11    | 0.09%     | 170.00° - 180.00° | 0.00    | 0.00%     |
| 0.00° - 90.00°  | 2440.36 | 100.00%   | 0.00° - 180.00°   | 2440.36 | 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°  | 7965.76 | 7965.76 | 7965.76 | 7965.76 | 7965.76 | 7965.76 | 7965.76 | 7965.76 | 7965.76 | 7965.76 | 7965.76 | 7965.76 | 7965.76 | 7965.76 | 7965.76 | 7965.76 | 7965.76 |
| 2.50°  | 7793.39 | 7837.53 | 7681.57 | 7711.12 | 7658.17 | 7688.04 | 7740.43 | 7840.74 | 7795.16 | 7888.49 | 7716.93 | 7752.87 | 7677.25 | 7705.07 | 7752.66 | 7814.29 | 7793.39 |
| 5.00°  | 7063.08 | 7059.77 | 7029.04 | 7009.60 | 7151.03 | 7098.66 | 7139.53 | 7083.66 | 7164.66 | 7094.53 | 7177.93 | 7154.36 | 7141.79 | 7027.36 | 7057.27 | 7126.17 | 7063.08 |
| 7.50°  | 6190.90 | 6204.17 | 6139.87 | 6164.20 | 6206.98 | 6225.63 | 6247.95 | 6232.29 | 6246.92 | 6254.16 | 6232.31 | 6269.33 | 6209.30 | 6182.71 | 6198.41 | 6248.78 | 6190.90 |
| 10.00° | 5155.31 | 5175.62 | 5138.74 | 5150.63 | 5241.49 | 5245.18 | 5256.31 | 5185.61 | 5236.96 | 5178.17 | 5235.46 | 5262.35 | 5220.89 | 5168.37 | 5175.70 | 5238.06 | 5155.31 |
| 12.50° | 4161.10 | 4134.59 | 4157.15 | 4165.44 | 4200.27 | 4192.44 | 4197.34 | 4173.03 | 4173.40 | 4134.77 | 4167.40 | 4185.60 | 4198.28 | 4177.97 | 4183.30 | 4187.89 | 4161.10 |
| 15.00° | 3208.52 | 3260.94 | 3183.45 | 3209.24 | 3238.27 | 3285.53 | 3287.16 | 3222.26 | 3274.88 | 3223.24 | 3232.20 | 3275.38 | 3172.29 | 3208.86 | 3217.84 | 3302.18 | 3208.52 |
| 17.50° | 2460.70 | 2393.79 | 2477.57 | 2459.32 | 2508.67 | 2463.80 | 2463.86 | 2430.49 | 2460.44 | 2402.25 | 2460.43 | 2447.30 | 2484.16 | 2458.34 | 2470.70 | 2456.25 | 2460.70 |
| 20.00° | 1895.66 | 1916.23 | 1864.60 | 1896.27 | 1882.40 | 1903.76 | 1901.55 | 1888.30 | 1914.10 | 1887.49 | 1868.30 | 1891.26 | 1817.53 | 1877.42 | 1893.00 | 1937.16 | 1895.66 |
| 22.50° | 1495.29 | 1448.11 | 1498.42 | 1498.51 | 1516.32 | 1477.72 | 1472.87 | 1464.78 | 1484.84 | 1447.30 | 1469.23 | 1451.96 | 1484.07 | 1481.59 | 1497.51 | 1480.88 | 1495.29 |
| 25.00° | 1223.27 | 1239.15 | 1203.48 | 1231.54 | 1217.90 | 1224.05 | 1216.95 | 1205.68 | 1233.58 | 1217.43 | 1196.71 | 1208.67 | 1160.32 | 1212.72 | 1225.21 | 1248.34 | 1223.27 |
| 27.50° | 1042.14 | 1034.96 | 1049.85 | 1049.06 | 1064.70 | 1046.06 | 1036.85 | 1007.57 | 1048.29 | 1013.07 | 1044.80 | 1036.66 | 1025.10 | 1029.39 | 1037.03 | 1049.58 | 1042.14 |
| 30.00° | 923.65  | 905.82  | 929.46  | 925.70  | 905.55  | 893.83  | 879.77  | 883.17  | 882.90  | 870.67  | 877.93  | 869.63  | 887.53  | 897.02  | 898.97  | 897.22  | 923.65  |
| 32.50° | 748.41  | 768.76  | 747.20  | 750.29  | 735.24  | 751.20  | 731.42  | 716.22  | 723.81  | 703.25  | 698.63  | 704.16  | 689.48  | 708.84  | 712.89  | 749.87  | 748.41  |
| 35.00° | 539.22  | 554.86  | 553.14  | 543.23  | 548.39  | 548.80  | 531.43  | 503.70  | 513.35  | 483.98  | 497.59  | 499.92  | 491.61  | 491.96  | 502.11  | 534.49  | 539.22  |
| 37.50° | 342.29  | 347.35  | 350.14  | 346.89  | 334.74  | 327.38  | 314.99  | 311.11  | 289.49  | 287.41  | 280.76  | 285.80  | 296.22  | 299.41  | 309.28  | 314.17  | 342.29  |
| 40.00° | 151.70  | 185.30  | 145.85  | 156.28  | 167.29  | 175.80  | 170.93  | 137.18  | 150.88  | 131.38  | 138.23  | 151.80  | 114.73  | 117.78  | 124.50  | 169.48  | 151.70  |
| 42.50° | 61.25   | 45.01   | 72.14   | 64.21   | 65.90   | 42.57   | 45.86   | 43.34   | 30.57   | 29.40   | 43.37   | 34.56   | 56.96   | 43.97   | 47.41   | 27.44   | 61.25   |
| 45.00° | 15.96   | 21.53   | 12.43   | 17.34   | 7.73    | 11.74   | 14.90   | 15.04   | 8.51    | 12.31   | 7.12    | 11.23   | 6.63    | 11.30   | 11.40   | 14.28   | 15.96   |
| 47.50° | 2.84    | 2.47    | 5.75    | 3.53    | 3.44    | 2.52    | 4.31    | 2.92    | 2.86    | 2.36    | 3.43    | 3.12    | 4.17    | 2.66    | 2.78    | 2.02    | 2.84    |
| 50.00° | 2.05    | 2.70    | 2.64    | 2.62    | 1.65    | 1.44    | 2.27    | 2.52    | 2.04    | 2.15    | 2.01    | 2.18    | 2.09    | 1.88    | 3.09    | 2.34    | 2.05    |
| 52.50° | 1.61    | 2.75    | 2.53    | 2.18    | 2.57    | 1.74    | 1.68    | 2.69    | 1.83    | 1.94    | 1.66    | 2.08    | 1.92    | 1.80    | 2.67    | 2.67    | 1.61    |
| 55.00° | 1.27    | 2.18    | 2.52    | 1.90    | 2.76    | 2.03    | 1.67    | 3.22    | 1.87    | 1.70    | 1.72    | 2.13    | 1.81    | 1.92    | 2.05    | 3.01    | 1.27    |
| 57.50° | 1.75    | 1.78    | 2.13    | 2.03    | 2.25    | 2.32    | 1.73    | 3.13    | 1.94    | 1.79    | 1.95    | 2.18    | 1.98    | 1.94    | 2.41    | 3.29    | 1.75    |
| 60.00° | 2.45    | 1.91    | 1.77    | 2.27    | 2.29    | 1.83    | 2.04    | 2.70    | 2.01    | 2.24    | 2.07    | 2.38    | 2.13    | 1.95    | 2.98    | 2.89    | 2.45    |
| 62.50° | 2.17    | 2.03    | 2.07    | 2.24    | 2.78    | 1.28    | 2.37    | 3.21    | 2.08    | 2.40    | 2.15    | 2.58    | 2.22    | 2.25    | 3.24    | 2.61    | 2.17    |
| 65.00° | 1.68    | 2.15    | 2.36    | 2.16    | 2.61    | 1.38    | 2.55    | 4.16    | 2.12    | 2.29    | 2.61    | 2.18    | 2.23    | 2.61    | 3.44    | 3.11    | 1.68    |
| 67.50° | 1.57    | 2.18    | 2.64    | 2.08    | 1.94    | 1.50    | 2.72    | 4.04    | 2.15    | 2.06    | 3.17    | 1.80    | 2.02    | 2.34    | 3.28    | 3.52    | 1.57    |
| 70.00° | 1.52    | 2.07    | 2.86    | 2.00    | 1.49    | 1.25    | 2.96    | 3.48    | 1.79    | 1.73    | 2.83    | 2.09    | 2.03    | 2.00    | 3.08    | 3.49    | 1.52    |
| 72.50° | 1.48    | 1.96    | 2.52    | 1.71    | 1.18    | 1.00    | 3.20    | 2.94    | 1.45    | 1.67    | 2.26    | 2.35    | 2.56    | 2.31    | 2.92    | 3.40    | 1.48    |
| 75.00° | 1.44    | 1.88    | 2.19    | 1.39    | 1.16    | 1.39    | 2.88    | 2.41    | 1.78    | 1.80    | 2.10    | 2.28    | 2.95    | 2.69    | 2.77    | 3.04    | 1.44    |
| 77.50° | 1.60    | 1.73    | 1.94    | 1.52    | 1.30    | 1.77    | 2.56    | 1.93    | 2.05    | 1.84    | 2.02    | 2.24    | 3.03    | 2.23    | 2.40    | 2.66    | 1.60    |
| 80.00° | 1.78    | 1.47    | 1.75    | 1.70    | 1.65    | 2.16    | 2.14    | 1.45    | 1.54    | 1.83    | 2.13    | 2.56    | 3.04    | 1.73    | 2.01    | 2.16    | 1.78    |
| 82.50° | 1.81    | 1.36    | 1.87    | 1.59    | 2.10    | 2.47    | 1.75    | 1.80    | 1.11    | 1.88    | 2.27    | 2.81    | 2.92    | 1.90    | 2.00    | 1.81    | 1.81    |
| 85.00° | 1.82    | 1.45    | 1.98    | 1.46    | 1.92    | 1.90    | 1.56    | 2.35    | 1.31    | 1.96    | 1.93    | 2.53    | 2.91    | 2.08    | 2.01    | 1.87    | 1.82    |
| 87.50° | 1.80    | 1.76    | 2.07    | 1.74    | 1.46    | 1.37    | 1.39    | 2.08    | 1.47    | 1.87    | 1.54    | 2.36    | 3.07    | 1.98    | 2.26    | 1.96    | 1.80    |
| 90.00° | 1.77    | 2.34    | 2.27    | 2.03    | 1.36    | 1.27    | 1.36    | 1.65    | 1.41    | 1.71    | 1.63    | 2.78    | 3.10    | 1.88    | 2.49    | 2.09    | 1.77    |

### 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>   | 2905 | 2905 | 2905 | 2905 | 2838 | 2838 | 2838 | 2838 | 2712 | 2712 | 2712 | 2596 | 2596 | 2596 | 2490 | 2490 | 2440 |
|            | <b>1</b>   | 2793 | 2735 | 2683 | 2636 | 2734 | 2683 | 2636 | 2594 | 2585 | 2548 | 2515 | 2495 | 2467 | 2440 | 2412 | 2391 | 2370 |
|            | <b>2</b>   | 2684 | 2584 | 2502 | 2433 | 2632 | 2543 | 2469 | 2406 | 2466 | 2406 | 2354 | 2395 | 2346 | 2304 | 2329 | 2291 | 2256 |
|            | <b>3</b>   | 2580 | 2451 | 2350 | 2270 | 2535 | 2418 | 2326 | 2252 | 2356 | 2280 | 2217 | 2299 | 2236 | 2183 | 2246 | 2195 | 2154 |
|            | <b>4</b>   | 2482 | 2331 | 2220 | 2136 | 2441 | 2304 | 2202 | 2123 | 2254 | 2168 | 2099 | 2208 | 2135 | 2075 | 2165 | 2103 | 2052 |
|            | <b>5</b>   | 2389 | 2222 | 2106 | 2021 | 2353 | 2201 | 2093 | 2012 | 2160 | 2066 | 1995 | 2122 | 2041 | 1978 | 2086 | 2017 | 1962 |
|            | <b>6</b>   | 2301 | 2124 | 2005 | 1920 | 2269 | 2106 | 1995 | 1914 | 2072 | 1975 | 1902 | 2041 | 1955 | 1890 | 2011 | 1936 | 1878 |
|            | <b>7</b>   | 2218 | 2034 | 1915 | 1832 | 2189 | 2019 | 1907 | 1827 | 1991 | 1891 | 1818 | 1964 | 1875 | 1809 | 1939 | 1860 | 1800 |
|            | <b>8</b>   | 2140 | 1952 | 1833 | 1752 | 2114 | 1939 | 1827 | 1749 | 1915 | 1814 | 1742 | 1892 | 1802 | 1735 | 1871 | 1790 | 1729 |
|            | <b>9</b>   | 2066 | 1876 | 1759 | 1680 | 2043 | 1865 | 1754 | 1678 | 1844 | 1743 | 1672 | 1825 | 1733 | 1667 | 1807 | 1724 | 1662 |
|            | <b>10</b>  | 1997 | 1806 | 1691 | 1615 | 1976 | 1796 | 1687 | 1613 | 1779 | 1678 | 1609 | 1762 | 1670 | 1605 | 1746 | 1662 | 1601 |

### Cone of Light

| Mtg Height | Light Level | Beam Diameter |
|------------|-------------|---------------|
| 5.5 ft     | 263.3 fc    | 2.5 ft        |
| 6.5 ft     | 188.5 fc    | 3.0 ft        |
| 7.5 ft     | 141.6 fc    | 3.5 ft        |
| 8.0 ft     | 124.5 fc    | 3.7 ft        |
| 10.0 ft    | 79.7 fc     | 4.6 ft        |
| 12.0 ft    | 55.3 fc     | 5.5 ft        |
| 14.0 ft    | 40.6 fc     | 6.5 ft        |
| 16.0 ft    | 31.1 fc     | 7.4 ft        |
| 20.0 ft    | 19.9 fc     | 9.2 ft        |
| 24.0 ft    | 13.8 fc     | 11.1 ft       |
| 28.0 ft    | 10.2 fc     | 12.9 ft       |

### Average Luminaire Luminance [cd/m²]

|               | 0.00°   | 45.00°  | 90.00°  |
|---------------|---------|---------|---------|
| <b>0.00°</b>  | 1002489 | 1002489 | 1002489 |
| <b>45.00°</b> | 2840    | 2212    | 1375    |
| <b>55.00°</b> | 278     | 552     | 606     |
| <b>65.00°</b> | 501     | 702     | 777     |
| <b>75.00°</b> | 698     | 1066    | 564     |
| <b>85.00°</b> | 2634    | 2859    | 2765    |

### 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  | -7.3             | -6.4 | -6.9 | -6.1 | -5.8 | -8.0           | -7.1 | -7.7 | -6.8 | -6.5 |
|                     | 3H  | -4.3             | -3.5 | -3.9 | -3.1 | -2.8 | -5.4           | -4.7 | -5.1 | -4.3 | -4.0 |
|                     | 4H  | -3.0             | -2.2 | -2.6 | -1.9 | -1.5 | -3.4           | -2.7 | -3.0 | -2.3 | -1.9 |
|                     | 6H  | -1.4             | -0.7 | -1.0 | -0.4 | 0.0  | -0.8           | -0.1 | -0.4 | 0.2  | 0.6  |
|                     | 8H  | -0.5             | 0.2  | 0.0  | 0.5  | 1.0  | 0.7            | 1.3  | 1.1  | 1.7  | 2.1  |
|                     | 12H | 0.7              | 1.3  | 1.1  | 1.7  | 2.1  | 2.2            | 2.8  | 2.7  | 3.2  | 3.6  |
| 4H                  | 2H  | -5.9             | -5.1 | -5.4 | -4.8 | -4.4 | -6.7           | -6.0 | -6.3 | -5.6 | -5.2 |
|                     | 3H  | -2.4             | -1.8 | -2.0 | -1.4 | -1.0 | -3.8           | -3.2 | -3.4 | -2.8 | -2.4 |
|                     | 4H  | -0.9             | -0.3 | -0.4 | 0.1  | 0.5  | -1.9           | -1.4 | -1.5 | -1.0 | -0.5 |
|                     | 6H  | 0.6              | 1.1  | 1.1  | 1.5  | 2.0  | 0.8            | 1.2  | 1.3  | 1.7  | 2.2  |
|                     | 8H  | 1.5              | 1.9  | 2.0  | 2.4  | 2.8  | 2.4            | 2.8  | 2.9  | 3.3  | 3.7  |
|                     | 12H | 2.6              | 3.0  | 3.1  | 3.5  | 3.9  | 4.0            | 4.3  | 4.5  | 4.8  | 5.3  |
| 8H                  | 4H  | -0.2             | 0.3  | 0.3  | 0.7  | 1.2  | -0.9           | -0.5 | -0.4 | 0.0  | 0.4  |
|                     | 6H  | 1.6              | 1.9  | 2.1  | 2.4  | 2.9  | 1.9            | 2.3  | 2.5  | 2.8  | 3.3  |
|                     | 8H  | 2.6              | 2.9  | 3.1  | 3.4  | 3.9  | 3.7            | 4.0  | 4.3  | 4.5  | 5.0  |
|                     | 12H | 3.9              | 4.1  | 4.4  | 4.6  | 5.2  | 5.5            | 5.7  | 6.0  | 6.2  | 6.8  |
| 12H                 | 4H  | -0.1             | 0.3  | 0.4  | 0.8  | 1.3  | -0.7           | -0.4 | -0.2 | 0.1  | 0.6  |
|                     | 6H  | 1.8              | 2.1  | 2.4  | 2.6  | 3.1  | 2.2            | 2.5  | 2.7  | 3.0  | 3.5  |
|                     | 8H  | 3.0              | 3.2  | 3.5  | 3.7  | 4.3  | 4.1            | 4.3  | 4.6  | 4.8  | 5.4  |

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0