

## **Indoor Distribution Test Report**

# **Spectrum Lighting Inc.**

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## **Spectrum Lighting Photometric Lab**

### **Luminaire**

CF04XXUDPC 20LWDCL 20LWDNL 35KXX XXMW (IND/DIR Damp location)  
Nom. 4" Diam. Gamma Indirect/Direct Cylinder

### **Test Number**

SP-01092

### **Test Date**

1/20/2020

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

### Summary of Results

#### Power

|             |        |
|-------------|--------|
| Input Watts | 25.8 W |
|-------------|--------|

#### Lumen Output

|               |            |
|---------------|------------|
| Output Lumens | 3119       |
| Efficacy      | 120.9 lm/W |

#### Luminous Dimensions

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

#### Spacing Criterion

|                           |      |
|---------------------------|------|
| Two luminaires, plane 0°  | 0.81 |
| Two luminaires, plane 90° | 0.81 |
| Four luminaires           | 0.8  |

#### Full Beam Angle

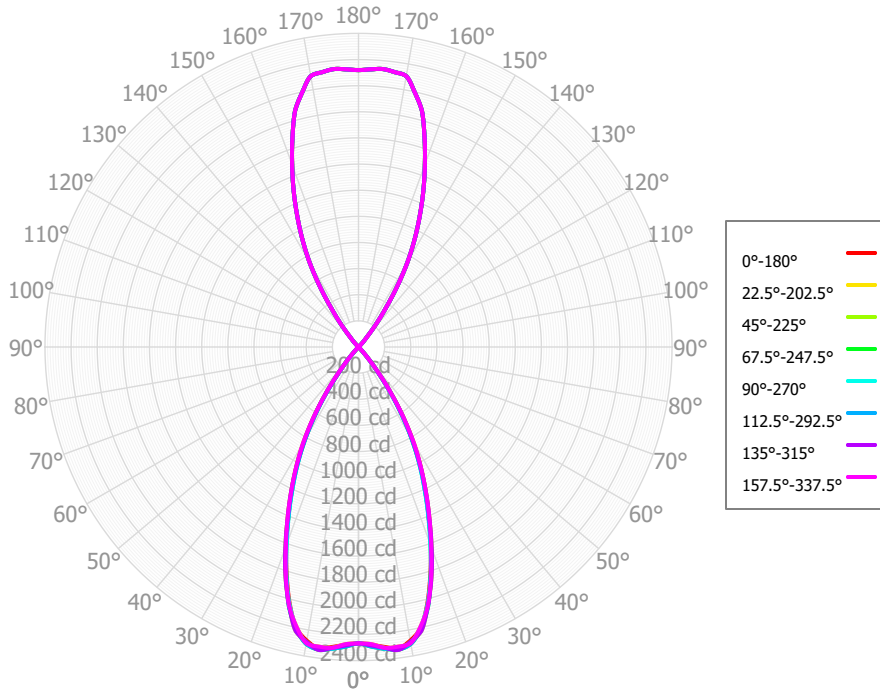
|            |      |
|------------|------|
| 0° - 180°  | 312° |
| 90° - 270° | 312° |

### IES File Header Contents

| Keyword   | Value  |
|-----------|--|
| TEST      | SP-01092   |
| TESTLAB   | VLS-245-981  |
| MANUFAC   | Spectrum Lighting  |
| TESTDATE  | 1/20/2020  |
| ISSUEDATE | 12/16/2020   |
| LUMCAT    | CF04XXUDPC 20LWDCL 20LWDNL 35KXX XXMW (IND/DIR Damp location)                        |
| LUMINAIRE | Nom. 4" Diam. Gamma Indirect/Direct Cylinder   |
| OTHER     | Uplight: Wide Optic, Flush Clear Glass lens  |
| OTHER     | Uplight: 51.2 Degree Beam Angle  |
| OTHER     | Downlight: Wide Optic, No lens   |
| OTHER     | Downlight: 49.4 Degree Beam Angle  |
| OTHER     | Trim: Matte White  |
| LAMP      | N/A  |
| LAMPCAT   | N/A, 19mm LES Uplight  |
| OTHER     | N/A, 19mm LES Downlight  |
| OTHER     | Total Luminaire Watts is approximate   |
| OTHER     | CCT Output Multipliers: 27K x 0.97, 30K x 0.98, 40K x 1.04, 27HK x 0.89, 30HK x 0.83 |
| OTHER     | See Catalog cut sheet for different source lumen multipliers                         |
| OTHER     | This report prepared by Spectrum Lighting  |
| _CRI      | 80   |
| CCTMULT   | 27K x 0.97, 30K x 0.98, 40K x 1.04   |

CF04XXUDPC 20LWDCL 20LWDNL 35KXX  
 XXMW (IND/DIR Damp location)

### Candela Polar Plot



### Zonal Lumen Summary

| Zone            | Lumens  | % Fixture | Zone              | Lumens  | % Fixture |
|-----------------|---------|-----------|-------------------|---------|-----------|
| 0.00° - 10.00°  | 231.48  | 7.42%     | 90.00° - 100.00°  | 1.52    | 0.05%     |
| 10.00° - 20.00° | 559.22  | 17.93%    | 100.00° - 110.00° | 2.02    | 0.06%     |
| 20.00° - 30.00° | 550.13  | 17.64%    | 100.00° - 120.00° | 3.86    | 0.12%     |
| 30.00° - 40.00° | 272.30  | 8.73%     | 120.00° - 130.00° | 2.42    | 0.08%     |
| 40.00° - 50.00° | 20.40   | 0.65%     | 130.00° - 140.00° | 23.61   | 0.76%     |
| 50.00° - 60.00° | 1.36    | 0.04%     | 140.00° - 150.00° | 236.54  | 7.58%     |
| 60.00° - 70.00° | 1.37    | 0.04%     | 150.00° - 160.00° | 503.80  | 16.15%    |
| 70.00° - 80.00° | 1.60    | 0.05%     | 160.00° - 170.00° | 509.66  | 16.34%    |
| 80.00° - 90.00° | 1.63    | 0.05%     | 170.00° - 180.00° | 212.67  | 6.82%     |
| 0.00° - 90.00°  | 1639.49 | 52.56%    | 0.00° - 180.00°   | 3133.57 | 100.46%   |

### Candela Distribution

|         | 0.00°   | 22.50°  | 45.00°  | 67.50°  | 90.00°  |
|---------|---------|---------|---------|---------|---------|
| 0.00°   | 2269.38 | 2269.38 | 2269.38 | 2269.38 | 2269.38 |
| 2.50°   | 2281.99 | 2277.22 | 2287.50 | 2296.12 | 2288.69 |
| 5.00°   | 2304.91 | 2311.68 | 2312.10 | 2317.65 | 2318.33 |
| 7.50°   | 2327.46 | 2313.73 | 2339.05 | 2335.80 | 2321.87 |
| 10.00°  | 2282.29 | 2302.41 | 2291.49 | 2307.67 | 2299.10 |
| 12.50°  | 2204.48 | 2193.09 | 2225.69 | 2208.94 | 2201.32 |
| 15.00°  | 2034.50 | 2052.81 | 2050.36 | 2057.35 | 2040.38 |
| 17.50°  | 1828.62 | 1846.32 | 1856.52 | 1840.65 | 1837.14 |
| 20.00°  | 1615.11 | 1623.78 | 1637.70 | 1622.10 | 1605.08 |
| 22.50°  | 1399.33 | 1418.85 | 1416.13 | 1401.66 | 1393.54 |
| 25.00°  | 1209.74 | 1216.86 | 1219.43 | 1199.37 | 1193.20 |
| 27.50°  | 1025.73 | 1031.24 | 1023.98 | 1012.25 | 1006.11 |
| 30.00°  | 832.16  | 847.26  | 832.04  | 817.33  | 824.91  |
| 32.50°  | 637.14  | 644.12  | 639.82  | 617.16  | 625.41  |
| 35.00°  | 441.46  | 440.27  | 442.81  | 428.82  | 419.60  |
| 37.50°  | 245.73  | 273.65  | 253.57  | 246.88  | 256.08  |
| 40.00°  | 131.68  | 113.35  | 133.22  | 127.20  | 103.40  |
| 42.50°  | 21.72   | 55.98   | 29.06   | 34.97   | 46.53   |
| 45.00°  | 11.42   | 4.36    | 14.23   | 7.79    | 7.80    |
| 47.50°  | 1.82    | 2.88    | 2.36    | 2.75    | 2.64    |
| 50.00°  | 1.55    | 1.61    | 1.96    | 1.64    | 1.51    |
| 52.50°  | 1.32    | 1.48    | 1.66    | 1.53    | 1.40    |
| 55.00°  | 1.30    | 1.39    | 1.65    | 1.53    | 1.34    |
| 57.50°  | 1.31    | 1.47    | 1.59    | 1.55    | 1.47    |
| 60.00°  | 1.47    | 1.49    | 1.41    | 1.48    | 1.57    |
| 62.50°  | 1.59    | 1.37    | 1.30    | 1.39    | 1.25    |
| 65.00°  | 1.55    | 1.27    | 1.32    | 1.44    | 0.99    |
| 67.50°  | 1.57    | 1.24    | 1.34    | 1.50    | 1.34    |
| 70.00°  | 1.74    | 1.27    | 1.35    | 1.51    | 1.58    |
| 72.50°  | 1.89    | 1.39    | 1.45    | 1.52    | 1.16    |
| 75.00°  | 2.01    | 1.42    | 1.65    | 1.61    | 0.90    |
| 77.50°  | 1.91    | 1.33    | 1.76    | 1.67    | 1.28    |
| 80.00°  | 1.44    | 1.35    | 1.78    | 1.38    | 1.54    |
| 82.50°  | 1.19    | 1.51    | 1.79    | 1.15    | 1.41    |
| 85.00°  | 1.26    | 1.59    | 1.79    | 1.29    | 1.32    |
| 87.50°  | 1.34    | 1.58    | 1.85    | 1.36    | 1.35    |
| 90.00°  | 1.42    | 1.55    | 1.96    | 1.17    | 1.39    |
| 92.50°  | 1.30    | 1.30    | 1.30    | 1.30    | 1.30    |
| 95.00°  | 1.34    | 1.34    | 1.34    | 1.34    | 1.34    |
| 97.50°  | 1.41    | 1.41    | 1.41    | 1.41    | 1.41    |
| 100.00° | 1.54    | 1.54    | 1.54    | 1.54    | 1.54    |
| 102.50° | 1.92    | 1.92    | 1.92    | 1.92    | 1.92    |
| 105.00° | 2.05    | 2.05    | 2.05    | 2.05    | 2.05    |
| 107.50° | 2.01    | 2.01    | 2.01    | 2.01    | 2.01    |
| 110.00° | 1.76    | 1.76    | 1.76    | 1.76    | 1.76    |
| 112.50° | 1.69    | 1.69    | 1.69    | 1.69    | 1.69    |

CF04XXUDPC 20LWDCL 20LWDNL 35KXX  
 XXMW (IND/DIR Damp location)

### 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>   | 3375 | 3375 | 3375 | 3375 | 3122 | 3122 | 3122 | 3122 | 2652 | 2652 | 2652 | 2221 | 2221 | 2221 | 1825 | 1825 | 1639 |
|            | <b>1</b>   | 3162 | 3060 | 2969 | 2887 | 2932 | 2847 | 2771 | 2701 | 2447 | 2395 | 2348 | 2080 | 2047 | 2016 | 1742 | 1722 | 1561 |
|            | <b>2</b>   | 2964 | 2790 | 2647 | 2526 | 2753 | 2608 | 2486 | 2383 | 2265 | 2180 | 2107 | 1949 | 1893 | 1843 | 1657 | 1622 | 1482 |
|            | <b>3</b>   | 2779 | 2555 | 2382 | 2244 | 2588 | 2398 | 2250 | 2130 | 2103 | 1996 | 1909 | 1829 | 1756 | 1695 | 1575 | 1529 | 1406 |
|            | <b>4</b>   | 2609 | 2351 | 2161 | 2017 | 2434 | 2214 | 2051 | 1924 | 1957 | 1838 | 1743 | 1719 | 1635 | 1567 | 1497 | 1442 | 1333 |
|            | <b>5</b>   | 2453 | 2171 | 1974 | 1828 | 2293 | 2052 | 1880 | 1752 | 1827 | 1700 | 1602 | 1618 | 1527 | 1455 | 1422 | 1361 | 1266 |
|            | <b>6</b>   | 2310 | 2013 | 1813 | 1670 | 2164 | 1908 | 1733 | 1606 | 1710 | 1578 | 1480 | 1525 | 1429 | 1356 | 1352 | 1286 | 1202 |
|            | <b>7</b>   | 2179 | 1873 | 1674 | 1535 | 2045 | 1781 | 1605 | 1481 | 1605 | 1471 | 1374 | 1441 | 1342 | 1268 | 1287 | 1217 | 1142 |
|            | <b>8</b>   | 2059 | 1749 | 1554 | 1419 | 1937 | 1667 | 1493 | 1373 | 1510 | 1376 | 1281 | 1364 | 1263 | 1190 | 1225 | 1154 | 1087 |
|            | <b>9</b>   | 1950 | 1638 | 1447 | 1318 | 1837 | 1565 | 1395 | 1278 | 1425 | 1292 | 1198 | 1293 | 1192 | 1120 | 1168 | 1095 | 1035 |
|            | <b>10</b>  | 1850 | 1540 | 1354 | 1230 | 1746 | 1474 | 1307 | 1195 | 1347 | 1216 | 1125 | 1228 | 1127 | 1056 | 1115 | 1041 | 988  |

### Cone of Light

| Mtg Height | Light Level | Beam Diameter |
|------------|-------------|---------------|
| 5.5 ft     | 75.0 fc     | 0.0 ft        |
| 6.5 ft     | 53.7 fc     | 0.0 ft        |
| 7.5 ft     | 40.3 fc     | 0.0 ft        |
| 8.0 ft     | 35.5 fc     | 0.0 ft        |
| 10.0 ft    | 22.7 fc     | 0.0 ft        |
| 12.0 ft    | 15.8 fc     | 0.0 ft        |
| 14.0 ft    | 11.6 fc     | 0.0 ft        |
| 16.0 ft    | 8.9 fc      | 0.0 ft        |
| 20.0 ft    | 5.7 fc      | 0.0 ft        |
| 24.0 ft    | 3.9 fc      | 0.0 ft        |
| 28.0 ft    | 2.9 fc      | 0.0 ft        |

### Average Luminaire Luminance [cd/m²]

|               | 0.00°  | 45.00° | 90.00° |
|---------------|--------|--------|--------|
| <b>0.00°</b>  | 285600 | 285600 | 285600 |
| <b>45.00°</b> | 2032   | 2532   | 1389   |
| <b>55.00°</b> | 285    | 363    | 295    |
| <b>65.00°</b> | 461    | 393    | 296    |
| <b>75.00°</b> | 976    | 800    | 435    |
| <b>85.00°</b> | 1827   | 2585   | 1907   |

### 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  | -13.8            | -13.2 | -12.9 | -12.2 | -11.0 | -13.4          | -12.8 | -12.5 | -11.8 | -10.6 |
|                     | 3H  | -10.3            | -9.7  | -9.3  | -8.8  | -7.5  | -10.1          | -9.5  | -9.1  | -8.6  | -7.3  |
|                     | 4H  | -7.8             | -7.2  | -6.8  | -6.3  | -5.0  | -8.8           | -8.3  | -7.8  | -7.3  | -6.0  |
|                     | 6H  | -5.7             | -5.2  | -4.6  | -4.2  | -2.9  | -6.6           | -6.1  | -5.5  | -5.1  | -3.8  |
|                     | 8H  | -4.9             | -4.4  | -3.9  | -3.4  | -2.1  | -5.4           | -5.0  | -4.4  | -4.0  | -2.7  |
|                     | 12H | -3.9             | -3.5  | -2.9  | -2.5  | -1.2  | -4.2           | -3.8  | -3.2  | -2.8  | -1.5  |
| 4H                  | 2H  | -13.0            | -12.5 | -12.0 | -11.5 | -10.2 | -12.7          | -12.2 | -11.7 | -11.2 | -9.9  |
|                     | 3H  | -9.3             | -8.8  | -8.3  | -7.8  | -6.5  | -9.0           | -8.5  | -8.0  | -7.5  | -6.2  |
|                     | 4H  | -6.7             | -6.3  | -5.7  | -5.3  | -4.0  | -7.1           | -6.7  | -6.1  | -5.7  | -4.4  |
|                     | 6H  | -4.5             | -4.1  | -3.5  | -3.1  | -1.8  | -4.8           | -4.5  | -3.8  | -3.4  | -2.1  |
|                     | 8H  | -3.5             | -3.2  | -2.5  | -2.2  | -0.8  | -3.7           | -3.4  | -2.7  | -2.4  | -1.0  |
|                     | 12H | -2.3             | -2.0  | -1.3  | -1.0  | 0.3   | -2.5           | -2.2  | -1.4  | -1.1  | 0.2   |
| 8H                  | 4H  | -5.8             | -5.5  | -4.8  | -4.5  | -3.2  | -6.1           | -5.8  | -5.1  | -4.8  | -3.4  |
|                     | 6H  | -3.4             | -3.1  | -2.3  | -2.1  | -0.7  | -3.6           | -3.3  | -2.5  | -2.3  | -0.9  |
|                     | 8H  | -2.2             | -1.9  | -1.1  | -0.9  | 0.5   | -2.4           | -2.2  | -1.4  | -1.2  | 0.2   |
|                     | 12H | -0.7             | -0.5  | 0.4   | 0.5   | 1.9   | -1.0           | -0.8  | 0.0   | 0.2   | 1.6   |
| 12H                 | 4H  | -5.6             | -5.3  | -4.6  | -4.3  | -3.0  | -5.8           | -5.6  | -4.8  | -4.5  | -3.2  |
|                     | 6H  | -3.0             | -2.8  | -1.9  | -1.7  | -0.3  | -3.2           | -2.9  | -2.1  | -1.9  | -0.5  |
|                     | 8H  | -1.6             | -1.4  | -0.5  | -0.3  | 1.1   | -1.9           | -1.7  | -0.8  | -0.6  | 0.8   |

Corrected UGR values based on total output energy  
 SHR = 1.0

Corrected UGR values based on total output lumens

SHR = 1.0