

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P642320

Luminaire Tested: GWS-SA6C-760-U-SL2-W-GRSWH

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P642320  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-29)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA6C-760-U-SL2-W-GRSWH  
Description: GALLEON WALL SLIM LUMINAIRE. (6) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS W/ FACTORY INSTALLED GLARE SHIELD, WH  
Light Source: (96) 5700K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

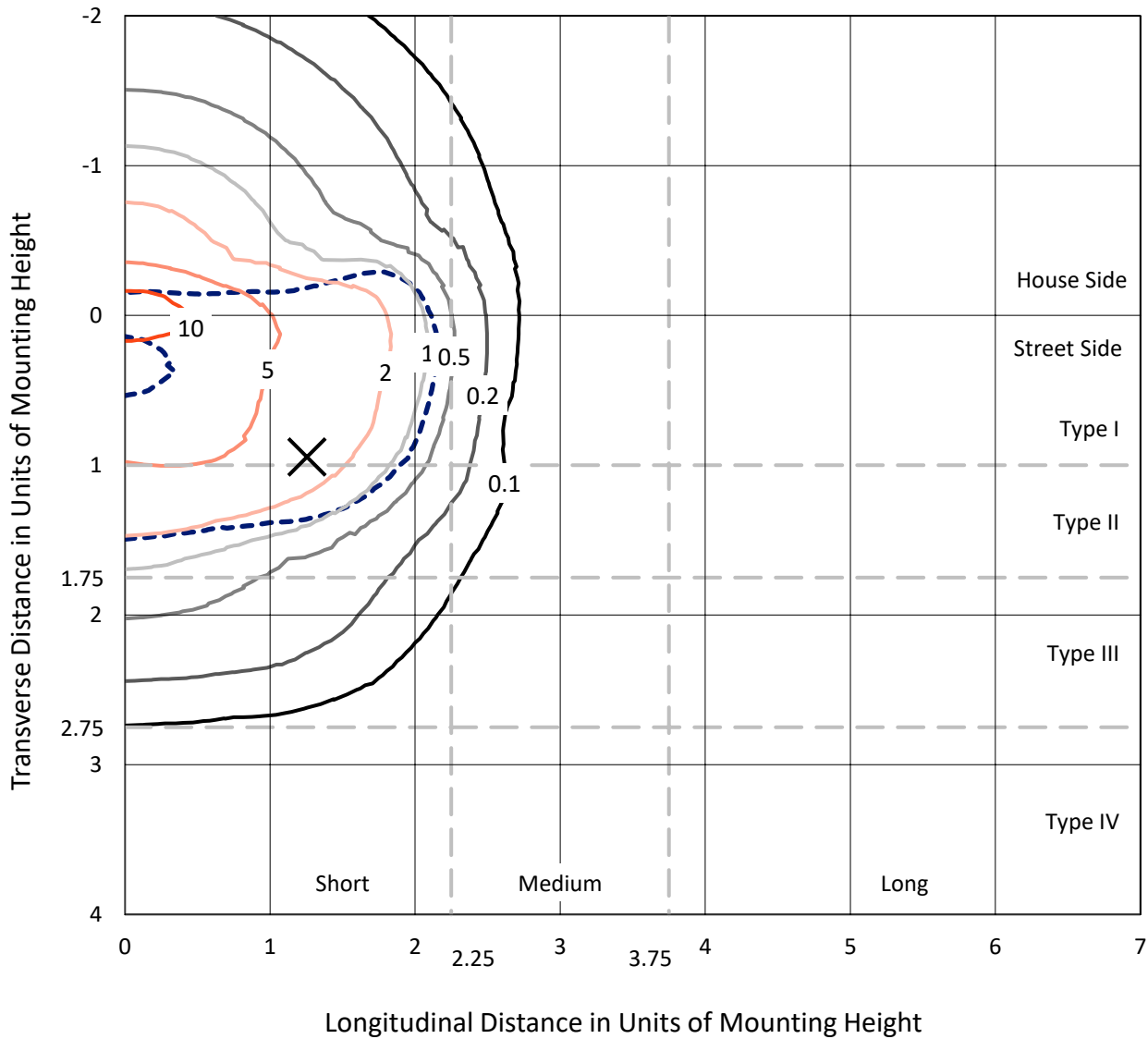
Lumens per Lamp: N/A  
Luminaire Lumens: 24399.4 lumens  
Efficiency: N/A  
Efficacy: 129.0 lumens/watt  
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B3 - U0 - G3  
  
Input Watts (W): 189.2  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 0  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



REPORT NUMBER: P642320  
 CATALOG NUMBER: GWS-SA6C-760-U-SL2-W-GRSWH

### Iso-Footcandle Lines of Horizontal Illumination

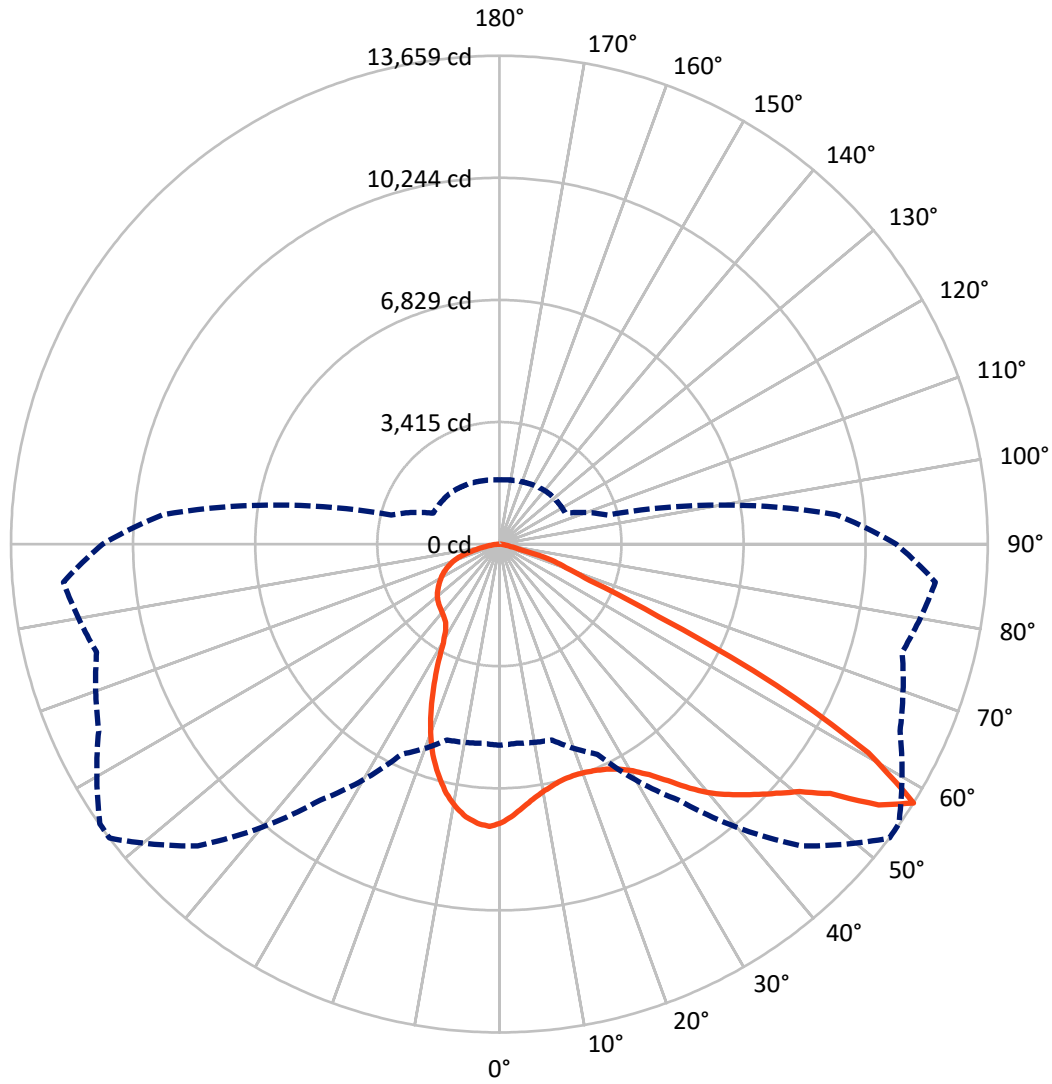
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 12.5 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 53-Deg Lateral    - - - Horizontal Cone Through 57.5-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 7628.8   | 0.0    | 7628.8  |
|                    | % Fixture | 31.3     | 0.0    | 31.3    |
| <b>Street Side</b> | Lumens    | 16770.6  | 0.0    | 16770.6 |
|                    | % Fixture | 68.7     | 0.0    | 68.7    |
| <b>Total</b>       | Lumens    | 24399.4  | 0.0    | 24399.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 704.6   | 2.9       |
| 10°-20°   | 1848.5  | 7.6       |
| 20°-30°   | 2723.5  | 11.2      |
| 30°-40°   | 3812.1  | 15.6      |
| 40°-50°   | 5011.3  | 20.5      |
| 50°-60°   | 5875.8  | 24.1      |
| 60°-70°   | 3461.5  | 14.2      |
| 70°-80°   | 861.1   | 3.5       |
| 80°-90°   | 101.0   | 0.4       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 24399.4 | 100.0     |
| 0°-180°   | 24399.4 | 100.0     |

**Coefficient of Utilization**



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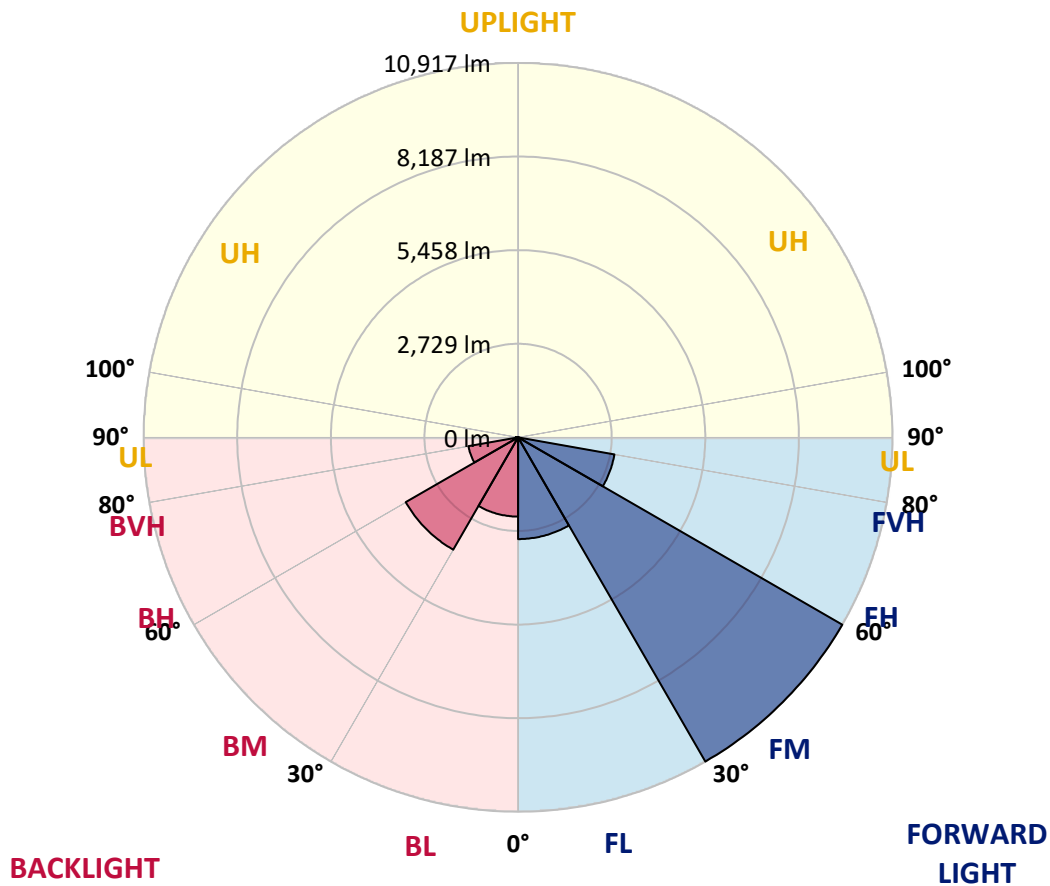
CATALOG NUMBER: GWS-SA6C-760-U-SL2-W-GRSWH

**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|---------|-----------|-------------------------|------|---------|
|                |         |           | B                       | U    | G       |
| FL (0°-30°)    | 2966.5  | 12.2      |                         |      |         |
| FM (30°-60°)   | 10916.5 | 44.7      |                         |      |         |
| FH (60°-80°)   | 2853.8  | 11.7      |                         |      | G2/5000 |
| FVH (80°-90°)  | 33.8    | 0.1       |                         |      | G1/100  |
| BL (0°-30°)    | 2310.0  | 9.5       | B3/2500                 |      |         |
| BM (30°-60°)   | 3782.8  | 15.5      | B3/5000                 |      |         |
| BH (60°-80°)   | 1468.8  | 6.0       | B3/2500                 |      | G3/2500 |
| BVH (80°-90°)  | 67.2    | 0.3       |                         |      | G1/100  |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G3**

Type II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°     | 35°     | 45°     | 53°     | 55°     | 65°     | 75°     | 85°     |
|-------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 7791.4 | 7791.4 | 7791.4 | 7791.4  | 7791.4  | 7791.4  | 7791.4  | 7791.4  | 7791.4  | 7791.4  | 7791.4  |
| 2.5°  | 7343.7 | 7364.2 | 7368.3 | 7432.0  | 7436.1  | 7528.5  | 7590.1  | 7577.8  | 7641.5  | 7719.5  | 7781.1  |
| 5°    | 6992.5 | 6994.6 | 7015.1 | 7091.1  | 7132.2  | 7253.3  | 7356.0  | 7356.0  | 7479.2  | 7639.4  | 7777.0  |
| 7.5°  | 6703.0 | 6700.9 | 6719.4 | 6803.6  | 6871.4  | 7017.2  | 7156.8  | 7173.3  | 7345.8  | 7579.9  | 7803.7  |
| 10°   | 6434.0 | 6448.3 | 6468.9 | 6571.5  | 6657.8  | 6838.5  | 7004.9  | 7031.6  | 7249.2  | 7538.8  | 7840.7  |
| 12.5° | 6261.4 | 6263.5 | 6294.3 | 6409.3  | 6520.2  | 6713.2  | 6887.8  | 6920.7  | 7171.2  | 7499.8  | 7867.4  |
| 15°   | 6150.6 | 6152.6 | 6185.5 | 6312.8  | 6442.2  | 6637.3  | 6815.9  | 6852.9  | 7126.0  | 7493.6  | 7918.7  |
| 17.5° | 6101.3 | 6099.2 | 6130.0 | 6257.3  | 6399.0  | 6602.3  | 6793.3  | 6838.5  | 7146.6  | 7540.8  | 8009.1  |
| 20°   | 6101.3 | 6103.3 | 6119.8 | 6234.8  | 6378.5  | 6594.1  | 6815.9  | 6871.4  | 7226.6  | 7647.6  | 8148.7  |
| 22.5° | 6187.5 | 6195.7 | 6203.9 | 6282.0  | 6394.9  | 6606.5  | 6875.5  | 6949.4  | 7399.1  | 7826.3  | 8331.5  |
| 25°   | 6355.9 | 6358.0 | 6366.2 | 6429.8  | 6481.2  | 6641.4  | 6974.1  | 7084.9  | 7668.2  | 8087.1  | 8561.5  |
| 27.5° | 6581.8 | 6610.6 | 6618.8 | 6659.8  | 6659.8  | 6727.6  | 7128.1  | 7288.3  | 8031.7  | 8462.9  | 8855.2  |
| 30°   | 6898.1 | 6908.3 | 6922.7 | 6967.9  | 6918.6  | 6889.9  | 7354.0  | 7559.3  | 8452.6  | 8916.8  | 9208.4  |
| 32.5° | 7175.3 | 7197.9 | 7275.9 | 7349.9  | 7261.6  | 7171.2  | 7686.7  | 7929.0  | 8857.2  | 9389.1  | 9584.2  |
| 35°   | 7411.5 | 7466.9 | 7616.8 | 7781.1  | 7719.5  | 7629.2  | 8128.2  | 8380.8  | 9189.9  | 9727.9  | 9916.9  |
| 37.5° | 7696.9 | 7740.0 | 7945.4 | 8212.4  | 8267.8  | 8224.7  | 8666.2  | 8846.9  | 9411.7  | 9814.2  | 10097.6 |
| 40°   | 7986.5 | 8052.2 | 8317.1 | 8686.8  | 8898.3  | 8929.1  | 9163.2  | 9284.4  | 9487.7  | 9645.8  | 10062.7 |
| 42.5° | 8282.2 | 8395.1 | 8758.6 | 9189.9  | 9565.7  | 9635.5  | 9582.1  | 9633.5  | 9463.0  | 9413.7  | 9900.4  |
| 45°   | 8643.6 | 8777.1 | 9187.8 | 9738.2  | 10233.1 | 10342.0 | 9992.9  | 9945.6  | 9458.9  | 9325.4  | 9799.8  |
| 47.5° | 9070.8 | 9204.3 | 9596.5 | 10237.2 | 10869.7 | 10949.8 | 10413.8 | 10327.6 | 9602.7  | 9461.0  | 9935.4  |
| 50°   | 9448.6 | 9541.1 | 9892.2 | 10608.9 | 11463.2 | 11510.5 | 10878.0 | 10773.2 | 9960.0  | 9836.8  | 10358.4 |
| 52.5° | 9064.6 | 9054.4 | 9424.0 | 10307.1 | 11771.3 | 12340.1 | 11592.6 | 11492.0 | 10650.0 | 10461.1 | 11013.5 |
| 55°   | 7690.8 | 7573.7 | 7904.3 | 8773.0  | 10910.8 | 13077.4 | 12874.1 | 12672.8 | 11570.0 | 11089.5 | 11627.5 |
| 57.5° | 5622.8 | 5589.9 | 5670.0 | 6485.3  | 8740.2  | 11935.6 | 13658.5 | 13640.1 | 12364.8 | 11664.5 | 12239.5 |
| 60°   | 4396.8 | 4347.5 | 4133.9 | 4156.5  | 5957.5  | 9323.4  | 11853.4 | 12397.6 | 12857.6 | 12009.5 | 12666.7 |
| 62.5° | 3903.9 | 3866.9 | 3756.0 | 3450.1  | 3548.6  | 6251.2  | 8688.8  | 9187.8  | 11235.3 | 10606.9 | 10880.0 |
| 65°   | 3232.4 | 3222.1 | 3314.5 | 3302.2  | 2973.6  | 3452.1  | 4904.0  | 5407.1  | 7064.4  | 7152.7  | 7064.4  |
| 67.5° | 2349.3 | 2330.8 | 2565.0 | 3027.0  | 2862.7  | 2606.0  | 2733.4  | 2907.9  | 3622.6  | 3252.9  | 2928.4  |
| 70°   | 1527.9 | 1501.2 | 1636.7 | 2187.1  | 2562.9  | 2271.3  | 1969.4  | 1940.7  | 1992.0  | 1238.3  | 1339.0  |
| 72.5° | 1024.8 | 993.9  | 991.9  | 1203.4  | 1548.4  | 1529.9  | 1525.8  | 1511.5  | 1349.2  | 977.5   | 1084.3  |
| 75°   | 570.9  | 546.3  | 540.1  | 519.6   | 554.5   | 564.7   | 601.7   | 622.2   | 673.6   | 741.4   | 821.4   |
| 77.5° | 96.5   | 94.5   | 119.1  | 152.0   | 209.5   | 269.0   | 332.7   | 351.2   | 433.3   | 513.4   | 564.7   |
| 80°   | 53.4   | 55.4   | 71.9   | 88.3    | 117.1   | 160.2   | 205.4   | 217.7   | 267.0   | 310.1   | 351.2   |
| 82.5° | 28.8   | 28.8   | 37.0   | 47.2    | 63.7    | 84.2    | 110.9   | 121.2   | 154.0   | 180.7   | 209.5   |
| 85°   | 10.3   | 10.3   | 14.4   | 18.5    | 26.7    | 34.9    | 43.1    | 49.3    | 67.8    | 92.4    | 104.7   |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.0     | 2.1     | 4.1     | 8.2     | 8.2     | 10.3    | 18.5    | 26.7    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |



REPORT NUMBER: P642320

CATALOG NUMBER: GWS-SA6C-760-U-SL2-W-GRSWH

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 7791.4  | 7791.4 | 7791.4 | 7791.4 | 7791.4 | 7791.4 | 7791.4 | 7791.4 | 7791.4 | 7791.4 | 7791.4 |
| 2.5°  | 7832.5  | 7777.0 | 7853.0 | 7887.9 | 7900.2 | 7908.4 | 7855.0 | 7818.1 | 7805.8 | 7766.7 | 7744.2 |
| 5°    | 7861.2  | 7824.2 | 7896.1 | 7896.1 | 7844.8 | 7791.4 | 7682.5 | 7606.6 | 7553.2 | 7489.5 | 7479.2 |
| 7.5°  | 7910.5  | 7883.8 | 7922.8 | 7842.7 | 7713.4 | 7569.6 | 7380.7 | 7232.8 | 7113.7 | 7035.7 | 7037.7 |
| 10°   | 7976.2  | 7943.4 | 7912.6 | 7733.9 | 7497.7 | 7232.8 | 6943.2 | 6727.6 | 6530.5 | 6440.1 | 6390.8 |
| 12.5° | 8019.3  | 7972.1 | 7842.7 | 7547.0 | 7199.9 | 6844.7 | 6436.0 | 6115.6 | 5830.2 | 5700.8 | 5690.5 |
| 15°   | 8072.7  | 7986.5 | 7727.7 | 7304.7 | 6822.1 | 6337.4 | 5811.7 | 5366.1 | 4980.0 | 4778.7 | 4768.5 |
| 17.5° | 8142.6  | 8000.9 | 7590.1 | 7027.4 | 6423.7 | 5709.0 | 5047.8 | 4487.1 | 4076.4 | 3920.3 | 3947.0 |
| 20°   | 8241.1  | 8017.3 | 7434.1 | 6719.4 | 5928.8 | 4994.4 | 4170.9 | 3655.4 | 3497.3 | 3487.0 | 3466.5 |
| 22.5° | 8352.0  | 8027.6 | 7261.6 | 6374.4 | 5329.1 | 4232.5 | 3446.0 | 3226.2 | 3224.2 | 3275.5 | 3287.8 |
| 25°   | 8477.3  | 8035.8 | 7066.5 | 5971.9 | 4680.2 | 3472.7 | 3047.6 | 2981.8 | 3033.2 | 3129.7 | 3142.0 |
| 27.5° | 8637.5  | 8052.2 | 6830.3 | 5530.4 | 3990.2 | 3000.3 | 2827.8 | 2811.4 | 2873.0 | 2963.4 | 2959.2 |
| 30°   | 8873.6  | 8111.8 | 6579.8 | 5023.1 | 3281.7 | 2776.5 | 2694.3 | 2696.4 | 2721.0 | 2764.2 | 2770.3 |
| 32.5° | 9113.9  | 8204.2 | 6335.4 | 4452.2 | 2875.1 | 2649.2 | 2612.2 | 2608.1 | 2608.1 | 2626.6 | 2630.7 |
| 35°   | 9341.9  | 8308.9 | 6070.5 | 3856.7 | 2677.9 | 2575.2 | 2550.6 | 2538.3 | 2532.1 | 2528.0 | 2521.8 |
| 37.5° | 9469.2  | 8360.2 | 5811.7 | 3269.3 | 2573.2 | 2525.9 | 2501.3 | 2484.9 | 2462.3 | 2445.8 | 2441.7 |
| 40°   | 9413.7  | 8300.7 | 5511.9 | 2829.9 | 2509.5 | 2478.7 | 2450.0 | 2427.4 | 2396.6 | 2382.2 | 2374.0 |
| 42.5° | 9228.9  | 8115.9 | 5185.4 | 2622.5 | 2458.2 | 2427.4 | 2392.5 | 2355.5 | 2335.0 | 2322.6 | 2320.6 |
| 45°   | 9033.8  | 7892.0 | 4791.1 | 2501.3 | 2408.9 | 2371.9 | 2330.8 | 2289.8 | 2267.2 | 2261.0 | 2259.0 |
| 47.5° | 9027.7  | 7781.1 | 4372.1 | 2404.8 | 2349.3 | 2312.4 | 2261.0 | 2219.9 | 2195.3 | 2187.1 | 2178.9 |
| 50°   | 9298.7  | 7894.1 | 3899.8 | 2320.6 | 2287.7 | 2248.7 | 2191.2 | 2146.0 | 2115.2 | 2104.9 | 2102.9 |
| 52.5° | 9861.4  | 8319.2 | 3476.8 | 2236.4 | 2205.6 | 2160.4 | 2113.2 | 2068.0 | 2031.0 | 2012.5 | 2010.5 |
| 55°   | 10469.3 | 8859.3 | 3213.9 | 2150.1 | 2109.1 | 2070.0 | 2026.9 | 1977.6 | 1936.6 | 1907.8 | 1903.7 |
| 57.5° | 11097.7 | 9448.6 | 3133.8 | 2041.3 | 2010.5 | 1983.8 | 1932.4 | 1879.1 | 1831.8 | 1805.1 | 1799.0 |
| 60°   | 11615.2 | 9955.9 | 3283.7 | 1926.3 | 1909.9 | 1874.9 | 1827.7 | 1776.4 | 1743.5 | 1723.0 | 1718.9 |
| 62.5° | 9723.8  | 8105.6 | 2651.2 | 1801.0 | 1801.0 | 1764.0 | 1710.7 | 1673.7 | 1651.1 | 1636.7 | 1632.6 |
| 65°   | 6171.1  | 5019.0 | 1809.2 | 1675.7 | 1673.7 | 1624.4 | 1579.2 | 1554.6 | 1544.3 | 1521.7 | 1517.6 |
| 67.5° | 2688.2  | 2293.9 | 1546.4 | 1548.4 | 1540.2 | 1486.8 | 1441.6 | 1423.2 | 1402.6 | 1378.0 | 1375.9 |
| 70°   | 1394.4  | 1421.1 | 1384.1 | 1406.7 | 1392.3 | 1328.7 | 1285.6 | 1256.8 | 1213.7 | 1189.0 | 1191.1 |
| 72.5° | 1125.4  | 1154.1 | 1195.2 | 1230.1 | 1199.3 | 1148.0 | 1080.2 | 1045.3 | 989.8  | 963.1  | 965.2  |
| 75°   | 858.4   | 889.2  | 928.2  | 965.2  | 940.6  | 876.9  | 833.8  | 798.9  | 735.2  | 704.4  | 710.5  |
| 77.5° | 591.4   | 607.9  | 655.1  | 653.0  | 644.8  | 626.4  | 562.7  | 521.6  | 455.9  | 418.9  | 423.0  |
| 80°   | 367.6   | 377.9  | 400.5  | 410.7  | 406.6  | 382.0  | 330.6  | 299.8  | 260.8  | 238.2  | 240.3  |
| 82.5° | 221.8   | 228.0  | 248.5  | 250.5  | 248.5  | 230.0  | 191.0  | 168.4  | 143.8  | 131.4  | 131.4  |
| 85°   | 112.9   | 117.1  | 129.4  | 129.4  | 117.1  | 98.6   | 88.3   | 78.0   | 63.7   | 57.5   | 57.5   |
| 87.5° | 30.8    | 30.8   | 39.0   | 32.9   | 26.7   | 24.6   | 12.3   | 10.3   | 4.1    | 2.1    | 2.1    |
| 90°   | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



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LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-9-R4

Test Date: 10/23/2019

Luminaire Tested: SA1C-760-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

**Test Information**

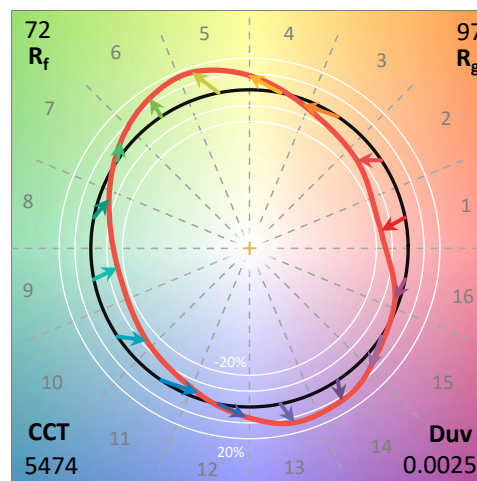
Test Method: LM-79-2008  
 Report Number: SP1-1908-441-9-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-760-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

**Spectral Parameters**

CCT (K): 5474  
 CIE u': 0.2052  
 CIE v': 0.4804  
 Duv: 0.0025  
 CIE x: 0.3330  
 CIE y: 0.3466  
 CIE z: 0.3204  
 Peak Wavelength (nm): 442  
 Dominant Wavelength (nm): 554  
 Purity: 4.1  
 Rf: 72.1  
 Rg: 97.2

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 71.7 |      |       |
| R1:       | 70.6 | R9:  | -27.1 |
| R2:       | 74.6 | R10: | 40.8  |
| R3:       | 78.3 | R11: | 74.6  |
| R4:       | 73.8 | R12: | 50.4  |
| R5:       | 72.4 | R13: | 70.0  |
| R6:       | 67.5 | R14: | 87.8  |
| R7:       | 77.5 |      |       |
| R8:       | 58.9 |      |       |



**Test Conditions**

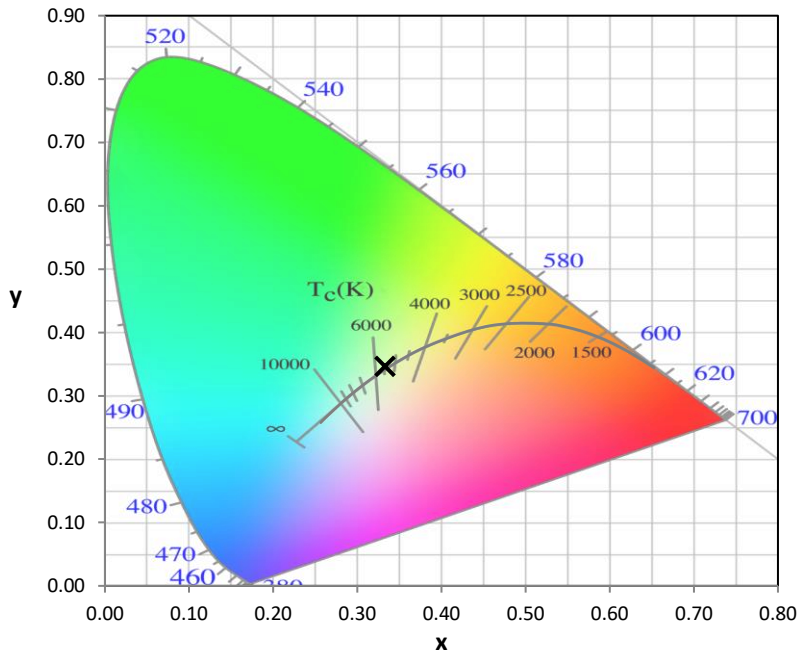
Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.6/31%  
 Sphere Temperature (°C): 25.9

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| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

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CIE 1931 Chromaticity Diagram



CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 5700K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 3540                                 | NR                             | 490               | 33363                                | NR                             | 620               | 80193                                | NR                             | 750               | 4663                                 | NR                             | 880               | 4678                                 | NR                             |
| 365               | 2862                                 | NR                             | 495               | 44177                                | NR                             | 625               | 73091                                | NR                             | 755               | 4147                                 | NR                             | 885               | 4128                                 | NR                             |
| 370               | 2865                                 | NR                             | 500               | 57019                                | NR                             | 630               | 66269                                | NR                             | 760               | 4040                                 | NR                             | 890               | 4504                                 | NR                             |
| 375               | 3254                                 | NR                             | 505               | 70030                                | NR                             | 635               | 60012                                | NR                             | 765               | 3474                                 | NR                             | 895               | 4371                                 | NR                             |
| 380               | 3076                                 | NR                             | 510               | 81972                                | NR                             | 640               | 53914                                | NR                             | 770               | 3469                                 | NR                             | 900               | 4082                                 | NR                             |
| 385               | 2904                                 | NR                             | 515               | 92590                                | NR                             | 645               | 48385                                | NR                             | 775               | 3181                                 | NR                             | 905               | 2982                                 | NR                             |
| 390               | 2689                                 | NR                             | 520               | 100305                               | NR                             | 650               | 43219                                | NR                             | 780               | 2969                                 | NR                             | 910               | 4351                                 | NR                             |
| 395               | 2619                                 | NR                             | 525               | 107452                               | NR                             | 655               | 38562                                | NR                             | 785               | 3132                                 | NR                             | 915               | 3365                                 | NR                             |
| 400               | 2679                                 | NR                             | 530               | 111373                               | NR                             | 660               | 34110                                | NR                             | 790               | 2507                                 | NR                             | 920               | 3430                                 | NR                             |
| 405               | 3515                                 | NR                             | 535               | 114505                               | NR                             | 665               | 30085                                | NR                             | 795               | 2968                                 | NR                             | 925               | 4264                                 | NR                             |
| 410               | 6934                                 | NR                             | 540               | 116408                               | NR                             | 670               | 26205                                | NR                             | 800               | 2758                                 | NR                             | 930               | 4095                                 | NR                             |
| 415               | 14943                                | NR                             | 545               | 118700                               | NR                             | 675               | 22906                                | NR                             | 805               | 2872                                 | NR                             | 935               | 5048                                 | NR                             |
| 420               | 31939                                | NR                             | 550               | 119209                               | NR                             | 680               | 20058                                | NR                             | 810               | 3094                                 | NR                             | 940               | 4074                                 | NR                             |
| 425               | 64701                                | NR                             | 555               | 120742                               | NR                             | 685               | 17413                                | NR                             | 815               | 3222                                 | NR                             | 945               | 4949                                 | NR                             |
| 430               | 110939                               | NR                             | 560               | 121594                               | NR                             | 690               | 15447                                | NR                             | 820               | 3238                                 | NR                             | 950               | 4387                                 | NR                             |
| 435               | 164597                               | NR                             | 565               | 121913                               | NR                             | 695               | 13398                                | NR                             | 825               | 3524                                 | NR                             | 955               | 4978                                 | NR                             |
| 440               | 207696                               | NR                             | 570               | 122147                               | NR                             | 700               | 11777                                | NR                             | 830               | 2921                                 | NR                             | 960               | 4706                                 | NR                             |
| 445               | 201830                               | NR                             | 575               | 121605                               | NR                             | 705               | 10412                                | NR                             | 835               | 3595                                 | NR                             | 965               | 5083                                 | NR                             |
| 450               | 145410                               | NR                             | 580               | 120248                               | NR                             | 710               | 9544                                 | NR                             | 840               | 3016                                 | NR                             | 970               | 4522                                 | NR                             |
| 455               | 89594                                | NR                             | 585               | 117717                               | NR                             | 715               | 8940                                 | NR                             | 845               | 4032                                 | NR                             | 975               | 4740                                 | NR                             |
| 460               | 58321                                | NR                             | 590               | 114359                               | NR                             | 720               | 7897                                 | NR                             | 850               | 3579                                 | NR                             | 980               | 6122                                 | NR                             |
| 465               | 39318                                | NR                             | 595               | 109974                               | NR                             | 725               | 7045                                 | NR                             | 855               | 4571                                 | NR                             | 985               | 6450                                 | NR                             |
| 470               | 27693                                | NR                             | 600               | 105269                               | NR                             | 730               | 6483                                 | NR                             | 860               | 4485                                 | NR                             | 990               | 4875                                 | NR                             |
| 475               | 23081                                | NR                             | 605               | 99453                                | NR                             | 735               | 5838                                 | NR                             | 865               | 3978                                 | NR                             | 995               | 4764                                 | NR                             |
| 480               | 23002                                | NR                             | 610               | 92921                                | NR                             | 740               | 5261                                 | NR                             | 870               | 4298                                 | NR                             | 1000              | 3640                                 | NR                             |
| 485               | 26201                                | NR                             | 615               | 86989                                | NR                             | 745               | 4760                                 | NR                             | 875               | 4356                                 | NR                             |                   |                                      |                                |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 13759.3 S/P: 1.85

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 3540          | NR            | 490    | 33363         | NR            | 620    | 80193         | NR            | 750    | 4663          | NR            | 880    | 4678          | NR            |
| 365    | 2862          | NR            | 495    | 44177         | NR            | 625    | 73091         | NR            | 755    | 4147          | NR            | 885    | 4128          | NR            |
| 370    | 2865          | NR            | 500    | 57019         | NR            | 630    | 66269         | NR            | 760    | 4040          | NR            | 890    | 4504          | NR            |
| 375    | 3254          | NR            | 505    | 70030         | NR            | 635    | 60012         | NR            | 765    | 3474          | NR            | 895    | 4371          | NR            |
| 380    | 3076          | NR            | 510    | 81972         | NR            | 640    | 53914         | NR            | 770    | 3469          | NR            | 900    | 4082          | NR            |
| 385    | 2904          | NR            | 515    | 92590         | NR            | 645    | 48385         | NR            | 775    | 3181          | NR            | 905    | 2982          | NR            |
| 390    | 2689          | NR            | 520    | 100305        | NR            | 650    | 43219         | NR            | 780    | 2969          | NR            | 910    | 4351          | NR            |
| 395    | 2619          | NR            | 525    | 107452        | NR            | 655    | 38562         | NR            | 785    | 3132          | NR            | 915    | 3365          | NR            |
| 400    | 2679          | NR            | 530    | 111373        | NR            | 660    | 34110         | NR            | 790    | 2507          | NR            | 920    | 3430          | NR            |
| 405    | 3515          | NR            | 535    | 114505        | NR            | 665    | 30085         | NR            | 795    | 2968          | NR            | 925    | 4264          | NR            |
| 410    | 6934          | NR            | 540    | 116408        | NR            | 670    | 26205         | NR            | 800    | 2758          | NR            | 930    | 4095          | NR            |
| 415    | 14943         | NR            | 545    | 118700        | NR            | 675    | 22906         | NR            | 805    | 2872          | NR            | 935    | 5048          | NR            |
| 420    | 31939         | NR            | 550    | 119209        | NR            | 680    | 20058         | NR            | 810    | 3094          | NR            | 940    | 4074          | NR            |
| 425    | 64701         | NR            | 555    | 120742        | NR            | 685    | 17413         | NR            | 815    | 3222          | NR            | 945    | 4949          | NR            |
| 430    | 110939        | NR            | 560    | 121594        | NR            | 690    | 15447         | NR            | 820    | 3238          | NR            | 950    | 4387          | NR            |
| 435    | 164597        | NR            | 565    | 121913        | NR            | 695    | 13398         | NR            | 825    | 3524          | NR            | 955    | 4978          | NR            |
| 440    | 207696        | NR            | 570    | 122147        | NR            | 700    | 11777         | NR            | 830    | 2921          | NR            | 960    | 4706          | NR            |
| 445    | 201830        | NR            | 575    | 121605        | NR            | 705    | 10412         | NR            | 835    | 3595          | NR            | 965    | 5083          | NR            |
| 450    | 145410        | NR            | 580    | 120248        | NR            | 710    | 9544          | NR            | 840    | 3016          | NR            | 970    | 4522          | NR            |
| 455    | 89594         | NR            | 585    | 117717        | NR            | 715    | 8940          | NR            | 845    | 4032          | NR            | 975    | 4740          | NR            |
| 460    | 58321         | NR            | 590    | 114359        | NR            | 720    | 7897          | NR            | 850    | 3579          | NR            | 980    | 6122          | NR            |
| 465    | 39318         | NR            | 595    | 109974        | NR            | 725    | 7045          | NR            | 855    | 4571          | NR            | 985    | 6450          | NR            |
| 470    | 27693         | NR            | 600    | 105269        | NR            | 730    | 6483          | NR            | 860    | 4485          | NR            | 990    | 4875          | NR            |
| 475    | 23081         | NR            | 605    | 99453         | NR            | 735    | 5838          | NR            | 865    | 3978          | NR            | 995    | 4764          | NR            |
| 480    | 23002         | NR            | 610    | 92921         | NR            | 740    | 5261          | NR            | 870    | 4298          | NR            | 1000   | 3640          | NR            |
| 485    | 26201         | NR            | 615    | 86989         | NR            | 745    | 4760          | NR            | 875    | 4356          | NR            |        |               |               |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5527.6 M/P: 0.74**

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 3540          | NR            | 490    | 33363         | NR            | 620    | 80193         | NR            | 750    | 4663          | NR            | 880    | 4678          | NR            |
| 365    | 2862          | NR            | 495    | 44177         | NR            | 625    | 73091         | NR            | 755    | 4147          | NR            | 885    | 4128          | NR            |
| 370    | 2865          | NR            | 500    | 57019         | NR            | 630    | 66269         | NR            | 760    | 4040          | NR            | 890    | 4504          | NR            |
| 375    | 3254          | NR            | 505    | 70030         | NR            | 635    | 60012         | NR            | 765    | 3474          | NR            | 895    | 4371          | NR            |
| 380    | 3076          | NR            | 510    | 81972         | NR            | 640    | 53914         | NR            | 770    | 3469          | NR            | 900    | 4082          | NR            |
| 385    | 2904          | NR            | 515    | 92590         | NR            | 645    | 48385         | NR            | 775    | 3181          | NR            | 905    | 2982          | NR            |
| 390    | 2689          | NR            | 520    | 100305        | NR            | 650    | 43219         | NR            | 780    | 2969          | NR            | 910    | 4351          | NR            |
| 395    | 2619          | NR            | 525    | 107452        | NR            | 655    | 38562         | NR            | 785    | 3132          | NR            | 915    | 3365          | NR            |
| 400    | 2679          | NR            | 530    | 111373        | NR            | 660    | 34110         | NR            | 790    | 2507          | NR            | 920    | 3430          | NR            |
| 405    | 3515          | NR            | 535    | 114505        | NR            | 665    | 30085         | NR            | 795    | 2968          | NR            | 925    | 4264          | NR            |
| 410    | 6934          | NR            | 540    | 116408        | NR            | 670    | 26205         | NR            | 800    | 2758          | NR            | 930    | 4095          | NR            |
| 415    | 14943         | NR            | 545    | 118700        | NR            | 675    | 22906         | NR            | 805    | 2872          | NR            | 935    | 5048          | NR            |
| 420    | 31939         | NR            | 550    | 119209        | NR            | 680    | 20058         | NR            | 810    | 3094          | NR            | 940    | 4074          | NR            |
| 425    | 64701         | NR            | 555    | 120742        | NR            | 685    | 17413         | NR            | 815    | 3222          | NR            | 945    | 4949          | NR            |
| 430    | 110939        | NR            | 560    | 121594        | NR            | 690    | 15447         | NR            | 820    | 3238          | NR            | 950    | 4387          | NR            |
| 435    | 164597        | NR            | 565    | 121913        | NR            | 695    | 13398         | NR            | 825    | 3524          | NR            | 955    | 4978          | NR            |
| 440    | 207696        | NR            | 570    | 122147        | NR            | 700    | 11777         | NR            | 830    | 2921          | NR            | 960    | 4706          | NR            |
| 445    | 201830        | NR            | 575    | 121605        | NR            | 705    | 10412         | NR            | 835    | 3595          | NR            | 965    | 5083          | NR            |
| 450    | 145410        | NR            | 580    | 120248        | NR            | 710    | 9544          | NR            | 840    | 3016          | NR            | 970    | 4522          | NR            |
| 455    | 89594         | NR            | 585    | 117717        | NR            | 715    | 8940          | NR            | 845    | 4032          | NR            | 975    | 4740          | NR            |
| 460    | 58321         | NR            | 590    | 114359        | NR            | 720    | 7897          | NR            | 850    | 3579          | NR            | 980    | 6122          | NR            |
| 465    | 39318         | NR            | 595    | 109974        | NR            | 725    | 7045          | NR            | 855    | 4571          | NR            | 985    | 6450          | NR            |
| 470    | 27693         | NR            | 600    | 105269        | NR            | 730    | 6483          | NR            | 860    | 4485          | NR            | 990    | 4875          | NR            |
| 475    | 23081         | NR            | 605    | 99453         | NR            | 735    | 5838          | NR            | 865    | 3978          | NR            | 995    | 4764          | NR            |
| 480    | 23002         | NR            | 610    | 92921         | NR            | 740    | 5261          | NR            | 870    | 4298          | NR            | 1000   | 3640          | NR            |
| 485    | 26201         | NR            | 615    | 86989         | NR            | 745    | 4760          | NR            | 875    | 4356          | NR            |        |               |               |

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**Summary**

$R_f = 72.1$   
 $R_g = 97.2$   
 CIE  $R_a = 71.7$   
 $R_g = -27.1$



**Color Vector Graphics**





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**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 54 | CES51 = 88 | CES76 = 43 |
| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
| CES11 = 55 | CES36 = 90 | CES61 = 88 | CES86 = 76 |
| CES12 = 61 | CES37 = 72 | CES62 = 81 | CES87 = 75 |
| CES13 = 41 | CES38 = 68 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
| CES16 = 46 | CES41 = 84 | CES66 = 66 | CES91 = 92 |
| CES17 = 48 | CES42 = 70 | CES67 = 64 | CES92 = 70 |
| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
| CES21 = 85 | CES46 = 78 | CES71 = 55 | CES96 = 79 |
| CES22 = 77 | CES47 = 76 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 |            |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)