

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: P639324

Luminaire Tested: GWS-SA5B-750-U-T3-W

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P639324  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-23)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA5B-750-U-T3-W  
Description: GALLEON WALL SLIM LUMINAIRE. (5) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS  
Light Source: (80) 5000K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

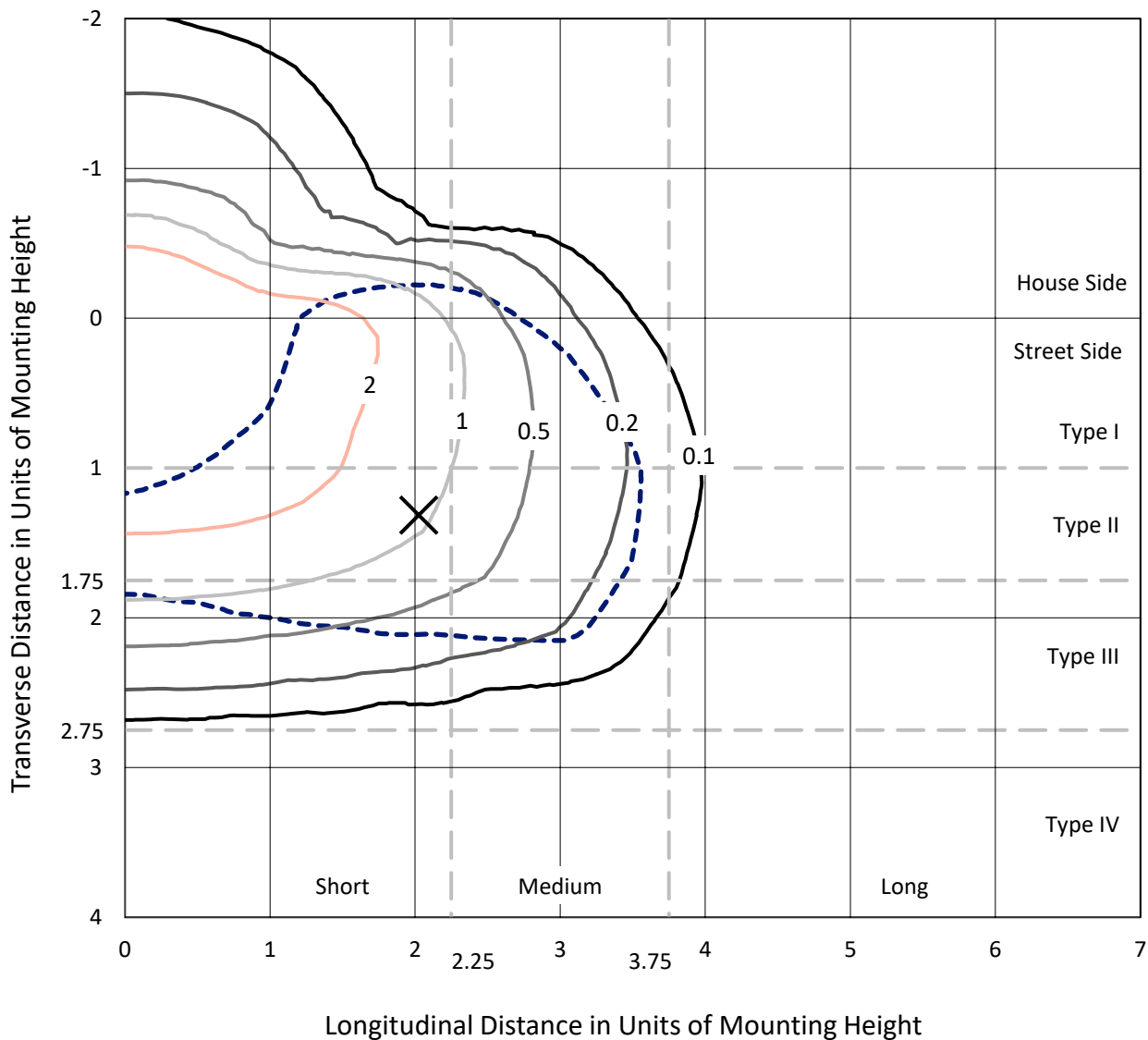
Lumens per Lamp: N/A  
Luminaire Lumens: 18175.1 lumens  
Efficiency: N/A  
Efficacy: 157.1 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B3 - U0 - G3  
  
Input Watts (W): 115.7  
Input Voltage (V): 120  
Input Current (Ain): 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: P639324  
 CATALOG NUMBER: GWS-SA5B-750-U-T3-W

### Iso-Footcandle Lines of Horizontal Illumination

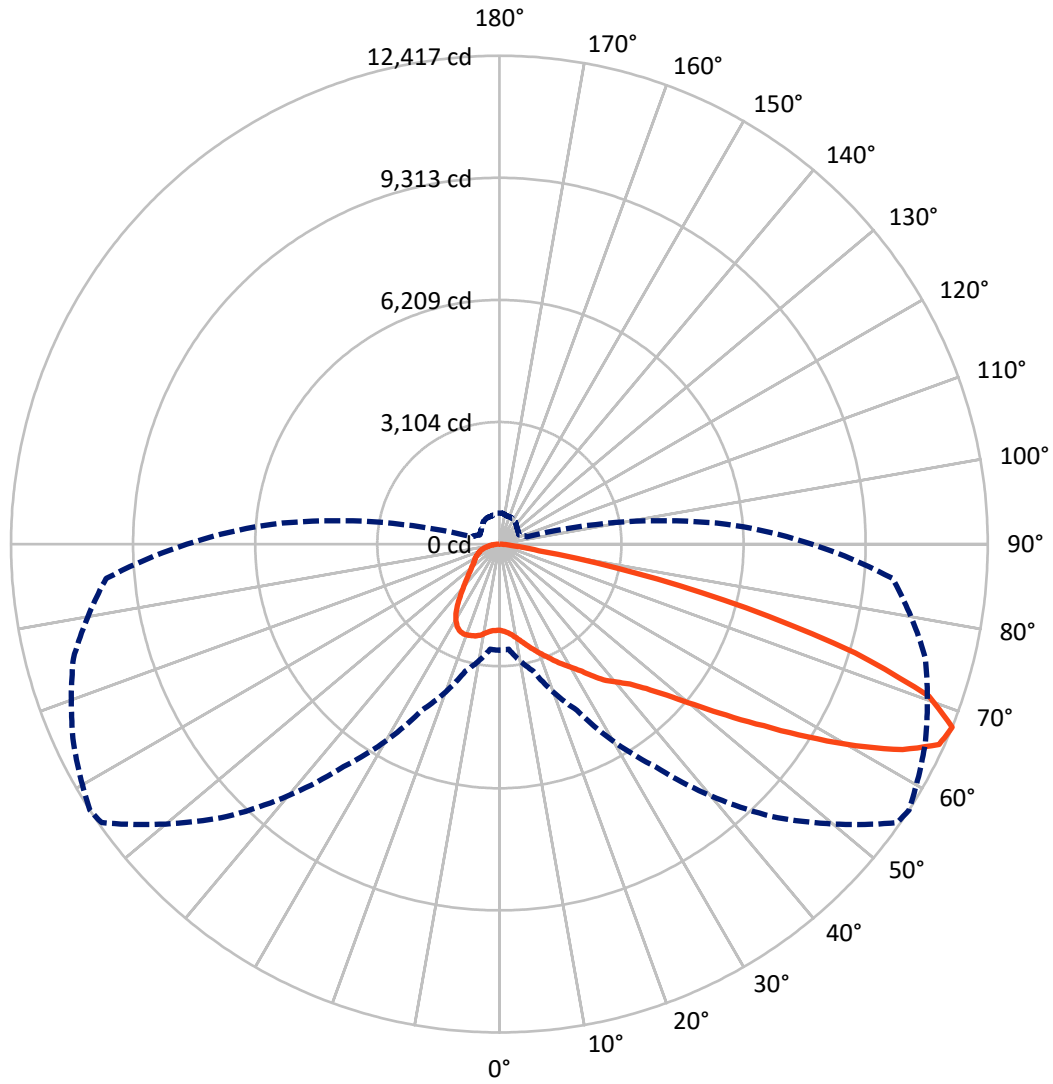
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 4.1 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 57-Deg Lateral    - - - Horizontal Cone Through 67.5-Deg Vertical

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CATALOG NUMBER: GWS-SA5B-750-U-T3-W

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 3996.0   | 0.0    | 3996.0  |
|                    | % Fixture | 22.0     | 0.0    | 22.0    |
| <b>Street Side</b> | Lumens    | 14179.1  | 0.0    | 14179.1 |
|                    | % Fixture | 78.0     | 0.0    | 78.0    |
| <b>Total</b>       | Lumens    | 18175.1  | 0.0    | 18175.1 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 217.2   | 1.2       |
| 10°-20°   | 719.0   | 4.0       |
| 20°-30°   | 1281.9  | 7.1       |
| 30°-40°   | 1863.7  | 10.3      |
| 40°-50°   | 2697.5  | 14.8      |
| 50°-60°   | 4221.4  | 23.2      |
| 60°-70°   | 4924.6  | 27.1      |
| 70°-80°   | 2055.7  | 11.3      |
| 80°-90°   | 194.0   | 1.1       |
| 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°    | 18175.1 | 100.0     |
| 0°-180°   | 18175.1 | 100.0     |

**Coefficient of Utilization**



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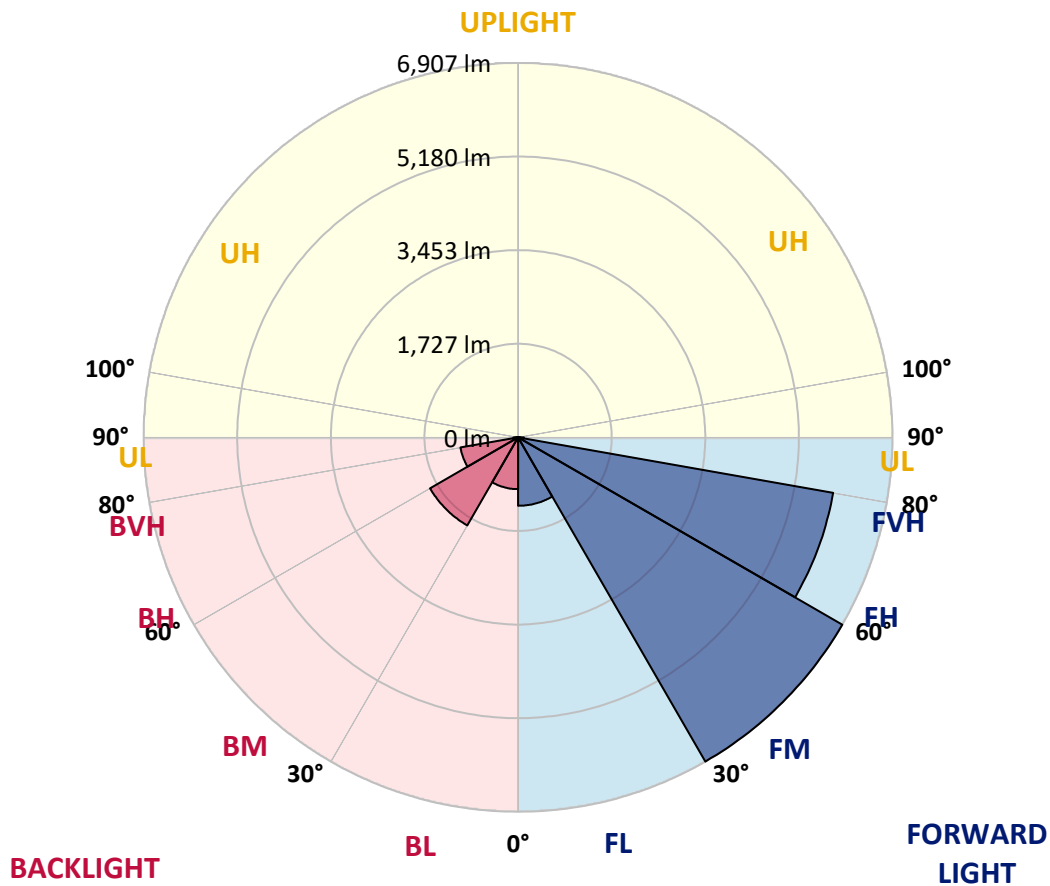
CATALOG NUMBER: GWS-SA5B-750-U-T3-W

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1262.4 | 6.9       |                         |      |         |
| FM (30°-60°)   | 6906.8 | 38.0      |                         |      |         |
| FH (60°-80°)   | 5901.8 | 32.5      |                         |      | G3/7500 |
| FVH (80°-90°)  | 108.1  | 0.6       |                         |      | G2/225  |
| BL (0°-30°)    | 955.7  | 5.3       | B2/1000                 |      |         |
| BM (30°-60°)   | 1875.8 | 10.3      | B2/2500                 |      |         |
| BH (60°-80°)   | 1078.5 | 5.9       | B3/2500                 |      | G3/2500 |
| BVH (80°-90°)  | 85.9   | 0.5       |                         |      | 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 III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°     | 55°     | 57°     | 65°     | 75°     | 85°     |
|-------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|
| 0°    | 2190.0 | 2190.0 | 2190.0 | 2190.0 | 2190.0 | 2190.0  | 2190.0  | 2190.0  | 2190.0  | 2190.0  | 2190.0  |
| 2.5°  | 2221.2 | 2218.6 | 2217.3 | 2225.1 | 2222.5 | 2221.2  | 2221.2  | 2219.9  | 2217.3  | 2206.9  | 2192.6  |
| 5°    | 2282.4 | 2277.2 | 2272.0 | 2278.5 | 2273.3 | 2268.1  | 2266.8  | 2264.2  | 2255.1  | 2239.5  | 2217.3  |
| 7.5°  | 2346.2 | 2341.0 | 2342.3 | 2346.2 | 2342.3 | 2339.7  | 2335.8  | 2333.2  | 2318.9  | 2294.1  | 2264.2  |
| 10°   | 2436.1 | 2436.1 | 2438.7 | 2442.6 | 2443.9 | 2440.0  | 2432.1  | 2428.2  | 2411.3  | 2380.1  | 2338.4  |
| 12.5° | 2566.3 | 2563.7 | 2563.7 | 2561.0 | 2565.0 | 2561.0  | 2553.2  | 2546.7  | 2525.9  | 2485.5  | 2425.6  |
| 15°   | 2738.1 | 2727.7 | 2718.6 | 2701.7 | 2696.5 | 2682.1  | 2684.7  | 2680.8  | 2661.3  | 2606.6  | 2531.1  |
| 17.5° | 2921.7 | 2920.4 | 2906.1 | 2872.2 | 2838.4 | 2814.9  | 2820.1  | 2818.8  | 2808.4  | 2734.2  | 2637.9  |
| 20°   | 3083.2 | 3089.7 | 3076.6 | 3050.6 | 3005.0 | 2960.8  | 2958.2  | 2964.7  | 2951.6  | 2877.4  | 2743.3  |
| 22.5° | 3264.1 | 3258.9 | 3245.9 | 3212.1 | 3178.2 | 3131.3  | 3115.7  | 3110.5  | 3105.3  | 3020.7  | 2851.4  |
| 25°   | 3436.0 | 3451.6 | 3434.7 | 3403.4 | 3351.4 | 3300.6  | 3287.6  | 3292.8  | 3278.5  | 3166.5  | 2967.3  |
| 27.5° | 3653.4 | 3659.9 | 3649.5 | 3606.6 | 3562.3 | 3490.7  | 3465.9  | 3465.9  | 3460.7  | 3303.2  | 3058.4  |
| 30°   | 3885.2 | 3903.4 | 3885.2 | 3850.0 | 3804.5 | 3701.6  | 3648.2  | 3643.0  | 3627.4  | 3443.8  | 3165.2  |
| 32.5° | 4118.2 | 4131.3 | 4118.2 | 4084.4 | 4032.3 | 3942.5  | 3865.7  | 3853.9  | 3833.1  | 3597.4  | 3274.5  |
| 35°   | 4325.3 | 4337.0 | 4334.4 | 4342.2 | 4299.2 | 4186.0  | 4139.1  | 4133.9  | 4079.2  | 3798.0  | 3423.0  |
| 37.5° | 4551.8 | 4566.1 | 4546.6 | 4562.2 | 4545.3 | 4438.5  | 4424.2  | 4398.2  | 4320.1  | 3986.7  | 3579.2  |
| 40°   | 4809.6 | 4822.6 | 4791.4 | 4797.9 | 4778.4 | 4718.5  | 4645.6  | 4610.4  | 4494.5  | 4191.2  | 3825.3  |
| 42.5° | 5085.6 | 5115.6 | 5129.9 | 5118.2 | 5072.6 | 5038.8  | 4911.2  | 4866.9  | 4770.6  | 4559.6  | 4230.2  |
| 45°   | 5485.4 | 5529.6 | 5550.5 | 5520.5 | 5501.0 | 5452.8  | 5296.6  | 5243.2  | 5192.4  | 5079.1  | 4795.3  |
| 47.5° | 5916.3 | 5956.7 | 6023.1 | 6036.1 | 6051.7 | 6015.3  | 5795.2  | 5743.2  | 5752.3  | 5739.2  | 5490.6  |
| 50°   | 6260.0 | 6293.9 | 6443.6 | 6603.8 | 6736.6 | 6747.0  | 6465.8  | 6409.8  | 6459.3  | 6500.9  | 6327.8  |
| 52.5° | 6510.0 | 6540.0 | 6737.9 | 7068.6 | 7369.4 | 7592.0  | 7288.6  | 7224.8  | 7265.2  | 7358.9  | 7279.5  |
| 55°   | 6713.1 | 6754.8 | 6961.8 | 7469.6 | 8077.7 | 8429.2  | 8235.2  | 8154.5  | 8137.5  | 8253.4  | 8299.0  |
| 57.5° | 6819.9 | 6832.9 | 7123.3 | 7783.4 | 8597.2 | 9250.8  | 9335.4  | 9244.2  | 9082.8  | 9146.6  | 9383.6  |
| 60°   | 6576.4 | 6598.6 | 6995.7 | 7864.1 | 9007.3 | 10065.8 | 10490.3 | 10414.8 | 10071.0 | 10106.2 | 10367.9 |
| 62.5° | 5903.3 | 5934.5 | 6412.4 | 7480.0 | 9041.1 | 10610.1 | 11556.6 | 11508.4 | 11047.5 | 10857.4 | 10935.6 |
| 65°   | 4735.4 | 4745.8 | 5240.6 | 6529.6 | 8368.0 | 10677.8 | 12300.1 | 12288.3 | 11729.8 | 11284.5 | 10949.9 |
| 67.5° | 2700.4 | 2682.1 | 3343.6 | 4657.3 | 6905.8 | 9797.6  | 12348.2 | 12417.2 | 11951.1 | 11214.2 | 10038.5 |
| 70°   | 1170.5 | 1173.1 | 1477.8 | 2298.0 | 4469.8 | 7918.8  | 11469.4 | 11587.9 | 11310.5 | 10043.7 | 7986.5  |
| 72.5° | 541.6  | 549.4  | 680.9  | 994.7  | 1908.7 | 4912.5  | 9352.3  | 9459.1  | 9220.8  | 8038.6  | 5810.9  |
| 75°   | 382.8  | 389.3  | 454.4  | 570.3  | 877.6  | 1914.0  | 6256.1  | 6480.1  | 6596.0  | 6012.7  | 3829.2  |
| 77.5° | 290.3  | 299.5  | 332.0  | 395.8  | 541.6  | 678.3   | 2993.3  | 3527.1  | 4201.6  | 3740.7  | 1972.5  |
| 80°   | 184.9  | 184.9  | 220.0  | 264.3  | 330.7  | 352.8   | 864.5   | 1024.7  | 2055.9  | 1541.6  | 774.7   |
| 82.5° | 125.0  | 128.9  | 149.7  | 168.0  | 190.1  | 200.5   | 371.1   | 395.8   | 593.7   | 524.7   | 319.0   |
| 85°   | 66.4   | 69.0   | 78.1   | 76.8   | 91.1   | 79.4    | 156.2   | 154.9   | 217.4   | 238.3   | 121.1   |
| 87.5° | 0.0    | 0.0    | 1.3    | 1.3    | 2.6    | 3.9     | 16.9    | 18.2    | 45.6    | 72.9    | 40.4    |
| 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: P639324  
 CATALOG NUMBER: GWS-SA5B-750-U-T3-W

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2190.0 | 2190.0 | 2190.0 | 2190.0 | 2190.0 | 2190.0 | 2190.0 | 2190.0 | 2190.0 | 2190.0 | 2190.0 |
| 2.5°  | 2200.4 | 2184.8 | 2192.6 | 2190.0 | 2197.8 | 2197.8 | 2183.5 | 2179.6 | 2180.9 | 2165.2 | 2160.0 |
| 5°    | 2219.9 | 2201.7 | 2205.6 | 2200.4 | 2208.2 | 2214.7 | 2208.2 | 2208.2 | 2216.0 | 2204.3 | 2197.8 |
| 7.5°  | 2264.2 | 2243.4 | 2243.4 | 2236.8 | 2246.0 | 2251.2 | 2246.0 | 2253.8 | 2268.1 | 2256.4 | 2249.9 |
| 10°   | 2334.5 | 2309.8 | 2311.1 | 2303.3 | 2307.2 | 2304.6 | 2283.7 | 2277.2 | 2281.1 | 2270.7 | 2265.5 |
| 12.5° | 2425.6 | 2391.8 | 2391.8 | 2376.2 | 2367.0 | 2339.7 | 2296.7 | 2281.1 | 2283.7 | 2274.6 | 2270.7 |
| 15°   | 2512.9 | 2481.6 | 2475.1 | 2443.9 | 2402.2 | 2351.4 | 2312.4 | 2301.9 | 2304.6 | 2295.4 | 2288.9 |
| 17.5° | 2615.7 | 2575.4 | 2551.9 | 2494.6 | 2417.8 | 2365.7 | 2326.7 | 2301.9 | 2281.1 | 2260.3 | 2255.1 |
| 20°   | 2710.8 | 2660.0 | 2617.0 | 2528.5 | 2434.8 | 2363.1 | 2290.2 | 2229.0 | 2178.3 | 2150.9 | 2144.4 |
| 22.5° | 2808.4 | 2743.3 | 2667.8 | 2551.9 | 2433.5 | 2316.3 | 2182.2 | 2089.7 | 2014.2 | 1973.8 | 1981.7 |
| 25°   | 2900.9 | 2818.8 | 2716.0 | 2574.1 | 2391.8 | 2212.1 | 2029.8 | 1891.8 | 1805.9 | 1774.6 | 1765.5 |
| 27.5° | 2977.7 | 2876.1 | 2760.3 | 2563.7 | 2305.9 | 2062.4 | 1821.5 | 1667.9 | 1584.5 | 1549.4 | 1540.3 |
| 30°   | 3063.6 | 2949.0 | 2824.1 | 2515.5 | 2170.4 | 1852.8 | 1585.8 | 1460.9 | 1401.0 | 1367.1 | 1368.4 |
| 32.5° | 3162.6 | 3042.8 | 2913.9 | 2423.0 | 1997.3 | 1626.2 | 1391.8 | 1305.9 | 1257.7 | 1223.9 | 1218.7 |
| 35°   | 3295.4 | 3176.9 | 2973.8 | 2283.7 | 1777.2 | 1417.9 | 1259.0 | 1188.7 | 1128.8 | 1084.6 | 1075.5 |
| 37.5° | 3459.4 | 3378.7 | 2980.3 | 2097.5 | 1541.6 | 1274.7 | 1164.0 | 1088.5 | 1015.6 | 957.0  | 950.5  |
| 40°   | 3740.7 | 3648.2 | 2926.9 | 1864.5 | 1341.1 | 1182.2 | 1084.6 | 997.3  | 912.7  | 847.6  | 838.5  |
| 42.5° | 4141.7 | 3951.6 | 2812.3 | 1601.5 | 1190.0 | 1109.3 | 1009.1 | 898.4  | 812.5  | 766.9  | 760.4  |
| 45°   | 4652.1 | 4290.1 | 2640.5 | 1354.1 | 1078.1 | 1037.7 | 929.6  | 813.8  | 768.2  | 735.6  | 729.1  |
| 47.5° | 5277.0 | 4684.6 | 2442.6 | 1161.4 | 990.8  | 972.6  | 848.9  | 785.1  | 744.7  | 717.4  | 710.9  |
| 50°   | 6024.4 | 5187.2 | 2279.8 | 1010.4 | 912.7  | 897.1  | 822.9  | 768.2  | 735.6  | 713.5  | 708.3  |
| 52.5° | 6877.2 | 5745.8 | 2200.4 | 902.3  | 845.0  | 829.4  | 813.8  | 764.3  | 736.9  | 720.0  | 713.5  |
| 55°   | 7762.6 | 6334.3 | 2126.2 | 819.0  | 787.7  | 796.8  | 815.1  | 777.3  | 756.5  | 734.3  | 727.8  |
| 57.5° | 8618.0 | 6886.3 | 1943.9 | 753.9  | 746.1  | 781.2  | 821.6  | 790.3  | 765.6  | 743.4  | 735.6  |
| 60°   | 9207.8 | 7188.4 | 1635.3 | 701.8  | 714.8  | 761.7  | 804.6  | 770.8  | 739.5  | 730.4  | 726.5  |
| 62.5° | 9366.6 | 7151.9 | 1269.5 | 648.4  | 677.0  | 718.7  | 760.4  | 738.2  | 705.7  | 720.0  | 721.3  |
| 65°   | 8995.6 | 6761.3 | 953.1  | 596.3  | 627.6  | 662.7  | 714.8  | 705.7  | 694.0  | 733.0  | 734.3  |
| 67.5° | 7944.8 | 5801.7 | 726.5  | 550.7  | 576.8  | 619.8  | 700.5  | 738.2  | 740.8  | 790.3  | 785.1  |
| 70°   | 6011.4 | 4334.4 | 569.0  | 507.8  | 537.7  | 619.8  | 746.1  | 763.0  | 731.7  | 777.3  | 766.9  |
| 72.5° | 4156.0 | 2860.5 | 484.3  | 470.0  | 489.6  | 591.1  | 744.7  | 744.7  | 710.9  | 710.9  | 691.4  |
| 75°   | 2581.9 | 1682.2 | 421.9  | 421.9  | 421.9  | 516.9  | 723.9  | 686.2  | 626.3  | 598.9  | 583.3  |
| 77.5° | 1274.7 | 817.7  | 354.1  | 367.2  | 352.8  | 432.3  | 591.1  | 561.2  | 524.7  | 496.1  | 485.6  |
| 80°   | 544.2  | 408.8  | 286.4  | 300.8  | 283.8  | 325.5  | 468.7  | 462.2  | 427.1  | 389.3  | 377.6  |
| 82.5° | 250.0  | 210.9  | 229.2  | 235.7  | 207.0  | 244.8  | 342.4  | 342.4  | 322.9  | 270.8  | 251.3  |
| 85°   | 106.8  | 112.0  | 158.8  | 158.8  | 130.2  | 138.0  | 183.6  | 174.5  | 156.2  | 127.6  | 117.2  |
| 87.5° | 36.5   | 54.7   | 80.7   | 70.3   | 27.3   | 11.7   | 6.5    | 2.6    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



Signify Classified - Internal  
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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: SP1-1908-441-4-R4

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

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

**Test Information**

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-4-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-750-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):                  | 4884   | CRI (Ra): | 73.5 | R9:  | -28.4 |
| CIE u':                   | 0.2101 | R1:       | 70.5 | R10: | 48.6  |
| CIE v':                   | 0.4904 | R2:       | 77.7 | R11: | 73.2  |
| Duv:                      | 0.0037 | R3:       | 84.6 | R12: | 50.7  |
| CIE x:                    | 0.3493 | R4:       | 74.7 | R13: | 71.2  |
| CIE y:                    | 0.3624 | R5:       | 71.9 | R14: | 91.4  |
| CIE z:                    | 0.2884 | R6:       | 70.7 |      |       |
| Peak Wavelength (nm):     | 444    | R7:       | 81.2 |      |       |
| Dominant Wavelength (nm): | 571    | R8:       | 56.9 |      |       |
| Purity:                   | 13.7   |           |      |      |       |
| Rf:                       | 74.9   |           |      |      |       |
| Rg:                       | 96.3   |           |      |      |       |



**Test Conditions**

Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-4-R4

| 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            |

REPORT NUMBER: SP1-1908-441-4-R4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5000K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-4-R4

**Photopic Flux vs. Wavelength**



#####

| 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    | 2945          | NR            | 490    | 37941         | NR            | 620    | 88803         | NR            | 750    | 3908          | NR            | 880    | 2997          | NR            |
| 365    | 2596          | NR            | 495    | 48525         | NR            | 625    | 80578         | NR            | 755    | 3988          | NR            | 885    | 2927          | NR            |
| 370    | 2732          | NR            | 500    | 60609         | NR            | 630    | 73127         | NR            | 760    | 3335          | NR            | 890    | 2649          | NR            |
| 375    | 2894          | NR            | 505    | 72036         | NR            | 635    | 66244         | NR            | 765    | 3438          | NR            | 895    | 2828          | NR            |
| 380    | 2822          | NR            | 510    | 82168         | NR            | 640    | 59440         | NR            | 770    | 3427          | NR            | 900    | 1407          | NR            |
| 385    | 2394          | NR            | 515    | 90898         | NR            | 645    | 52864         | NR            | 775    | 2759          | NR            | 905    | 2224          | NR            |
| 390    | 2370          | NR            | 520    | 97142         | NR            | 650    | 47085         | NR            | 780    | 2340          | NR            | 910    | 2905          | NR            |
| 395    | 2267          | NR            | 525    | 103255        | NR            | 655    | 41789         | NR            | 785    | 2412          | NR            | 915    | 3350          | NR            |
| 400    | 2262          | NR            | 530    | 106697        | NR            | 660    | 37064         | NR            | 790    | 1999          | NR            | 920    | 3114          | NR            |
| 405    | 3000          | NR            | 535    | 110081        | NR            | 665    | 32299         | NR            | 795    | 2054          | NR            | 925    | 2834          | NR            |
| 410    | 5324          | NR            | 540    | 112494        | NR            | 670    | 28142         | NR            | 800    | 2331          | NR            | 930    | 2271          | NR            |
| 415    | 10725         | NR            | 545    | 115513        | NR            | 675    | 24505         | NR            | 805    | 2648          | NR            | 935    | 2228          | NR            |
| 420    | 22128         | NR            | 550    | 117203        | NR            | 680    | 21162         | NR            | 810    | 2485          | NR            | 940    | 2833          | NR            |
| 425    | 44095         | NR            | 555    | 119753        | NR            | 685    | 18400         | NR            | 815    | 2409          | NR            | 945    | 2941          | NR            |
| 430    | 77002         | NR            | 560    | 122602        | NR            | 690    | 16065         | NR            | 820    | 2221          | NR            | 950    | 2323          | NR            |
| 435    | 119881        | NR            | 565    | 124314        | NR            | 695    | 13860         | NR            | 825    | 1562          | NR            | 955    | 1667          | NR            |
| 440    | 164454        | NR            | 570    | 126775        | NR            | 700    | 12177         | NR            | 830    | 2249          | NR            | 960    | 749           | NR            |
| 445    | 179997        | NR            | 575    | 127511        | NR            | 705    | 10757         | NR            | 835    | 2573          | NR            | 965    | 2669          | NR            |
| 450    | 142822        | NR            | 580    | 127577        | NR            | 710    | 9601          | NR            | 840    | 2764          | NR            | 970    | 3968          | NR            |
| 455    | 90008         | NR            | 585    | 126153        | NR            | 715    | 8944          | NR            | 845    | 3109          | NR            | 975    | 3886          | NR            |
| 460    | 60557         | NR            | 590    | 123678        | NR            | 720    | 7947          | NR            | 850    | 2963          | NR            | 980    | 2788          | NR            |
| 465    | 43305         | NR            | 595    | 119774        | NR            | 725    | 7062          | NR            | 855    | 2336          | NR            | 985    | 3496          | NR            |
| 470    | 31089         | NR            | 600    | 115733        | NR            | 730    | 6004          | NR            | 860    | 2118          | NR            | 990    | 2913          | NR            |
| 475    | 26278         | NR            | 605    | 109231        | NR            | 735    | 5594          | NR            | 865    | 3144          | NR            | 995    | 4659          | NR            |
| 480    | 27060         | NR            | 610    | 102408        | NR            | 740    | 5165          | NR            | 870    | 3069          | NR            | 1000   | 1308          | NR            |
| 485    | 30698         | NR            | 615    | 96015         | NR            | 745    | 4687          | NR            | 875    | 3311          | NR            |        |               |               |

REPORT NUMBER: SP1-1908-441-4-R4

Scotopic Flux vs. Wavelength

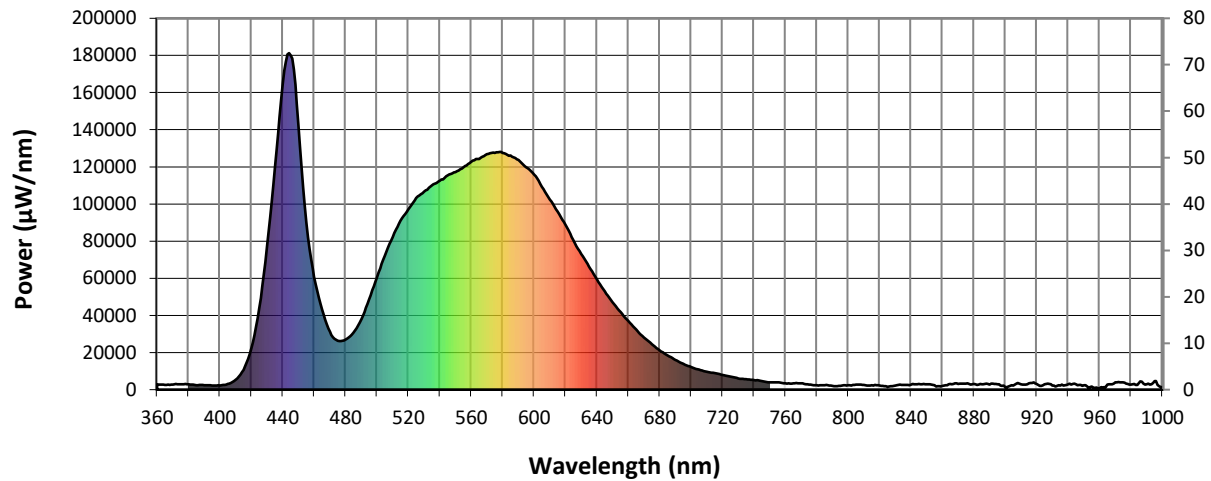


Scotopic Lumens: 13493.5 S/P: 1.77

| 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    | 2945          | NR            | 490    | 37941         | NR            | 620    | 88803         | NR            | 750    | 3908          | NR            | 880    | 2997          | NR            |
| 365    | 2596          | NR            | 495    | 48525         | NR            | 625    | 80578         | NR            | 755    | 3988          | NR            | 885    | 2927          | NR            |
| 370    | 2732          | NR            | 500    | 60609         | NR            | 630    | 73127         | NR            | 760    | 3335          | NR            | 890    | 2649          | NR            |
| 375    | 2894          | NR            | 505    | 72036         | NR            | 635    | 66244         | NR            | 765    | 3438          | NR            | 895    | 2828          | NR            |
| 380    | 2822          | NR            | 510    | 82168         | NR            | 640    | 59440         | NR            | 770    | 3427          | NR            | 900    | 1407          | NR            |
| 385    | 2394          | NR            | 515    | 90898         | NR            | 645    | 52864         | NR            | 775    | 2759          | NR            | 905    | 2224          | NR            |
| 390    | 2370          | NR            | 520    | 97142         | NR            | 650    | 47085         | NR            | 780    | 2340          | NR            | 910    | 2905          | NR            |
| 395    | 2267          | NR            | 525    | 103255        | NR            | 655    | 41789         | NR            | 785    | 2412          | NR            | 915    | 3350          | NR            |
| 400    | 2262          | NR            | 530    | 106697        | NR            | 660    | 37064         | NR            | 790    | 1999          | NR            | 920    | 3114          | NR            |
| 405    | 3000          | NR            | 535    | 110081        | NR            | 665    | 32299         | NR            | 795    | 2054          | NR            | 925    | 2834          | NR            |
| 410    | 5324          | NR            | 540    | 112494        | NR            | 670    | 28142         | NR            | 800    | 2331          | NR            | 930    | 2271          | NR            |
| 415    | 10725         | NR            | 545    | 115513        | NR            | 675    | 24505         | NR            | 805    | 2648          | NR            | 935    | 2228          | NR            |
| 420    | 22128         | NR            | 550    | 117203        | NR            | 680    | 21162         | NR            | 810    | 2485          | NR            | 940    | 2833          | NR            |
| 425    | 44095         | NR            | 555    | 119753        | NR            | 685    | 18400         | NR            | 815    | 2409          | NR            | 945    | 2941          | NR            |
| 430    | 77002         | NR            | 560    | 122602        | NR            | 690    | 16065         | NR            | 820    | 2221          | NR            | 950    | 2323          | NR            |
| 435    | 119881        | NR            | 565    | 124314        | NR            | 695    | 13860         | NR            | 825    | 1562          | NR            | 955    | 1667          | NR            |
| 440    | 164454        | NR            | 570    | 126775        | NR            | 700    | 12177         | NR            | 830    | 2249          | NR            | 960    | 749           | NR            |
| 445    | 179997        | NR            | 575    | 127511        | NR            | 705    | 10757         | NR            | 835    | 2573          | NR            | 965    | 2669          | NR            |
| 450    | 142822        | NR            | 580    | 127577        | NR            | 710    | 9601          | NR            | 840    | 2764          | NR            | 970    | 3968          | NR            |
| 455    | 90008         | NR            | 585    | 126153        | NR            | 715    | 8944          | NR            | 845    | 3109          | NR            | 975    | 3886          | NR            |
| 460    | 60557         | NR            | 590    | 123678        | NR            | 720    | 7947          | NR            | 850    | 2963          | NR            | 980    | 2788          | NR            |
| 465    | 43305         | NR            | 595    | 119774        | NR            | 725    | 7062          | NR            | 855    | 2336          | NR            | 985    | 3496          | NR            |
| 470    | 31089         | NR            | 600    | 115733        | NR            | 730    | 6004          | NR            | 860    | 2118          | NR            | 990    | 2913          | NR            |
| 475    | 26278         | NR            | 605    | 109231        | NR            | 735    | 5594          | NR            | 865    | 3144          | NR            | 995    | 4659          | NR            |
| 480    | 27060         | NR            | 610    | 102408        | NR            | 740    | 5165          | NR            | 870    | 3069          | NR            | 1000   | 1308          | NR            |
| 485    | 30698         | NR            | 615    | 96015         | NR            | 745    | 4687          | NR            | 875    | 3311          | NR            |        |               |               |

REPORT NUMBER: SP1-1908-441-4-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 5378.9 M/P: 0.71

| 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    | 2945          | NR            | 490    | 37941         | NR            | 620    | 88803         | NR            | 750    | 3908          | NR            | 880    | 2997          | NR            |
| 365    | 2596          | NR            | 495    | 48525         | NR            | 625    | 80578         | NR            | 755    | 3988          | NR            | 885    | 2927          | NR            |
| 370    | 2732          | NR            | 500    | 60609         | NR            | 630    | 73127         | NR            | 760    | 3335          | NR            | 890    | 2649          | NR            |
| 375    | 2894          | NR            | 505    | 72036         | NR            | 635    | 66244         | NR            | 765    | 3438          | NR            | 895    | 2828          | NR            |
| 380    | 2822          | NR            | 510    | 82168         | NR            | 640    | 59440         | NR            | 770    | 3427          | NR            | 900    | 1407          | NR            |
| 385    | 2394          | NR            | 515    | 90898         | NR            | 645    | 52864         | NR            | 775    | 2759          | NR            | 905    | 2224          | NR            |
| 390    | 2370          | NR            | 520    | 97142         | NR            | 650    | 47085         | NR            | 780    | 2340          | NR            | 910    | 2905          | NR            |
| 395    | 2267          | NR            | 525    | 103255        | NR            | 655    | 41789         | NR            | 785    | 2412          | NR            | 915    | 3350          | NR            |
| 400    | 2262          | NR            | 530    | 106697        | NR            | 660    | 37064         | NR            | 790    | 1999          | NR            | 920    | 3114          | NR            |
| 405    | 3000          | NR            | 535    | 110081        | NR            | 665    | 32299         | NR            | 795    | 2054          | NR            | 925    | 2834          | NR            |
| 410    | 5324          | NR            | 540    | 112494        | NR            | 670    | 28142         | NR            | 800    | 2331          | NR            | 930    | 2271          | NR            |
| 415    | 10725         | NR            | 545    | 115513        | NR            | 675    | 24505         | NR            | 805    | 2648          | NR            | 935    | 2228          | NR            |
| 420    | 22128         | NR            | 550    | 117203        | NR            | 680    | 21162         | NR            | 810    | 2485          | NR            | 940    | 2833          | NR            |
| 425    | 44095         | NR            | 555    | 119753        | NR            | 685    | 18400         | NR            | 815    | 2409          | NR            | 945    | 2941          | NR            |
| 430    | 77002         | NR            | 560    | 122602        | NR            | 690    | 16065         | NR            | 820    | 2221          | NR            | 950    | 2323          | NR            |
| 435    | 119881        | NR            | 565    | 124314        | NR            | 695    | 13860         | NR            | 825    | 1562          | NR            | 955    | 1667          | NR            |
| 440    | 164454        | NR            | 570    | 126775        | NR            | 700    | 12177         | NR            | 830    | 2249          | NR            | 960    | 749           | NR            |
| 445    | 179997        | NR            | 575    | 127511        | NR            | 705    | 10757         | NR            | 835    | 2573          | NR            | 965    | 2669          | NR            |
| 450    | 142822        | NR            | 580    | 127577        | NR            | 710    | 9601          | NR            | 840    | 2764          | NR            | 970    | 3968          | NR            |
| 455    | 90008         | NR            | 585    | 126153        | NR            | 715    | 8944          | NR            | 845    | 3109          | NR            | 975    | 3886          | NR            |
| 460    | 60557         | NR            | 590    | 123678        | NR            | 720    | 7947          | NR            | 850    | 2963          | NR            | 980    | 2788          | NR            |
| 465    | 43305         | NR            | 595    | 119774        | NR            | 725    | 7062          | NR            | 855    | 2336          | NR            | 985    | 3496          | NR            |
| 470    | 31089         | NR            | 600    | 115733        | NR            | 730    | 6004          | NR            | 860    | 2118          | NR            | 990    | 2913          | NR            |
| 475    | 26278         | NR            | 605    | 109231        | NR            | 735    | 5594          | NR            | 865    | 3144          | NR            | 995    | 4659          | NR            |
| 480    | 27060         | NR            | 610    | 102408        | NR            | 740    | 5165          | NR            | 870    | 3069          | NR            | 1000   | 1308          | NR            |
| 485    | 30698         | NR            | 615    | 96015         | NR            | 745    | 4687          | NR            | 875    | 3311          | NR            |        |               |               |

REPORT NUMBER: SP1-1908-441-4-R4

TM-30-18

**Summary**

$R_f = 74.9$   
 $R_g = 96.3$   
 CIE  $R_a = 73.5$   
 $R_g = -28.4$



**Color Vector Graphics**





REPORT NUMBER: SP1-1908-441-4-R4

TM-30-18

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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 90 | CES76 = 52 |
| CES02 = 60 | CES27 = 84 | CES52 = 91 | CES77 = 71 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 58 | CES54 = 83 | CES79 = 80 |
| CES05 = 46 | CES30 = 67 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 63 | CES56 = 73 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 72 | CES82 = 90 |
| CES08 = 38 | CES33 = 69 | CES58 = 73 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 88 | CES84 = 88 |
| CES10 = 73 | CES35 = 83 | CES60 = 93 | CES85 = 84 |
| CES11 = 56 | CES36 = 95 | CES61 = 88 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 85 | CES87 = 78 |
| CES13 = 41 | CES38 = 76 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 93 | CES64 = 74 | CES89 = 75 |
| CES15 = 70 | CES40 = 86 | CES65 = 67 | CES90 = 77 |
| CES16 = 46 | CES41 = 87 | CES66 = 69 | CES91 = 89 |
| CES17 = 49 | CES42 = 78 | CES67 = 67 | CES92 = 66 |
| CES18 = 55 | CES43 = 75 | CES68 = 73 | CES93 = 80 |
| CES19 = 71 | CES44 = 99 | CES69 = 81 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 63 | CES95 = 71 |
| CES21 = 85 | CES46 = 81 | CES71 = 60 | CES96 = 78 |
| CES22 = 77 | CES47 = 80 | CES72 = 86 | CES97 = 85 |
| CES23 = 91 | CES48 = 72 | CES73 = 53 | CES98 = 75 |
| CES24 = 90 | CES49 = 81 | CES74 = 96 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 58 |            |



REPORT NUMBER: SP1-1908-441-4-R4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-4-R4

TM-30-18

Measure Comparisons



(END OF REPORT)