

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: P641848

Luminaire Tested: GWS-SA6B-760-U-T2R-W-GRSWH

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P641848  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-13)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA6B-760-U-T2R-W-GRSWH  
Description: GALLEON WALL SLIM LUMINAIRE. (6) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II ROADWAY OPTICS W/ FACTORY INSTALLED GLARE SHIELD, WH  
Light Source: (96) 5700K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

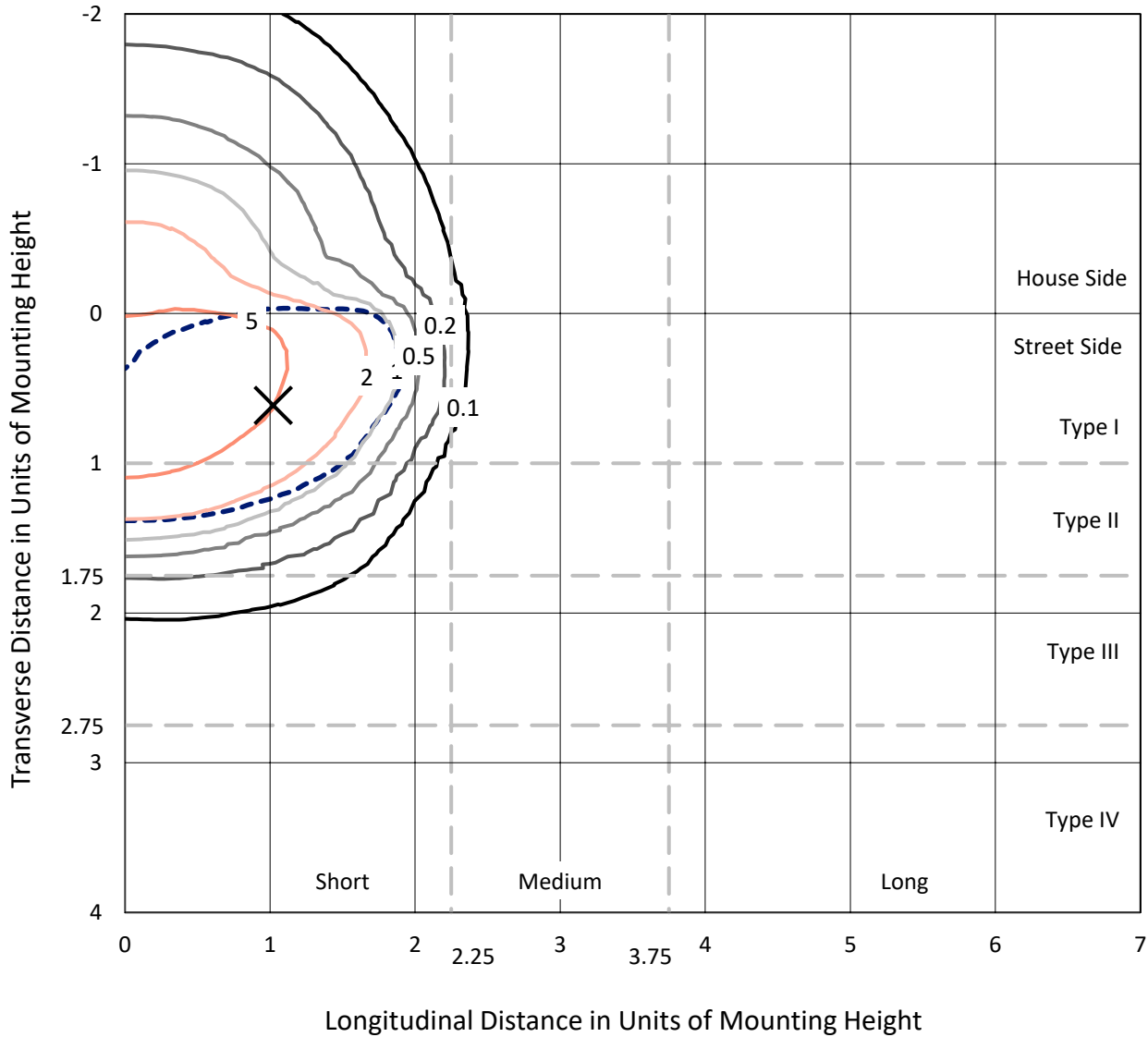
Lumens per Lamp: N/A  
Luminaire Lumens: 18799.8 lumens  
Efficiency: N/A  
Efficacy: 135.3 lumens/watt  
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B3 - U0 - G2  
  
Input Watts (W): 138.9  
Input Voltage (V): 120  
Input Current (Ain): NR  
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: P641848  
 CATALOG NUMBER: GWS-SA6B-760-U-T2R-W-GRSWH

### Iso-Footcandle Lines of Horizontal Illumination

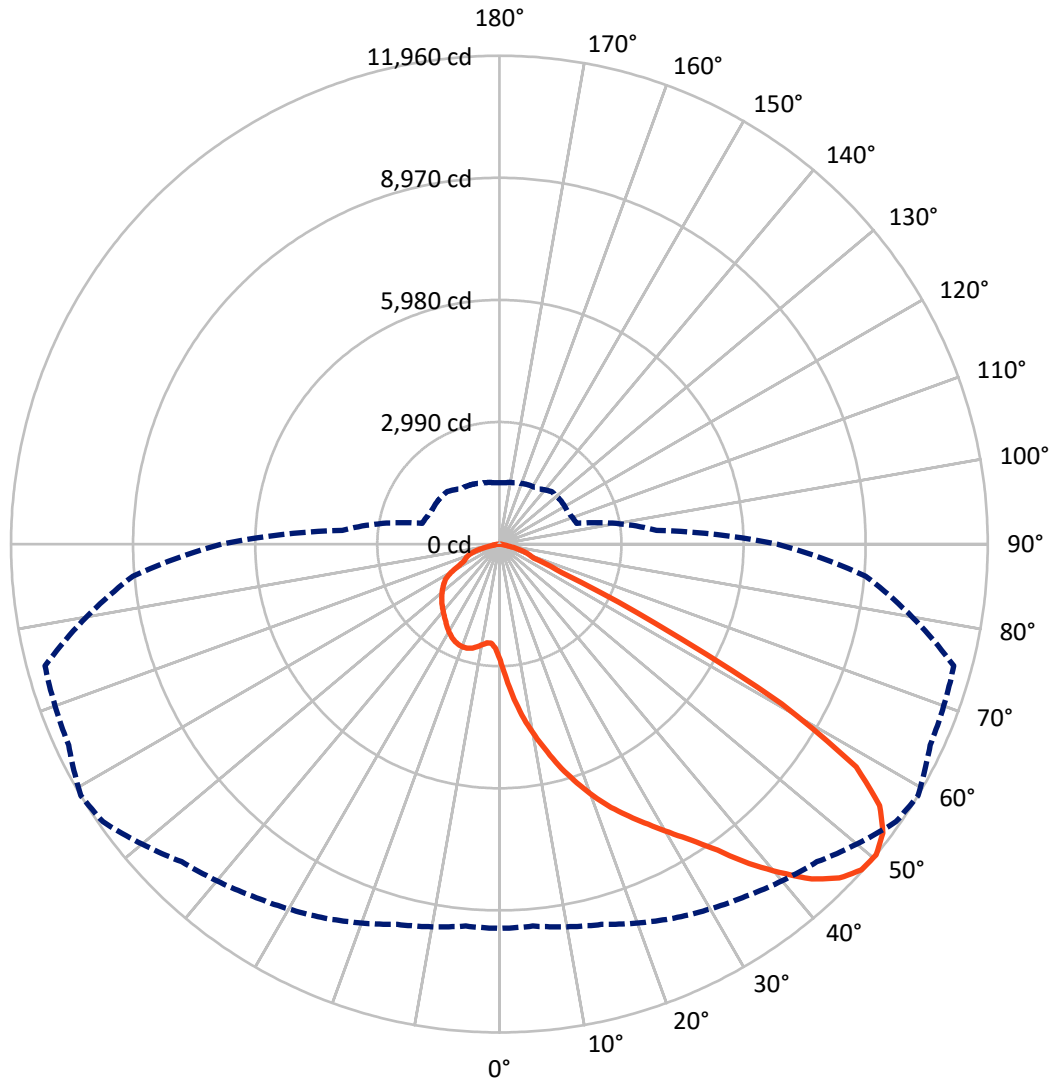
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 9 fc  
 Type II - Short - N/A

REPORT NUMBER: P641848  
CATALOG NUMBER: GWS-SA6B-760-U-T2R-W-GRSWH

### Luminous Intensity Polar Plot



— Vertical Plane Through 59-Deg Lateral    - - - Horizontal Cone Through 50-Deg Vertical

REPORT NUMBER: P641848

CATALOG NUMBER: GWS-SA6B-760-U-T2R-W-GRSWH

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 4324.3   | 0.0    | 4324.3  |
|                    | % Fixture | 23.0     | 0.0    | 23.0    |
| <b>Street Side</b> | Lumens    | 14475.5  | 0.0    | 14475.5 |
|                    | % Fixture | 77.0     | 0.0    | 77.0    |
| <b>Total</b>       | Lumens    | 18799.8  | 0.0    | 18799.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 319.5   | 1.7       |
| 10°-20°   | 1160.0  | 6.2       |
| 20°-30°   | 2196.5  | 11.7      |
| 30°-40°   | 3642.5  | 19.4      |
| 40°-50°   | 4975.8  | 26.5      |
| 50°-60°   | 4516.7  | 24.0      |
| 60°-70°   | 1504.1  | 8.0       |
| 70°-80°   | 438.7   | 2.3       |
| 80°-90°   | 46.1    | 0.2       |
| 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°    | 18799.8 | 100.0     |
| 0°-180°   | 18799.8 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P641848

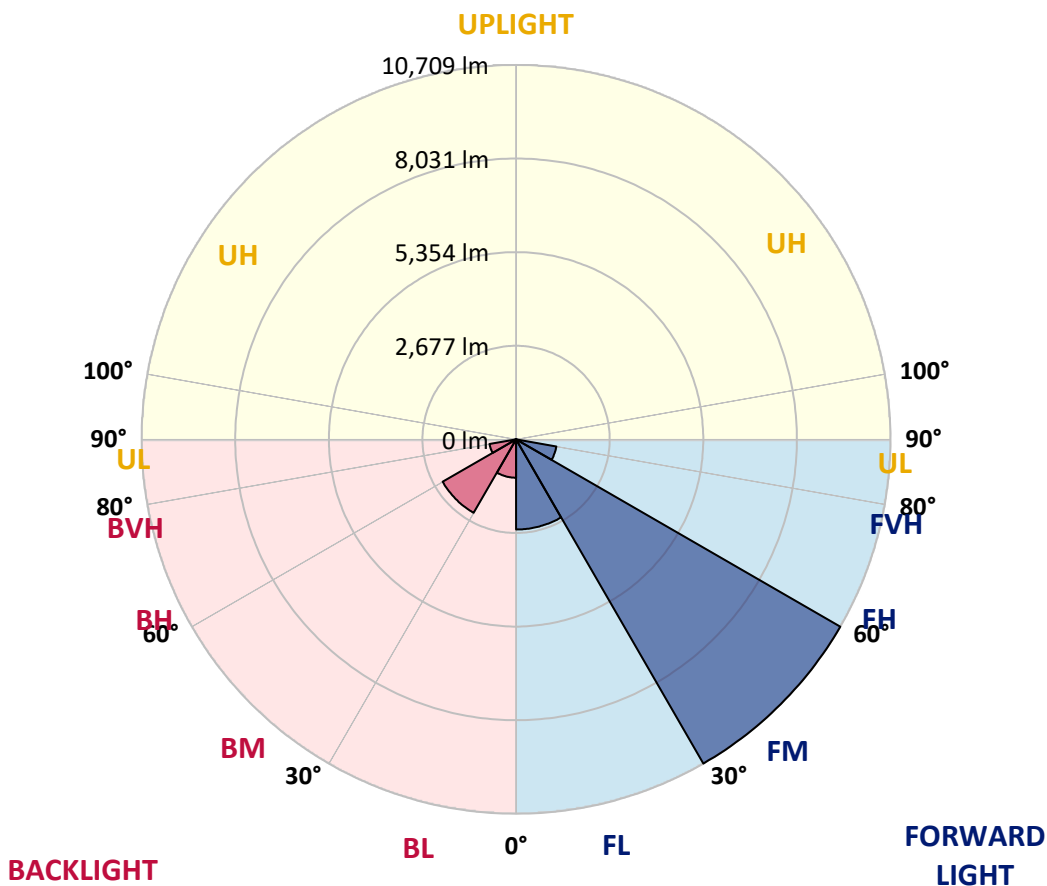
CATALOG NUMBER: GWS-SA6B-760-U-T2R-W-GRSWH

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

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|---------|-----------|-------------------------|------|---------|
|                |         |           | B                       | U    | G       |
| FL (0°-30°)    | 2577.9  | 13.7      |                         |      |         |
| FM (30°-60°)   | 10708.6 | 57.0      |                         |      |         |
| FH (60°-80°)   | 1171.0  | 6.2       |                         |      | G1/1800 |
| FVH (80°-90°)  | 18.0    | 0.1       |                         |      | G1/100  |
| BL (0°-30°)    | 1098.0  | 5.8       | B3/2500                 |      |         |
| BM (30°-60°)   | 2426.4  | 12.9      | B2/2500                 |      |         |
| BH (60°-80°)   | 771.8   | 4.1       | B2/1000                 |      | G2/1000 |
| BVH (80°-90°)  | 28.1    | 0.1       |                         |      | G1/100  |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G2**

Type II Short





REPORT NUMBER: P641848

CATALOG NUMBER: GWS-SA6B-760-U-T2R-W-GRSWH

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 59°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 2848.3  | 2848.3  | 2848.3  | 2848.3  | 2848.3  | 2848.3  | 2848.3  | 2848.3  | 2848.3  | 2848.3  | 2848.3 |
| 2.5°  | 3690.5  | 3718.1  | 3675.2  | 3678.3  | 3571.1  | 3522.1  | 3384.3  | 3303.1  | 3249.5  | 3099.4  | 2963.2 |
| 5°    | 4434.8  | 4402.6  | 4368.9  | 4349.0  | 4255.6  | 4123.9  | 3952.4  | 3816.1  | 3690.5  | 3396.5  | 3113.2 |
| 7.5°  | 4891.1  | 4874.3  | 4851.3  | 4839.1  | 4747.2  | 4609.3  | 4437.8  | 4321.5  | 4139.2  | 3741.1  | 3295.5 |
| 10°   | 5278.5  | 5258.6  | 5244.9  | 5254.0  | 5179.0  | 5090.2  | 4903.4  | 4770.1  | 4564.9  | 4105.5  | 3516.0 |
| 12.5° | 5578.7  | 5589.4  | 5594.0  | 5643.0  | 5610.8  | 5557.3  | 5364.3  | 5223.4  | 4995.2  | 4489.9  | 3774.8 |
| 15°   | 5816.1  | 5813.0  | 5866.6  | 5960.0  | 6012.1  | 5978.4  | 5823.7  | 5705.8  | 5427.1  | 4868.1  | 4053.5 |
| 17.5° | 5871.2  | 5874.2  | 5958.5  | 6122.3  | 6292.3  | 6375.0  | 6287.7  | 6146.8  | 5871.2  | 5241.8  | 4342.9 |
| 20°   | 5915.6  | 5921.7  | 6009.0  | 6195.8  | 6443.9  | 6675.1  | 6688.9  | 6587.8  | 6350.5  | 5646.1  | 4636.9 |
| 22.5° | 6195.8  | 6209.6  | 6232.6  | 6350.5  | 6574.1  | 6866.6  | 7027.3  | 7005.9  | 6806.8  | 6070.3  | 4953.9 |
| 25°   | 6932.4  | 6891.1  | 6779.3  | 6745.6  | 6831.3  | 7068.7  | 7342.8  | 7384.1  | 7286.1  | 6537.3  | 5295.4 |
| 27.5° | 7842.0  | 7797.6  | 7632.2  | 7457.7  | 7272.4  | 7355.1  | 7647.5  | 7771.6  | 7773.1  | 7051.8  | 5638.4 |
| 30°   | 8667.4  | 8632.2  | 8497.4  | 8247.8  | 7927.8  | 7808.3  | 8024.3  | 8191.2  | 8290.7  | 7646.0  | 6028.9 |
| 32.5° | 9373.4  | 9341.2  | 9159.0  | 8955.3  | 8642.9  | 8402.5  | 8480.6  | 8641.4  | 8874.1  | 8414.7  | 6514.3 |
| 35°   | 9967.5  | 9935.4  | 9760.8  | 9555.6  | 9266.2  | 9122.2  | 9094.7  | 9204.9  | 9506.6  | 9217.2  | 7071.8 |
| 37.5° | 10449.9 | 10417.7 | 10235.5 | 10042.6 | 9822.1  | 9831.2  | 9872.6  | 9926.2  | 10099.2 | 10076.3 | 7667.4 |
| 40°   | 10762.3 | 10728.6 | 10598.4 | 10460.6 | 10321.3 | 10431.5 | 10636.7 | 10572.4 | 10664.3 | 10770.0 | 8215.7 |
| 42.5° | 10901.6 | 10858.8 | 10783.7 | 10753.1 | 10710.2 | 10881.7 | 11276.8 | 11212.5 | 11102.3 | 11232.4 | 8623.0 |
| 45°   | 10762.3 | 10725.5 | 10724.0 | 10817.4 | 10917.0 | 11137.5 | 11719.4 | 11667.3 | 11388.6 | 11456.0 | 8866.5 |
| 47.5° | 10335.1 | 10302.9 | 10390.2 | 10635.2 | 10880.2 | 11201.8 | 11916.9 | 11926.1 | 11592.3 | 11549.4 | 9024.2 |
| 50°   | 9411.6  | 9390.2  | 9642.9  | 10106.9 | 10529.5 | 11001.2 | 11854.1 | 11959.8 | 11641.3 | 11520.3 | 9004.3 |
| 52.5° | 7534.2  | 7633.8  | 8183.5  | 8958.4  | 9779.2  | 10649.0 | 11621.4 | 11759.2 | 11405.5 | 11328.9 | 8897.1 |
| 55°   | 5157.6  | 5203.5  | 5753.3  | 6884.9  | 8186.6  | 9886.4  | 11086.9 | 11299.8 | 11126.8 | 11296.7 | 9008.9 |
| 57.5° | 2670.7  | 2707.4  | 3140.8  | 4145.4  | 5552.7  | 7812.9  | 9603.1  | 10301.4 | 10564.8 | 11459.1 | 9356.5 |
| 60°   | 1096.4  | 1127.1  | 1306.2  | 1791.7  | 2800.8  | 4549.6  | 6911.0  | 7946.2  | 8564.8  | 10465.2 | 8309.1 |
| 62.5° | 796.3   | 811.6   | 897.4   | 1068.9  | 1467.0  | 2229.6  | 3911.1  | 4292.4  | 4727.3  | 6558.8  | 5275.5 |
| 65°   | 670.7   | 687.6   | 756.5   | 860.6   | 1070.4  | 1367.5  | 1670.7  | 1679.9  | 1851.4  | 2672.2  | 1955.5 |
| 67.5° | 562.0   | 577.3   | 638.6   | 727.4   | 865.2   | 970.9   | 897.4   | 898.9   | 895.8   | 969.3   | 937.2  |
| 70°   | 438.0   | 450.2   | 511.5   | 606.4   | 678.4   | 623.3   | 701.4   | 776.4   | 744.2   | 773.3   | 817.7  |
| 72.5° | 320.1   | 333.8   | 387.4   | 459.4   | 441.0   | 444.1   | 568.1   | 644.7   | 626.3   | 658.5   | 699.8  |
| 75°   | 231.2   | 240.4   | 268.0   | 229.7   | 242.0   | 292.5   | 399.7   | 441.0   | 459.4   | 487.0   | 523.7  |
| 77.5° | 75.0    | 75.0    | 84.2    | 105.7   | 131.7   | 162.3   | 203.7   | 220.5   | 248.1   | 278.7   | 304.7  |
| 80°   | 38.3    | 39.8    | 47.5    | 58.2    | 73.5    | 93.4    | 119.4   | 127.1   | 140.9   | 157.7   | 168.4  |
| 82.5° | 18.4    | 19.9    | 23.0    | 29.1    | 38.3    | 49.0    | 65.8    | 73.5    | 82.7    | 93.4    | 101.1  |
| 85°   | 4.6     | 4.6     | 6.1     | 9.2     | 12.3    | 18.4    | 24.5    | 29.1    | 36.8    | 44.4    | 49.0   |
| 87.5° | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 1.5     | 4.6     | 6.1     | 7.7     | 9.2     | 12.3   |
| 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: P641848

CATALOG NUMBER: GWS-SA6B-760-U-T2R-W-GRSWH

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2848.3 | 2848.3 | 2848.3 | 2848.3 | 2848.3 | 2848.3 | 2848.3 | 2848.3 | 2848.3 | 2848.3 | 2848.3 |
| 2.5°  | 2901.9 | 2816.1 | 2705.9 | 2612.5 | 2526.7 | 2460.9 | 2404.2 | 2376.6 | 2350.6 | 2332.2 | 2338.4 |
| 5°    | 2981.5 | 2834.5 | 2629.3 | 2486.9 | 2399.6 | 2355.2 | 2324.6 | 2309.3 | 2306.2 | 2294.0 | 2289.4 |
| 7.5°  | 3097.9 | 2888.1 | 2614.0 | 2470.1 | 2411.9 | 2388.9 | 2372.1 | 2362.9 | 2367.5 | 2355.2 | 2350.6 |
| 10°   | 3241.9 | 2976.9 | 2652.3 | 2525.2 | 2474.7 | 2457.8 | 2439.4 | 2427.2 | 2421.1 | 2402.7 | 2399.6 |
| 12.5° | 3421.0 | 3087.2 | 2721.2 | 2595.6 | 2545.1 | 2516.0 | 2491.5 | 2470.1 | 2456.3 | 2433.3 | 2427.2 |
| 15°   | 3614.0 | 3209.7 | 2802.4 | 2664.5 | 2604.8 | 2561.9 | 2522.1 | 2490.0 | 2465.5 | 2434.8 | 2430.2 |
| 17.5° | 3823.8 | 3338.3 | 2869.7 | 2712.0 | 2635.4 | 2578.8 | 2520.6 | 2473.1 | 2439.4 | 2399.6 | 2395.0 |
| 20°   | 4042.8 | 3468.5 | 2920.3 | 2735.0 | 2637.0 | 2560.4 | 2482.3 | 2419.5 | 2376.6 | 2336.8 | 2333.8 |
| 22.5° | 4269.4 | 3587.9 | 2950.9 | 2728.9 | 2612.5 | 2517.5 | 2424.1 | 2353.7 | 2303.1 | 2255.7 | 2252.6 |
| 25°   | 4497.6 | 3702.8 | 2958.6 | 2704.4 | 2563.5 | 2453.2 | 2359.8 | 2277.1 | 2220.5 | 2166.9 | 2160.7 |
| 27.5° | 4728.8 | 3799.3 | 2940.2 | 2655.4 | 2497.6 | 2378.2 | 2284.8 | 2203.6 | 2145.4 | 2091.8 | 2082.6 |
| 30°   | 4975.3 | 3882.0 | 2900.4 | 2591.0 | 2421.1 | 2298.5 | 2206.7 | 2145.4 | 2090.3 | 2036.7 | 2027.5 |
| 32.5° | 5238.7 | 3953.9 | 2843.7 | 2512.9 | 2332.2 | 2218.9 | 2151.5 | 2096.4 | 2041.3 | 1993.8 | 1984.6 |
| 35°   | 5552.7 | 4001.4 | 2759.5 | 2411.9 | 2249.5 | 2160.7 | 2114.8 | 2050.5 | 1983.1 | 1931.0 | 1926.4 |
| 37.5° | 5877.3 | 4038.2 | 2658.4 | 2315.4 | 2177.6 | 2127.0 | 2088.8 | 2001.5 | 1917.2 | 1854.5 | 1846.8 |
| 40°   | 6191.2 | 4068.8 | 2532.8 | 2225.0 | 2111.7 | 2102.5 | 2050.5 | 1941.7 | 1796.3 | 1725.8 | 1719.7 |
| 42.5° | 6483.7 | 4078.0 | 2401.1 | 2128.6 | 2052.0 | 2047.4 | 1989.2 | 1820.8 | 1709.0 | 1664.6 | 1658.4 |
| 45°   | 6684.3 | 4070.3 | 2264.9 | 2038.2 | 1992.3 | 1967.8 | 1906.5 | 1733.5 | 1664.6 | 1624.8 | 1617.1 |
| 47.5° | 6832.9 | 4030.5 | 2111.7 | 1943.3 | 1924.9 | 1891.2 | 1759.5 | 1678.4 | 1614.0 | 1574.2 | 1566.6 |
| 50°   | 6806.8 | 3865.1 | 1957.1 | 1851.4 | 1843.7 | 1814.6 | 1652.3 | 1609.4 | 1552.8 | 1509.9 | 1503.8 |
| 52.5° | 6672.1 | 3551.2 | 1799.3 | 1750.3 | 1765.6 | 1709.0 | 1575.8 | 1526.8 | 1477.7 | 1428.7 | 1418.0 |
| 55°   | 6705.8 | 3324.6 | 1679.9 | 1652.3 | 1679.9 | 1551.3 | 1490.0 | 1437.9 | 1392.0 | 1344.5 | 1335.3 |
| 57.5° | 6852.8 | 3101.0 | 1552.8 | 1546.7 | 1575.8 | 1430.3 | 1379.7 | 1313.9 | 1248.0 | 1209.8 | 1209.8 |
| 60°   | 5754.8 | 2260.3 | 1329.2 | 1344.5 | 1410.4 | 1332.3 | 1287.9 | 1220.5 | 1148.5 | 1114.8 | 1114.8 |
| 62.5° | 3402.6 | 1418.0 | 1102.6 | 1085.7 | 1127.1 | 1176.1 | 1200.6 | 1145.4 | 1059.7 | 1015.3 | 1016.8 |
| 65°   | 1499.2 | 1032.1 | 972.4  | 958.6  | 946.4  | 980.1  | 1047.4 | 1052.0 | 961.7  | 909.6  | 911.2  |
| 67.5° | 923.4  | 934.1  | 909.6  | 898.9  | 888.2  | 882.1  | 875.9  | 879.0  | 854.5  | 807.0  | 805.5  |
| 70°   | 833.1  | 862.1  | 845.3  | 836.1  | 822.3  | 811.6  | 774.9  | 715.1  | 673.8  | 661.5  | 675.3  |
| 72.5° | 716.7  | 756.5  | 747.3  | 742.7  | 725.9  | 699.8  | 650.8  | 592.6  | 543.6  | 513.0  | 519.1  |
| 75°   | 540.6  | 572.7  | 577.3  | 578.8  | 560.5  | 536.0  | 485.4  | 436.4  | 393.6  | 361.4  | 369.1  |
| 77.5° | 310.9  | 329.2  | 333.8  | 338.4  | 324.6  | 315.5  | 281.8  | 246.5  | 223.6  | 189.9  | 199.1  |
| 80°   | 173.0  | 180.7  | 180.7  | 182.2  | 174.6  | 163.9  | 140.9  | 121.0  | 110.3  | 94.9   | 96.5   |
| 82.5° | 104.1  | 107.2  | 108.7  | 110.3  | 105.7  | 94.9   | 78.1   | 64.3   | 58.2   | 50.5   | 49.0   |
| 85°   | 50.5   | 53.6   | 53.6   | 55.1   | 47.5   | 41.3   | 32.2   | 24.5   | 21.4   | 15.3   | 16.8   |
| 87.5° | 12.3   | 13.8   | 13.8   | 12.3   | 10.7   | 7.7    | 4.6    | 1.5    | 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  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



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   | CRI (Ra): | 71.7 | R9:  | -27.1 |
| CIE u':                   | 0.2052 | R1:       | 70.6 | R10: | 40.8  |
| CIE v':                   | 0.4804 | R2:       | 74.6 | R11: | 74.6  |
| Duv:                      | 0.0025 | R3:       | 78.3 | R12: | 50.4  |
| CIE x:                    | 0.3330 | R4:       | 73.8 | R13: | 70.0  |
| CIE y:                    | 0.3466 | R5:       | 72.4 | R14: | 87.8  |
| CIE z:                    | 0.3204 | R6:       | 67.5 |      |       |
| Peak Wavelength (nm):     | 442    | R7:       | 77.5 |      |       |
| Dominant Wavelength (nm): | 554    | R8:       | 58.9 |      |       |
| Purity:                   | 4.1    |           |      |      |       |
| Rf:                       | 72.1   |           |      |      |       |
| Rg:                       | 97.2   |           |      |      |       |



**Test Conditions**

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

REPORT NUMBER: SP1-1908-441-9-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: SP1-1908-441-9-R4

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

REPORT NUMBER: SP1-1908-441-9-R4

**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                             |                   |                                      |                                |

REPORT NUMBER: SP1-1908-441-9-R4

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            |        |               |               |

REPORT NUMBER: SP1-1908-441-9-R4

**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            |        |               |               |

REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

**Summary**

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



**Color Vector Graphics**





REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

**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 |            |



REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

Measure Comparisons



(END OF REPORT)