

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: P639375

Luminaire Tested: GWS-SA5B-760-U-T2R-W

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P639375  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-11)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA5B-760-U-T2R-W  
Description: GALLEON WALL SLIM LUMINAIRE. (5) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II ROADWAY OPTICS  
Light Source: (80) 5700K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

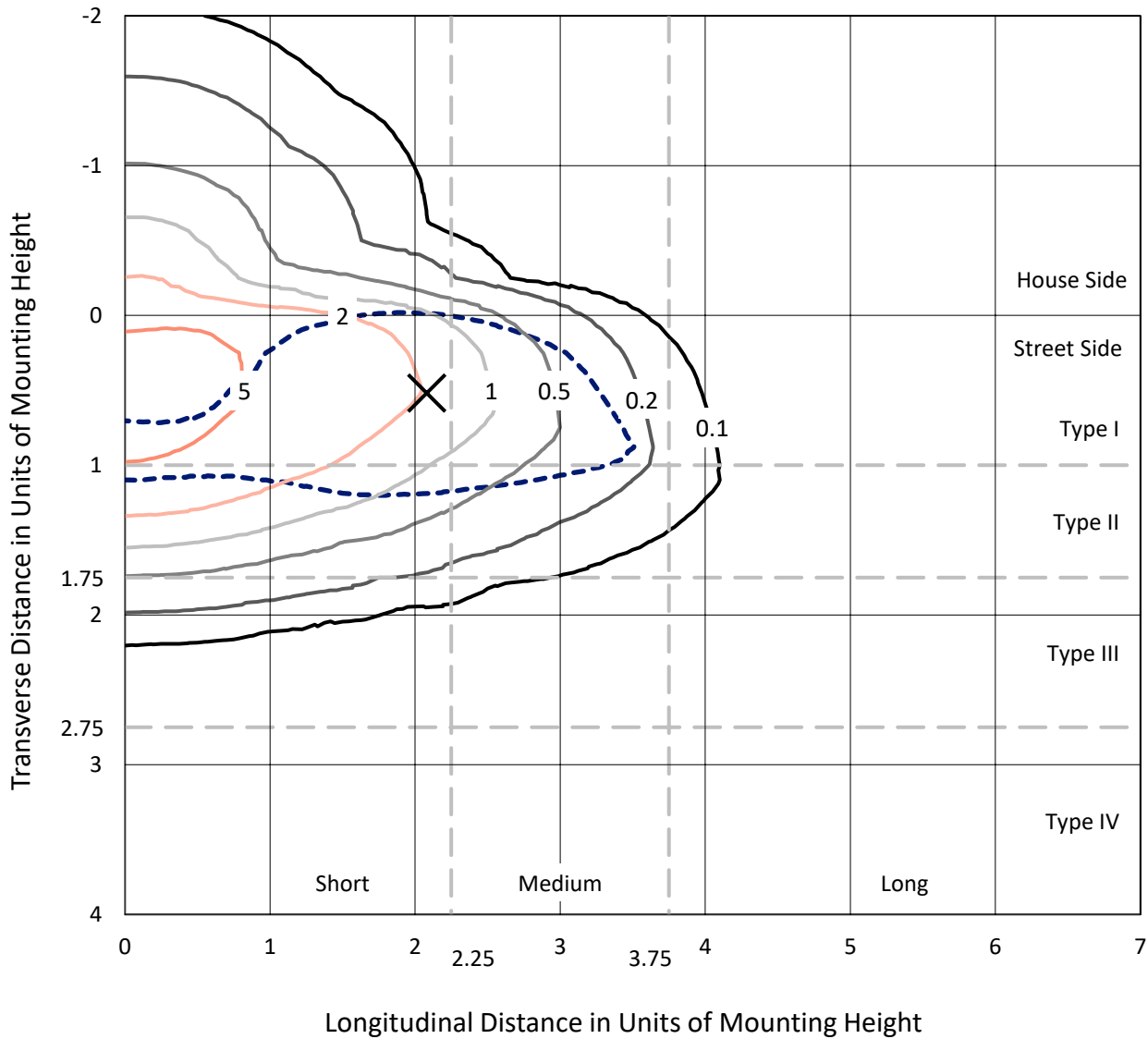
Lumens per Lamp: N/A  
Luminaire Lumens: 18266.3 lumens  
Efficiency: N/A  
Efficacy: 157.9 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B2 - U0 - G2  
  
Input Watts (W): 115.7  
Input Voltage (V): 120  
Input Current (Ain): 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: P639375  
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### Iso-Footcandle Lines of Horizontal Illumination

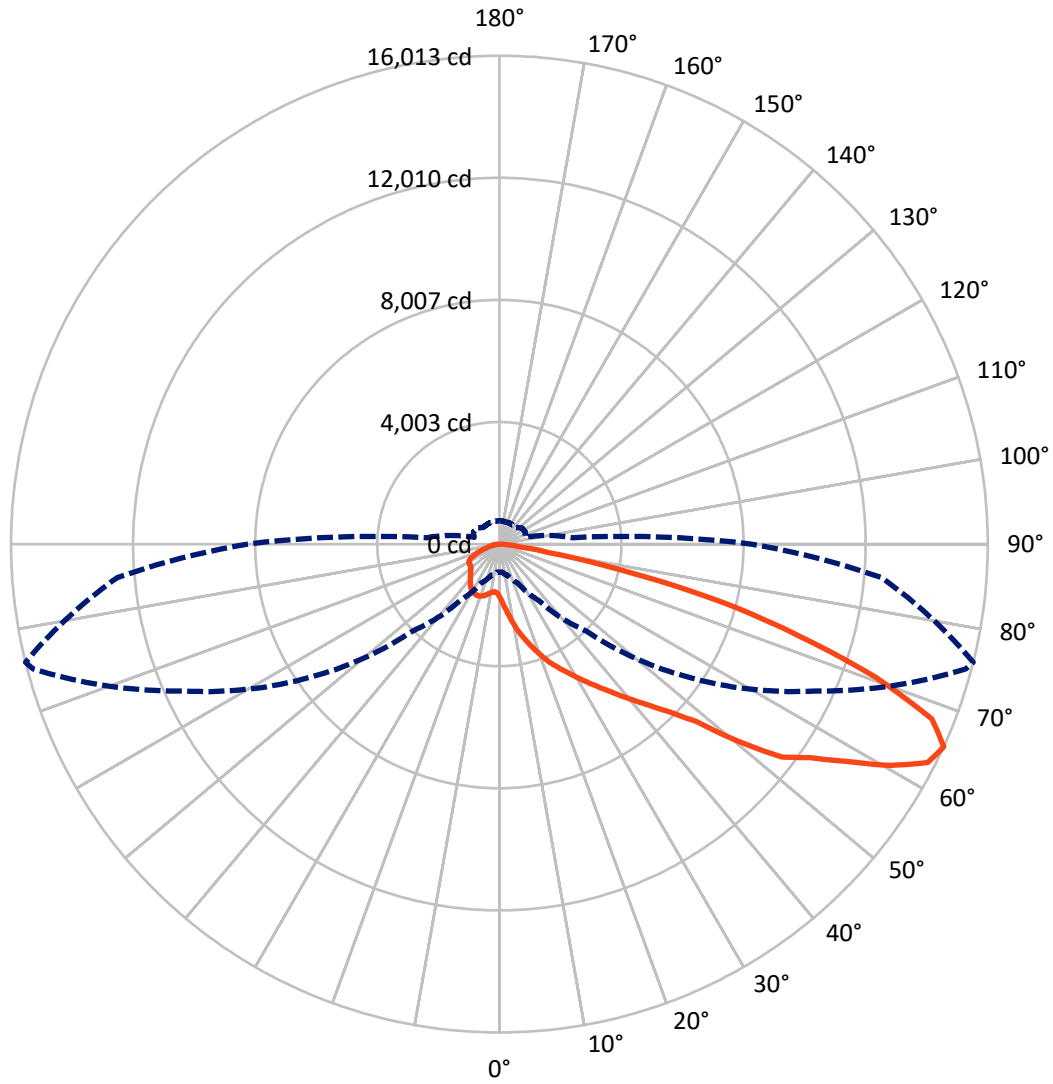
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 7.2 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 76-Deg Lateral    - - - Horizontal Cone Through 65-Deg Vertical

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CATALOG NUMBER: GWS-SA5B-760-U-T2R-W

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 3053.2   | 0.0    | 3053.2  |
|                    | % Fixture | 16.7     | 0.0    | 16.7    |
| <b>Street Side</b> | Lumens    | 15213.1  | 0.0    | 15213.1 |
|                    | % Fixture | 83.3     | 0.0    | 83.3    |
| <b>Total</b>       | Lumens    | 18266.3  | 0.0    | 18266.3 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 205.5   | 1.1       |
| 10°-20°   | 782.7   | 4.3       |
| 20°-30°   | 1525.5  | 8.4       |
| 30°-40°   | 2551.2  | 14.0      |
| 40°-50°   | 3652.9  | 20.0      |
| 50°-60°   | 4324.5  | 23.7      |
| 60°-70°   | 3595.8  | 19.7      |
| 70°-80°   | 1471.5  | 8.1       |
| 80°-90°   | 156.7   | 0.9       |
| 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°    | 18266.3 | 100.0     |
| 0°-180°   | 18266.3 | 100.0     |

**Coefficient of Utilization**



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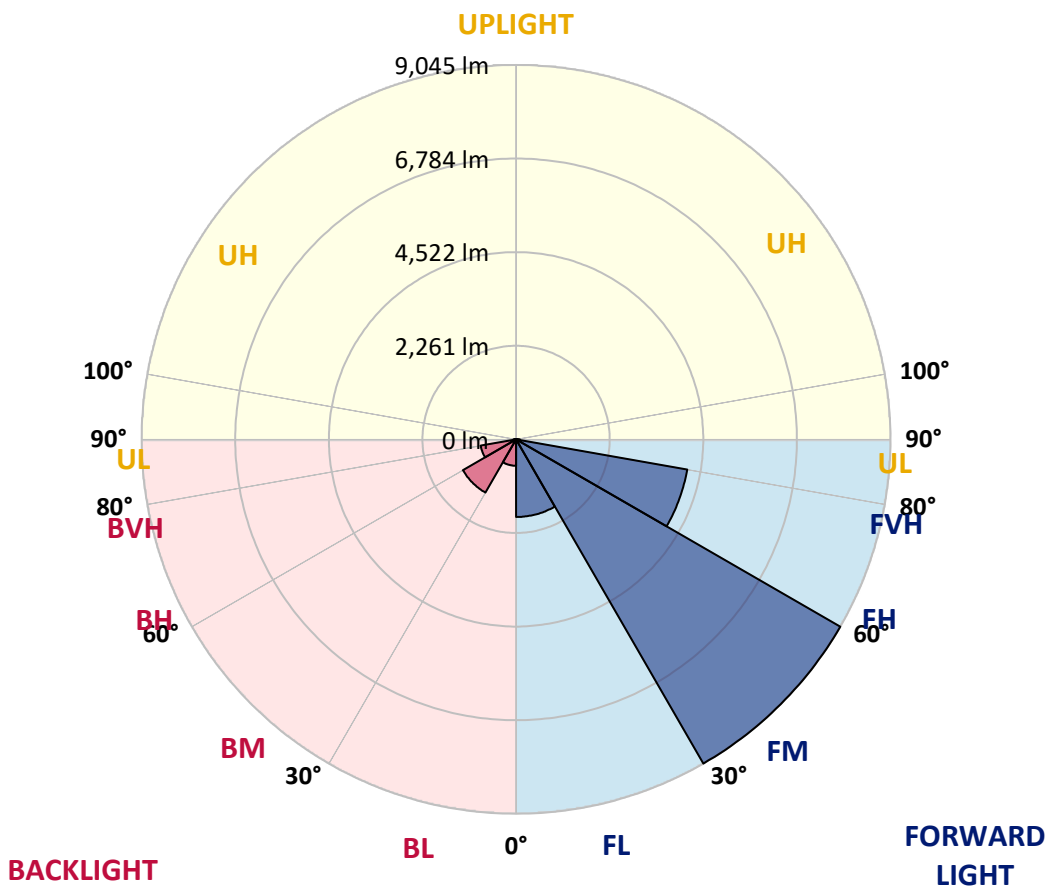
CATALOG NUMBER: GWS-SA5B-760-U-T2R-W

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1875.0 | 10.3      |                         |      |         |
| FM (30°-60°)   | 9044.8 | 49.5      |                         |      |         |
| FH (60°-80°)   | 4199.9 | 23.0      |                         |      | G2/5000 |
| FVH (80°-90°)  | 93.4   | 0.5       |                         |      | G1/100  |
| BL (0°-30°)    | 638.7  | 3.5       | B2/1000                 |      |         |
| BM (30°-60°)   | 1483.8 | 8.1       | B2/2500                 |      |         |
| BH (60°-80°)   | 867.5  | 4.7       | B2/1000                 |      | G2/1000 |
| BVH (80°-90°)  | 63.2   | 0.3       |                         |      | G1/100  |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G2**

Type II Short





REPORT NUMBER: P639375  
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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°     | 65°     | 75°     | 76°     | 85°     |
|-------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| 0°    | 1729.8 | 1729.8 | 1729.8 | 1729.8 | 1729.8 | 1729.8 | 1729.8  | 1729.8  | 1729.8  | 1729.8  | 1729.8  |
| 2.5°  | 2424.5 | 2433.5 | 2403.9 | 2393.7 | 2324.3 | 2230.6 | 2152.2  | 2034.1  | 1924.9  | 1908.2  | 1810.7  |
| 5°    | 3079.4 | 3040.9 | 3007.5 | 2985.7 | 2889.3 | 2782.8 | 2617.1  | 2394.9  | 2162.5  | 2134.3  | 1923.7  |
| 7.5°  | 3468.5 | 3462.1 | 3421.0 | 3408.1 | 3333.7 | 3227.1 | 3056.3  | 2780.2  | 2442.5  | 2396.2  | 2076.5  |
| 10°   | 3780.5 | 3776.7 | 3756.1 | 3767.7 | 3699.6 | 3595.6 | 3430.0  | 3144.9  | 2749.4  | 2703.1  | 2247.3  |
| 12.5° | 4052.8 | 4059.2 | 4055.3 | 4097.7 | 4063.1 | 3982.2 | 3810.1  | 3496.7  | 3056.3  | 3006.2  | 2455.3  |
| 15°   | 4251.8 | 4257.0 | 4276.2 | 4368.7 | 4387.9 | 4371.2 | 4196.6  | 3842.2  | 3359.3  | 3287.4  | 2669.7  |
| 17.5° | 4308.3 | 4318.6 | 4364.8 | 4513.8 | 4617.8 | 4687.2 | 4557.5  | 4194.0  | 3657.3  | 3578.9  | 2888.1  |
| 20°   | 4384.1 | 4395.6 | 4441.9 | 4597.3 | 4750.1 | 4908.0 | 4884.9  | 4551.0  | 3957.8  | 3893.5  | 3108.9  |
| 22.5° | 4734.7 | 4725.7 | 4705.1 | 4779.6 | 4888.8 | 5085.2 | 5143.0  | 4893.9  | 4268.5  | 4206.9  | 3352.9  |
| 25°   | 5410.1 | 5393.4 | 5262.4 | 5194.4 | 5158.4 | 5277.9 | 5380.6  | 5205.9  | 4571.6  | 4479.1  | 3580.2  |
| 27.5° | 6154.9 | 6145.9 | 5979.0 | 5817.2 | 5596.3 | 5545.0 | 5605.3  | 5478.2  | 4865.6  | 4771.9  | 3778.0  |
| 30°   | 6859.9 | 6833.0 | 6658.3 | 6455.4 | 6160.1 | 5939.2 | 5850.6  | 5745.3  | 5188.0  | 5090.4  | 4009.1  |
| 32.5° | 7490.5 | 7455.8 | 7250.3 | 7025.6 | 6716.1 | 6455.4 | 6190.9  | 6029.1  | 5552.7  | 5439.7  | 4245.4  |
| 35°   | 8008.0 | 7973.3 | 7762.7 | 7523.8 | 7183.5 | 6990.9 | 6628.8  | 6337.3  | 5923.8  | 5809.5  | 4524.1  |
| 37.5° | 8408.6 | 8376.5 | 8156.9 | 7921.9 | 7625.3 | 7472.5 | 7157.9  | 6684.0  | 6351.4  | 6232.0  | 4819.4  |
| 40°   | 8633.3 | 8610.2 | 8434.3 | 8248.1 | 7999.0 | 7866.7 | 7725.5  | 7121.9  | 6830.4  | 6711.0  | 5167.4  |
| 42.5° | 8701.4 | 8686.0 | 8562.7 | 8466.4 | 8298.2 | 8198.0 | 8278.9  | 7636.8  | 7341.5  | 7237.5  | 5559.1  |
| 45°   | 8530.6 | 8530.6 | 8494.7 | 8543.5 | 8551.2 | 8549.9 | 8833.7  | 8218.6  | 7969.4  | 7855.2  | 6111.3  |
| 47.5° | 8094.0 | 8122.3 | 8174.9 | 8415.0 | 8668.0 | 8879.9 | 9482.2  | 8994.2  | 8777.2  | 8683.4  | 6893.3  |
| 50°   | 7295.3 | 7372.3 | 7552.1 | 8020.8 | 8558.9 | 9098.2 | 10096.0 | 10140.9 | 10347.7 | 10182.0 | 8043.9  |
| 52.5° | 6125.4 | 6113.8 | 6572.3 | 7240.0 | 8060.6 | 9107.2 | 10433.7 | 11152.8 | 11708.9 | 11594.6 | 8899.2  |
| 55°   | 4868.2 | 4849.0 | 5276.6 | 6197.3 | 7296.5 | 8763.0 | 10636.6 | 11616.4 | 12464.0 | 12361.2 | 9668.4  |
| 57.5° | 3727.9 | 3703.5 | 4083.6 | 4914.4 | 6217.9 | 8032.4 | 10598.1 | 12168.6 | 13502.8 | 13450.2 | 10713.7 |
| 60°   | 2565.7 | 2536.2 | 2891.9 | 3618.7 | 4941.4 | 6915.2 | 10171.8 | 12452.4 | 14718.9 | 14736.9 | 11832.2 |
| 62.5° | 1541.0 | 1524.3 | 1782.4 | 2346.1 | 3554.5 | 5530.8 | 9174.0  | 12280.3 | 15687.2 | 15768.1 | 12551.3 |
| 65°   | 929.7  | 918.2  | 1069.7 | 1399.7 | 2255.0 | 4036.1 | 7635.6  | 11400.7 | 15827.2 | 16013.4 | 12568.0 |
| 67.5° | 676.7  | 678.0  | 721.7  | 852.7  | 1315.0 | 2606.8 | 5729.9  | 9823.8  | 15097.8 | 15290.4 | 11775.7 |
| 70°   | 588.1  | 590.7  | 613.8  | 643.4  | 794.9  | 1492.2 | 3725.3  | 7755.0  | 12941.7 | 13090.6 | 9876.4  |
| 72.5° | 522.6  | 522.6  | 538.1  | 553.5  | 621.5  | 909.2  | 1995.6  | 5420.4  | 10214.1 | 10253.9 | 7538.0  |
| 75°   | 459.7  | 455.9  | 463.6  | 471.3  | 539.3  | 635.7  | 970.8   | 3776.7  | 7544.4  | 7451.9  | 4872.1  |
| 77.5° | 366.0  | 362.1  | 363.4  | 371.1  | 432.8  | 454.6  | 491.8   | 2359.0  | 4251.8  | 4013.0  | 2152.2  |
| 80°   | 260.7  | 258.1  | 272.2  | 291.5  | 319.8  | 278.7  | 308.2   | 1141.6  | 1686.1  | 1569.2  | 834.7   |
| 82.5° | 155.4  | 160.5  | 182.3  | 197.8  | 220.9  | 174.6  | 199.0   | 381.4   | 597.1   | 581.7   | 339.0   |
| 85°   | 21.8   | 23.1   | 65.5   | 75.8   | 95.0   | 68.1   | 105.3   | 172.1   | 238.9   | 255.5   | 119.4   |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 9.0     | 30.8    | 68.1    | 69.3    | 29.5    |
| 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: P639375  
 CATALOG NUMBER: GWS-SA5B-760-U-T2R-W

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1729.8 | 1729.8 | 1729.8 | 1729.8 | 1729.8 | 1729.8 | 1729.8 | 1729.8 | 1729.8 | 1729.8 | 1729.8 |
| 2.5°  | 1760.6 | 1700.2 | 1614.2 | 1542.3 | 1481.9 | 1433.1 | 1392.0 | 1361.2 | 1352.2 | 1339.4 | 1339.4 |
| 5°    | 1824.8 | 1715.6 | 1561.5 | 1452.4 | 1389.5 | 1352.2 | 1326.5 | 1313.7 | 1307.3 | 1299.6 | 1295.7 |
| 7.5°  | 1913.4 | 1760.6 | 1552.5 | 1442.1 | 1393.3 | 1370.2 | 1353.5 | 1345.8 | 1340.7 | 1332.9 | 1332.9 |
| 10°   | 2035.4 | 1827.3 | 1580.8 | 1478.1 | 1439.5 | 1416.4 | 1397.2 | 1384.3 | 1372.8 | 1361.2 | 1358.6 |
| 12.5° | 2167.6 | 1914.7 | 1632.2 | 1526.9 | 1485.8 | 1457.5 | 1430.5 | 1411.3 | 1397.2 | 1383.0 | 1379.2 |
| 15°   | 2314.0 | 2004.6 | 1687.4 | 1574.4 | 1523.0 | 1484.5 | 1452.4 | 1422.8 | 1403.6 | 1383.0 | 1380.5 |
| 17.5° | 2457.9 | 2095.7 | 1733.6 | 1606.5 | 1541.0 | 1493.5 | 1447.2 | 1408.7 | 1384.3 | 1361.2 | 1354.8 |
| 20°   | 2629.9 | 2186.9 | 1765.7 | 1615.5 | 1537.1 | 1474.2 | 1419.0 | 1370.2 | 1343.2 | 1316.3 | 1312.4 |
| 22.5° | 2787.9 | 2271.7 | 1781.1 | 1602.6 | 1507.6 | 1433.1 | 1368.9 | 1316.3 | 1286.7 | 1259.8 | 1254.6 |
| 25°   | 2940.7 | 2346.1 | 1774.7 | 1571.8 | 1462.6 | 1376.6 | 1309.8 | 1257.2 | 1228.9 | 1200.7 | 1193.0 |
| 27.5° | 3088.4 | 2396.2 | 1749.0 | 1524.3 | 1406.1 | 1313.7 | 1249.5 | 1202.0 | 1177.6 | 1153.2 | 1142.9 |
| 30°   | 3233.5 | 2442.5 | 1709.2 | 1462.6 | 1334.2 | 1248.2 | 1195.5 | 1162.2 | 1137.8 | 1112.1 | 1104.4 |
| 32.5° | 3379.9 | 2475.8 | 1648.8 | 1390.7 | 1261.0 | 1190.4 | 1158.3 | 1133.9 | 1108.2 | 1082.5 | 1074.8 |
| 35°   | 3527.6 | 2490.0 | 1575.7 | 1308.5 | 1199.4 | 1153.2 | 1141.6 | 1113.4 | 1078.7 | 1047.9 | 1037.6 |
| 37.5° | 3703.5 | 2502.8 | 1484.5 | 1227.6 | 1145.5 | 1135.2 | 1132.6 | 1090.2 | 1049.2 | 1006.8 | 995.2  |
| 40°   | 3915.4 | 2519.5 | 1390.7 | 1154.5 | 1101.8 | 1128.8 | 1118.5 | 1060.7 | 978.5  | 937.4  | 924.6  |
| 42.5° | 4174.8 | 2550.3 | 1293.1 | 1087.7 | 1069.7 | 1104.4 | 1092.8 | 988.8  | 933.6  | 910.5  | 904.0  |
| 45°   | 4556.2 | 2663.3 | 1195.5 | 1035.0 | 1045.3 | 1069.7 | 1051.7 | 946.4  | 924.6  | 909.2  | 901.5  |
| 47.5° | 5235.5 | 2836.7 | 1110.8 | 995.2  | 1026.0 | 1038.9 | 969.5  | 934.9  | 918.2  | 897.6  | 888.6  |
| 50°   | 5941.8 | 2912.5 | 1042.7 | 970.8  | 1004.2 | 1010.6 | 924.6  | 919.5  | 907.9  | 886.1  | 877.1  |
| 52.5° | 6419.5 | 2902.2 | 1001.6 | 961.8  | 986.2  | 961.8  | 904.0  | 902.8  | 895.1  | 869.4  | 859.1  |
| 55°   | 6958.8 | 2920.2 | 983.7  | 964.4  | 978.5  | 879.6  | 878.4  | 882.2  | 878.4  | 850.1  | 845.0  |
| 57.5° | 7686.9 | 2975.4 | 974.7  | 973.4  | 973.4  | 839.8  | 854.0  | 859.1  | 851.4  | 838.6  | 834.7  |
| 60°   | 8386.8 | 2979.2 | 958.0  | 983.7  | 969.5  | 815.4  | 825.7  | 830.8  | 821.9  | 819.3  | 818.0  |
| 62.5° | 8650.0 | 2794.3 | 920.7  | 976.0  | 954.1  | 788.5  | 796.2  | 798.7  | 789.8  | 796.2  | 794.9  |
| 65°   | 8258.4 | 2401.4 | 859.1  | 938.7  | 906.6  | 764.1  | 758.9  | 765.4  | 749.9  | 766.6  | 767.9  |
| 67.5° | 7332.5 | 1908.2 | 765.4  | 868.1  | 839.8  | 737.1  | 726.8  | 726.8  | 701.1  | 726.8  | 725.5  |
| 70°   | 5912.2 | 1348.4 | 627.9  | 755.1  | 766.6  | 705.0  | 699.9  | 670.3  | 629.2  | 667.8  | 663.9  |
| 72.5° | 4481.7 | 968.2  | 494.4  | 597.1  | 660.1  | 660.1  | 661.3  | 611.3  | 563.7  | 581.7  | 566.3  |
| 75°   | 2839.3 | 681.9  | 395.5  | 457.2  | 517.5  | 579.2  | 608.7  | 516.2  | 473.9  | 466.1  | 458.4  |
| 77.5° | 1279.0 | 448.2  | 308.2  | 350.6  | 367.3  | 457.2  | 556.0  | 444.3  | 386.5  | 369.8  | 364.7  |
| 80°   | 535.5  | 278.7  | 219.6  | 247.8  | 226.0  | 384.0  | 490.5  | 345.4  | 283.8  | 260.7  | 244.0  |
| 82.5° | 235.0  | 165.7  | 140.0  | 133.6  | 141.3  | 285.1  | 366.0  | 229.9  | 177.2  | 240.1  | 242.7  |
| 85°   | 98.9   | 87.3   | 71.9   | 65.5   | 57.8   | 109.2  | 172.1  | 89.9   | 110.4  | 62.9   | 51.4   |
| 87.5° | 23.1   | 25.7   | 19.3   | 12.8   | 7.7    | 1.3    | 0.0    | 0.0    | 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: SP1-1908-441-9-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

|           |      |      |       |
|-----------|------|------|-------|
| 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 |      |       |

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**



#####

| 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

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)