

Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P321030

Luminaire Tested: **GLEON-SA6A-760-U-AFL**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321030  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-29)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA6A-760-U-AFL  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(6) 70 CRI, 5700K, 615mA LIGHTSQUARES WITH 16 LEDS EACH AND AUTOMOTIVE  
FRONTLINE OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 28594 lumens  
Efficiency: N/A  
Efficacy: 148.2 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B3 - U0 - G3

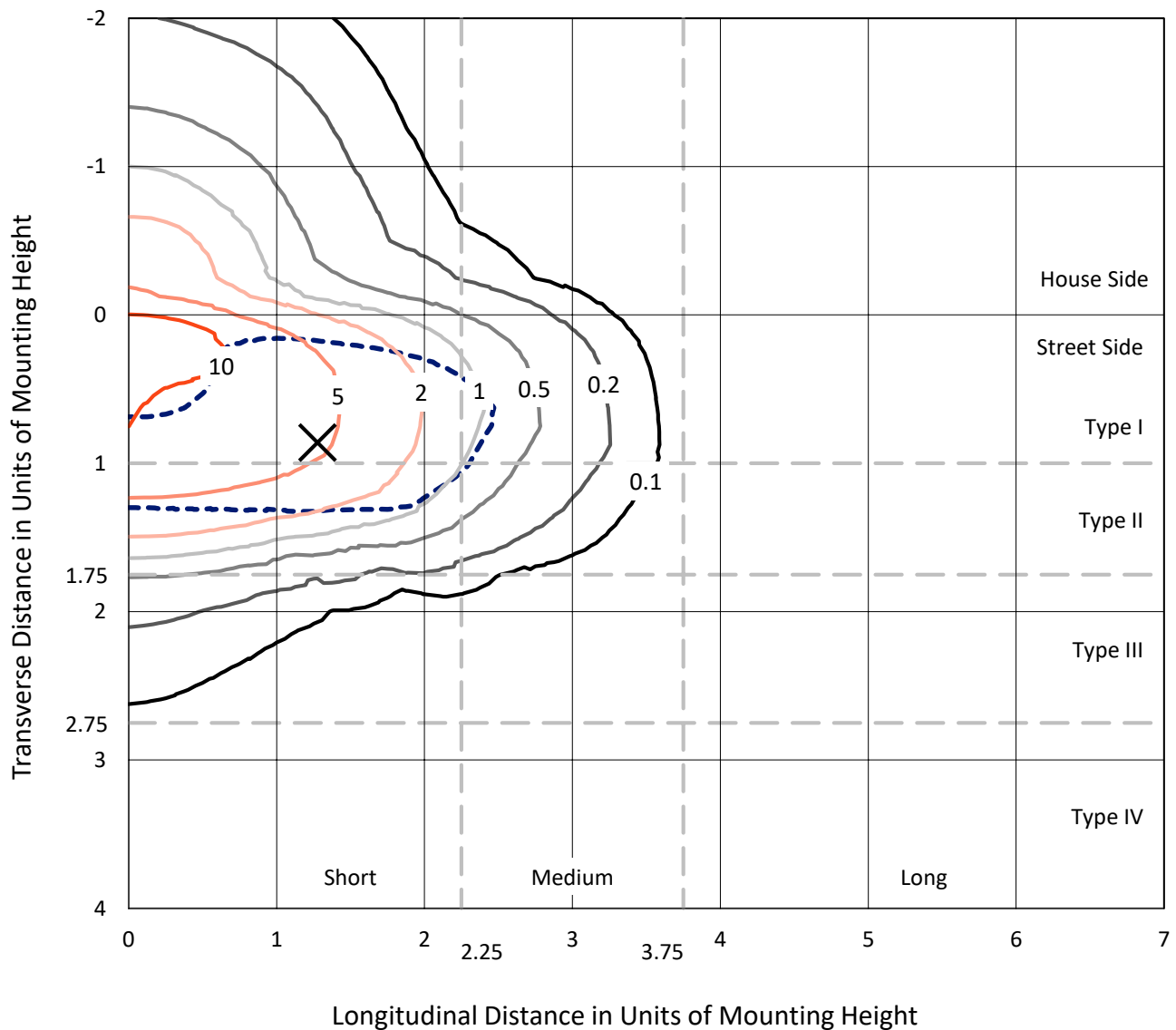
Input Watts (W): 193  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P321030  
 CATALOG NUMBER: GLEON-SA6A-760-U-AFL

## Iso-Footcandle Lines of Horizontal Illumination

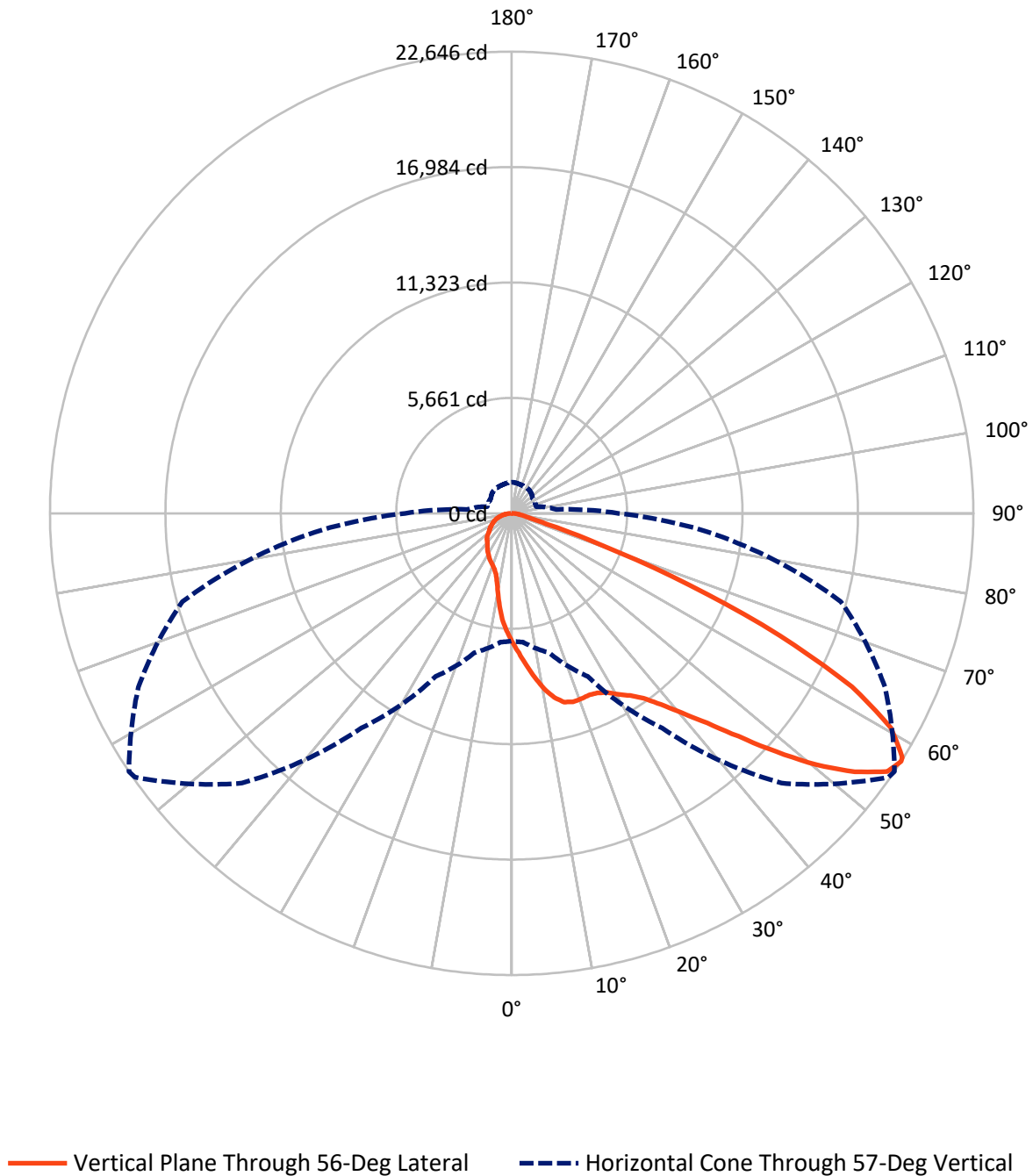
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 14.1 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GLEON-SA6A-760-U-AFL

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 4929.0   | 0.0    | 4929.0  |
|                    | % Fixture | 17.2     | 0.0    | 17.2    |
| <b>Street Side</b> | Lumens    | 23665.0  | 0.0    | 23665.0 |
|                    | % Fixture | 82.8     | 0.0    | 82.8    |
| <b>Total</b>       | Lumens    | 28594.0  | 0.0    | 28594.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 605.8   | 2.1       |
| 10°-20°   | 1712.8  | 6.0       |
| 20°-30°   | 2789.9  | 9.8       |
| 30°-40°   | 4170.6  | 14.6      |
| 40°-50°   | 6325.9  | 22.1      |
| 50°-60°   | 7090.2  | 24.8      |
| 60°-70°   | 4187.7  | 14.6      |
| 70°-80°   | 1372.1  | 4.8       |
| 80°-90°   | 339.0   | 1.2       |
| 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°    | 28594.0 | 100.0     |
| 0°-180°   | 28594.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P321030

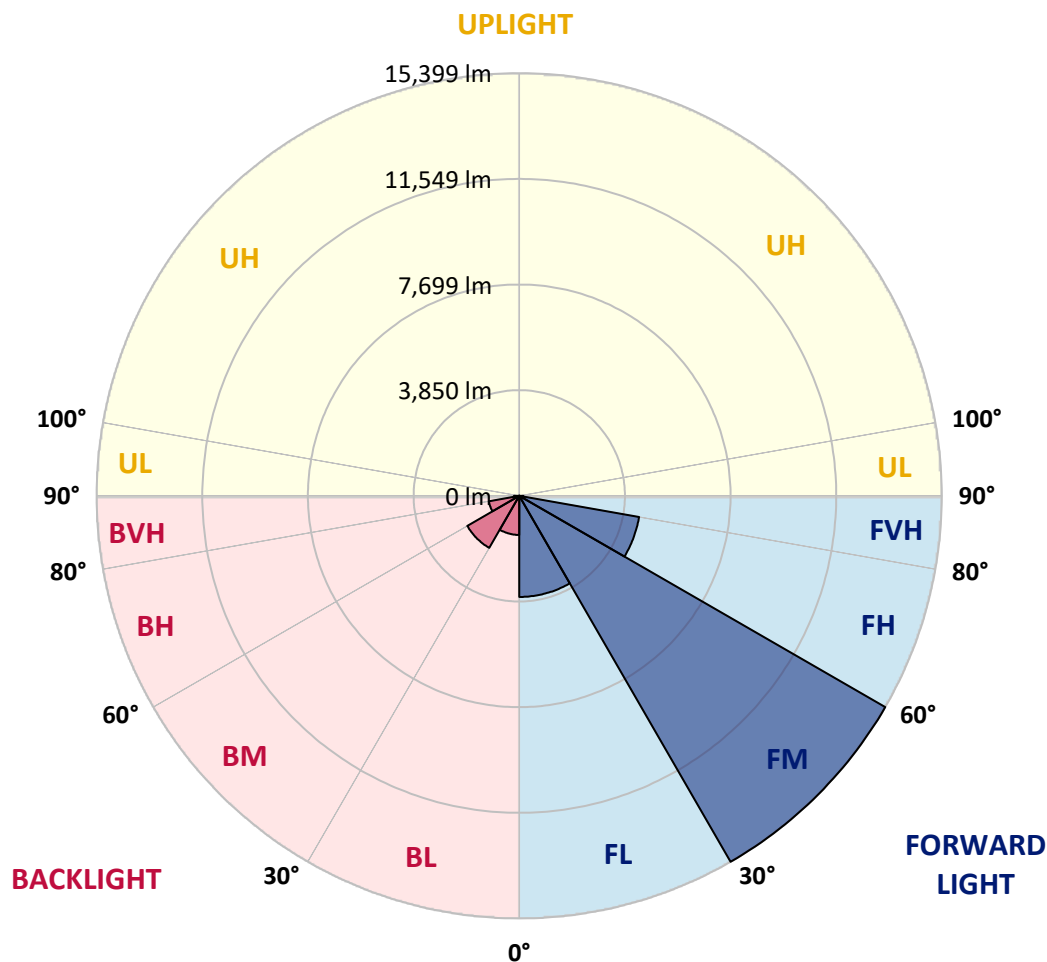
CATALOG NUMBER: GLEON-SA6A-760-U-AFL

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 3683.3  | 12.9      |                         |      |         |
| FM   | (30°-60°)   | 15398.8 | 53.9      |                         |      |         |
| FH   | (60°-80°)   | 4433.6  | 15.5      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 149.3   | 0.5       |                         |      | G2/225  |
| BL   | (0°-30°)    | 1425.2  | 5.0       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 2187.8  | 7.7       | B2/2500                 |      |         |
| BH   | (60°-80°)   | 1126.2  | 3.9       | B3/2500                 |      | G3/2500 |
| BVH  | (80°-90°)   | 189.7   | 0.7       |                         |      | G2/225  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

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

Type II Short



REPORT NUMBER: P321030

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 56°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 6342.2  | 6342.2  | 6342.2  | 6342.2  | 6342.2  | 6342.2  | 6342.2  | 6342.2  | 6342.2  | 6342.2  | 6342.2 |
| 2.5°  | 7282.6  | 7349.4  | 7319.9  | 7217.7  | 7139.1  | 7028.1  | 6904.3  | 6866.9  | 6736.2  | 6589.8  | 6413.9 |
| 5°    | 8435.3  | 8401.9  | 8353.7  | 8194.5  | 8026.5  | 7830.9  | 7520.4  | 7471.3  | 7180.4  | 6849.2  | 6499.4 |
| 7.5°  | 9091.7  | 9088.7  | 9060.3  | 8966.9  | 8813.6  | 8558.1  | 8183.7  | 8125.7  | 7686.5  | 7153.9  | 6611.4 |
| 10°   | 8996.4  | 8989.5  | 9036.7  | 9134.0  | 9180.1  | 9127.1  | 8811.6  | 8753.7  | 8214.2  | 7490.9  | 6741.1 |
| 12.5° | 8454.9  | 8458.9  | 8534.5  | 8738.9  | 9017.0  | 9351.1  | 9300.0  | 9271.5  | 8761.5  | 7872.2  | 6898.4 |
| 15°   | 8033.4  | 8042.2  | 8102.1  | 8280.0  | 8608.2  | 9214.5  | 9596.8  | 9606.6  | 9291.2  | 8292.8  | 7082.1 |
| 17.5° | 7848.6  | 7867.3  | 7894.8  | 8019.6  | 8320.3  | 8942.3  | 9667.5  | 9720.6  | 9755.0  | 8729.1  | 7259.0 |
| 20°   | 7907.6  | 7925.3  | 7933.1  | 8012.7  | 8259.4  | 8777.2  | 9618.4  | 9713.7  | 10110.7 | 9139.8  | 7435.9 |
| 22.5° | 8171.9  | 8182.7  | 8187.6  | 8208.3  | 8399.9  | 8824.4  | 9586.0  | 9686.2  | 10368.2 | 9508.3  | 7569.5 |
| 25°   | 8610.2  | 8602.3  | 8570.9  | 8544.3  | 8673.1  | 9011.1  | 9660.7  | 9756.0  | 10577.5 | 9842.5  | 7657.0 |
| 27.5° | 9134.9  | 9125.1  | 9064.2  | 8991.5  | 9065.2  | 9302.0  | 9875.9  | 9951.5  | 10765.2 | 10154.9 | 7701.2 |
| 30°   | 9764.8  | 9739.3  | 9624.3  | 9537.8  | 9566.3  | 9738.3  | 10230.6 | 10299.4 | 11055.1 | 10509.7 | 7744.5 |
| 32.5° | 10493.0 | 10465.5 | 10299.4 | 10155.9 | 10155.9 | 10299.4 | 10596.2 | 10653.2 | 11300.7 | 10910.6 | 7814.2 |
| 35°   | 11404.9 | 11370.5 | 11154.3 | 10913.6 | 10845.8 | 10918.5 | 11094.4 | 11134.7 | 11742.9 | 11415.7 | 7941.0 |
| 37.5° | 12480.0 | 12433.8 | 12153.7 | 11831.4 | 11683.0 | 11679.1 | 11805.8 | 11888.4 | 12449.5 | 12079.0 | 8156.2 |
| 40°   | 13557.9 | 13525.5 | 13280.8 | 13027.3 | 12736.4 | 12643.1 | 12838.6 | 12864.2 | 13373.2 | 12902.5 | 8431.3 |
| 42.5° | 14391.3 | 14385.4 | 14340.2 | 14373.6 | 14075.8 | 13887.1 | 14040.4 | 14061.1 | 14501.3 | 13793.8 | 8724.2 |
| 45°   | 14831.5 | 14841.3 | 15060.5 | 15545.9 | 15656.0 | 15518.4 | 15594.0 | 15599.9 | 15790.6 | 14692.9 | 8992.4 |
| 47.5° | 14478.7 | 14529.8 | 15084.0 | 16169.9 | 17071.0 | 17527.9 | 17402.2 | 17474.9 | 17040.5 | 15465.3 | 9202.7 |
| 50°   | 13104.0 | 13166.8 | 14110.2 | 15891.8 | 17731.4 | 19472.7 | 19406.8 | 19390.1 | 18048.8 | 16031.3 | 9316.7 |
| 52.5° | 11401.0 | 11450.1 | 12228.4 | 14446.3 | 17246.9 | 20547.7 | 21152.0 | 21065.6 | 18945.0 | 16454.9 | 9338.3 |
| 55°   | 8807.7  | 8884.4  | 9630.2  | 11561.2 | 15287.5 | 20136.9 | 22435.4 | 22357.8 | 19761.6 | 16677.0 | 9312.8 |
| 57°   | 6261.6  | 6342.2  | 7083.1  | 8823.4  | 12860.2 | 18715.0 | 22563.2 | 22645.7 | 20202.8 | 16714.3 | 9341.3 |
| 57.5° | 5587.5  | 5670.0  | 6404.1  | 8094.3  | 12103.6 | 18201.1 | 22453.1 | 22590.7 | 20282.4 | 16708.4 | 9357.0 |
| 60°   | 2813.4  | 2844.8  | 3312.6  | 4518.3  | 7651.1  | 14714.6 | 21017.4 | 21372.2 | 20354.1 | 16419.5 | 9424.8 |
| 62.5° | 1749.2  | 1726.6  | 1711.8  | 2081.3  | 3722.4  | 9757.9  | 18054.7 | 18737.6 | 18981.3 | 15719.8 | 9260.7 |
| 65°   | 1537.9  | 1495.6  | 1333.5  | 1304.0  | 1644.0  | 4739.4  | 13596.3 | 14446.3 | 16048.0 | 14617.3 | 8869.6 |
| 67.5° | 1444.5  | 1403.3  | 1220.5  | 1110.4  | 1111.4  | 1878.9  | 8441.2  | 9398.3  | 12501.6 | 12753.1 | 7946.9 |
| 70°   | 1348.2  | 1310.9  | 1139.9  | 1010.2  | 946.3   | 1040.7  | 3883.5  | 4609.7  | 8149.3  | 10024.3 | 6641.9 |
| 72.5° | 1224.4  | 1198.9  | 1036.7  | 903.1   | 835.3   | 779.3   | 1486.8  | 1756.0  | 4717.8  | 6732.3  | 4612.7 |
| 75°   | 1094.7  | 1071.1  | 932.6   | 804.8   | 722.3   | 613.2   | 837.2   | 902.1   | 2396.7  | 3444.3  | 2271.0 |
| 77.5° | 952.2   | 938.5   | 829.4   | 711.5   | 645.6   | 508.0   | 592.6   | 624.0   | 1027.9  | 1477.0  | 1138.9 |
| 80°   | 757.6   | 784.2   | 725.2   | 633.8   | 572.9   | 406.8   | 419.6   | 440.2   | 598.4   | 721.3   | 646.6  |
| 82.5° | 493.3   | 539.5   | 568.0   | 514.9   | 471.7   | 320.4   | 301.7   | 310.5   | 390.1   | 440.2   | 281.0  |
| 85°   | 205.4   | 230.9   | 373.4   | 337.1   | 313.5   | 233.9   | 202.4   | 206.4   | 241.7   | 250.6   | 115.0  |
| 87.5° | 91.4    | 97.3    | 164.1   | 154.3   | 132.7   | 80.6    | 86.5    | 94.3    | 128.7   | 121.9   | 44.2   |
| 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: P321030

CATALOG NUMBER: GLEON-SA6A-760-U-AFL

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 6342.2 | 6342.2 | 6342.2 | 6342.2 | 6342.2 | 6342.2 | 6342.2 | 6342.2 | 6342.2 | 6342.2 | 6342.2 |
| 2.5°  | 6348.1 | 6265.5 | 6124.0 | 5967.8 | 5840.0 | 5737.8 | 5634.7 | 5563.9 | 5481.4 | 5437.1 | 5414.5 |
| 5°    | 6353.0 | 6190.8 | 5893.1 | 5587.5 | 5314.3 | 5064.7 | 4826.9 | 4644.1 | 4473.1 | 4380.8 | 4355.2 |
| 7.5°  | 6373.6 | 6129.9 | 5648.4 | 5145.3 | 4659.8 | 4216.7 | 3874.7 | 3660.5 | 3506.2 | 3437.4 | 3417.7 |
| 10°   | 6390.3 | 6058.2 | 5345.7 | 4600.9 | 3940.5 | 3491.4 | 3226.1 | 3106.2 | 3053.2 | 3044.3 | 3035.5 |
| 12.5° | 6429.6 | 5984.5 | 5027.4 | 4032.9 | 3381.4 | 3070.9 | 2978.5 | 2970.6 | 2985.4 | 3007.0 | 3007.0 |
| 15°   | 6491.5 | 5911.8 | 4663.8 | 3545.5 | 3025.7 | 2916.6 | 2935.2 | 2978.5 | 3018.8 | 3052.2 | 3057.1 |
| 17.5° | 6536.7 | 5822.3 | 4272.7 | 3155.4 | 2836.0 | 2865.5 | 2932.3 | 2993.2 | 3034.5 | 3066.9 | 3069.9 |
| 20°   | 6569.2 | 5683.8 | 3855.0 | 2857.6 | 2726.9 | 2818.3 | 2901.8 | 2955.9 | 2984.4 | 3016.8 | 3021.7 |
| 22.5° | 6552.5 | 5498.1 | 3484.6 | 2644.4 | 2638.5 | 2749.5 | 2829.1 | 2894.0 | 2872.4 | 2840.9 | 2861.5 |
| 25°   | 6471.9 | 5242.6 | 3103.3 | 2485.2 | 2545.1 | 2657.1 | 2755.4 | 2712.2 | 2639.5 | 2625.7 | 2633.6 |
| 27.5° | 6328.4 | 4916.3 | 2750.5 | 2337.8 | 2437.0 | 2571.7 | 2565.8 | 2522.5 | 2497.0 | 2479.3 | 2490.1 |
| 30°   | 6174.1 | 4562.6 | 2441.9 | 2209.1 | 2317.1 | 2428.2 | 2405.6 | 2404.6 | 2379.1 | 2350.6 | 2364.3 |
| 32.5° | 6021.8 | 4206.8 | 2197.3 | 2102.9 | 2226.7 | 2241.5 | 2290.6 | 2305.4 | 2255.2 | 2195.3 | 2191.4 |
| 35°   | 5889.2 | 3870.8 | 2011.5 | 2006.6 | 2117.7 | 2119.6 | 2191.4 | 2170.7 | 2045.9 | 1984.0 | 1984.0 |
| 37.5° | 5789.9 | 3535.7 | 1870.0 | 1920.1 | 1974.2 | 2025.3 | 2061.6 | 1976.2 | 1955.5 | 1921.1 | 1920.1 |
| 40°   | 5746.7 | 3240.9 | 1781.6 | 1854.3 | 1873.0 | 1937.8 | 1844.5 | 1877.9 | 1887.7 | 1870.0 | 1870.0 |
| 42.5° | 5701.5 | 2984.4 | 1704.9 | 1804.2 | 1801.2 | 1792.4 | 1745.2 | 1788.5 | 1827.8 | 1828.8 | 1825.8 |
| 45°   | 5656.3 | 2763.3 | 1637.1 | 1697.1 | 1738.3 | 1643.0 | 1651.9 | 1698.1 | 1753.1 | 1772.7 | 1772.7 |
| 47.5° | 5606.2 | 2588.4 | 1575.2 | 1584.1 | 1647.9 | 1584.1 | 1577.2 | 1612.6 | 1677.4 | 1708.9 | 1715.7 |
| 50°   | 5496.1 | 2431.1 | 1504.5 | 1484.8 | 1502.5 | 1524.1 | 1530.0 | 1546.7 | 1618.5 | 1668.6 | 1680.4 |
| 52.5° | 5343.8 | 2290.6 | 1414.1 | 1393.4 | 1393.4 | 1475.0 | 1502.5 | 1507.4 | 1568.3 | 1628.3 | 1640.1 |
| 55°   | 5217.0 | 2201.2 | 1320.7 | 1316.8 | 1312.9 | 1422.9 | 1470.1 | 1477.9 | 1520.2 | 1567.4 | 1573.3 |
| 57°   | 5225.9 | 2194.3 | 1249.0 | 1252.9 | 1251.9 | 1369.8 | 1439.6 | 1456.3 | 1477.9 | 1518.2 | 1525.1 |
| 57.5° | 5230.8 | 2199.2 | 1233.3 | 1235.2 | 1234.2 | 1355.1 | 1430.8 | 1449.4 | 1466.1 | 1508.4 | 1515.3 |
| 60°   | 5304.5 | 2212.0 | 1169.4 | 1147.8 | 1152.7 | 1276.5 | 1380.7 | 1404.2 | 1415.0 | 1471.1 | 1479.9 |
| 62.5° | 5195.4 | 2155.0 | 1118.3 | 1066.2 | 1066.2 | 1193.9 | 1310.9 | 1348.2 | 1364.9 | 1440.6 | 1455.3 |
| 65°   | 4879.0 | 1994.8 | 1058.3 | 973.8  | 983.7  | 1111.4 | 1227.4 | 1288.3 | 1313.8 | 1408.2 | 1423.9 |
| 67.5° | 4390.6 | 1809.1 | 994.5  | 891.3  | 901.1  | 1024.9 | 1140.9 | 1206.7 | 1247.0 | 1372.8 | 1385.6 |
| 70°   | 3754.8 | 1582.1 | 908.0  | 803.8  | 815.6  | 930.6  | 1038.7 | 1113.4 | 1173.3 | 1339.4 | 1343.3 |
| 72.5° | 2768.2 | 1297.1 | 787.1  | 707.5  | 720.3  | 820.5  | 935.5  | 1022.0 | 1102.6 | 1255.9 | 1253.9 |
| 75°   | 1646.0 | 1014.1 | 653.5  | 610.2  | 619.1  | 712.4  | 842.2  | 947.3  | 1068.2 | 1223.4 | 1242.1 |
| 77.5° | 998.4  | 763.5  | 532.6  | 511.0  | 521.8  | 617.1  | 775.3  | 887.4  | 1053.4 | 1153.7 | 1147.8 |
| 80°   | 603.4  | 545.4  | 425.5  | 411.7  | 422.5  | 527.7  | 717.4  | 842.2  | 920.8  | 985.6  | 985.6  |
| 82.5° | 315.4  | 333.1  | 312.5  | 301.7  | 316.4  | 428.4  | 652.5  | 735.0  | 813.7  | 698.7  | 652.5  |
| 85°   | 128.7  | 173.9  | 189.7  | 188.7  | 197.5  | 296.8  | 563.1  | 628.9  | 524.7  | 498.2  | 510.0  |
| 87.5° | 43.2   | 73.7   | 92.4   | 79.6   | 83.5   | 186.7  | 390.1  | 303.6  | 360.6  | 251.6  | 238.8  |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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:  $4\pi$   
 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 |      |       |
| CIE u':                   | 0.2052 | R1:       | 70.6 | R9:  | -27.1 |
| CIE v':                   | 0.4804 | R2:       | 74.6 | R10: | 40.8  |
| Duv:                      | 0.0025 | R3:       | 78.3 | R11: | 74.6  |
| CIE x:                    | 0.3330 | R4:       | 73.8 | R12: | 50.4  |
| CIE y:                    | 0.3466 | R5:       | 72.4 | R13: | 70.0  |
| CIE z:                    | 0.3204 | R6:       | 67.5 | R14: | 87.8  |
| 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**



#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(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<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(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<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(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)