

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: P321869

Luminaire Tested: **GLEON-SA5A-730-U-T2-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321869  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-13)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA5A-730-U-T2-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(5) 70 CRI, 3000K, 615mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II  
OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15089 lumens  
Efficiency: N/A  
Efficacy: 93.1 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B1 - U0 - G3

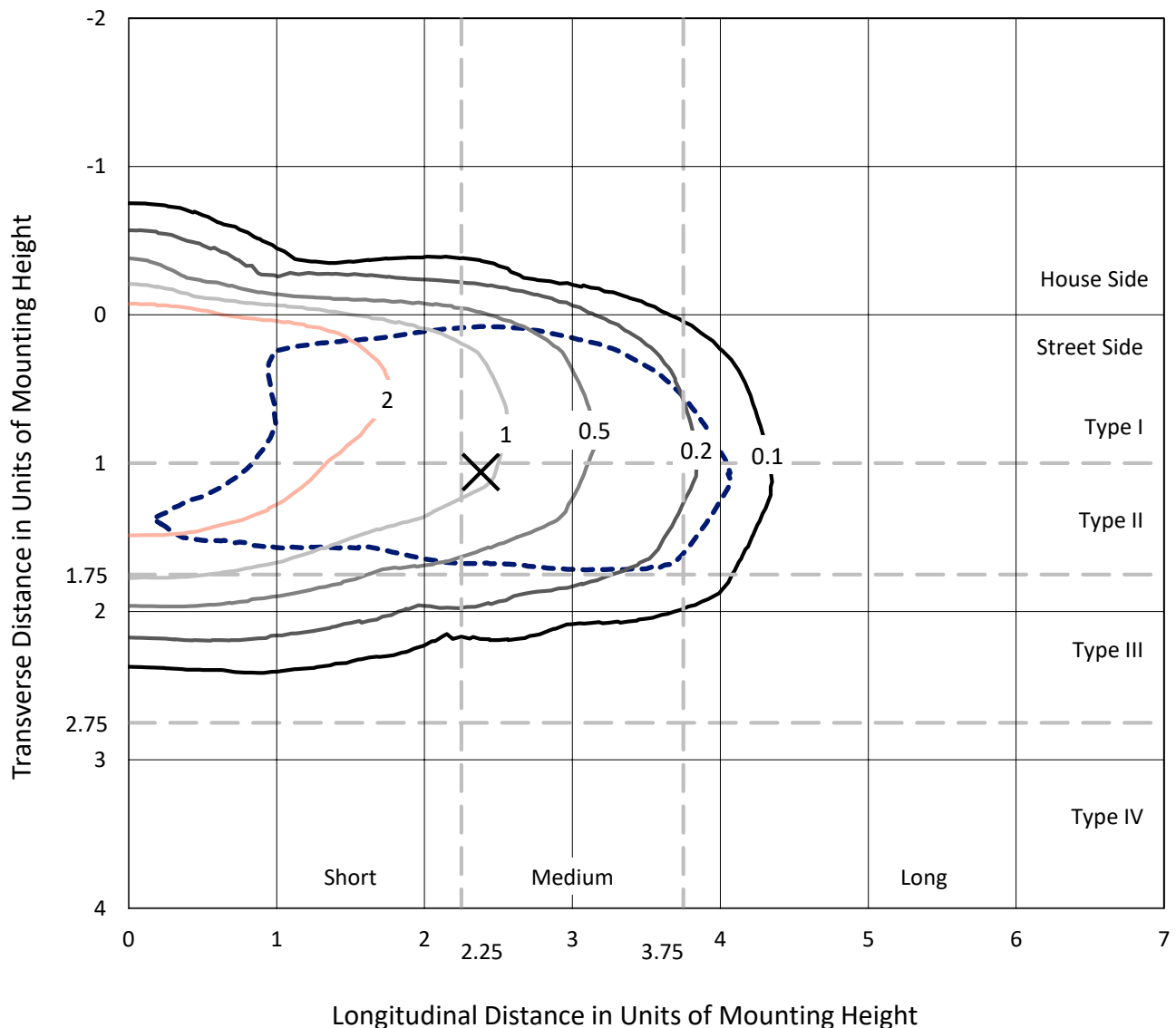
Input Watts (W): 162  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P321869  
 CATALOG NUMBER: GLEON-SA5A-730-U-T2-HSS

## Iso-Footcandle Lines of Horizontal Illumination

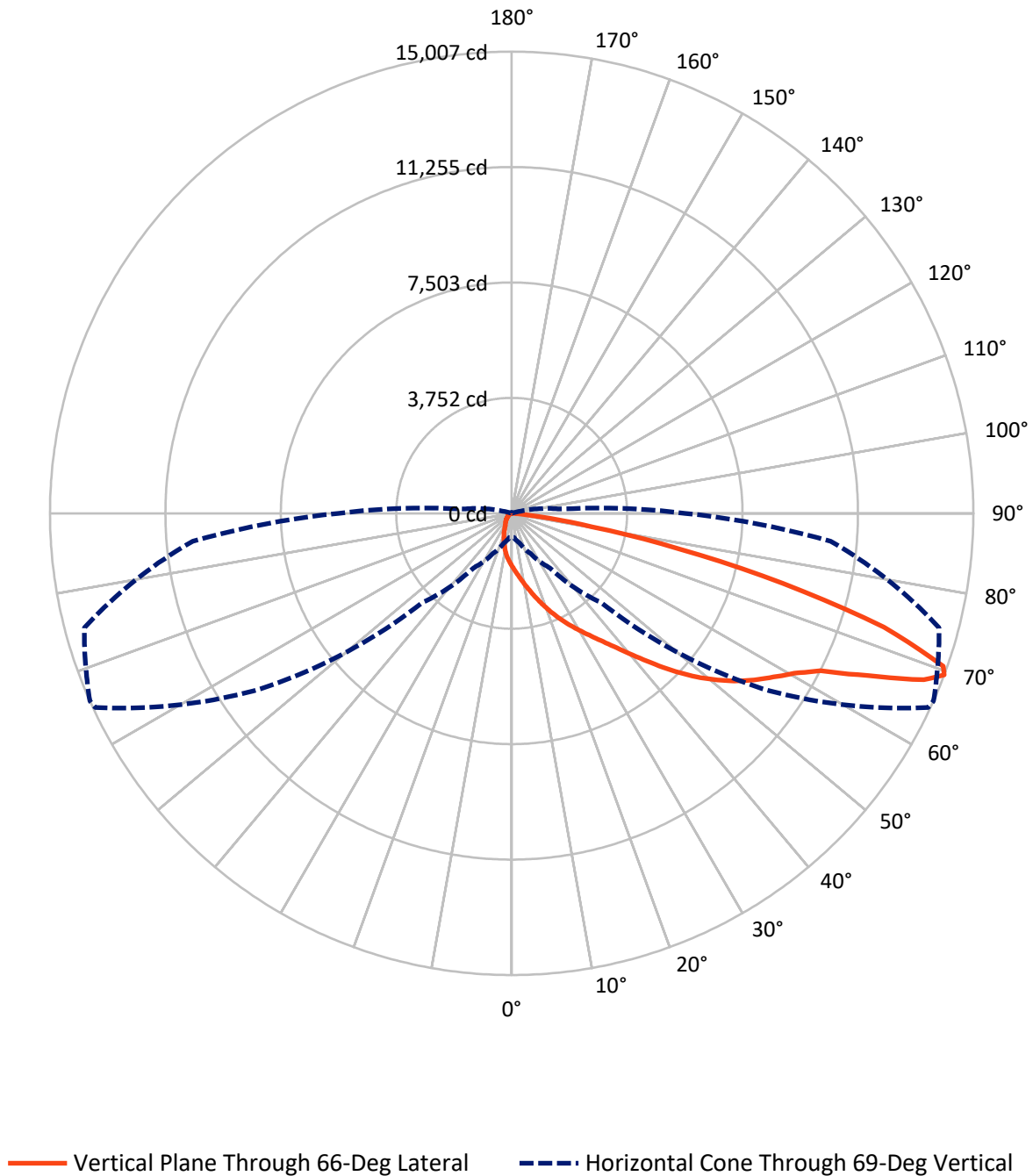
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 4.5 fc  
 Type II - Medium - N/A

REPORT NUMBER: P321869  
CATALOG NUMBER: GLEON-SA5A-730-U-T2-HSS

## Luminous Intensity Polar Plot



REPORT NUMBER: P321869

CATALOG NUMBER: GLEON-SA5A-730-U-T2-HSS

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 905.1    | 0.0    | 905.1   |
|                    | % Fixture | 6.0      | 0.0    | 6.0     |
| <b>Street Side</b> | Lumens    | 14183.9  | 0.0    | 14183.9 |
|                    | % Fixture | 94.0     | 0.0    | 94.0    |
| <b>Total</b>       | Lumens    | 15089.0  | 0.0    | 15089.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 166.0   | 1.1       |
| 10°-20°   | 494.0   | 3.3       |
| 20°-30°   | 860.3   | 5.7       |
| 30°-40°   | 1509.3  | 10.0      |
| 40°-50°   | 2526.4  | 16.7      |
| 50°-60°   | 3713.5  | 24.6      |
| 60°-70°   | 3812.8  | 25.3      |
| 70°-80°   | 1882.3  | 12.5      |
| 80°-90°   | 124.5   | 0.8       |
| 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°    | 15089.0 | 100.0     |
| 0°-180°   | 15089.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P321869

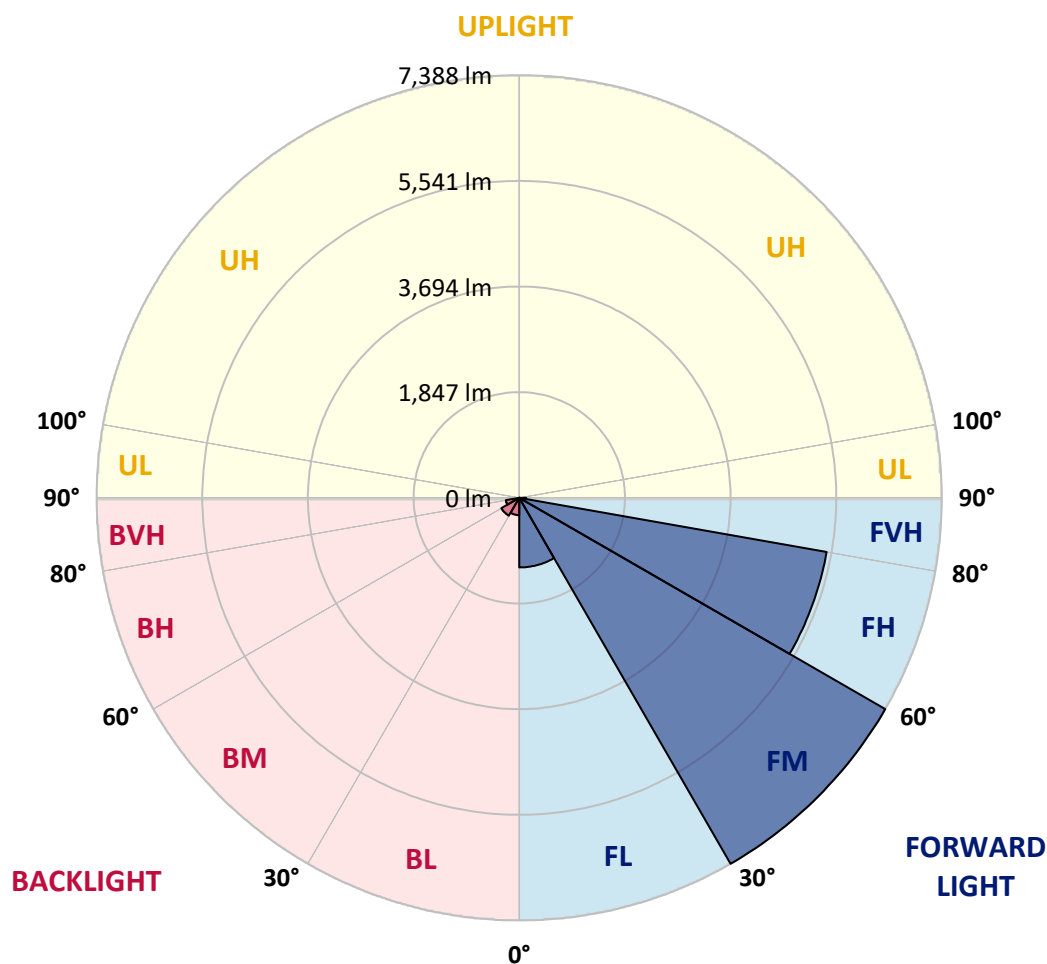
CATALOG NUMBER: GLEON-SA5A-730-U-T2-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1217.5 | 8.1       |                         |      |         |
| FM   | (30°-60°)   | 7388.3 | 49.0      |                         |      |         |
| FH   | (60°-80°)   | 5456.6 | 36.2      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 121.5  | 0.8       |                         |      | G2/225  |
| BL   | (0°-30°)    | 302.7  | 2.0       | B1/500                  |      |         |
| BM   | (30°-60°)   | 360.9  | 2.4       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 238.5  | 1.6       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 3.0    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G3**

Type II Medium





REPORT NUMBER: P321869

CATALOG NUMBER: GLEON-SA5A-730-U-T2-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°     | 65°     | 66°     | 75°     | 85°     |
|-------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| 0°    | 1717.2 | 1717.2 | 1717.2 | 1717.2 | 1717.2 | 1717.2 | 1717.2  | 1717.2  | 1717.2  | 1717.2  | 1717.2  |
| 2.5°  | 2021.1 | 2012.5 | 2008.9 | 1993.1 | 1965.9 | 1945.1 | 1904.9  | 1858.4  | 1849.8  | 1804.6  | 1749.4  |
| 5°    | 2283.4 | 2276.2 | 2271.2 | 2249.0 | 2221.0 | 2168.7 | 2095.6  | 2008.9  | 1992.4  | 1906.4  | 1796.0  |
| 7.5°  | 2466.1 | 2479.0 | 2479.0 | 2464.7 | 2429.6 | 2390.1 | 2300.6  | 2182.3  | 2161.5  | 2029.7  | 1858.4  |
| 10°   | 2572.9 | 2588.7 | 2600.8 | 2613.0 | 2608.0 | 2592.2 | 2507.7  | 2374.4  | 2349.3  | 2174.4  | 1930.7  |
| 12.5° | 2582.9 | 2598.7 | 2633.1 | 2684.0 | 2733.4 | 2769.3 | 2716.2  | 2587.2  | 2558.6  | 2342.1  | 2016.8  |
| 15°   | 2527.0 | 2543.5 | 2596.5 | 2695.5 | 2815.1 | 2919.8 | 2937.0  | 2823.0  | 2793.6  | 2542.1  | 2124.3  |
| 17.5° | 2429.6 | 2440.3 | 2516.3 | 2653.2 | 2840.9 | 3033.0 | 3136.9  | 3076.0  | 3048.8  | 2770.7  | 2243.9  |
| 20°   | 2357.2 | 2365.1 | 2431.7 | 2578.6 | 2825.2 | 3104.0 | 3326.1  | 3344.8  | 3316.1  | 3015.8  | 2373.7  |
| 22.5° | 2481.2 | 2495.5 | 2497.6 | 2567.2 | 2782.2 | 3139.1 | 3492.4  | 3609.2  | 3587.7  | 3276.0  | 2501.2  |
| 25°   | 2820.2 | 2836.6 | 2782.2 | 2739.2 | 2818.7 | 3154.8 | 3635.0  | 3880.1  | 3862.9  | 3556.2  | 2629.5  |
| 27.5° | 3268.1 | 3285.3 | 3215.0 | 3086.8 | 3010.1 | 3214.3 | 3761.9  | 4155.3  | 4154.6  | 3852.9  | 2767.8  |
| 30°   | 3708.1 | 3725.3 | 3653.7 | 3525.4 | 3349.1 | 3382.8 | 3871.5  | 4443.4  | 4447.7  | 4158.9  | 2914.8  |
| 32.5° | 4169.7 | 4191.2 | 4117.4 | 3952.5 | 3768.3 | 3673.7 | 4025.6  | 4733.0  | 4757.4  | 4513.7  | 3080.3  |
| 35°   | 4694.3 | 4697.2 | 4593.2 | 4420.5 | 4208.4 | 4062.9 | 4272.9  | 5057.6  | 5115.7  | 4953.0  | 3290.3  |
| 37.5° | 5208.9 | 5229.6 | 5144.4 | 4872.0 | 4677.1 | 4512.2 | 4640.5  | 5463.3  | 5545.7  | 5489.8  | 3564.8  |
| 40°   | 5590.1 | 5633.9 | 5621.7 | 5327.8 | 5142.9 | 5025.4 | 5097.1  | 5945.6  | 6050.3  | 6114.8  | 3910.9  |
| 42.5° | 5829.5 | 5862.5 | 5918.4 | 5741.4 | 5573.7 | 5593.0 | 5636.0  | 6507.5  | 6636.5  | 6827.1  | 4308.7  |
| 45°   | 6104.0 | 6119.8 | 6166.4 | 6088.2 | 5975.0 | 6169.9 | 6207.9  | 7140.3  | 7275.8  | 7593.3  | 4750.2  |
| 47.5° | 6439.4 | 6476.7 | 6489.6 | 6417.9 | 6366.3 | 6680.2 | 6759.1  | 7715.8  | 7905.7  | 8413.9  | 5217.5  |
| 50°   | 6866.6 | 6876.6 | 6898.8 | 6852.2 | 6800.6 | 7118.8 | 7253.6  | 8320.0  | 8492.7  | 9237.3  | 5678.3  |
| 52.5° | 7284.4 | 7320.2 | 7397.6 | 7368.2 | 7347.5 | 7492.2 | 7694.3  | 8864.7  | 9057.5  | 9923.9  | 6138.4  |
| 55°   | 7404.8 | 7435.6 | 7702.9 | 7885.7 | 8054.8 | 7952.3 | 8115.7  | 9352.7  | 9561.3  | 10537.4 | 6581.3  |
| 57.5° | 6923.9 | 6986.2 | 7449.2 | 7925.1 | 8626.7 | 8667.6 | 8694.8  | 9853.7  | 10040.8 | 11007.6 | 7042.1  |
| 60°   | 5708.4 | 5720.6 | 6480.3 | 7296.6 | 8532.1 | 9291.8 | 9540.5  | 10391.9 | 10548.9 | 11445.5 | 7594.0  |
| 62.5° | 3630.7 | 3754.7 | 4588.2 | 5740.6 | 7531.6 | 9201.5 | 10563.2 | 11206.1 | 11263.4 | 11970.8 | 8385.2  |
| 65°   | 1729.4 | 1809.6 | 2410.2 | 3546.9 | 5455.4 | 8045.5 | 11269.2 | 12678.9 | 12704.7 | 13012.1 | 9442.3  |
| 67.5° | 957.5  | 996.2  | 1282.1 | 1909.2 | 3189.2 | 5689.8 | 10983.9 | 14423.3 | 14447.6 | 14075.7 | 10369.7 |
| 69°   | 748.9  | 781.9  | 1006.9 | 1439.1 | 2162.2 | 4089.4 | 9939.7  | 14934.3 | 15006.7 | 14380.3 | 10402.7 |
| 70°   | 635.7  | 668.0  | 867.2  | 1215.5 | 1738.7 | 3159.9 | 8847.5  | 14807.4 | 14884.1 | 14351.6 | 10156.9 |
| 72.5° | 389.2  | 407.8  | 577.6  | 855.7  | 1165.3 | 1589.6 | 5456.1  | 12522.6 | 12652.4 | 13164.8 | 8729.2  |
| 75°   | 262.3  | 272.3  | 361.2  | 590.5  | 833.5  | 818.5  | 2834.5  | 8826.7  | 9107.6  | 10240.7 | 6447.3  |
| 77.5° | 187.8  | 197.1  | 242.2  | 382.0  | 584.1  | 540.4  | 1283.6  | 5485.5  | 5545.7  | 6142.0  | 3516.1  |
| 80°   | 106.8  | 115.4  | 171.3  | 227.2  | 396.3  | 360.5  | 510.3   | 2620.2  | 2650.3  | 2633.8  | 1173.9  |
| 82.5° | 55.9   | 63.1   | 93.9   | 149.8  | 254.4  | 235.8  | 212.1   | 877.2   | 881.5   | 733.2   | 257.3   |
| 85°   | 10.8   | 12.9   | 46.6   | 102.5  | 131.2  | 102.5  | 86.7    | 205.7   | 210.0   | 185.6   | 63.8    |
| 87.5° | 0.0    | 0.7    | 18.6   | 22.9   | 25.8   | 26.5   | 28.0    | 40.1    | 43.0    | 58.1    | 17.2    |
| 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: P321869

CATALOG NUMBER: GLEON-SA5A-730-U-T2-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1717.2 | 1717.2 | 1717.2 | 1717.2 | 1717.2 | 1717.2 | 1717.2 | 1717.2 | 1717.2 | 1717.2 | 1717.2 |
| 2.5°  | 1725.1 | 1699.3 | 1649.8 | 1592.5 | 1548.0 | 1504.3 | 1469.9 | 1434.1 | 1421.2 | 1414.7 | 1414.0 |
| 5°    | 1742.3 | 1687.8 | 1583.2 | 1475.7 | 1387.5 | 1304.4 | 1244.9 | 1188.3 | 1161.7 | 1149.6 | 1144.5 |
| 7.5°  | 1770.9 | 1683.5 | 1515.1 | 1351.0 | 1224.1 | 1120.2 | 1037.8 | 976.1  | 945.3  | 932.4  | 927.4  |
| 10°   | 1804.6 | 1677.8 | 1435.5 | 1219.1 | 1057.1 | 949.6  | 867.9  | 807.0  | 773.3  | 759.0  | 751.8  |
| 12.5° | 1844.0 | 1667.7 | 1343.8 | 1085.8 | 914.5  | 807.0  | 708.1  | 632.8  | 594.1  | 577.6  | 569.8  |
| 15°   | 1892.8 | 1657.7 | 1247.7 | 960.4  | 789.1  | 657.9  | 549.7  | 498.8  | 490.9  | 488.1  | 488.8  |
| 17.5° | 1940.8 | 1641.9 | 1143.1 | 836.4  | 657.2  | 513.9  | 458.7  | 455.8  | 457.2  | 457.2  | 457.2  |
| 20°   | 1983.8 | 1606.1 | 1029.2 | 730.3  | 531.8  | 433.6  | 422.1  | 417.1  | 413.5  | 410.7  | 407.1  |
| 22.5° | 2017.5 | 1558.1 | 919.5  | 624.9  | 434.3  | 397.0  | 379.1  | 363.4  | 350.5  | 341.9  | 337.6  |
| 25°   | 2040.4 | 1494.3 | 819.2  | 523.9  | 390.6  | 361.2  | 329.0  | 302.4  | 282.4  | 270.2  | 265.2  |
| 27.5° | 2057.6 | 1425.5 | 729.6  | 438.6  | 360.5  | 319.6  | 277.4  | 245.8  | 225.0  | 214.3  | 210.0  |
| 30°   | 2069.8 | 1347.4 | 650.7  | 385.6  | 326.8  | 275.9  | 230.8  | 200.0  | 184.9  | 179.2  | 176.3  |
| 32.5° | 2081.3 | 1260.6 | 576.2  | 360.5  | 295.3  | 235.8  | 193.5  | 169.9  | 160.5  | 153.4  | 151.2  |
| 35°   | 2109.9 | 1180.4 | 505.3  | 334.0  | 263.0  | 201.4  | 166.3  | 149.1  | 139.8  | 135.5  | 134.0  |
| 37.5° | 2178.0 | 1120.9 | 437.2  | 306.7  | 230.8  | 174.2  | 145.5  | 133.3  | 124.7  | 120.4  | 119.0  |
| 40°   | 2287.7 | 1090.8 | 379.8  | 277.4  | 199.2  | 153.4  | 131.9  | 120.4  | 111.1  | 104.6  | 103.2  |
| 42.5° | 2448.9 | 1095.1 | 339.7  | 248.0  | 174.2  | 136.9  | 119.0  | 105.4  | 95.3   | 89.6   | 88.2   |
| 45°   | 2644.6 | 1126.6 | 311.8  | 219.3  | 153.4  | 124.0  | 104.6  | 90.3   | 81.0   | 76.0   | 74.5   |
| 47.5° | 2856.7 | 1177.5 | 288.8  | 193.5  | 136.9  | 111.8  | 90.3   | 75.3   | 67.4   | 63.1   | 62.4   |
| 50°   | 3080.3 | 1227.0 | 265.2  | 168.4  | 122.6  | 99.6   | 76.0   | 62.4   | 55.9   | 52.3   | 50.9   |
| 52.5° | 3306.8 | 1284.3 | 243.7  | 145.5  | 110.4  | 85.3   | 63.1   | 50.9   | 45.9   | 43.0   | 41.6   |
| 55°   | 3550.5 | 1327.3 | 222.9  | 127.6  | 98.2   | 72.4   | 52.3   | 42.3   | 38.0   | 34.4   | 33.7   |
| 57.5° | 3837.1 | 1394.0 | 201.4  | 110.4  | 83.9   | 60.2   | 43.0   | 33.7   | 30.1   | 26.5   | 25.8   |
| 60°   | 4224.1 | 1472.1 | 178.5  | 97.5   | 68.8   | 49.5   | 35.1   | 27.2   | 22.9   | 20.1   | 19.4   |
| 62.5° | 4734.4 | 1558.8 | 149.8  | 85.3   | 55.9   | 40.1   | 28.0   | 21.5   | 16.5   | 12.9   | 12.9   |
| 65°   | 5381.6 | 1700.0 | 122.6  | 71.7   | 45.9   | 33.0   | 21.5   | 15.8   | 9.3    | 5.7    | 5.7    |
| 67.5° | 5759.3 | 1724.3 | 98.9   | 58.8   | 37.3   | 28.0   | 17.9   | 10.8   | 2.9    | 0.7    | 0.0    |
| 69°   | 5638.2 | 1583.2 | 83.9   | 50.2   | 32.3   | 26.5   | 16.5   | 7.9    | 1.4    | 0.0    | 0.0    |
| 70°   | 5410.3 | 1447.7 | 73.8   | 44.4   | 29.4   | 25.1   | 15.8   | 5.7    | 1.4    | 0.0    | 0.0    |
| 72.5° | 4470.7 | 1030.6 | 55.9   | 33.0   | 21.5   | 22.2   | 14.3   | 3.6    | 1.4    | 0.0    | 0.0    |
| 75°   | 3256.6 | 626.4  | 40.1   | 22.9   | 13.6   | 16.5   | 10.0   | 1.4    | 0.7    | 0.0    | 0.0    |
| 77.5° | 1811.8 | 295.3  | 25.1   | 12.9   | 8.6    | 10.0   | 5.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 80°   | 588.4  | 80.3   | 11.5   | 7.2    | 5.0    | 5.7    | 2.2    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 108.9  | 22.9   | 6.5    | 3.6    | 1.4    | 1.4    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 23.7   | 9.3    | 3.6    | 1.4    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 7.9    | 2.9    | 0.7    | 0.0    | 0.0    | 0.0    | 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    |

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

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

Data in this report applies to families of products SA1C-730-U-5WQ .

### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-2-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-730-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 2993   | CRI (Ra): | 71.8 |      |       |
| CIE u':                   | 0.2508 | R1:       | 67.5 | R9:  | -38.3 |
| CIE v':                   | 0.5215 | R2:       | 82.9 | R10: | 62.5  |
| Duv:                      | 0.0000 | R3:       | 94.7 | R11: | 63.7  |
| CIE x:                    | 0.4374 | R4:       | 67.7 | R12: | 57.8  |
| CIE y:                    | 0.4043 | R5:       | 67.9 | R13: | 70.4  |
| CIE z:                    | 0.1583 | R6:       | 77.6 | R14: | 97.3  |
| Peak Wavelength (nm):     | 593    | R7:       | 76.0 |      |       |
| Dominant Wavelength (nm): | 582    | R8:       | 40.5 |      |       |
| Purity:                   | 53     |           |      |      |       |
| Rf:                       | 75.7   |           |      |      |       |
| Rg:                       | 93.9   |           |      |      |       |



### Test Conditions

Stabilization Time: 53M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-2-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: SP1-1908-441-2-R4

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-2-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       | 2397             | NR               | 490       | 24908            | NR               | 620       | 118784           | NR               | 750       | 5037             | NR               | 880       | 2677             | NR               |
| 365       | 2084             | NR               | 495       | 30998            | NR               | 625       | 108951           | NR               | 755       | 4413             | NR               | 885       | 2940             | NR               |
| 370       | 2143             | NR               | 500       | 37103            | NR               | 630       | 99573            | NR               | 760       | 4189             | NR               | 890       | 3116             | NR               |
| 375       | 2413             | NR               | 505       | 42987            | NR               | 635       | 90444            | NR               | 765       | 3677             | NR               | 895       | 3345             | NR               |
| 380       | 2172             | NR               | 510       | 48702            | NR               | 640       | 80749            | NR               | 770       | 3366             | NR               | 900       | 2312             | NR               |
| 385       | 1997             | NR               | 515       | 53741            | NR               | 645       | 71664            | NR               | 775       | 3211             | NR               | 905       | 2829             | NR               |
| 390       | 1830             | NR               | 520       | 57283            | NR               | 650       | 63936            | NR               | 780       | 2682             | NR               | 910       | 2783             | NR               |
| 395       | 1861             | NR               | 525       | 61876            | NR               | 655       | 56611            | NR               | 785       | 2804             | NR               | 915       | 2662             | NR               |
| 400       | 1717             | NR               | 530       | 65398            | NR               | 660       | 49763            | NR               | 790       | 2581             | NR               | 920       | 3047             | NR               |
| 405       | 1761             | NR               | 535       | 69597            | NR               | 665       | 42891            | NR               | 795       | 2711             | NR               | 925       | 2256             | NR               |
| 410       | 2680             | NR               | 540       | 74214            | NR               | 670       | 36939            | NR               | 800       | 2609             | NR               | 930       | 2976             | NR               |
| 415       | 4374             | NR               | 545       | 79911            | NR               | 675       | 31946            | NR               | 805       | 2581             | NR               | 935       | 3503             | NR               |
| 420       | 8071             | NR               | 550       | 86153            | NR               | 680       | 27385            | NR               | 810       | 2404             | NR               | 940       | 4226             | NR               |
| 425       | 15169            | NR               | 555       | 93952            | NR               | 685       | 23504            | NR               | 815       | 2556             | NR               | 945       | 2930             | NR               |
| 430       | 26038            | NR               | 560       | 102904           | NR               | 690       | 20210            | NR               | 820       | 2742             | NR               | 950       | 2115             | NR               |
| 435       | 41316            | NR               | 565       | 112009           | NR               | 695       | 17459            | NR               | 825       | 2014             | NR               | 955       | 2634             | NR               |
| 440       | 59674            | NR               | 570       | 121662           | NR               | 700       | 15207            | NR               | 830       | 2488             | NR               | 960       | 4200             | NR               |
| 445       | 72751            | NR               | 575       | 130476           | NR               | 705       | 13322            | NR               | 835       | 2625             | NR               | 965       | 1982             | NR               |
| 450       | 65091            | NR               | 580       | 137926           | NR               | 710       | 11676            | NR               | 840       | 2754             | NR               | 970       | 3613             | NR               |
| 455       | 44894            | NR               | 585       | 143406           | NR               | 715       | 10626            | NR               | 845       | 2708             | NR               | 975       | 4034             | NR               |
| 460       | 32712            | NR               | 590       | 147039           | NR               | 720       | 9416             | NR               | 850       | 2608             | NR               | 980       | 3922             | NR               |
| 465       | 25296            | NR               | 595       | 147365           | NR               | 725       | 8333             | NR               | 855       | 2605             | NR               | 985       | 1909             | NR               |
| 470       | 19318            | NR               | 600       | 145800           | NR               | 730       | 7134             | NR               | 860       | 1765             | NR               | 990       | 3617             | NR               |
| 475       | 17265            | NR               | 605       | 141363           | NR               | 735       | 6437             | NR               | 865       | 2581             | NR               | 995       | 4767             | NR               |
| 480       | 18260            | NR               | 610       | 134199           | NR               | 740       | 5834             | NR               | 870       | 3016             | NR               | 1000      | 2528             | NR               |
| 485       | 20845            | NR               | 615       | 127683           | NR               | 745       | 5500             | NR               | 875       | 3952             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-2-R4

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 8494.8**

**S/P: 1.23**

| 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       | 2397             | NR               | 490       | 24908            | NR               | 620       | 118784           | NR               | 750       | 5037             | NR               | 880       | 2677             | NR               |
| 365       | 2084             | NR               | 495       | 30998            | NR               | 625       | 108951           | NR               | 755       | 4413             | NR               | 885       | 2940             | NR               |
| 370       | 2143             | NR               | 500       | 37103            | NR               | 630       | 99573            | NR               | 760       | 4189             | NR               | 890       | 3116             | NR               |
| 375       | 2413             | NR               | 505       | 42987            | NR               | 635       | 90444            | NR               | 765       | 3677             | NR               | 895       | 3345             | NR               |
| 380       | 2172             | NR               | 510       | 48702            | NR               | 640       | 80749            | NR               | 770       | 3366             | NR               | 900       | 2312             | NR               |
| 385       | 1997             | NR               | 515       | 53741            | NR               | 645       | 71664            | NR               | 775       | 3211             | NR               | 905       | 2829             | NR               |
| 390       | 1830             | NR               | 520       | 57283            | NR               | 650       | 63936            | NR               | 780       | 2682             | NR               | 910       | 2783             | NR               |
| 395       | 1861             | NR               | 525       | 61876            | NR               | 655       | 56611            | NR               | 785       | 2804             | NR               | 915       | 2662             | NR               |
| 400       | 1717             | NR               | 530       | 65398            | NR               | 660       | 49763            | NR               | 790       | 2581             | NR               | 920       | 3047             | NR               |
| 405       | 1761             | NR               | 535       | 69597            | NR               | 665       | 42891            | NR               | 795       | 2711             | NR               | 925       | 2256             | NR               |
| 410       | 2680             | NR               | 540       | 74214            | NR               | 670       | 36939            | NR               | 800       | 2609             | NR               | 930       | 2976             | NR               |
| 415       | 4374             | NR               | 545       | 79911            | NR               | 675       | 31946            | NR               | 805       | 2581             | NR               | 935       | 3503             | NR               |
| 420       | 8071             | NR               | 550       | 86153            | NR               | 680       | 27385            | NR               | 810       | 2404             | NR               | 940       | 4226             | NR               |
| 425       | 15169            | NR               | 555       | 93952            | NR               | 685       | 23504            | NR               | 815       | 2556             | NR               | 945       | 2930             | NR               |
| 430       | 26038            | NR               | 560       | 102904           | NR               | 690       | 20210            | NR               | 820       | 2742             | NR               | 950       | 2115             | NR               |
| 435       | 41316            | NR               | 565       | 112009           | NR               | 695       | 17459            | NR               | 825       | 2014             | NR               | 955       | 2634             | NR               |
| 440       | 59674            | NR               | 570       | 121662           | NR               | 700       | 15207            | NR               | 830       | 2488             | NR               | 960       | 4200             | NR               |
| 445       | 72751            | NR               | 575       | 130476           | NR               | 705       | 13322            | NR               | 835       | 2625             | NR               | 965       | 1982             | NR               |
| 450       | 65091            | NR               | 580       | 137926           | NR               | 710       | 11676            | NR               | 840       | 2754             | NR               | 970       | 3613             | NR               |
| 455       | 44894            | NR               | 585       | 143406           | NR               | 715       | 10626            | NR               | 845       | 2708             | NR               | 975       | 4034             | NR               |
| 460       | 32712            | NR               | 590       | 147039           | NR               | 720       | 9416             | NR               | 850       | 2608             | NR               | 980       | 3922             | NR               |
| 465       | 25296            | NR               | 595       | 147365           | NR               | 725       | 8333             | NR               | 855       | 2605             | NR               | 985       | 1909             | NR               |
| 470       | 19318            | NR               | 600       | 145800           | NR               | 730       | 7134             | NR               | 860       | 1765             | NR               | 990       | 3617             | NR               |
| 475       | 17265            | NR               | 605       | 141363           | NR               | 735       | 6437             | NR               | 865       | 2581             | NR               | 995       | 4767             | NR               |
| 480       | 18260            | NR               | 610       | 134199           | NR               | 740       | 5834             | NR               | 870       | 3016             | NR               | 1000      | 2528             | NR               |
| 485       | 20845            | NR               | 615       | 127683           | NR               | 745       | 5500             | NR               | 875       | 3952             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-2-R4

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 3101.5 M/P: 0.45**

| 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       | 2397             | NR               | 490       | 24908            | NR               | 620       | 118784           | NR               | 750       | 5037             | NR               | 880       | 2677             | NR               |
| 365       | 2084             | NR               | 495       | 30998            | NR               | 625       | 108951           | NR               | 755       | 4413             | NR               | 885       | 2940             | NR               |
| 370       | 2143             | NR               | 500       | 37103            | NR               | 630       | 99573            | NR               | 760       | 4189             | NR               | 890       | 3116             | NR               |
| 375       | 2413             | NR               | 505       | 42987            | NR               | 635       | 90444            | NR               | 765       | 3677             | NR               | 895       | 3345             | NR               |
| 380       | 2172             | NR               | 510       | 48702            | NR               | 640       | 80749            | NR               | 770       | 3366             | NR               | 900       | 2312             | NR               |
| 385       | 1997             | NR               | 515       | 53741            | NR               | 645       | 71664            | NR               | 775       | 3211             | NR               | 905       | 2829             | NR               |
| 390       | 1830             | NR               | 520       | 57283            | NR               | 650       | 63936            | NR               | 780       | 2682             | NR               | 910       | 2783             | NR               |
| 395       | 1861             | NR               | 525       | 61876            | NR               | 655       | 56611            | NR               | 785       | 2804             | NR               | 915       | 2662             | NR               |
| 400       | 1717             | NR               | 530       | 65398            | NR               | 660       | 49763            | NR               | 790       | 2581             | NR               | 920       | 3047             | NR               |
| 405       | 1761             | NR               | 535       | 69597            | NR               | 665       | 42891            | NR               | 795       | 2711             | NR               | 925       | 2256             | NR               |
| 410       | 2680             | NR               | 540       | 74214            | NR               | 670       | 36939            | NR               | 800       | 2609             | NR               | 930       | 2976             | NR               |
| 415       | 4374             | NR               | 545       | 79911            | NR               | 675       | 31946            | NR               | 805       | 2581             | NR               | 935       | 3503             | NR               |
| 420       | 8071             | NR               | 550       | 86153            | NR               | 680       | 27385            | NR               | 810       | 2404             | NR               | 940       | 4226             | NR               |
| 425       | 15169            | NR               | 555       | 93952            | NR               | 685       | 23504            | NR               | 815       | 2556             | NR               | 945       | 2930             | NR               |
| 430       | 26038            | NR               | 560       | 102904           | NR               | 690       | 20210            | NR               | 820       | 2742             | NR               | 950       | 2115             | NR               |
| 435       | 41316            | NR               | 565       | 112009           | NR               | 695       | 17459            | NR               | 825       | 2014             | NR               | 955       | 2634             | NR               |
| 440       | 59674            | NR               | 570       | 121662           | NR               | 700       | 15207            | NR               | 830       | 2488             | NR               | 960       | 4200             | NR               |
| 445       | 72751            | NR               | 575       | 130476           | NR               | 705       | 13322            | NR               | 835       | 2625             | NR               | 965       | 1982             | NR               |
| 450       | 65091            | NR               | 580       | 137926           | NR               | 710       | 11676            | NR               | 840       | 2754             | NR               | 970       | 3613             | NR               |
| 455       | 44894            | NR               | 585       | 143406           | NR               | 715       | 10626            | NR               | 845       | 2708             | NR               | 975       | 4034             | NR               |
| 460       | 32712            | NR               | 590       | 147039           | NR               | 720       | 9416             | NR               | 850       | 2608             | NR               | 980       | 3922             | NR               |
| 465       | 25296            | NR               | 595       | 147365           | NR               | 725       | 8333             | NR               | 855       | 2605             | NR               | 985       | 1909             | NR               |
| 470       | 19318            | NR               | 600       | 145800           | NR               | 730       | 7134             | NR               | 860       | 1765             | NR               | 990       | 3617             | NR               |
| 475       | 17265            | NR               | 605       | 141363           | NR               | 735       | 6437             | NR               | 865       | 2581             | NR               | 995       | 4767             | NR               |
| 480       | 18260            | NR               | 610       | 134199           | NR               | 740       | 5834             | NR               | 870       | 3016             | NR               | 1000      | 2528             | NR               |
| 485       | 20845            | NR               | 615       | 127683           | NR               | 745       | 5500             | NR               | 875       | 3952             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-2-R4

**TM-30-18**

**Summary**

$R_f = 75.7$   
 $R_g = 93.9$   
 CIE  $R_a = 71.8$   
 $R_g = -38.3$



**Color Vector Graphics**



REPORT NUMBER: SP1-1908-441-2-R4

TM-30-18

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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 |            |



REPORT NUMBER: SP1-1908-441-2-R4

**TM-30-18**

**Color Rendition by Hue-Angle Bin**



REPORT NUMBER: SP1-1908-441-2-R4

**TM-30-18**

**Measure Comparisons**



(END OF REPORT)