

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: P321765

Luminaire Tested: **GLEON-SA1C-830-U-T3R-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321765  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-11)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA1C-830-U-T3R-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(1) 80 CRI, 3000K, 1050mA LIGHTSQUARE WITH 16 LEDS AND TYPE III ROADWAY  
OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4525 lumens  
Efficiency: N/A  
Efficacy: 76.7 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B1 - U0 - G2

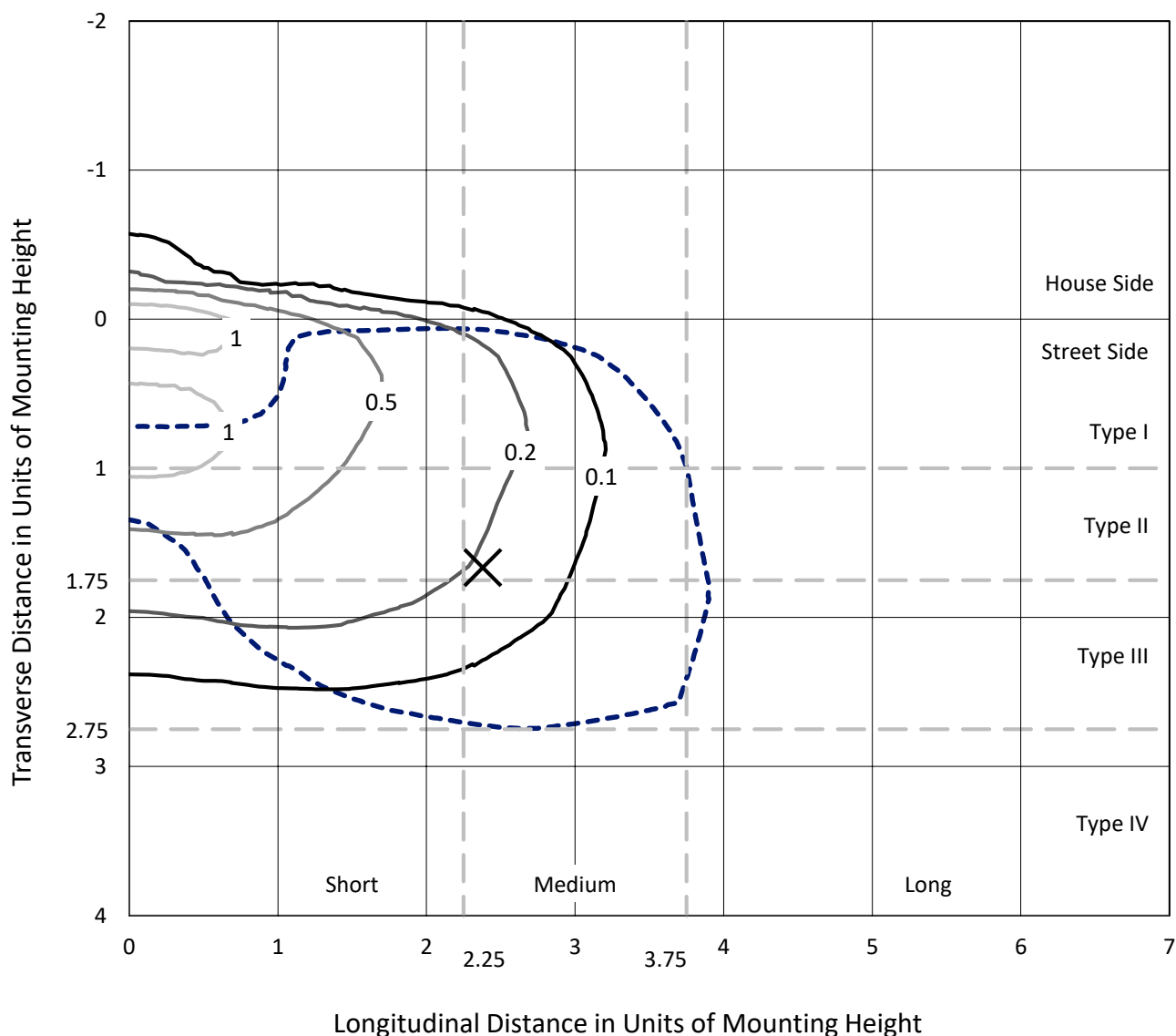
Input Watts (W): 59  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P321765  
 CATALOG NUMBER: GLEON-SA1C-830-U-T3R-HSS

## Iso-Footcandle Lines of Horizontal Illumination

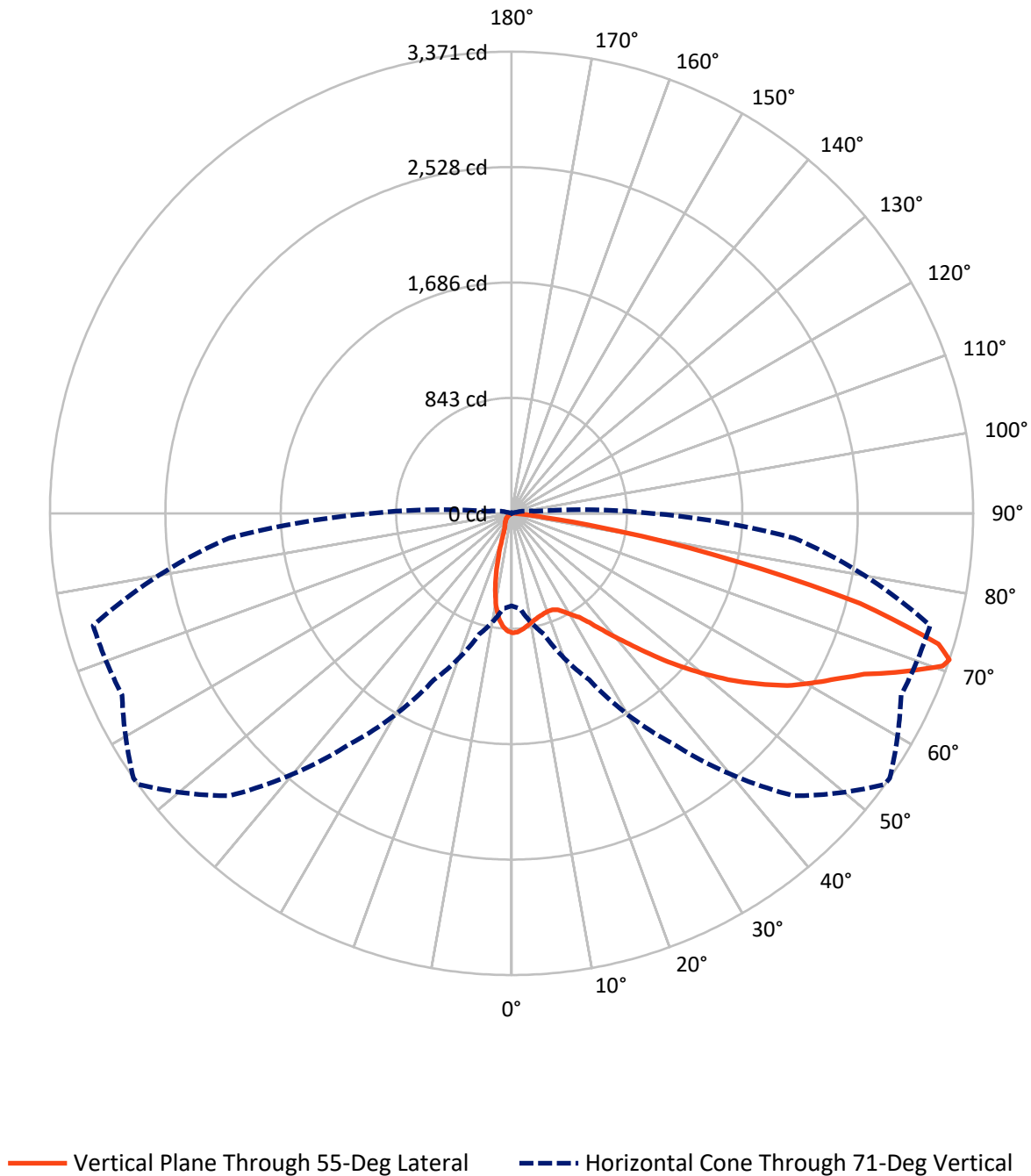
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.4 fc  
 Type III - Medium - N/A

REPORT NUMBER: P321765  
CATALOG NUMBER: GLEON-SA1C-830-U-T3R-HSS

## Luminous Intensity Polar Plot



REPORT NUMBER: P321765  
 CATALOG NUMBER: GLEON-SA1C-830-U-T3R-HSS

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 358.3    | 0.0    | 358.3  |
|                    | % Fixture | 7.9      | 0.0    | 7.9    |
| <b>Street Side</b> | Lumens    | 4166.7   | 0.0    | 4166.7 |
|                    | % Fixture | 92.1     | 0.0    | 92.1   |
| <b>Total</b>       | Lumens    | 4525.0   | 0.0    | 4525.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 74.4   | 1.6       |
| 10°-20°   | 168.0  | 3.7       |
| 20°-30°   | 269.9  | 6.0       |
| 30°-40°   | 458.7  | 10.1      |
| 40°-50°   | 711.9  | 15.7      |
| 50°-60°   | 957.1  | 21.2      |
| 60°-70°   | 1170.9 | 25.9      |
| 70°-80°   | 684.6  | 15.1      |
| 80°-90°   | 29.6   | 0.7       |
| 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°    | 4525.0 | 100.0     |
| 0°-180°   | 4525.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P321765

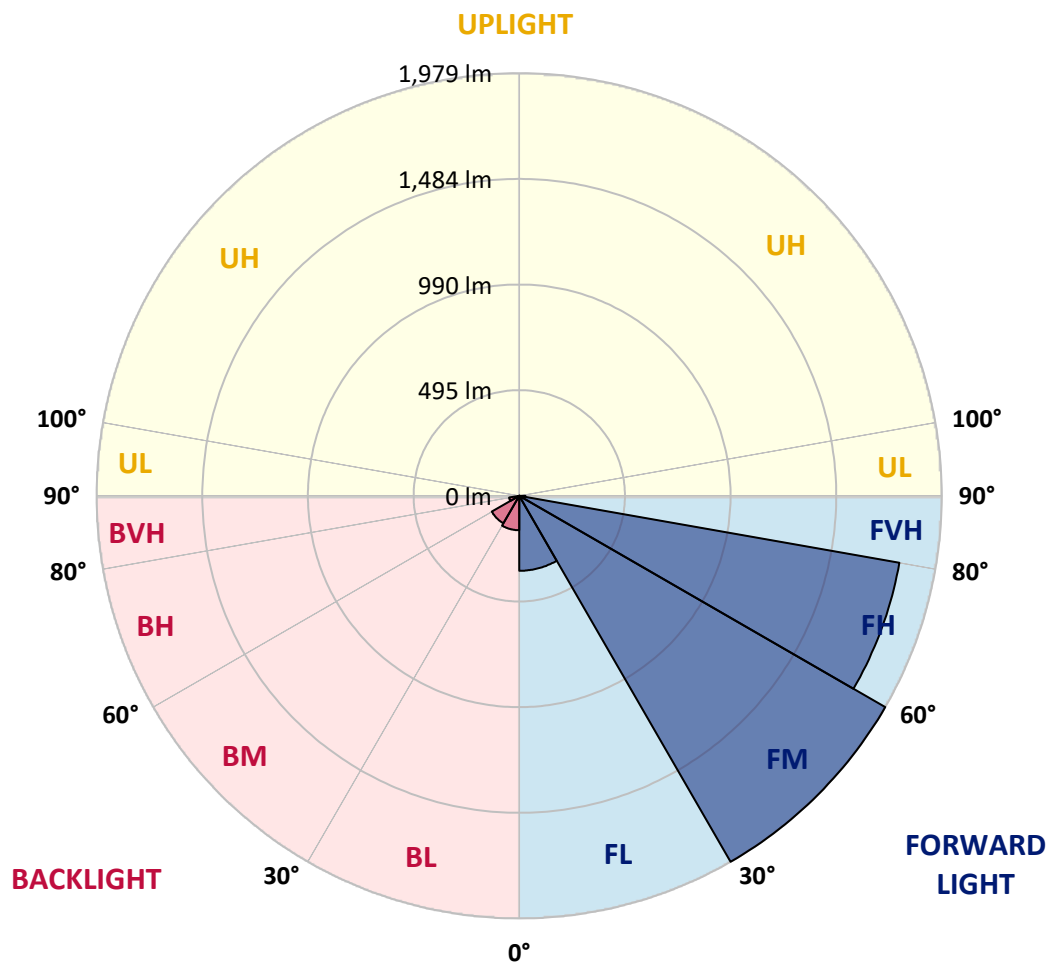
CATALOG NUMBER: GLEON-SA1C-830-U-T3R-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 351.1  | 7.8       |                         |      |         |
| FM   | (30°-60°)   | 1979.1 | 43.7      |                         |      |         |
| FH   | (60°-80°)   | 1807.4 | 39.9      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 29.1   | 0.6       |                         |      | G1/100  |
| BL   | (0°-30°)    | 161.3  | 3.6       | B1/500                  |      |         |
| BM   | (30°-60°)   | 148.5  | 3.3       | B0/220                  |      |         |
| BH   | (60°-80°)   | 48.0   | 1.1       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 0.5    | 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-G2**

Type III Medium



REPORT NUMBER: P321765

CATALOG NUMBER: GLEON-SA1C-830-U-T3R-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 54°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 872.7  | 872.7  | 872.7  | 872.7  | 872.7  | 872.7  | 872.7  | 872.7  | 872.7  | 872.7  | 872.7  |
| 2.5°  | 847.1  | 848.1  | 851.7  | 853.4  | 857.2  | 863.7  | 867.0  | 867.2  | 872.5  | 874.5  | 876.1  |
| 5°    | 787.1  | 793.2  | 799.3  | 805.8  | 817.6  | 833.2  | 848.7  | 850.1  | 867.2  | 879.8  | 886.5  |
| 7.5°  | 735.5  | 741.0  | 748.3  | 758.7  | 775.3  | 799.9  | 825.7  | 828.8  | 861.1  | 889.7  | 904.8  |
| 10°   | 682.5  | 687.0  | 697.5  | 712.8  | 735.7  | 768.6  | 803.4  | 808.5  | 855.6  | 903.1  | 929.6  |
| 12.5° | 625.8  | 628.4  | 641.2  | 663.2  | 696.9  | 738.8  | 784.5  | 791.2  | 852.1  | 918.6  | 958.8  |
| 15°   | 582.7  | 583.9  | 596.1  | 618.9  | 657.5  | 711.9  | 769.9  | 778.0  | 853.0  | 937.1  | 990.7  |
| 17.5° | 571.8  | 572.4  | 578.9  | 594.5  | 628.6  | 688.0  | 758.3  | 768.2  | 855.4  | 955.2  | 1022.8 |
| 20°   | 616.2  | 612.0  | 605.3  | 602.8  | 617.5  | 673.5  | 751.4  | 762.5  | 858.6  | 971.2  | 1051.7 |
| 22.5° | 738.4  | 725.8  | 697.9  | 660.7  | 638.2  | 674.6  | 753.2  | 764.4  | 869.0  | 990.9  | 1085.0 |
| 25°   | 919.6  | 902.1  | 854.8  | 781.6  | 711.3  | 703.8  | 768.4  | 779.8  | 889.1  | 1014.5 | 1116.9 |
| 27.5° | 1125.8 | 1108.6 | 1050.6 | 946.2  | 826.3  | 761.7  | 803.4  | 813.9  | 919.0  | 1035.4 | 1141.3 |
| 30°   | 1323.3 | 1318.4 | 1250.2 | 1131.5 | 971.0  | 855.6  | 848.5  | 857.4  | 941.1  | 1048.0 | 1160.6 |
| 32.5° | 1490.7 | 1483.0 | 1428.2 | 1312.8 | 1136.6 | 968.4  | 901.5  | 904.2  | 957.8  | 1064.3 | 1185.8 |
| 35°   | 1646.0 | 1636.4 | 1588.3 | 1479.2 | 1306.5 | 1106.1 | 983.2  | 979.3  | 994.2  | 1097.0 | 1222.3 |
| 37.5° | 1781.5 | 1790.2 | 1736.8 | 1633.0 | 1458.8 | 1249.4 | 1093.3 | 1081.7 | 1051.1 | 1150.2 | 1275.4 |
| 40°   | 1894.9 | 1894.9 | 1867.0 | 1780.5 | 1623.4 | 1397.5 | 1217.9 | 1202.6 | 1136.6 | 1232.3 | 1342.6 |
| 42.5° | 1935.7 | 1944.4 | 1954.8 | 1905.8 | 1770.7 | 1551.5 | 1356.6 | 1340.8 | 1257.1 | 1348.7 | 1427.5 |
| 45°   | 1938.1 | 1952.0 | 2005.0 | 2004.8 | 1903.8 | 1704.5 | 1513.1 | 1505.6 | 1411.5 | 1498.3 | 1532.8 |
| 47.5° | 1903.8 | 1921.1 | 2008.4 | 2058.0 | 2009.3 | 1846.9 | 1684.2 | 1674.8 | 1592.9 | 1681.5 | 1642.9 |
| 50°   | 1850.8 | 1869.9 | 1971.5 | 2078.9 | 2081.0 | 1970.9 | 1864.4 | 1850.4 | 1792.7 | 1891.0 | 1756.7 |
| 52.5° | 1755.9 | 1792.9 | 1938.3 | 2083.8 | 2128.1 | 2077.9 | 2035.9 | 2029.8 | 2016.2 | 2092.8 | 1847.3 |
| 55°   | 1552.9 | 1594.0 | 1855.2 | 2085.4 | 2171.8 | 2172.8 | 2196.6 | 2198.2 | 2225.6 | 2281.3 | 1914.8 |
| 57.5° | 1457.0 | 1480.2 | 1710.2 | 2093.2 | 2236.6 | 2280.5 | 2360.4 | 2373.0 | 2415.4 | 2460.3 | 1991.8 |
| 60°   | 1396.7 | 1424.1 | 1638.7 | 2082.6 | 2338.4 | 2421.7 | 2512.1 | 2516.4 | 2561.9 | 2645.0 | 2096.0 |
| 62.5° | 1348.5 | 1375.5 | 1593.5 | 2042.0 | 2452.8 | 2591.6 | 2660.5 | 2660.9 | 2695.0 | 2865.1 | 2214.5 |
| 65°   | 1229.7 | 1252.4 | 1502.3 | 1996.3 | 2528.4 | 2759.6 | 2832.7 | 2830.1 | 2857.9 | 3097.1 | 2352.0 |
| 67.5° | 1057.8 | 1075.2 | 1316.0 | 1822.9 | 2499.9 | 2912.4 | 3092.8 | 3084.1 | 3050.4 | 3297.6 | 2406.1 |
| 70°   | 817.8  | 824.1  | 1037.2 | 1519.2 | 2233.4 | 2971.1 | 3344.2 | 3339.7 | 3168.4 | 3261.7 | 2208.0 |
| 71°   | 676.0  | 696.7  | 914.1  | 1340.8 | 2054.8 | 2916.9 | 3368.5 | 3371.2 | 3138.7 | 3163.7 | 2071.6 |
| 72.5° | 392.5  | 410.2  | 662.6  | 1029.7 | 1744.5 | 2690.5 | 3242.2 | 3261.3 | 3000.2 | 2877.7 | 1769.5 |
| 75°   | 84.1   | 90.0   | 245.6  | 498.4  | 959.6  | 1885.7 | 2559.1 | 2627.1 | 2445.3 | 1957.6 | 1066.5 |
| 77.5° | 58.5   | 63.2   | 105.2  | 226.1  | 317.2  | 931.8  | 1589.7 | 1666.5 | 1460.9 | 735.7  | 341.3  |
| 80°   | 46.3   | 51.6   | 82.1   | 111.7  | 85.7   | 300.5  | 744.7  | 791.6  | 487.2  | 164.2  | 57.5   |
| 82.5° | 25.8   | 30.7   | 64.0   | 60.3   | 32.9   | 57.1   | 208.5  | 235.7  | 97.5   | 33.1   | 13.6   |
| 85°   | 7.5    | 9.1    | 41.2   | 43.9   | 14.0   | 11.0   | 35.6   | 44.1   | 18.5   | 8.7    | 6.1    |
| 87.5° | 0.0    | 0.0    | 19.9   | 16.9   | 4.1    | 1.6    | 3.3    | 3.7    | 3.7    | 3.7    | 4.1    |
| 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: P321765

CATALOG NUMBER: GLEON-SA1C-830-U-T3R-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 872.7  | 872.7 | 872.7 | 872.7 | 872.7 | 872.7 | 872.7 | 872.7 | 872.7 | 872.7 | 872.7 |
| 2.5°  | 876.1  | 877.5 | 872.5 | 865.8 | 858.6 | 849.9 | 840.8 | 833.7 | 833.4 | 830.0 | 826.5 |
| 5°    | 886.9  | 886.1 | 872.1 | 850.7 | 825.5 | 799.3 | 774.3 | 746.1 | 736.7 | 725.2 | 721.3 |
| 7.5°  | 906.8  | 901.1 | 871.4 | 824.7 | 769.4 | 714.6 | 657.9 | 600.8 | 576.4 | 554.5 | 550.6 |
| 10°   | 931.8  | 921.0 | 867.6 | 785.7 | 684.3 | 583.1 | 497.6 | 420.0 | 385.8 | 359.6 | 358.4 |
| 12.5° | 957.8  | 941.3 | 856.8 | 726.8 | 572.8 | 430.5 | 332.0 | 255.6 | 227.2 | 208.9 | 210.5 |
| 15°   | 985.0  | 960.4 | 833.7 | 647.3 | 445.8 | 292.2 | 204.0 | 159.1 | 147.7 | 143.0 | 144.3 |
| 17.5° | 1012.9 | 973.6 | 801.3 | 551.6 | 320.4 | 188.6 | 141.2 | 128.6 | 128.6 | 129.6 | 130.0 |
| 20°   | 1037.0 | 980.8 | 753.8 | 444.4 | 217.2 | 137.4 | 123.5 | 121.7 | 122.7 | 124.3 | 124.5 |
| 22.5° | 1061.0 | 981.2 | 691.8 | 335.7 | 152.0 | 120.3 | 117.6 | 116.8 | 117.4 | 119.3 | 119.5 |
| 25°   | 1080.5 | 976.3 | 614.2 | 238.7 | 121.3 | 113.4 | 112.2 | 111.7 | 112.2 | 114.4 | 114.4 |
| 27.5° | 1088.4 | 958.6 | 519.5 | 167.8 | 108.7 | 105.7 | 105.2 | 105.7 | 106.3 | 107.9 | 108.1 |
| 30°   | 1089.3 | 927.7 | 416.3 | 121.5 | 98.5  | 95.3  | 96.1  | 97.5  | 96.9  | 96.5  | 96.9  |
| 32.5° | 1091.3 | 892.0 | 315.7 | 100.0 | 90.0  | 84.9  | 83.9  | 83.9  | 81.5  | 80.1  | 79.2  |
| 35°   | 1098.0 | 849.9 | 229.0 | 89.8  | 81.3  | 75.4  | 71.5  | 67.0  | 62.4  | 59.9  | 59.3  |
| 37.5° | 1108.6 | 805.8 | 164.0 | 83.1  | 73.6  | 66.8  | 59.5  | 51.6  | 44.9  | 43.1  | 43.1  |
| 40°   | 1127.9 | 760.3 | 121.3 | 77.8  | 67.5  | 59.1  | 48.2  | 37.8  | 31.7  | 30.7  | 30.7  |
| 42.5° | 1158.3 | 712.4 | 96.7  | 73.1  | 62.2  | 51.2  | 36.8  | 27.4  | 23.0  | 22.3  | 22.1  |
| 45°   | 1190.0 | 659.5 | 84.5  | 68.7  | 56.5  | 42.1  | 27.2  | 20.3  | 17.7  | 17.1  | 17.1  |
| 47.5° | 1221.7 | 603.2 | 78.6  | 64.4  | 51.0  | 32.7  | 20.3  | 16.1  | 14.8  | 14.8  | 15.0  |
| 50°   | 1248.5 | 544.5 | 74.4  | 59.7  | 43.9  | 24.8  | 16.1  | 13.6  | 13.2  | 14.0  | 14.2  |
| 52.5° | 1255.3 | 486.8 | 69.1  | 53.8  | 35.2  | 18.9  | 13.2  | 12.0  | 12.0  | 12.0  | 12.0  |
| 55°   | 1251.2 | 442.1 | 62.2  | 46.5  | 26.0  | 15.0  | 11.4  | 10.6  | 10.4  | 10.4  | 10.4  |
| 57.5° | 1265.0 | 415.7 | 49.8  | 36.2  | 18.7  | 12.2  | 10.0  | 9.3   | 8.9   | 8.7   | 8.7   |
| 60°   | 1292.8 | 398.4 | 35.6  | 26.0  | 14.0  | 10.2  | 8.5   | 7.9   | 7.3   | 6.9   | 6.9   |
| 62.5° | 1329.8 | 383.4 | 26.4  | 19.3  | 10.8  | 8.1   | 7.1   | 6.5   | 5.7   | 5.3   | 5.3   |
| 65°   | 1358.3 | 356.6 | 20.1  | 14.4  | 8.1   | 6.5   | 5.5   | 5.3   | 4.1   | 3.7   | 3.5   |
| 67.5° | 1314.8 | 297.7 | 16.3  | 10.6  | 6.1   | 5.1   | 4.3   | 4.1   | 2.4   | 2.0   | 2.0   |
| 70°   | 1127.7 | 207.2 | 13.0  | 7.7   | 4.5   | 4.1   | 3.5   | 2.6   | 1.8   | 1.6   | 1.6   |
| 71°   | 1022.6 | 173.1 | 11.8  | 6.5   | 3.9   | 3.9   | 3.3   | 2.2   | 1.6   | 1.4   | 1.4   |
| 72.5° | 849.5  | 122.9 | 10.0  | 5.1   | 3.5   | 4.1   | 3.5   | 2.0   | 1.6   | 1.4   | 1.2   |
| 75°   | 493.1  | 51.4  | 6.9   | 3.5   | 2.6   | 4.9   | 4.5   | 1.8   | 1.2   | 1.0   | 1.0   |
| 77.5° | 148.3  | 18.9  | 3.9   | 2.2   | 2.0   | 4.3   | 5.1   | 1.6   | 0.6   | 0.2   | 0.2   |
| 80°   | 27.0   | 8.1   | 2.4   | 1.4   | 1.4   | 2.6   | 3.9   | 0.8   | 0.0   | 0.0   | 0.0   |
| 82.5° | 9.5    | 4.1   | 1.4   | 0.8   | 0.6   | 1.2   | 1.8   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 5.5    | 2.8   | 0.8   | 0.4   | 0.0   | 0.2   | 0.4   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 3.7    | 0.8   | 0.0   | 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-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

MCGRAW EDISON

Report Number: SP1-2408-195-9

Test Date: 08/07/2024

Luminaire Tested: GALN-SB1A-830-U-5WQ

Data in this report applies to families of products including GALN-SB1A-830-U-5WQ.

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2408-195-9  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 08/07/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW EDISON  
 Catalog Number: **GALN-SB1A-830-U-5WQ**  
 Description: GALLEON AREA AND ROADWAY LUMINAIRE. (1) 80 CRI, 3000K, 350MA HIGH DENSITY LIGHTSQUARE WITH 26 LEDS AND TYPE V WIDE OPTICS

### Spectral Parameters

CCT (K): 3050  
 CIE  $u'$ : 0.2476  
 CIE  $v'$ : 0.5251  
 Duv: 0.0034  
 CIE x: 0.4383  
 CIE y: 0.4131  
 CIE z: 0.1487  
 Peak Wavelength (nm): 603  
 Dominant Wavelength (nm): 581  
 Purity: 55.55201  
 Rf: 81.5  
 Rg: 99.2

CRI (Ra): 81.0  
 R1: 79.6  
 R2: 85.6  
 R3: 92.0  
 R4: 82.6  
 R5: 78.9  
 R6: 81.7  
 R7: 85.2  
 R8: 62.0  
 R9: 7.1  
 R10: 67.0  
 R11: 82.7  
 R12: 63.2  
 R13: 80.3  
 R14: 95.0  
 R15: 71.7



### Test Conditions

Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 24.2

REPORT NUMBER: SP1-2408-195-9

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/18/2024        | 12/18/2024           |
| Power Meter                    | INXT2011004           | 2/8/2024         | 2/8/2025             |
| AC Power Source                | IN0063                | 10/24/2023       | 10/24/2024           |
| DC Power Source                | IN0208                | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | IN0085                | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | IN0046                | 10/24/2023       | 10/24/2024           |

REPORT NUMBER: SP1-2408-195-9

**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: SP1-2408-195-9

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 168                                  | NR                             | 620               | 940                                  | NR                             | 750               | 35                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 233                                  | NR                             | 625               | 897                                  | NR                             | 755               | 30                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 300                                  | NR                             | 630               | 847                                  | NR                             | 760               | 26                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 372                                  | NR                             | 635               | 790                                  | NR                             | 765               | 22                                   | NR                             | 895               | 1                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 430                                  | NR                             | 640               | 730                                  | NR                             | 770               | 19                                   | NR                             | 900               | 1                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 483                                  | NR                             | 645               | 668                                  | NR                             | 775               | 16                                   | NR                             | 905               | 1                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 524                                  | NR                             | 650               | 605                                  | NR                             | 780               | 14                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 2                                    | NR                             | 525               | 555                                  | NR                             | 655               | 545                                  | NR                             | 785               | 12                                   | NR                             | 915               | 0                                    | NR                             |
| 400               | 4                                    | NR                             | 530               | 581                                  | NR                             | 660               | 485                                  | NR                             | 790               | 10                                   | NR                             | 920               | 0                                    | NR                             |
| 405               | 7                                    | NR                             | 535               | 604                                  | NR                             | 665               | 430                                  | NR                             | 795               | 9                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 17                                   | NR                             | 540               | 623                                  | NR                             | 670               | 378                                  | NR                             | 800               | 8                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 34                                   | NR                             | 545               | 645                                  | NR                             | 675               | 331                                  | NR                             | 805               | 7                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 68                                   | NR                             | 550               | 667                                  | NR                             | 680               | 290                                  | NR                             | 810               | 6                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 128                                  | NR                             | 555               | 693                                  | NR                             | 685               | 251                                  | NR                             | 815               | 5                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 214                                  | NR                             | 560               | 719                                  | NR                             | 690               | 218                                  | NR                             | 820               | 4                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 339                                  | NR                             | 565               | 754                                  | NR                             | 695               | 188                                  | NR                             | 825               | 4                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 507                                  | NR                             | 570               | 791                                  | NR                             | 700               | 162                                  | NR                             | 830               | 3                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 573                                  | NR                             | 575               | 830                                  | NR                             | 705               | 139                                  | NR                             | 835               | 3                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 356                                  | NR                             | 580               | 873                                  | NR                             | 710               | 119                                  | NR                             | 840               | 3                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 217                                  | NR                             | 585               | 913                                  | NR                             | 715               | 102                                  | NR                             | 845               | 2                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 168                                  | NR                             | 590               | 948                                  | NR                             | 720               | 88                                   | NR                             | 850               | 2                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 113                                  | NR                             | 595               | 974                                  | NR                             | 725               | 76                                   | NR                             | 855               | 2                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 85                                   | NR                             | 600               | 994                                  | NR                             | 730               | 65                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 85                                   | NR                             | 605               | 998                                  | NR                             | 735               | 55                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 94                                   | NR                             | 610               | 994                                  | NR                             | 740               | 47                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 120                                  | NR                             | 615               | 973                                  | NR                             | 745               | 41                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-2408-195-9

### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.27

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 168                      | NR            | 620    | 940                      | NR            | 750    | 35                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 233                      | NR            | 625    | 897                      | NR            | 755    | 30                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 300                      | NR            | 630    | 847                      | NR            | 760    | 26                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 372                      | NR            | 635    | 790                      | NR            | 765    | 22                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 430                      | NR            | 640    | 730                      | NR            | 770    | 19                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 483                      | NR            | 645    | 668                      | NR            | 775    | 16                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 524                      | NR            | 650    | 605                      | NR            | 780    | 14                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 555                      | NR            | 655    | 545                      | NR            | 785    | 12                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 581                      | NR            | 660    | 485                      | NR            | 790    | 10                       | NR            | 920    | 0                        | NR            |
| 405    | 7                        | NR            | 535    | 604                      | NR            | 665    | 430                      | NR            | 795    | 9                        | NR            | 925    | 0                        | NR            |
| 410    | 17                       | NR            | 540    | 623                      | NR            | 670    | 378                      | NR            | 800    | 8                        | NR            | 930    | 0                        | NR            |
| 415    | 34                       | NR            | 545    | 645                      | NR            | 675    | 331                      | NR            | 805    | 7                        | NR            | 935    | 0                        | NR            |
| 420    | 68                       | NR            | 550    | 667                      | NR            | 680    | 290                      | NR            | 810    | 6                        | NR            | 940    | 0                        | NR            |
| 425    | 128                      | NR            | 555    | 693                      | NR            | 685    | 251                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 214                      | NR            | 560    | 719                      | NR            | 690    | 218                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 339                      | NR            | 565    | 754                      | NR            | 695    | 188                      | NR            | 825    | 4                        | NR            | 955    | 0                        | NR            |
| 440    | 507                      | NR            | 570    | 791                      | NR            | 700    | 162                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 573                      | NR            | 575    | 830                      | NR            | 705    | 139                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 356                      | NR            | 580    | 873                      | NR            | 710    | 119                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 217                      | NR            | 585    | 913                      | NR            | 715    | 102                      | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 168                      | NR            | 590    | 948                      | NR            | 720    | 88                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 113                      | NR            | 595    | 974                      | NR            | 725    | 76                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 85                       | NR            | 600    | 994                      | NR            | 730    | 65                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 85                       | NR            | 605    | 998                      | NR            | 735    | 55                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 94                       | NR            | 610    | 994                      | NR            | 740    | 47                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 120                      | NR            | 615    | 973                      | NR            | 745    | 41                       | NR            | 875    | 1                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2408-195-9

### Melanopic Flux vs. Wavelength


**Melanopic Lumens: NR**
**M/P: 2.32**

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 168                                  | NR                             | 620               | 940                                  | NR                             | 750               | 35                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 233                                  | NR                             | 625               | 897                                  | NR                             | 755               | 30                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 300                                  | NR                             | 630               | 847                                  | NR                             | 760               | 26                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 372                                  | NR                             | 635               | 790                                  | NR                             | 765               | 22                                   | NR                             | 895               | 1                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 430                                  | NR                             | 640               | 730                                  | NR                             | 770               | 19                                   | NR                             | 900               | 1                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 483                                  | NR                             | 645               | 668                                  | NR                             | 775               | 16                                   | NR                             | 905               | 1                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 524                                  | NR                             | 650               | 605                                  | NR                             | 780               | 14                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 2                                    | NR                             | 525               | 555                                  | NR                             | 655               | 545                                  | NR                             | 785               | 12                                   | NR                             | 915               | 0                                    | NR                             |
| 400               | 4                                    | NR                             | 530               | 581                                  | NR                             | 660               | 485                                  | NR                             | 790               | 10                                   | NR                             | 920               | 0                                    | NR                             |
| 405               | 7                                    | NR                             | 535               | 604                                  | NR                             | 665               | 430                                  | NR                             | 795               | 9                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 17                                   | NR                             | 540               | 623                                  | NR                             | 670               | 378                                  | NR                             | 800               | 8                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 34                                   | NR                             | 545               | 645                                  | NR                             | 675               | 331                                  | NR                             | 805               | 7                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 68                                   | NR                             | 550               | 667                                  | NR                             | 680               | 290                                  | NR                             | 810               | 6                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 128                                  | NR                             | 555               | 693                                  | NR                             | 685               | 251                                  | NR                             | 815               | 5                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 214                                  | NR                             | 560               | 719                                  | NR                             | 690               | 218                                  | NR                             | 820               | 4                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 339                                  | NR                             | 565               | 754                                  | NR                             | 695               | 188                                  | NR                             | 825               | 4                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 507                                  | NR                             | 570               | 791                                  | NR                             | 700               | 162                                  | NR                             | 830               | 3                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 573                                  | NR                             | 575               | 830                                  | NR                             | 705               | 139                                  | NR                             | 835               | 3                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 356                                  | NR                             | 580               | 873                                  | NR                             | 710               | 119                                  | NR                             | 840               | 3                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 217                                  | NR                             | 585               | 913                                  | NR                             | 715               | 102                                  | NR                             | 845               | 2                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 168                                  | NR                             | 590               | 948                                  | NR                             | 720               | 88                                   | NR                             | 850               | 2                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 113                                  | NR                             | 595               | 974                                  | NR                             | 725               | 76                                   | NR                             | 855               | 2                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 85                                   | NR                             | 600               | 994                                  | NR                             | 730               | 65                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 85                                   | NR                             | 605               | 998                                  | NR                             | 735               | 55                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 94                                   | NR                             | 610               | 994                                  | NR                             | 740               | 47                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 120                                  | NR                             | 615               | 973                                  | NR                             | 745               | 41                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-2408-195-9

TM-30-18

### Summary

$R_f = 81.5$   
 $R_g = 99.2$   
 $CIE R_a = 81.0$   
 $R_9 = 7.1$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 94 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 91 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 78 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)