

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: P319860

Luminaire Tested: **GLEON-SA6D-830-U-SL3**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P319860  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-22)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA6D-830-U-SL3  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(6) 80 CRI, 3000K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
SPILL LIGHT ELIMINATOR OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 36879 lumens  
Efficiency: N/A  
Efficacy: 96.5 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B3 - U0 - G5

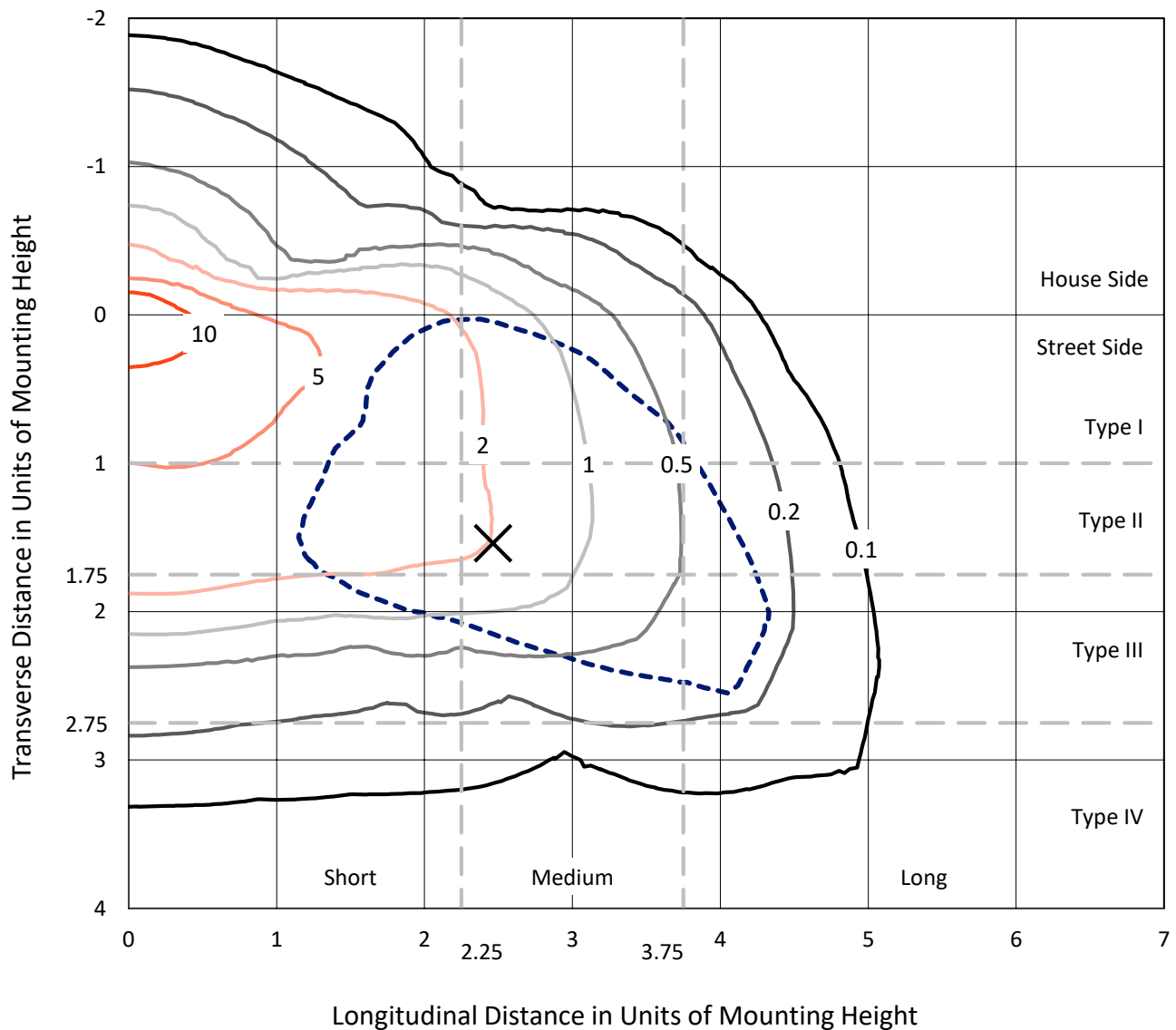
Input Watts (W): 382  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P319860  
 CATALOG NUMBER: GLEON-SA6D-830-U-SL3

## Iso-Footcandle Lines of Horizontal Illumination

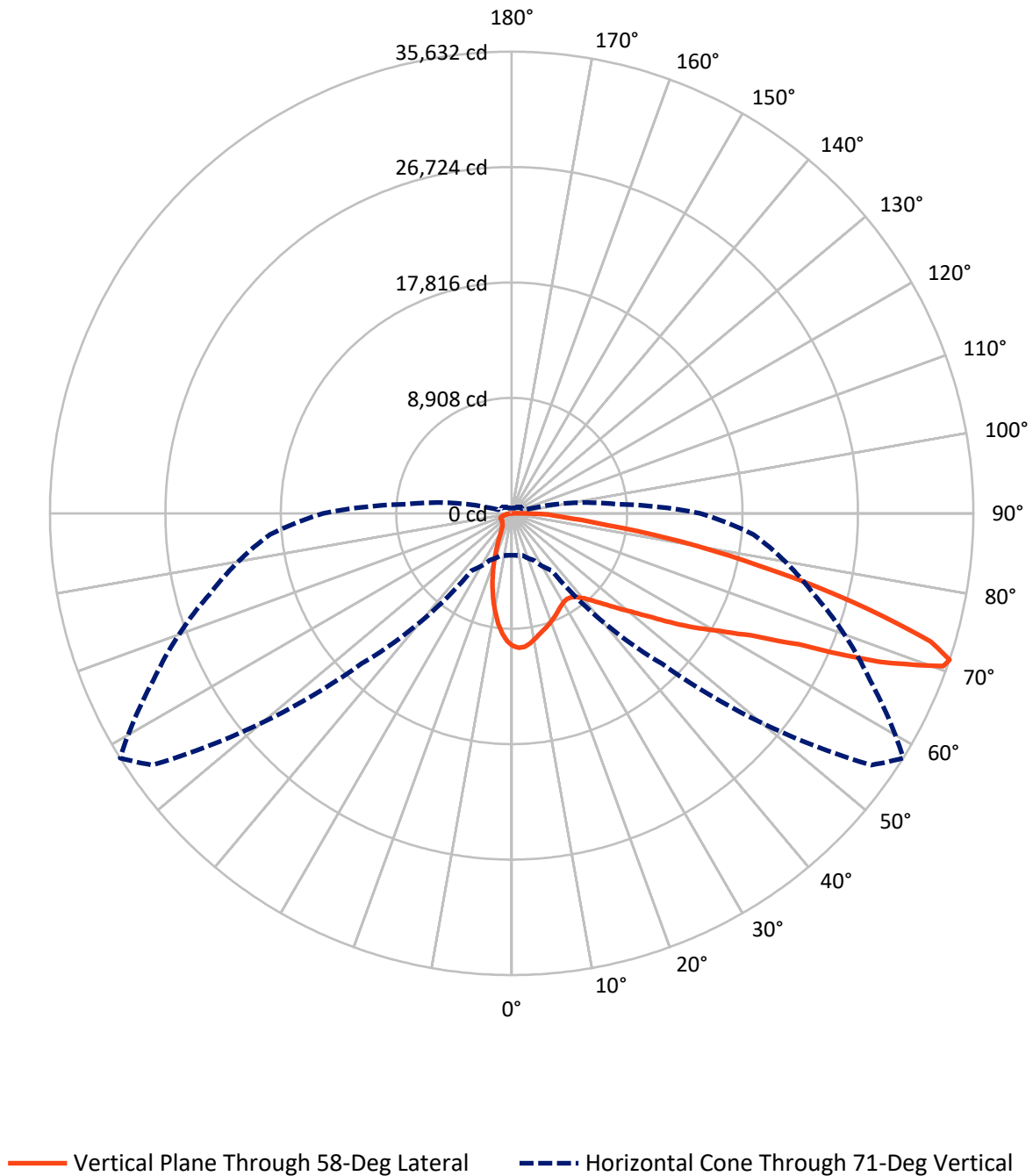
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 16.3 fc  
 Type III - Medium - N/A

REPORT NUMBER: P319860  
CATALOG NUMBER: GLEON-SA6D-830-U-SL3

## Luminous Intensity Polar Plot



REPORT NUMBER: P319860

CATALOG NUMBER: GLEON-SA6D-830-U-SL3

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 5513.7   | 0.0    | 5513.7  |
|                    | % Fixture | 15.0     | 0.0    | 15.0    |
| <b>Street Side</b> | Lumens    | 31365.3  | 0.0    | 31365.3 |
|                    | % Fixture | 85.0     | 0.0    | 85.0    |
| <b>Total</b>       | Lumens    | 36879.0  | 0.0    | 36879.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 881.5   | 2.4       |
| 10°-20°   | 1960.1  | 5.3       |
| 20°-30°   | 2491.1  | 6.8       |
| 30°-40°   | 3173.2  | 8.6       |
| 40°-50°   | 4499.7  | 12.2      |
| 50°-60°   | 6963.5  | 18.9      |
| 60°-70°   | 9479.9  | 25.7      |
| 70°-80°   | 6324.2  | 17.1      |
| 80°-90°   | 1105.7  | 3.0       |
| 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°    | 36879.0 | 100.0     |
| 0°-180°   | 36879.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P319860

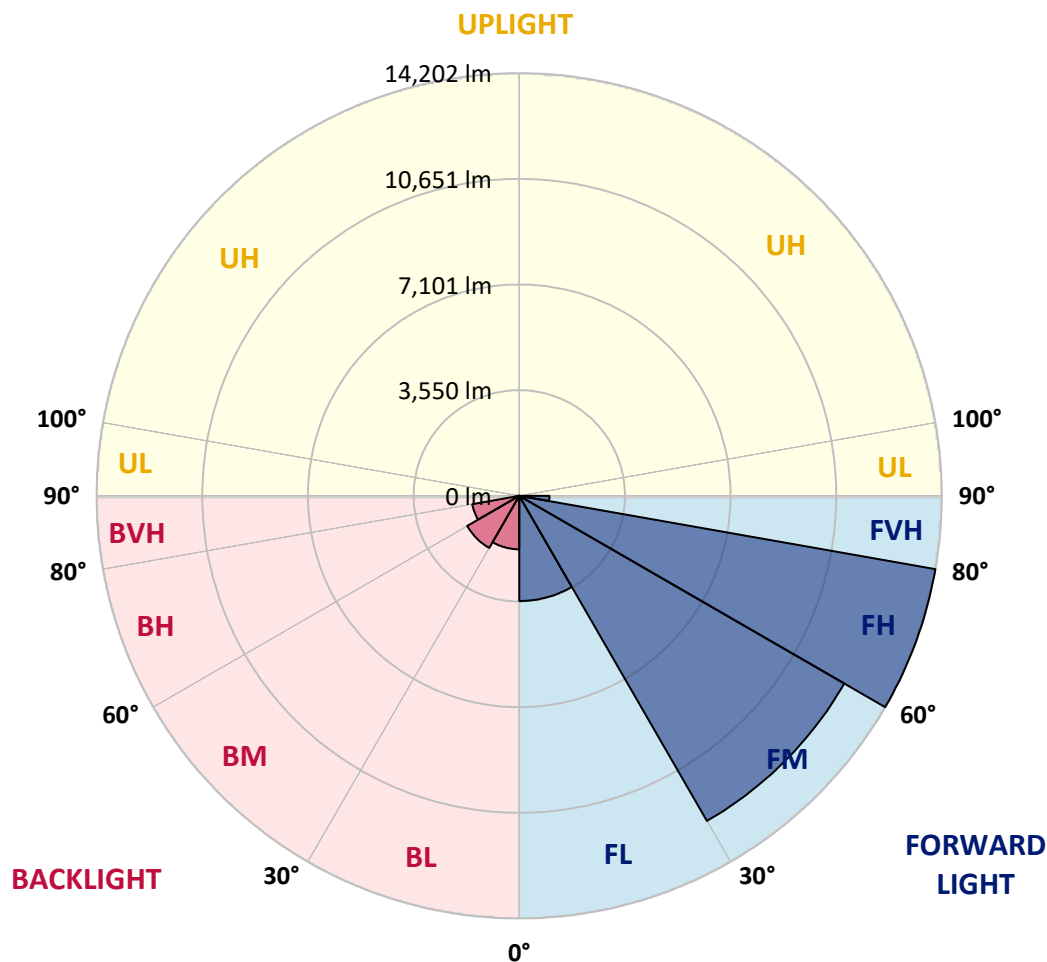
CATALOG NUMBER: GLEON-SA6D-830-U-SL3

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 3535.5  | 9.6       |                         |      |         |
| FM   | (30°-60°)   | 12614.4 | 34.2      |                         |      |         |
| FH   | (60°-80°)   | 14201.7 | 38.5      |                         |      | G5      |
| FVH  | (80°-90°)   | 1013.8  | 2.7       |                         |      | G5      |
| BL   | (0°-30°)    | 1797.3  | 4.9       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 2022.0  | 5.5       | B2/2500                 |      |         |
| BH   | (60°-80°)   | 1602.5  | 4.3       | B3/2500                 |      | G3/2500 |
| BVH  | (80°-90°)   | 91.9    | 0.2       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G5**

Type III Medium





REPORT NUMBER: P319860

CATALOG NUMBER: GLEON-SA6D-830-U-SL3

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 58°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 |
| 2.5°  | 10489.0 | 10474.9 | 10480.0 | 10469.7 | 10445.3 | 10420.9 | 10385.0 | 10391.4 | 10341.3 | 10266.8 | 10174.3 |
| 5°    | 10291.2 | 10286.0 | 10324.6 | 10346.4 | 10364.4 | 10350.3 | 10340.0 | 10352.8 | 10279.6 | 10176.8 | 10016.3 |
| 7.5°  | 9876.2  | 9819.7  | 9868.5  | 9941.8  | 10011.1 | 10063.8 | 10133.2 | 10142.2 | 10095.9 | 9988.0  | 9777.3  |
| 10°   | 9286.6  | 9232.6  | 9304.6  | 9418.9  | 9557.6  | 9683.5  | 9823.6  | 9849.3  | 9858.3  | 9760.6  | 9505.0  |
| 12.5° | 8675.1  | 8634.0  | 8705.9  | 8866.5  | 9096.5  | 9290.4  | 9514.0  | 9552.5  | 9632.2  | 9566.6  | 9253.2  |
| 15°   | 8127.9  | 8112.4  | 8199.8  | 8357.8  | 8622.4  | 8919.2  | 9241.6  | 9312.3  | 9447.2  | 9425.3  | 9056.6  |
| 17.5° | 7655.1  | 7651.3  | 7718.1  | 7883.8  | 8176.7  | 8551.8  | 8970.6  | 9090.0  | 9290.4  | 9316.1  | 8894.8  |
| 20°   | 7303.1  | 7295.4  | 7341.7  | 7463.7  | 7765.6  | 8190.8  | 8677.7  | 8842.1  | 9131.2  | 9221.1  | 8727.8  |
| 22.5° | 7114.3  | 7113.0  | 7114.3  | 7172.1  | 7418.7  | 7814.4  | 8392.5  | 8592.9  | 8975.7  | 9145.3  | 8542.8  |
| 25°   | 7082.2  | 7078.3  | 7050.1  | 7043.6  | 7183.7  | 7499.7  | 8109.9  | 8330.8  | 8828.0  | 9092.6  | 8366.8  |
| 27.5° | 7165.7  | 7170.8  | 7133.6  | 7073.2  | 7101.4  | 7292.8  | 7864.5  | 8100.9  | 8709.8  | 9082.3  | 8244.8  |
| 30°   | 7339.1  | 7336.5  | 7304.4  | 7241.5  | 7186.2  | 7215.8  | 7689.8  | 7926.2  | 8630.1  | 9127.3  | 8161.3  |
| 32.5° | 7530.5  | 7544.6  | 7538.2  | 7503.5  | 7421.3  | 7303.1  | 7637.1  | 7868.4  | 8607.0  | 9235.2  | 8125.3  |
| 35°   | 7760.5  | 7775.9  | 7822.1  | 7849.1  | 7752.7  | 7562.6  | 7750.2  | 7950.6  | 8673.8  | 9438.2  | 8183.1  |
| 37.5° | 7978.8  | 8018.7  | 8148.4  | 8262.7  | 8180.5  | 7968.6  | 8050.8  | 8193.4  | 8880.6  | 9758.1  | 8338.5  |
| 40°   | 8230.6  | 8265.3  | 8477.3  | 8720.1  | 8707.2  | 8487.6  | 8535.1  | 8630.1  | 9245.5  | 10216.7 | 8619.9  |
| 42.5° | 8478.6  | 8547.9  | 8855.0  | 9199.2  | 9298.2  | 9104.2  | 9180.0  | 9230.1  | 9759.3  | 10824.3 | 9110.6  |
| 45°   | 8808.7  | 8883.2  | 9309.7  | 9724.7  | 9955.9  | 9846.7  | 9967.4  | 9986.7  | 10405.5 | 11651.6 | 9823.6  |
| 47.5° | 9308.4  | 9393.2  | 9890.4  | 10325.9 | 10679.1 | 10690.7 | 10889.8 | 10882.1 | 11212.3 | 12598.4 | 10721.5 |
| 50°   | 10086.9 | 10209.0 | 10616.2 | 11023.4 | 11452.5 | 11691.4 | 11957.3 | 11920.1 | 12179.6 | 13606.8 | 11755.7 |
| 52.5° | 11106.9 | 11163.4 | 11465.3 | 11765.9 | 12299.0 | 12834.7 | 13216.3 | 13182.9 | 13276.7 | 14643.5 | 12929.8 |
| 55°   | 12164.2 | 12206.6 | 12331.2 | 12495.6 | 13212.4 | 14086.0 | 14892.7 | 14840.0 | 14602.4 | 15720.0 | 14089.8 |
| 57.5° | 13114.8 | 13200.9 | 13286.9 | 13355.0 | 14132.2 | 15393.7 | 16607.7 | 16611.6 | 16041.2 | 16881.3 | 15288.4 |
| 60°   | 13262.5 | 13338.3 | 13907.4 | 14444.4 | 15705.9 | 17138.3 | 18443.4 | 18404.9 | 17530.1 | 18141.5 | 16624.4 |
| 62.5° | 11723.5 | 11894.4 | 12845.0 | 14273.5 | 17221.8 | 20329.3 | 20785.3 | 20737.8 | 19310.6 | 19694.7 | 18180.1 |
| 65°   | 8401.5  | 8595.5  | 9742.6  | 11889.3 | 16486.9 | 23845.3 | 25011.7 | 24372.0 | 21738.5 | 21604.9 | 20001.7 |
| 67.5° | 4846.9  | 4893.2  | 5390.3  | 7114.3  | 12553.4 | 24029.0 | 31459.3 | 30563.9 | 25508.9 | 23772.1 | 20893.2 |
| 70°   | 3584.1  | 3582.8  | 3701.0  | 4378.0  | 6793.1  | 19611.2 | 34525.7 | 35328.6 | 29478.4 | 24485.1 | 19633.0 |
| 71°   | 3241.1  | 3245.0  | 3377.3  | 3984.9  | 5380.0  | 16415.0 | 33874.4 | 35631.8 | 30524.1 | 24133.1 | 18720.9 |
| 72.5° | 2772.2  | 2785.1  | 2968.8  | 3573.8  | 4525.8  | 11320.2 | 31068.8 | 33812.8 | 31020.0 | 23264.7 | 17293.7 |
| 75°   | 2102.9  | 2132.5  | 2386.8  | 3012.5  | 4136.5  | 5741.0  | 22802.2 | 27000.4 | 27556.6 | 20528.4 | 12850.2 |
| 77.5° | 1500.4  | 1533.8  | 1821.6  | 2533.3  | 3932.3  | 4326.6  | 15270.4 | 19694.7 | 20279.2 | 13155.9 | 5796.3  |
| 80°   | 948.1   | 987.9   | 1205.0  | 2015.6  | 3694.6  | 4108.2  | 9596.2  | 13238.1 | 11058.1 | 4209.7  | 1474.8  |
| 82.5° | 556.2   | 587.1   | 747.7   | 1316.7  | 3017.6  | 3956.7  | 5645.9  | 7337.8  | 4303.5  | 1271.8  | 670.6   |
| 85°   | 322.4   | 336.6   | 466.3   | 838.9   | 2191.6  | 3734.4  | 4148.1  | 4101.8  | 1867.9  | 621.8   | 317.3   |
| 87.5° | 150.3   | 167.0   | 276.2   | 438.1   | 1216.5  | 2706.7  | 3278.4  | 2832.6  | 1161.3  | 291.6   | 149.0   |
| 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: P319860

CATALOG NUMBER: GLEON-SA6D-830-U-SL3

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°    | 115°    | 125°    | 135°    | 145°    | 155°    | 165°    | 175°    | 180°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 | 10217.9 |
| 2.5°  | 10129.3 | 10107.5 | 10016.3 | 9935.3  | 9850.5  | 9740.1  | 9618.0  | 9602.6  | 9528.1  | 9542.2  | 9516.5  |
| 5°    | 9928.9  | 9873.7  | 9654.0  | 9454.9  | 9219.8  | 9009.1  | 8780.4  | 8675.1  | 8523.5  | 8513.2  | 8474.7  |
| 7.5°  | 9642.4  | 9539.7  | 9199.2  | 8821.6  | 8443.9  | 8084.2  | 7728.3  | 7494.5  | 7255.6  | 7154.1  | 7145.1  |
| 10°   | 9320.0  | 9145.3  | 8644.3  | 8085.5  | 7540.8  | 7015.4  | 6506.7  | 6130.3  | 5791.1  | 5630.5  | 5624.1  |
| 12.5° | 9014.2  | 8756.0  | 8068.8  | 7308.3  | 6563.2  | 5882.3  | 5184.8  | 4690.2  | 4265.0  | 4122.4  | 4062.0  |
| 15°   | 8754.8  | 8391.2  | 7508.7  | 6536.2  | 5631.8  | 4686.3  | 3892.4  | 3372.2  | 2979.1  | 2842.9  | 2817.2  |
| 17.5° | 8503.0  | 8035.4  | 6934.4  | 5756.4  | 4663.2  | 3623.9  | 2828.8  | 2442.1  | 2232.7  | 2177.4  | 2176.2  |
| 20°   | 8252.5  | 7669.2  | 6334.5  | 4958.7  | 3726.7  | 2710.6  | 2174.9  | 2001.5  | 1930.8  | 1924.4  | 1914.1  |
| 22.5° | 7968.6  | 7281.3  | 5703.8  | 4158.3  | 2908.4  | 2131.2  | 1848.6  | 1779.2  | 1770.2  | 1793.3  | 1793.3  |
| 25°   | 7702.6  | 6895.9  | 5064.0  | 3374.7  | 2262.2  | 1777.9  | 1650.7  | 1636.6  | 1661.0  | 1702.1  | 1706.0  |
| 27.5° | 7454.7  | 6524.6  | 4439.7  | 2678.5  | 1812.6  | 1566.0  | 1513.3  | 1530.0  | 1573.7  | 1621.2  | 1622.5  |
| 30°   | 7250.5  | 6173.9  | 3833.3  | 2110.6  | 1531.3  | 1408.0  | 1399.0  | 1432.4  | 1479.9  | 1517.1  | 1526.1  |
| 32.5° | 7092.4  | 5874.6  | 3247.5  | 1697.0  | 1347.6  | 1289.8  | 1297.5  | 1325.7  | 1355.3  | 1375.8  | 1390.0  |
| 35°   | 7019.2  | 5617.7  | 2706.7  | 1431.1  | 1230.7  | 1198.6  | 1208.8  | 1224.3  | 1237.1  | 1252.5  | 1264.1  |
| 37.5° | 7032.1  | 5418.6  | 2223.7  | 1265.4  | 1152.3  | 1135.6  | 1135.6  | 1135.6  | 1135.6  | 1143.3  | 1144.6  |
| 40°   | 7151.5  | 5304.2  | 1830.6  | 1160.0  | 1099.6  | 1081.7  | 1067.5  | 1054.7  | 1044.4  | 1049.5  | 1047.0  |
| 42.5° | 7457.3  | 5294.0  | 1542.8  | 1093.2  | 1057.3  | 1027.7  | 999.4   | 981.5   | 968.6   | 973.7   | 976.3   |
| 45°   | 7976.3  | 5422.4  | 1348.9  | 1045.7  | 1017.4  | 972.5   | 936.5   | 917.2   | 908.2   | 924.9   | 927.5   |
| 47.5° | 8648.1  | 5702.5  | 1230.7  | 1011.0  | 980.2   | 921.1   | 882.5   | 864.6   | 867.1   | 891.5   | 898.0   |
| 50°   | 9514.0  | 6157.2  | 1174.2  | 989.2   | 954.5   | 877.4   | 837.6   | 822.2   | 829.9   | 864.6   | 872.3   |
| 52.5° | 10464.6 | 6812.4  | 1180.6  | 982.7   | 937.8   | 845.3   | 802.9   | 784.9   | 797.8   | 829.9   | 836.3   |
| 55°   | 11561.7 | 7599.9  | 1287.2  | 991.7   | 913.4   | 824.7   | 774.6   | 743.8   | 754.1   | 783.6   | 788.8   |
| 57.5° | 12780.8 | 8501.7  | 1501.7  | 989.2   | 882.5   | 805.5   | 745.1   | 698.8   | 706.5   | 724.5   | 729.7   |
| 60°   | 14050.0 | 9591.0  | 1834.5  | 996.9   | 868.4   | 782.3   | 705.3   | 647.5   | 644.9   | 660.3   | 662.9   |
| 62.5° | 15573.6 | 10851.3 | 2214.7  | 1002.0  | 877.4   | 752.8   | 652.6   | 596.1   | 588.4   | 592.2   | 594.8   |
| 65°   | 17143.4 | 11763.4 | 2072.1  | 981.5   | 905.7   | 728.4   | 606.3   | 546.0   | 531.8   | 529.3   | 530.6   |
| 67.5° | 17192.2 | 10785.8 | 1452.9  | 940.3   | 917.2   | 715.5   | 571.7   | 503.6   | 480.5   | 471.5   | 470.2   |
| 70°   | 15418.1 | 8762.5  | 1131.8  | 896.7   | 871.0   | 695.0   | 539.5   | 468.9   | 434.2   | 420.1   | 418.8   |
| 71°   | 14552.3 | 8066.2  | 1072.7  | 874.8   | 836.3   | 674.4   | 525.4   | 453.5   | 417.5   | 402.1   | 399.5   |
| 72.5° | 13194.4 | 7231.2  | 1000.7  | 840.1   | 769.5   | 621.8   | 498.4   | 431.6   | 394.4   | 376.4   | 372.5   |
| 75°   | 9469.0  | 4728.7  | 859.4   | 748.9   | 637.2   | 495.9   | 436.8   | 388.0   | 355.8   | 334.0   | 331.4   |
| 77.5° | 3648.3  | 1882.0  | 650.0   | 623.0   | 488.2   | 388.0   | 359.7   | 335.3   | 312.2   | 290.3   | 289.0   |
| 80°   | 1127.9  | 841.4   | 474.0   | 468.9   | 353.3   | 289.0   | 280.0   | 273.6   | 264.6   | 241.5   | 236.4   |
| 82.5° | 602.5   | 483.0   | 326.3   | 303.2   | 231.2   | 192.7   | 203.0   | 205.5   | 206.8   | 182.4   | 179.8   |
| 85°   | 287.8   | 255.6   | 183.7   | 172.1   | 134.9   | 107.9   | 124.6   | 134.9   | 136.2   | 111.8   | 104.1   |
| 87.5° | 137.5   | 133.6   | 86.1    | 65.5    | 50.1    | 36.0    | 43.7    | 54.0    | 59.1    | 42.4    | 37.3    |
| 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  
 R<sub>f</sub>: 81.5  
 R<sub>g</sub>: 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

| 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

### 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)