

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-08 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: P317880

Luminaire Tested: **GLEON-SA6B-827-U-T3R**

Issue Date: 3/3/2020

### Test Information

Test Method: LM-79-08  
Report Number: P317880  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-10)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA6B-827-U-T3R  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(6) 80 CRI, 2700K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
ROADWAY OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

### Summary

Lumens per Lamp: N/A  
Luminaire Lumens: 25689 lumens  
Efficiency: N/A  
Efficacy: 103.2 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type IV - Medium  
BUG Rating: B3 - U0 - G4

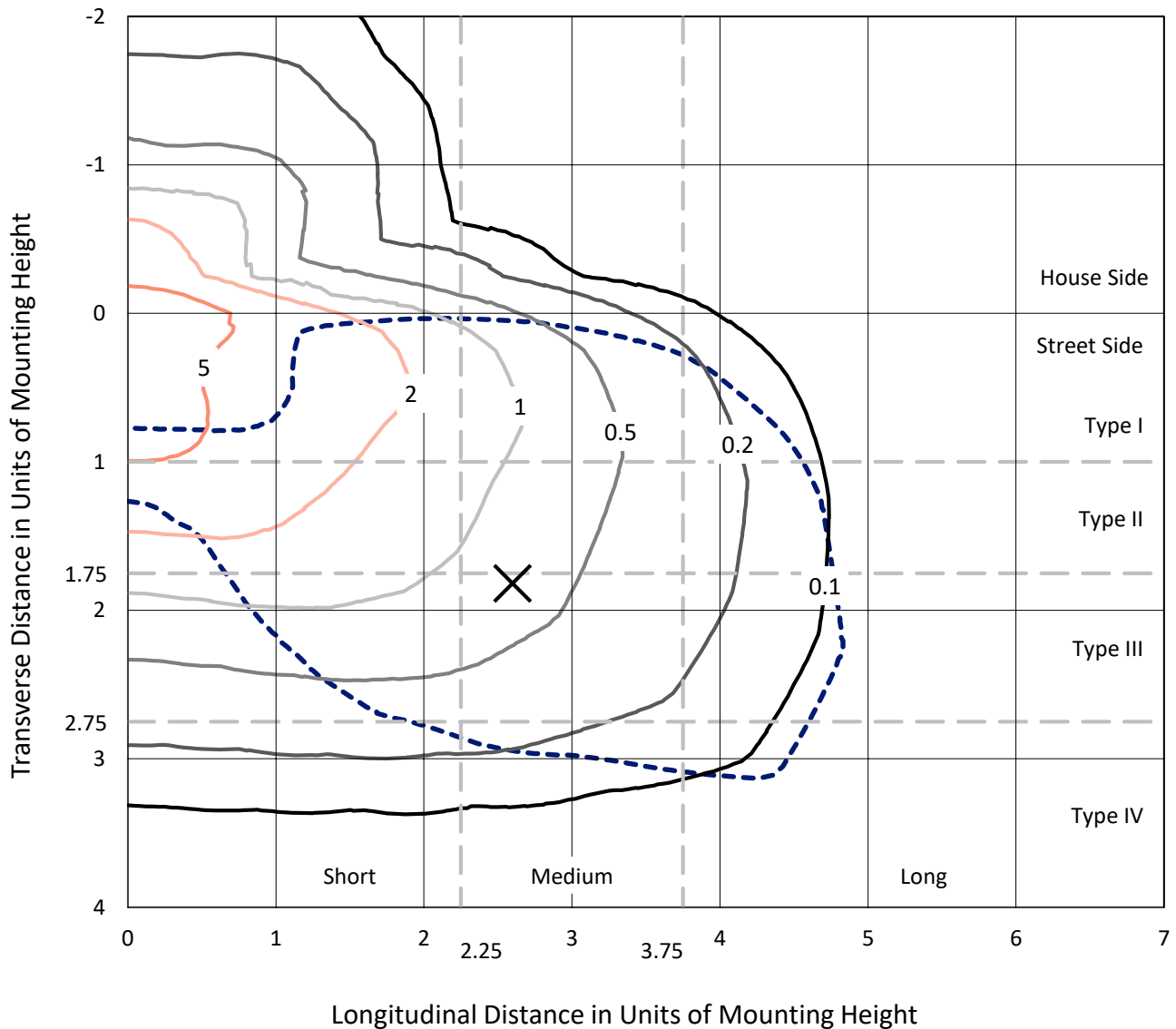
Input Watts (W): 249  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

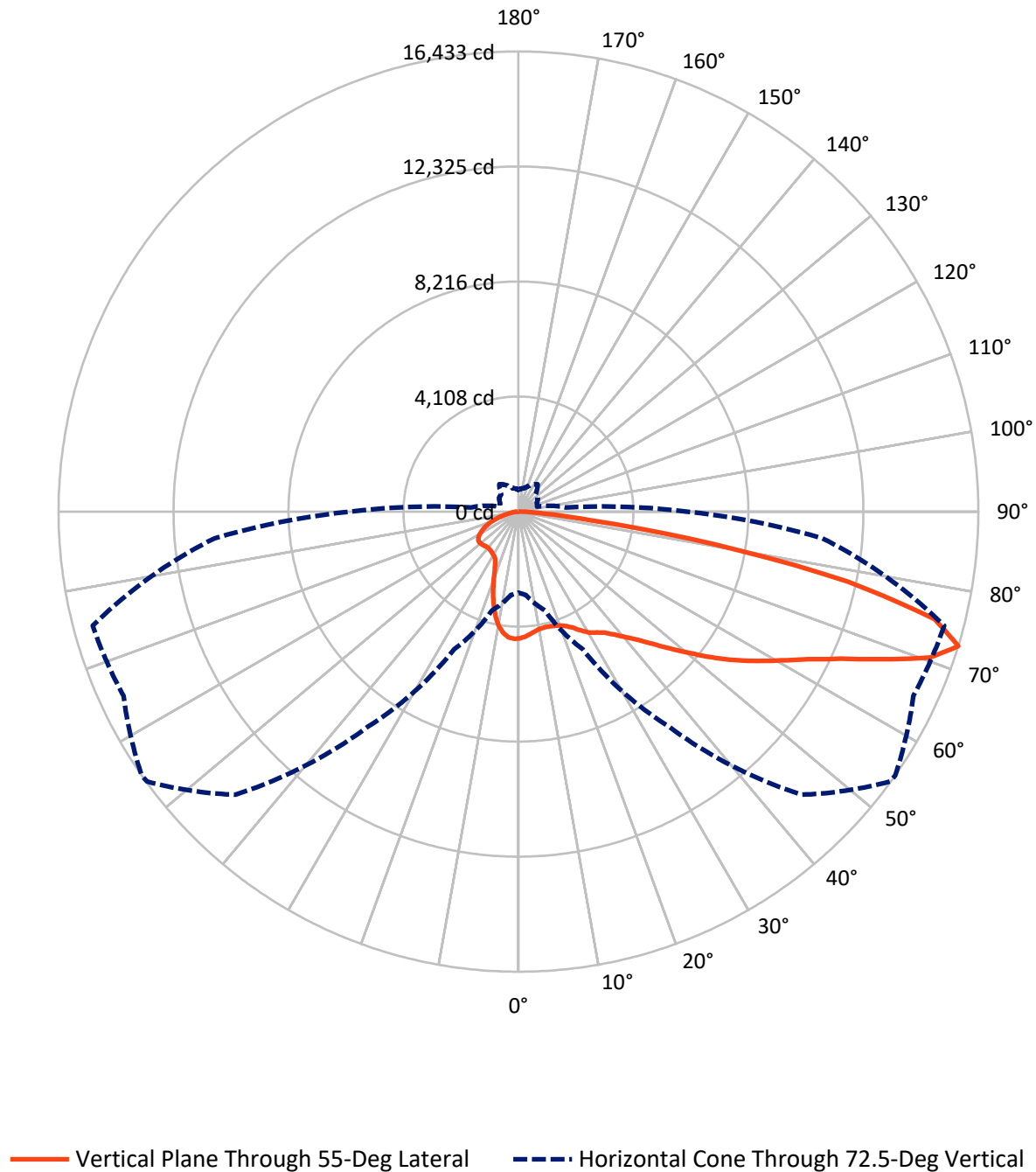
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 7.3 fc  
 Type IV - Medium - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GLEON-SA6B-827-U-T3R

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 4774.7   | 0.0    | 4774.7  |
|                    | % Fixture | 18.6     | 0.0    | 18.6    |
| <b>Street Side</b> | Lumens    | 20914.2  | 0.0    | 20914.2 |
|                    | % Fixture | 81.4     | 0.0    | 81.4    |
| <b>Total</b>       | Lumens    | 25689.0  | 0.0    | 25689.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 410.0   | 1.6       |
| 10°-20°   | 1091.6  | 4.2       |
| 20°-30°   | 1799.7  | 7.0       |
| 30°-40°   | 2662.3  | 10.4      |
| 40°-50°   | 3715.9  | 14.5      |
| 50°-60°   | 4838.3  | 18.8      |
| 60°-70°   | 5946.1  | 23.1      |
| 70°-80°   | 4661.0  | 18.1      |
| 80°-90°   | 564.1   | 2.2       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 25689.0 | 100.0     |
| 0°-180°   | 25689.0 | 100.0     |

**Coefficient of Utilization**



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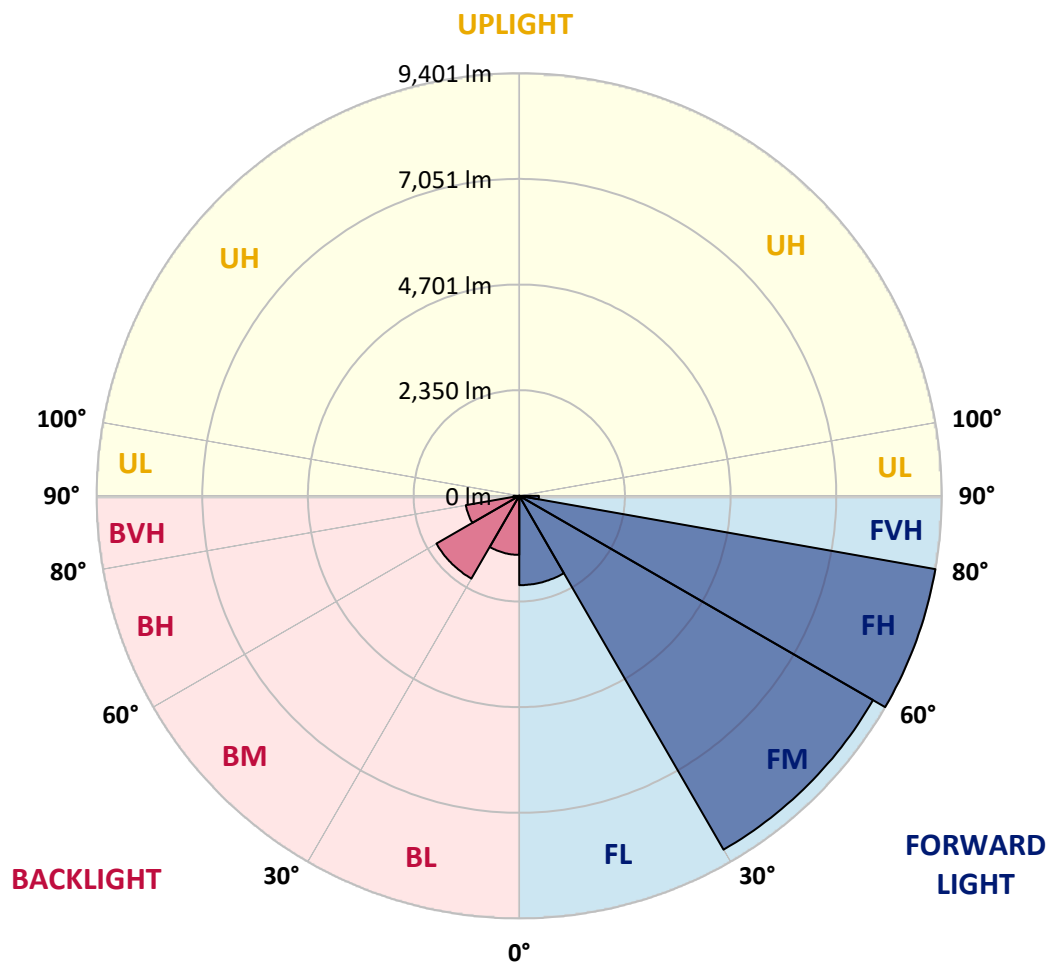
CATALOG NUMBER: GLEON-SA6B-827-U-T3R

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|--------|-----------|-------------------------|------|----------|
|      |             |        |           | B                       | U    | G        |
| FL   | (0°-30°)    | 1987.6 | 7.7       |                         |      |          |
| FM   | (30°-60°)   | 9089.3 | 35.4      |                         |      |          |
| FH   | (60°-80°)   | 9401.3 | 36.6      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 436.1  | 1.7       |                         |      | G3/500   |
| BL   | (0°-30°)    | 1313.7 | 5.1       | B3/2500                 |      |          |
| BM   | (30°-60°)   | 2127.2 | 8.3       | B2/2500                 |      |          |
| BH   | (60°-80°)   | 1205.8 | 4.7       | B3/2500                 |      | G3/2500  |
| BVH  | (80°-90°)   | 128.0  | 0.5       |                         |      | G2/225   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |          |

**BUG Rating: B3-U0-G4**

Type IV Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°     | 45°     | 54°     | 55°     | 65°     | 75°     | 85°     |
|-------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 4531.0 | 4531.0 | 4531.0 | 4531.0 | 4531.0  | 4531.0  | 4531.0  | 4531.0  | 4531.0  | 4531.0  | 4531.0  |
| 2.5°  | 4383.5 | 4373.1 | 4386.1 | 4404.3 | 4424.3  | 4451.2  | 4466.8  | 4473.7  | 4500.6  | 4511.0  | 4533.6  |
| 5°    | 4180.4 | 4175.2 | 4196.9 | 4228.2 | 4272.4  | 4334.9  | 4385.2  | 4394.8  | 4465.9  | 4516.2  | 4562.2  |
| 7.5°  | 4032.9 | 4032.9 | 4058.1 | 4095.4 | 4144.9  | 4229.0  | 4300.2  | 4313.2  | 4433.8  | 4542.3  | 4627.3  |
| 10°   | 3915.8 | 3920.1 | 3949.6 | 3993.9 | 4052.0  | 4141.4  | 4236.0  | 4250.7  | 4425.1  | 4603.0  | 4738.4  |
| 12.5° | 3837.7 | 3848.1 | 3875.0 | 3914.9 | 3987.0  | 4095.4  | 4215.2  | 4235.1  | 4443.4  | 4689.8  | 4872.0  |
| 15°   | 3887.2 | 3904.5 | 3907.1 | 3923.6 | 3963.5  | 4081.5  | 4227.3  | 4248.1  | 4482.4  | 4778.3  | 5023.8  |
| 17.5° | 4104.1 | 4110.2 | 4083.3 | 4048.6 | 4029.5  | 4105.0  | 4263.7  | 4285.4  | 4529.3  | 4865.9  | 5169.6  |
| 20°   | 4433.8 | 4430.3 | 4372.2 | 4278.5 | 4181.3  | 4193.5  | 4323.6  | 4346.2  | 4592.6  | 4943.1  | 5315.4  |
| 22.5° | 4850.3 | 4838.1 | 4748.8 | 4576.1 | 4410.4  | 4341.0  | 4428.6  | 4447.7  | 4688.0  | 5053.3  | 5471.5  |
| 25°   | 5355.3 | 5328.4 | 5210.4 | 4978.7 | 4734.9  | 4556.1  | 4586.5  | 4604.7  | 4826.9  | 5176.5  | 5614.7  |
| 27.5° | 5888.0 | 5861.1 | 5711.0 | 5430.8 | 5106.3  | 4827.7  | 4804.3  | 4819.9  | 4984.8  | 5267.6  | 5720.6  |
| 30°   | 6445.1 | 6416.4 | 6279.3 | 5965.2 | 5500.2  | 5108.9  | 5007.3  | 5013.4  | 5095.8  | 5317.1  | 5807.3  |
| 32.5° | 7004.7 | 6977.8 | 6824.2 | 6459.8 | 5927.9  | 5410.8  | 5154.0  | 5146.2  | 5162.7  | 5368.3  | 5905.4  |
| 35°   | 7572.2 | 7582.6 | 7403.0 | 6999.5 | 6401.7  | 5746.6  | 5327.5  | 5311.0  | 5274.6  | 5473.3  | 6044.2  |
| 37.5° | 8179.6 | 8172.6 | 7940.1 | 7518.4 | 6897.1  | 6111.0  | 5576.5  | 5573.9  | 5448.1  | 5672.0  | 6262.0  |
| 40°   | 8585.6 | 8590.0 | 8448.5 | 8049.4 | 7397.8  | 6514.5  | 5895.8  | 5889.8  | 5724.9  | 5969.6  | 6547.5  |
| 42.5° | 8744.4 | 8773.0 | 8809.5 | 8556.1 | 7921.9  | 6982.2  | 6276.7  | 6268.1  | 6111.0  | 6396.5  | 6883.2  |
| 45°   | 8755.7 | 8813.0 | 9038.5 | 9006.4 | 8452.9  | 7517.5  | 6763.5  | 6739.2  | 6626.4  | 6963.9  | 7284.1  |
| 47.5° | 8658.5 | 8717.5 | 9092.3 | 9274.6 | 8927.5  | 8082.4  | 7332.7  | 7313.6  | 7216.4  | 7673.7  | 7717.9  |
| 50°   | 8445.9 | 8502.3 | 8981.3 | 9405.6 | 9317.9  | 8625.5  | 7988.7  | 7938.3  | 7886.3  | 8493.6  | 8214.3  |
| 52.5° | 8047.7 | 8156.1 | 8832.9 | 9436.8 | 9551.3  | 9108.0  | 8678.5  | 8645.5  | 8674.1  | 9358.7  | 8711.4  |
| 55°   | 7104.5 | 7226.0 | 8450.3 | 9410.8 | 9724.0  | 9513.2  | 9368.3  | 9366.5  | 9514.9  | 10266.3 | 9245.1  |
| 57.5° | 6576.1 | 6662.0 | 7671.1 | 9366.5 | 9928.8  | 9915.8  | 10051.1 | 10067.6 | 10356.5 | 11254.6 | 9803.8  |
| 60°   | 6277.6 | 6367.8 | 7276.3 | 9202.5 | 10246.3 | 10436.4 | 10747.9 | 10780.8 | 11212.1 | 12348.7 | 10476.3 |
| 62.5° | 6006.0 | 6104.9 | 7031.6 | 8868.5 | 10620.3 | 11180.8 | 11582.6 | 11612.1 | 12117.9 | 13473.2 | 11126.2 |
| 65°   | 5541.8 | 5653.8 | 6673.3 | 8649.0 | 10960.4 | 12151.8 | 12643.7 | 12663.7 | 13158.3 | 14651.5 | 11623.3 |
| 67.5° | 4885.9 | 4988.3 | 5997.4 | 8163.9 | 11212.1 | 13330.9 | 14054.6 | 14065.8 | 14189.9 | 15483.6 | 11877.6 |
| 70°   | 4119.7 | 4158.8 | 5034.2 | 7162.6 | 10914.5 | 14433.7 | 15600.8 | 15603.4 | 15130.5 | 16016.4 | 11835.9 |
| 72.5° | 2894.6 | 2986.5 | 3654.6 | 5422.1 | 9379.5  | 14299.2 | 16403.4 | 16432.9 | 15567.8 | 15747.4 | 10890.2 |
| 75°   | 1775.3 | 1872.4 | 2292.4 | 3285.9 | 5950.5  | 11245.9 | 15155.6 | 15360.4 | 14747.8 | 14040.7 | 8896.2  |
| 77.5° | 1187.0 | 1223.4 | 1495.9 | 1915.8 | 2695.9  | 6470.2  | 11652.0 | 12037.2 | 12251.5 | 10239.4 | 5689.3  |
| 80°   | 662.0  | 731.4  | 991.7  | 1190.4 | 1199.1  | 2570.9  | 6986.5  | 7076.7  | 6816.4  | 4077.2  | 1755.3  |
| 82.5° | 350.5  | 388.7  | 662.0  | 699.3  | 654.2   | 860.7   | 2603.9  | 2606.5  | 2177.9  | 1093.3  | 521.5   |
| 85°   | 271.6  | 303.7  | 453.8  | 426.9  | 334.1   | 381.8   | 859.0   | 905.9   | 741.0   | 447.7   | 170.1   |
| 87.5° | 135.4  | 168.3  | 308.0  | 270.7  | 131.0   | 109.3   | 307.2   | 328.0   | 292.4   | 175.3   | 61.6    |
| 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: P317880

CATALOG NUMBER: GLEON-SA6B-827-U-T3R

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 4531.0 | 4531.0 | 4531.0 | 4531.0 | 4531.0 | 4531.0 | 4531.0 | 4531.0 | 4531.0 | 4531.0 | 4531.0 |
| 2.5°  | 4542.3 | 4550.1 | 4559.6 | 4549.2 | 4545.7 | 4531.9 | 4508.4 | 4503.2 | 4491.1 | 4491.9 | 4498.9 |
| 5°    | 4582.2 | 4595.2 | 4590.0 | 4550.1 | 4502.4 | 4435.5 | 4366.1 | 4307.1 | 4268.1 | 4265.5 | 4262.9 |
| 7.5°  | 4658.5 | 4667.2 | 4626.4 | 4512.8 | 4379.1 | 4224.7 | 4078.9 | 3951.4 | 3874.2 | 3855.1 | 3850.7 |
| 10°   | 4778.3 | 4776.5 | 4664.6 | 4435.5 | 4169.2 | 3893.2 | 3659.0 | 3482.0 | 3378.7 | 3348.3 | 3340.5 |
| 12.5° | 4911.9 | 4891.9 | 4677.6 | 4295.0 | 3872.4 | 3489.8 | 3193.0 | 2996.1 | 2888.5 | 2853.8 | 2845.1 |
| 15°   | 5049.9 | 5000.4 | 4645.5 | 4085.0 | 3508.0 | 3055.1 | 2743.6 | 2561.4 | 2503.2 | 2484.1 | 2480.7 |
| 17.5° | 5178.3 | 5082.8 | 4553.5 | 3800.4 | 3092.4 | 2622.1 | 2379.2 | 2306.3 | 2320.2 | 2345.3 | 2346.2 |
| 20°   | 5304.1 | 5138.4 | 4406.0 | 3441.2 | 2654.2 | 2265.5 | 2183.1 | 2236.9 | 2302.8 | 2354.0 | 2360.9 |
| 22.5° | 5428.2 | 5177.4 | 4216.0 | 3026.4 | 2262.0 | 2065.1 | 2123.2 | 2221.2 | 2296.7 | 2352.3 | 2361.8 |
| 25°   | 5532.3 | 5186.9 | 3954.0 | 2583.9 | 1989.6 | 1989.6 | 2094.6 | 2187.4 | 2262.0 | 2316.7 | 2326.2 |
| 27.5° | 5570.5 | 5122.7 | 3584.4 | 2174.4 | 1852.5 | 1954.9 | 2054.6 | 2131.9 | 2195.2 | 2253.3 | 2263.8 |
| 30°   | 5585.2 | 5003.9 | 3157.5 | 1845.5 | 1796.1 | 1917.6 | 2000.9 | 2066.8 | 2126.7 | 2181.3 | 2190.9 |
| 32.5° | 5587.8 | 4860.7 | 2704.5 | 1659.0 | 1757.0 | 1878.5 | 1934.0 | 1992.2 | 2056.4 | 2078.1 | 2081.5 |
| 35°   | 5604.3 | 4691.5 | 2227.3 | 1563.5 | 1720.6 | 1842.1 | 1886.3 | 1928.0 | 1823.8 | 1831.7 | 1838.6 |
| 37.5° | 5652.0 | 4524.0 | 1828.2 | 1509.8 | 1697.2 | 1823.0 | 1875.9 | 1724.9 | 1643.4 | 1624.3 | 1621.7 |
| 40°   | 5741.4 | 4345.3 | 1532.3 | 1466.4 | 1688.5 | 1832.5 | 1809.1 | 1610.4 | 1469.8 | 1364.8 | 1349.2 |
| 42.5° | 5865.5 | 4152.7 | 1343.2 | 1437.7 | 1694.6 | 1878.5 | 1716.3 | 1500.2 | 1266.8 | 1199.1 | 1190.4 |
| 45°   | 6005.2 | 3950.5 | 1240.8 | 1417.8 | 1715.4 | 1914.1 | 1697.2 | 1353.6 | 1172.2 | 1121.0 | 1116.7 |
| 47.5° | 6140.5 | 3703.2 | 1187.8 | 1409.1 | 1744.0 | 1885.5 | 1616.5 | 1308.5 | 1127.1 | 1100.2 | 1102.8 |
| 50°   | 6295.8 | 3480.2 | 1155.7 | 1399.6 | 1769.2 | 1867.2 | 1525.4 | 1285.0 | 1109.8 | 1142.7 | 1177.4 |
| 52.5° | 6426.9 | 3249.4 | 1127.1 | 1380.5 | 1778.7 | 1835.1 | 1501.9 | 1289.4 | 1109.8 | 1173.1 | 1206.1 |
| 55°   | 6582.2 | 3075.0 | 1094.1 | 1340.6 | 1760.5 | 1744.0 | 1485.5 | 1315.4 | 1122.8 | 1082.9 | 1086.3 |
| 57.5° | 6782.6 | 3017.8 | 1057.7 | 1278.1 | 1699.8 | 1611.3 | 1477.6 | 1340.6 | 1115.0 | 1089.8 | 1098.5 |
| 60°   | 7060.3 | 3078.5 | 1042.9 | 1196.5 | 1605.2 | 1507.1 | 1478.5 | 1327.5 | 1060.3 | 1016.9 | 1017.8 |
| 62.5° | 7324.9 | 3146.2 | 1042.1 | 1145.3 | 1488.9 | 1414.3 | 1458.6 | 1285.0 | 1032.5 | 1007.4 | 1016.9 |
| 65°   | 7411.7 | 3077.6 | 1000.4 | 1088.1 | 1357.9 | 1303.2 | 1422.1 | 1239.9 | 1011.7 | 973.5  | 971.8  |
| 67.5° | 7295.4 | 2865.1 | 916.3  | 995.2  | 1207.8 | 1174.0 | 1374.4 | 1186.1 | 978.7  | 947.5  | 942.3  |
| 70°   | 6950.1 | 2390.4 | 812.1  | 872.9  | 1036.9 | 1028.2 | 1298.9 | 1123.6 | 934.5  | 907.6  | 885.0  |
| 72.5° | 6020.8 | 1703.2 | 684.6  | 726.2  | 844.2  | 872.0  | 1194.8 | 1042.1 | 872.0  | 813.9  | 779.2  |
| 75°   | 4944.9 | 1260.7 | 562.3  | 570.9  | 641.2  | 716.7  | 1051.6 | 946.6  | 798.3  | 699.3  | 672.4  |
| 77.5° | 3028.2 | 771.4  | 447.7  | 451.2  | 459.9  | 571.8  | 865.9  | 839.9  | 704.6  | 583.1  | 564.0  |
| 80°   | 980.5  | 420.8  | 323.6  | 340.1  | 314.1  | 419.1  | 669.8  | 715.0  | 604.8  | 487.6  | 466.8  |
| 82.5° | 373.1  | 245.6  | 218.7  | 229.9  | 217.8  | 281.1  | 488.5  | 572.7  | 495.4  | 400.9  | 326.2  |
| 85°   | 180.5  | 138.8  | 129.3  | 144.9  | 134.5  | 144.0  | 312.4  | 421.7  | 375.7  | 261.2  | 242.9  |
| 87.5° | 64.2   | 61.6   | 49.5   | 66.8   | 57.3   | 51.2   | 95.4   | 212.6  | 248.2  | 179.6  | 160.5  |
| 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

Invue

Report Number: SP1-2407-157-9

Test Date: 10/03/2024

Luminaire Tested: EMM2-HTN-SA1A-827-U-5WQ

Data applicable to all product families utilizing light square engine

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-157-9  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/03/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Invue  
 Catalog Number: **EMM2-HTN-SA1A-827-U-5WQ**  
 Description: Epic Modern Light Square 40W 5WQ Optic

### Spectral Parameters

CCT (K): 2764  
 CIE  $u'$ : 0.2591  
 CIE  $v'$ : 0.5290  
 Duv: 0.0020  
 CIE x: 0.4581  
 CIE y: 0.4156  
 CIE z: 0.1263  
 Peak Wavelength (nm): 603  
 Dominant Wavelength (nm): 583  
 Purity: 62.2537  
 R<sub>f</sub>: 84.7  
 R<sub>g</sub>: 94.6

CRI (Ra): 80.9  
 R1: 78.8  
 R2: 89.9  
 R3: 96.2  
 R4: 79.1  
 R5: 79.1  
 R6: 88.8  
 R7: 81.3  
 R8: 54.3  
 R9: -1.5  
 R10: 77.9  
 R11: 78.9  
 R12: 71.6  
 R13: 81.2  
 R14: 98.5  
 R15: 69.9



### Test Conditions

Stabilization Time: 81M  
 Operation Time: 2H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-157-9

| 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: SP1-2407-157-9

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 2700K 4-step quadrangle

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### Photopic Flux vs. Wavelength



**Photopic Lumens: 4337.9**

| λ (nm) | Power (μW/nm) | Lumens (φ/nm) | λ (nm) | Power (μW/nm) | Lumens (φ/nm) | λ (nm) | Power (μW/nm) | Lumens (φ/nm) | λ (nm) | Power (μW/nm) | Lumens (φ/nm) | λ (nm) | Power (μW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 0             | 0.0           | 490    | 18018         | 2.6           | 620    | 87426         | 22.8          | 750    | 2680          | 0.0           | 880    | 58            | 0.0           |
| 365    | 0             | 0.0           | 495    | 22295         | 3.9           | 625    | 83013         | 18.2          | 755    | 2287          | 0.0           | 885    | 46            | 0.0           |
| 370    | 0             | 0.0           | 500    | 26478         | 5.8           | 630    | 78077         | 14.1          | 760    | 1944          | 0.0           | 890    | 45            | 0.0           |
| 375    | 0             | 0.0           | 505    | 30524         | 8.5           | 635    | 72080         | 10.7          | 765    | 1653          | 0.0           | 895    | 41            | 0.0           |
| 380    | 0             | 0.0           | 510    | 33611         | 11.5          | 640    | 66249         | 7.9           | 770    | 1413          | 0.0           | 900    | 38            | 0.0           |
| 385    | 0             | 0.0           | 515    | 36490         | 15.2          | 645    | 59973         | 5.7           | 775    | 1198          | 0.0           | 905    | 33            | 0.0           |
| 390    | 0             | 0.0           | 520    | 38610         | 18.7          | 650    | 53972         | 3.9           | 780    | 1025          | 0.0           | 910    | 30            | 0.0           |
| 395    | 0             | 0.0           | 525    | 40511         | 21.9          | 655    | 48369         | 2.7           | 785    | 874           | 0.0           | 915    | 23            | 0.0           |
| 400    | 48            | 0.0           | 530    | 42223         | 24.9          | 660    | 42641         | 1.8           | 790    | 747           | 0.0           | 920    | 24            | 0.0           |
| 405    | 201           | 0.0           | 535    | 44137         | 27.6          | 665    | 37602         | 1.1           | 795    | 639           | 0.0           | 925    | 22            | 0.0           |
| 410    | 457           | 0.0           | 540    | 46032         | 30.0          | 670    | 32798         | 0.7           | 800    | 547           | 0.0           | 930    | 22            | 0.0           |
| 415    | 925           | 0.0           | 545    | 48553         | 32.5          | 675    | 28558         | 0.5           | 805    | 473           | 0.0           | 935    | 17            | 0.0           |
| 420    | 1816          | 0.0           | 550    | 51408         | 34.9          | 680    | 24782         | 0.3           | 810    | 401           | 0.0           | 940    | 13            | 0.0           |
| 425    | 3217          | 0.0           | 555    | 54711         | 37.4          | 685    | 21386         | 0.2           | 815    | 351           | 0.0           | 945    | 6             | 0.0           |
| 430    | 5520          | 0.0           | 560    | 58847         | 40.0          | 690    | 18413         | 0.1           | 820    | 307           | 0.0           | 950    | 10            | 0.0           |
| 435    | 9225          | 0.1           | 565    | 63386         | 42.4          | 695    | 15721         | 0.1           | 825    | 261           | 0.0           | 955    | 11            | 0.0           |
| 440    | 15522         | 0.2           | 570    | 68196         | 44.3          | 700    | 13432         | 0.0           | 830    | 228           | 0.0           | 960    | 8             | 0.0           |
| 445    | 27642         | 0.6           | 575    | 73613         | 46.0          | 705    | 11513         | 0.0           | 835    | 193           | 0.0           | 965    | 12            | 0.0           |
| 450    | 36602         | 0.9           | 580    | 79207         | 47.1          | 710    | 9780          | 0.0           | 840    | 174           | 0.0           | 970    | 3             | 0.0           |
| 455    | 28292         | 0.9           | 585    | 84248         | 47.0          | 715    | 8356          | 0.0           | 845    | 151           | 0.0           | 975    | 8             | 0.0           |
| 460    | 21166         | 0.9           | 590    | 88397         | 45.7          | 720    | 7161          | 0.0           | 850    | 123           | 0.0           | 980    | 2             | 0.0           |
| 465    | 19092         | 1.0           | 595    | 91428         | 43.4          | 725    | 6067          | 0.0           | 855    | 106           | 0.0           | 985    | 13            | 0.0           |
| 470    | 14951         | 0.9           | 600    | 93452         | 40.3          | 730    | 5164          | 0.0           | 860    | 95            | 0.0           | 990    | 16            | 0.0           |
| 475    | 12606         | 1.0           | 605    | 93959         | 36.4          | 735    | 4393          | 0.0           | 865    | 82            | 0.0           | 995    | 20            | 0.0           |
| 480    | 13323         | 1.3           | 610    | 93079         | 32.0          | 740    | 3694          | 0.0           | 870    | 77            | 0.0           | 1000   | 0             | 0.0           |
| 485    | 15164         | 1.8           | 615    | 90707         | 27.3          | 745    | 3157          | 0.0           | 875    | 65            | 0.0           |        |               |               |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: 5286.7

S/P: 1.22

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 0                | 0.0              | 490       | 18018            | 75.9             | 620       | 87426            | 0.4              | 750       | 2680             | 0.0              | 880       | 58               | 0.0              |
| 365       | 0                | 0.0              | 495       | 22295            | 93.2             | 625       | 83013            | 0.2              | 755       | 2287             | 0.0              | 885       | 46               | 0.0              |
| 370       | 0                | 0.0              | 500       | 26478            | 107.8            | 630       | 78077            | 0.1              | 760       | 1944             | 0.0              | 890       | 45               | 0.0              |
| 375       | 0                | 0.0              | 505       | 30524            | 118.7            | 635       | 72080            | 0.1              | 765       | 1653             | 0.0              | 895       | 41               | 0.0              |
| 380       | 0                | 0.0              | 510       | 33611            | 122.2            | 640       | 66249            | 0.1              | 770       | 1413             | 0.0              | 900       | 38               | 0.0              |
| 385       | 0                | 0.0              | 515       | 36490            | 120.8            | 645       | 59973            | 0.0              | 775       | 1198             | 0.0              | 905       | 33               | 0.0              |
| 390       | 0                | 0.0              | 520       | 38610            | 113.9            | 650       | 53972            | 0.0              | 780       | 1025             | 0.0              | 910       | 30               | 0.0              |
| 395       | 0                | 0.0              | 525       | 40511            | 104.1            | 655       | 48369            | 0.0              | 785       | 874              | 0.0              | 915       | 23               | 0.0              |
| 400       | 48               | 0.0              | 530       | 42223            | 92.4             | 660       | 42641            | 0.0              | 790       | 747              | 0.0              | 920       | 24               | 0.0              |
| 405       | 201              | 0.0              | 535       | 44137            | 80.5             | 665       | 37602            | 0.0              | 795       | 639              | 0.0              | 925       | 22               | 0.0              |
| 410       | 457              | 0.1              | 540       | 46032            | 68.2             | 670       | 32798            | 0.0              | 800       | 547              | 0.0              | 930       | 22               | 0.0              |
| 415       | 925              | 0.3              | 545       | 48553            | 57.1             | 675       | 28558            | 0.0              | 805       | 473              | 0.0              | 935       | 17               | 0.0              |
| 420       | 1816             | 1.1              | 550       | 51408            | 46.7             | 680       | 24782            | 0.0              | 810       | 401              | 0.0              | 940       | 13               | 0.0              |
| 425       | 3217             | 2.5              | 555       | 54711            | 37.4             | 685       | 21386            | 0.0              | 815       | 351              | 0.0              | 945       | 6                | 0.0              |
| 430       | 5520             | 5.9              | 560       | 58847            | 29.4             | 690       | 18413            | 0.0              | 820       | 307              | 0.0              | 950       | 10               | 0.0              |
| 435       | 9225             | 12.5             | 565       | 63386            | 22.5             | 695       | 15721            | 0.0              | 825       | 261              | 0.0              | 955       | 11               | 0.0              |
| 440       | 15522            | 26.3             | 570       | 68196            | 16.9             | 700       | 13432            | 0.0              | 830       | 228              | 0.0              | 960       | 8                | 0.0              |
| 445       | 27642            | 55.2             | 575       | 73613            | 12.4             | 705       | 11513            | 0.0              | 835       | 193              | 0.0              | 965       | 12               | 0.0              |
| 450       | 36602            | 85.4             | 580       | 79207            | 9.0              | 710       | 9780             | 0.0              | 840       | 174              | 0.0              | 970       | 3                | 0.0              |
| 455       | 28292            | 75.1             | 585       | 84248            | 6.3              | 715       | 8356             | 0.0              | 845       | 151              | 0.0              | 975       | 8                | 0.0              |
| 460       | 21166            | 63.2             | 590       | 88397            | 4.4              | 720       | 7161             | 0.0              | 850       | 123              | 0.0              | 980       | 2                | 0.0              |
| 465       | 19092            | 63.2             | 595       | 91428            | 3.0              | 725       | 6067             | 0.0              | 855       | 106              | 0.0              | 985       | 13               | 0.0              |
| 470       | 14951            | 54.2             | 600       | 93452            | 2.0              | 730       | 5164             | 0.0              | 860       | 95               | 0.0              | 990       | 16               | 0.0              |
| 475       | 12606            | 48.8             | 605       | 93959            | 1.3              | 735       | 4393             | 0.0              | 865       | 82               | 0.0              | 995       | 20               | 0.0              |
| 480       | 13323            | 54.2             | 610       | 93079            | 0.9              | 740       | 3694             | 0.0              | 870       | 77               | 0.0              | 1000      | 0                | 0.0              |
| 485       | 15164            | 63.3             | 615       | 90707            | 0.5              | 745       | 3157             | 0.0              | 875       | 65               | 0.0              |           |                  |                  |

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### Melanopic Flux vs. Wavelength



**Melanopic Lumens: 9797**

**M/P: 2.26**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 0                | 0.0              | 490       | 18018            | 27.7             | 620       | 87426            | 1.1              | 750       | 2680             | 0.0              | 880       | 58               | 0.0              |
| 365       | 0                | 0.0              | 495       | 22295            | 36.0             | 625       | 83013            | 0.7              | 755       | 2287             | 0.0              | 885       | 46               | 0.0              |
| 370       | 0                | 0.0              | 500       | 26478            | 44.2             | 630       | 78077            | 0.4              | 760       | 1944             | 0.0              | 890       | 45               | 0.0              |
| 375       | 0                | 0.0              | 505       | 30524            | 51.8             | 635       | 72080            | 0.3              | 765       | 1653             | 0.0              | 895       | 41               | 0.0              |
| 380       | 0                | 0.0              | 510       | 33611            | 57.0             | 640       | 66249            | 0.2              | 770       | 1413             | 0.0              | 900       | 38               | 0.0              |
| 385       | 0                | 0.0              | 515       | 36490            | 60.5             | 645       | 59973            | 0.1              | 775       | 1198             | 0.0              | 905       | 33               | 0.0              |
| 390       | 0                | 0.0              | 520       | 38610            | 61.4             | 650       | 53972            | 0.1              | 780       | 1025             | 0.0              | 910       | 30               | 0.0              |
| 395       | 0                | 0.0              | 525       | 40511            | 60.6             | 655       | 48369            | 0.0              | 785       | 874              | 0.0              | 915       | 23               | 0.0              |
| 400       | 48               | 0.0              | 530       | 42223            | 58.2             | 660       | 42641            | 0.0              | 790       | 747              | 0.0              | 920       | 24               | 0.0              |
| 405       | 201              | 0.0              | 535       | 44137            | 55.0             | 665       | 37602            | 0.0              | 795       | 639              | 0.0              | 925       | 22               | 0.0              |
| 410       | 457              | 0.0              | 540       | 46032            | 50.9             | 670       | 32798            | 0.0              | 800       | 547              | 0.0              | 930       | 22               | 0.0              |
| 415       | 925              | 0.1              | 545       | 48553            | 46.6             | 675       | 28558            | 0.0              | 805       | 473              | 0.0              | 935       | 17               | 0.0              |
| 420       | 1816             | 0.3              | 550       | 51408            | 42.0             | 680       | 24782            | 0.0              | 810       | 401              | 0.0              | 940       | 13               | 0.0              |
| 425       | 3217             | 0.8              | 555       | 54711            | 37.4             | 685       | 21386            | 0.0              | 815       | 351              | 0.0              | 945       | 6                | 0.0              |
| 430       | 5520             | 1.9              | 560       | 58847            | 32.9             | 690       | 18413            | 0.0              | 820       | 307              | 0.0              | 950       | 10               | 0.0              |
| 435       | 9225             | 4.1              | 565       | 63386            | 28.4             | 695       | 15721            | 0.0              | 825       | 261              | 0.0              | 955       | 11               | 0.0              |
| 440       | 15522            | 8.7              | 570       | 68196            | 24.1             | 700       | 13432            | 0.0              | 830       | 228              | 0.0              | 960       | 8                | 0.0              |
| 445       | 27642            | 18.5             | 575       | 73613            | 20.0             | 705       | 11513            | 0.0              | 835       | 193              | 0.0              | 965       | 12               | 0.0              |
| 450       | 36602            | 28.3             | 580       | 79207            | 16.3             | 710       | 9780             | 0.0              | 840       | 174              | 0.0              | 970       | 3                | 0.0              |
| 455       | 28292            | 24.7             | 585       | 84248            | 12.9             | 715       | 8356             | 0.0              | 845       | 151              | 0.0              | 975       | 8                | 0.0              |
| 460       | 21166            | 20.4             | 590       | 88397            | 9.8              | 720       | 7161             | 0.0              | 850       | 123              | 0.0              | 980       | 2                | 0.0              |
| 465       | 19092            | 20.1             | 595       | 91428            | 7.3              | 725       | 6067             | 0.0              | 855       | 106              | 0.0              | 985       | 13               | 0.0              |
| 470       | 14951            | 17.2             | 600       | 93452            | 5.3              | 730       | 5164             | 0.0              | 860       | 95               | 0.0              | 990       | 16               | 0.0              |
| 475       | 12606            | 15.7             | 605       | 93959            | 3.7              | 735       | 4393             | 0.0              | 865       | 82               | 0.0              | 995       | 20               | 0.0              |
| 480       | 13323            | 18.0             | 610       | 93079            | 2.5              | 740       | 3694             | 0.0              | 870       | 77               | 0.0              | 1000      | 0                | 0.0              |
| 485       | 15164            | 21.9             | 615       | 90707            | 1.7              | 745       | 3157             | 0.0              | 875       | 65               | 0.0              |           |                  |                  |

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TM-30-18

### Summary

$R_f = 84.7$   
 $R_g = 94.6$   
 $CIE\ R_a = 80.9$   
 $R_g = -1.5$

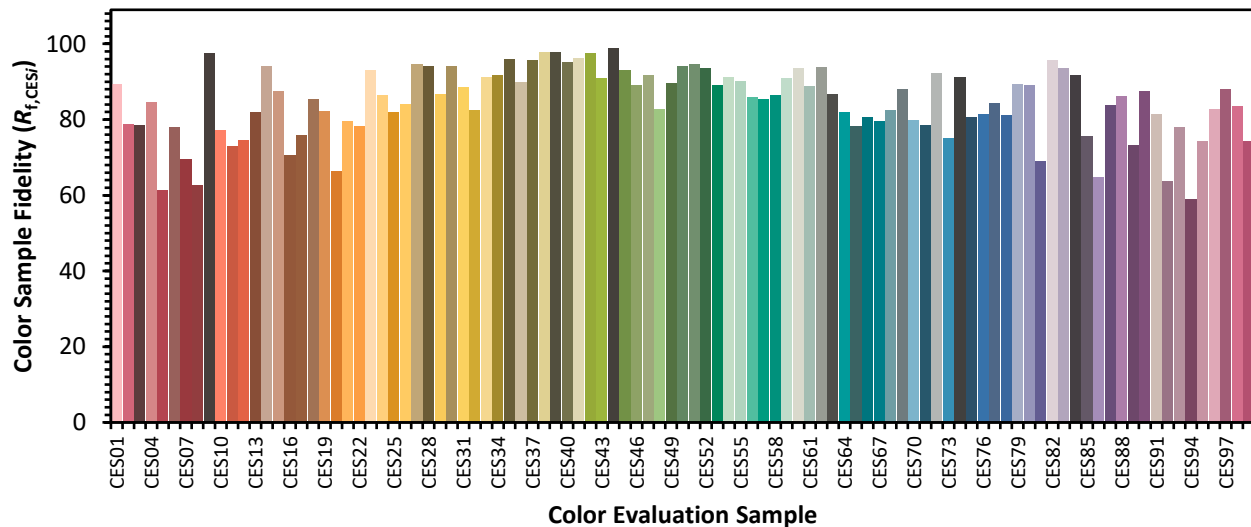


### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 84 | CES51 = 95 | CES76 = 81 |
| CES02 = 63 | CES27 = 95 | CES52 = 94 | CES77 = 84 |
| CES03 = 31 | CES28 = 94 | CES53 = 89 | CES78 = 81 |
| CES04 = 71 | CES29 = 87 | CES54 = 91 | CES79 = 89 |
| CES05 = 50 | CES30 = 94 | CES55 = 90 | CES80 = 89 |
| CES06 = 52 | CES31 = 89 | CES56 = 86 | CES81 = 69 |
| CES07 = 43 | CES32 = 82 | CES57 = 85 | CES82 = 96 |
| CES08 = 41 | CES33 = 91 | CES58 = 86 | CES83 = 93 |
| CES09 = 29 | CES34 = 92 | CES59 = 91 | CES84 = 92 |
| CES10 = 77 | CES35 = 96 | CES60 = 94 | CES85 = 76 |
| CES11 = 60 | CES36 = 90 | CES61 = 89 | CES86 = 65 |
| CES12 = 66 | CES37 = 96 | CES62 = 94 | CES87 = 84 |
| CES13 = 44 | CES38 = 98 | CES63 = 87 | CES88 = 86 |
| CES14 = 74 | CES39 = 98 | CES64 = 82 | CES89 = 73 |
| CES15 = 72 | CES40 = 95 | CES65 = 78 | CES90 = 88 |
| CES16 = 48 | CES41 = 96 | CES66 = 81 | CES91 = 82 |
| CES17 = 50 | CES42 = 97 | CES67 = 80 | CES92 = 64 |
| CES18 = 57 | CES43 = 91 | CES68 = 83 | CES93 = 78 |
| CES19 = 73 | CES44 = 99 | CES69 = 88 | CES94 = 59 |
| CES20 = 67 | CES45 = 93 | CES70 = 80 | CES95 = 74 |
| CES21 = 87 | CES46 = 89 | CES71 = 79 | CES96 = 83 |
| CES22 = 79 | CES47 = 92 | CES72 = 92 | CES97 = 88 |
| CES23 = 92 | CES48 = 83 | CES73 = 75 | CES98 = 83 |
| CES24 = 91 | CES49 = 90 | CES74 = 91 | CES99 = 74 |
| CES25 = 72 | CES50 = 94 | CES75 = 81 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**


(END OF REPORT)