

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: P322124

Luminaire Tested: **GLEON-SA0B-722-U-T2-HSS**

Issue Date: 3/3/2020

### Test Information

Test Method: LM-79-08  
Report Number: P322124  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-13)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA0B-722-U-T2-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(10) 70 CRI, 2200K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II  
OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

### Summary

Lumens per Lamp: N/A  
Luminaire Lumens: 29580 lumens  
Efficiency: N/A  
Efficacy: 70.6 lumens/watt  
Luminous Opening: Rectangular (W 2.5' x L: 1' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B2 - U0 - G4

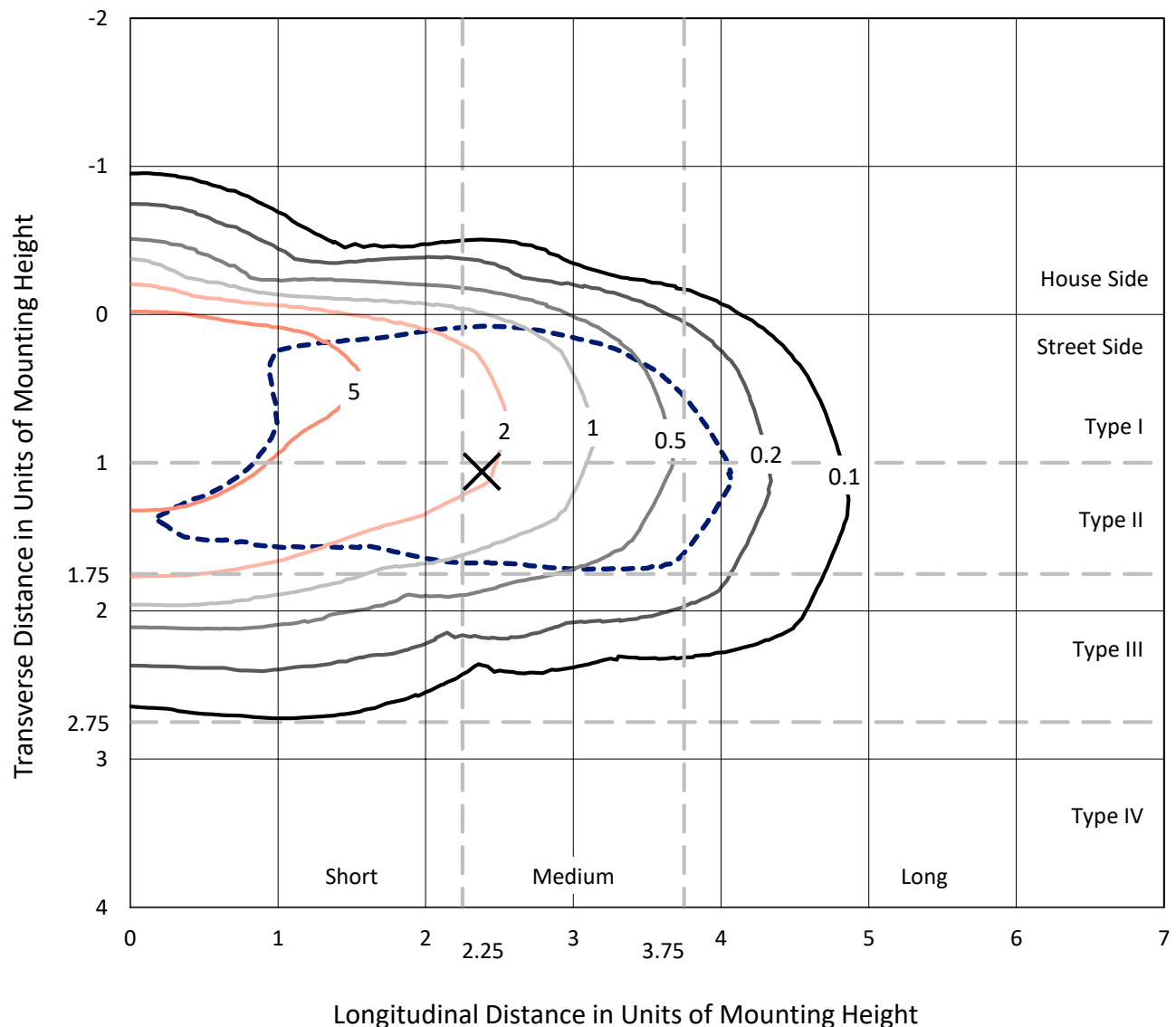
Input Watts (W): 419  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

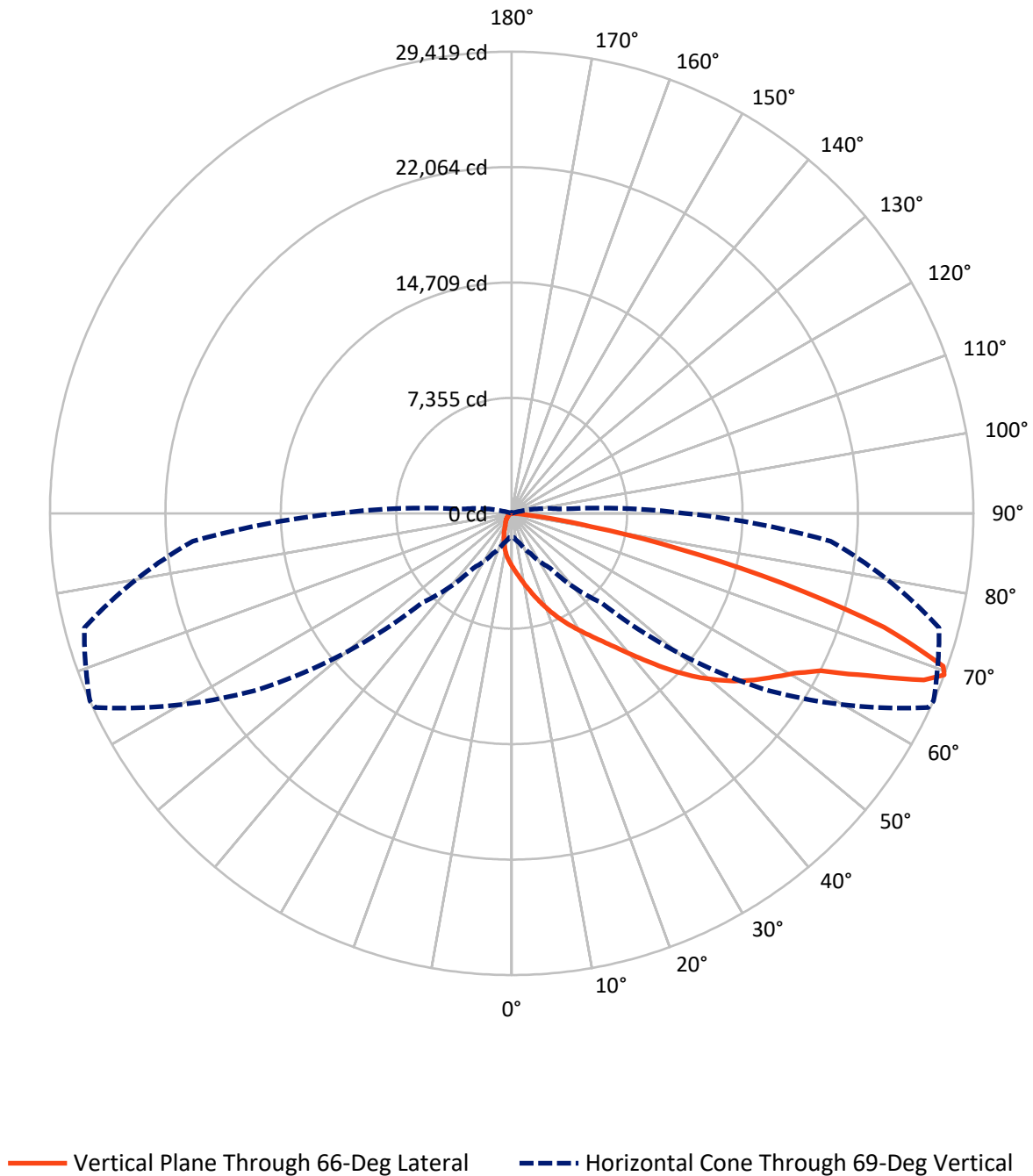
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 8.9 fc  
 Type II - Medium - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1774.4   | 0.0    | 1774.4  |
|                    | % Fixture | 6.0      | 0.0    | 6.0     |
| <b>Street Side</b> | Lumens    | 27805.6  | 0.0    | 27805.6 |
|                    | % Fixture | 94.0     | 0.0    | 94.0    |
| <b>Total</b>       | Lumens    | 29580.0  | 0.0    | 29580.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 325.4   | 1.1       |
| 10°-20°   | 968.4   | 3.3       |
| 20°-30°   | 1686.4  | 5.7       |
| 30°-40°   | 2958.8  | 10.0      |
| 40°-50°   | 4952.6  | 16.7      |
| 50°-60°   | 7279.8  | 24.6      |
| 60°-70°   | 7474.6  | 25.3      |
| 70°-80°   | 3690.0  | 12.5      |
| 80°-90°   | 244.0   | 0.8       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 29580.0 | 100.0     |
| 0°-180°   | 29580.0 | 100.0     |

**Coefficient of Utilization**



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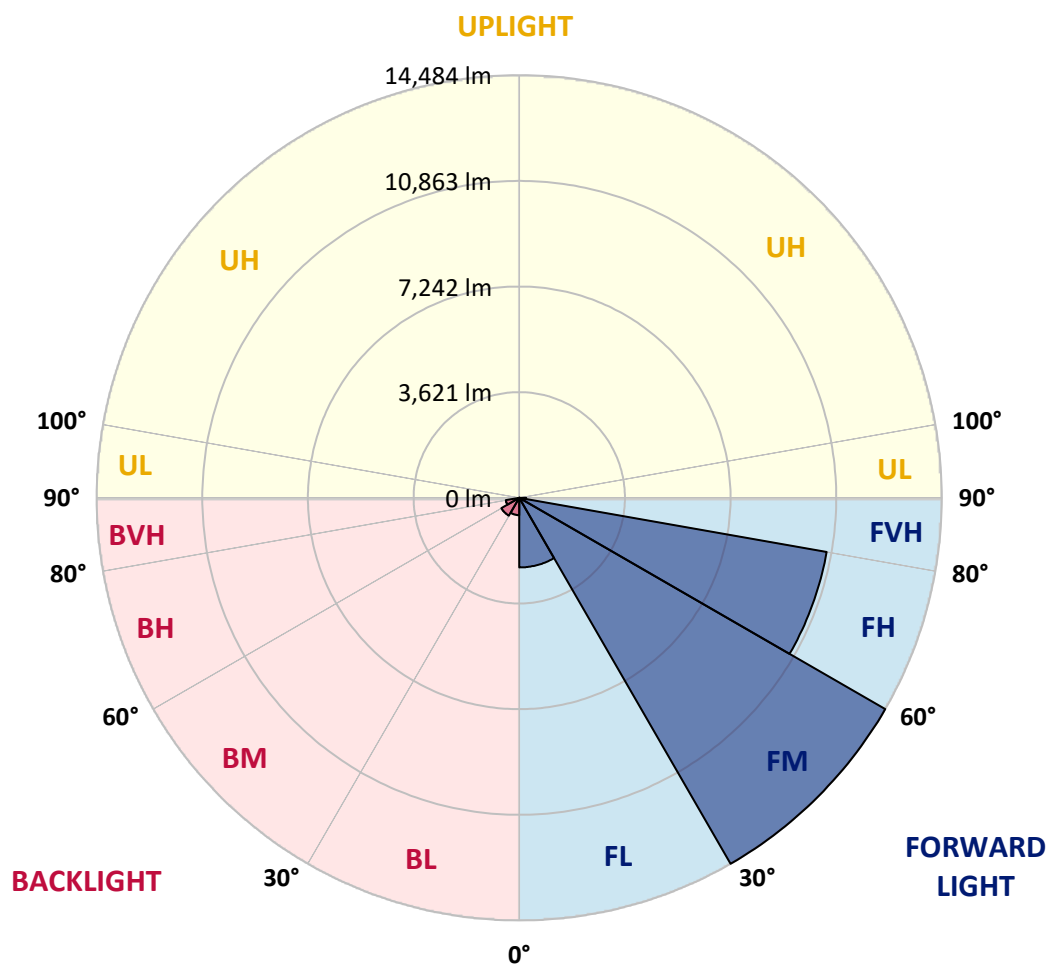
CATALOG NUMBER: GLEON-SA0B-722-U-T2-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|---------|-----------|-------------------------|------|----------|
|      |             |         |           | B                       | U    | G        |
| FL   | (0°-30°)    | 2386.8  | 8.1       |                         |      |          |
| FM   | (30°-60°)   | 14483.8 | 49.0      |                         |      |          |
| FH   | (60°-80°)   | 10696.9 | 36.2      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 238.1   | 0.8       |                         |      | G3/500   |
| BL   | (0°-30°)    | 593.4   | 2.0       | B2/1000                 |      |          |
| BM   | (30°-60°)   | 707.5   | 2.4       | B1/1000                 |      |          |
| BH   | (60°-80°)   | 467.6   | 1.6       | B1/500                  |      | G1/500   |
| BVH  | (80°-90°)   | 5.9     | 0.0       |                         |      | G0/10    |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |          |

**BUG Rating: B2-U0-G4**

Type II Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 66°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 3366.3  | 3366.3  | 3366.3  | 3366.3  | 3366.3  | 3366.3  | 3366.3  | 3366.3  | 3366.3  | 3366.3  | 3366.3  |
| 2.5°  | 3962.0  | 3945.1  | 3938.1  | 3907.2  | 3853.8  | 3813.1  | 3734.4  | 3643.1  | 3626.2  | 3537.7  | 3429.5  |
| 5°    | 4476.2  | 4462.2  | 4452.3  | 4408.8  | 4354.0  | 4251.4  | 4108.1  | 3938.1  | 3905.8  | 3737.2  | 3520.8  |
| 7.5°  | 4834.5  | 4859.8  | 4859.8  | 4831.7  | 4762.8  | 4685.6  | 4509.9  | 4278.1  | 4237.4  | 3978.9  | 3643.1  |
| 10°   | 5043.8  | 5074.7  | 5098.6  | 5122.5  | 5112.7  | 5081.8  | 4916.0  | 4654.7  | 4605.5  | 4262.7  | 3785.0  |
| 12.5° | 5063.5  | 5094.4  | 5161.8  | 5261.6  | 5358.5  | 5428.8  | 5324.8  | 5071.9  | 5015.7  | 4591.4  | 3953.6  |
| 15°   | 4953.9  | 4986.2  | 5090.2  | 5284.1  | 5518.7  | 5723.8  | 5757.6  | 5534.2  | 5476.6  | 4983.4  | 4164.3  |
| 17.5° | 4762.8  | 4783.9  | 4932.8  | 5201.2  | 5569.3  | 5945.8  | 6149.5  | 6030.1  | 5976.7  | 5431.6  | 4398.9  |
| 20°   | 4620.9  | 4636.4  | 4767.1  | 5055.1  | 5538.4  | 6084.9  | 6520.4  | 6557.0  | 6500.8  | 5912.1  | 4653.2  |
| 22.5° | 4864.0  | 4892.1  | 4896.3  | 5032.6  | 5454.1  | 6153.8  | 6846.4  | 7075.4  | 7033.3  | 6422.1  | 4903.3  |
| 25°   | 5528.5  | 5560.9  | 5454.1  | 5369.8  | 5525.7  | 6184.7  | 7126.0  | 7606.5  | 7572.8  | 6971.4  | 5154.8  |
| 27.5° | 6406.6  | 6440.4  | 6302.7  | 6051.2  | 5900.9  | 6301.3  | 7374.7  | 8146.0  | 8144.6  | 7553.1  | 5426.0  |
| 30°   | 7269.3  | 7303.0  | 7162.5  | 6911.0  | 6565.4  | 6631.4  | 7589.6  | 8710.8  | 8719.2  | 8153.0  | 5714.0  |
| 32.5° | 8174.1  | 8216.2  | 8071.5  | 7748.4  | 7387.3  | 7201.9  | 7891.7  | 9278.4  | 9326.2  | 8848.5  | 6038.5  |
| 35°   | 9202.5  | 9208.1  | 9004.4  | 8665.8  | 8250.0  | 7964.8  | 8376.4  | 9914.8  | 10028.6 | 9709.7  | 6450.2  |
| 37.5° | 10211.3 | 10252.0 | 10084.8 | 9551.0  | 9168.8  | 8845.7  | 9097.2  | 10710.1 | 10871.6 | 10762.0 | 6988.3  |
| 40°   | 10958.7 | 11044.4 | 11020.6 | 10444.5 | 10082.0 | 9851.6  | 9992.1  | 11655.6 | 11860.7 | 11987.2 | 7666.9  |
| 42.5° | 11428.0 | 11492.6 | 11602.2 | 11255.2 | 10926.4 | 10964.4 | 11048.7 | 12757.1 | 13010.0 | 13383.7 | 8446.7  |
| 45°   | 11966.1 | 11997.0 | 12088.3 | 11935.2 | 11713.2 | 12095.4 | 12169.8 | 13997.7 | 14263.2 | 14885.6 | 9312.1  |
| 47.5° | 12623.6 | 12696.7 | 12722.0 | 12581.5 | 12480.3 | 13095.7 | 13250.2 | 15125.9 | 15498.2 | 16494.3 | 10228.2 |
| 50°   | 13461.0 | 13480.7 | 13524.2 | 13432.9 | 13331.7 | 13955.5 | 14219.7 | 16310.3 | 16648.8 | 18108.6 | 11131.5 |
| 52.5° | 14280.1 | 14350.3 | 14502.1 | 14444.5 | 14403.7 | 14687.5 | 15083.7 | 17378.0 | 17756.0 | 19454.6 | 12033.5 |
| 55°   | 14516.1 | 14576.5 | 15100.6 | 15458.8 | 15790.4 | 15589.5 | 15909.8 | 18334.8 | 18743.7 | 20657.2 | 12901.8 |
| 57.5° | 13573.4 | 13695.6 | 14603.2 | 15536.1 | 16911.6 | 16991.7 | 17045.0 | 19316.9 | 19683.6 | 21578.9 | 13805.2 |
| 60°   | 11190.6 | 11214.4 | 12703.7 | 14304.0 | 16726.1 | 18215.4 | 18702.9 | 20372.0 | 20679.7 | 22437.3 | 14887.0 |
| 62.5° | 7117.6  | 7360.6  | 8994.6  | 11253.8 | 14764.8 | 18038.4 | 20707.8 | 21968.1 | 22080.4 | 23467.2 | 16438.1 |
| 65°   | 3390.2  | 3547.5  | 4724.9  | 6953.2  | 10694.6 | 15772.2 | 22091.7 | 24855.3 | 24905.8 | 25508.6 | 18510.4 |
| 67.5° | 1877.0  | 1952.9  | 2513.5  | 3742.8  | 6252.1  | 11154.0 | 21532.5 | 28274.9 | 28322.7 | 27593.5 | 20328.5 |
| 69°   | 1468.2  | 1532.8  | 1974.0  | 2821.2  | 4238.8  | 8016.7  | 19485.5 | 29276.7 | 29418.6 | 28190.6 | 20393.1 |
| 70°   | 1246.2  | 1309.4  | 1700.0  | 2382.8  | 3408.4  | 6194.5  | 17344.3 | 29028.0 | 29178.3 | 28134.4 | 19911.2 |
| 72.5° | 762.9   | 799.4   | 1132.4  | 1677.5  | 2284.5  | 3116.2  | 10696.0 | 24549.0 | 24803.3 | 25807.8 | 17112.5 |
| 75°   | 514.2   | 533.9   | 708.1   | 1157.7  | 1634.0  | 1604.5  | 5556.6  | 17303.6 | 17854.3 | 20075.6 | 12639.1 |
| 77.5° | 368.1   | 386.4   | 474.9   | 748.8   | 1145.0  | 1059.3  | 2516.3  | 10753.6 | 10871.6 | 12040.6 | 6892.8  |
| 80°   | 209.3   | 226.2   | 335.8   | 445.4   | 776.9   | 706.7   | 1000.3  | 5136.6  | 5195.6  | 5163.3  | 2301.3  |
| 82.5° | 109.6   | 123.6   | 184.1   | 293.6   | 498.8   | 462.2   | 415.9   | 1719.7  | 1728.1  | 1437.3  | 504.4   |
| 85°   | 21.1    | 25.3    | 91.3    | 200.9   | 257.1   | 200.9   | 170.0   | 403.2   | 411.7   | 363.9   | 125.0   |
| 87.5° | 0.0     | 1.4     | 36.5    | 45.0    | 50.6    | 52.0    | 54.8    | 78.7    | 84.3    | 113.8   | 33.7    |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |



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CATALOG NUMBER: GLEON-SA0B-722-U-T2-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3366.3  | 3366.3 | 3366.3 | 3366.3 | 3366.3 | 3366.3 | 3366.3 | 3366.3 | 3366.3 | 3366.3 | 3366.3 |
| 2.5°  | 3381.8  | 3331.2 | 3234.2 | 3121.8 | 3034.7 | 2949.0 | 2881.6 | 2811.3 | 2786.0 | 2773.4 | 2772.0 |
| 5°    | 3415.5  | 3308.7 | 3103.6 | 2892.8 | 2720.0 | 2557.0 | 2440.4 | 2329.4 | 2277.5 | 2253.6 | 2243.7 |
| 7.5°  | 3471.7  | 3300.3 | 2970.1 | 2648.4 | 2399.7 | 2196.0 | 2034.4 | 1913.6 | 1853.2 | 1827.9 | 1818.0 |
| 10°   | 3537.7  | 3289.0 | 2814.1 | 2389.8 | 2072.3 | 1861.6 | 1701.4 | 1582.0 | 1516.0 | 1487.9 | 1473.8 |
| 12.5° | 3615.0  | 3269.4 | 2634.3 | 2128.5 | 1792.7 | 1582.0 | 1388.1 | 1240.6 | 1164.7 | 1132.4 | 1116.9 |
| 15°   | 3710.5  | 3249.7 | 2446.0 | 1882.7 | 1546.9 | 1289.8 | 1077.6 | 977.9  | 962.4  | 956.8  | 958.2  |
| 17.5° | 3804.6  | 3218.8 | 2240.9 | 1639.6 | 1288.4 | 1007.4 | 899.2  | 893.6  | 896.4  | 896.4  | 896.4  |
| 20°   | 3888.9  | 3148.5 | 2017.5 | 1431.7 | 1042.5 | 850.0  | 827.5  | 817.7  | 810.7  | 805.0  | 798.0  |
| 22.5° | 3955.0  | 3054.4 | 1802.6 | 1225.1 | 851.4  | 778.4  | 743.2  | 712.3  | 687.0  | 670.2  | 661.7  |
| 25°   | 3999.9  | 2929.4 | 1605.9 | 1027.0 | 765.7  | 708.1  | 644.9  | 592.9  | 553.6  | 529.7  | 519.8  |
| 27.5° | 4033.7  | 2794.5 | 1430.3 | 859.8  | 706.7  | 626.6  | 543.7  | 481.9  | 441.2  | 420.1  | 411.7  |
| 30°   | 4057.5  | 2641.3 | 1275.7 | 755.9  | 640.7  | 540.9  | 452.4  | 392.0  | 362.5  | 351.2  | 345.6  |
| 32.5° | 4080.0  | 2471.3 | 1129.6 | 706.7  | 578.8  | 462.2  | 379.3  | 333.0  | 314.7  | 300.7  | 296.4  |
| 35°   | 4136.2  | 2314.0 | 990.5  | 654.7  | 515.6  | 394.8  | 326.0  | 292.2  | 274.0  | 265.5  | 262.7  |
| 37.5° | 4269.7  | 2197.4 | 857.0  | 601.3  | 452.4  | 341.4  | 285.2  | 261.3  | 244.5  | 236.0  | 233.2  |
| 40°   | 4484.7  | 2138.4 | 744.6  | 543.7  | 390.6  | 300.7  | 258.5  | 236.0  | 217.8  | 205.1  | 202.3  |
| 42.5° | 4800.8  | 2146.8 | 666.0  | 486.1  | 341.4  | 268.3  | 233.2  | 206.5  | 186.9  | 175.6  | 172.8  |
| 45°   | 5184.3  | 2208.6 | 611.2  | 429.9  | 300.7  | 243.1  | 205.1  | 177.0  | 158.8  | 148.9  | 146.1  |
| 47.5° | 5600.2  | 2308.4 | 566.2  | 379.3  | 268.3  | 219.2  | 177.0  | 147.5  | 132.1  | 123.6  | 122.2  |
| 50°   | 6038.5  | 2405.3 | 519.8  | 330.2  | 240.2  | 195.3  | 148.9  | 122.2  | 109.6  | 102.6  | 99.8   |
| 52.5° | 6482.5  | 2517.7 | 477.7  | 285.2  | 216.4  | 167.2  | 123.6  | 99.8   | 89.9   | 84.3   | 81.5   |
| 55°   | 6960.2  | 2602.0 | 436.9  | 250.1  | 192.5  | 141.9  | 102.6  | 82.9   | 74.5   | 67.4   | 66.0   |
| 57.5° | 7522.2  | 2732.7 | 394.8  | 216.4  | 164.4  | 118.0  | 84.3   | 66.0   | 59.0   | 52.0   | 50.6   |
| 60°   | 8280.9  | 2885.8 | 349.8  | 191.1  | 134.9  | 96.9   | 68.8   | 53.4   | 45.0   | 39.3   | 37.9   |
| 62.5° | 9281.2  | 3055.8 | 293.6  | 167.2  | 109.6  | 78.7   | 54.8   | 42.1   | 32.3   | 25.3   | 25.3   |
| 65°   | 10549.9 | 3332.6 | 240.2  | 140.5  | 89.9   | 64.6   | 42.1   | 30.9   | 18.3   | 11.2   | 11.2   |
| 67.5° | 11290.3 | 3380.3 | 193.9  | 115.2  | 73.1   | 54.8   | 35.1   | 21.1   | 5.6    | 1.4    | 0.0    |
| 69°   | 11052.9 | 3103.6 | 164.4  | 98.3   | 63.2   | 52.0   | 32.3   | 15.5   | 2.8    | 0.0    | 0.0    |
| 70°   | 10606.1 | 2838.0 | 144.7  | 87.1   | 57.6   | 49.2   | 30.9   | 11.2   | 2.8    | 0.0    | 0.0    |
| 72.5° | 8764.2  | 2020.3 | 109.6  | 64.6   | 42.1   | 43.6   | 28.1   | 7.0    | 2.8    | 0.0    | 0.0    |
| 75°   | 6384.2  | 1227.9 | 78.7   | 45.0   | 26.7   | 32.3   | 19.7   | 2.8    | 1.4    | 0.0    | 0.0    |
| 77.5° | 3551.8  | 578.8  | 49.2   | 25.3   | 16.9   | 19.7   | 9.8    | 0.0    | 0.0    | 0.0    | 0.0    |
| 80°   | 1153.5  | 157.4  | 22.5   | 14.0   | 9.8    | 11.2   | 4.2    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 213.6   | 45.0   | 12.6   | 7.0    | 2.8    | 2.8    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 46.4    | 18.3   | 7.0    | 2.8    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 15.5    | 5.6    | 1.4    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-10-R4

Test Date: 10/25/2019

Luminaire Tested: SA1C-722-U-5WQ

Data in this report applies to families of products SA1C-722-U-5WQ.

### Test Information

Test Method: LM-79-2008 Report  
 Number: SP1-1908-441-10-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-722-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |         |           |      |      |       |
|---------------------------|---------|-----------|------|------|-------|
| CCT (K):                  | 2237    | CRI (Ra): | 72.0 |      |       |
| CIE u':                   | 0.2876  | R1:       | 68.9 | R9:  | -17.4 |
| CIE v':                   | 0.5346  | R2:       | 83.0 | R10: | 61.3  |
| Duv:                      | -0.0006 | R3:       | 95.2 | R11: | 59.8  |
| CIE x:                    | 0.5005  | R4:       | 66.2 | R12: | 50.5  |
| CIE y:                    | 0.4134  | R5:       | 65.9 | R13: | 71.1  |
| CIE z:                    | 0.0860  | R6:       | 76.3 | R14: | 96.9  |
| Peak Wavelength (nm):     | 603     | R7:       | 76.7 |      |       |
| Dominant Wavelength (nm): | 587     | R8:       | 43.8 |      |       |
| Purity:                   | 74.5    |           |      |      |       |
| Rf:                       | 69.8    |           |      |      |       |
| Rg:                       | 99.2    |           |      |      |       |



### Test Conditions

Stabilization Time: 71M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.7/41%  
 Sphere Temperature (°C): 25.6

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| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

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CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 2200K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1768             | NR               | 490       | 5206             | NR               | 620       | 130919           | NR               | 750       | 8553             | NR               | 880       | 2713             | NR               |
| 365       | 1569             | NR               | 495       | 7286             | NR               | 625       | 125335           | NR               | 755       | 7696             | NR               | 885       | 2316             | NR               |
| 370       | 1594             | NR               | 500       | 10654            | NR               | 630       | 118388           | NR               | 760       | 6978             | NR               | 890       | 2539             | NR               |
| 375       | 1744             | NR               | 505       | 15189            | NR               | 635       | 111855           | NR               | 765       | 6377             | NR               | 895       | 1933             | NR               |
| 380       | 1659             | NR               | 510       | 20541            | NR               | 640       | 104062           | NR               | 770       | 5600             | NR               | 900       | 2216             | NR               |
| 385       | 1504             | NR               | 515       | 26492            | NR               | 645       | 96365            | NR               | 775       | 5000             | NR               | 905       | 2067             | NR               |
| 390       | 1541             | NR               | 520       | 32294            | NR               | 650       | 88651            | NR               | 780       | 4709             | NR               | 910       | 1959             | NR               |
| 395       | 1355             | NR               | 525       | 38123            | NR               | 655       | 81152            | NR               | 785       | 4305             | NR               | 915       | 1874             | NR               |
| 400       | 1243             | NR               | 530       | 43232            | NR               | 660       | 73523            | NR               | 790       | 4040             | NR               | 920       | 1484             | NR               |
| 405       | 1417             | NR               | 535       | 48012            | NR               | 665       | 66123            | NR               | 795       | 3642             | NR               | 925       | 1914             | NR               |
| 410       | 2147             | NR               | 540       | 52623            | NR               | 670       | 58677            | NR               | 800       | 3594             | NR               | 930       | 1948             | NR               |
| 415       | 3837             | NR               | 545       | 57516            | NR               | 675       | 52349            | NR               | 805       | 3190             | NR               | 935       | 2079             | NR               |
| 420       | 7159             | NR               | 550       | 62613            | NR               | 680       | 46159            | NR               | 810       | 3241             | NR               | 940       | 2263             | NR               |
| 425       | 12599            | NR               | 555       | 68554            | NR               | 685       | 40525            | NR               | 815       | 2732             | NR               | 945       | 1688             | NR               |
| 430       | 19019            | NR               | 560       | 75325            | NR               | 690       | 35615            | NR               | 820       | 2612             | NR               | 950       | 1560             | NR               |
| 435       | 24875            | NR               | 565       | 82533            | NR               | 695       | 31158            | NR               | 825       | 2966             | NR               | 955       | 2826             | NR               |
| 440       | 29103            | NR               | 570       | 90909            | NR               | 700       | 27409            | NR               | 830       | 2574             | NR               | 960       | 1477             | NR               |
| 445       | 29901            | NR               | 575       | 99621            | NR               | 705       | 24204            | NR               | 835       | 2633             | NR               | 965       | 1568             | NR               |
| 450       | 24862            | NR               | 580       | 108484           | NR               | 710       | 21558            | NR               | 840       | 2526             | NR               | 970       | 2030             | NR               |
| 455       | 15942            | NR               | 585       | 116679           | NR               | 715       | 19222            | NR               | 845       | 2631             | NR               | 975       | 1986             | NR               |
| 460       | 9916             | NR               | 590       | 123752           | NR               | 720       | 17310            | NR               | 850       | 2079             | NR               | 980       | 2540             | NR               |
| 465       | 7051             | NR               | 595       | 129324           | NR               | 725       | 15280            | NR               | 855       | 2309             | NR               | 985       | 1139             | NR               |
| 470       | 5227             | NR               | 600       | 134082           | NR               | 730       | 13282            | NR               | 860       | 2528             | NR               | 990       | 2018             | NR               |
| 475       | 4257             | NR               | 605       | 135698           | NR               | 735       | 11753            | NR               | 865       | 2121             | NR               | 995       | 3445             | NR               |
| 480       | 4052             | NR               | 610       | 135144           | NR               | 740       | 10654            | NR               | 870       | 2751             | NR               | 1000      | 3704             | NR               |
| 485       | 4298             | NR               | 615       | 134180           | NR               | 745       | 9451             | NR               | 875       | 2317             | NR               |           |                  |                  |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 4696.9**

**S/P: 0.85**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1768             | NR               | 490       | 5206             | NR               | 620       | 130919           | NR               | 750       | 8553             | NR               | 880       | 2713             | NR               |
| 365       | 1569             | NR               | 495       | 7286             | NR               | 625       | 125335           | NR               | 755       | 7696             | NR               | 885       | 2316             | NR               |
| 370       | 1594             | NR               | 500       | 10654            | NR               | 630       | 118388           | NR               | 760       | 6978             | NR               | 890       | 2539             | NR               |
| 375       | 1744             | NR               | 505       | 15189            | NR               | 635       | 111855           | NR               | 765       | 6377             | NR               | 895       | 1933             | NR               |
| 380       | 1659             | NR               | 510       | 20541            | NR               | 640       | 104062           | NR               | 770       | 5600             | NR               | 900       | 2216             | NR               |
| 385       | 1504             | NR               | 515       | 26492            | NR               | 645       | 96365            | NR               | 775       | 5000             | NR               | 905       | 2067             | NR               |
| 390       | 1541             | NR               | 520       | 32294            | NR               | 650       | 88651            | NR               | 780       | 4709             | NR               | 910       | 1959             | NR               |
| 395       | 1355             | NR               | 525       | 38123            | NR               | 655       | 81152            | NR               | 785       | 4305             | NR               | 915       | 1874             | NR               |
| 400       | 1243             | NR               | 530       | 43232            | NR               | 660       | 73523            | NR               | 790       | 4040             | NR               | 920       | 1484             | NR               |
| 405       | 1417             | NR               | 535       | 48012            | NR               | 665       | 66123            | NR               | 795       | 3642             | NR               | 925       | 1914             | NR               |
| 410       | 2147             | NR               | 540       | 52623            | NR               | 670       | 58677            | NR               | 800       | 3594             | NR               | 930       | 1948             | NR               |
| 415       | 3837             | NR               | 545       | 57516            | NR               | 675       | 52349            | NR               | 805       | 3190             | NR               | 935       | 2079             | NR               |
| 420       | 7159             | NR               | 550       | 62613            | NR               | 680       | 46159            | NR               | 810       | 3241             | NR               | 940       | 2263             | NR               |
| 425       | 12599            | NR               | 555       | 68554            | NR               | 685       | 40525            | NR               | 815       | 2732             | NR               | 945       | 1688             | NR               |
| 430       | 19019            | NR               | 560       | 75325            | NR               | 690       | 35615            | NR               | 820       | 2612             | NR               | 950       | 1560             | NR               |
| 435       | 24875            | NR               | 565       | 82533            | NR               | 695       | 31158            | NR               | 825       | 2966             | NR               | 955       | 2826             | NR               |
| 440       | 29103            | NR               | 570       | 90909            | NR               | 700       | 27409            | NR               | 830       | 2574             | NR               | 960       | 1477             | NR               |
| 445       | 29901            | NR               | 575       | 99621            | NR               | 705       | 24204            | NR               | 835       | 2633             | NR               | 965       | 1568             | NR               |
| 450       | 24862            | NR               | 580       | 108484           | NR               | 710       | 21558            | NR               | 840       | 2526             | NR               | 970       | 2030             | NR               |
| 455       | 15942            | NR               | 585       | 116679           | NR               | 715       | 19222            | NR               | 845       | 2631             | NR               | 975       | 1986             | NR               |
| 460       | 9916             | NR               | 590       | 123752           | NR               | 720       | 17310            | NR               | 850       | 2079             | NR               | 980       | 2540             | NR               |
| 465       | 7051             | NR               | 595       | 129324           | NR               | 725       | 15280            | NR               | 855       | 2309             | NR               | 985       | 1139             | NR               |
| 470       | 5227             | NR               | 600       | 134082           | NR               | 730       | 13282            | NR               | 860       | 2528             | NR               | 990       | 2018             | NR               |
| 475       | 4257             | NR               | 605       | 135698           | NR               | 735       | 11753            | NR               | 865       | 2121             | NR               | 995       | 3445             | NR               |
| 480       | 4052             | NR               | 610       | 135144           | NR               | 740       | 10654            | NR               | 870       | 2751             | NR               | 1000      | 3704             | NR               |
| 485       | 4298             | NR               | 615       | 134180           | NR               | 745       | 9451             | NR               | 875       | 2317             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 1470.8 M/P: 0.27**

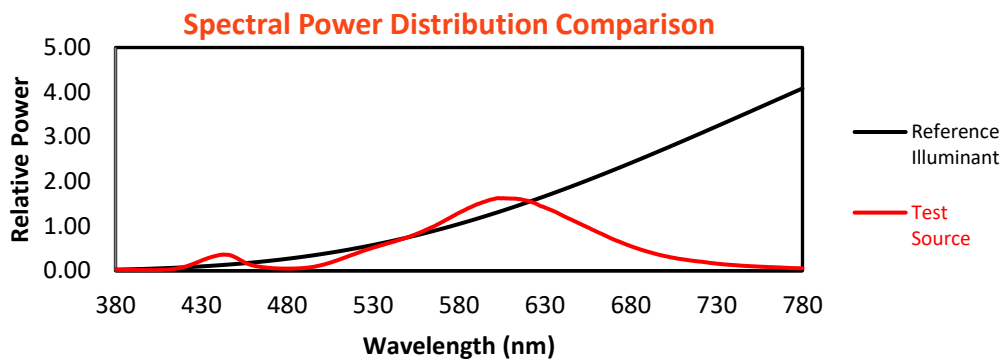
| $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 360               | 1768                          | NR                             | 490               | 5206                          | NR                             | 620               | 130919                        | NR                             | 750               | 8553                          | NR                             | 880               | 2713                          | NR                             |
| 365               | 1569                          | NR                             | 495               | 7286                          | NR                             | 625               | 125335                        | NR                             | 755               | 7696                          | NR                             | 885               | 2316                          | NR                             |
| 370               | 1594                          | NR                             | 500               | 10654                         | NR                             | 630               | 118388                        | NR                             | 760               | 6978                          | NR                             | 890               | 2539                          | NR                             |
| 375               | 1744                          | NR                             | 505               | 15189                         | NR                             | 635               | 111855                        | NR                             | 765               | 6377                          | NR                             | 895               | 1933                          | NR                             |
| 380               | 1659                          | NR                             | 510               | 20541                         | NR                             | 640               | 104062                        | NR                             | 770               | 5600                          | NR                             | 900               | 2216                          | NR                             |
| 385               | 1504                          | NR                             | 515               | 26492                         | NR                             | 645               | 96365                         | NR                             | 775               | 5000                          | NR                             | 905               | 2067                          | NR                             |
| 390               | 1541                          | NR                             | 520               | 32294                         | NR                             | 650               | 88651                         | NR                             | 780               | 4709                          | NR                             | 910               | 1959                          | NR                             |
| 395               | 1355                          | NR                             | 525               | 38123                         | NR                             | 655               | 81152                         | NR                             | 785               | 4305                          | NR                             | 915               | 1874                          | NR                             |
| 400               | 1243                          | NR                             | 530               | 43232                         | NR                             | 660               | 73523                         | NR                             | 790               | 4040                          | NR                             | 920               | 1484                          | NR                             |
| 405               | 1417                          | NR                             | 535               | 48012                         | NR                             | 665               | 66123                         | NR                             | 795               | 3642                          | NR                             | 925               | 1914                          | NR                             |
| 410               | 2147                          | NR                             | 540               | 52623                         | NR                             | 670               | 58677                         | NR                             | 800               | 3594                          | NR                             | 930               | 1948                          | NR                             |
| 415               | 3837                          | NR                             | 545               | 57516                         | NR                             | 675               | 52349                         | NR                             | 805               | 3190                          | NR                             | 935               | 2079                          | NR                             |
| 420               | 7159                          | NR                             | 550               | 62613                         | NR                             | 680               | 46159                         | NR                             | 810               | 3241                          | NR                             | 940               | 2263                          | NR                             |
| 425               | 12599                         | NR                             | 555               | 68554                         | NR                             | 685               | 40525                         | NR                             | 815               | 2732                          | NR                             | 945               | 1688                          | NR                             |
| 430               | 19019                         | NR                             | 560               | 75325                         | NR                             | 690               | 35615                         | NR                             | 820               | 2612                          | NR                             | 950               | 1560                          | NR                             |
| 435               | 24875                         | NR                             | 565               | 82533                         | NR                             | 695               | 31158                         | NR                             | 825               | 2966                          | NR                             | 955               | 2826                          | NR                             |
| 440               | 29103                         | NR                             | 570               | 90909                         | NR                             | 700               | 27409                         | NR                             | 830               | 2574                          | NR                             | 960               | 1477                          | NR                             |
| 445               | 29901                         | NR                             | 575               | 99621                         | NR                             | 705               | 24204                         | NR                             | 835               | 2633                          | NR                             | 965               | 1568                          | NR                             |
| 450               | 24862                         | NR                             | 580               | 108484                        | NR                             | 710               | 21558                         | NR                             | 840               | 2526                          | NR                             | 970               | 2030                          | NR                             |
| 455               | 15942                         | NR                             | 585               | 116679                        | NR                             | 715               | 19222                         | NR                             | 845               | 2631                          | NR                             | 975               | 1986                          | NR                             |
| 460               | 9916                          | NR                             | 590               | 123752                        | NR                             | 720               | 17310                         | NR                             | 850               | 2079                          | NR                             | 980               | 2540                          | NR                             |
| 465               | 7051                          | NR                             | 595               | 129324                        | NR                             | 725               | 15280                         | NR                             | 855               | 2309                          | NR                             | 985               | 1139                          | NR                             |
| 470               | 5227                          | NR                             | 600               | 134082                        | NR                             | 730               | 13282                         | NR                             | 860               | 2528                          | NR                             | 990               | 2018                          | NR                             |
| 475               | 4257                          | NR                             | 605               | 135698                        | NR                             | 735               | 11753                         | NR                             | 865               | 2121                          | NR                             | 995               | 3445                          | NR                             |
| 480               | 4052                          | NR                             | 610               | 135144                        | NR                             | 740               | 10654                         | NR                             | 870               | 2751                          | NR                             | 1000              | 3704                          | NR                             |
| 485               | 4298                          | NR                             | 615               | 134180                        | NR                             | 745               | 9451                          | NR                             | 875               | 2317                          | NR                             |                   |                               |                                |

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### Summary

$R_f = 69.8$   
 $R_g = 99.2$   
 CIE  $R_a = 72.0$   
 $R_g = -17.4$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 56 | CES51 = 74 | CES76 = 56 |
| CES02 = 65 | CES27 = 76 | CES52 = 76 | CES77 = 81 |
| CES03 = 32 | CES28 = 83 | CES53 = 65 | CES78 = 63 |
| CES04 = 72 | CES29 = 46 | CES54 = 78 | CES79 = 84 |
| CES05 = 52 | CES30 = 48 | CES55 = 75 | CES80 = 84 |
| CES06 = 52 | CES31 = 51 | CES56 = 65 | CES81 = 63 |
| CES07 = 44 | CES32 = 51 | CES57 = 62 | CES82 = 92 |
| CES08 = 42 | CES33 = 53 | CES58 = 66 | CES83 = 83 |
| CES09 = 29 | CES34 = 70 | CES59 = 84 | CES84 = 92 |
| CES10 = 78 | CES35 = 85 | CES60 = 90 | CES85 = 81 |
| CES11 = 61 | CES36 = 78 | CES61 = 84 | CES86 = 56 |
| CES12 = 68 | CES37 = 80 | CES62 = 70 | CES87 = 78 |
| CES13 = 45 | CES38 = 53 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 84 | CES65 = 67 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 90 |
| CES17 = 51 | CES42 = 79 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 64 | CES68 = 69 | CES93 = 79 |
| CES19 = 74 | CES44 = 98 | CES69 = 80 | CES94 = 52 |
| CES20 = 68 | CES45 = 73 | CES70 = 63 | CES95 = 76 |
| CES21 = 89 | CES46 = 67 | CES71 = 63 | CES96 = 78 |
| CES22 = 81 | CES47 = 60 | CES72 = 87 | CES97 = 77 |
| CES23 = 92 | CES48 = 48 | CES73 = 56 | CES98 = 71 |
| CES24 = 92 | CES49 = 64 | CES74 = 87 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 |            |



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Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)