

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: P323607

Luminaire Tested: **GLEON-SA3C-760-U-SL3-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P323607  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-23)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA3C-760-U-SL3-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(3) 70 CRI, 5700K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 18448 lumens  
Efficiency: N/A  
Efficacy: 111.1 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B2 - U0 - G3

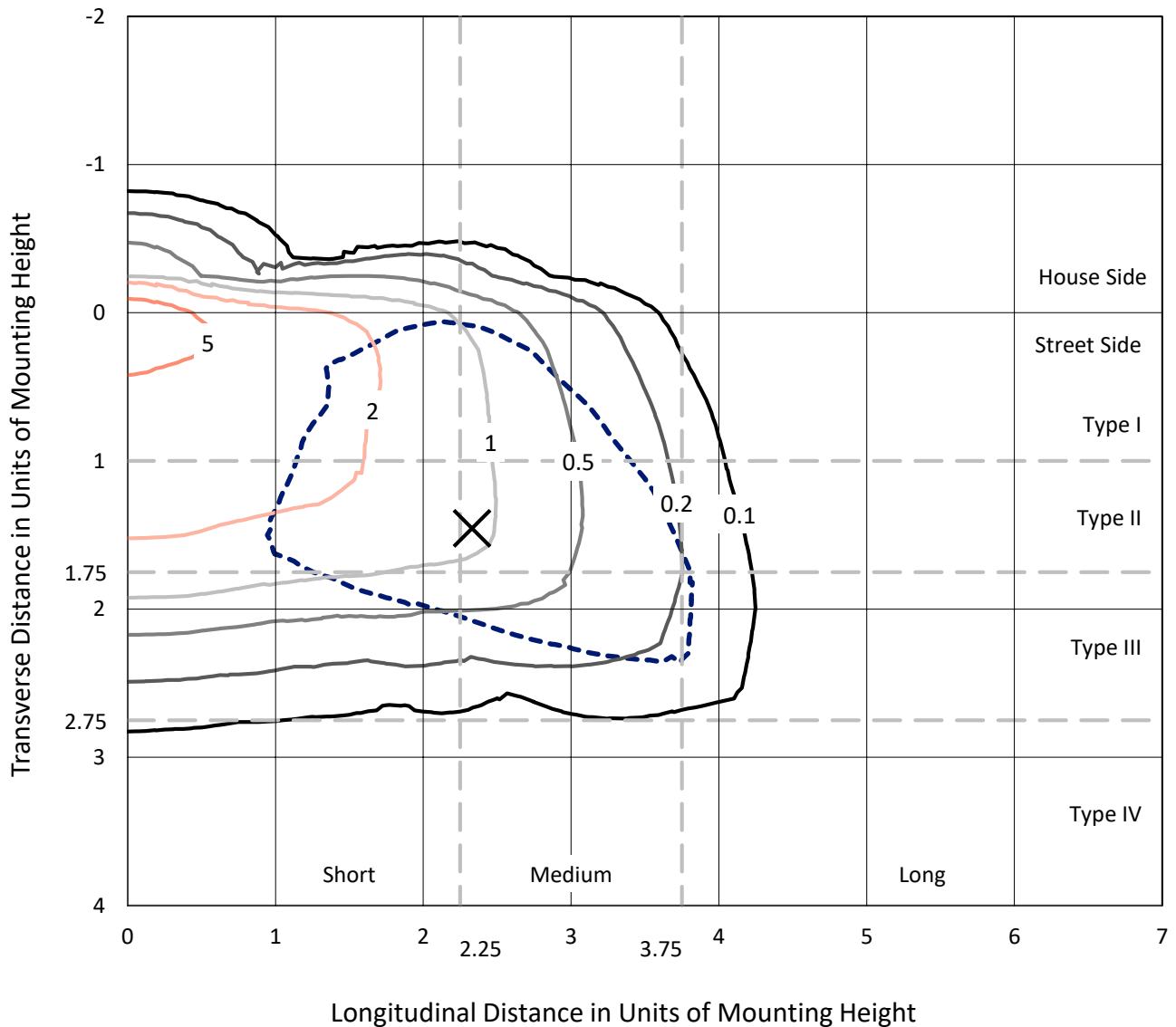
Input Watts (W): 166  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P323607  
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### Iso-Footcandle Lines of Horizontal Illumination

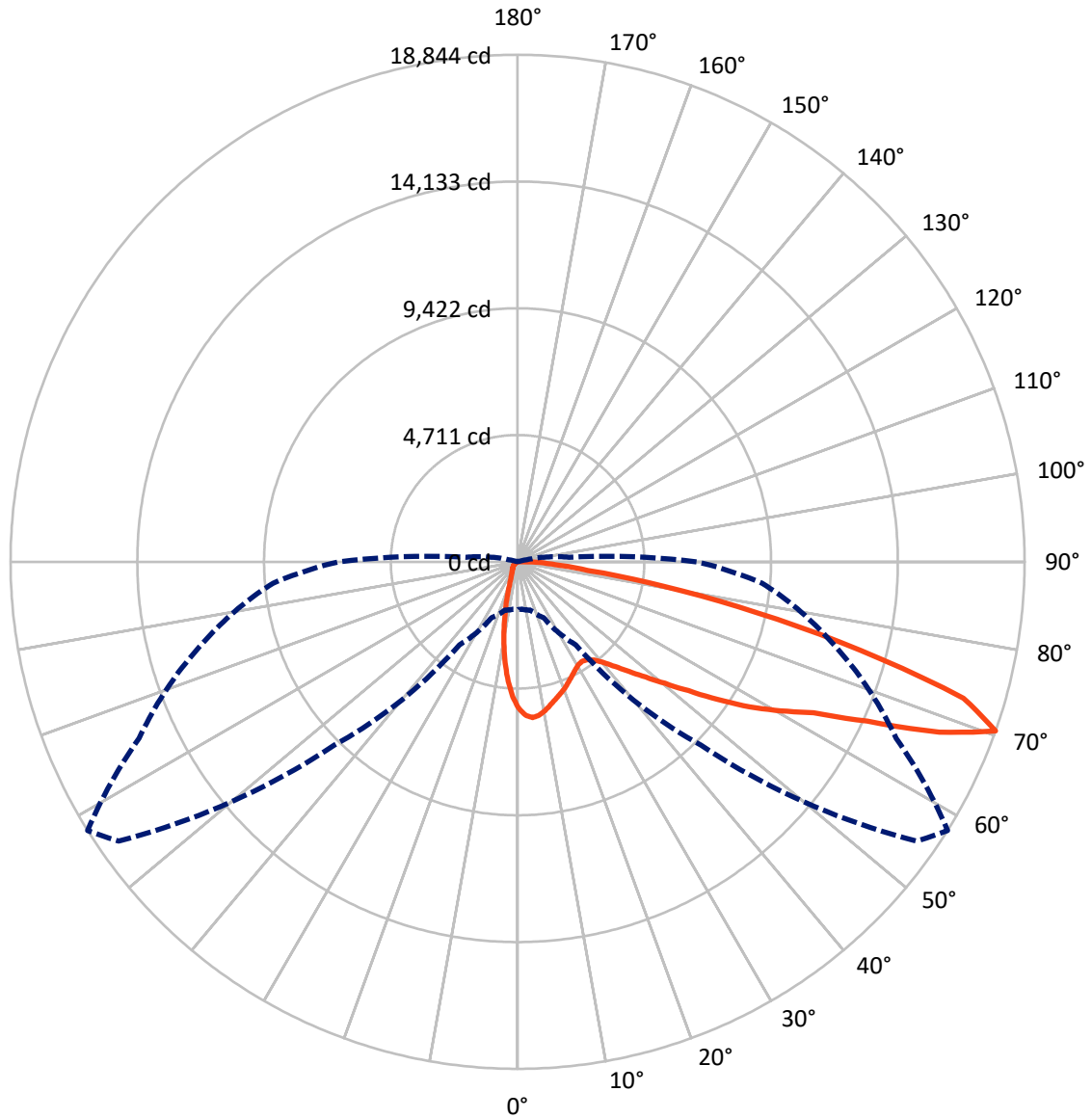
✕ Max cd  
 - - - 1/2 Max cd



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

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### Luminous Intensity Polar Plot



— Vertical Plane Through 58-Deg Lateral      - - - Horizontal Cone Through 70-Deg Vertical

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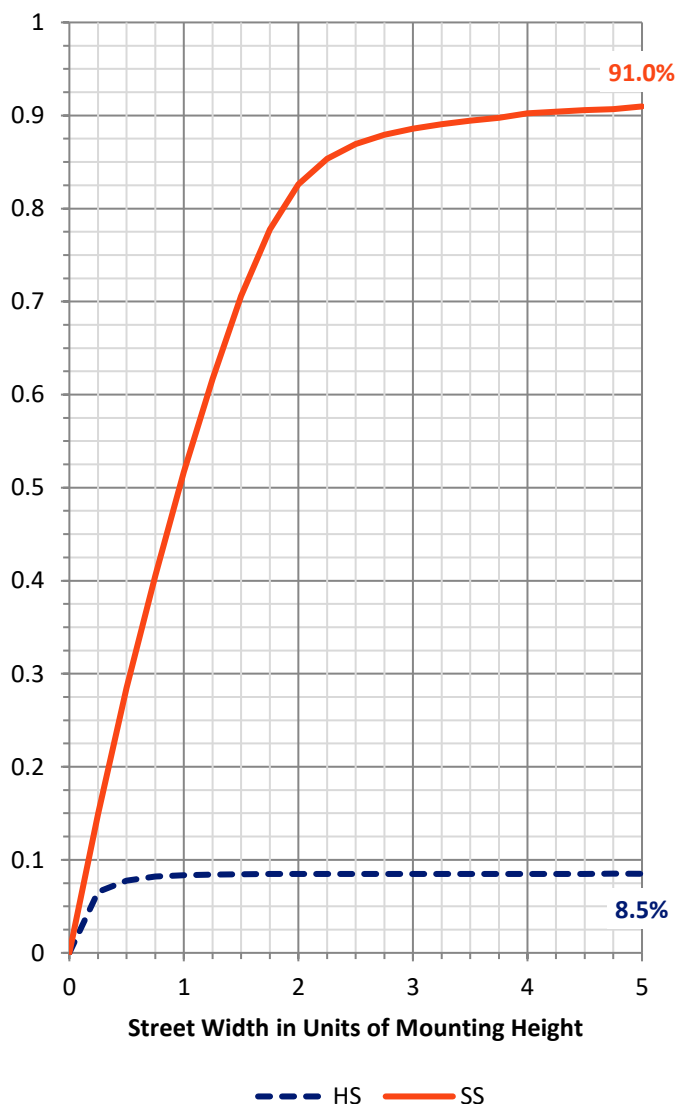
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1578.7   | 0.0    | 1578.7  |
|                    | % Fixture | 8.6      | 0.0    | 8.6     |
| <b>Street Side</b> | Lumens    | 16869.3  | 0.0    | 16869.3 |
|                    | % Fixture | 91.4     | 0.0    | 91.4    |
| <b>Total</b>       | Lumens    | 18448.0  | 0.0    | 18448.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 445.6   | 2.4       |
| 10°-20°   | 935.3   | 5.1       |
| 20°-30°   | 1229.5  | 6.7       |
| 30°-40°   | 1628.4  | 8.8       |
| 40°-50°   | 2434.0  | 13.2      |
| 50°-60°   | 3899.1  | 21.1      |
| 60°-70°   | 4914.8  | 26.6      |
| 70°-80°   | 2651.0  | 14.4      |
| 80°-90°   | 310.3   | 1.7       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 18448.0 | 100.0     |
| 0°-180°   | 18448.0 | 100.0     |

**Coefficient of Utilization**

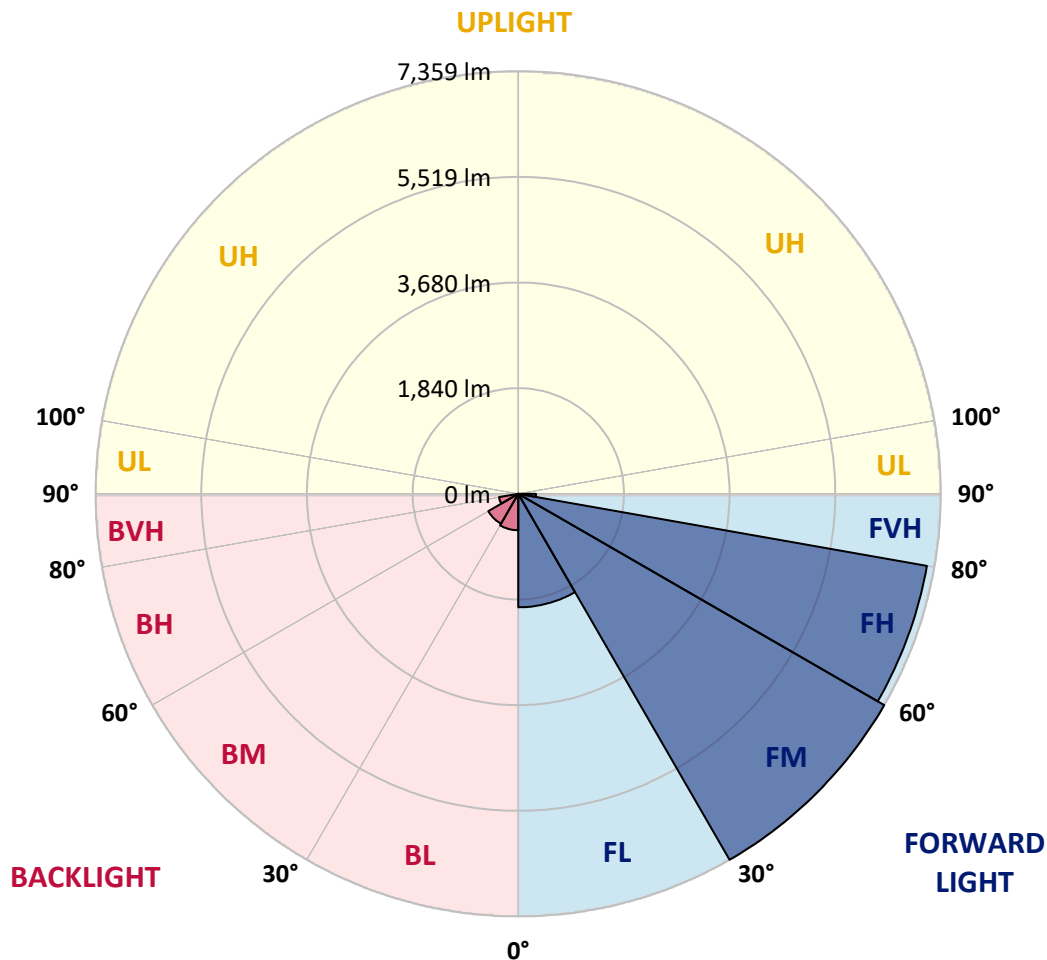


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1976.2 | 10.7      |                         |      |         |
| FM (30°-60°)   | 7359.2 | 39.9      |                         |      |         |
| FH (60°-80°)   | 7226.3 | 39.2      |                         |      | G3/7500 |
| FVH (80°-90°)  | 307.6  | 1.7       |                         |      | G3/500  |
| BL (0°-30°)    | 634.3  | 3.4       | B2/1000                 |      |         |
| BM (30°-60°)   | 602.3  | 3.3       | B1/1000                 |      |         |
| BH (60°-80°)   | 339.5  | 1.8       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 2.7    | 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-G3**  
 Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°     | 55°     | 58°     | 65°     | 75°     | 85°     |
|-------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|
| 0°    | 5449.5 | 5449.5 | 5449.5 | 5449.5 | 5449.5 | 5449.5  | 5449.5  | 5449.5  | 5449.5  | 5449.5  | 5449.5  |
| 2.5°  | 5901.3 | 5886.7 | 5881.3 | 5872.1 | 5836.8 | 5802.3  | 5734.0  | 5714.9  | 5671.9  | 5569.9  | 5461.7  |
| 5°    | 5905.9 | 5905.1 | 5921.2 | 5917.4 | 5905.1 | 5889.0  | 5839.9  | 5814.6  | 5741.7  | 5596.0  | 5398.1  |
| 7.5°  | 5621.3 | 5635.9 | 5671.9 | 5701.1 | 5734.8 | 5778.5  | 5784.7  | 5760.1  | 5700.3  | 5543.0  | 5280.7  |
| 10°   | 5239.3 | 5262.3 | 5312.9 | 5370.4 | 5458.7 | 5546.1  | 5624.3  | 5621.3  | 5600.6  | 5445.6  | 5139.5  |
| 12.5° | 4856.5 | 4883.3 | 4941.6 | 5026.8 | 5151.8 | 5294.5  | 5434.1  | 5453.3  | 5487.8  | 5358.2  | 5009.1  |
| 15°   | 4521.3 | 4544.3 | 4601.8 | 4706.1 | 4861.1 | 5052.9  | 5257.7  | 5293.0  | 5381.9  | 5289.9  | 4900.2  |
| 17.5° | 4236.7 | 4251.2 | 4293.4 | 4409.3 | 4588.8 | 4821.2  | 5087.4  | 5156.4  | 5289.1  | 5236.2  | 4805.9  |
| 20°   | 4038.0 | 4040.3 | 4067.9 | 4149.2 | 4328.7 | 4588.8  | 4911.0  | 5009.9  | 5190.9  | 5190.2  | 4708.4  |
| 22.5° | 3939.8 | 3932.1 | 3937.5 | 3984.3 | 4116.2 | 4367.1  | 4734.5  | 4851.9  | 5102.7  | 5151.1  | 4609.5  |
| 25°   | 3921.4 | 3915.3 | 3899.9 | 3906.1 | 3985.8 | 4173.0  | 4556.6  | 4692.3  | 5025.2  | 5127.3  | 4523.6  |
| 27.5° | 3978.9 | 3985.1 | 3959.0 | 3931.4 | 3937.5 | 4047.2  | 4398.5  | 4555.8  | 4962.3  | 5127.3  | 4463.0  |
| 30°   | 4094.8 | 4097.8 | 4078.7 | 4042.6 | 3994.3 | 4011.9  | 4288.8  | 4446.1  | 4930.9  | 5162.6  | 4424.6  |
| 32.5° | 4222.9 | 4239.7 | 4237.4 | 4208.3 | 4139.3 | 4067.9  | 4262.8  | 4406.2  | 4928.6  | 5240.8  | 4420.8  |
| 35°   | 4381.7 | 4400.8 | 4433.0 | 4426.9 | 4354.8 | 4237.4  | 4351.7  | 4464.5  | 4973.9  | 5369.7  | 4462.2  |
| 37.5° | 4550.4 | 4579.6 | 4648.6 | 4681.6 | 4634.8 | 4502.1  | 4551.2  | 4631.7  | 5095.1  | 5578.3  | 4567.3  |
| 40°   | 4713.8 | 4746.8 | 4872.6 | 5002.2 | 4966.9 | 4830.4  | 4853.4  | 4917.9  | 5310.6  | 5878.3  | 4766.7  |
| 42.5° | 4874.1 | 4923.2 | 5108.1 | 5321.3 | 5363.5 | 5254.6  | 5266.9  | 5318.3  | 5630.5  | 6291.0  | 5092.8  |
| 45°   | 5065.9 | 5121.1 | 5395.0 | 5658.1 | 5770.9 | 5723.3  | 5775.5  | 5809.2  | 6048.6  | 6836.4  | 5532.3  |
| 47.5° | 5347.4 | 5411.1 | 5747.1 | 6047.0 | 6244.9 | 6275.6  | 6380.7  | 6403.0  | 6577.1  | 7471.5  | 6105.3  |
| 50°   | 5896.7 | 5914.3 | 6218.1 | 6490.4 | 6775.8 | 6959.9  | 7079.5  | 7096.4  | 7216.8  | 8165.7  | 6821.0  |
| 52.5° | 6587.8 | 6599.3 | 6771.2 | 6953.7 | 7278.2 | 7654.1  | 7934.1  | 7957.9  | 7983.2  | 8842.3  | 7527.5  |
| 55°   | 7274.4 | 7272.8 | 7386.4 | 7493.8 | 7865.0 | 8411.2  | 9018.8  | 9033.3  | 8851.5  | 9484.4  | 8067.6  |
| 57.5° | 7703.2 | 7744.6 | 7917.2 | 8055.3 | 8573.8 | 9274.2  | 10117.2 | 10170.9 | 9763.6  | 9960.0  | 8601.5  |
| 60°   | 7566.6 | 7586.6 | 7969.4 | 8480.2 | 9456.8 | 10500.8 | 11228.8 | 11242.6 | 10449.4 | 10434.8 | 9276.5  |
| 62.5° | 6446.7 | 6457.4 | 7058.8 | 8112.0 | 9904.0 | 12091.7 | 12569.6 | 12344.9 | 11238.0 | 11093.7 | 10084.2 |
| 65°   | 4418.5 | 4488.3 | 4990.7 | 6292.5 | 9082.4 | 13089.7 | 14645.4 | 14273.4 | 12440.0 | 12043.4 | 10814.5 |
| 67.5° | 2602.0 | 2587.4 | 2836.0 | 3794.8 | 6670.7 | 12427.0 | 17271.2 | 16901.4 | 14079.3 | 12679.3 | 10600.5 |
| 70°   | 1777.4 | 1767.4 | 1862.5 | 2297.5 | 3765.7 | 9640.1  | 18097.3 | 18843.7 | 15526.8 | 12251.3 | 9123.1  |
| 72.5° | 1268.8 | 1274.1 | 1414.5 | 1785.0 | 2364.2 | 5616.7  | 15562.8 | 17329.5 | 15073.4 | 10680.3 | 6934.6  |
| 75°   | 861.4  | 876.0  | 1077.0 | 1464.4 | 2072.7 | 2857.4  | 11043.9 | 13173.3 | 12274.3 | 7762.2  | 3985.8  |
| 77.5° | 463.3  | 479.4  | 716.5  | 1179.8 | 1874.0 | 1985.2  | 7104.1  | 9066.3  | 7710.1  | 3489.5  | 1155.2  |
| 80°   | 193.3  | 202.5  | 335.2  | 857.6  | 1619.3 | 1743.6  | 4179.9  | 5497.8  | 3285.5  | 688.1   | 257.7   |
| 82.5° | 83.6   | 88.2   | 139.6  | 511.7  | 1210.5 | 1472.1  | 2213.1  | 2644.9  | 995.7   | 151.1   | 129.6   |
| 85°   | 16.1   | 16.9   | 57.5   | 270.8  | 772.5  | 830.8   | 1434.5  | 1406.1  | 447.2   | 65.2    | 94.4    |
| 87.5° | 0.0    | 0.0    | 13.8   | 85.1   | 227.1  | 452.6   | 875.3   | 864.5   | 151.9   | 31.5    | 35.3    |
| 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: P323607

CATALOG NUMBER: GLEON-SA3C-760-U-SL3-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 5449.5 | 5449.5 | 5449.5 | 5449.5 | 5449.5 | 5449.5 | 5449.5 | 5449.5 | 5449.5 | 5449.5 | 5449.5 |
| 2.5°  | 5406.5 | 5353.6 | 5242.3 | 5105.0 | 4999.9 | 4884.1 | 4792.1 | 4675.5 | 4624.8 | 4627.1 | 4599.5 |
| 5°    | 5285.3 | 5176.4 | 4930.1 | 4619.5 | 4380.1 | 4133.1 | 3920.6 | 3708.9 | 3583.9 | 3543.2 | 3504.9 |
| 7.5°  | 5111.9 | 4939.3 | 4546.6 | 4067.9 | 3662.9 | 3267.1 | 2922.6 | 2619.6 | 2427.9 | 2334.3 | 2299.8 |
| 10°   | 4916.3 | 4673.9 | 4105.5 | 3474.9 | 2896.6 | 2361.1 | 1914.7 | 1526.5 | 1371.6 | 1266.5 | 1239.6 |
| 12.5° | 4744.5 | 4416.2 | 3674.4 | 2866.6 | 2180.1 | 1534.2 | 1108.5 | 866.8  | 761.7  | 720.3  | 713.4  |
| 15°   | 4582.6 | 4175.3 | 3259.4 | 2315.9 | 1509.6 | 944.3  | 705.0  | 622.9  | 598.3  | 591.4  | 591.4  |
| 17.5° | 4430.0 | 3945.9 | 2853.6 | 1773.5 | 998.8  | 662.0  | 583.8  | 565.3  | 557.7  | 556.9  | 557.7  |
| 20°   | 4270.4 | 3716.6 | 2454.7 | 1299.5 | 697.3  | 560.7  | 539.3  | 529.3  | 527.0  | 527.0  | 527.0  |
| 22.5° | 4117.8 | 3487.2 | 2066.6 | 928.2  | 559.2  | 511.7  | 500.9  | 494.0  | 491.7  | 490.9  | 489.4  |
| 25°   | 3971.3 | 3269.4 | 1687.6 | 655.9  | 490.9  | 468.7  | 459.5  | 450.3  | 443.4  | 439.5  | 437.2  |
| 27.5° | 3850.8 | 3075.3 | 1334.7 | 526.2  | 443.4  | 424.2  | 412.7  | 398.9  | 382.0  | 374.3  | 371.3  |
| 30°   | 3754.9 | 2898.1 | 1028.7 | 444.1  | 398.9  | 379.7  | 362.1  | 338.3  | 313.7  | 300.7  | 299.9  |
| 32.5° | 3679.8 | 2724.0 | 780.9  | 392.8  | 359.0  | 335.2  | 309.9  | 280.0  | 251.6  | 237.0  | 236.3  |
| 35°   | 3642.9 | 2570.5 | 596.8  | 355.2  | 323.7  | 293.8  | 262.3  | 229.4  | 201.7  | 187.9  | 186.4  |
| 37.5° | 3667.5 | 2440.9 | 465.6  | 323.7  | 293.8  | 259.3  | 222.5  | 187.9  | 163.4  | 151.1  | 150.4  |
| 40°   | 3757.2 | 2358.1 | 378.2  | 296.9  | 268.5  | 226.3  | 186.4  | 154.2  | 133.5  | 123.5  | 122.7  |
| 42.5° | 3948.2 | 2327.4 | 322.9  | 274.6  | 243.9  | 195.6  | 155.0  | 127.3  | 108.2  | 101.3  | 99.7   |
| 45°   | 4267.4 | 2372.6 | 285.4  | 253.1  | 218.6  | 166.5  | 128.1  | 104.3  | 87.4   | 82.1   | 81.3   |
| 47.5° | 4692.3 | 2491.5 | 258.5  | 232.4  | 195.6  | 140.4  | 106.6  | 84.4   | 71.3   | 66.0   | 65.2   |
| 50°   | 5240.0 | 2680.2 | 236.3  | 211.7  | 174.1  | 118.9  | 88.2   | 66.7   | 55.2   | 51.4   | 51.4   |
| 52.5° | 5836.1 | 2905.0 | 216.3  | 192.5  | 152.7  | 99.0   | 71.3   | 51.4   | 43.7   | 39.1   | 39.1   |
| 55°   | 6328.5 | 3101.4 | 194.8  | 178.0  | 126.6  | 82.1   | 54.5   | 39.1   | 32.2   | 29.9   | 29.9   |
| 57.5° | 6820.3 | 3310.8 | 170.3  | 152.7  | 101.3  | 66.7   | 41.4   | 29.1   | 23.8   | 22.2   | 22.2   |
| 60°   | 7457.7 | 3567.0 | 146.5  | 124.3  | 79.8   | 50.6   | 30.7   | 20.7   | 17.6   | 16.9   | 16.9   |
| 62.5° | 8158.8 | 3717.3 | 125.0  | 99.7   | 62.1   | 37.6   | 22.2   | 13.8   | 13.0   | 13.0   | 12.3   |
| 65°   | 8587.6 | 3504.9 | 105.1  | 79.8   | 48.3   | 28.4   | 14.6   | 10.0   | 11.5   | 10.7   | 9.2    |
| 67.5° | 8040.7 | 2743.9 | 85.9   | 62.1   | 37.6   | 21.5   | 9.2    | 6.9    | 12.3   | 10.0   | 7.7    |
| 70°   | 6657.6 | 1920.8 | 66.7   | 43.7   | 29.9   | 18.4   | 6.1    | 4.6    | 13.0   | 10.0   | 6.1    |
| 72.5° | 4982.3 | 1285.7 | 52.9   | 29.1   | 22.2   | 16.1   | 5.4    | 2.3    | 11.5   | 8.4    | 5.4    |
| 75°   | 2722.4 | 517.8  | 42.2   | 18.4   | 13.8   | 11.5   | 3.8    | 1.5    | 7.7    | 6.1    | 3.8    |
| 77.5° | 716.5  | 136.5  | 30.7   | 12.3   | 7.7    | 4.6    | 2.3    | 0.8    | 3.8    | 3.1    | 1.5    |
| 80°   | 182.6  | 52.9   | 19.9   | 8.4    | 5.4    | 2.3    | 0.0    | 0.0    | 0.8    | 0.0    | 0.0    |
| 82.5° | 97.4   | 22.2   | 12.3   | 6.1    | 3.1    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 73.6   | 14.6   | 6.9    | 3.8    | 0.8    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 28.4   | 4.6    | 2.3    | 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    |



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

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-9-R4

Test Date: 10/23/2019

Luminaire Tested: SA1C-760-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

**Test Information**

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-9-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-760-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):                  | 5474   | CRI (Ra): | 71.7 | R9:  | -27.1 |
| CIE u':                   | 0.2052 | R1:       | 70.6 | R10: | 40.8  |
| CIE v':                   | 0.4804 | R2:       | 74.6 | R11: | 74.6  |
| Duv:                      | 0.0025 | R3:       | 78.3 | R12: | 50.4  |
| CIE x:                    | 0.3330 | R4:       | 73.8 | R13: | 70.0  |
| CIE y:                    | 0.3466 | R5:       | 72.4 | R14: | 87.8  |
| CIE z:                    | 0.3204 | R6:       | 67.5 |      |       |
| Peak Wavelength (nm):     | 442    | R7:       | 77.5 |      |       |
| Dominant Wavelength (nm): | 554    | R8:       | 58.9 |      |       |
| Purity:                   | 4.1    |           |      |      |       |
| Rf:                       | 72.1   |           |      |      |       |
| Rg:                       | 97.2   |           |      |      |       |



**Test Conditions**

Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.6/31%  
 Sphere Temperature (°C): 25.9

REPORT NUMBER: SP1-1908-441-9-R4

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

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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 5700K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 3540                                 | NR                             | 490               | 33363                                | NR                             | 620               | 80193                                | NR                             | 750               | 4663                                 | NR                             | 880               | 4678                                 | NR                             |
| 365               | 2862                                 | NR                             | 495               | 44177                                | NR                             | 625               | 73091                                | NR                             | 755               | 4147                                 | NR                             | 885               | 4128                                 | NR                             |
| 370               | 2865                                 | NR                             | 500               | 57019                                | NR                             | 630               | 66269                                | NR                             | 760               | 4040                                 | NR                             | 890               | 4504                                 | NR                             |
| 375               | 3254                                 | NR                             | 505               | 70030                                | NR                             | 635               | 60012                                | NR                             | 765               | 3474                                 | NR                             | 895               | 4371                                 | NR                             |
| 380               | 3076                                 | NR                             | 510               | 81972                                | NR                             | 640               | 53914                                | NR                             | 770               | 3469                                 | NR                             | 900               | 4082                                 | NR                             |
| 385               | 2904                                 | NR                             | 515               | 92590                                | NR                             | 645               | 48385                                | NR                             | 775               | 3181                                 | NR                             | 905               | 2982                                 | NR                             |
| 390               | 2689                                 | NR                             | 520               | 100305                               | NR                             | 650               | 43219                                | NR                             | 780               | 2969                                 | NR                             | 910               | 4351                                 | NR                             |
| 395               | 2619                                 | NR                             | 525               | 107452                               | NR                             | 655               | 38562                                | NR                             | 785               | 3132                                 | NR                             | 915               | 3365                                 | NR                             |
| 400               | 2679                                 | NR                             | 530               | 111373                               | NR                             | 660               | 34110                                | NR                             | 790               | 2507                                 | NR                             | 920               | 3430                                 | NR                             |
| 405               | 3515                                 | NR                             | 535               | 114505                               | NR                             | 665               | 30085                                | NR                             | 795               | 2968                                 | NR                             | 925               | 4264                                 | NR                             |
| 410               | 6934                                 | NR                             | 540               | 116408                               | NR                             | 670               | 26205                                | NR                             | 800               | 2758                                 | NR                             | 930               | 4095                                 | NR                             |
| 415               | 14943                                | NR                             | 545               | 118700                               | NR                             | 675               | 22906                                | NR                             | 805               | 2872                                 | NR                             | 935               | 5048                                 | NR                             |
| 420               | 31939                                | NR                             | 550               | 119209                               | NR                             | 680               | 20058                                | NR                             | 810               | 3094                                 | NR                             | 940               | 4074                                 | NR                             |
| 425               | 64701                                | NR                             | 555               | 120742                               | NR                             | 685               | 17413                                | NR                             | 815               | 3222                                 | NR                             | 945               | 4949                                 | NR                             |
| 430               | 110939                               | NR                             | 560               | 121594                               | NR                             | 690               | 15447                                | NR                             | 820               | 3238                                 | NR                             | 950               | 4387                                 | NR                             |
| 435               | 164597                               | NR                             | 565               | 121913                               | NR                             | 695               | 13398                                | NR                             | 825               | 3524                                 | NR                             | 955               | 4978                                 | NR                             |
| 440               | 207696                               | NR                             | 570               | 122147                               | NR                             | 700               | 11777                                | NR                             | 830               | 2921                                 | NR                             | 960               | 4706                                 | NR                             |
| 445               | 201830                               | NR                             | 575               | 121605                               | NR                             | 705               | 10412                                | NR                             | 835               | 3595                                 | NR                             | 965               | 5083                                 | NR                             |
| 450               | 145410                               | NR                             | 580               | 120248                               | NR                             | 710               | 9544                                 | NR                             | 840               | 3016                                 | NR                             | 970               | 4522                                 | NR                             |
| 455               | 89594                                | NR                             | 585               | 117717                               | NR                             | 715               | 8940                                 | NR                             | 845               | 4032                                 | NR                             | 975               | 4740                                 | NR                             |
| 460               | 58321                                | NR                             | 590               | 114359                               | NR                             | 720               | 7897                                 | NR                             | 850               | 3579                                 | NR                             | 980               | 6122                                 | NR                             |
| 465               | 39318                                | NR                             | 595               | 109974                               | NR                             | 725               | 7045                                 | NR                             | 855               | 4571                                 | NR                             | 985               | 6450                                 | NR                             |
| 470               | 27693                                | NR                             | 600               | 105269                               | NR                             | 730               | 6483                                 | NR                             | 860               | 4485                                 | NR                             | 990               | 4875                                 | NR                             |
| 475               | 23081                                | NR                             | 605               | 99453                                | NR                             | 735               | 5838                                 | NR                             | 865               | 3978                                 | NR                             | 995               | 4764                                 | NR                             |
| 480               | 23002                                | NR                             | 610               | 92921                                | NR                             | 740               | 5261                                 | NR                             | 870               | 4298                                 | NR                             | 1000              | 3640                                 | NR                             |
| 485               | 26201                                | NR                             | 615               | 86989                                | NR                             | 745               | 4760                                 | NR                             | 875               | 4356                                 | NR                             |                   |                                      |                                |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 13759.3 S/P: 1.85

| 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    | 3540          | NR            | 490    | 33363         | NR            | 620    | 80193         | NR            | 750    | 4663          | NR            | 880    | 4678          | NR            |
| 365    | 2862          | NR            | 495    | 44177         | NR            | 625    | 73091         | NR            | 755    | 4147          | NR            | 885    | 4128          | NR            |
| 370    | 2865          | NR            | 500    | 57019         | NR            | 630    | 66269         | NR            | 760    | 4040          | NR            | 890    | 4504          | NR            |
| 375    | 3254          | NR            | 505    | 70030         | NR            | 635    | 60012         | NR            | 765    | 3474          | NR            | 895    | 4371          | NR            |
| 380    | 3076          | NR            | 510    | 81972         | NR            | 640    | 53914         | NR            | 770    | 3469          | NR            | 900    | 4082          | NR            |
| 385    | 2904          | NR            | 515    | 92590         | NR            | 645    | 48385         | NR            | 775    | 3181          | NR            | 905    | 2982          | NR            |
| 390    | 2689          | NR            | 520    | 100305        | NR            | 650    | 43219         | NR            | 780    | 2969          | NR            | 910    | 4351          | NR            |
| 395    | 2619          | NR            | 525    | 107452        | NR            | 655    | 38562         | NR            | 785    | 3132          | NR            | 915    | 3365          | NR            |
| 400    | 2679          | NR            | 530    | 111373        | NR            | 660    | 34110         | NR            | 790    | 2507          | NR            | 920    | 3430          | NR            |
| 405    | 3515          | NR            | 535    | 114505        | NR            | 665    | 30085         | NR            | 795    | 2968          | NR            | 925    | 4264          | NR            |
| 410    | 6934          | NR            | 540    | 116408        | NR            | 670    | 26205         | NR            | 800    | 2758          | NR            | 930    | 4095          | NR            |
| 415    | 14943         | NR            | 545    | 118700        | NR            | 675    | 22906         | NR            | 805    | 2872          | NR            | 935    | 5048          | NR            |
| 420    | 31939         | NR            | 550    | 119209        | NR            | 680    | 20058         | NR            | 810    | 3094          | NR            | 940    | 4074          | NR            |
| 425    | 64701         | NR            | 555    | 120742        | NR            | 685    | 17413         | NR            | 815    | 3222          | NR            | 945    | 4949          | NR            |
| 430    | 110939        | NR            | 560    | 121594        | NR            | 690    | 15447         | NR            | 820    | 3238          | NR            | 950    | 4387          | NR            |
| 435    | 164597        | NR            | 565    | 121913        | NR            | 695    | 13398         | NR            | 825    | 3524          | NR            | 955    | 4978          | NR            |
| 440    | 207696        | NR            | 570    | 122147        | NR            | 700    | 11777         | NR            | 830    | 2921          | NR            | 960    | 4706          | NR            |
| 445    | 201830        | NR            | 575    | 121605        | NR            | 705    | 10412         | NR            | 835    | 3595          | NR            | 965    | 5083          | NR            |
| 450    | 145410        | NR            | 580    | 120248        | NR            | 710    | 9544          | NR            | 840    | 3016          | NR            | 970    | 4522          | NR            |
| 455    | 89594         | NR            | 585    | 117717        | NR            | 715    | 8940          | NR            | 845    | 4032          | NR            | 975    | 4740          | NR            |
| 460    | 58321         | NR            | 590    | 114359        | NR            | 720    | 7897          | NR            | 850    | 3579          | NR            | 980    | 6122          | NR            |
| 465    | 39318         | NR            | 595    | 109974        | NR            | 725    | 7045          | NR            | 855    | 4571          | NR            | 985    | 6450          | NR            |
| 470    | 27693         | NR            | 600    | 105269        | NR            | 730    | 6483          | NR            | 860    | 4485          | NR            | 990    | 4875          | NR            |
| 475    | 23081         | NR            | 605    | 99453         | NR            | 735    | 5838          | NR            | 865    | 3978          | NR            | 995    | 4764          | NR            |
| 480    | 23002         | NR            | 610    | 92921         | NR            | 740    | 5261          | NR            | 870    | 4298          | NR            | 1000   | 3640          | NR            |
| 485    | 26201         | NR            | 615    | 86989         | NR            | 745    | 4760          | NR            | 875    | 4356          | NR            |        |               |               |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5527.6 M/P: 0.74**

| 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    | 3540          | NR            | 490    | 33363         | NR            | 620    | 80193         | NR            | 750    | 4663          | NR            | 880    | 4678          | NR            |
| 365    | 2862          | NR            | 495    | 44177         | NR            | 625    | 73091         | NR            | 755    | 4147          | NR            | 885    | 4128          | NR            |
| 370    | 2865          | NR            | 500    | 57019         | NR            | 630    | 66269         | NR            | 760    | 4040          | NR            | 890    | 4504          | NR            |
| 375    | 3254          | NR            | 505    | 70030         | NR            | 635    | 60012         | NR            | 765    | 3474          | NR            | 895    | 4371          | NR            |
| 380    | 3076          | NR            | 510    | 81972         | NR            | 640    | 53914         | NR            | 770    | 3469          | NR            | 900    | 4082          | NR            |
| 385    | 2904          | NR            | 515    | 92590         | NR            | 645    | 48385         | NR            | 775    | 3181          | NR            | 905    | 2982          | NR            |
| 390    | 2689          | NR            | 520    | 100305        | NR            | 650    | 43219         | NR            | 780    | 2969          | NR            | 910    | 4351          | NR            |
| 395    | 2619          | NR            | 525    | 107452        | NR            | 655    | 38562         | NR            | 785    | 3132          | NR            | 915    | 3365          | NR            |
| 400    | 2679          | NR            | 530    | 111373        | NR            | 660    | 34110         | NR            | 790    | 2507          | NR            | 920    | 3430          | NR            |
| 405    | 3515          | NR            | 535    | 114505        | NR            | 665    | 30085         | NR            | 795    | 2968          | NR            | 925    | 4264          | NR            |
| 410    | 6934          | NR            | 540    | 116408        | NR            | 670    | 26205         | NR            | 800    | 2758          | NR            | 930    | 4095          | NR            |
| 415    | 14943         | NR            | 545    | 118700        | NR            | 675    | 22906         | NR            | 805    | 2872          | NR            | 935    | 5048          | NR            |
| 420    | 31939         | NR            | 550    | 119209        | NR            | 680    | 20058         | NR            | 810    | 3094          | NR            | 940    | 4074          | NR            |
| 425    | 64701         | NR            | 555    | 120742        | NR            | 685    | 17413         | NR            | 815    | 3222          | NR            | 945    | 4949          | NR            |
| 430    | 110939        | NR            | 560    | 121594        | NR            | 690    | 15447         | NR            | 820    | 3238          | NR            | 950    | 4387          | NR            |
| 435    | 164597        | NR            | 565    | 121913        | NR            | 695    | 13398         | NR            | 825    | 3524          | NR            | 955    | 4978          | NR            |
| 440    | 207696        | NR            | 570    | 122147        | NR            | 700    | 11777         | NR            | 830    | 2921          | NR            | 960    | 4706          | NR            |
| 445    | 201830        | NR            | 575    | 121605        | NR            | 705    | 10412         | NR            | 835    | 3595          | NR            | 965    | 5083          | NR            |
| 450    | 145410        | NR            | 580    | 120248        | NR            | 710    | 9544          | NR            | 840    | 3016          | NR            | 970    | 4522          | NR            |
| 455    | 89594         | NR            | 585    | 117717        | NR            | 715    | 8940          | NR            | 845    | 4032          | NR            | 975    | 4740          | NR            |
| 460    | 58321         | NR            | 590    | 114359        | NR            | 720    | 7897          | NR            | 850    | 3579          | NR            | 980    | 6122          | NR            |
| 465    | 39318         | NR            | 595    | 109974        | NR            | 725    | 7045          | NR            | 855    | 4571          | NR            | 985    | 6450          | NR            |
| 470    | 27693         | NR            | 600    | 105269        | NR            | 730    | 6483          | NR            | 860    | 4485          | NR            | 990    | 4875          | NR            |
| 475    | 23081         | NR            | 605    | 99453         | NR            | 735    | 5838          | NR            | 865    | 3978          | NR            | 995    | 4764          | NR            |
| 480    | 23002         | NR            | 610    | 92921         | NR            | 740    | 5261          | NR            | 870    | 4298          | NR            | 1000   | 3640          | NR            |
| 485    | 26201         | NR            | 615    | 86989         | NR            | 745    | 4760          | NR            | 875    | 4356          | NR            |        |               |               |

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**Summary**

$R_f = 72.1$   
 $R_g = 97.2$   
 CIE  $R_a = 71.7$   
 $R_g = -27.1$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 54 | CES51 = 88 | CES76 = 43 |
| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
| CES11 = 55 | CES36 = 90 | CES61 = 88 | CES86 = 76 |
| CES12 = 61 | CES37 = 72 | CES62 = 81 | CES87 = 75 |
| CES13 = 41 | CES38 = 68 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
| CES16 = 46 | CES41 = 84 | CES66 = 66 | CES91 = 92 |
| CES17 = 48 | CES42 = 70 | CES67 = 64 | CES92 = 70 |
| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
| CES21 = 85 | CES46 = 78 | CES71 = 55 | CES96 = 79 |
| CES22 = 77 | CES47 = 76 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 |            |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)