

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: P318341

Luminaire Tested: **GLEON-SA7D-727-U-T3**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P318341  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-14)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA7D-727-U-T3  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(7) 70 CRI, 2700K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 45906 lumens  
Efficiency: N/A  
Efficacy: 102.5 lumens/watt  
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B4 - U0 - G5

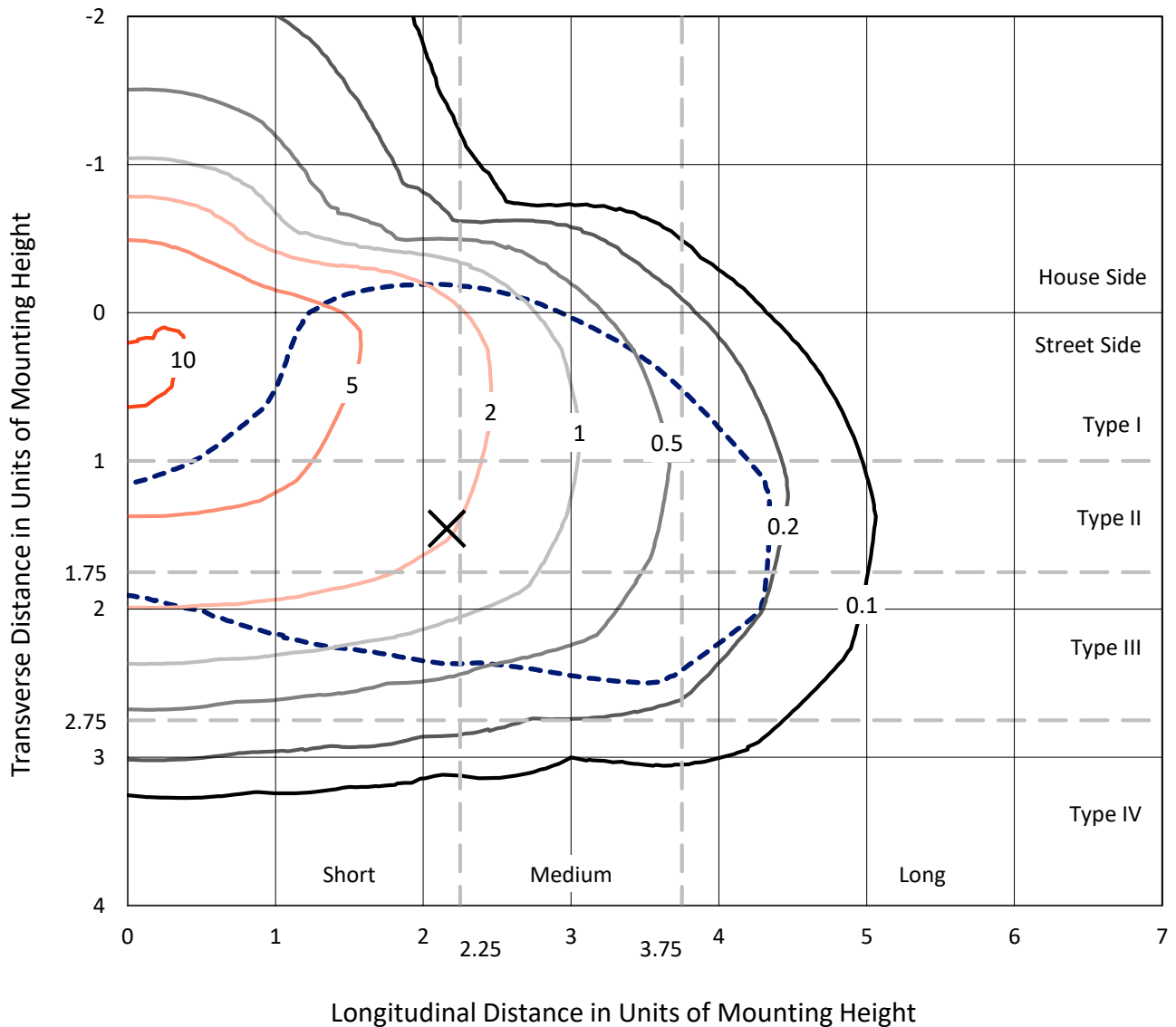
Input Watts (W): 448  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P318341  
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### Iso-Footcandle Lines of Horizontal Illumination

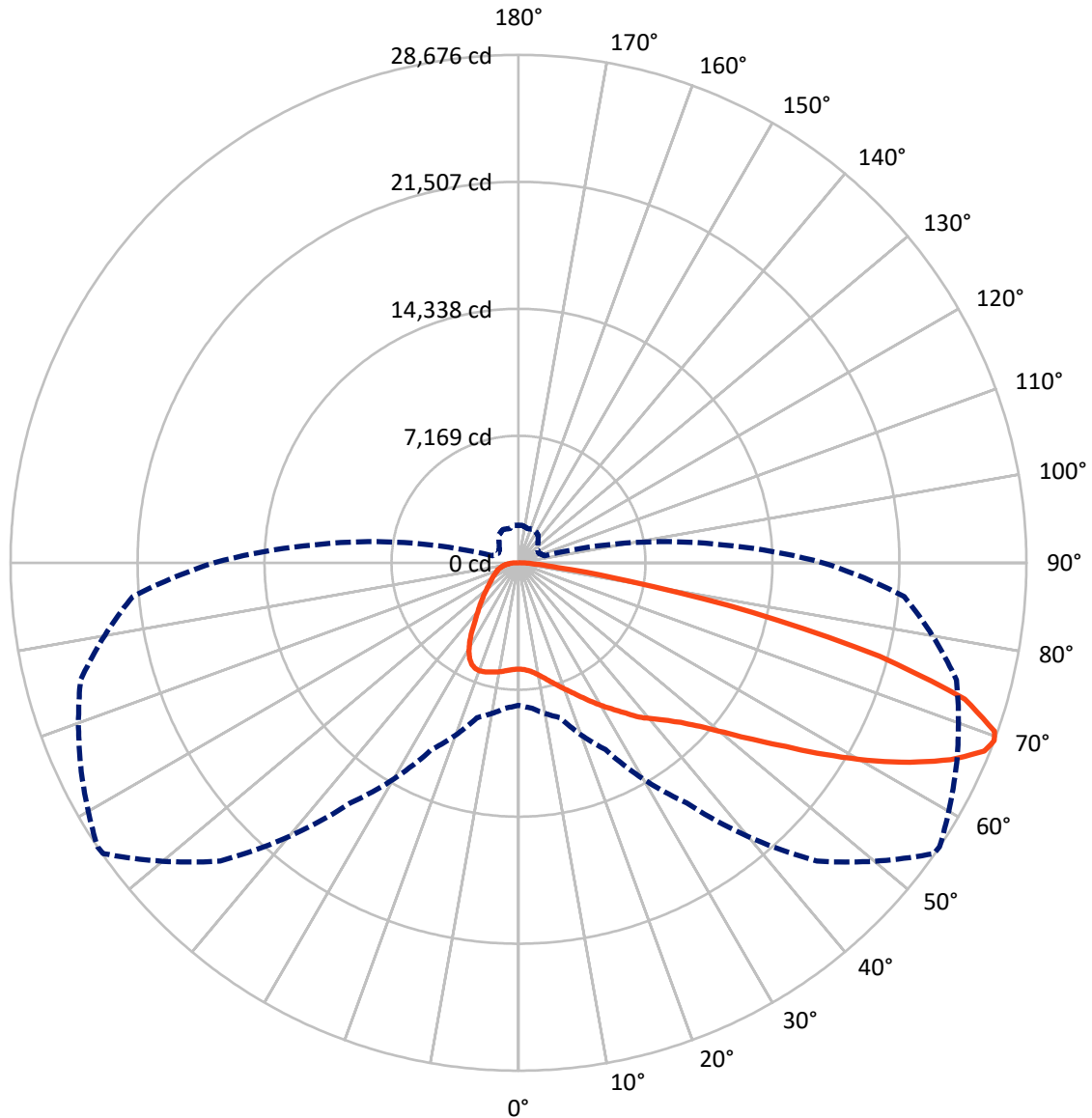
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 10.4 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 56-Deg Lateral      - - - Horizontal Cone Through 69-Deg Vertical

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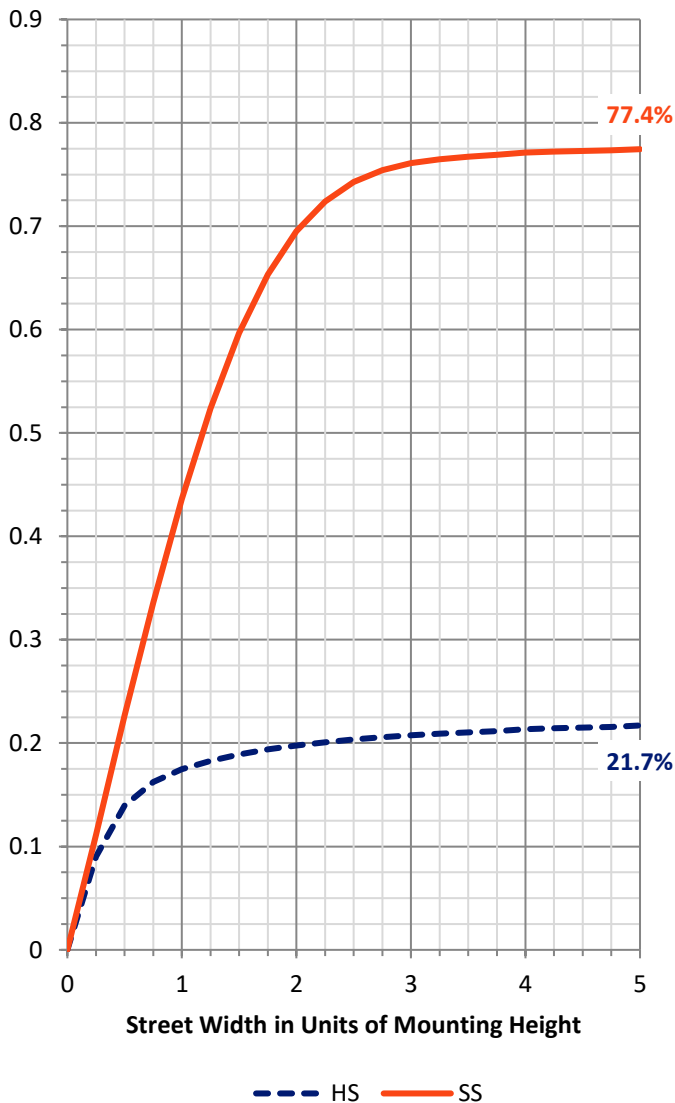
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 10223.2  | 0.0    | 10223.2 |
|                    | % Fixture | 22.3     | 0.0    | 22.3    |
| <b>Street Side</b> | Lumens    | 35682.8  | 0.0    | 35682.8 |
|                    | % Fixture | 77.7     | 0.0    | 77.7    |
| <b>Total</b>       | Lumens    | 45906.0  | 0.0    | 45906.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 589.4   | 1.3       |
| 10°-20°   | 1895.4  | 4.1       |
| 20°-30°   | 3308.7  | 7.2       |
| 30°-40°   | 4752.8  | 10.4      |
| 40°-50°   | 6577.6  | 14.3      |
| 50°-60°   | 9637.1  | 21.0      |
| 60°-70°   | 11749.4 | 25.6      |
| 70°-80°   | 6495.9  | 14.2      |
| 80°-90°   | 899.7   | 2.0       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 45906.0 | 100.0     |
| 0°-180°   | 45906.0 | 100.0     |

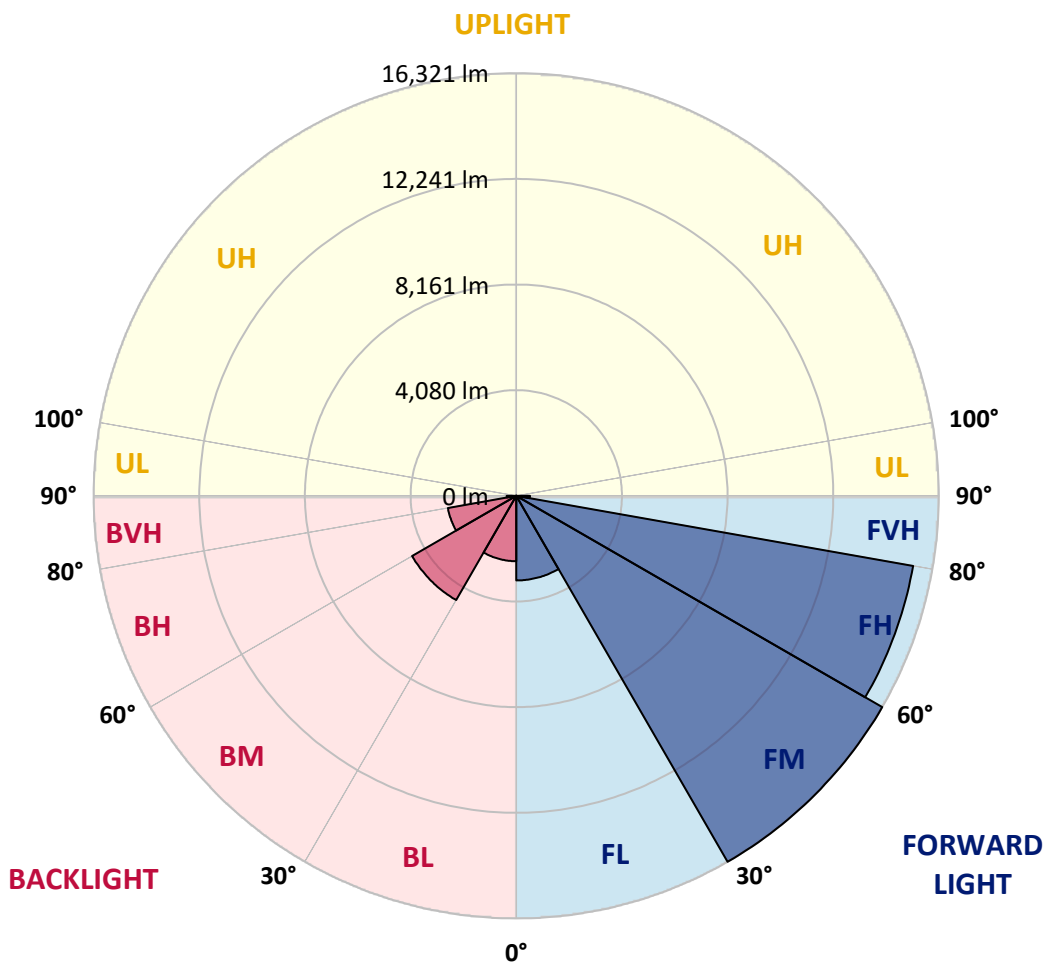


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|---------|-----------|-------------------------|------|---------|
|                |         |           | B                       | U    | G       |
| FL (0°-30°)    | 3267.1  | 7.1       |                         |      |         |
| FM (30°-60°)   | 16321.3 | 35.6      |                         |      |         |
| FH (60°-80°)   | 15564.4 | 33.9      |                         |      | G5      |
| FVH (80°-90°)  | 529.9   | 1.2       |                         |      | G4/750  |
| BL (0°-30°)    | 2526.4  | 5.5       | B4/5000                 |      |         |
| BM (30°-60°)   | 4646.2  | 10.1      | B3/5000                 |      |         |
| BH (60°-80°)   | 2680.9  | 5.8       | B4/5000                 |      | G4/5000 |
| BVH (80°-90°)  | 369.7   | 0.8       |                         |      | G3/500  |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B4-U0-G5**  
 Type III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 56°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 6001.5  | 6001.5  | 6001.5  | 6001.5  | 6001.5  | 6001.5  | 6001.5  | 6001.5  | 6001.5  | 6001.5  | 6001.5  |
| 2.5°  | 6039.5  | 6045.8  | 6041.1  | 6053.7  | 6039.5  | 6049.0  | 6041.1  | 6041.1  | 6036.3  | 6022.1  | 6006.3  |
| 5°    | 6134.4  | 6147.0  | 6139.1  | 6151.8  | 6134.4  | 6137.5  | 6123.3  | 6123.3  | 6109.1  | 6079.0  | 6047.4  |
| 7.5°  | 6283.0  | 6297.2  | 6290.9  | 6303.6  | 6279.8  | 6279.8  | 6260.9  | 6259.3  | 6230.8  | 6181.8  | 6145.4  |
| 10°   | 6460.1  | 6479.1  | 6472.8  | 6491.8  | 6472.8  | 6479.1  | 6460.1  | 6460.1  | 6422.2  | 6352.6  | 6306.7  |
| 12.5° | 6717.9  | 6741.6  | 6724.2  | 6722.6  | 6714.7  | 6727.4  | 6711.6  | 6708.4  | 6673.6  | 6578.7  | 6515.5  |
| 15°   | 7062.7  | 7088.0  | 7051.6  | 7048.4  | 7004.1  | 6999.4  | 6999.4  | 6994.7  | 6972.5  | 6858.7  | 6754.3  |
| 17.5° | 7459.6  | 7467.5  | 7435.9  | 7385.3  | 7328.3  | 7292.0  | 7287.2  | 7299.9  | 7299.9  | 7167.0  | 7001.0  |
| 20°   | 7848.6  | 7862.9  | 7837.6  | 7780.6  | 7707.9  | 7654.1  | 7616.2  | 7641.5  | 7639.9  | 7481.7  | 7246.1  |
| 22.5° | 8272.4  | 8305.7  | 8267.7  | 8195.0  | 8109.6  | 8049.5  | 7983.0  | 8005.2  | 8006.8  | 7812.3  | 7486.5  |
| 25°   | 8821.2  | 8791.2  | 8767.4  | 8664.6  | 8542.9  | 8481.2  | 8419.5  | 8441.7  | 8435.3  | 8168.1  | 7734.8  |
| 27.5° | 9306.7  | 9313.0  | 9281.4  | 9172.3  | 9031.5  | 8895.5  | 8892.4  | 8906.6  | 8882.9  | 8538.1  | 7968.8  |
| 30°   | 9871.3  | 9874.4  | 9830.2  | 9732.1  | 9578.7  | 9403.2  | 9362.1  | 9385.8  | 9335.2  | 8889.2  | 8215.5  |
| 32.5° | 10432.7 | 10448.5 | 10399.5 | 10280.9 | 10157.5 | 9944.0  | 9861.8  | 9877.6  | 9751.1  | 9248.2  | 8470.1  |
| 35°   | 10924.5 | 10946.6 | 10930.8 | 10851.8 | 10717.3 | 10533.9 | 10435.8 | 10426.4 | 10269.8 | 9687.8  | 8807.0  |
| 37.5° | 11425.8 | 11446.4 | 11429.0 | 11362.6 | 11308.8 | 11114.3 | 11062.1 | 11062.1 | 10790.1 | 10137.0 | 9235.5  |
| 40°   | 11941.4 | 11973.0 | 11952.4 | 11860.7 | 11814.8 | 11726.3 | 11601.4 | 11571.3 | 11277.2 | 10676.2 | 9934.5  |
| 42.5° | 12420.5 | 12461.7 | 12543.9 | 12490.1 | 12396.8 | 12409.5 | 12158.0 | 12142.2 | 11927.1 | 11473.3 | 10812.2 |
| 45°   | 13100.5 | 13160.6 | 13299.8 | 13258.7 | 13239.7 | 13170.1 | 12871.2 | 12857.0 | 12774.8 | 12545.5 | 11901.8 |
| 47.5° | 13842.2 | 13924.5 | 14175.9 | 14183.8 | 14387.8 | 14256.6 | 13850.1 | 13801.1 | 13820.1 | 13829.6 | 13231.8 |
| 50°   | 14525.4 | 14615.6 | 15028.3 | 15222.8 | 15703.6 | 15732.0 | 15082.1 | 15037.8 | 15112.1 | 15330.4 | 14781.6 |
| 52.5° | 15071.0 | 15184.9 | 15700.4 | 16301.4 | 17125.3 | 17359.3 | 16598.7 | 16565.5 | 16620.8 | 16997.2 | 16533.8 |
| 55°   | 15471.1 | 15594.5 | 16155.9 | 17250.2 | 18566.0 | 18978.7 | 18344.6 | 18312.9 | 18347.7 | 18826.9 | 18439.4 |
| 57.5° | 15564.4 | 15594.5 | 16408.9 | 17889.1 | 19782.1 | 20773.6 | 20481.1 | 20417.8 | 20247.0 | 20664.5 | 20542.7 |
| 60°   | 15126.4 | 15246.5 | 16200.1 | 18113.7 | 20723.0 | 22543.3 | 22714.0 | 22635.0 | 22155.8 | 22497.4 | 22399.3 |
| 62.5° | 14237.6 | 14452.7 | 15420.5 | 17772.1 | 21091.5 | 23988.7 | 24904.3 | 24809.4 | 23983.9 | 24205.3 | 23734.1 |
| 65°   | 12785.8 | 12877.6 | 13894.4 | 16593.9 | 20623.4 | 24913.8 | 26857.4 | 26809.9 | 25770.9 | 25424.6 | 23980.8 |
| 67.5° | 10189.1 | 10361.5 | 11225.0 | 14131.6 | 18708.3 | 24804.7 | 28367.7 | 28362.9 | 26938.0 | 25876.9 | 23106.2 |
| 69°   | 8049.5  | 8228.2  | 9050.5  | 11640.9 | 16554.4 | 23806.8 | 28620.7 | 28676.0 | 27267.0 | 25601.7 | 21856.9 |
| 70°   | 6417.4  | 6624.6  | 7189.2  | 9804.9  | 14642.4 | 22491.1 | 28410.4 | 28510.0 | 27203.7 | 25147.9 | 20704.1 |
| 72.5° | 2731.1  | 2898.8  | 3300.4  | 5054.2  | 8924.0  | 16794.8 | 25976.5 | 26352.9 | 25737.7 | 23016.1 | 17111.0 |
| 75°   | 1192.4  | 1244.6  | 1426.4  | 2060.6  | 3961.5  | 9140.7  | 20349.8 | 21045.6 | 22007.1 | 19454.7 | 12746.3 |
| 77.5° | 872.9   | 895.1   | 994.7   | 1209.8  | 1777.5  | 3452.3  | 13086.3 | 13491.2 | 15871.2 | 14156.9 | 7818.6  |
| 80°   | 675.3   | 691.1   | 768.6   | 888.8   | 1160.8  | 1396.4  | 5968.3  | 6316.2  | 8924.0  | 7271.4  | 3256.2  |
| 82.5° | 537.7   | 548.8   | 602.5   | 654.7   | 801.8   | 846.1   | 1981.5  | 2198.2  | 3294.1  | 2008.4  | 861.9   |
| 85°   | 499.7   | 512.4   | 531.4   | 477.6   | 514.0   | 496.6   | 857.1   | 896.7   | 994.7   | 789.1   | 360.6   |
| 87.5° | 226.1   | 267.3   | 526.6   | 371.6   | 273.6   | 218.2   | 351.1   | 366.9   | 412.8   | 414.3   | 159.7   |
| 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: P318341

CATALOG NUMBER: GLEON-SA7D-727-U-T3

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 6001.5  | 6001.5  | 6001.5 | 6001.5 | 6001.5 | 6001.5 | 6001.5 | 6001.5 | 6001.5 | 6001.5 | 6001.5 |
| 2.5°  | 6015.8  | 6011.0  | 6018.9 | 5999.9 | 6023.7 | 6022.1 | 6014.2 | 6017.3 | 6033.1 | 6031.6 | 6033.1 |
| 5°    | 6052.1  | 6049.0  | 6058.4 | 6044.2 | 6072.7 | 6082.2 | 6083.8 | 6098.0 | 6115.4 | 6120.1 | 6120.1 |
| 7.5°  | 6143.8  | 6143.8  | 6148.6 | 6129.6 | 6148.6 | 6147.0 | 6139.1 | 6153.3 | 6170.7 | 6172.3 | 6170.7 |
| 10°   | 6302.0  | 6303.6  | 6295.7 | 6246.6 | 6230.8 | 6188.1 | 6148.6 | 6150.2 | 6172.3 | 6189.7 | 6194.5 |
| 12.5° | 6501.2  | 6494.9  | 6460.1 | 6370.0 | 6303.6 | 6216.6 | 6175.5 | 6173.9 | 6196.0 | 6210.3 | 6215.0 |
| 15°   | 6729.0  | 6711.6  | 6621.4 | 6474.4 | 6357.3 | 6271.9 | 6205.5 | 6189.7 | 6177.1 | 6161.2 | 6162.8 |
| 17.5° | 6944.0  | 6904.5  | 6754.3 | 6550.3 | 6426.9 | 6313.1 | 6185.0 | 6082.2 | 6011.0 | 5969.9 | 5957.2 |
| 20°   | 7162.3  | 7084.8  | 6868.1 | 6621.4 | 6464.9 | 6257.7 | 6011.0 | 5802.3 | 5672.6 | 5612.5 | 5601.4 |
| 22.5° | 7361.5  | 7236.6  | 6974.1 | 6695.8 | 6434.8 | 6071.1 | 5683.7 | 5380.0 | 5199.7 | 5119.1 | 5125.4 |
| 25°   | 7556.1  | 7382.1  | 7084.8 | 6748.0 | 6283.0 | 5742.2 | 5228.2 | 4855.0 | 4646.2 | 4556.1 | 4552.9 |
| 27.5° | 7726.9  | 7529.2  | 7205.0 | 6705.3 | 5999.9 | 5274.1 | 4688.9 | 4325.2 | 4151.2 | 4073.8 | 4061.1 |
| 30°   | 7923.0  | 7714.2  | 7364.7 | 6542.4 | 5585.6 | 4733.2 | 4162.3 | 3906.1 | 3782.8 | 3705.3 | 3691.1 |
| 32.5° | 8161.7  | 7965.7  | 7496.0 | 6246.6 | 5055.8 | 4168.6 | 3751.1 | 3572.4 | 3460.2 | 3373.2 | 3357.4 |
| 35°   | 8509.7  | 8297.8  | 7529.2 | 5822.8 | 4473.9 | 3722.7 | 3449.1 | 3265.6 | 3113.8 | 3001.5 | 2990.5 |
| 37.5° | 8946.1  | 8713.7  | 7453.3 | 5274.1 | 3909.3 | 3433.3 | 3197.6 | 2971.5 | 2773.8 | 2615.7 | 2590.4 |
| 40°   | 9575.5  | 9224.5  | 7242.9 | 4641.5 | 3493.4 | 3210.3 | 2952.5 | 2694.8 | 2449.6 | 2264.6 | 2228.2 |
| 42.5° | 10331.5 | 9823.8  | 6920.3 | 4012.1 | 3188.2 | 2984.2 | 2709.0 | 2389.5 | 2155.5 | 2024.2 | 2005.3 |
| 45°   | 11293.0 | 10446.9 | 6472.8 | 3461.7 | 2887.7 | 2758.0 | 2446.5 | 2152.3 | 2006.8 | 1910.4 | 1894.6 |
| 47.5° | 12390.5 | 11145.9 | 6003.1 | 3014.2 | 2633.1 | 2546.1 | 2236.1 | 2046.4 | 1930.9 | 1855.0 | 1840.8 |
| 50°   | 13739.4 | 11935.0 | 5505.0 | 2647.3 | 2376.9 | 2291.5 | 2136.5 | 1987.9 | 1896.1 | 1837.6 | 1823.4 |
| 52.5° | 15260.8 | 12825.4 | 5146.0 | 2357.9 | 2165.0 | 2103.3 | 2084.3 | 1956.2 | 1881.9 | 1837.6 | 1823.4 |
| 55°   | 16899.1 | 13731.5 | 4758.5 | 2114.4 | 1981.5 | 1998.9 | 2049.5 | 1959.4 | 1908.8 | 1855.0 | 1834.5 |
| 57.5° | 18539.1 | 14667.7 | 4326.8 | 1908.8 | 1836.0 | 1921.4 | 2025.8 | 1965.7 | 1923.0 | 1870.8 | 1851.9 |
| 60°   | 19835.8 | 15260.8 | 3657.8 | 1736.4 | 1720.6 | 1836.0 | 1968.9 | 1918.3 | 1862.9 | 1864.5 | 1861.3 |
| 62.5° | 20441.5 | 15229.1 | 2919.3 | 1583.0 | 1605.1 | 1720.6 | 1877.2 | 1843.9 | 1798.1 | 1859.8 | 1864.5 |
| 65°   | 20101.5 | 14470.1 | 2272.5 | 1443.8 | 1481.8 | 1600.4 | 1782.3 | 1807.6 | 1823.4 | 1942.0 | 1957.8 |
| 67.5° | 18675.1 | 12993.0 | 1760.1 | 1322.1 | 1369.5 | 1518.2 | 1791.8 | 1968.9 | 1989.4 | 2114.4 | 2112.8 |
| 69°   | 17199.6 | 11607.7 | 1529.2 | 1258.8 | 1314.2 | 1538.7 | 1915.1 | 2071.7 | 1994.2 | 2127.0 | 2108.0 |
| 70°   | 15962.9 | 10511.8 | 1405.9 | 1216.1 | 1288.9 | 1575.1 | 1997.3 | 2070.1 | 1970.5 | 2084.3 | 2052.7 |
| 72.5° | 12294.0 | 7562.4  | 1192.4 | 1137.0 | 1203.5 | 1507.1 | 2021.1 | 2024.2 | 1915.1 | 1937.2 | 1883.5 |
| 75°   | 8432.2  | 4779.1  | 1040.6 | 1029.5 | 1073.8 | 1358.4 | 1945.2 | 1934.1 | 1771.2 | 1739.6 | 1695.3 |
| 77.5° | 4649.4  | 2427.5  | 884.0  | 926.7  | 956.8  | 1203.5 | 1768.0 | 1752.2 | 1617.8 | 1551.4 | 1535.6 |
| 80°   | 1793.3  | 1062.7  | 746.4  | 823.9  | 842.9  | 1042.2 | 1549.8 | 1535.6 | 1423.3 | 1337.9 | 1314.2 |
| 82.5° | 676.9   | 556.7   | 616.8  | 713.2  | 706.9  | 860.3  | 1312.6 | 1304.7 | 1195.6 | 1070.6 | 1032.7 |
| 85°   | 313.1   | 333.7   | 488.7  | 588.3  | 542.4  | 637.3  | 1050.1 | 1064.3 | 931.5  | 782.8  | 782.8  |
| 87.5° | 132.8   | 186.6   | 346.3  | 444.4  | 365.3  | 430.1  | 770.2  | 735.4  | 675.3  | 468.1  | 439.6  |
| 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: SP1-1908-441-1-R4

Test Date: 08/20/2019

Luminaire Tested: SA1C-727-U-5WQ

**Test Information**

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-1-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-727-U-5WQ**  
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-1-R3. TO UPDATE THE CATALOG NUMBER.\*\*\*TESTED IN  
 SITU. (1) 70 CRI, 2700K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

**Spectral Parameters**

CCT (K): 2741  
 CIE u': 0.2605  
 CIE v': 0.5272  
 Duv: 0.0005  
 CIE x: 0.4573  
 CIE y: 0.4113  
 CIE z: 0.1313  
 Peak Wavelength (nm): 602  
 Dominant Wavelength (nm): 583  
 Purity: 61.2

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 71.5 |      |       |
| R1:       | 69.2 | R9:  | -16.1 |
| R2:       | 79.4 | R10: | 51.4  |
| R3:       | 87.8 | R11: | 63.1  |
| R4:       | 69.4 | R12: | 42.0  |
| R5:       | 66.4 | R13: | 70.2  |
| R6:       | 69.8 | R14: | 92.4  |
| R7:       | 79.8 |      |       |
| R8:       | 50.1 |      |       |

Rf: 69.9  
 Rg: 98.3



**Test Conditions**

Stabilization Time: 56M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.3./42%  
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-1-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 2700K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



**Photopic Lumens: 6211.7**

| $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) | $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) | $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) | $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) | $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) |
|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|
| 360            | 2044                              | 0.0                         | 490            | 7179                              | 1.0                         | 620            | 118034                            | 30.7                        | 750            | 8362                              | 0.0                         | 880            | 3128                              | 0.0                         |
| 365            | 2016                              | 0.0                         | 495            | 10476                             | 1.9                         | 625            | 111884                            | 24.7                        | 755            | 7635                              | 0.0                         | 885            | 3110                              | 0.0                         |
| 370            | 2020                              | 0.0                         | 500            | 15549                             | 3.4                         | 630            | 106119                            | 19.2                        | 760            | 6582                              | 0.0                         | 890            | 2632                              | 0.0                         |
| 375            | 2137                              | 0.0                         | 505            | 22477                             | 6.3                         | 635            | 99706                             | 15.0                        | 765            | 5777                              | 0.0                         | 895            | 2709                              | 0.0                         |
| 380            | 2046                              | 0.0                         | 510            | 30417                             | 10.4                        | 640            | 92142                             | 11.0                        | 770            | 5474                              | 0.0                         | 900            | 2016                              | 0.0                         |
| 385            | 1925                              | 0.0                         | 515            | 39274                             | 16.3                        | 645            | 84987                             | 8.2                         | 775            | 4977                              | 0.0                         | 905            | 1748                              | 0.0                         |
| 390            | 1893                              | 0.0                         | 520            | 47282                             | 22.9                        | 650            | 78016                             | 5.7                         | 780            | 4723                              | 0.0                         | 910            | 2046                              | 0.0                         |
| 395            | 1695                              | 0.0                         | 525            | 55413                             | 29.7                        | 655            | 71541                             | 4.1                         | 785            | 4219                              | 0.0                         | 915            | 1844                              | 0.0                         |
| 400            | 1633                              | 0.0                         | 530            | 62377                             | 36.7                        | 660            | 64863                             | 2.7                         | 790            | 3969                              | 0.0                         | 920            | 2734                              | 0.0                         |
| 405            | 2065                              | 0.0                         | 535            | 68520                             | 42.5                        | 665            | 58485                             | 1.9                         | 795            | 4122                              | 0.0                         | 925            | 2307                              | 0.0                         |
| 410            | 3449                              | 0.0                         | 540            | 73435                             | 47.8                        | 670            | 51641                             | 1.1                         | 800            | 2864                              | 0.0                         | 930            | 2039                              | 0.0                         |
| 415            | 7117                              | 0.0                         | 545            | 78677                             | 52.4                        | 675            | 46030                             | 0.8                         | 805            | 3151                              | 0.0                         | 935            | 1784                              | 0.0                         |
| 420            | 13992                             | 0.0                         | 550            | 83331                             | 56.6                        | 680            | 40590                             | 0.5                         | 810            | 3022                              | 0.0                         | 940            | 2464                              | 0.0                         |
| 425            | 25176                             | 0.1                         | 555            | 89120                             | 60.9                        | 685            | 35691                             | 0.3                         | 815            | 3471                              | 0.0                         | 945            | 2794                              | 0.0                         |
| 430            | 38151                             | 0.3                         | 560            | 94613                             | 64.3                        | 690            | 31631                             | 0.2                         | 820            | 2749                              | 0.0                         | 950            | 3090                              | 0.0                         |
| 435            | 49673                             | 0.6                         | 565            | 99818                             | 66.4                        | 695            | 27437                             | 0.1                         | 825            | 2729                              | 0.0                         | 955            | 1866                              | 0.0                         |
| 440            | 57273                             | 0.9                         | 570            | 106526                            | 69.3                        | 700            | 24589                             | 0.1                         | 830            | 2282                              | 0.0                         | 960            | 3110                              | 0.0                         |
| 445            | 54802                             | 1.1                         | 575            | 111610                            | 69.4                        | 705            | 21832                             | 0.0                         | 835            | 3140                              | 0.0                         | 965            | 3880                              | 0.0                         |
| 450            | 39184                             | 1.0                         | 580            | 117163                            | 69.6                        | 710            | 19500                             | 0.0                         | 840            | 2365                              | 0.0                         | 970            | 3243                              | 0.0                         |
| 455            | 22506                             | 0.8                         | 585            | 122201                            | 67.9                        | 715            | 17870                             | 0.0                         | 845            | 3024                              | 0.0                         | 975            | 2014                              | 0.0                         |
| 460            | 13692                             | 0.6                         | 590            | 125662                            | 65.0                        | 720            | 15924                             | 0.0                         | 850            | 2510                              | 0.0                         | 980            | 1688                              | 0.0                         |
| 465            | 9446                              | 0.5                         | 595            | 127415                            | 60.4                        | 725            | 14268                             | 0.0                         | 855            | 2739                              | 0.0                         | 985            | 2827                              | 0.0                         |
| 470            | 6698                              | 0.4                         | 600            | 129155                            | 55.7                        | 730            | 12438                             | 0.0                         | 860            | 3515                              | 0.0                         | 990            | 4172                              | 0.0                         |
| 475            | 5328                              | 0.4                         | 605            | 128057                            | 49.6                        | 735            | 11255                             | 0.0                         | 865            | 3600                              | 0.0                         | 995            | 3177                              | 0.0                         |
| 480            | 5081                              | 0.5                         | 610            | 126031                            | 43.3                        | 740            | 9951                              | 0.0                         | 870            | 3609                              | 0.0                         | 1000           | 3241                              | 0.0                         |
| 485            | 5579                              | 0.7                         | 615            | 123059                            | 37.1                        | 745            | 8870                              | 0.0                         | 875            | 3208                              | 0.0                         |                |                                   |                             |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 6474.3

S/P: 1.04

| 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    | 2044          | 0.0           | 490    | 7179          | 6.0           | 620    | 118034        | 0.1           | 750    | 8362          | 0.0           | 880    | 3128          | 0.0           |
| 365    | 2016          | 0.0           | 495    | 10476         | 8.6           | 625    | 111884        | 0.1           | 755    | 7635          | 0.0           | 885    | 3110          | 0.0           |
| 370    | 2020          | 0.0           | 500    | 15549         | 12.5          | 630    | 106119        | 0.0           | 760    | 6582          | 0.0           | 890    | 2632          | 0.0           |
| 375    | 2137          | 0.0           | 505    | 22477         | 17.3          | 635    | 99706         | 0.0           | 765    | 5777          | 0.0           | 895    | 2709          | 0.0           |
| 380    | 2046          | 0.0           | 510    | 30417         | 21.8          | 640    | 92142         | 0.0           | 770    | 5474          | 0.0           | 900    | 2016          | 0.0           |
| 385    | 1925          | 0.0           | 515    | 39274         | 25.7          | 645    | 84987         | 0.0           | 775    | 4977          | 0.0           | 905    | 1748          | 0.0           |
| 390    | 1893          | 0.0           | 520    | 47282         | 27.5          | 650    | 78016         | 0.0           | 780    | 4723          | 0.0           | 910    | 2046          | 0.0           |
| 395    | 1695          | 0.0           | 525    | 55413         | 28.1          | 655    | 71541         | 0.0           | 785    | 4219          | 0.0           | 915    | 1844          | 0.0           |
| 400    | 1633          | 0.0           | 530    | 62377         | 27.0          | 660    | 64863         | 0.0           | 790    | 3969          | 0.0           | 920    | 2734          | 0.0           |
| 405    | 2065          | 0.0           | 535    | 68520         | 24.7          | 665    | 58485         | 0.0           | 795    | 4122          | 0.0           | 925    | 2307          | 0.0           |
| 410    | 3449          | 0.1           | 540    | 73435         | 21.5          | 670    | 51641         | 0.0           | 800    | 2864          | 0.0           | 930    | 2039          | 0.0           |
| 415    | 7117          | 0.5           | 545    | 78677         | 18.3          | 675    | 46030         | 0.0           | 805    | 3151          | 0.0           | 935    | 1784          | 0.0           |
| 420    | 13992         | 1.6           | 550    | 83331         | 15.0          | 680    | 40590         | 0.0           | 810    | 3022          | 0.0           | 940    | 2464          | 0.0           |
| 425    | 25176         | 3.9           | 555    | 89120         | 12.0          | 685    | 35691         | 0.0           | 815    | 3471          | 0.0           | 945    | 2794          | 0.0           |
| 430    | 38151         | 8.1           | 560    | 94613         | 9.3           | 690    | 31631         | 0.0           | 820    | 2749          | 0.0           | 950    | 3090          | 0.0           |
| 435    | 49673         | 13.3          | 565    | 99818         | 7.0           | 695    | 27437         | 0.0           | 825    | 2729          | 0.0           | 955    | 1866          | 0.0           |
| 440    | 57273         | 19.1          | 570    | 106526        | 5.2           | 700    | 24589         | 0.0           | 830    | 2282          | 0.0           | 960    | 3110          | 0.0           |
| 445    | 54802         | 21.6          | 575    | 111610        | 3.7           | 705    | 21832         | 0.0           | 835    | 3140          | 0.0           | 965    | 3880          | 0.0           |
| 450    | 39184         | 18.1          | 580    | 117163        | 2.6           | 710    | 19500         | 0.0           | 840    | 2365          | 0.0           | 970    | 3243          | 0.0           |
| 455    | 22506         | 11.8          | 585    | 122201        | 1.8           | 715    | 17870         | 0.0           | 845    | 3024          | 0.0           | 975    | 2014          | 0.0           |
| 460    | 13692         | 8.1           | 590    | 125662        | 1.2           | 720    | 15924         | 0.0           | 850    | 2510          | 0.0           | 980    | 1688          | 0.0           |
| 465    | 9446          | 6.2           | 595    | 127415        | 0.8           | 725    | 14268         | 0.0           | 855    | 2739          | 0.0           | 985    | 2827          | 0.0           |
| 470    | 6698          | 4.8           | 600    | 129155        | 0.5           | 730    | 12438         | 0.0           | 860    | 3515          | 0.0           | 990    | 4172          | 0.0           |
| 475    | 5328          | 4.1           | 605    | 128057        | 0.4           | 735    | 11255         | 0.0           | 865    | 3600          | 0.0           | 995    | 3177          | 0.0           |
| 480    | 5081          | 4.1           | 610    | 126031        | 0.2           | 740    | 9951          | 0.0           | 870    | 3609          | 0.0           | 1000   | 3241          | 0.0           |
| 485    | 5579          | 4.6           | 615    | 123059        | 0.1           | 745    | 8870          | 0.0           | 875    | 3208          | 0.0           |        |               |               |

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Melanopic Flux vs. Wavelength



Melanopic Lumens: 2145.7 M/P: 0.35

| $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) | $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) | $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) | $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) | $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) |
|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|
| 360            | 2044                              | 0.0                         | 490            | 7179                              | 11.1                        | 620            | 118034                            | 1.5                         | 750            | 8362                              | 0.0                         | 880            | 3128                              | 0.0                         |
| 365            | 2016                              | 0.0                         | 495            | 10476                             | 16.9                        | 625            | 111884                            | 0.9                         | 755            | 7635                              | 0.0                         | 885            | 3110                              | 0.0                         |
| 370            | 2020                              | 0.0                         | 500            | 15549                             | 26.0                        | 630            | 106119                            | 0.6                         | 760            | 6582                              | 0.0                         | 890            | 2632                              | 0.0                         |
| 375            | 2137                              | 0.0                         | 505            | 22477                             | 38.2                        | 635            | 99706                             | 0.4                         | 765            | 5777                              | 0.0                         | 895            | 2709                              | 0.0                         |
| 380            | 2046                              | 0.0                         | 510            | 30417                             | 51.6                        | 640            | 92142                             | 0.2                         | 770            | 5474                              | 0.0                         | 900            | 2016                              | 0.0                         |
| 385            | 1925                              | 0.0                         | 515            | 39274                             | 65.1                        | 645            | 84987                             | 0.1                         | 775            | 4977                              | 0.0                         | 905            | 1748                              | 0.0                         |
| 390            | 1893                              | 0.0                         | 520            | 47282                             | 75.2                        | 650            | 78016                             | 0.1                         | 780            | 4723                              | 0.0                         | 910            | 2046                              | 0.0                         |
| 395            | 1695                              | 0.0                         | 525            | 55413                             | 82.9                        | 655            | 71541                             | 0.1                         | 785            | 4219                              | 0.0                         | 915            | 1844                              | 0.0                         |
| 400            | 1633                              | 0.0                         | 530            | 62377                             | 86.0                        | 660            | 64863                             | 0.0                         | 790            | 3969                              | 0.0                         | 920            | 2734                              | 0.0                         |
| 405            | 2065                              | 0.1                         | 535            | 68520                             | 85.4                        | 665            | 58485                             | 0.0                         | 795            | 4122                              | 0.0                         | 925            | 2307                              | 0.0                         |
| 410            | 3449                              | 0.2                         | 540            | 73435                             | 81.1                        | 670            | 51641                             | 0.0                         | 800            | 2864                              | 0.0                         | 930            | 2039                              | 0.0                         |
| 415            | 7117                              | 0.7                         | 545            | 78677                             | 75.4                        | 675            | 46030                             | 0.0                         | 805            | 3151                              | 0.0                         | 935            | 1784                              | 0.0                         |
| 420            | 13992                             | 2.3                         | 550            | 83331                             | 68.1                        | 680            | 40590                             | 0.0                         | 810            | 3022                              | 0.0                         | 940            | 2464                              | 0.0                         |
| 425            | 25176                             | 6.2                         | 555            | 89120                             | 60.9                        | 685            | 35691                             | 0.0                         | 815            | 3471                              | 0.0                         | 945            | 2794                              | 0.0                         |
| 430            | 38151                             | 13.0                        | 560            | 94613                             | 52.9                        | 690            | 31631                             | 0.0                         | 820            | 2749                              | 0.0                         | 950            | 3090                              | 0.0                         |
| 435            | 49673                             | 22.2                        | 565            | 99818                             | 44.8                        | 695            | 27437                             | 0.0                         | 825            | 2729                              | 0.0                         | 955            | 1866                              | 0.0                         |
| 440            | 57273                             | 32.0                        | 570            | 106526                            | 37.6                        | 700            | 24589                             | 0.0                         | 830            | 2282                              | 0.0                         | 960            | 3110                              | 0.0                         |
| 445            | 54802                             | 36.7                        | 575            | 111610                            | 30.4                        | 705            | 21832                             | 0.0                         | 835            | 3140                              | 0.0                         | 965            | 3880                              | 0.0                         |
| 450            | 39184                             | 30.4                        | 580            | 117163                            | 24.1                        | 710            | 19500                             | 0.0                         | 840            | 2365                              | 0.0                         | 970            | 3243                              | 0.0                         |
| 455            | 22506                             | 19.7                        | 585            | 122201                            | 18.7                        | 715            | 17870                             | 0.0                         | 845            | 3024                              | 0.0                         | 975            | 2014                              | 0.0                         |
| 460            | 13692                             | 13.2                        | 590            | 125662                            | 14.0                        | 720            | 15924                             | 0.0                         | 850            | 2510                              | 0.0                         | 980            | 1688                              | 0.0                         |
| 465            | 9446                              | 10.0                        | 595            | 127415                            | 10.2                        | 725            | 14268                             | 0.0                         | 855            | 2739                              | 0.0                         | 985            | 2827                              | 0.0                         |
| 470            | 6698                              | 7.7                         | 600            | 129155                            | 7.3                         | 730            | 12438                             | 0.0                         | 860            | 3515                              | 0.0                         | 990            | 4172                              | 0.0                         |
| 475            | 5328                              | 6.7                         | 605            | 128057                            | 5.0                         | 735            | 11255                             | 0.0                         | 865            | 3600                              | 0.0                         | 995            | 3177                              | 0.0                         |
| 480            | 5081                              | 6.9                         | 610            | 126031                            | 3.4                         | 740            | 9951                              | 0.0                         | 870            | 3609                              | 0.0                         | 1000           | 3241                              | 0.0                         |
| 485            | 5579                              | 8.1                         | 615            | 123059                            | 2.3                         | 745            | 8870                              | 0.0                         | 875            | 3208                              | 0.0                         |                |                                   |                             |

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**Summary**

$R_f = 69.9$   
 $R_g = 98.3$   
 CIE  $R_a = 71.5$   
 $R_9 = -16.1$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 54 | CES51 = 77 | CES76 = 48 |
| CES02 = 63 | CES27 = 74 | CES52 = 80 | CES77 = 75 |
| CES03 = 31 | CES28 = 80 | CES53 = 66 | CES78 = 56 |
| CES04 = 71 | CES29 = 44 | CES54 = 77 | CES79 = 81 |
| CES05 = 50 | CES30 = 46 | CES55 = 74 | CES80 = 80 |
| CES06 = 52 | CES31 = 50 | CES56 = 63 | CES81 = 73 |
| CES07 = 42 | CES32 = 49 | CES57 = 60 | CES82 = 91 |
| CES08 = 41 | CES33 = 53 | CES58 = 63 | CES83 = 84 |
| CES09 = 29 | CES34 = 66 | CES59 = 85 | CES84 = 90 |
| CES10 = 77 | CES35 = 82 | CES60 = 89 | CES85 = 87 |
| CES11 = 60 | CES36 = 78 | CES61 = 85 | CES86 = 65 |
| CES12 = 66 | CES37 = 75 | CES62 = 69 | CES87 = 78 |
| CES13 = 43 | CES38 = 53 | CES63 = 68 | CES88 = 73 |
| CES14 = 74 | CES39 = 91 | CES64 = 68 | CES89 = 68 |
| CES15 = 71 | CES40 = 85 | CES65 = 65 | CES90 = 68 |
| CES16 = 48 | CES41 = 76 | CES66 = 62 | CES91 = 91 |
| CES17 = 50 | CES42 = 76 | CES67 = 60 | CES92 = 71 |
| CES18 = 57 | CES43 = 65 | CES68 = 68 | CES93 = 82 |
| CES19 = 73 | CES44 = 98 | CES69 = 77 | CES94 = 57 |
| CES20 = 67 | CES45 = 75 | CES70 = 60 | CES95 = 78 |
| CES21 = 88 | CES46 = 70 | CES71 = 57 | CES96 = 80 |
| CES22 = 80 | CES47 = 63 | CES72 = 86 | CES97 = 79 |
| CES23 = 92 | CES48 = 51 | CES73 = 52 | CES98 = 71 |
| CES24 = 91 | CES49 = 68 | CES74 = 90 | CES99 = 64 |
| CES25 = 73 | CES50 = 77 | CES75 = 58 |            |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)