

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



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P640903

Luminaire Tested: GWS-SA5E-827-U-SLR-W-GRSBK

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P640903  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-42)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA5E-827-U-SLR-W-GRSBK  
Description: GALLEON WALL SLIM LUMINAIRE. (5) LIGHTSQUARES WITH 16 LEDS EACH AND  
SPILL LIGHT ELIMINATOR RIGHT OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK  
Light Source: (80) 2700K CCT, 80 CRI LEDS  
Ballast/Driver: -

**Summary**

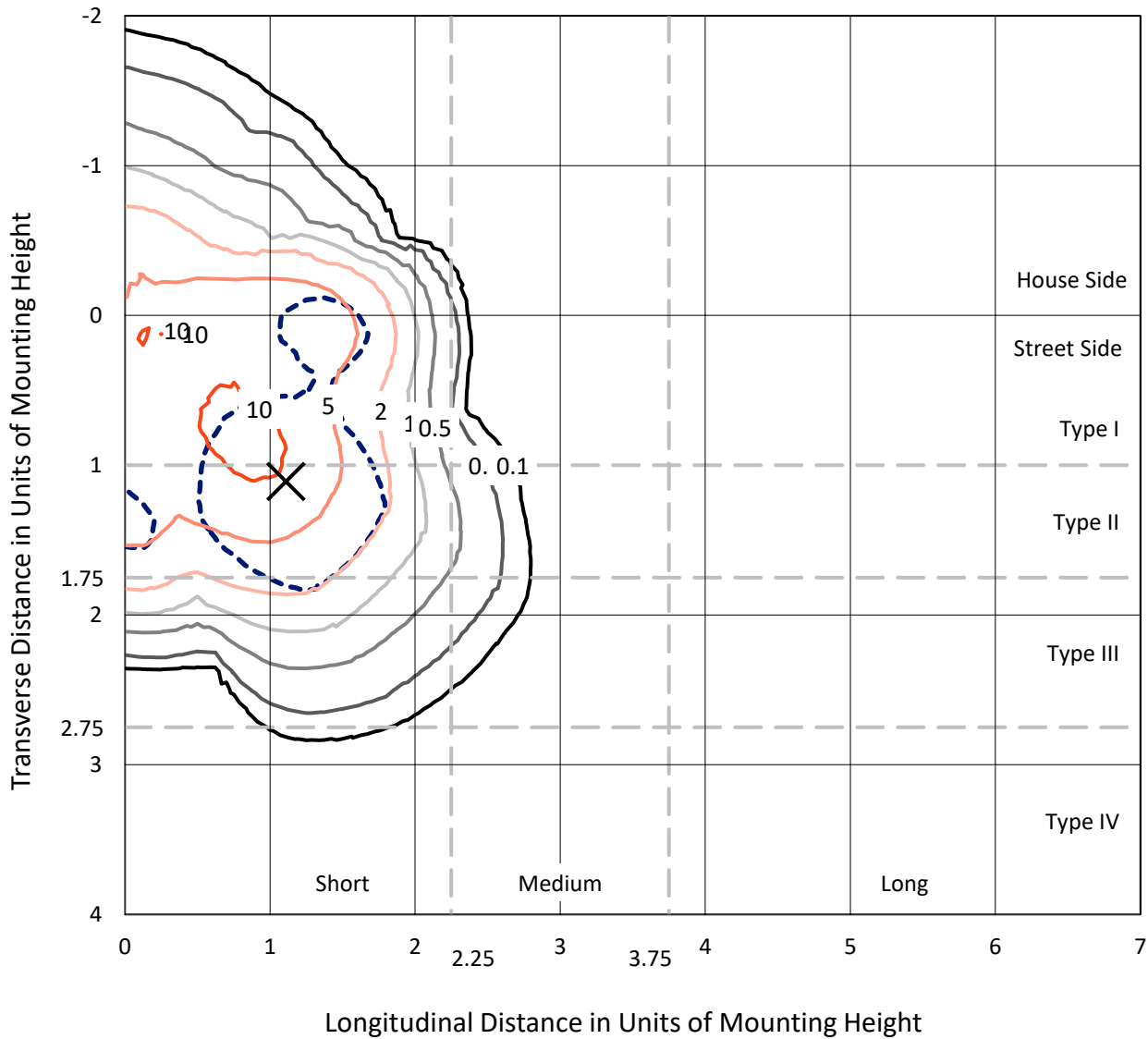
Lumens per Lamp: N/A  
Luminaire Lumens: 14722.7 lumens  
Efficiency: N/A  
Efficacy: 54.6 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B2 - U0 - G2  
  
Input Watts (W): 269.6  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 0  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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### Iso-Footcandle Lines of Horizontal Illumination

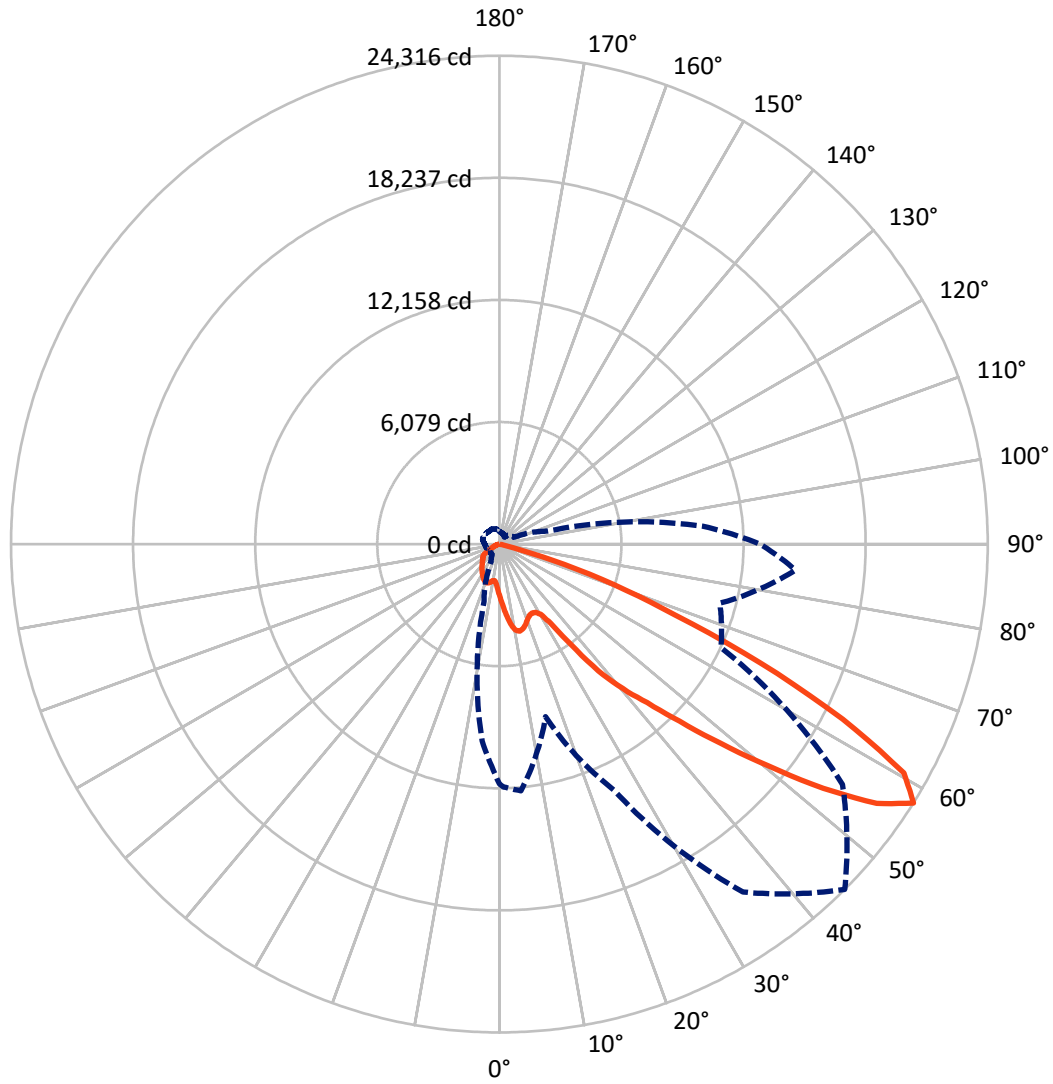
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 11.5 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral    - - - Horizontal Cone Through 57.5-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 3296.8   | 0.0    | 3296.8  |
|                    | % Fixture | 22.4     | 0.0    | 22.4    |
| <b>Street Side</b> | Lumens    | 11425.9  | 0.0    | 11425.9 |
|                    | % Fixture | 77.6     | 0.0    | 77.6    |
| <b>Total</b>       | Lumens    | 14722.7  | 0.0    | 14722.7 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 254.6   | 1.7       |
| 10°-20°   | 823.5   | 5.6       |
| 20°-30°   | 1337.7  | 9.1       |
| 30°-40°   | 2067.0  | 14.0      |
| 40°-50°   | 3314.5  | 22.5      |
| 50°-60°   | 4530.0  | 30.8      |
| 60°-70°   | 2194.0  | 14.9      |
| 70°-80°   | 200.9   | 1.4       |
| 80°-90°   | 0.6     | 0.0       |
| 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°    | 14722.7 | 100.0     |
| 0°-180°   | 14722.7 | 100.0     |

**Coefficient of Utilization**



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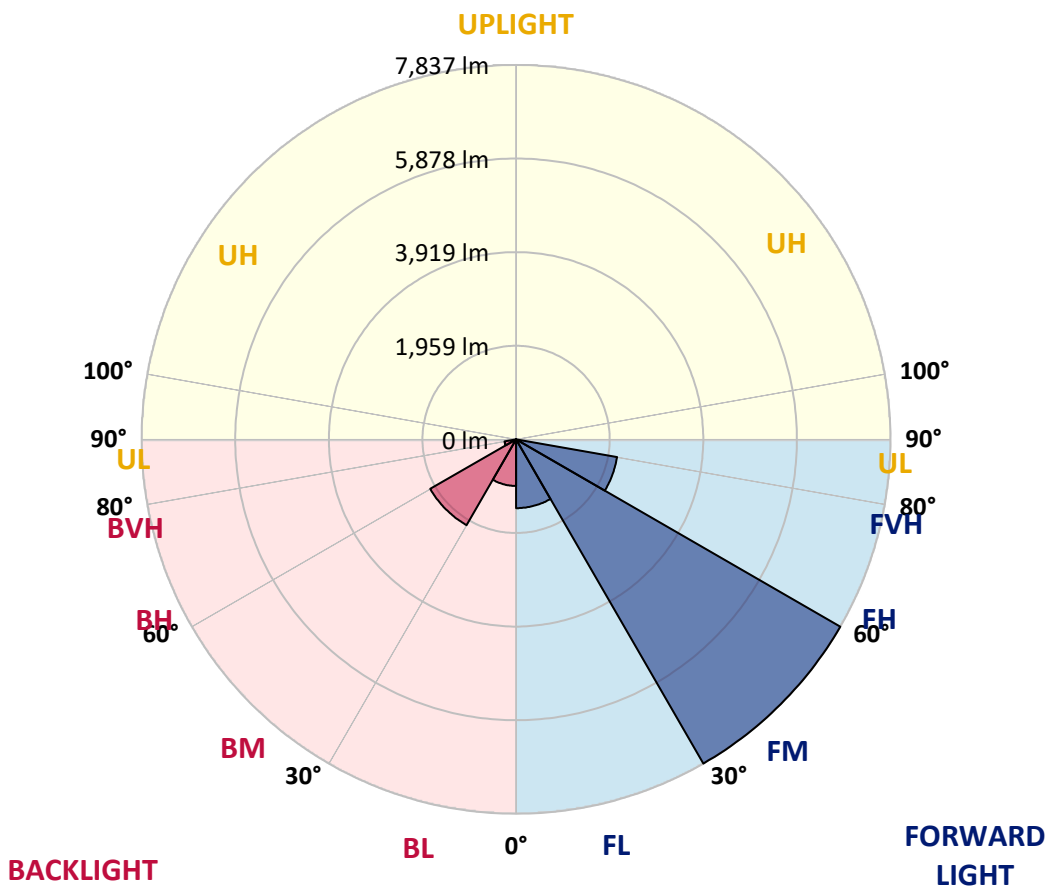
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1440.3 | 9.8       |                         |      |         |
| FM (30°-60°)   | 7837.2 | 53.2      |                         |      |         |
| FH (60°-80°)   | 2147.8 | 14.6      |                         |      | G2/5000 |
| FVH (80°-90°)  | 0.6    | 0.0       |                         |      | G0/10   |
| BL (0°-30°)    | 975.5  | 6.6       | B2/1000                 |      |         |
| BM (30°-60°)   | 2074.2 | 14.1      | B2/2500                 |      |         |
| BH (60°-80°)   | 247.1  | 1.7       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 0.0    | 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-G2**

Type III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 1°      | 5°      | 15°    | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|--------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 2587.7  | 2587.7  | 2587.7  | 2587.7 | 2587.7  | 2587.7  | 2587.7  | 2587.7  | 2587.7  | 2587.7  | 2587.7  |
| 2.5°  | 2803.3  | 2821.1  | 2850.8  | 2914.1 | 2967.5  | 3003.1  | 3019.0  | 3015.0  | 2993.2  | 2977.4  | 2945.8  |
| 5°    | 3104.0  | 3104.0  | 3161.4  | 3305.8 | 3416.6  | 3485.8  | 3521.5  | 3499.7  | 3456.2  | 3386.9  | 3280.1  |
| 7.5°  | 3367.1  | 3377.0  | 3474.0  | 3679.7 | 3847.9  | 3946.8  | 4004.2  | 3992.3  | 3915.1  | 3782.6  | 3568.9  |
| 10°   | 3572.9  | 3584.8  | 3713.3  | 3964.6 | 4162.4  | 4263.3  | 4348.4  | 4356.3  | 4271.2  | 4095.2  | 3849.9  |
| 12.5° | 3772.7  | 3784.6  | 3919.1  | 4160.5 | 4334.5  | 4376.1  | 4451.3  | 4480.9  | 4459.2  | 4334.5  | 4079.3  |
| 15°   | 3988.3  | 4016.0  | 4130.8  | 4310.8 | 4384.0  | 4334.5  | 4384.0  | 4437.4  | 4510.6  | 4498.8  | 4269.3  |
| 17.5° | 4200.0  | 4219.8  | 4336.5  | 4399.8 | 4318.7  | 4190.1  | 4213.9  | 4277.2  | 4443.4  | 4605.6  | 4457.2  |
| 20°   | 4395.9  | 4423.6  | 4520.5  | 4437.4 | 4192.1  | 3992.3  | 3994.3  | 4077.4  | 4330.6  | 4670.9  | 4649.1  |
| 22.5° | 4601.6  | 4643.2  | 4712.4  | 4479.0 | 4075.4  | 3836.0  | 3845.9  | 3921.1  | 4241.6  | 4732.2  | 4866.7  |
| 25°   | 4870.7  | 4910.2  | 4955.7  | 4581.8 | 4037.8  | 3758.9  | 3796.4  | 3865.7  | 4241.6  | 4837.0  | 5135.8  |
| 27.5° | 5234.7  | 5262.4  | 5264.4  | 4773.7 | 4103.1  | 3770.7  | 3849.9  | 3929.0  | 4368.2  | 5046.8  | 5495.8  |
| 30°   | 5691.7  | 5735.2  | 5677.8  | 5072.5 | 4306.9  | 3929.0  | 4045.7  | 4144.6  | 4641.2  | 5400.9  | 6026.0  |
| 32.5° | 6247.6  | 6308.9  | 6231.8  | 5515.6 | 4732.2  | 4475.0  | 4686.7  | 4744.1  | 5076.4  | 5913.3  | 6627.4  |
| 35°   | 6900.5  | 6951.9  | 6868.8  | 6128.9 | 5725.3  | 5772.8  | 6156.6  | 6083.4  | 5950.9  | 6544.4  | 7329.8  |
| 37.5° | 7616.6  | 7664.1  | 7503.9  | 7058.7 | 7193.3  | 7399.0  | 8012.3  | 7761.0  | 7333.7  | 7357.5  | 8091.4  |
| 40°   | 8273.4  | 8324.9  | 8073.6  | 8069.7 | 8346.6  | 8722.5  | 9462.4  | 9116.2  | 8534.6  | 8421.8  | 8805.6  |
| 42.5° | 8954.0  | 8989.6  | 8762.1  | 8607.8 | 9236.9  | 10010.4 | 10793.8 | 10327.0 | 9329.9  | 9207.2  | 9699.8  |
| 45°   | 9925.3  | 10000.5 | 9595.0  | 8872.9 | 10038.1 | 11492.2 | 12584.2 | 11672.2 | 9871.9  | 9773.0  | 11068.8 |
| 47.5° | 11353.7 | 11409.1 | 10582.2 | 9039.0 | 10783.9 | 13338.0 | 14821.7 | 13417.1 | 10348.7 | 10123.2 | 12940.3 |
| 50°   | 12534.8 | 12572.4 | 11490.2 | 9221.1 | 11577.3 | 15328.2 | 17371.8 | 15486.5 | 10884.8 | 10702.8 | 14687.2 |
| 52.5° | 13405.3 | 13547.7 | 12683.2 | 9595.0 | 12619.8 | 17668.6 | 20194.9 | 17937.6 | 11721.7 | 11822.6 | 16135.4 |
| 55°   | 13585.3 | 13779.2 | 13498.2 | 9824.5 | 13537.8 | 20052.5 | 22802.4 | 20131.6 | 12556.5 | 12671.3 | 16622.0 |
| 57.5° | 11939.3 | 12093.6 | 12327.1 | 8898.6 | 13516.0 | 21144.5 | 24315.8 | 20859.6 | 12176.7 | 11363.6 | 14800.0 |
| 60°   | 8944.1  | 9050.9  | 9474.3  | 6801.5 | 12429.9 | 20179.1 | 23136.7 | 19621.2 | 10647.4 | 8671.1  | 11276.6 |
| 62.5° | 5303.9  | 5351.4  | 5887.5  | 4405.8 | 10317.1 | 17377.8 | 19187.9 | 16930.7 | 8413.9  | 5832.2  | 6906.4  |
| 65°   | 2035.7  | 2015.9  | 2425.4  | 2174.2 | 7586.9  | 13842.5 | 14271.8 | 12906.7 | 5772.8  | 2672.7  | 2633.2  |
| 67.5° | 314.6   | 300.7   | 405.6   | 643.0  | 5472.1  | 9593.0  | 9416.9  | 9302.2  | 3616.4  | 623.2   | 544.0   |
| 70°   | 71.2    | 71.2    | 87.0    | 189.9  | 3343.4  | 5636.3  | 6032.0  | 5751.0  | 2314.7  | 132.5   | 71.2    |
| 72.5° | 33.6    | 33.6    | 41.5    | 81.1   | 1210.7  | 2322.6  | 2706.4  | 2664.8  | 751.8   | 43.5    | 25.7    |
| 75°   | 11.9    | 13.8    | 13.8    | 17.8   | 73.2    | 120.7   | 277.0   | 197.8   | 47.5    | 0.0     | 0.0     |
| 77.5° | 4.0     | 4.0     | 4.0     | 4.0    | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |
| 80°   | 2.0     | 2.0     | 2.0     | 0.0    | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |
| 82.5° | 2.0     | 0.0     | 0.0     | 0.0    | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |
| 85°   | 0.0     | 0.0     | 0.0     | 0.0    | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |
| 87.5° | 0.0     | 0.0     | 0.0     | 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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**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2587.7  | 2587.7  | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 |
| 2.5°  | 2876.5  | 2862.7  | 2811.2 | 2742.0 | 2674.7 | 2615.4 | 2554.0 | 2480.8 | 2427.4 | 2366.1 | 2346.3 |
| 5°    | 3197.0  | 3110.0  | 2969.5 | 2823.1 | 2688.6 | 2573.8 | 2463.0 | 2344.3 | 2257.3 | 2170.2 | 2140.6 |
| 7.5°  | 3468.0  | 3339.4  | 3111.9 | 2892.3 | 2708.4 | 2546.1 | 2385.9 | 2223.7 | 2097.0 | 1994.2 | 1962.5 |
| 10°   | 3711.4  | 3563.0  | 3258.3 | 2987.3 | 2755.8 | 2567.9 | 2374.0 | 2170.2 | 2006.0 | 1883.4 | 1853.7 |
| 12.5° | 3921.1  | 3749.0  | 3383.0 | 3058.5 | 2775.6 | 2560.0 | 2372.0 | 2209.8 | 2061.4 | 1921.0 | 1883.4 |
| 15°   | 4097.1  | 3907.2  | 3487.8 | 3106.0 | 2745.9 | 2461.1 | 2296.9 | 2271.1 | 2259.3 | 2105.0 | 2031.8 |
| 17.5° | 4269.3  | 4055.6  | 3572.9 | 3127.8 | 2662.8 | 2287.0 | 2168.3 | 2285.0 | 2409.6 | 2308.7 | 2215.7 |
| 20°   | 4449.3  | 4206.0  | 3659.9 | 3131.7 | 2524.4 | 2091.1 | 2071.3 | 2255.3 | 2413.6 | 2381.9 | 2294.9 |
| 22.5° | 4661.0  | 4393.9  | 3768.7 | 3129.7 | 2350.3 | 1924.9 | 2000.1 | 2197.9 | 2326.5 | 2324.6 | 2255.3 |
| 25°   | 4967.6  | 4631.3  | 3915.1 | 3141.6 | 2160.4 | 1796.3 | 1921.0 | 2101.0 | 2205.9 | 2201.9 | 2144.5 |
| 27.5° | 5296.0  | 4914.2  | 4105.1 | 3171.3 | 1998.1 | 1721.2 | 1828.0 | 1968.5 | 2059.5 | 2055.5 | 2006.0 |
| 30°   | 5757.0  | 5240.6  | 4287.1 | 3173.3 | 1881.4 | 1681.6 | 1725.1 | 1822.1 | 1909.1 | 1899.2 | 1861.6 |
| 32.5° | 6316.8  | 5608.6  | 4439.4 | 3060.5 | 1808.2 | 1644.0 | 1618.3 | 1667.7 | 1735.0 | 1721.2 | 1711.3 |
| 35°   | 6993.4  | 6045.8  | 4570.0 | 2813.2 | 1695.4 | 1568.8 | 1499.6 | 1509.5 | 1557.0 | 1564.9 | 1560.9 |
| 37.5° | 7765.0  | 6566.1  | 4732.2 | 2486.8 | 1543.1 | 1460.0 | 1367.0 | 1359.1 | 1386.8 | 1412.5 | 1432.3 |
| 40°   | 8526.7  | 7151.7  | 4951.8 | 2156.4 | 1404.6 | 1321.5 | 1232.5 | 1212.7 | 1224.6 | 1270.1 | 1311.6 |
| 42.5° | 9383.3  | 7830.3  | 5189.2 | 1873.5 | 1309.7 | 1169.2 | 1084.1 | 1046.5 | 1080.2 | 1153.4 | 1202.8 |
| 45°   | 10617.8 | 8781.9  | 5420.7 | 1648.0 | 1270.1 | 1034.7 | 919.9  | 916.0  | 953.6  | 1048.5 | 1103.9 |
| 47.5° | 12350.8 | 10012.4 | 5573.0 | 1471.9 | 1268.1 | 929.8  | 793.3  | 817.1  | 860.6  | 953.6  | 1016.9 |
| 50°   | 14040.3 | 11553.5 | 5404.8 | 1337.4 | 1226.6 | 860.6  | 698.4  | 745.8  | 789.4  | 870.5  | 935.8  |
| 52.5° | 15059.1 | 12382.4 | 4750.0 | 1210.7 | 1098.0 | 828.9  | 605.4  | 688.5  | 696.4  | 769.6  | 838.8  |
| 55°   | 14952.3 | 11846.3 | 3638.2 | 1014.9 | 908.1  | 783.4  | 508.4  | 621.2  | 625.2  | 680.5  | 739.9  |
| 57.5° | 12977.9 | 10170.7 | 2498.6 | 823.0  | 682.5  | 646.9  | 419.4  | 524.3  | 561.8  | 595.5  | 639.0  |
| 60°   | 9672.1  | 7420.8  | 1113.8 | 668.7  | 433.3  | 437.2  | 358.1  | 395.7  | 453.0  | 492.6  | 530.2  |
| 62.5° | 5699.6  | 4269.3  | 453.0  | 401.6  | 239.4  | 275.0  | 288.8  | 288.8  | 324.4  | 354.1  | 377.9  |
| 65°   | 2154.4  | 1493.6  | 184.0  | 201.8  | 124.6  | 128.6  | 170.1  | 209.7  | 237.4  | 263.1  | 294.8  |
| 67.5° | 377.9   | 261.1   | 95.0   | 75.2   | 73.2   | 65.3   | 87.0   | 136.5  | 152.3  | 172.1  | 186.0  |
| 70°   | 63.3    | 53.4    | 39.6   | 37.6   | 33.6   | 35.6   | 57.4   | 96.9   | 106.8  | 112.8  | 118.7  |
| 72.5° | 17.8    | 15.8    | 11.9   | 9.9    | 7.9    | 9.9    | 35.6   | 75.2   | 79.1   | 83.1   | 89.0   |
| 75°   | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 13.8   | 53.4   | 57.4   | 59.4   | 65.3   |
| 77.5° | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 11.9   | 15.8   | 19.8   | 15.8   |
| 80°   | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 0.0     | 0.0     | 0.0    | 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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**CANDELA DISTRIBUTION (continued):**

|       | 185°   | 195°   | 205°   | 215°   | 225°   | 235°   | 245°   | 255°   | 265°   | 270°   | 275°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 |
| 2.5°  | 2334.4 | 2294.9 | 2273.1 | 2261.2 | 2261.2 | 2245.4 | 2227.6 | 2221.7 | 2247.4 | 2247.4 | 2290.9 |
| 5°    | 2103.0 | 2071.3 | 2035.7 | 2014.0 | 1980.3 | 1986.3 | 1966.5 | 1964.5 | 1990.2 | 2002.1 | 2047.6 |
| 7.5°  | 1942.7 | 1903.2 | 1881.4 | 1867.6 | 1849.8 | 1841.8 | 1824.0 | 1818.1 | 1831.9 | 1851.7 | 1895.3 |
| 10°   | 1835.9 | 1830.0 | 1828.0 | 1837.9 | 1837.9 | 1828.0 | 1812.2 | 1802.3 | 1806.2 | 1843.8 | 1893.3 |
| 12.5° | 1863.6 | 1875.5 | 1879.4 | 1895.3 | 1903.2 | 1895.3 | 1883.4 | 1887.3 | 1913.1 | 1982.3 | 2055.5 |
| 15°   | 1984.3 | 1974.4 | 1970.4 | 1978.3 | 1984.3 | 1976.4 | 1972.4 | 2002.1 | 2091.1 | 2190.0 | 2273.1 |
| 17.5° | 2112.9 | 2049.6 | 2021.9 | 2021.9 | 2025.8 | 2021.9 | 2025.8 | 2083.2 | 2227.6 | 2326.5 | 2387.9 |
| 20°   | 2178.2 | 2061.4 | 2017.9 | 2008.0 | 2015.9 | 2017.9 | 2031.8 | 2097.0 | 2255.3 | 2324.6 | 2338.4 |
| 22.5° | 2158.4 | 2012.0 | 1962.5 | 1954.6 | 1962.5 | 1970.4 | 1984.3 | 2039.7 | 2188.0 | 2223.7 | 2217.7 |
| 25°   | 2059.5 | 1915.0 | 1875.5 | 1875.5 | 1893.3 | 1891.3 | 1897.2 | 1936.8 | 2059.5 | 2081.2 | 2071.3 |
| 27.5° | 1934.8 | 1798.3 | 1764.7 | 1784.5 | 1800.3 | 1796.3 | 1798.3 | 1831.9 | 1922.9 | 1928.9 | 1919.0 |
| 30°   | 1808.2 | 1689.5 | 1657.9 | 1681.6 | 1703.4 | 1699.4 | 1701.4 | 1735.0 | 1792.4 | 1786.4 | 1772.6 |
| 32.5° | 1679.6 | 1592.6 | 1568.8 | 1582.7 | 1616.3 | 1612.3 | 1620.3 | 1655.9 | 1677.6 | 1651.9 | 1636.1 |
| 35°   | 1560.9 | 1515.4 | 1497.6 | 1505.5 | 1531.2 | 1537.2 | 1551.0 | 1574.8 | 1574.8 | 1543.1 | 1515.4 |
| 37.5° | 1450.1 | 1444.2 | 1432.3 | 1422.4 | 1446.2 | 1464.0 | 1483.8 | 1511.5 | 1471.9 | 1426.4 | 1400.7 |
| 40°   | 1347.3 | 1373.0 | 1357.1 | 1331.4 | 1345.3 | 1371.0 | 1410.6 | 1432.3 | 1384.8 | 1339.3 | 1295.8 |
| 42.5° | 1252.3 | 1295.8 | 1289.9 | 1258.2 | 1270.1 | 1293.8 | 1339.3 | 1357.1 | 1301.7 | 1250.3 | 1208.8 |
| 45°   | 1161.3 | 1222.6 | 1226.6 | 1187.0 | 1198.9 | 1222.6 | 1276.0 | 1282.0 | 1210.7 | 1155.4 | 1125.7 |
| 47.5° | 1082.2 | 1149.4 | 1151.4 | 1121.7 | 1125.7 | 1159.3 | 1208.8 | 1210.7 | 1129.6 | 1078.2 | 1040.6 |
| 50°   | 1007.0 | 1084.1 | 1090.1 | 1064.3 | 1068.3 | 1107.9 | 1149.4 | 1141.5 | 1054.5 | 1001.0 | 967.4  |
| 52.5° | 916.0  | 1020.8 | 1034.7 | 1022.8 | 1038.6 | 1070.3 | 1096.0 | 1068.3 | 967.4  | 914.0  | 884.3  |
| 55°   | 817.1  | 953.6  | 983.2  | 975.3  | 993.1  | 1018.8 | 1024.8 | 1007.0 | 880.4  | 826.9  | 799.3  |
| 57.5° | 702.3  | 785.4  | 836.8  | 821.0  | 834.9  | 860.6  | 878.4  | 864.5  | 769.6  | 728.0  | 704.3  |
| 60°   | 581.6  | 637.0  | 648.9  | 623.2  | 611.3  | 656.8  | 698.4  | 680.5  | 599.4  | 573.7  | 546.0  |
| 62.5° | 425.3  | 488.7  | 496.6  | 462.9  | 449.1  | 498.5  | 534.2  | 516.3  | 427.3  | 399.6  | 377.9  |
| 65°   | 340.3  | 399.6  | 415.5  | 383.8  | 375.9  | 413.5  | 435.2  | 391.7  | 328.4  | 298.7  | 275.0  |
| 67.5° | 223.6  | 271.0  | 312.6  | 310.6  | 294.8  | 306.6  | 290.8  | 255.2  | 209.7  | 193.9  | 178.1  |
| 70°   | 138.5  | 166.2  | 191.9  | 201.8  | 199.8  | 195.9  | 174.1  | 148.4  | 134.5  | 128.6  | 120.7  |
| 72.5° | 106.8  | 134.5  | 154.3  | 160.2  | 162.2  | 156.3  | 138.5  | 114.7  | 100.9  | 93.0   | 87.0   |
| 75°   | 79.1   | 100.9  | 116.7  | 124.6  | 128.6  | 124.6  | 106.8  | 91.0   | 77.2   | 71.2   | 65.3   |
| 77.5° | 27.7   | 33.6   | 41.5   | 45.5   | 43.5   | 41.5   | 37.6   | 37.6   | 29.7   | 27.7   | 23.7   |
| 80°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 0.0    | 0.0    | 0.0    | 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    |



REPORT NUMBER: P640903

CATALOG NUMBER: GWS-SA5E-827-U-SLR-W-GRSBK

**CANDELA DISTRIBUTION (continued):**

|       | 285°   | 295°   | 305°   | 315°   | 325°   | 335°   | 345°   | 355°    | 359°    | 360°    |
|-------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| 0°    | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7 | 2587.7  | 2587.7  | 2587.7  |
| 2.5°  | 2340.4 | 2376.0 | 2441.3 | 2500.6 | 2563.9 | 2629.2 | 2700.4 | 2773.6  | 2807.3  | 2803.3  |
| 5°    | 2116.8 | 2194.0 | 2300.8 | 2417.5 | 2548.1 | 2688.6 | 2844.9 | 3005.1  | 3074.3  | 3104.0  |
| 7.5°  | 1976.4 | 2085.2 | 2225.6 | 2374.0 | 2546.1 | 2745.9 | 2981.4 | 3232.6  | 3333.5  | 3367.1  |
| 10°   | 1994.2 | 2120.8 | 2237.5 | 2381.9 | 2565.9 | 2825.1 | 3117.9 | 3416.6  | 3535.3  | 3572.9  |
| 12.5° | 2138.6 | 2166.3 | 2197.9 | 2316.6 | 2548.1 | 2884.4 | 3242.5 | 3598.6  | 3735.1  | 3772.7  |
| 15°   | 2269.2 | 2140.6 | 2081.2 | 2190.0 | 2484.8 | 2926.0 | 3369.1 | 3794.5  | 3944.8  | 3988.3  |
| 17.5° | 2275.1 | 2081.2 | 1948.7 | 2033.7 | 2381.9 | 2943.8 | 3493.8 | 3994.3  | 4158.5  | 4200.0  |
| 20°   | 2201.9 | 2015.9 | 1845.8 | 1847.8 | 2241.5 | 2939.8 | 3596.6 | 4174.3  | 4358.3  | 4395.9  |
| 22.5° | 2095.1 | 1938.8 | 1762.7 | 1701.4 | 2091.1 | 2931.9 | 3709.4 | 4366.2  | 4566.0  | 4601.6  |
| 25°   | 1976.4 | 1839.9 | 1683.6 | 1590.6 | 1940.8 | 2939.8 | 3867.7 | 4617.5  | 4837.0  | 4870.7  |
| 27.5° | 1847.8 | 1731.1 | 1622.2 | 1547.1 | 1814.1 | 2969.5 | 4057.6 | 4937.9  | 5199.1  | 5234.7  |
| 30°   | 1713.2 | 1626.2 | 1582.7 | 1537.2 | 1735.0 | 2977.4 | 4263.3 | 5311.9  | 5642.2  | 5691.7  |
| 32.5° | 1580.7 | 1533.2 | 1535.2 | 1543.1 | 1659.8 | 2922.0 | 4451.3 | 5727.3  | 6168.5  | 6247.6  |
| 35°   | 1458.0 | 1444.2 | 1483.8 | 1523.3 | 1551.0 | 2779.6 | 4615.5 | 6217.9  | 6819.3  | 6900.5  |
| 37.5° | 1353.2 | 1365.1 | 1414.5 | 1454.1 | 1432.3 | 2577.8 | 4833.1 | 6831.2  | 7547.4  | 7616.6  |
| 40°   | 1252.3 | 1282.0 | 1339.3 | 1357.1 | 1341.3 | 2342.4 | 5094.2 | 7422.7  | 8178.5  | 8273.4  |
| 42.5° | 1159.3 | 1181.1 | 1262.2 | 1266.1 | 1315.6 | 2103.0 | 5345.5 | 8059.8  | 8904.5  | 8954.0  |
| 45°   | 1084.1 | 1080.2 | 1163.3 | 1189.0 | 1349.2 | 1837.9 | 5590.8 | 8908.5  | 9854.1  | 9925.3  |
| 47.5° | 1010.9 | 1007.0 | 1026.8 | 1143.5 | 1363.1 | 1592.6 | 5834.1 | 10150.9 | 11231.1 | 11353.7 |
| 50°   | 941.7  | 947.6  | 886.3  | 1121.7 | 1287.9 | 1404.6 | 5944.9 | 11300.3 | 12483.3 | 12534.8 |
| 52.5° | 880.4  | 858.6  | 751.8  | 1050.5 | 1127.7 | 1226.6 | 5630.4 | 11822.6 | 13258.9 | 13405.3 |
| 55°   | 793.3  | 672.6  | 619.2  | 852.7  | 890.3  | 1070.3 | 4611.5 | 11519.9 | 13326.1 | 13585.3 |
| 57.5° | 678.6  | 528.2  | 526.2  | 629.1  | 629.1  | 993.1  | 2953.7 | 9842.3  | 11484.3 | 11939.3 |
| 60°   | 522.3  | 409.5  | 435.2  | 437.2  | 403.6  | 724.1  | 1657.9 | 7129.9  | 8491.0  | 8944.1  |
| 62.5° | 371.9  | 312.6  | 328.4  | 261.1  | 231.5  | 362.0  | 795.3  | 4105.1  | 5240.6  | 5303.9  |
| 65°   | 249.3  | 211.7  | 172.1  | 144.4  | 142.4  | 154.3  | 328.4  | 1483.8  | 1804.2  | 2035.7  |
| 67.5° | 164.2  | 128.6  | 91.0   | 91.0   | 102.9  | 102.9  | 124.6  | 245.3   | 344.2   | 314.6   |
| 70°   | 106.8  | 89.0   | 57.4   | 55.4   | 67.3   | 67.3   | 63.3   | 67.3    | 71.2    | 71.2    |
| 72.5° | 79.1   | 67.3   | 33.6   | 29.7   | 37.6   | 39.6   | 35.6   | 33.6    | 33.6    | 33.6    |
| 75°   | 59.4   | 47.5   | 19.8   | 13.8   | 17.8   | 23.7   | 19.8   | 13.8    | 13.8    | 11.9    |
| 77.5° | 23.7   | 17.8   | 7.9    | 5.9    | 9.9    | 13.8   | 11.9   | 5.9     | 4.0     | 4.0     |
| 80°   | 2.0    | 4.0    | 4.0    | 4.0    | 5.9    | 7.9    | 9.9    | 4.0     | 2.0     | 2.0     |
| 82.5° | 0.0    | 2.0    | 2.0    | 2.0    | 4.0    | 5.9    | 7.9    | 4.0     | 2.0     | 2.0     |
| 85°   | 0.0    | 0.0    | 0.0    | 0.0    | 4.0    | 5.9    | 4.0    | 2.0     | 0.0     | 0.0     |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.0    | 2.0    | 5.9    | 4.0    | 2.0     | 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     |

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Invue

Report Number: SP1-2407-157-9

Test Date: 10/03/2024

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

Data applicable to all product families utilizing light square engine

**Test Information**

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

**Spectral Parameters**

CCT (K): 2764  
 CIE u': 0.2591  
 CIE v': 0.5290  
 Duv: 0.0020  
 CIE x: 0.4581  
 CIE y: 0.4156  
 CIE z: 0.1263  
 Peak Wavelength (nm): 603  
 Dominant Wavelength (nm): 583  
 Purity: 62.2537  
 Rf: 84.7  
 Rg: 94.6

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



**Test Conditions**

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

REPORT NUMBER: SP1-2407-157-9

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/18/2024        | 12/18/2024           |
| Power Meter                    | INXT2011004           | 2/8/2024         | 2/8/2025             |
| AC Power Source                | IN0063                | 10/24/2023       | 10/24/2024           |
| DC Power Source                | IN0208                | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | IN0085                | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | IN0046                | 10/24/2023       | 10/24/2024           |

REPORT NUMBER: SP1-2407-157-9

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 2700K 4-step quadrangle

REPORT NUMBER: SP1-2407-157-9

**Photopic Flux vs. Wavelength**



**Photopic Lumens: 4337.9**

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

REPORT NUMBER: SP1-2407-157-9

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 5286.7**

**S/P: 1.22**

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



REPORT NUMBER: SP1-2407-157-9

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 9797**

**M/P: 2.26**

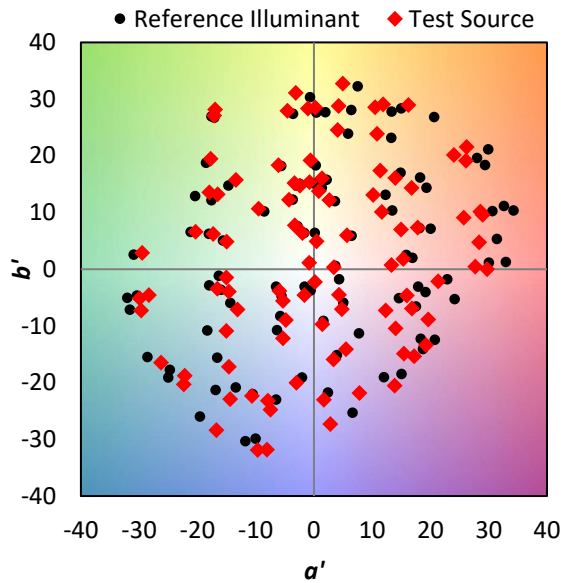
| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|--------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

**Summary**

$R_f = 84.7$   
 $R_g = 94.6$   
 CIE  $R_a = 80.9$   
 $R_9 = -1.5$



**Color Vector Graphics**

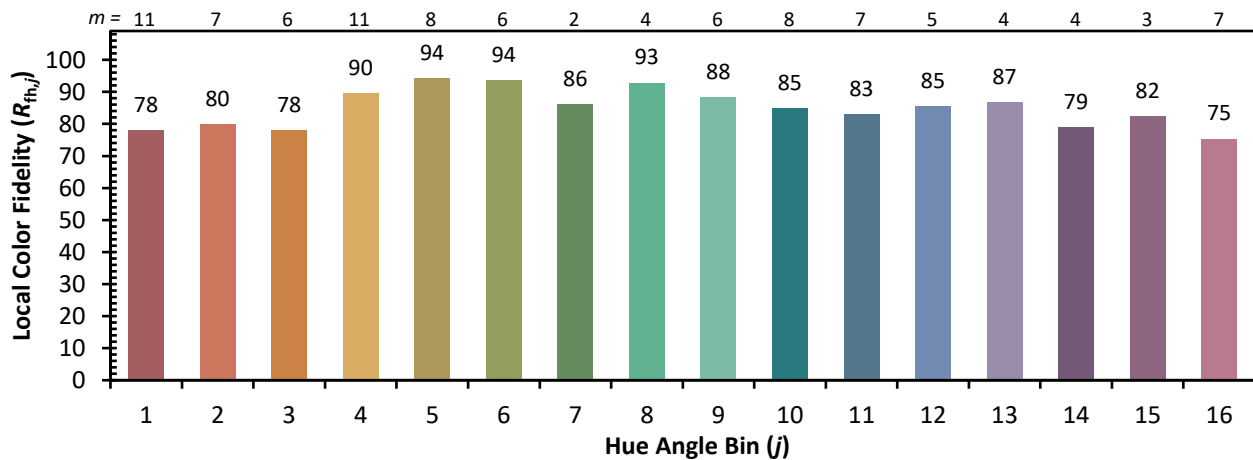


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

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



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)