

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: P641165

Luminaire Tested: GWS-SA5F-735-U-SL2-W-GRSWH

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P641165  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-29)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA5F-735-U-SL2-W-GRSWH  
Description: GALLEON WALL SLIM LUMINAIRE. (5) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS W/ FACTORY INSTALLED GLARE SHIELD, WH  
Light Source: (80) 3500K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

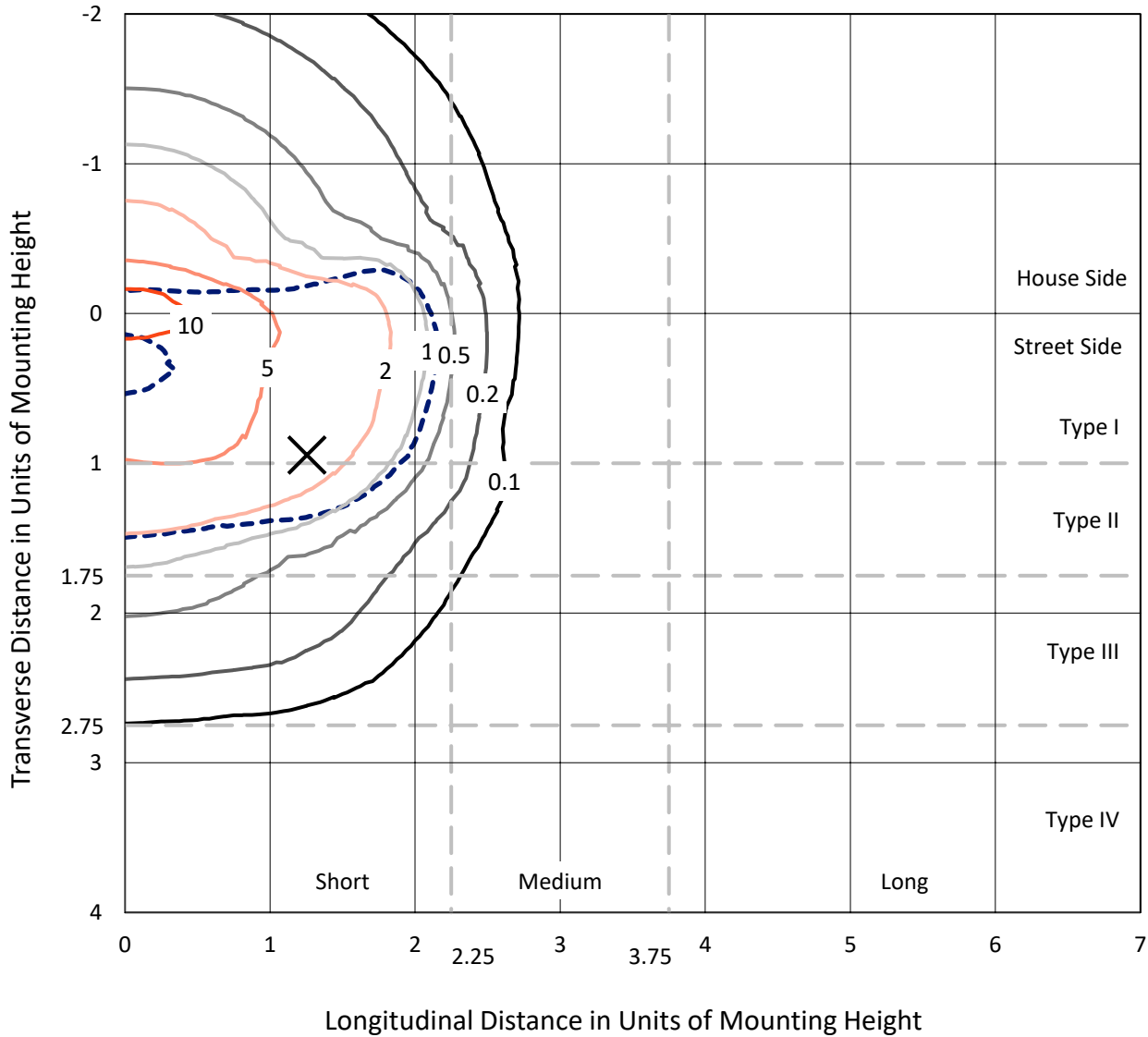
Lumens per Lamp: N/A  
Luminaire Lumens: 35062 lumens  
Efficiency: N/A  
Efficacy: 113.0 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B4 - U0 - G3  
  
Input Watts (W): 310.3  
Input Voltage (V): 120  
Input Current (Ain): NR  
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

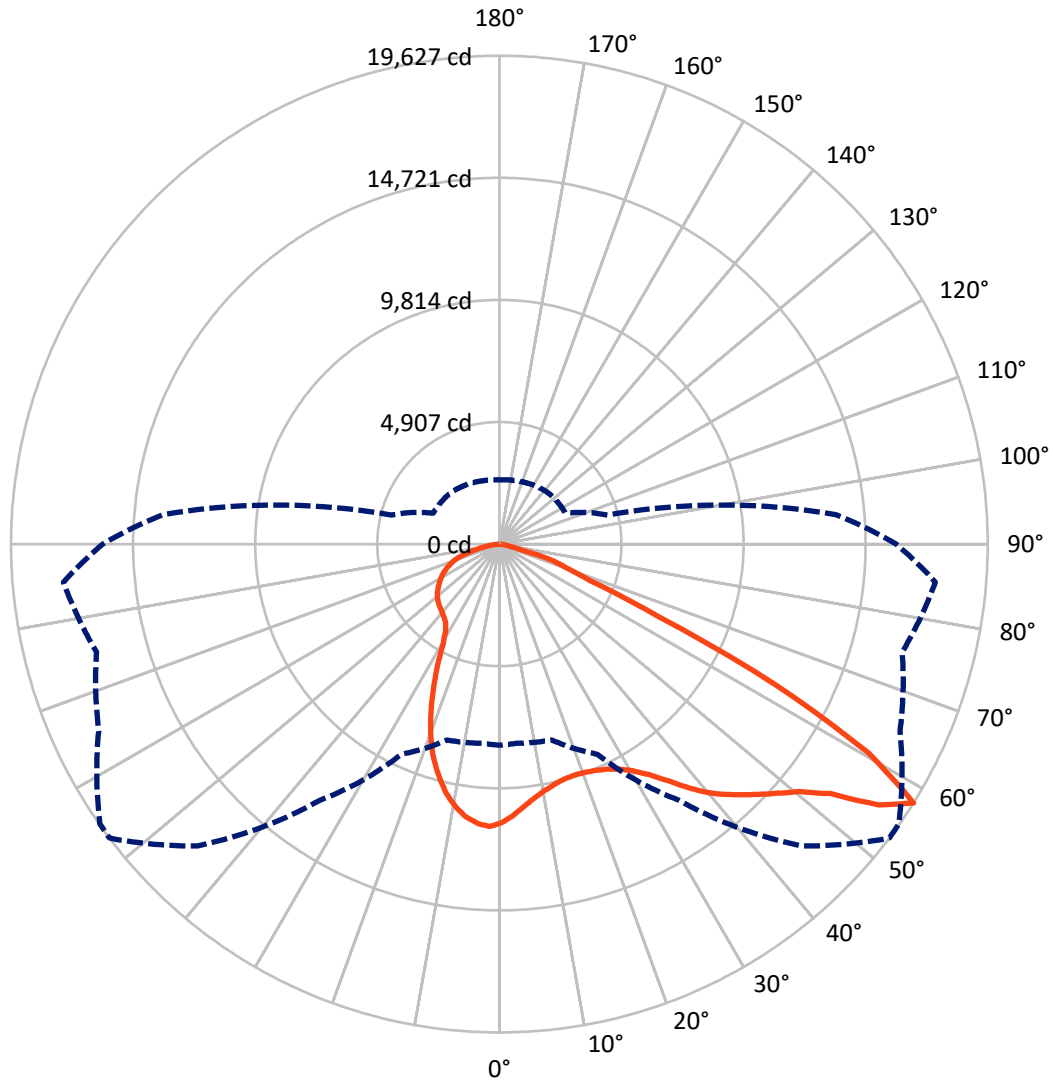
✕ Max cd  
 - - - 1/2 Max cd



Based on 30 foot mounting height. Maximum calculated value = 12.4 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 53-Deg Lateral    - - - Horizontal Cone Through 57.5-Deg Vertical

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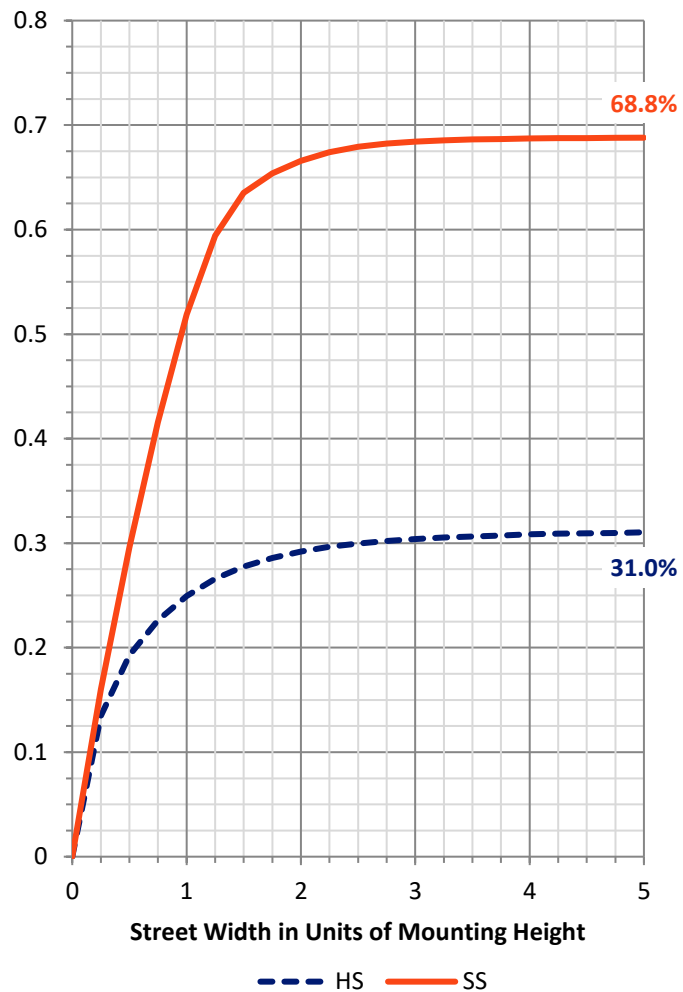
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 10962.6  | 0.0    | 10962.6 |
|                    | % Fixture | 31.3     | 0.0    | 31.3    |
| <b>Street Side</b> | Lumens    | 24099.4  | 0.0    | 24099.4 |
|                    | % Fixture | 68.7     | 0.0    | 68.7    |
| <b>Total</b>       | Lumens    | 35062.0  | 0.0    | 35062.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 1012.5  | 2.9       |
| 10°-20°   | 2656.3  | 7.6       |
| 20°-30°   | 3913.6  | 11.2      |
| 30°-40°   | 5478.0  | 15.6      |
| 40°-50°   | 7201.3  | 20.5      |
| 50°-60°   | 8443.5  | 24.1      |
| 60°-70°   | 4974.2  | 14.2      |
| 70°-80°   | 1237.4  | 3.5       |
| 80°-90°   | 145.2   | 0.4       |
| 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°    | 35062.0 | 100.0     |
| 0°-180°   | 35062.0 | 100.0     |

**Coefficient of Utilization**



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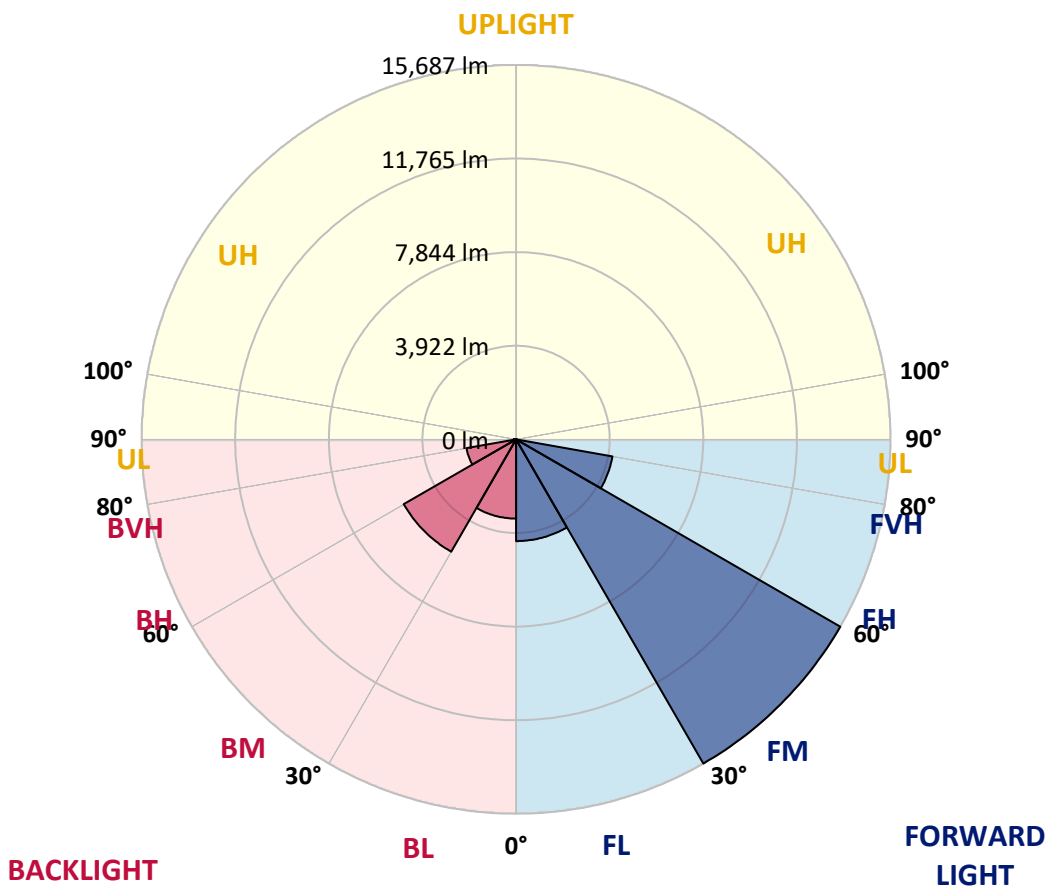
CATALOG NUMBER: GWS-SA5F-735-U-SL2-W-GRSWH

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

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|---------|-----------|-------------------------|------|---------|
|                |         |           | B                       | U    | G       |
| FL (0°-30°)    | 4262.9  | 12.2      |                         |      |         |
| FM (30°-60°)   | 15687.1 | 44.7      |                         |      |         |
| FH (60°-80°)   | 4100.9  | 11.7      |                         |      | G2/5000 |
| FVH (80°-90°)  | 48.6    | 0.1       |                         |      | G1/100  |
| BL (0°-30°)    | 3319.5  | 9.5       | B4/5000                 |      |         |
| BM (30°-60°)   | 5435.8  | 15.5      | B4/8500                 |      |         |
| BH (60°-80°)   | 2110.7  | 6.0       | B3/2500                 |      | G3/2500 |
| BVH (80°-90°)  | 96.6    | 0.3       |                         |      | G1/100  |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B4-U0-G3**

Type II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 53°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 |
| 2.5°  | 10552.9 | 10582.4 | 10588.3 | 10679.8 | 10685.7 | 10818.5 | 10907.0 | 10889.3 | 10980.8 | 11093.0 | 11181.5 |
| 5°    | 10048.3 | 10051.2 | 10080.8 | 10189.9 | 10249.0 | 10423.1 | 10570.6 | 10570.6 | 10747.7 | 10977.9 | 11175.6 |
| 7.5°  | 9632.2  | 9629.2  | 9655.8  | 9776.8  | 9874.2  | 10083.7 | 10284.4 | 10308.0 | 10555.9 | 10892.3 | 11214.0 |
| 10°   | 9245.6  | 9266.3  | 9295.8  | 9443.3  | 9567.3  | 9827.0  | 10066.0 | 10104.4 | 10417.2 | 10833.3 | 11267.1 |
| 12.5° | 8997.7  | 9000.7  | 9044.9  | 9210.2  | 9369.6  | 9646.9  | 9897.8  | 9945.0  | 10305.0 | 10777.2 | 11305.4 |
| 15°   | 8838.4  | 8841.3  | 8888.5  | 9071.5  | 9257.4  | 9537.8  | 9794.5  | 9847.6  | 10240.1 | 10768.3 | 11379.2 |
| 17.5° | 8767.5  | 8764.6  | 8808.9  | 8991.8  | 9195.4  | 9487.6  | 9762.0  | 9827.0  | 10269.6 | 10836.2 | 11509.1 |
| 20°   | 8767.5  | 8770.5  | 8794.1  | 8959.4  | 9165.9  | 9475.8  | 9794.5  | 9874.2  | 10384.7 | 10989.7 | 11709.7 |
| 22.5° | 8891.5  | 8903.3  | 8915.1  | 9027.2  | 9189.5  | 9493.5  | 9880.1  | 9986.3  | 10632.6 | 11246.4 | 11972.4 |
| 25°   | 9133.5  | 9136.4  | 9148.2  | 9239.7  | 9313.5  | 9543.7  | 10021.7 | 10181.1 | 11019.2 | 11621.2 | 12302.9 |
| 27.5° | 9458.1  | 9499.4  | 9511.2  | 9570.2  | 9570.2  | 9667.6  | 10243.1 | 10473.2 | 11541.5 | 12161.2 | 12724.9 |
| 30°   | 9912.5  | 9927.3  | 9948.0  | 10012.9 | 9942.1  | 9900.7  | 10567.7 | 10862.8 | 12146.5 | 12813.4 | 13232.5 |
| 32.5° | 10310.9 | 10343.4 | 10455.5 | 10561.8 | 10434.9 | 10305.0 | 11045.7 | 11394.0 | 12727.8 | 13492.2 | 13772.5 |
| 35°   | 10650.3 | 10730.0 | 10945.4 | 11181.5 | 11093.0 | 10963.1 | 11680.2 | 12043.2 | 13205.9 | 13979.1 | 14250.6 |
| 37.5° | 11060.5 | 11122.5 | 11417.6 | 11801.2 | 11880.9 | 11818.9 | 12453.4 | 12713.1 | 13524.6 | 14103.0 | 14510.3 |
| 40°   | 11476.6 | 11571.0 | 11951.7 | 12482.9 | 12786.9 | 12831.1 | 13167.5 | 13341.6 | 13633.8 | 13861.0 | 14460.1 |
| 42.5° | 11901.5 | 12063.8 | 12586.2 | 13205.9 | 13745.9 | 13846.3 | 13769.6 | 13843.3 | 13598.4 | 13527.6 | 14227.0 |
| 45°   | 12420.9 | 12612.7 | 13203.0 | 13993.8 | 14705.0 | 14861.4 | 14359.8 | 14291.9 | 13592.5 | 13400.7 | 14082.4 |
| 47.5° | 13034.7 | 13226.6 | 13790.2 | 14710.9 | 15619.9 | 15734.9 | 14964.7 | 14840.8 | 13799.1 | 13595.4 | 14277.1 |
| 50°   | 13577.7 | 13710.5 | 14215.2 | 15245.1 | 16472.7 | 16540.6 | 15631.7 | 15481.2 | 14312.5 | 14135.5 | 14885.0 |
| 52.5° | 13025.9 | 13011.1 | 13542.3 | 14811.3 | 16915.4 | 17732.8 | 16658.6 | 16514.0 | 15304.1 | 15032.6 | 15826.4 |
| 55°   | 11051.6 | 10883.4 | 11358.6 | 12606.8 | 15678.9 | 18792.2 | 18500.1 | 18210.9 | 16626.2 | 15935.6 | 16708.8 |
| 57.5° | 8079.9  | 8032.7  | 8147.8  | 9319.4  | 12559.6 | 17151.4 | 19627.4 | 19600.8 | 17768.2 | 16761.9 | 17588.2 |
| 60°   | 6318.2  | 6247.4  | 5940.4  | 5972.9  | 8561.0  | 13397.7 | 17033.4 | 17815.4 | 18476.5 | 17257.7 | 18202.0 |
| 62.5° | 5609.9  | 5556.8  | 5397.5  | 4957.7  | 5099.4  | 8983.0  | 12485.8 | 13203.0 | 16145.1 | 15242.1 | 15634.6 |
| 65°   | 4644.9  | 4630.2  | 4763.0  | 4745.3  | 4273.1  | 4960.7  | 7047.1  | 7770.1  | 10151.6 | 10278.5 | 10151.6 |
| 67.5° | 3376.0  | 3349.4  | 3685.8  | 4349.8  | 4113.7  | 3744.9  | 3927.8  | 4178.7  | 5205.6  | 4674.4  | 4208.2  |
| 70°   | 2195.6  | 2157.2  | 2352.0  | 3142.9  | 3682.9  | 3263.8  | 2830.0  | 2788.7  | 2862.5  | 1779.5  | 1924.1  |
| 72.5° | 1472.6  | 1428.3  | 1425.4  | 1729.3  | 2225.1  | 2198.5  | 2192.6  | 2172.0  | 1938.8  | 1404.7  | 1558.1  |
| 75°   | 820.4   | 785.0   | 776.1   | 746.6   | 796.8   | 811.5   | 864.7   | 894.2   | 967.9   | 1065.3  | 1180.4  |
| 77.5° | 138.7   | 135.7   | 171.2   | 218.4   | 301.0   | 386.6   | 478.1   | 504.6   | 622.7   | 737.8   | 811.5   |
| 80°   | 76.7    | 79.7    | 103.3   | 126.9   | 168.2   | 230.2   | 295.1   | 312.8   | 383.6   | 445.6   | 504.6   |
| 82.5° | 41.3    | 41.3    | 53.1    | 67.9    | 91.5    | 121.0   | 159.4   | 174.1   | 221.3   | 259.7   | 301.0   |
| 85°   | 14.8    | 14.8    | 20.7    | 26.6    | 38.4    | 50.2    | 62.0    | 70.8    | 97.4    | 132.8   | 150.5   |
| 87.5° | 0.0     | 0.0     | 0.0     | 0.0     | 3.0     | 5.9     | 11.8    | 11.8    | 14.8    | 26.6    | 38.4    |
| 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: P641165

CATALOG NUMBER: GWS-SA5F-735-U-SL2-W-GRSWH

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°    | 115°    | 125°    | 135°    | 145°    | 155°    | 165°    | 175°    | 180°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 | 11196.2 |
| 2.5°  | 11255.3 | 11175.6 | 11284.8 | 11334.9 | 11352.6 | 11364.5 | 11287.7 | 11234.6 | 11216.9 | 11160.8 | 11128.4 |
| 5°    | 11296.6 | 11243.5 | 11346.7 | 11346.7 | 11273.0 | 11196.2 | 11039.8 | 10930.7 | 10853.9 | 10762.4 | 10747.7 |
| 7.5°  | 11367.4 | 11329.0 | 11385.1 | 11270.0 | 11084.1 | 10877.5 | 10606.0 | 10393.6 | 10222.4 | 10110.3 | 10113.2 |
| 10°   | 11461.8 | 11414.6 | 11370.4 | 11113.6 | 10774.2 | 10393.6 | 9977.5  | 9667.6  | 9384.3  | 9254.5  | 9183.6  |
| 12.5° | 11523.8 | 11455.9 | 11270.0 | 10845.1 | 10346.3 | 9835.8  | 9248.6  | 8788.2  | 8378.0  | 8192.1  | 8177.3  |
| 15°   | 11600.5 | 11476.6 | 11104.8 | 10496.8 | 9803.4  | 9106.9  | 8351.4  | 7711.1  | 7156.3  | 6867.1  | 6852.3  |
| 17.5° | 11700.9 | 11497.2 | 10907.0 | 10098.5 | 9230.9  | 8203.9  | 7253.7  | 6448.0  | 5857.8  | 5633.5  | 5671.9  |
| 20°   | 11842.5 | 11520.9 | 10682.8 | 9655.8  | 8519.7  | 7176.9  | 5993.6  | 5252.9  | 5025.6  | 5010.9  | 4981.4  |
| 22.5° | 12001.9 | 11535.6 | 10434.9 | 9160.0  | 7657.9  | 6082.1  | 4951.8  | 4636.1  | 4633.1  | 4706.9  | 4724.6  |
| 25°   | 12181.9 | 11547.4 | 10154.5 | 8581.6  | 6725.4  | 4990.2  | 4379.3  | 4284.9  | 4358.7  | 4497.4  | 4515.1  |
| 27.5° | 12412.1 | 11571.0 | 9815.2  | 7947.1  | 5733.9  | 4311.5  | 4063.6  | 4040.0  | 4128.5  | 4258.4  | 4252.4  |
| 30°   | 12751.4 | 11656.6 | 9455.1  | 7218.2  | 4715.8  | 3989.8  | 3871.8  | 3874.7  | 3910.1  | 3972.1  | 3981.0  |
| 32.5° | 13096.7 | 11789.4 | 9104.0  | 6397.9  | 4131.5  | 3806.8  | 3753.7  | 3747.8  | 3747.8  | 3774.4  | 3780.3  |
| 35°   | 13424.3 | 11939.9 | 8723.3  | 5542.1  | 3848.2  | 3700.6  | 3665.2  | 3647.5  | 3638.6  | 3632.7  | 3623.9  |
| 37.5° | 13607.2 | 12013.7 | 8351.4  | 4698.1  | 3697.7  | 3629.8  | 3594.4  | 3570.8  | 3538.3  | 3514.7  | 3508.8  |
| 40°   | 13527.6 | 11928.1 | 7920.6  | 4066.5  | 3606.2  | 3561.9  | 3520.6  | 3488.1  | 3443.9  | 3423.2  | 3411.4  |
| 42.5° | 13262.0 | 11662.5 | 7451.4  | 3768.5  | 3532.4  | 3488.1  | 3438.0  | 3384.8  | 3355.3  | 3337.6  | 3334.7  |
| 45°   | 12981.6 | 11340.8 | 6884.8  | 3594.4  | 3461.6  | 3408.5  | 3349.4  | 3290.4  | 3257.9  | 3249.1  | 3246.1  |
| 47.5° | 12972.8 | 11181.5 | 6282.8  | 3455.7  | 3376.0  | 3322.9  | 3249.1  | 3190.1  | 3154.7  | 3142.9  | 3131.1  |
| 50°   | 13362.3 | 11343.8 | 5604.0  | 3334.7  | 3287.5  | 3231.4  | 3148.8  | 3083.8  | 3039.6  | 3024.8  | 3021.9  |
| 52.5° | 14170.9 | 11954.7 | 4996.1  | 3213.7  | 3169.4  | 3104.5  | 3036.6  | 2971.7  | 2918.6  | 2892.0  | 2889.1  |
| 55°   | 15044.4 | 12730.8 | 4618.4  | 3089.7  | 3030.7  | 2974.6  | 2912.7  | 2841.9  | 2782.8  | 2741.5  | 2735.6  |
| 57.5° | 15947.4 | 13577.7 | 4503.3  | 2933.3  | 2889.1  | 2850.7  | 2776.9  | 2700.2  | 2632.3  | 2594.0  | 2585.1  |
| 60°   | 16691.1 | 14306.6 | 4718.7  | 2768.1  | 2744.5  | 2694.3  | 2626.4  | 2552.6  | 2505.4  | 2475.9  | 2470.0  |
| 62.5° | 13973.2 | 11647.8 | 3809.8  | 2588.1  | 2588.1  | 2534.9  | 2458.2  | 2405.1  | 2372.6  | 2352.0  | 2346.1  |
| 65°   | 8867.9  | 7212.3  | 2599.9  | 2408.0  | 2405.1  | 2334.3  | 2269.3  | 2233.9  | 2219.2  | 2186.7  | 2180.8  |
| 67.5° | 3862.9  | 3296.3  | 2222.1  | 2225.1  | 2213.3  | 2136.6  | 2071.6  | 2045.1  | 2015.6  | 1980.1  | 1977.2  |
| 70°   | 2003.8  | 2042.1  | 1989.0  | 2021.5  | 2000.8  | 1909.3  | 1847.4  | 1806.0  | 1744.1  | 1708.7  | 1711.6  |
| 72.5° | 1617.2  | 1658.5  | 1717.5  | 1767.7  | 1723.4  | 1649.6  | 1552.2  | 1502.1  | 1422.4  | 1384.0  | 1387.0  |
| 75°   | 1233.5  | 1277.8  | 1333.9  | 1387.0  | 1351.6  | 1260.1  | 1198.1  | 1148.0  | 1056.5  | 1012.2  | 1021.1  |
| 77.5° | 849.9   | 873.5   | 941.4   | 938.4   | 926.6   | 900.1   | 808.6   | 749.6   | 655.1   | 602.0   | 607.9   |
| 80°   | 528.2   | 543.0   | 575.5   | 590.2   | 584.3   | 548.9   | 475.1   | 430.9   | 374.8   | 342.3   | 345.3   |
| 82.5° | 318.7   | 327.6   | 357.1   | 360.0   | 357.1   | 330.5   | 274.4   | 242.0   | 206.6   | 188.9   | 188.9   |
| 85°   | 162.3   | 168.2   | 185.9   | 185.9   | 168.2   | 141.6   | 126.9   | 112.1   | 91.5    | 82.6    | 82.6    |
| 87.5° | 44.3    | 44.3    | 56.1    | 47.2    | 38.4    | 35.4    | 17.7    | 14.8    | 5.9     | 3.0     | 3.0     |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |



LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

All Brands

Data applicable to all product families using SA light engines

Report Number: SP1-2101-121-7

Luminaire Tested: IFLD-S-SA2A-735-U-T2

Test Date: 03/04/2021

**Test Information**

Test Method: LM-79-08  
 Report Number: SP1-2101-121-7  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry: 4π  
 Issue Date: 03/04/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2A-735-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

**Spectral Parameters**

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 3388   | CRI (Ra): | 73.1 | R9:  | -34.6 |
| CIE u':                   | 0.2371 | R1:       | 68.9 | R10: | 57.8  |
| CIE v':                   | 0.5177 | R2:       | 81.1 | R11: | 68.6  |
| Duv:                      | 0.0032 | R3:       | 93.1 | R12: | 53.9  |
| CIE x:                    | 0.4153 | R4:       | 71.6 | R13: | 70.9  |
| CIE y:                    | 0.4030 | R5:       | 69.4 | R14: | 96.2  |
| CIE z:                    | 0.1817 | R6:       | 75.0 |      |       |
| Peak Wavelength (nm):     | 590    | R7:       | 79.5 |      |       |
| Dominant Wavelength (nm): | 580    | R8:       | 46.4 |      |       |
| Purity:                   | 45.7   |           |      |      |       |
| Rf:                       | 76.9   |           |      |      |       |
| Rg:                       | 94.4   |           |      |      |       |



**Test Conditions**

Stabilization Time: 81M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0/30%  
 Sphere Temperature (°C): 24.1

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| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 1/31/2021        | 7/31/2021            |
| Power Meter                    | IN0071                | 12/1/2020        | 12/1/2021            |
| AC Power Source                | IN0063                | 12/1/2020        | 12/1/2021            |
| DC Power Source                | IN0208                | 12/1/2020        | 12/1/2021            |
| Sphere Thermometer             | IN0085                | 12/1/2020        | 12/1/2021            |
| Room Thermometer               | IN0046                | 12/1/2020        | 12/1/2021            |

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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 3500K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| 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    | 2672          | 0.0           | 490    | 34553         | 4.9           | 620    | 136720        | 35.6          | 750    | 5870          | 0.0           | 880    | 4216          | 0.0           |
| 365    | 2252          | 0.0           | 495    | 44336         | 8.0           | 625    | 126308        | 27.9          | 755    | 5421          | 0.0           | 885    | 4132          | 0.0           |
| 370    | 2217          | 0.0           | 500    | 54643         | 12.1          | 630    | 114625        | 20.7          | 760    | 5097          | 0.0           | 890    | 3992          | 0.0           |
| 375    | 2697          | 0.0           | 505    | 64676         | 18.1          | 635    | 103216        | 15.5          | 765    | 4626          | 0.0           | 895    | 3214          | 0.0           |
| 380    | 3039          | 0.0           | 510    | 73825         | 25.4          | 640    | 92605         | 11.1          | 770    | 3782          | 0.0           | 900    | 2580          | 0.0           |
| 385    | 2655          | 0.0           | 515    | 81872         | 33.9          | 645    | 83234         | 8.0           | 775    | 3506          | 0.0           | 905    | 1776          | 0.0           |
| 390    | 2357          | 0.0           | 520    | 88574         | 43.0          | 650    | 73263         | 5.4           | 780    | 3507          | 0.0           | 910    | 3995          | 0.0           |
| 395    | 2186          | 0.0           | 525    | 93289         | 50.1          | 655    | 64627         | 3.7           | 785    | 3267          | 0.0           | 915    | 4288          | 0.0           |
| 400    | 2015          | 0.0           | 530    | 98393         | 57.9          | 660    | 56614         | 2.4           | 790    | 2849          | 0.0           | 920    | 2446          | 0.0           |
| 405    | 2234          | 0.0           | 535    | 103269        | 64.0          | 665    | 49537         | 1.6           | 795    | 3037          | 0.0           | 925    | 3009          | 0.0           |
| 410    | 3412          | 0.0           | 540    | 107316        | 69.9          | 670    | 42866         | 0.9           | 800    | 2716          | 0.0           | 930    | 3026          | 0.0           |
| 415    | 6135          | 0.0           | 545    | 113101        | 75.3          | 675    | 36708         | 0.6           | 805    | 2648          | 0.0           | 935    | 4734          | 0.0           |
| 420    | 12146         | 0.0           | 550    | 120690        | 82.0          | 680    | 31814         | 0.4           | 810    | 3187          | 0.0           | 940    | 3719          | 0.0           |
| 425    | 23983         | 0.1           | 555    | 128583        | 87.8          | 685    | 27485         | 0.2           | 815    | 2931          | 0.0           | 945    | 1480          | 0.0           |
| 430    | 42142         | 0.3           | 560    | 137796        | 93.6          | 690    | 23698         | 0.1           | 820    | 2717          | 0.0           | 950    | 3450          | 0.0           |
| 435    | 68228         | 0.8           | 565    | 146577        | 97.5          | 695    | 20309         | 0.1           | 825    | 2236          | 0.0           | 955    | 5051          | 0.0           |
| 440    | 99323         | 1.6           | 570    | 154581        | 100.5         | 700    | 17890         | 0.1           | 830    | 2628          | 0.0           | 960    | 3176          | 0.0           |
| 445    | 115584        | 2.4           | 575    | 162633        | 101.2         | 705    | 15500         | 0.0           | 835    | 3140          | 0.0           | 965    | 5178          | 0.0           |
| 450    | 94997         | 2.5           | 580    | 168101        | 99.9          | 710    | 13699         | 0.0           | 840    | 3675          | 0.0           | 970    | 6385          | 0.0           |
| 455    | 61433         | 2.1           | 585    | 173145        | 96.2          | 715    | 12398         | 0.0           | 845    | 3283          | 0.0           | 975    | 3810          | 0.0           |
| 460    | 43373         | 1.8           | 590    | 174675        | 90.3          | 720    | 11147         | 0.0           | 850    | 3055          | 0.0           | 980    | 4322          | 0.0           |
| 465    | 32472         | 1.7           | 595    | 173724        | 82.3          | 725    | 9761          | 0.0           | 855    | 2932          | 0.0           | 985    | 4200          | 0.0           |
| 470    | 24257         | 1.5           | 600    | 171241        | 73.8          | 730    | 8651          | 0.0           | 860    | 3382          | 0.0           | 990    | 4661          | 0.0           |
| 475    | 21690         | 1.7           | 605    | 165134        | 64.0          | 735    | 7730          | 0.0           | 865    | 2605          | 0.0           | 995    | 6746          | 0.0           |
| 480    | 23173         | 2.2           | 610    | 156652        | 53.8          | 740    | 6847          | 0.0           | 870    | 3325          | 0.0           | 1000   | 4150          | 0.0           |
| 485    | 27564         | 3.3           | 615    | 147879        | 44.6          | 745    | 6124          | 0.0           | 875    | 3325          | 0.0           |        |               |               |

REPORT NUMBER: SP1-2101-121-7

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 12126**

**S/P: 1.36**

| $\lambda$<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               | 2672                                 | 0.0                            | 490               | 34553                                | 53.2                           | 620               | 136720                               | 1.7                            | 750               | 5870                                 | 0.0                            | 880               | 4216                                 | 0.0                            |
| 365               | 2252                                 | 0.0                            | 495               | 44336                                | 71.7                           | 625               | 126308                               | 1.1                            | 755               | 5421                                 | 0.0                            | 885               | 4132                                 | 0.0                            |
| 370               | 2217                                 | 0.0                            | 500               | 54643                                | 91.4                           | 630               | 114625                               | 0.6                            | 760               | 5097                                 | 0.0                            | 890               | 3992                                 | 0.0                            |
| 375               | 2697                                 | 0.0                            | 505               | 64676                                | 110.0                          | 635               | 103216                               | 0.4                            | 765               | 4626                                 | 0.0                            | 895               | 3214                                 | 0.0                            |
| 380               | 3039                                 | 0.0                            | 510               | 73825                                | 125.1                          | 640               | 92605                                | 0.2                            | 770               | 3782                                 | 0.0                            | 900               | 2580                                 | 0.0                            |
| 385               | 2655                                 | 0.0                            | 515               | 81872                                | 135.7                          | 645               | 83234                                | 0.1                            | 775               | 3506                                 | 0.0                            | 905               | 1776                                 | 0.0                            |
| 390               | 2357                                 | 0.0                            | 520               | 88574                                | 140.8                          | 650               | 73263                                | 0.1                            | 780               | 3507                                 | 0.0                            | 910               | 3995                                 | 0.0                            |
| 395               | 2186                                 | 0.0                            | 525               | 93289                                | 139.6                          | 655               | 64627                                | 0.1                            | 785               | 3267                                 | 0.0                            | 915               | 4288                                 | 0.0                            |
| 400               | 2015                                 | 0.0                            | 530               | 98393                                | 135.7                          | 660               | 56614                                | 0.0                            | 790               | 2849                                 | 0.0                            | 920               | 2446                                 | 0.0                            |
| 405               | 2234                                 | 0.1                            | 535               | 103269                               | 128.7                          | 665               | 49537                                | 0.0                            | 795               | 3037                                 | 0.0                            | 925               | 3009                                 | 0.0                            |
| 410               | 3412                                 | 0.2                            | 540               | 107316                               | 118.6                          | 670               | 42866                                | 0.0                            | 800               | 2716                                 | 0.0                            | 930               | 3026                                 | 0.0                            |
| 415               | 6135                                 | 0.6                            | 545               | 113101                               | 108.4                          | 675               | 36708                                | 0.0                            | 805               | 2648                                 | 0.0                            | 935               | 4734                                 | 0.0                            |
| 420               | 12146                                | 2.0                            | 550               | 120690                               | 98.7                           | 680               | 31814                                | 0.0                            | 810               | 3187                                 | 0.0                            | 940               | 3719                                 | 0.0                            |
| 425               | 23983                                | 5.9                            | 555               | 128583                               | 87.9                           | 685               | 27485                                | 0.0                            | 815               | 2931                                 | 0.0                            | 945               | 1480                                 | 0.0                            |
| 430               | 42142                                | 14.3                           | 560               | 137796                               | 77.0                           | 690               | 23698                                | 0.0                            | 820               | 2717                                 | 0.0                            | 950               | 3450                                 | 0.0                            |
| 435               | 68228                                | 30.5                           | 565               | 146577                               | 65.8                           | 695               | 20309                                | 0.0                            | 825               | 2236                                 | 0.0                            | 955               | 5051                                 | 0.0                            |
| 440               | 99323                                | 55.5                           | 570               | 154581                               | 54.6                           | 700               | 17890                                | 0.0                            | 830               | 2628                                 | 0.0                            | 960               | 3176                                 | 0.0                            |
| 445               | 115584                               | 77.4                           | 575               | 162633                               | 44.3                           | 705               | 15500                                | 0.0                            | 835               | 3140                                 | 0.0                            | 965               | 5178                                 | 0.0                            |
| 450               | 94997                                | 73.6                           | 580               | 168101                               | 34.6                           | 710               | 13699                                | 0.0                            | 840               | 3675                                 | 0.0                            | 970               | 6385                                 | 0.0                            |
| 455               | 61433                                | 53.7                           | 585               | 173145                               | 26.5                           | 715               | 12398                                | 0.0                            | 845               | 3283                                 | 0.0                            | 975               | 3810                                 | 0.0                            |
| 460               | 43373                                | 41.9                           | 590               | 174675                               | 19.5                           | 720               | 11147                                | 0.0                            | 850               | 3055                                 | 0.0                            | 980               | 4322                                 | 0.0                            |
| 465               | 32472                                | 34.3                           | 595               | 173724                               | 13.9                           | 725               | 9761                                 | 0.0                            | 855               | 2932                                 | 0.0                            | 985               | 4200                                 | 0.0                            |
| 470               | 24257                                | 27.9                           | 600               | 171241                               | 9.7                            | 730               | 8651                                 | 0.0                            | 860               | 3382                                 | 0.0                            | 990               | 4661                                 | 0.0                            |
| 475               | 21690                                | 27.1                           | 605               | 165134                               | 6.5                            | 735               | 7730                                 | 0.0                            | 865               | 2605                                 | 0.0                            | 995               | 6746                                 | 0.0                            |
| 480               | 23173                                | 31.3                           | 610               | 156652                               | 4.2                            | 740               | 6847                                 | 0.0                            | 870               | 3325                                 | 0.0                            | 1000              | 4150                                 | 0.0                            |
| 485               | 27564                                | 40.0                           | 615               | 147879                               | 2.7                            | 745               | 6124                                 | 0.0                            | 875               | 3325                                 | 0.0                            |                   |                                      |                                |

REPORT NUMBER: SP1-2101-121-7

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 4490.7 M/P: 0.5**

| 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    | 2672          | 0.0           | 490    | 34553         | 28.8          | 620    | 136720        | 0.1           | 750    | 5870          | 0.0           | 880    | 4216          | 0.0           |
| 365    | 2252          | 0.0           | 495    | 44336         | 36.6          | 625    | 126308        | 0.1           | 755    | 5421          | 0.0           | 885    | 4132          | 0.0           |
| 370    | 2217          | 0.0           | 500    | 54643         | 43.9          | 630    | 114625        | 0.0           | 760    | 5097          | 0.0           | 890    | 3992          | 0.0           |
| 375    | 2697          | 0.0           | 505    | 64676         | 49.6          | 635    | 103216        | 0.0           | 765    | 4626          | 0.0           | 895    | 3214          | 0.0           |
| 380    | 3039          | 0.0           | 510    | 73825         | 53.0          | 640    | 92605         | 0.0           | 770    | 3782          | 0.0           | 900    | 2580          | 0.0           |
| 385    | 2655          | 0.0           | 515    | 81872         | 53.5          | 645    | 83234         | 0.0           | 775    | 3506          | 0.0           | 905    | 1776          | 0.0           |
| 390    | 2357          | 0.0           | 520    | 88574         | 51.6          | 650    | 73263         | 0.0           | 780    | 3507          | 0.0           | 910    | 3995          | 0.0           |
| 395    | 2186          | 0.0           | 525    | 93289         | 47.3          | 655    | 64627         | 0.0           | 785    | 3267          | 0.0           | 915    | 4288          | 0.0           |
| 400    | 2015          | 0.0           | 530    | 98393         | 42.5          | 660    | 56614         | 0.0           | 790    | 2849          | 0.0           | 920    | 2446          | 0.0           |
| 405    | 2234          | 0.0           | 535    | 103269        | 37.2          | 665    | 49537         | 0.0           | 795    | 3037          | 0.0           | 925    | 3009          | 0.0           |
| 410    | 3412          | 0.1           | 540    | 107316        | 31.4          | 670    | 42866         | 0.0           | 800    | 2716          | 0.0           | 930    | 3026          | 0.0           |
| 415    | 6135          | 0.4           | 545    | 113101        | 26.3          | 675    | 36708         | 0.0           | 805    | 2648          | 0.0           | 935    | 4734          | 0.0           |
| 420    | 12146         | 1.4           | 550    | 120690        | 21.7          | 680    | 31814         | 0.0           | 810    | 3187          | 0.0           | 940    | 3719          | 0.0           |
| 425    | 23983         | 3.7           | 555    | 128583        | 17.3          | 685    | 27485         | 0.0           | 815    | 2931          | 0.0           | 945    | 1480          | 0.0           |
| 430    | 42142         | 8.9           | 560    | 137796        | 13.6          | 690    | 23698         | 0.0           | 820    | 2717          | 0.0           | 950    | 3450          | 0.0           |
| 435    | 68228         | 18.2          | 565    | 146577        | 10.3          | 695    | 20309         | 0.0           | 825    | 2236          | 0.0           | 955    | 5051          | 0.0           |
| 440    | 99323         | 33.2          | 570    | 154581        | 7.6           | 700    | 17890         | 0.0           | 830    | 2628          | 0.0           | 960    | 3176          | 0.0           |
| 445    | 115584        | 45.6          | 575    | 162633        | 5.4           | 705    | 15500         | 0.0           | 835    | 3140          | 0.0           | 965    | 5178          | 0.0           |
| 450    | 94997         | 43.8          | 580    | 168101        | 3.8           | 710    | 13699         | 0.0           | 840    | 3675          | 0.0           | 970    | 6385          | 0.0           |
| 455    | 61433         | 32.2          | 585    | 173145        | 2.6           | 715    | 12398         | 0.0           | 845    | 3283          | 0.0           | 975    | 3810          | 0.0           |
| 460    | 43373         | 25.6          | 590    | 174675        | 1.7           | 720    | 11147         | 0.0           | 850    | 3055          | 0.0           | 980    | 4322          | 0.0           |
| 465    | 32472         | 21.2          | 595    | 173724        | 1.1           | 725    | 9761          | 0.0           | 855    | 2932          | 0.0           | 985    | 4200          | 0.0           |
| 470    | 24257         | 17.4          | 600    | 171241        | 0.7           | 730    | 8651          | 0.0           | 860    | 3382          | 0.0           | 990    | 4661          | 0.0           |
| 475    | 21690         | 16.6          | 605    | 165134        | 0.5           | 735    | 7730          | 0.0           | 865    | 2605          | 0.0           | 995    | 6746          | 0.0           |
| 480    | 23173         | 18.6          | 610    | 156652        | 0.3           | 740    | 6847          | 0.0           | 870    | 3325          | 0.0           | 1000   | 4150          | 0.0           |
| 485    | 27564         | 22.7          | 615    | 147879        | 0.2           | 745    | 6124          | 0.0           | 875    | 3325          | 0.0           |        |               |               |

**Summary**

$R_f = 76.9$   
 $R_g = 94.4$   
 CIE  $R_a = 73.1$   
 $R_g = -34.6$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 68 | CES51 = 90 | CES76 = 63 |
| CES02 = 62 | CES27 = 88 | CES52 = 89 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 80 | CES78 = 65 |
| CES04 = 70 | CES29 = 67 | CES54 = 84 | CES79 = 87 |
| CES05 = 48 | CES30 = 74 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 71 | CES56 = 75 | CES81 = 75 |
| CES07 = 40 | CES32 = 67 | CES57 = 74 | CES82 = 94 |
| CES08 = 39 | CES33 = 74 | CES58 = 76 | CES83 = 91 |
| CES09 = 29 | CES34 = 78 | CES59 = 87 | CES84 = 89 |
| CES10 = 75 | CES35 = 89 | CES60 = 93 | CES85 = 80 |
| CES11 = 58 | CES36 = 98 | CES61 = 86 | CES86 = 66 |
| CES12 = 64 | CES37 = 86 | CES62 = 89 | CES87 = 79 |
| CES13 = 43 | CES38 = 82 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 95 | CES64 = 74 | CES89 = 70 |
| CES15 = 71 | CES40 = 91 | CES65 = 68 | CES90 = 77 |
| CES16 = 47 | CES41 = 89 | CES66 = 71 | CES91 = 88 |
| CES17 = 50 | CES42 = 88 | CES67 = 69 | CES92 = 60 |
| CES18 = 56 | CES43 = 82 | CES68 = 74 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 82 | CES94 = 52 |
| CES20 = 65 | CES45 = 87 | CES70 = 67 | CES95 = 69 |
| CES21 = 86 | CES46 = 82 | CES71 = 66 | CES96 = 78 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 85 |
| CES23 = 92 | CES48 = 72 | CES73 = 59 | CES98 = 76 |
| CES24 = 91 | CES49 = 82 | CES74 = 97 | CES99 = 63 |
| CES25 = 72 | CES50 = 88 | CES75 = 66 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)