

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



Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P323510

Luminaire Tested: **GLEON-SA6A-740-U-SL3-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P323510  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-23)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GLEON-SA6A-740-U-SL3-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(6) 70 CRI, 4000K, 615mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 23812 lumens  
Efficiency: N/A  
Efficacy: 123.4 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B2 - U0 - G4

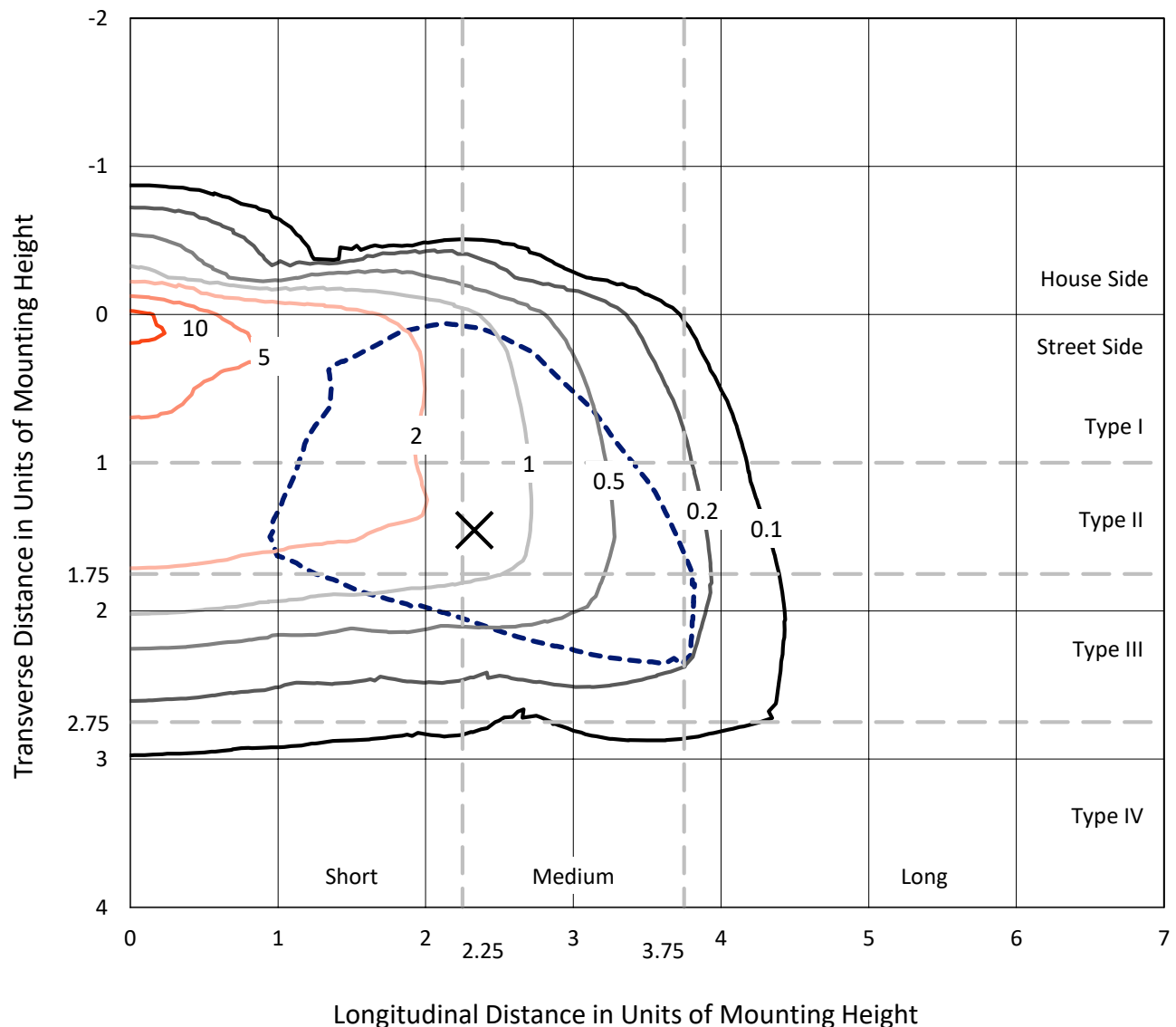
Input Watts (W): 193  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

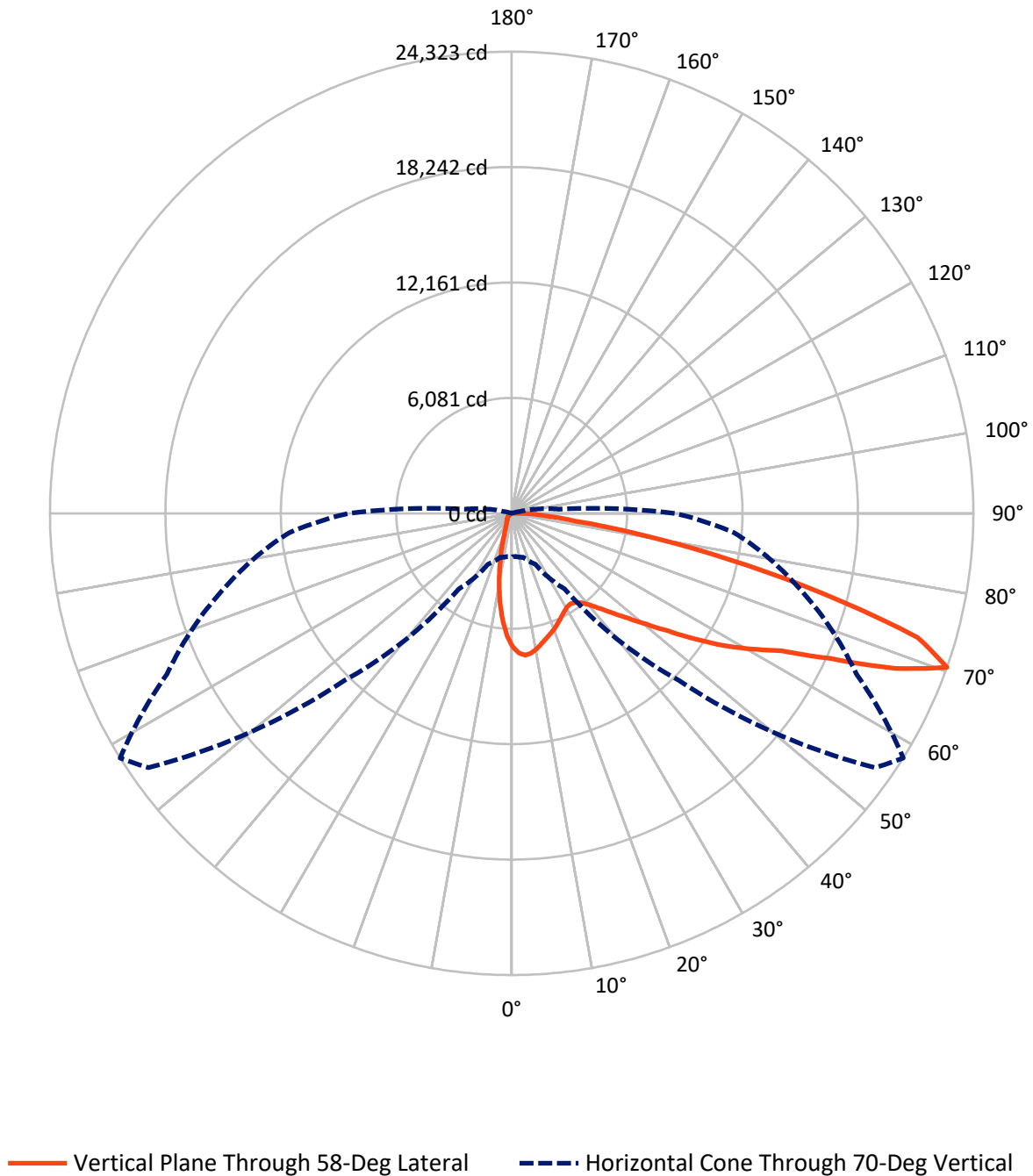
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 11.4 fc  
 Type III - Medium - N/A

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## Luminous Intensity Polar Plot



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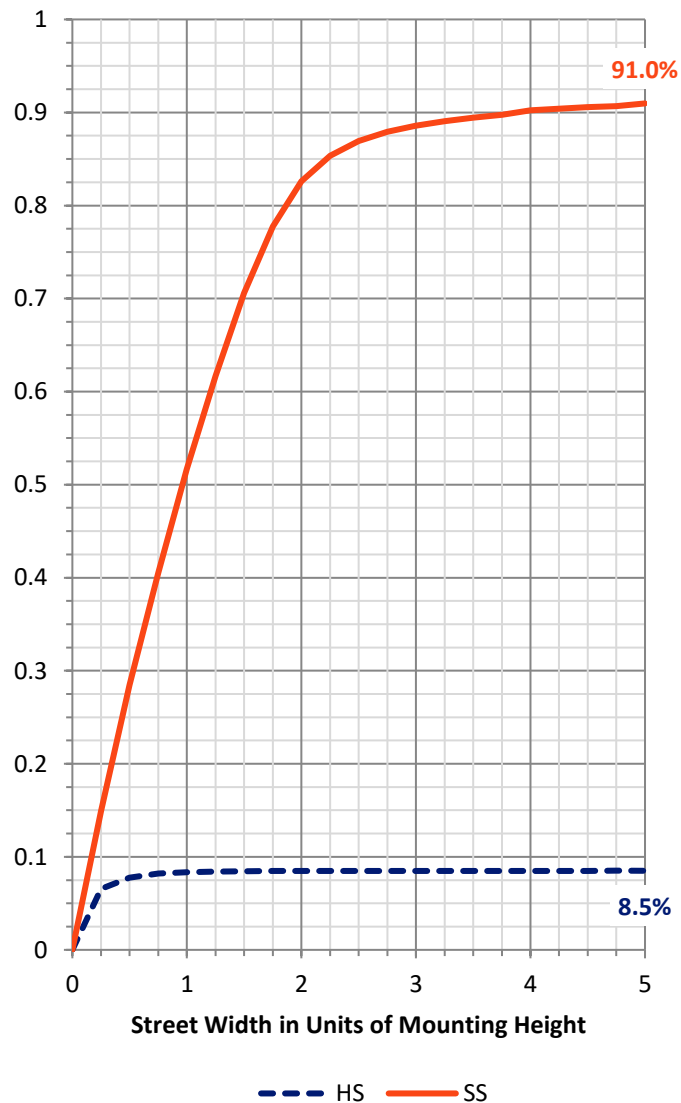
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2037.8   | 0.0    | 2037.8  |
|                    | % Fixture | 8.6      | 0.0    | 8.6     |
| <b>Street Side</b> | Lumens    | 21774.2  | 0.0    | 21774.2 |
|                    | % Fixture | 91.4     | 0.0    | 91.4    |
| <b>Total</b>       | Lumens    | 23812.0  | 0.0    | 23812.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 575.2   | 2.4       |
| 10°-20°   | 1207.2  | 5.1       |
| 20°-30°   | 1587.1  | 6.7       |
| 30°-40°   | 2101.9  | 8.8       |
| 40°-50°   | 3141.7  | 13.2      |
| 50°-60°   | 5032.8  | 21.1      |
| 60°-70°   | 6343.8  | 26.6      |
| 70°-80°   | 3421.8  | 14.4      |
| 80°-90°   | 400.5   | 1.7       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 23812.0 | 100.0     |
| 0°-180°   | 23812.0 | 100.0     |

**Coefficient of Utilization**



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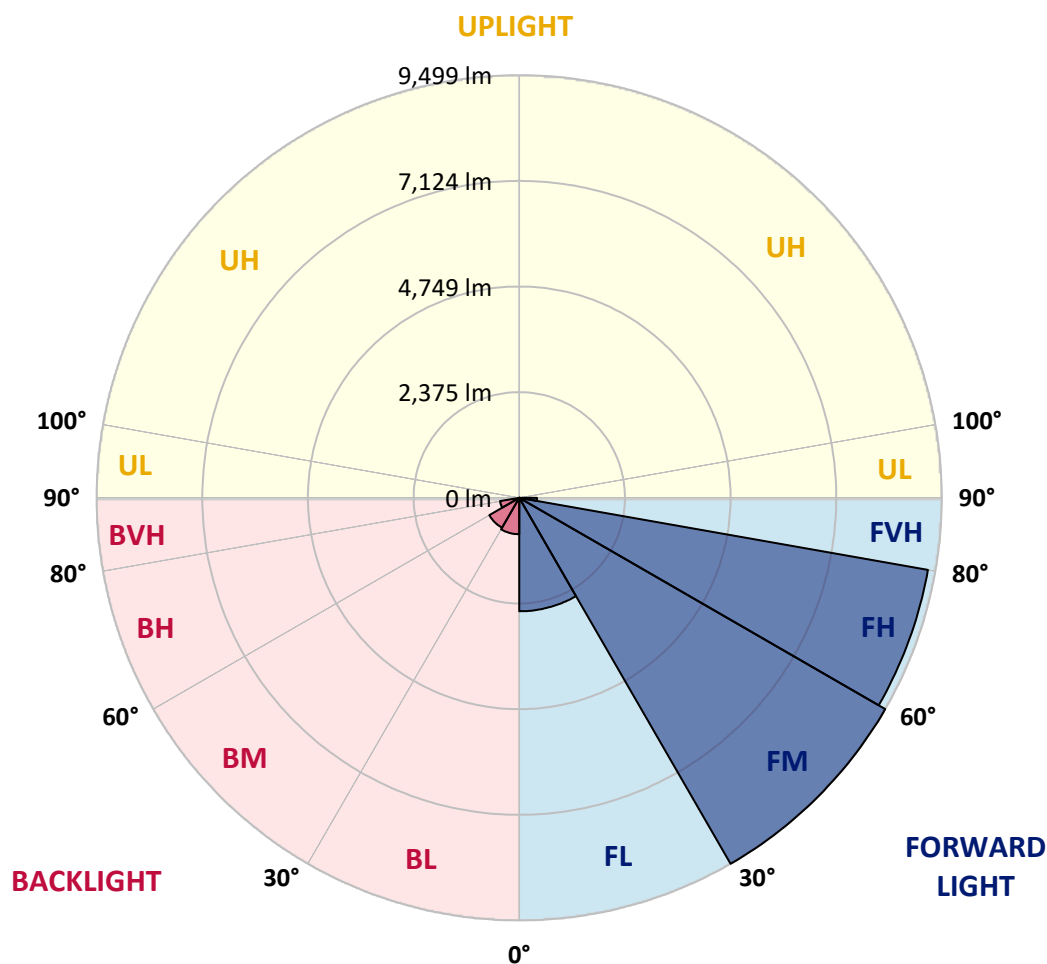
CATALOG NUMBER: GLEON-SA6A-740-U-SL3-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|--------|-----------|-------------------------|------|----------|
|      |             |        |           | B                       | U    | G        |
| FL   | (0°-30°)    | 2550.8 | 10.7      |                         |      |          |
| FM   | (30°-60°)   | 9499.0 | 39.9      |                         |      |          |
| FH   | (60°-80°)   | 9327.4 | 39.2      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 397.1  | 1.7       |                         |      | G3/500   |
| BL   | (0°-30°)    | 818.7  | 3.4       | B2/1000                 |      |          |
| BM   | (30°-60°)   | 777.4  | 3.3       | B1/1000                 |      |          |
| BH   | (60°-80°)   | 438.2  | 1.8       | B1/500                  |      | G1/500   |
| BVH  | (80°-90°)   | 3.5    | 0.0       |                         |      | G0/10    |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |          |

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

Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°     | 25°     | 35°     | 45°     | 55°     | 58°     | 65°     | 75°     | 85°     |
|-------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 7034.0 | 7034.0 | 7034.0  | 7034.0  | 7034.0  | 7034.0  | 7034.0  | 7034.0  | 7034.0  | 7034.0  | 7034.0  |
| 2.5°  | 7617.1 | 7598.3 | 7591.4  | 7579.5  | 7534.0  | 7489.4  | 7401.3  | 7376.5  | 7321.1  | 7189.4  | 7049.8  |
| 5°    | 7623.1 | 7622.1 | 7642.9  | 7637.9  | 7622.1  | 7601.3  | 7537.9  | 7505.3  | 7411.2  | 7223.1  | 6967.6  |
| 7.5°  | 7255.7 | 7274.6 | 7321.1  | 7358.7  | 7402.3  | 7458.7  | 7466.6  | 7435.0  | 7357.7  | 7154.7  | 6816.1  |
| 10°   | 6762.7 | 6792.4 | 6857.7  | 6932.0  | 7045.8  | 7158.7  | 7259.7  | 7255.7  | 7229.0  | 7029.0  | 6633.9  |
| 12.5° | 6268.6 | 6303.2 | 6378.5  | 6488.4  | 6649.8  | 6833.9  | 7014.1  | 7038.9  | 7083.5  | 6916.1  | 6465.6  |
| 15°   | 5835.9 | 5865.6 | 5939.8  | 6074.5  | 6274.5  | 6522.0  | 6786.4  | 6832.0  | 6946.8  | 6828.0  | 6325.0  |
| 17.5° | 5468.5 | 5487.4 | 5541.8  | 5691.3  | 5923.0  | 6223.0  | 6566.6  | 6655.7  | 6827.0  | 6758.7  | 6203.2  |
| 20°   | 5212.1 | 5215.1 | 5250.7  | 5355.7  | 5587.4  | 5923.0  | 6338.9  | 6466.6  | 6700.3  | 6699.3  | 6077.5  |
| 22.5° | 5085.4 | 5075.5 | 5082.4  | 5142.8  | 5313.1  | 5636.9  | 6111.1  | 6262.6  | 6586.4  | 6648.8  | 5949.7  |
| 25°   | 5061.6 | 5053.7 | 5033.9  | 5041.8  | 5144.8  | 5386.4  | 5881.4  | 6056.7  | 6486.4  | 6618.1  | 5838.9  |
| 27.5° | 5135.9 | 5143.8 | 5110.1  | 5074.5  | 5082.4  | 5224.0  | 5677.5  | 5880.4  | 6405.2  | 6618.1  | 5760.6  |
| 30°   | 5285.4 | 5289.3 | 5264.6  | 5218.0  | 5155.7  | 5178.4  | 5535.9  | 5738.8  | 6364.6  | 6663.6  | 5711.1  |
| 32.5° | 5450.7 | 5472.5 | 5469.5  | 5431.9  | 5342.8  | 5250.7  | 5502.2  | 5687.4  | 6361.6  | 6764.6  | 5706.2  |
| 35°   | 5655.7 | 5680.4 | 5722.0  | 5714.1  | 5621.0  | 5469.5  | 5617.1  | 5762.6  | 6420.1  | 6931.0  | 5759.6  |
| 37.5° | 5873.5 | 5911.1 | 6000.2  | 6042.8  | 5982.4  | 5811.1  | 5874.5  | 5978.5  | 6576.5  | 7200.3  | 5895.3  |
| 40°   | 6084.4 | 6127.0 | 6289.4  | 6456.7  | 6411.2  | 6234.9  | 6264.6  | 6347.8  | 6854.7  | 7587.4  | 6152.7  |
| 42.5° | 6291.3 | 6354.7 | 6593.3  | 6868.6  | 6923.1  | 6782.5  | 6798.3  | 6864.6  | 7267.6  | 8120.1  | 6573.5  |
| 45°   | 6538.9 | 6610.2 | 6963.7  | 7303.3  | 7448.8  | 7387.4  | 7454.8  | 7498.3  | 7807.3  | 8824.1  | 7140.9  |
| 47.5° | 6902.3 | 6984.4 | 7418.1  | 7805.3  | 8060.7  | 8100.3  | 8236.0  | 8264.7  | 8489.5  | 9644.0  | 7880.5  |
| 50°   | 7611.2 | 7634.0 | 8026.1  | 8377.6  | 8745.9  | 8983.5  | 9138.0  | 9159.8  | 9315.2  | 10540.0 | 8804.3  |
| 52.5° | 8503.3 | 8518.2 | 8740.0  | 8975.6  | 9394.4  | 9879.6  | 10241.0 | 10271.7 | 10304.4 | 11413.3 | 9716.2  |
| 55°   | 9389.5 | 9387.5 | 9534.1  | 9672.7  | 10151.9 | 10856.9 | 11641.1 | 11659.9 | 11425.2 | 12242.1 | 10413.3 |
| 57.5° | 9943.0 | 9996.4 | 10219.2 | 10397.5 | 11066.8 | 11970.8 | 13059.0 | 13128.3 | 12602.5 | 12856.0 | 11102.4 |
| 60°   | 9766.7 | 9792.5 | 10286.6 | 10946.0 | 12206.4 | 13554.0 | 14493.7 | 14511.5 | 13487.7 | 13468.9 | 11973.8 |
| 62.5° | 8321.1 | 8335.0 | 9111.3  | 10470.7 | 12783.7 | 15607.6 | 16224.4 | 15934.3 | 14505.5 | 14319.4 | 13016.4 |
| 65°   | 5703.2 | 5793.3 | 6441.8  | 8122.1  | 11723.3 | 16895.7 | 18903.7 | 18423.5 | 16057.1 | 15545.2 | 13959.0 |
| 67.5° | 3358.6 | 3339.7 | 3660.5  | 4898.2  | 8610.3  | 16040.3 | 22293.0 | 21815.7 | 18173.0 | 16366.0 | 13682.7 |
| 70°   | 2294.2 | 2281.3 | 2404.1  | 2965.5  | 4860.6  | 12443.1 | 23359.4 | 24322.8 | 20041.4 | 15813.5 | 11775.7 |
| 72.5° | 1637.7 | 1644.6 | 1825.8  | 2304.1  | 3051.6  | 7249.8  | 20088.0 | 22368.2 | 19456.2 | 13785.7 | 8950.9  |
| 75°   | 1111.9 | 1130.7 | 1390.2  | 1890.2  | 2675.4  | 3688.3  | 14255.0 | 17003.7 | 15843.2 | 10019.2 | 5144.8  |
| 77.5° | 598.0  | 618.8  | 924.8   | 1522.8  | 2418.9  | 2562.5  | 9169.7  | 11702.5 | 9951.9  | 4504.1  | 1491.2  |
| 80°   | 249.5  | 261.4  | 432.7   | 1107.0  | 2090.2  | 2250.6  | 5395.3  | 7096.3  | 4240.8  | 888.2   | 332.7   |
| 82.5° | 107.9  | 113.9  | 180.2   | 660.4   | 1562.4  | 1900.1  | 2856.6  | 3414.0  | 1285.2  | 195.1   | 167.3   |
| 85°   | 20.8   | 21.8   | 74.3    | 349.5   | 997.1   | 1072.3  | 1851.6  | 1814.9  | 577.3   | 84.2    | 121.8   |
| 87.5° | 0.0    | 0.0    | 17.8    | 109.9   | 293.1   | 584.2   | 1129.7  | 1115.9  | 196.0   | 40.6    | 45.5    |
| 90°   | 0.0    | 0.0    | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |



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CATALOG NUMBER: GLEON-SA6A-740-U-SL3-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 7034.0  | 7034.0 | 7034.0 | 7034.0 | 7034.0 | 7034.0 | 7034.0 | 7034.0 | 7034.0 | 7034.0 | 7034.0 |
| 2.5°  | 6978.5  | 6910.2 | 6766.6 | 6589.4 | 6453.7 | 6304.2 | 6185.4 | 6034.9 | 5969.6 | 5972.5 | 5936.9 |
| 5°    | 6822.1  | 6681.5 | 6363.6 | 5962.6 | 5653.7 | 5334.9 | 5060.6 | 4787.3 | 4625.9 | 4573.5 | 4523.9 |
| 7.5°  | 6598.3  | 6375.5 | 5868.6 | 5250.7 | 4727.9 | 4217.0 | 3772.4 | 3381.3 | 3133.8 | 3013.0 | 2968.4 |
| 10°   | 6345.8  | 6032.9 | 5299.2 | 4485.3 | 3738.8 | 3047.6 | 2471.4 | 1970.4 | 1770.4 | 1634.7 | 1600.1 |
| 12.5° | 6124.0  | 5700.2 | 4742.8 | 3700.2 | 2814.0 | 1980.3 | 1430.8 | 1118.9 | 983.2  | 929.7  | 920.8  |
| 15°   | 5915.1  | 5389.3 | 4207.1 | 2989.2 | 1948.6 | 1218.9 | 909.9  | 804.0  | 772.3  | 763.4  | 763.4  |
| 17.5° | 5718.1  | 5093.3 | 3683.3 | 2289.2 | 1289.2 | 854.5  | 753.5  | 729.7  | 719.8  | 718.8  | 719.8  |
| 20°   | 5512.1  | 4797.2 | 3168.4 | 1677.3 | 900.0  | 723.8  | 696.1  | 683.2  | 680.2  | 680.2  | 680.2  |
| 22.5° | 5315.1  | 4501.2 | 2667.4 | 1198.1 | 721.8  | 660.4  | 646.6  | 637.6  | 634.7  | 633.7  | 631.7  |
| 25°   | 5126.0  | 4220.0 | 2178.3 | 846.6  | 633.7  | 605.0  | 593.1  | 581.2  | 572.3  | 567.4  | 564.4  |
| 27.5° | 4970.5  | 3969.5 | 1722.8 | 679.2  | 572.3  | 547.5  | 532.7  | 514.9  | 493.1  | 483.2  | 479.2  |
| 30°   | 4846.7  | 3740.7 | 1327.8 | 573.3  | 514.9  | 490.1  | 467.3  | 436.7  | 405.0  | 388.1  | 387.1  |
| 32.5° | 4749.7  | 3516.0 | 1008.0 | 507.0  | 463.4  | 432.7  | 400.0  | 361.4  | 324.8  | 306.0  | 305.0  |
| 35°   | 4702.2  | 3318.0 | 770.3  | 458.4  | 417.8  | 379.2  | 338.6  | 296.1  | 260.4  | 242.6  | 240.6  |
| 37.5° | 4733.9  | 3150.6 | 601.0  | 417.8  | 379.2  | 334.7  | 287.1  | 242.6  | 210.9  | 195.1  | 194.1  |
| 40°   | 4849.7  | 3043.7 | 488.1  | 383.2  | 346.5  | 292.1  | 240.6  | 199.0  | 172.3  | 159.4  | 158.4  |
| 42.5° | 5096.2  | 3004.1 | 416.8  | 354.5  | 314.9  | 252.5  | 200.0  | 164.4  | 139.6  | 130.7  | 128.7  |
| 45°   | 5508.1  | 3062.5 | 368.3  | 326.7  | 282.2  | 214.9  | 165.4  | 134.7  | 112.9  | 105.9  | 105.0  |
| 47.5° | 6056.7  | 3216.0 | 333.7  | 300.0  | 252.5  | 181.2  | 137.6  | 108.9  | 92.1   | 85.2   | 84.2   |
| 50°   | 6763.6  | 3459.5 | 305.0  | 273.3  | 224.8  | 153.5  | 113.9  | 86.1   | 71.3   | 66.3   | 66.3   |
| 52.5° | 7533.0  | 3749.7 | 279.2  | 248.5  | 197.0  | 127.7  | 92.1   | 66.3   | 56.4   | 50.5   | 50.5   |
| 55°   | 8168.7  | 4003.1 | 251.5  | 229.7  | 163.4  | 105.9  | 70.3   | 50.5   | 41.6   | 38.6   | 38.6   |
| 57.5° | 8803.3  | 4273.4 | 219.8  | 197.0  | 130.7  | 86.1   | 53.5   | 37.6   | 30.7   | 28.7   | 28.7   |
| 60°   | 9626.1  | 4604.1 | 189.1  | 160.4  | 103.0  | 65.3   | 39.6   | 26.7   | 22.8   | 21.8   | 21.8   |
| 62.5° | 10531.1 | 4798.2 | 161.4  | 128.7  | 80.2   | 48.5   | 28.7   | 17.8   | 16.8   | 16.8   | 15.8   |
| 65°   | 11084.6 | 4523.9 | 135.6  | 103.0  | 62.4   | 36.6   | 18.8   | 12.9   | 14.9   | 13.9   | 11.9   |
| 67.5° | 10378.6 | 3541.7 | 110.9  | 80.2   | 48.5   | 27.7   | 11.9   | 8.9    | 15.8   | 12.9   | 9.9    |
| 70°   | 8593.4  | 2479.3 | 86.1   | 56.4   | 38.6   | 23.8   | 7.9    | 5.9    | 16.8   | 12.9   | 7.9    |
| 72.5° | 6431.0  | 1659.5 | 68.3   | 37.6   | 28.7   | 20.8   | 6.9    | 3.0    | 14.9   | 10.9   | 6.9    |
| 75°   | 3514.0  | 668.3  | 54.5   | 23.8   | 17.8   | 14.9   | 5.0    | 2.0    | 9.9    | 7.9    | 5.0    |
| 77.5° | 924.8   | 176.2  | 39.6   | 15.8   | 9.9    | 5.9    | 3.0    | 1.0    | 5.0    | 4.0    | 2.0    |
| 80°   | 235.7   | 68.3   | 25.7   | 10.9   | 6.9    | 3.0    | 0.0    | 0.0    | 1.0    | 0.0    | 0.0    |
| 82.5° | 125.7   | 28.7   | 15.8   | 7.9    | 4.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 95.1    | 18.8   | 8.9    | 5.0    | 1.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 36.6    | 5.9    | 3.0    | 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    |



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

Report Prepared for

Cooper Lighting Solutions

MCGRAW, INVUE, LUMARK AND STREETWORKS

DATA VALID FOR LUMINAIRES UTILIZING SA LIGHT ENGINES

Report Number: SP1-2101-121-2

Luminaire Tested: IFLD-S-SA2A-740-U-T3R-HSS

Test Date: 03/05/2021

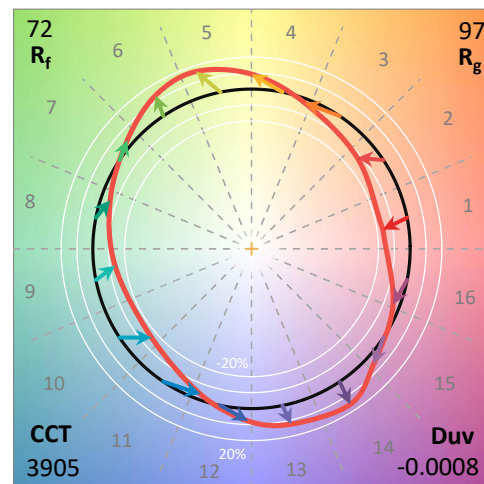
### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 03/05/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2A-740-U-T3R-HSS**  
 Description: STREETWORKS INF FLOOD

SHIELD, DRIVER PROGRAMMED @ 615mA.

### Spectral Parameters

|                           |         |           |      |      |       |
|---------------------------|---------|-----------|------|------|-------|
| CCT (K):                  | 3905    | CRI (Ra): | 71.2 |      |       |
| CIE u':                   | 0.2273  | R1:       | 68.9 | R9:  | -29.7 |
| CIE v':                   | 0.5024  | R2:       | 77.0 | R10: | 46.2  |
| Duv:                      | -0.0008 | R3:       | 84.0 | R11: | 68.8  |
| CIE x:                    | 0.3841  | R4:       | 71.6 | R12: | 45.6  |
| CIE y:                    | 0.3774  | R5:       | 68.9 | R13: | 69.5  |
| CIE z:                    | 0.2385  | R6:       | 68.3 | R14: | 90.7  |
| Peak Wavelength (nm):     | 443     | R7:       | 78.7 |      |       |
| Dominant Wavelength (nm): | 579     | R8:       | 52.2 |      |       |
| Purity:                   | 28.7    |           |      |      |       |
| Rf:                       | 71.7    |           |      |      |       |
| Rg:                       | 96.9    |           |      |      |       |



### Test Conditions

Stabilization Time: 211M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.8/312%  
 Sphere Temperature (°C): 24.1

REPORT NUMBER: SP1-2101-121-2

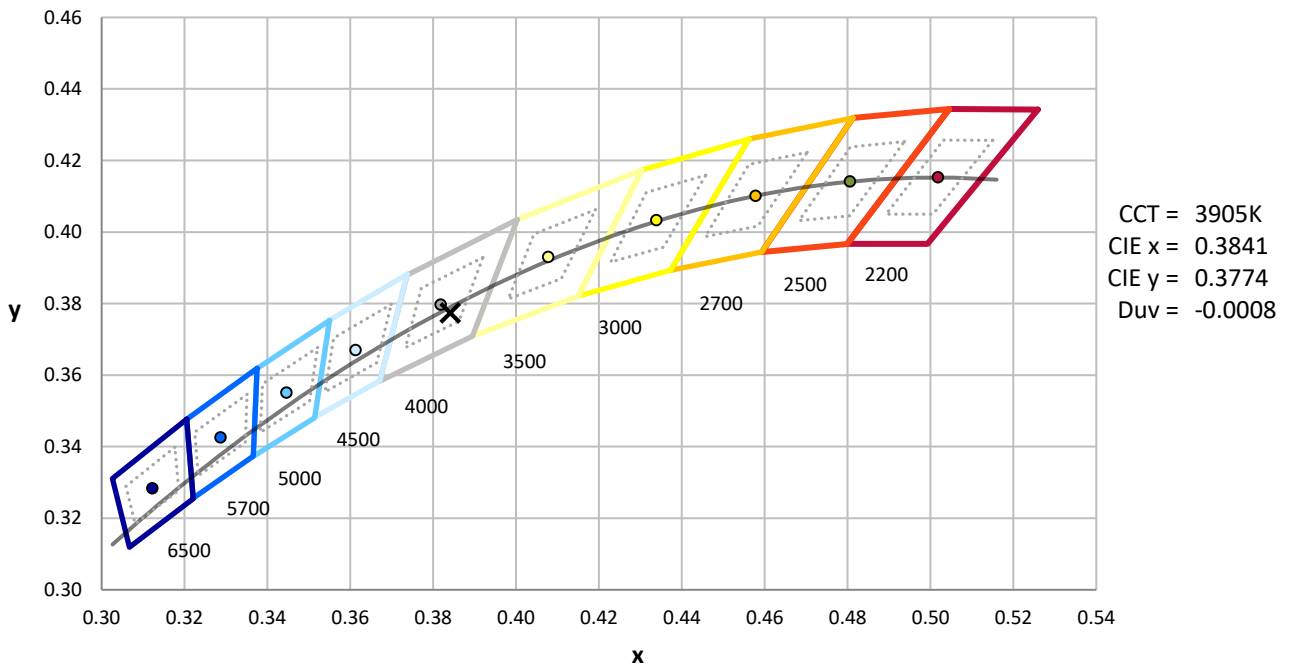
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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            |

REPORT NUMBER: SP1-2101-121-2

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP1-2101-121-2

### Photopic Flux vs. Wavelength

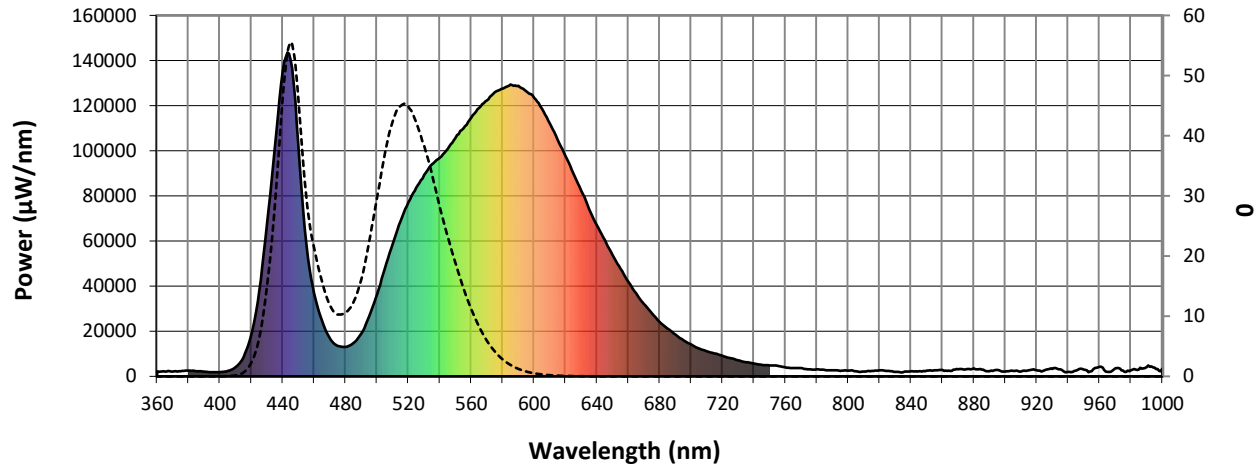


#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2304             | 0.0              | 490       | 19043            | 2.7              | 620       | 97577            | 25.4             | 750       | 4830             | 0.0              | 880       | 3505             | 0.0              |
| 365       | 2150             | 0.0              | 495       | 26606            | 4.8              | 625       | 90158            | 19.9             | 755       | 4664             | 0.0              | 885       | 2991             | 0.0              |
| 370       | 2146             | 0.0              | 500       | 36376            | 8.0              | 630       | 82240            | 14.9             | 760       | 4006             | 0.0              | 890       | 2327             | 0.0              |
| 375       | 2332             | 0.0              | 505       | 47714            | 13.3             | 635       | 74361            | 11.2             | 765       | 3715             | 0.0              | 895       | 2775             | 0.0              |
| 380       | 2527             | 0.0              | 510       | 58741            | 20.2             | 640       | 66994            | 8.0              | 770       | 3696             | 0.0              | 900       | 2141             | 0.0              |
| 385       | 2304             | 0.0              | 515       | 68716            | 28.5             | 645       | 60405            | 5.8              | 775       | 3117             | 0.0              | 905       | 2421             | 0.0              |
| 390       | 2064             | 0.0              | 520       | 77136            | 37.4             | 650       | 53806            | 3.9              | 780       | 3062             | 0.0              | 910       | 2200             | 0.0              |
| 395       | 1856             | 0.0              | 525       | 83567            | 44.9             | 655       | 47610            | 2.7              | 785       | 2907             | 0.0              | 915       | 2716             | 0.0              |
| 400       | 1856             | 0.0              | 530       | 89283            | 52.6             | 660       | 42018            | 1.8              | 790       | 2655             | 0.0              | 920       | 2656             | 0.0              |
| 405       | 2374             | 0.0              | 535       | 94097            | 58.4             | 665       | 36742            | 1.2              | 795       | 2467             | 0.0              | 925       | 2671             | 0.0              |
| 410       | 4084             | 0.0              | 540       | 96845            | 63.1             | 670       | 32105            | 0.7              | 800       | 2609             | 0.0              | 930       | 3292             | 0.0              |
| 415       | 8543             | 0.0              | 545       | 100829           | 67.1             | 675       | 27946            | 0.5              | 805       | 2293             | 0.0              | 935       | 3188             | 0.0              |
| 420       | 18394            | 0.1              | 550       | 105648           | 71.8             | 680       | 24146            | 0.3              | 810       | 2188             | 0.0              | 940       | 1997             | 0.0              |
| 425       | 37987            | 0.2              | 555       | 110017           | 75.1             | 685       | 21191            | 0.2              | 815       | 2386             | 0.0              | 945       | 2623             | 0.0              |
| 430       | 67605            | 0.5              | 560       | 114586           | 77.9             | 690       | 18544            | 0.1              | 820       | 2712             | 0.0              | 950       | 2969             | 0.0              |
| 435       | 102160           | 1.2              | 565       | 118987           | 79.1             | 695       | 16058            | 0.1              | 825       | 2473             | 0.0              | 955       | 2277             | 0.0              |
| 440       | 135103           | 2.1              | 570       | 122326           | 79.5             | 700       | 14133            | 0.0              | 830       | 1969             | 0.0              | 960       | 4267             | 0.0              |
| 445       | 140126           | 2.9              | 575       | 125968           | 78.4             | 705       | 12309            | 0.0              | 835       | 1917             | 0.0              | 965       | 2034             | 0.0              |
| 450       | 102339           | 2.7              | 580       | 127613           | 75.8             | 710       | 11142            | 0.0              | 840       | 2248             | 0.0              | 970       | 3586             | 0.0              |
| 455       | 58751            | 2.0              | 585       | 129466           | 71.9             | 715       | 10143            | 0.0              | 845       | 2266             | 0.0              | 975       | 2505             | 0.0              |
| 460       | 36892            | 1.5              | 590       | 128813           | 66.6             | 720       | 9072             | 0.0              | 850       | 2558             | 0.0              | 980       | 2666             | 0.0              |
| 465       | 24637            | 1.3              | 595       | 126387           | 59.9             | 725       | 8130             | 0.0              | 855       | 2767             | 0.0              | 985       | 2934             | 0.0              |
| 470       | 16738            | 1.0              | 600       | 123477           | 53.2             | 730       | 7149             | 0.0              | 860       | 2826             | 0.0              | 990       | 4120             | 0.0              |
| 475       | 13456            | 1.1              | 605       | 118718           | 46.0             | 735       | 6311             | 0.0              | 865       | 2385             | 0.0              | 995       | 3858             | 0.0              |
| 480       | 13081            | 1.2              | 610       | 112091           | 38.5             | 740       | 5711             | 0.0              | 870       | 3194             | 0.0              | 1000      | 3405             | 0.0              |
| 485       | 14734            | 1.7              | 615       | 105039           | 31.7             | 745       | 5111             | 0.0              | 875       | 3189             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-2

### Scotopic Flux vs. Wavelength



Scotopic Lumens: 10425.8

S/P: 1.47

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2304             | 0.0              | 490       | 19043            | 29.3             | 620       | 97577            | 1.2              | 750       | 4830             | 0.0              | 880       | 3505             | 0.0              |
| 365       | 2150             | 0.0              | 495       | 26606            | 43.0             | 625       | 90158            | 0.8              | 755       | 4664             | 0.0              | 885       | 2991             | 0.0              |
| 370       | 2146             | 0.0              | 500       | 36376            | 60.8             | 630       | 82240            | 0.5              | 760       | 4006             | 0.0              | 890       | 2327             | 0.0              |
| 375       | 2332             | 0.0              | 505       | 47714            | 81.1             | 635       | 74361            | 0.3              | 765       | 3715             | 0.0              | 895       | 2775             | 0.0              |
| 380       | 2527             | 0.0              | 510       | 58741            | 99.6             | 640       | 66994            | 0.2              | 770       | 3696             | 0.0              | 900       | 2141             | 0.0              |
| 385       | 2304             | 0.0              | 515       | 68716            | 113.9            | 645       | 60405            | 0.1              | 775       | 3117             | 0.0              | 905       | 2421             | 0.0              |
| 390       | 2064             | 0.0              | 520       | 77136            | 122.6            | 650       | 53806            | 0.1              | 780       | 3062             | 0.0              | 910       | 2200             | 0.0              |
| 395       | 1856             | 0.0              | 525       | 83567            | 125.0            | 655       | 47610            | 0.0              | 785       | 2907             | 0.0              | 915       | 2716             | 0.0              |
| 400       | 1856             | 0.0              | 530       | 89283            | 123.1            | 660       | 42018            | 0.0              | 790       | 2655             | 0.0              | 920       | 2656             | 0.0              |
| 405       | 2374             | 0.1              | 535       | 94097            | 117.3            | 665       | 36742            | 0.0              | 795       | 2467             | 0.0              | 925       | 2671             | 0.0              |
| 410       | 4084             | 0.2              | 540       | 96845            | 107.0            | 670       | 32105            | 0.0              | 800       | 2609             | 0.0              | 930       | 3292             | 0.0              |
| 415       | 8543             | 0.9              | 545       | 100829           | 96.7             | 675       | 27946            | 0.0              | 805       | 2293             | 0.0              | 935       | 3188             | 0.0              |
| 420       | 18394            | 3.0              | 550       | 105648           | 86.4             | 680       | 24146            | 0.0              | 810       | 2188             | 0.0              | 940       | 1997             | 0.0              |
| 425       | 37987            | 9.3              | 555       | 110017           | 75.2             | 685       | 21191            | 0.0              | 815       | 2386             | 0.0              | 945       | 2623             | 0.0              |
| 430       | 67605            | 23.0             | 560       | 114586           | 64.0             | 690       | 18544            | 0.0              | 820       | 2712             | 0.0              | 950       | 2969             | 0.0              |
| 435       | 102160           | 45.7             | 565       | 118987           | 53.4             | 695       | 16058            | 0.0              | 825       | 2473             | 0.0              | 955       | 2277             | 0.0              |
| 440       | 135103           | 75.5             | 570       | 122326           | 43.2             | 700       | 14133            | 0.0              | 830       | 1969             | 0.0              | 960       | 4267             | 0.0              |
| 445       | 140126           | 93.8             | 575       | 125968           | 34.3             | 705       | 12309            | 0.0              | 835       | 1917             | 0.0              | 965       | 2034             | 0.0              |
| 450       | 102339           | 79.3             | 580       | 127613           | 26.3             | 710       | 11142            | 0.0              | 840       | 2248             | 0.0              | 970       | 3586             | 0.0              |
| 455       | 58751            | 51.3             | 585       | 129466           | 19.8             | 715       | 10143            | 0.0              | 845       | 2266             | 0.0              | 975       | 2505             | 0.0              |
| 460       | 36892            | 35.6             | 590       | 128813           | 14.3             | 720       | 9072             | 0.0              | 850       | 2558             | 0.0              | 980       | 2666             | 0.0              |
| 465       | 24637            | 26.0             | 595       | 126387           | 10.1             | 725       | 8130             | 0.0              | 855       | 2767             | 0.0              | 985       | 2934             | 0.0              |
| 470       | 16738            | 19.3             | 600       | 123477           | 7.0              | 730       | 7149             | 0.0              | 860       | 2826             | 0.0              | 990       | 4120             | 0.0              |
| 475       | 13456            | 16.8             | 605       | 118718           | 4.7              | 735       | 6311             | 0.0              | 865       | 2385             | 0.0              | 995       | 3858             | 0.0              |
| 480       | 13081            | 17.7             | 610       | 112091           | 3.0              | 740       | 5711             | 0.0              | 870       | 3194             | 0.0              | 1000      | 3405             | 0.0              |
| 485       | 14734            | 21.4             | 615       | 105039           | 1.9              | 745       | 5111             | 0.0              | 875       | 3189             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-2

### Melanopic Flux vs. Wavelength


**Melanopic Lumens: 3927.2**
**M/P: 0.55**

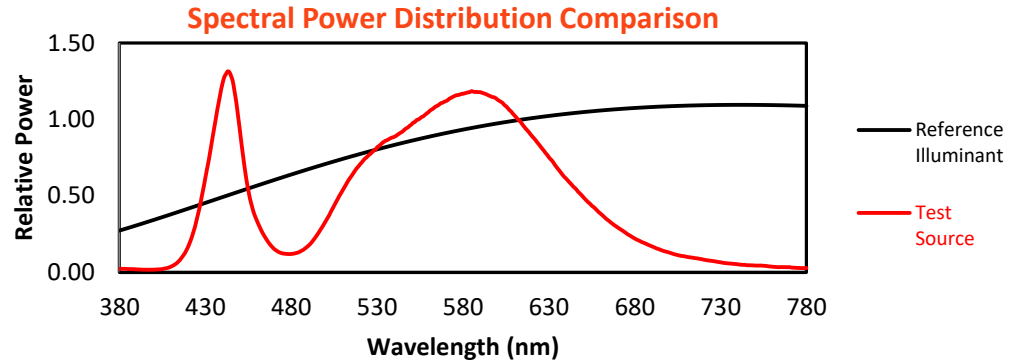
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2304             | 0.0              | 490       | 19043            | 15.8             | 620       | 97577            | 0.1              | 750       | 4830             | 0.0              | 880       | 3505             | 0.0              |
| 365       | 2150             | 0.0              | 495       | 26606            | 22.0             | 625       | 90158            | 0.0              | 755       | 4664             | 0.0              | 885       | 2991             | 0.0              |
| 370       | 2146             | 0.0              | 500       | 36376            | 29.2             | 630       | 82240            | 0.0              | 760       | 4006             | 0.0              | 890       | 2327             | 0.0              |
| 375       | 2332             | 0.0              | 505       | 47714            | 36.6             | 635       | 74361            | 0.0              | 765       | 3715             | 0.0              | 895       | 2775             | 0.0              |
| 380       | 2527             | 0.0              | 510       | 58741            | 42.2             | 640       | 66994            | 0.0              | 770       | 3696             | 0.0              | 900       | 2141             | 0.0              |
| 385       | 2304             | 0.0              | 515       | 68716            | 44.9             | 645       | 60405            | 0.0              | 775       | 3117             | 0.0              | 905       | 2421             | 0.0              |
| 390       | 2064             | 0.0              | 520       | 77136            | 44.9             | 650       | 53806            | 0.0              | 780       | 3062             | 0.0              | 910       | 2200             | 0.0              |
| 395       | 1856             | 0.0              | 525       | 83567            | 42.4             | 655       | 47610            | 0.0              | 785       | 2907             | 0.0              | 915       | 2716             | 0.0              |
| 400       | 1856             | 0.0              | 530       | 89283            | 38.6             | 660       | 42018            | 0.0              | 790       | 2655             | 0.0              | 920       | 2656             | 0.0              |
| 405       | 2374             | 0.0              | 535       | 94097            | 33.9             | 665       | 36742            | 0.0              | 795       | 2467             | 0.0              | 925       | 2671             | 0.0              |
| 410       | 4084             | 0.2              | 540       | 96845            | 28.3             | 670       | 32105            | 0.0              | 800       | 2609             | 0.0              | 930       | 3292             | 0.0              |
| 415       | 8543             | 0.6              | 545       | 100829           | 23.4             | 675       | 27946            | 0.0              | 805       | 2293             | 0.0              | 935       | 3188             | 0.0              |
| 420       | 18394            | 2.1              | 550       | 105648           | 19.0             | 680       | 24146            | 0.0              | 810       | 2188             | 0.0              | 940       | 1997             | 0.0              |
| 425       | 37987            | 5.9              | 555       | 110017           | 14.8             | 685       | 21191            | 0.0              | 815       | 2386             | 0.0              | 945       | 2623             | 0.0              |
| 430       | 67605            | 14.3             | 560       | 114586           | 11.3             | 690       | 18544            | 0.0              | 820       | 2712             | 0.0              | 950       | 2969             | 0.0              |
| 435       | 102160           | 27.3             | 565       | 118987           | 8.4              | 695       | 16058            | 0.0              | 825       | 2473             | 0.0              | 955       | 2277             | 0.0              |
| 440       | 135103           | 45.1             | 570       | 122326           | 6.0              | 700       | 14133            | 0.0              | 830       | 1969             | 0.0              | 960       | 4267             | 0.0              |
| 445       | 140126           | 55.3             | 575       | 125968           | 4.2              | 705       | 12309            | 0.0              | 835       | 1917             | 0.0              | 965       | 2034             | 0.0              |
| 450       | 102339           | 47.2             | 580       | 127613           | 2.9              | 710       | 11142            | 0.0              | 840       | 2248             | 0.0              | 970       | 3586             | 0.0              |
| 455       | 58751            | 30.8             | 585       | 129466           | 1.9              | 715       | 10143            | 0.0              | 845       | 2266             | 0.0              | 975       | 2505             | 0.0              |
| 460       | 36892            | 21.7             | 590       | 128813           | 1.3              | 720       | 9072             | 0.0              | 850       | 2558             | 0.0              | 980       | 2666             | 0.0              |
| 465       | 24637            | 16.1             | 595       | 126387           | 0.8              | 725       | 8130             | 0.0              | 855       | 2767             | 0.0              | 985       | 2934             | 0.0              |
| 470       | 16738            | 12.0             | 600       | 123477           | 0.5              | 730       | 7149             | 0.0              | 860       | 2826             | 0.0              | 990       | 4120             | 0.0              |
| 475       | 13456            | 10.3             | 605       | 118718           | 0.3              | 735       | 6311             | 0.0              | 865       | 2385             | 0.0              | 995       | 3858             | 0.0              |
| 480       | 13081            | 10.5             | 610       | 112091           | 0.2              | 740       | 5711             | 0.0              | 870       | 3194             | 0.0              | 1000      | 3405             | 0.0              |
| 485       | 14734            | 12.1             | 615       | 105039           | 0.1              | 745       | 5111             | 0.0              | 875       | 3189             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-2

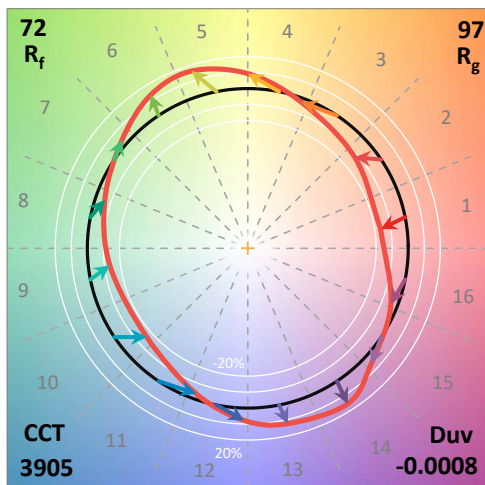
TM-30-18

### Summary

$R_f = 71.7$   
 $R_g = 96.9$   
 CIE  $R_a = 71.2$   
 $R_g = -29.7$



### Color Vector Graphics



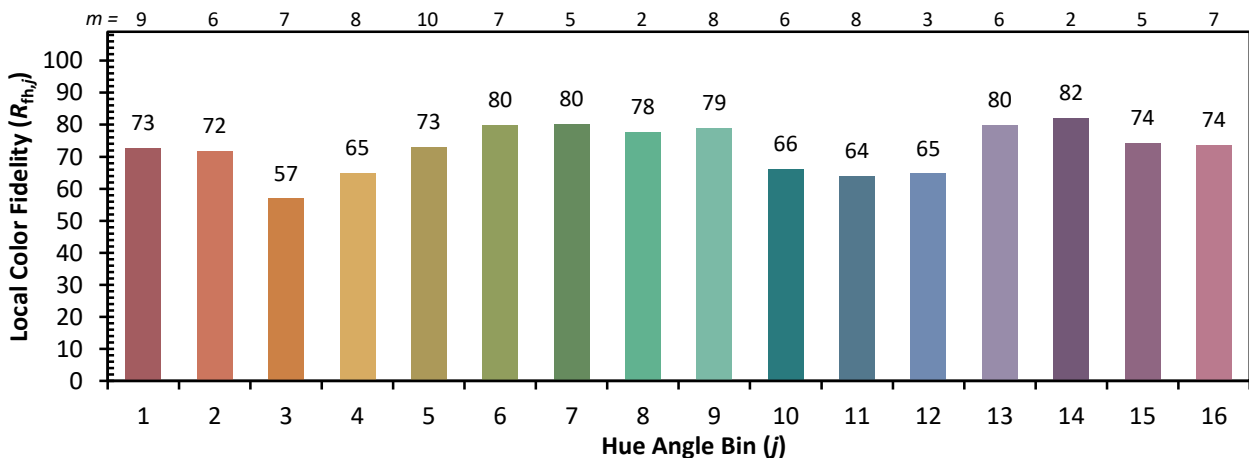
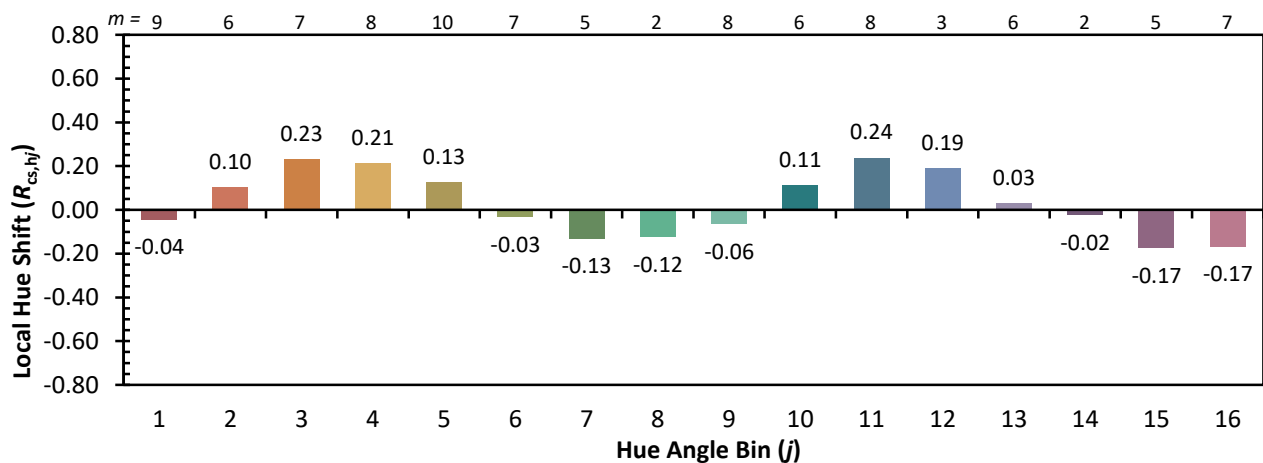
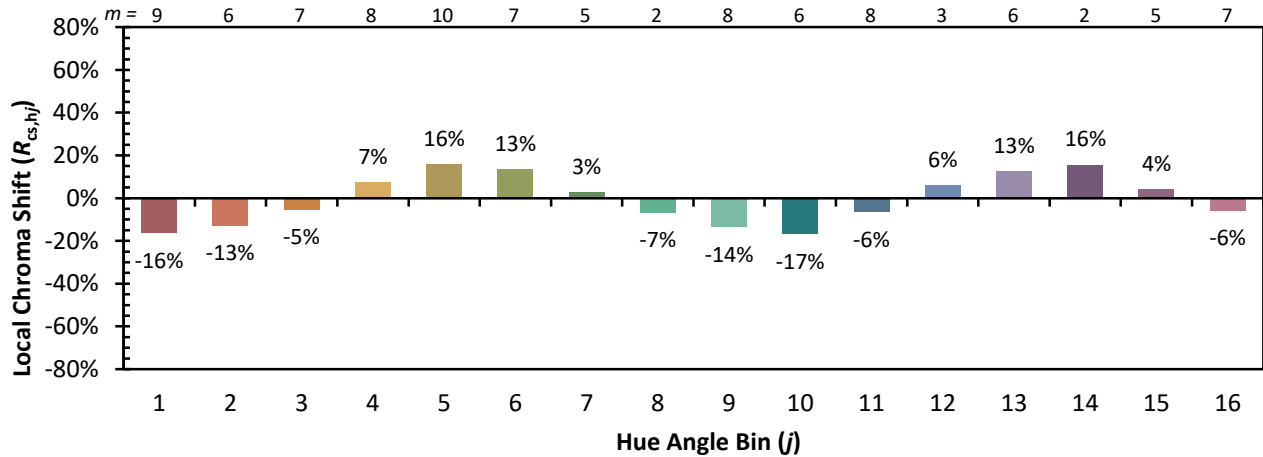


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 55 | CES51 = 86 | CES76 = 45 |
| CES02 = 61 | CES27 = 80 | CES52 = 87 | CES77 = 68 |
| CES03 = 30 | CES28 = 79 | CES53 = 74 | CES78 = 49 |
| CES04 = 70 | CES29 = 51 | CES54 = 81 | CES79 = 77 |
| CES05 = 47 | CES30 = 60 | CES55 = 80 | CES80 = 75 |
| CES06 = 50 | CES31 = 56 | CES56 = 69 | CES81 = 75 |
| CES07 = 40 | CES32 = 52 | CES57 = 67 | CES82 = 90 |
| CES08 = 39 | CES33 = 62 | CES58 = 69 | CES83 = 85 |
| CES09 = 29 | CES34 = 65 | CES59 = 86 | CES84 = 87 |
| CES10 = 74 | CES35 = 81 | CES60 = 91 | CES85 = 83 |
| CES11 = 57 | CES36 = 92 | CES61 = 85 | CES86 = 72 |
| CES12 = 63 | CES37 = 74 | CES62 = 81 | CES87 = 77 |
| CES13 = 42 | CES38 = 69 | CES63 = 72 | CES88 = 77 |
| CES14 = 74 | CES39 = 92 | CES64 = 69 | CES89 = 72 |
| CES15 = 71 | CES40 = 86 | CES65 = 64 | CES90 = 75 |
| CES16 = 46 | CES41 = 84 | CES66 = 63 | CES91 = 91 |
| CES17 = 49 | CES42 = 75 | CES67 = 60 | CES92 = 66 |
| CES18 = 56 | CES43 = 70 | CES68 = 67 | CES93 = 80 |
| CES19 = 72 | CES44 = 98 | CES69 = 77 | CES94 = 56 |
| CES20 = 65 | CES45 = 80 | CES70 = 57 | CES95 = 72 |
| CES21 = 86 | CES46 = 77 | CES71 = 53 | CES96 = 78 |
| CES22 = 78 | CES47 = 74 | CES72 = 84 | CES97 = 83 |
| CES23 = 92 | CES48 = 66 | CES73 = 47 | CES98 = 73 |
| CES24 = 91 | CES49 = 76 | CES74 = 96 | CES99 = 63 |
| CES25 = 72 | CES50 = 85 | CES75 = 52 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)