

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: P323527

Luminaire Tested: **GLEON-SA3C-740-U-SL3-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P323527  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-23)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA3C-740-U-SL3-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(3) 70 CRI, 4000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

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

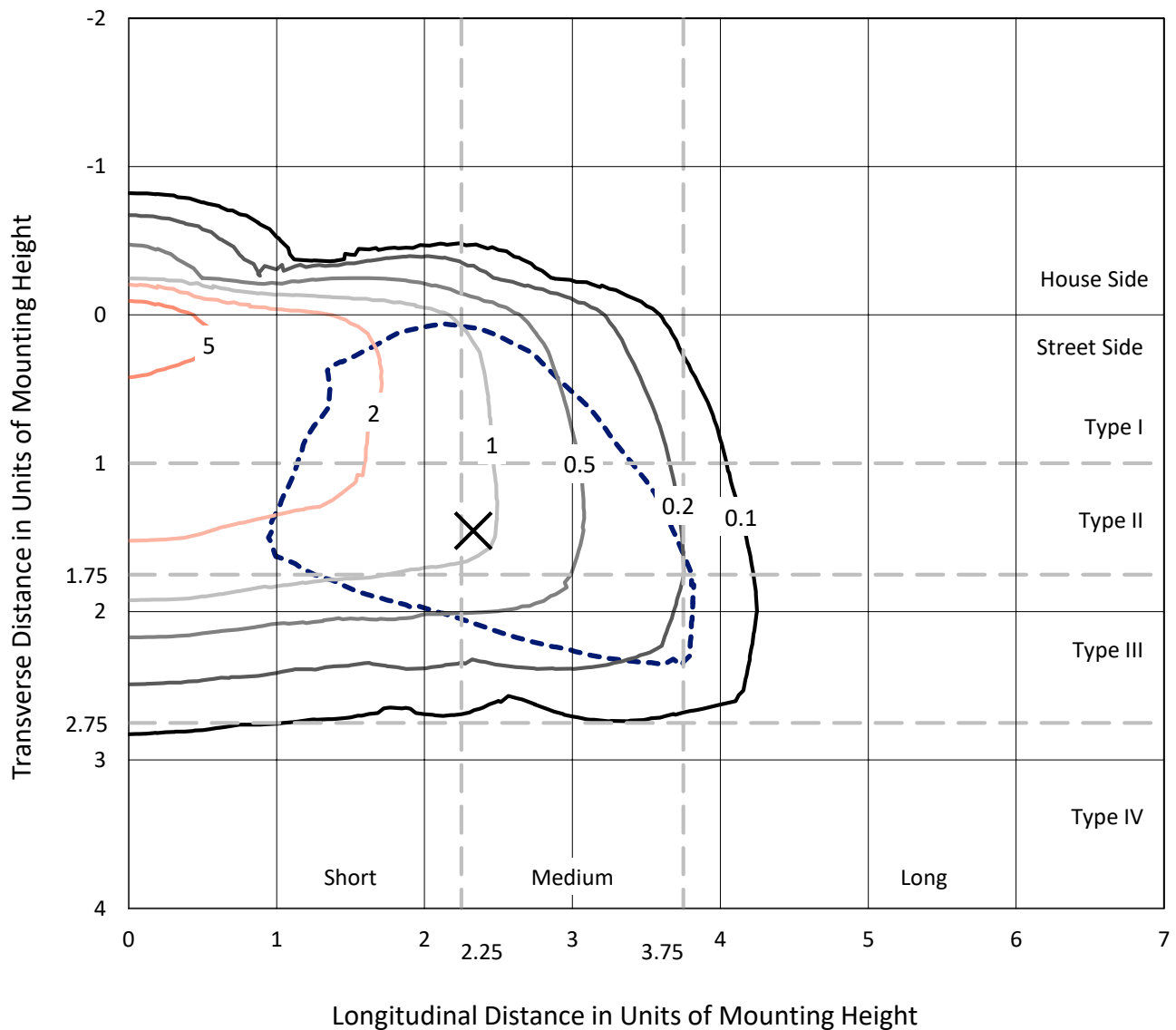
Input Watts (W): 166  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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 CATALOG NUMBER: GLEON-SA3C-740-U-SL3-HSS

## Iso-Footcandle Lines of Horizontal Illumination

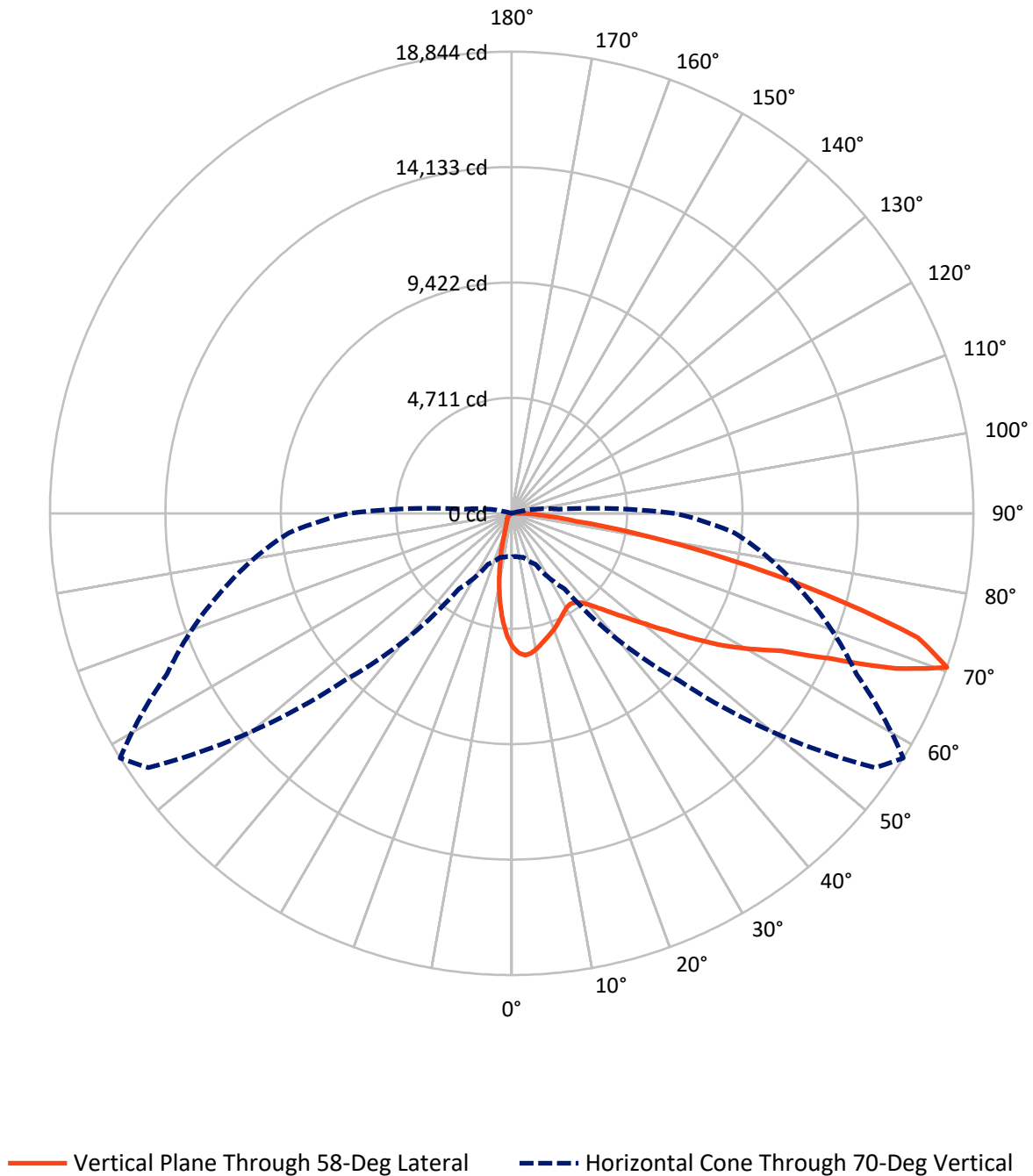
✕ Max cd  
 - - - 1/2 Max cd



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

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## Luminous Intensity Polar Plot



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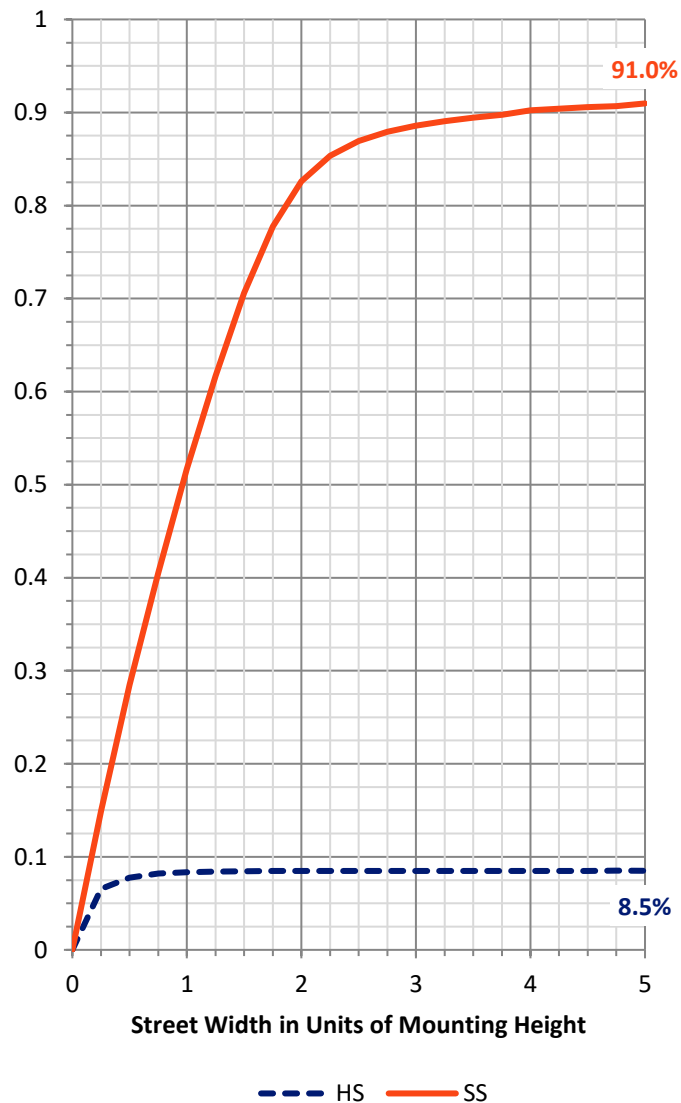
**FLUX DISTRIBUTION:**

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

**ZONAL LUMENS:**

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

**Coefficient of Utilization**



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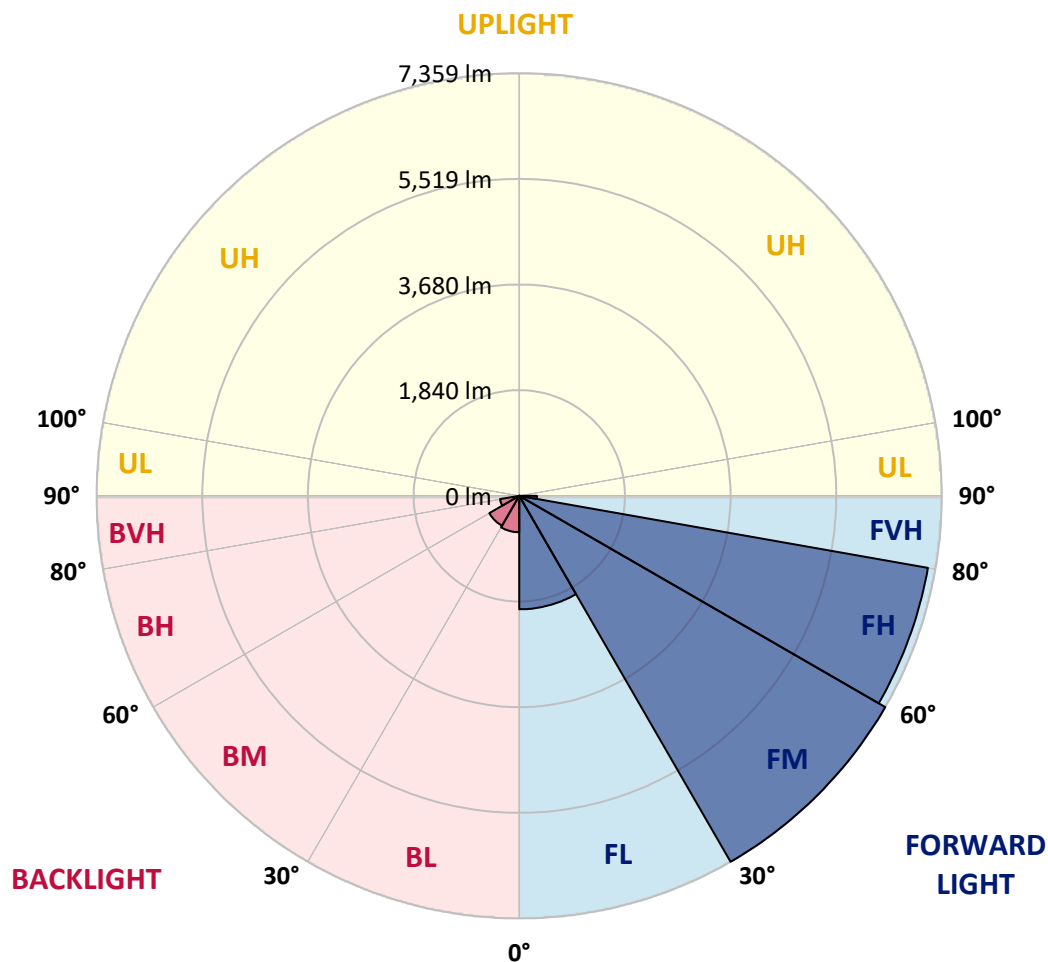
CATALOG NUMBER: GLEON-SA3C-740-U-SL3-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1976.2 | 10.7      |                         |      |         |
| FM   | (30°-60°)   | 7359.2 | 39.9      |                         |      |         |
| FH   | (60°-80°)   | 7226.3 | 39.2      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 307.6  | 1.7       |                         |      | G3/500  |
| BL   | (0°-30°)    | 634.3  | 3.4       | B2/1000                 |      |         |
| BM   | (30°-60°)   | 602.3  | 3.3       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 339.5  | 1.8       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 2.7    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G3**

Type III Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°     | 55°     | 58°     | 65°     | 75°     | 85°     |
|-------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|
| 0°    | 5449.5 | 5449.5 | 5449.5 | 5449.5 | 5449.5 | 5449.5  | 5449.5  | 5449.5  | 5449.5  | 5449.5  | 5449.5  |
| 2.5°  | 5901.3 | 5886.7 | 5881.3 | 5872.1 | 5836.8 | 5802.3  | 5734.0  | 5714.9  | 5671.9  | 5569.9  | 5461.7  |
| 5°    | 5905.9 | 5905.1 | 5921.2 | 5917.4 | 5905.1 | 5889.0  | 5839.9  | 5814.6  | 5741.7  | 5596.0  | 5398.1  |
| 7.5°  | 5621.3 | 5635.9 | 5671.9 | 5701.1 | 5734.8 | 5778.5  | 5784.7  | 5760.1  | 5700.3  | 5543.0  | 5280.7  |
| 10°   | 5239.3 | 5262.3 | 5312.9 | 5370.4 | 5458.7 | 5546.1  | 5624.3  | 5621.3  | 5600.6  | 5445.6  | 5139.5  |
| 12.5° | 4856.5 | 4883.3 | 4941.6 | 5026.8 | 5151.8 | 5294.5  | 5434.1  | 5453.3  | 5487.8  | 5358.2  | 5009.1  |
| 15°   | 4521.3 | 4544.3 | 4601.8 | 4706.1 | 4861.1 | 5052.9  | 5257.7  | 5293.0  | 5381.9  | 5289.9  | 4900.2  |
| 17.5° | 4236.7 | 4251.2 | 4293.4 | 4409.3 | 4588.8 | 4821.2  | 5087.4  | 5156.4  | 5289.1  | 5236.2  | 4805.9  |
| 20°   | 4038.0 | 4040.3 | 4067.9 | 4149.2 | 4328.7 | 4588.8  | 4911.0  | 5009.9  | 5190.9  | 5190.2  | 4708.4  |
| 22.5° | 3939.8 | 3932.1 | 3937.5 | 3984.3 | 4116.2 | 4367.1  | 4734.5  | 4851.9  | 5102.7  | 5151.1  | 4609.5  |
| 25°   | 3921.4 | 3915.3 | 3899.9 | 3906.1 | 3985.8 | 4173.0  | 4556.6  | 4692.3  | 5025.2  | 5127.3  | 4523.6  |
| 27.5° | 3978.9 | 3985.1 | 3959.0 | 3931.4 | 3937.5 | 4047.2  | 4398.5  | 4555.8  | 4962.3  | 5127.3  | 4463.0  |
| 30°   | 4094.8 | 4097.8 | 4078.7 | 4042.6 | 3994.3 | 4011.9  | 4288.8  | 4446.1  | 4930.9  | 5162.6  | 4424.6  |
| 32.5° | 4222.9 | 4239.7 | 4237.4 | 4208.3 | 4139.3 | 4067.9  | 4262.8  | 4406.2  | 4928.6  | 5240.8  | 4420.8  |
| 35°   | 4381.7 | 4400.8 | 4433.0 | 4426.9 | 4354.8 | 4237.4  | 4351.7  | 4464.5  | 4973.9  | 5369.7  | 4462.2  |
| 37.5° | 4550.4 | 4579.6 | 4648.6 | 4681.6 | 4634.8 | 4502.1  | 4551.2  | 4631.7  | 5095.1  | 5578.3  | 4567.3  |
| 40°   | 4713.8 | 4746.8 | 4872.6 | 5002.2 | 4966.9 | 4830.4  | 4853.4  | 4917.9  | 5310.6  | 5878.3  | 4766.7  |
| 42.5° | 4874.1 | 4923.2 | 5108.1 | 5321.3 | 5363.5 | 5254.6  | 5266.9  | 5318.3  | 5630.5  | 6291.0  | 5092.8  |
| 45°   | 5065.9 | 5121.1 | 5395.0 | 5658.1 | 5770.9 | 5723.3  | 5775.5  | 5809.2  | 6048.6  | 6836.4  | 5532.3  |
| 47.5° | 5347.4 | 5411.1 | 5747.1 | 6047.0 | 6244.9 | 6275.6  | 6380.7  | 6403.0  | 6577.1  | 7471.5  | 6105.3  |
| 50°   | 5896.7 | 5914.3 | 6218.1 | 6490.4 | 6775.8 | 6959.9  | 7079.5  | 7096.4  | 7216.8  | 8165.7  | 6821.0  |
| 52.5° | 6587.8 | 6599.3 | 6771.2 | 6953.7 | 7278.2 | 7654.1  | 7934.1  | 7957.9  | 7983.2  | 8842.3  | 7527.5  |
| 55°   | 7274.4 | 7272.8 | 7386.4 | 7493.8 | 7865.0 | 8411.2  | 9018.8  | 9033.3  | 8851.5  | 9484.4  | 8067.6  |
| 57.5° | 7703.2 | 7744.6 | 7917.2 | 8055.3 | 8573.8 | 9274.2  | 10117.2 | 10170.9 | 9763.6  | 9960.0  | 8601.5  |
| 60°   | 7566.6 | 7586.6 | 7969.4 | 8480.2 | 9456.8 | 10500.8 | 11228.8 | 11242.6 | 10449.4 | 10434.8 | 9276.5  |
| 62.5° | 6446.7 | 6457.4 | 7058.8 | 8112.0 | 9904.0 | 12091.7 | 12569.6 | 12344.9 | 11238.0 | 11093.7 | 10084.2 |
| 65°   | 4418.5 | 4488.3 | 4990.7 | 6292.5 | 9082.4 | 13089.7 | 14645.4 | 14273.4 | 12440.0 | 12043.4 | 10814.5 |
| 67.5° | 2602.0 | 2587.4 | 2836.0 | 3794.8 | 6670.7 | 12427.0 | 17271.2 | 16901.4 | 14079.3 | 12679.3 | 10600.5 |
| 70°   | 1777.4 | 1767.4 | 1862.5 | 2297.5 | 3765.7 | 9640.1  | 18097.3 | 18843.7 | 15526.8 | 12251.3 | 9123.1  |
| 72.5° | 1268.8 | 1274.1 | 1414.5 | 1785.0 | 2364.2 | 5616.7  | 15562.8 | 17329.5 | 15073.4 | 10680.3 | 6934.6  |
| 75°   | 861.4  | 876.0  | 1077.0 | 1464.4 | 2072.7 | 2857.4  | 11043.9 | 13173.3 | 12274.3 | 7762.2  | 3985.8  |
| 77.5° | 463.3  | 479.4  | 716.5  | 1179.8 | 1874.0 | 1985.2  | 7104.1  | 9066.3  | 7710.1  | 3489.5  | 1155.2  |
| 80°   | 193.3  | 202.5  | 335.2  | 857.6  | 1619.3 | 1743.6  | 4179.9  | 5497.8  | 3285.5  | 688.1   | 257.7   |
| 82.5° | 83.6   | 88.2   | 139.6  | 511.7  | 1210.5 | 1472.1  | 2213.1  | 2644.9  | 995.7   | 151.1   | 129.6   |
| 85°   | 16.1   | 16.9   | 57.5   | 270.8  | 772.5  | 830.8   | 1434.5  | 1406.1  | 447.2   | 65.2    | 94.4    |
| 87.5° | 0.0    | 0.0    | 13.8   | 85.1   | 227.1  | 452.6   | 875.3   | 864.5   | 151.9   | 31.5    | 35.3    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |

REPORT NUMBER: P323527

CATALOG NUMBER: GLEON-SA3C-740-U-SL3-HSS

**CANDELA DISTRIBUTION (continued):**

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

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

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### Photopic Flux vs. Wavelength

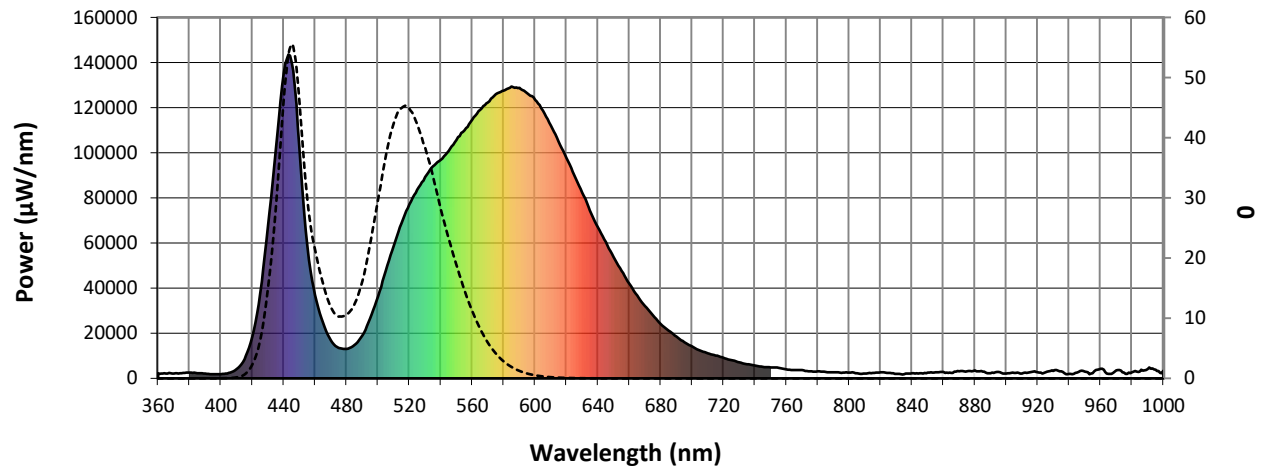


#####

| 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

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 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**

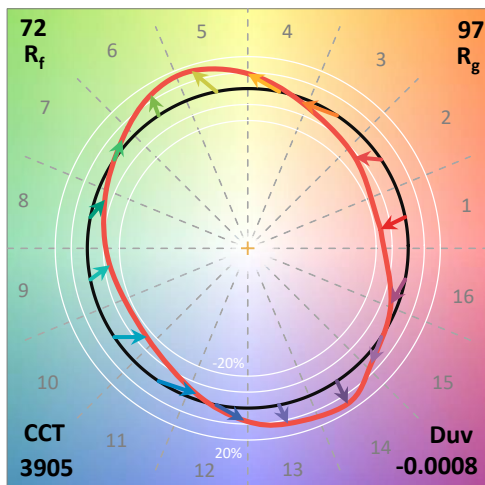
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 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              |           |                  |                  |

### Summary

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

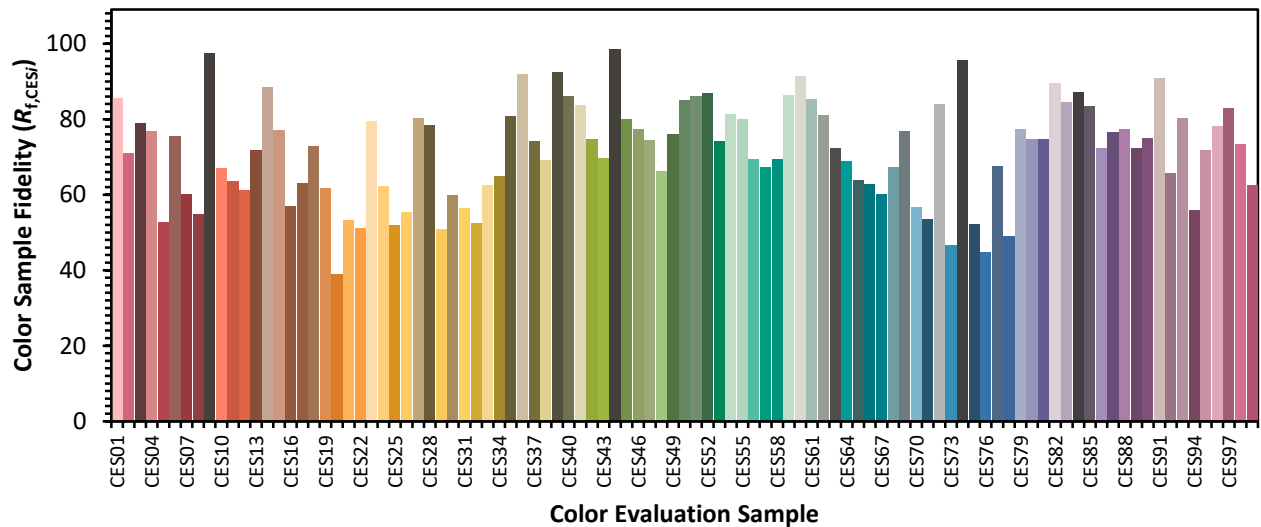


### Color Vector Graphics



**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)