

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: P321919

Luminaire Tested: **GLEON-SA5B-740-U-T2-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321919  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-13)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA5B-740-U-T2-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(5) 70 CRI, 4000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II  
OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 20319 lumens  
Efficiency: N/A  
Efficacy: 96.8 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B1 - U0 - G3

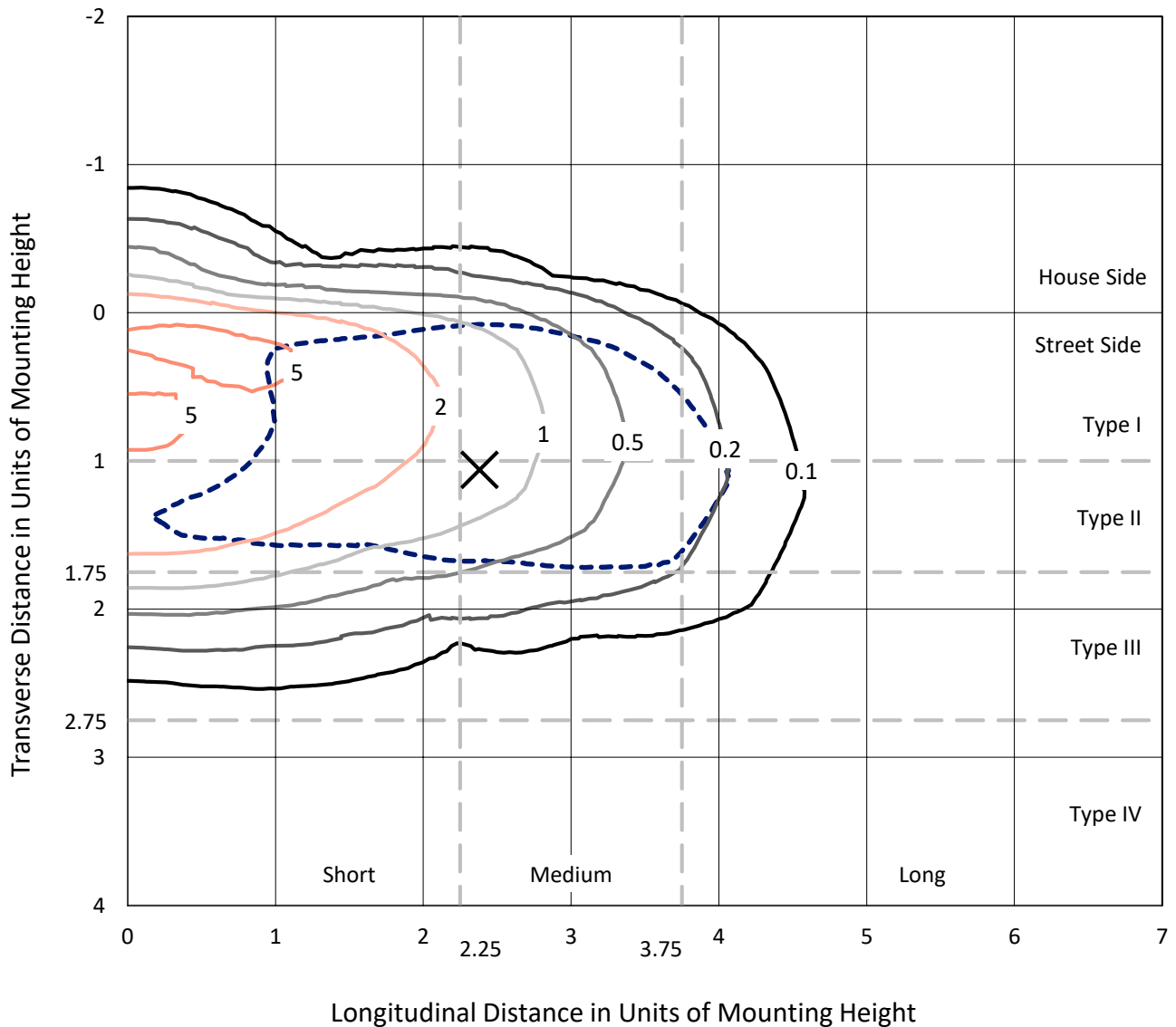
Input Watts (W): 210  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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### Iso-Footcandle Lines of Horizontal Illumination

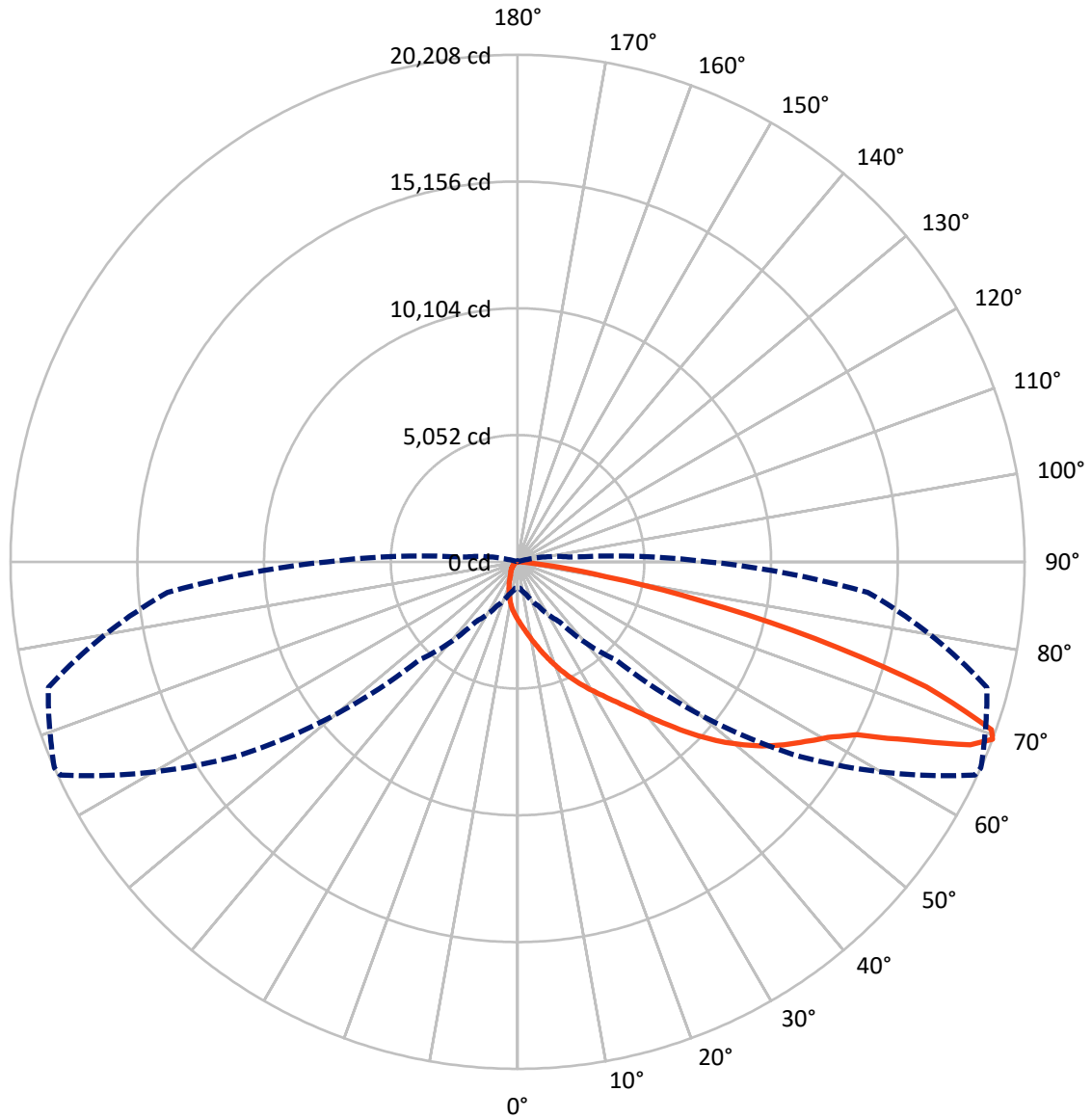
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 6.1 fc  
 Type II - Medium - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 66-Deg Lateral      - - - Horizontal Cone Through 69-Deg Vertical

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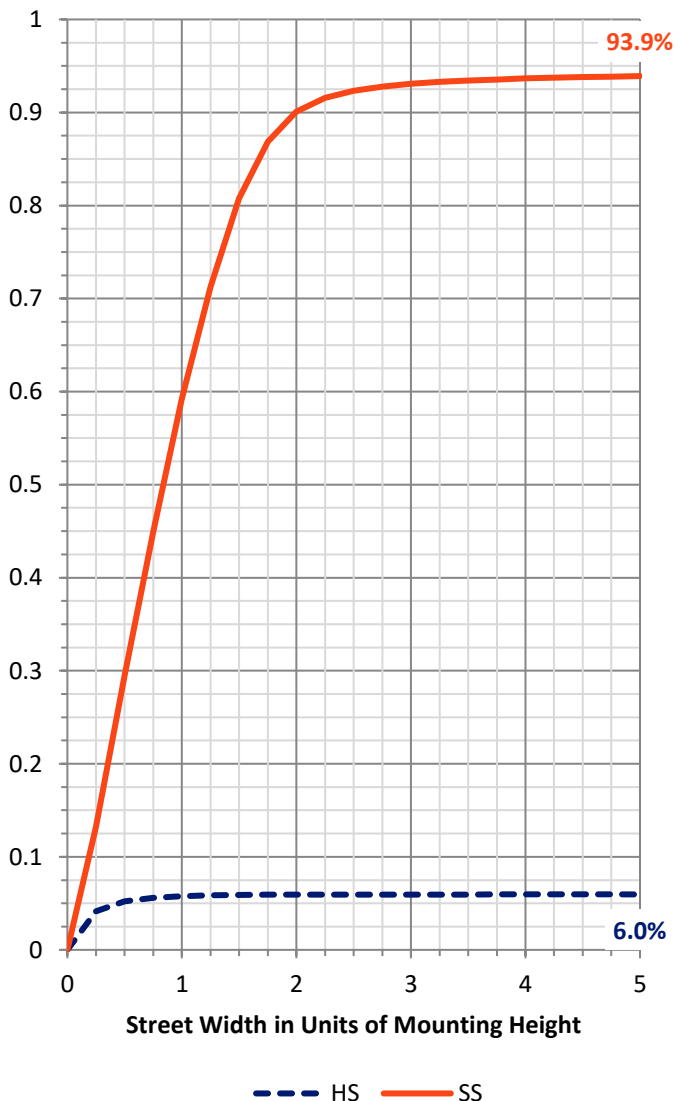
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1218.9   | 0.0    | 1218.9  |
|                    | % Fixture | 6.0      | 0.0    | 6.0     |
| <b>Street Side</b> | Lumens    | 19100.1  | 0.0    | 19100.1 |
|                    | % Fixture | 94.0     | 0.0    | 94.0    |
| <b>Total</b>       | Lumens    | 20319.0  | 0.0    | 20319.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 223.5   | 1.1       |
| 10°-20°   | 665.2   | 3.3       |
| 20°-30°   | 1158.4  | 5.7       |
| 30°-40°   | 2032.5  | 10.0      |
| 40°-50°   | 3402.0  | 16.7      |
| 50°-60°   | 5000.6  | 24.6      |
| 60°-70°   | 5134.4  | 25.3      |
| 70°-80°   | 2534.7  | 12.5      |
| 80°-90°   | 167.6   | 0.8       |
| 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°    | 20319.0 | 100.0     |
| 0°-180°   | 20319.0 | 100.0     |

**Coefficient of Utilization**

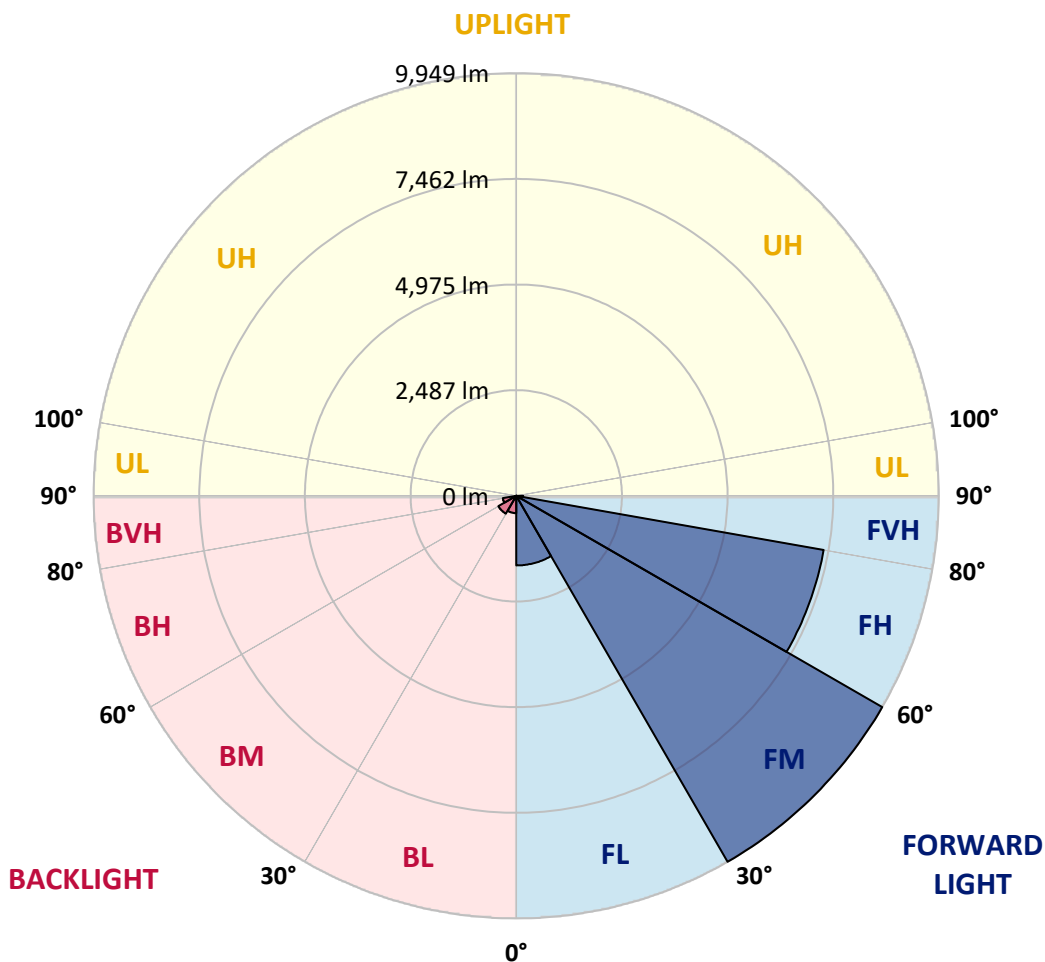


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1639.5 | 8.1       |                         |      |         |
| FM (30°-60°)   | 9949.2 | 49.0      |                         |      |         |
| FH (60°-80°)   | 7347.9 | 36.2      |                         |      | G3/7500 |
| FVH (80°-90°)  | 163.5  | 0.8       |                         |      | G2/225  |
| BL (0°-30°)    | 407.6  | 2.0       | B1/500                  |      |         |
| BM (30°-60°)   | 486.0  | 2.4       | B1/1000                 |      |         |
| BH (60°-80°)   | 321.2  | 1.6       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 4.0    | 0.0       |                         |      | G0/10   |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G3**  
 Type II Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 66°     | 75°     | 85°     |
|-------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 2312.4 | 2312.4  | 2312.4  | 2312.4  | 2312.4  | 2312.4  | 2312.4  | 2312.4  | 2312.4  | 2312.4  | 2312.4  |
| 2.5°  | 2721.6 | 2710.0  | 2705.2  | 2683.9  | 2647.3  | 2619.3  | 2565.2  | 2502.5  | 2490.9  | 2430.1  | 2355.8  |
| 5°    | 3074.8 | 3065.1  | 3058.4  | 3028.5  | 2990.8  | 2920.4  | 2821.9  | 2705.2  | 2683.0  | 2567.2  | 2418.5  |
| 7.5°  | 3320.9 | 3338.3  | 3338.3  | 3319.0  | 3271.7  | 3218.6  | 3098.0  | 2938.7  | 2910.7  | 2733.1  | 2502.5  |
| 10°   | 3464.7 | 3485.9  | 3502.3  | 3518.7  | 3512.0  | 3490.7  | 3376.9  | 3197.4  | 3163.6  | 2928.1  | 2600.0  |
| 12.5° | 3478.2 | 3499.4  | 3545.8  | 3614.3  | 3680.9  | 3729.1  | 3657.7  | 3484.0  | 3445.4  | 3153.9  | 2715.8  |
| 15°   | 3402.9 | 3425.1  | 3496.5  | 3629.7  | 3790.9  | 3931.8  | 3955.0  | 3801.5  | 3761.9  | 3423.2  | 2860.5  |
| 17.5° | 3271.7 | 3286.1  | 3388.4  | 3572.8  | 3825.6  | 4084.3  | 4224.2  | 4142.2  | 4105.5  | 3731.1  | 3021.7  |
| 20°   | 3174.2 | 3184.8  | 3274.6  | 3472.4  | 3804.4  | 4179.8  | 4479.0  | 4504.1  | 4465.5  | 4061.1  | 3196.4  |
| 22.5° | 3341.2 | 3360.5  | 3363.4  | 3457.0  | 3746.5  | 4227.1  | 4702.9  | 4860.2  | 4831.3  | 4411.4  | 3368.2  |
| 25°   | 3797.6 | 3819.8  | 3746.5  | 3688.6  | 3795.7  | 4248.3  | 4895.0  | 5225.0  | 5201.9  | 4788.8  | 3540.9  |
| 27.5° | 4400.8 | 4424.0  | 4329.4  | 4156.7  | 4053.4  | 4328.5  | 5065.8  | 5595.6  | 5594.7  | 5188.4  | 3727.2  |
| 30°   | 4993.4 | 5016.6  | 4920.1  | 4747.3  | 4509.9  | 4555.2  | 5213.4  | 5983.6  | 5989.4  | 5600.4  | 3925.0  |
| 32.5° | 5614.9 | 5643.9  | 5544.5  | 5322.5  | 5074.5  | 4947.1  | 5420.9  | 6373.5  | 6406.3  | 6078.2  | 4148.0  |
| 35°   | 6321.4 | 6325.2  | 6185.3  | 5952.7  | 5667.0  | 5471.1  | 5753.9  | 6810.7  | 6888.8  | 6669.8  | 4430.8  |
| 37.5° | 7014.3 | 7042.3  | 6927.5  | 6560.7  | 6298.2  | 6076.2  | 6249.0  | 7356.9  | 7467.9  | 7392.6  | 4800.4  |
| 40°   | 7527.7 | 7586.6  | 7570.2  | 7174.5  | 6925.5  | 6767.2  | 6863.8  | 8006.4  | 8147.3  | 8234.2  | 5266.5  |
| 42.5° | 7850.1 | 7894.5  | 7969.8  | 7731.4  | 7505.5  | 7531.6  | 7589.5  | 8763.1  | 8936.8  | 9193.5  | 5802.2  |
| 45°   | 8219.7 | 8240.9  | 8303.7  | 8198.5  | 8046.0  | 8308.5  | 8359.7  | 9615.2  | 9797.6  | 10225.2 | 6396.6  |
| 47.5° | 8671.4 | 8721.6  | 8738.9  | 8642.4  | 8572.9  | 8995.6  | 9101.8  | 10390.2 | 10646.0 | 11330.2 | 7025.9  |
| 50°   | 9246.6 | 9260.1  | 9290.0  | 9227.3  | 9157.8  | 9586.3  | 9767.7  | 11203.8 | 11436.4 | 12439.1 | 7646.4  |
| 52.5° | 9809.2 | 9857.5  | 9961.7  | 9922.1  | 9894.2  | 10089.1 | 10361.3 | 11937.3 | 12196.9 | 13363.7 | 8266.0  |
| 55°   | 9971.4 | 10012.9 | 10372.8 | 10618.9 | 10846.7 | 10708.7 | 10928.7 | 12594.5 | 12875.3 | 14189.8 | 8862.5  |
| 57.5° | 9323.8 | 9407.7  | 10031.2 | 10672.0 | 11616.8 | 11671.9 | 11708.5 | 13269.1 | 13521.0 | 14822.9 | 9483.0  |
| 60°   | 7687.0 | 7703.4  | 8726.4  | 9825.6  | 11489.5 | 12512.5 | 12847.3 | 13993.9 | 14205.2 | 15412.6 | 10226.1 |
| 62.5° | 4889.2 | 5056.1  | 6178.5  | 7730.4  | 10142.2 | 12390.9 | 14224.5 | 15090.2 | 15167.4 | 16120.0 | 11291.6 |
| 65°   | 2328.8 | 2436.9  | 3245.6  | 4776.3  | 7346.3  | 10834.2 | 15175.2 | 17073.5 | 17108.2 | 17522.3 | 12715.1 |
| 67.5° | 1289.4 | 1341.5  | 1726.6  | 2571.0  | 4294.7  | 7661.9  | 14791.0 | 19422.5 | 19455.3 | 18954.5 | 13964.0 |
| 69°   | 1008.5 | 1052.9  | 1356.0  | 1937.9  | 2911.7  | 5506.8  | 13384.9 | 20110.6 | 20208.1 | 19364.6 | 14008.4 |
| 70°   | 856.0  | 899.5   | 1167.8  | 1636.8  | 2341.3  | 4255.1  | 11914.1 | 19939.8 | 20043.1 | 19326.0 | 13677.3 |
| 72.5° | 524.0  | 549.1   | 777.9   | 1152.3  | 1569.2  | 2140.6  | 7347.3  | 16863.1 | 17037.8 | 17727.8 | 11754.9 |
| 75°   | 353.2  | 366.7   | 486.4   | 795.2   | 1122.4  | 1102.1  | 3817.0  | 11886.1 | 12264.4 | 13790.2 | 8682.0  |
| 77.5° | 252.9  | 265.4   | 326.2   | 514.4   | 786.6   | 727.7   | 1728.5  | 7386.8  | 7467.9  | 8270.9  | 4734.8  |
| 80°   | 143.8  | 155.4   | 230.7   | 305.9   | 533.7   | 485.4   | 687.1   | 3528.4  | 3568.9  | 3546.7  | 1580.8  |
| 82.5° | 75.3   | 84.9    | 126.4   | 201.7   | 342.6   | 317.5   | 285.7   | 1181.3  | 1187.1  | 987.3   | 346.5   |
| 85°   | 14.5   | 17.4    | 62.7    | 138.0   | 176.6   | 138.0   | 116.8   | 277.0   | 282.8   | 250.0   | 85.9    |
| 87.5° | 0.0    | 1.0     | 25.1    | 30.9    | 34.7    | 35.7    | 37.6    | 54.0    | 57.9    | 78.2    | 23.2    |
| 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-SA5B-740-U-T2-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2312.4 | 2312.4 | 2312.4 | 2312.4 | 2312.4 | 2312.4 | 2312.4 | 2312.4 | 2312.4 | 2312.4 | 2312.4 |
| 2.5°  | 2323.0 | 2288.2 | 2221.6 | 2144.4 | 2084.6 | 2025.7 | 1979.4 | 1931.2 | 1913.8 | 1905.1 | 1904.1 |
| 5°    | 2346.1 | 2272.8 | 2131.9 | 1987.1 | 1868.4 | 1756.5 | 1676.4 | 1600.1 | 1564.4 | 1548.0 | 1541.3 |
| 7.5°  | 2384.7 | 2267.0 | 2040.2 | 1819.2 | 1648.4 | 1508.4 | 1397.5 | 1314.5 | 1273.0 | 1255.6 | 1248.8 |
| 10°   | 2430.1 | 2259.3 | 1933.1 | 1641.6 | 1423.5 | 1278.8 | 1168.7 | 1086.7 | 1041.3 | 1022.0 | 1012.4 |
| 12.5° | 2483.2 | 2245.8 | 1809.6 | 1462.1 | 1231.5 | 1086.7 | 953.5  | 852.2  | 800.1  | 777.9  | 767.3  |
| 15°   | 2548.8 | 2232.3 | 1680.2 | 1293.2 | 1062.6 | 886.0  | 740.2  | 671.7  | 661.1  | 657.2  | 658.2  |
| 17.5° | 2613.5 | 2211.0 | 1539.3 | 1126.3 | 885.0  | 692.0  | 617.7  | 613.8  | 615.7  | 615.7  | 615.7  |
| 20°   | 2671.4 | 2162.8 | 1385.9 | 983.4  | 716.1  | 583.9  | 568.4  | 561.7  | 556.9  | 553.0  | 548.2  |
| 22.5° | 2716.7 | 2098.1 | 1238.2 | 841.6  | 584.8  | 534.7  | 510.5  | 489.3  | 471.9  | 460.4  | 454.6  |
| 25°   | 2747.6 | 2012.2 | 1103.1 | 705.5  | 526.0  | 486.4  | 443.0  | 407.3  | 380.2  | 363.8  | 357.1  |
| 27.5° | 2770.8 | 1919.6 | 982.5  | 590.6  | 485.4  | 430.4  | 373.5  | 331.0  | 303.0  | 288.6  | 282.8  |
| 30°   | 2787.2 | 1814.4 | 876.3  | 519.2  | 440.1  | 371.6  | 310.8  | 269.3  | 249.0  | 241.3  | 237.4  |
| 32.5° | 2802.6 | 1697.6 | 775.9  | 485.4  | 397.6  | 317.5  | 260.6  | 228.7  | 216.2  | 206.5  | 203.6  |
| 35°   | 2841.2 | 1589.5 | 680.4  | 449.7  | 354.2  | 271.2  | 223.9  | 200.7  | 188.2  | 182.4  | 180.5  |
| 37.5° | 2932.9 | 1509.4 | 588.7  | 413.1  | 310.8  | 234.5  | 195.9  | 179.5  | 167.9  | 162.1  | 160.2  |
| 40°   | 3080.6 | 1468.9 | 511.5  | 373.5  | 268.3  | 206.5  | 177.6  | 162.1  | 149.6  | 140.9  | 139.0  |
| 42.5° | 3297.7 | 1474.7 | 457.5  | 333.9  | 234.5  | 184.3  | 160.2  | 141.9  | 128.4  | 120.6  | 118.7  |
| 45°   | 3561.2 | 1517.1 | 419.8  | 295.3  | 206.5  | 167.0  | 140.9  | 121.6  | 109.1  | 102.3  | 100.4  |
| 47.5° | 3846.9 | 1585.7 | 388.9  | 260.6  | 184.3  | 150.6  | 121.6  | 101.3  | 90.7   | 84.9   | 84.0   |
| 50°   | 4148.0 | 1652.2 | 357.1  | 226.8  | 165.0  | 134.1  | 102.3  | 84.0   | 75.3   | 70.5   | 68.5   |
| 52.5° | 4452.9 | 1729.5 | 328.1  | 195.9  | 148.6  | 114.8  | 84.9   | 68.5   | 61.8   | 57.9   | 56.0   |
| 55°   | 4781.1 | 1787.4 | 300.1  | 171.8  | 132.2  | 97.5   | 70.5   | 56.9   | 51.2   | 46.3   | 45.4   |
| 57.5° | 5167.1 | 1877.1 | 271.2  | 148.6  | 112.9  | 81.1   | 57.9   | 45.4   | 40.5   | 35.7   | 34.7   |
| 60°   | 5688.3 | 1982.3 | 240.3  | 131.3  | 92.6   | 66.6   | 47.3   | 36.7   | 30.9   | 27.0   | 26.1   |
| 62.5° | 6375.4 | 2099.1 | 201.7  | 114.8  | 75.3   | 54.0   | 37.6   | 29.0   | 22.2   | 17.4   | 17.4   |
| 65°   | 7246.9 | 2289.2 | 165.0  | 96.5   | 61.8   | 44.4   | 29.0   | 21.2   | 12.5   | 7.7    | 7.7    |
| 67.5° | 7755.5 | 2322.0 | 133.2  | 79.1   | 50.2   | 37.6   | 24.1   | 14.5   | 3.9    | 1.0    | 0.0    |
| 69°   | 7592.4 | 2131.9 | 112.9  | 67.6   | 43.4   | 35.7   | 22.2   | 10.6   | 1.9    | 0.0    | 0.0    |
| 70°   | 7285.5 | 1949.5 | 99.4   | 59.8   | 39.6   | 33.8   | 21.2   | 7.7    | 1.9    | 0.0    | 0.0    |
| 72.5° | 6020.3 | 1387.8 | 75.3   | 44.4   | 29.0   | 29.9   | 19.3   | 4.8    | 1.9    | 0.0    | 0.0    |
| 75°   | 4385.4 | 843.5  | 54.0   | 30.9   | 18.3   | 22.2   | 13.5   | 1.9    | 1.0    | 0.0    | 0.0    |
| 77.5° | 2439.8 | 397.6  | 33.8   | 17.4   | 11.6   | 13.5   | 6.8    | 0.0    | 0.0    | 0.0    | 0.0    |
| 80°   | 792.3  | 108.1  | 15.4   | 9.7    | 6.8    | 7.7    | 2.9    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 146.7  | 30.9   | 8.7    | 4.8    | 1.9    | 1.9    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 31.8   | 12.5   | 4.8    | 1.9    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 10.6   | 3.9    | 1.0    | 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: 4π  
 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 | R9:  | -29.7 |
| CIE u':                   | 0.2273  | R1:       | 68.9 | R10: | 46.2  |
| CIE v':                   | 0.5024  | R2:       | 77.0 | R11: | 68.8  |
| Duv:                      | -0.0008 | R3:       | 84.0 | R12: | 45.6  |
| CIE x:                    | 0.3841  | R4:       | 71.6 | R13: | 69.5  |
| CIE y:                    | 0.3774  | R5:       | 68.9 | R14: | 90.7  |
| CIE z:                    | 0.2385  | R6:       | 68.3 |      |       |
| 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 (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    | 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 (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    | 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 (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    | 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)