

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: P321942

Luminaire Tested: **GLEON-SA8D-740-U-T2-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321942  
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-SA8D-740-U-T2-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(8) 70 CRI, 4000K, 1200mA 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: 44238 lumens  
Efficiency: N/A  
Efficacy: 86.6 lumens/watt  
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B2 - U0 - G5

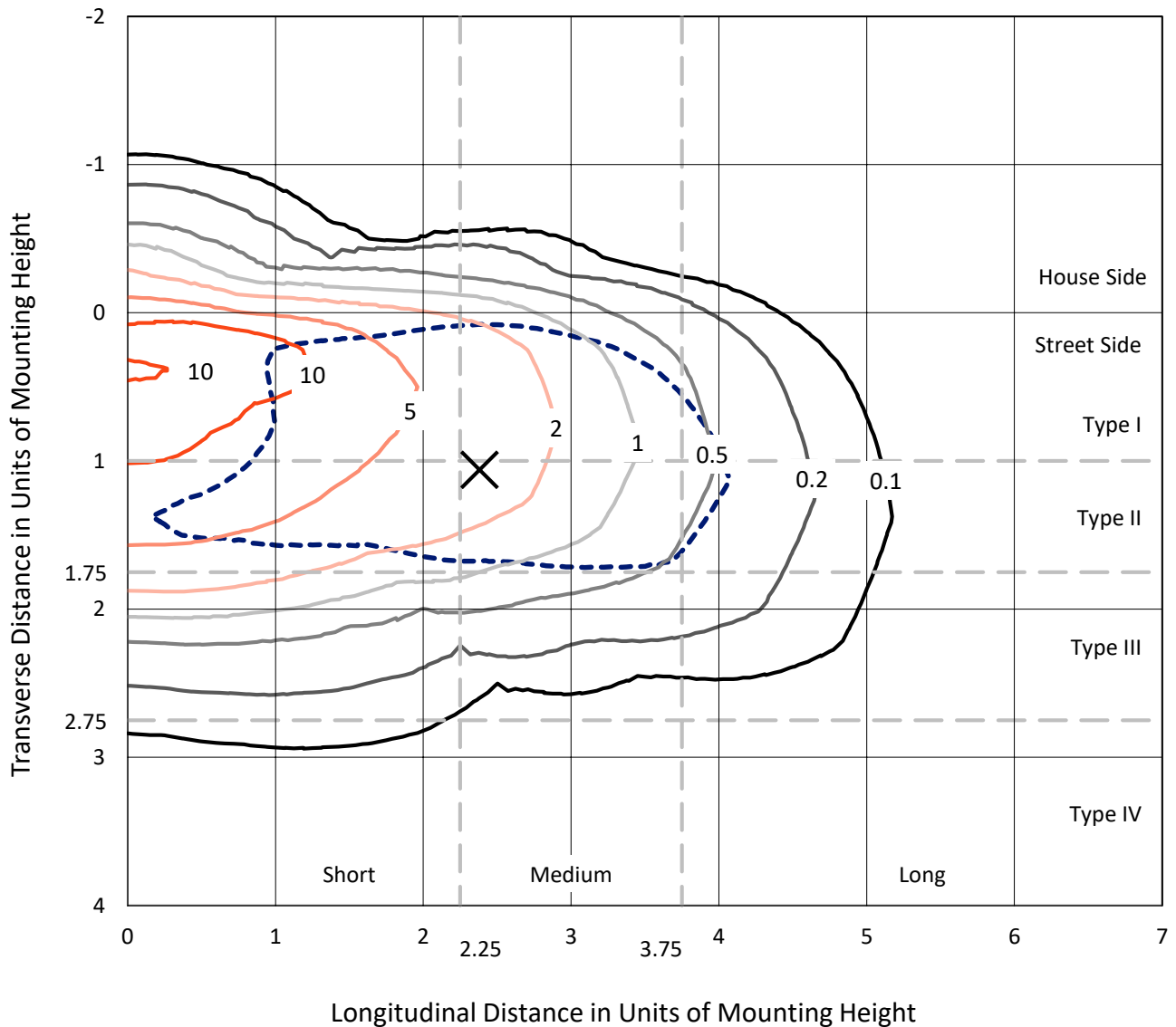
Input Watts (W): 511  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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### Iso-Footcandle Lines of Horizontal Illumination

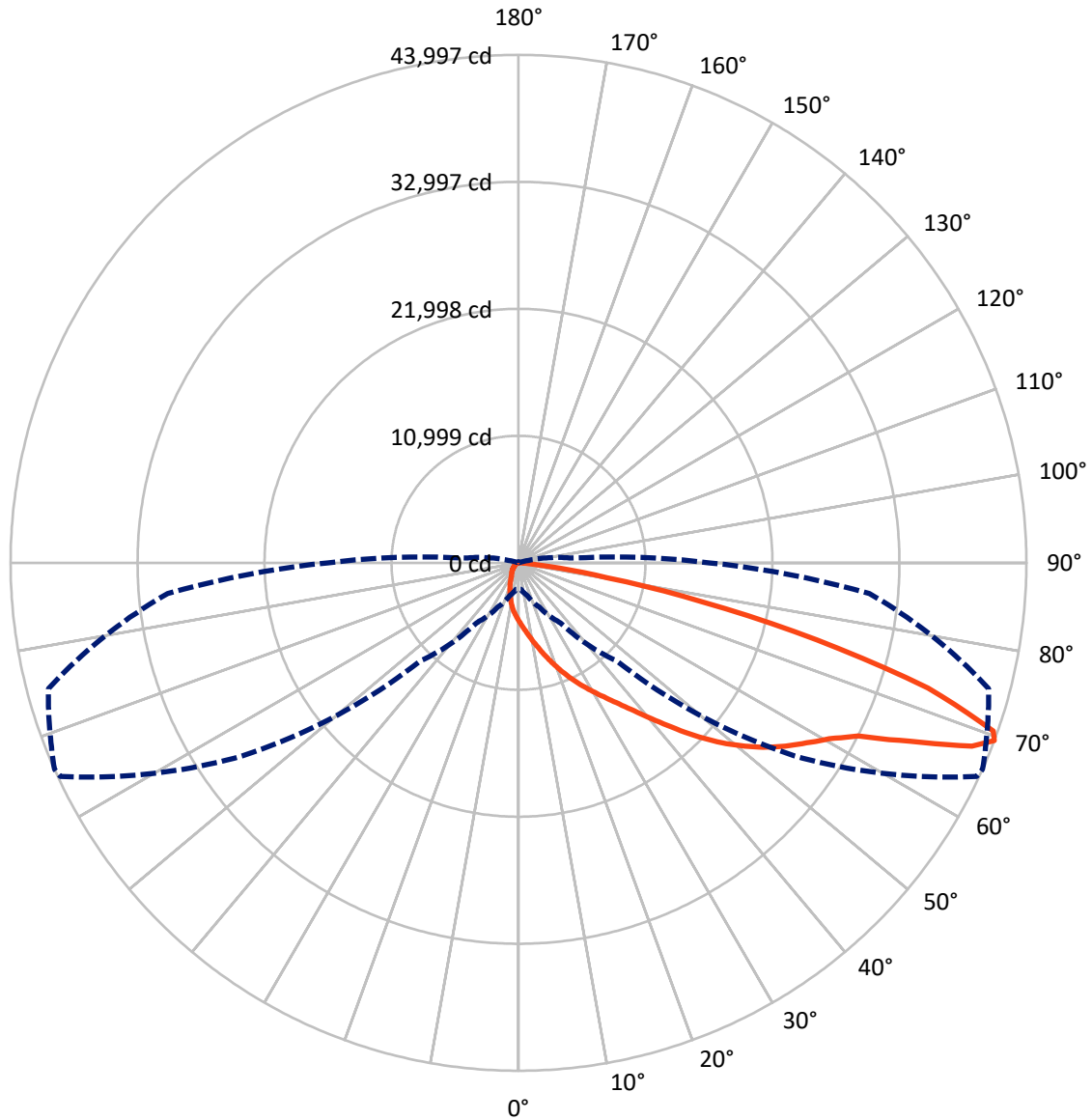
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 13.3 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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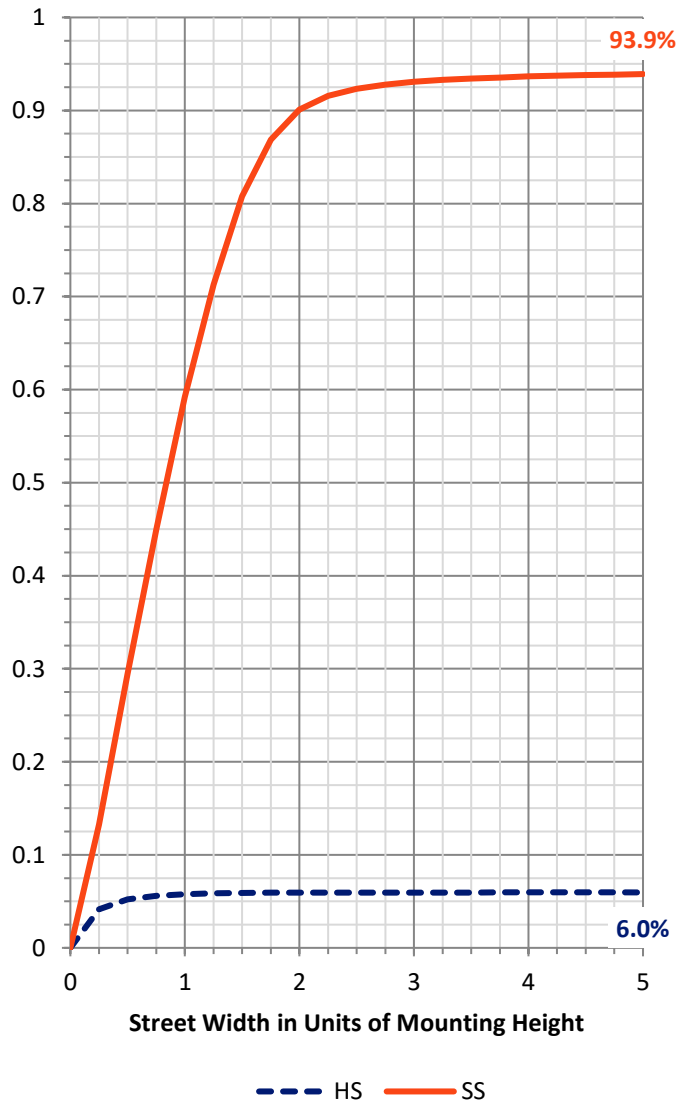
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2653.7   | 0.0    | 2653.7  |
|                    | % Fixture | 6.0      | 0.0    | 6.0     |
| <b>Street Side</b> | Lumens    | 41584.3  | 0.0    | 41584.3 |
|                    | % Fixture | 94.0     | 0.0    | 94.0    |
| <b>Total</b>       | Lumens    | 44238.0  | 0.0    | 44238.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 486.6   | 1.1       |
| 10°-20°   | 1448.3  | 3.3       |
| 20°-30°   | 2522.1  | 5.7       |
| 30°-40°   | 4425.0  | 10.0      |
| 40°-50°   | 7406.8  | 16.7      |
| 50°-60°   | 10887.3 | 24.6      |
| 60°-70°   | 11178.5 | 25.3      |
| 70°-80°   | 5518.5  | 12.5      |
| 80°-90°   | 364.9   | 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°    | 44238.0 | 100.0     |
| 0°-180°   | 44238.0 | 100.0     |

**Coefficient of Utilization**

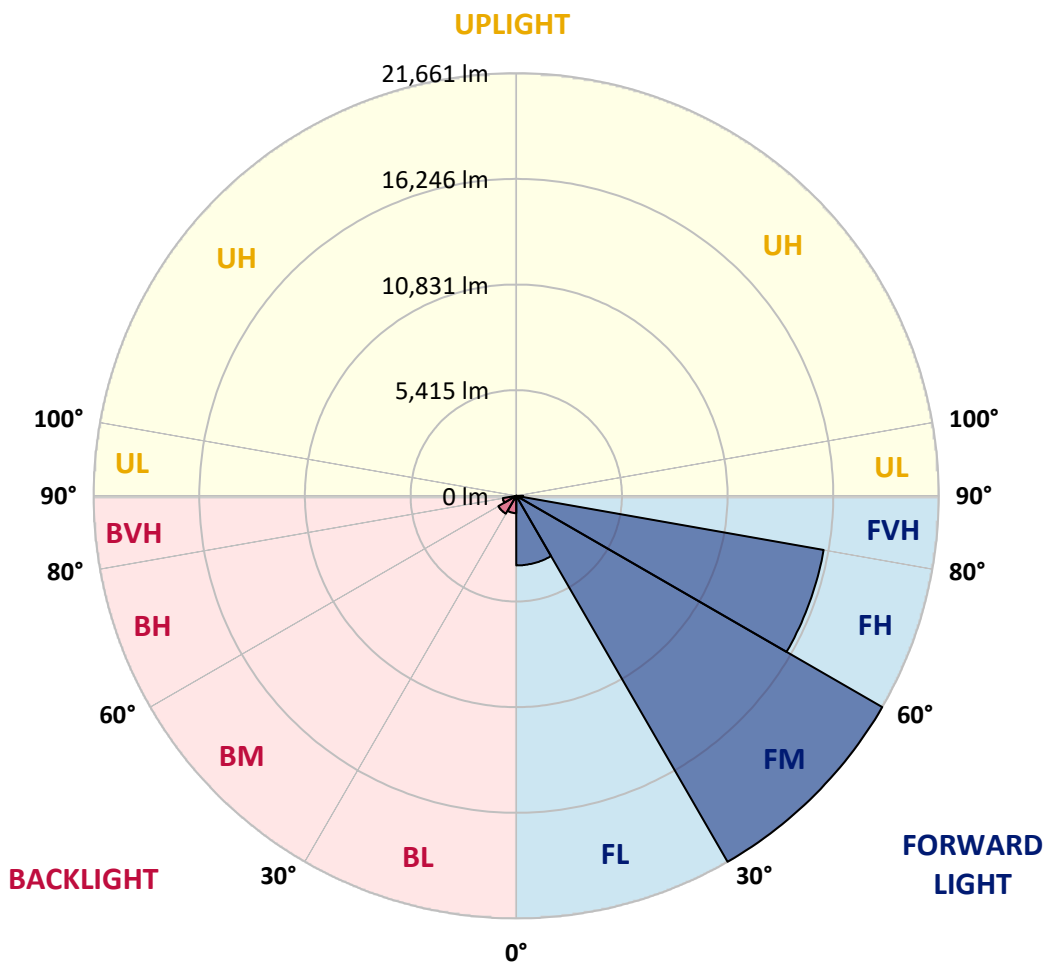


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|---------|-----------|-------------------------|------|---------|
|                |         |           | B                       | U    | G       |
| FL (0°-30°)    | 3569.6  | 8.1       |                         |      |         |
| FM (30°-60°)   | 21661.0 | 49.0      |                         |      |         |
| FH (60°-80°)   | 15997.7 | 36.2      |                         |      | G5      |
| FVH (80°-90°)  | 356.1   | 0.8       |                         |      | G3/500  |
| BL (0°-30°)    | 887.5   | 2.0       | B2/1000                 |      |         |
| BM (30°-60°)   | 1058.0  | 2.4       | B2/2500                 |      |         |
| BH (60°-80°)   | 699.3   | 1.6       | B2/1000                 |      | G2/1000 |
| BVH (80°-90°)  | 8.8     | 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-G5**  
 Type II Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 66°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 5034.4  | 5034.4  | 5034.4  | 5034.4  | 5034.4  | 5034.4  | 5034.4  | 5034.4  | 5034.4  | 5034.4  | 5034.4  |
| 2.5°  | 5925.3  | 5900.1  | 5889.6  | 5843.4  | 5763.5  | 5702.6  | 5584.9  | 5448.4  | 5423.1  | 5290.8  | 5129.0  |
| 5°    | 6694.4  | 6673.3  | 6658.6  | 6593.5  | 6511.6  | 6358.2  | 6143.8  | 5889.6  | 5841.3  | 5589.1  | 5265.6  |
| 7.5°  | 7230.2  | 7268.0  | 7268.0  | 7226.0  | 7123.0  | 7007.4  | 6744.8  | 6398.1  | 6337.2  | 5950.5  | 5448.4  |
| 10°   | 7543.2  | 7589.5  | 7625.2  | 7660.9  | 7646.2  | 7600.0  | 7352.0  | 6961.2  | 6887.7  | 6375.0  | 5660.6  |
| 12.5° | 7572.7  | 7618.9  | 7719.7  | 7868.9  | 8013.9  | 8119.0  | 7963.5  | 7585.3  | 7501.2  | 6866.7  | 5912.7  |
| 15°   | 7408.8  | 7457.1  | 7612.6  | 7902.5  | 8253.4  | 8560.2  | 8610.6  | 8276.5  | 8190.4  | 7452.9  | 6227.9  |
| 17.5° | 7123.0  | 7154.5  | 7377.2  | 7778.6  | 8329.1  | 8892.2  | 9196.9  | 9018.3  | 8938.4  | 8123.2  | 6578.8  |
| 20°   | 6910.8  | 6933.9  | 7129.3  | 7560.0  | 8282.9  | 9100.2  | 9751.6  | 9806.2  | 9722.2  | 8841.8  | 6959.1  |
| 22.5° | 7274.3  | 7316.3  | 7322.6  | 7526.4  | 8156.8  | 9203.2  | 10239.0 | 10581.5 | 10518.5 | 9604.5  | 7333.1  |
| 25°   | 8268.1  | 8316.5  | 8156.8  | 8030.7  | 8263.9  | 9249.4  | 10657.2 | 11375.8 | 11325.4 | 10426.1 | 7709.2  |
| 27.5° | 9581.4  | 9631.8  | 9425.9  | 9049.8  | 8825.0  | 9423.8  | 11029.1 | 12182.6 | 12180.5 | 11295.9 | 8114.8  |
| 30°   | 10871.5 | 10921.9 | 10711.8 | 10335.7 | 9818.8  | 9917.6  | 11350.6 | 13027.3 | 13039.9 | 12193.1 | 8545.5  |
| 32.5° | 12224.7 | 12287.7 | 12071.3 | 11588.0 | 11048.0 | 10770.6 | 11802.3 | 13876.2 | 13947.6 | 13233.2 | 9030.9  |
| 35°   | 13762.7 | 13771.1 | 13466.5 | 12960.1 | 12338.1 | 11911.6 | 12527.2 | 14828.0 | 14998.2 | 14521.3 | 9646.5  |
| 37.5° | 15271.4 | 15332.3 | 15082.3 | 14283.8 | 13712.3 | 13229.0 | 13605.1 | 16017.3 | 16258.9 | 16095.0 | 10451.3 |
| 40°   | 16389.2 | 16517.4 | 16481.7 | 15620.2 | 15078.1 | 14733.5 | 14943.6 | 17431.4 | 17738.2 | 17927.3 | 11466.1 |
| 42.5° | 17091.0 | 17187.6 | 17351.5 | 16832.6 | 16340.9 | 16397.6 | 16523.7 | 19078.7 | 19456.9 | 20015.8 | 12632.3 |
| 45°   | 17895.7 | 17942.0 | 18078.5 | 17849.5 | 17517.5 | 18089.1 | 18200.4 | 20934.1 | 21331.2 | 22262.0 | 13926.6 |
| 47.5° | 18879.1 | 18988.4 | 19026.2 | 18816.1 | 18664.8 | 19585.1 | 19816.2 | 22621.3 | 23178.1 | 24667.8 | 15296.6 |
| 50°   | 20131.4 | 20160.8 | 20226.0 | 20089.4 | 19938.1 | 20871.0 | 21266.0 | 24392.6 | 24899.0 | 27082.1 | 16647.6 |
| 52.5° | 21356.4 | 21461.4 | 21688.4 | 21602.2 | 21541.3 | 21965.7 | 22558.3 | 25989.5 | 26554.7 | 29095.0 | 17996.6 |
| 55°   | 21709.4 | 21799.7 | 22583.5 | 23119.3 | 23615.2 | 23314.7 | 23793.8 | 27420.4 | 28031.8 | 30893.6 | 19295.1 |
| 57.5° | 20299.5 | 20482.3 | 21839.7 | 23234.8 | 25291.9 | 25411.7 | 25491.5 | 28889.1 | 29437.5 | 32272.0 | 20646.2 |
| 60°   | 16735.9 | 16771.6 | 18998.9 | 21392.1 | 25014.5 | 27241.8 | 27970.9 | 30467.1 | 30927.3 | 33555.8 | 22264.1 |
| 62.5° | 10644.6 | 11008.1 | 13451.8 | 16830.4 | 22081.3 | 26977.0 | 30969.3 | 32854.0 | 33022.1 | 35096.0 | 24583.8 |
| 65°   | 5070.1  | 5305.5  | 7066.3  | 10398.7 | 15994.2 | 23587.8 | 33038.9 | 37172.0 | 37247.6 | 38149.0 | 27683.0 |
| 67.5° | 2807.2  | 2920.6  | 3759.0  | 5597.5  | 9350.2  | 16681.3 | 32202.7 | 42286.2 | 42357.7 | 41267.2 | 30402.0 |
| 69°   | 2195.7  | 2292.4  | 2952.2  | 4219.2  | 6339.3  | 11989.3 | 29141.3 | 43784.4 | 43996.6 | 42160.2 | 30498.6 |
| 70°   | 1863.7  | 1958.3  | 2542.4  | 3563.6  | 5097.5  | 9264.1  | 25939.1 | 43412.5 | 43637.3 | 42076.1 | 29777.9 |
| 72.5° | 1140.9  | 1195.6  | 1693.6  | 2508.8  | 3416.5  | 4660.4  | 15996.3 | 36713.9 | 37094.2 | 38596.6 | 25592.4 |
| 75°   | 769.0   | 798.4   | 1059.0  | 1731.4  | 2443.7  | 2399.5  | 8310.2  | 25878.1 | 26701.8 | 30023.8 | 18902.2 |
| 77.5° | 550.5   | 577.8   | 710.2   | 1119.9  | 1712.5  | 1584.3  | 3763.2  | 16082.4 | 16258.9 | 18007.1 | 10308.4 |
| 80°   | 313.1   | 338.3   | 502.2   | 666.1   | 1162.0  | 1056.9  | 1496.0  | 7681.9  | 7770.2  | 7721.8  | 3441.7  |
| 82.5° | 163.9   | 184.9   | 275.3   | 439.1   | 745.9   | 691.3   | 621.9   | 2571.8  | 2584.5  | 2149.5  | 754.3   |
| 85°   | 31.5    | 37.8    | 136.6   | 300.5   | 384.5   | 300.5   | 254.2   | 603.0   | 615.6   | 544.2   | 187.0   |
| 87.5° | 0.0     | 2.1     | 54.6    | 67.2    | 75.6    | 77.7    | 81.9    | 117.7   | 126.1   | 170.2   | 50.4    |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |



REPORT NUMBER: P321942

CATALOG NUMBER: GLEON-SA8D-740-U-T2-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 5034.4  | 5034.4 | 5034.4 | 5034.4 | 5034.4 | 5034.4 | 5034.4 | 5034.4 | 5034.4 | 5034.4 | 5034.4 |
| 2.5°  | 5057.5  | 4981.9 | 4836.9 | 4668.8 | 4538.5 | 4410.4 | 4309.5 | 4204.5 | 4166.6 | 4147.7 | 4145.6 |
| 5°    | 5108.0  | 4948.3 | 4641.5 | 4326.3 | 4067.9 | 3824.1 | 3649.7 | 3483.8 | 3406.0 | 3370.3 | 3355.6 |
| 7.5°  | 5192.0  | 4935.7 | 4441.9 | 3960.7 | 3588.8 | 3284.1 | 3042.5 | 2861.8 | 2771.5 | 2733.6 | 2718.9 |
| 10°   | 5290.8  | 4918.9 | 4208.7 | 3574.1 | 3099.2 | 2784.1 | 2544.5 | 2365.9 | 2267.2 | 2225.1 | 2204.1 |
| 12.5° | 5406.3  | 4889.4 | 3939.7 | 3183.3 | 2681.1 | 2365.9 | 2076.0 | 1855.3 | 1741.9 | 1693.6 | 1670.4 |
| 15°   | 5549.2  | 4860.0 | 3658.2 | 2815.6 | 2313.4 | 1928.9 | 1611.6 | 1462.4 | 1439.3 | 1430.9 | 1433.0 |
| 17.5° | 5690.0  | 4813.8 | 3351.4 | 2452.1 | 1926.8 | 1506.5 | 1344.8 | 1336.4 | 1340.6 | 1340.6 | 1340.6 |
| 20°   | 5816.1  | 4708.7 | 3017.3 | 2141.1 | 1559.1 | 1271.2 | 1237.6 | 1222.9 | 1212.4 | 1204.0 | 1193.5 |
| 22.5° | 5914.8  | 4568.0 | 2695.8 | 1832.2 | 1273.3 | 1164.1 | 1111.5 | 1065.3 | 1027.5 | 1002.3 | 989.7  |
| 25°   | 5982.1  | 4381.0 | 2401.6 | 1536.0 | 1145.1 | 1059.0 | 964.4  | 886.7  | 827.9  | 792.1  | 777.4  |
| 27.5° | 6032.5  | 4179.2 | 2139.0 | 1285.9 | 1056.9 | 937.1  | 813.2  | 720.7  | 659.8  | 628.3  | 615.6  |
| 30°   | 6068.2  | 3950.2 | 1907.9 | 1130.4 | 958.1  | 809.0  | 676.6  | 586.2  | 542.1  | 525.3  | 516.9  |
| 32.5° | 6101.8  | 3696.0 | 1689.3 | 1056.9 | 865.7  | 691.3  | 567.3  | 498.0  | 470.7  | 449.7  | 443.3  |
| 35°   | 6185.9  | 3460.6 | 1481.3 | 979.1  | 771.1  | 590.4  | 487.5  | 437.0  | 409.7  | 397.1  | 392.9  |
| 37.5° | 6385.5  | 3286.2 | 1281.7 | 899.3  | 676.6  | 510.6  | 426.5  | 390.8  | 365.6  | 353.0  | 348.8  |
| 40°   | 6707.0  | 3198.0 | 1113.6 | 813.2  | 584.1  | 449.7  | 386.6  | 353.0  | 325.7  | 306.8  | 302.6  |
| 42.5° | 7179.7  | 3210.6 | 996.0  | 727.0  | 510.6  | 401.3  | 348.8  | 308.9  | 279.5  | 262.6  | 258.4  |
| 45°   | 7753.4  | 3303.1 | 914.0  | 643.0  | 449.7  | 363.5  | 306.8  | 264.7  | 237.4  | 222.7  | 218.5  |
| 47.5° | 8375.3  | 3452.2 | 846.8  | 567.3  | 401.3  | 327.8  | 264.7  | 220.6  | 197.5  | 184.9  | 182.8  |
| 50°   | 9030.9  | 3597.2 | 777.4  | 493.8  | 359.3  | 292.1  | 222.7  | 182.8  | 163.9  | 153.4  | 149.2  |
| 52.5° | 9694.8  | 3765.3 | 714.4  | 426.5  | 323.6  | 250.0  | 184.9  | 149.2  | 134.5  | 126.1  | 121.9  |
| 55°   | 10409.2 | 3891.4 | 653.5  | 374.0  | 287.9  | 212.2  | 153.4  | 124.0  | 111.4  | 100.9  | 98.8   |
| 57.5° | 11249.7 | 4086.8 | 590.4  | 323.6  | 245.8  | 176.5  | 126.1  | 98.8   | 88.2   | 77.7   | 75.6   |
| 60°   | 12384.4 | 4315.8 | 523.2  | 285.8  | 201.7  | 145.0  | 103.0  | 79.8   | 67.2   | 58.8   | 56.7   |
| 62.5° | 13880.4 | 4570.1 | 439.1  | 250.0  | 163.9  | 117.7  | 81.9   | 63.0   | 48.3   | 37.8   | 37.8   |
| 65°   | 15777.8 | 4984.0 | 359.3  | 210.1  | 134.5  | 96.7   | 63.0   | 46.2   | 27.3   | 16.8   | 16.8   |
| 67.5° | 16885.1 | 5055.4 | 290.0  | 172.3  | 109.3  | 81.9   | 52.5   | 31.5   | 8.4    | 2.1    | 0.0    |
| 69°   | 16530.0 | 4641.5 | 245.8  | 147.1  | 94.6   | 77.7   | 48.3   | 23.1   | 4.2    | 0.0    | 0.0    |
| 70°   | 15861.8 | 4244.4 | 216.4  | 130.3  | 86.1   | 73.5   | 46.2   | 16.8   | 4.2    | 0.0    | 0.0    |
| 72.5° | 13107.2 | 3021.5 | 163.9  | 96.7   | 63.0   | 65.1   | 42.0   | 10.5   | 4.2    | 0.0    | 0.0    |
| 75°   | 9547.8  | 1836.4 | 117.7  | 67.2   | 39.9   | 48.3   | 29.4   | 4.2    | 2.1    | 0.0    | 0.0    |
| 77.5° | 5311.8  | 865.7  | 73.5   | 37.8   | 25.2   | 29.4   | 14.7   | 0.0    | 0.0    | 0.0    | 0.0    |
| 80°   | 1725.1  | 235.3  | 33.6   | 21.0   | 14.7   | 16.8   | 6.3    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 319.4   | 67.2   | 18.9   | 10.5   | 4.2    | 4.2    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 69.3    | 27.3   | 10.5   | 4.2    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 23.1    | 8.4    | 2.1    | 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

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

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CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 4000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 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)