

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: P318083

Luminaire Tested: **GLEON-SA9B-740-U-T2**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P318083  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-12)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA9B-740-U-T2  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(9) 70 CRI, 4000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 50134 lumens  
Efficiency: N/A  
Efficacy: 134.0 lumens/watt  
Luminous Opening: Rectangular (W 2.5' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B4 - U0 - G5

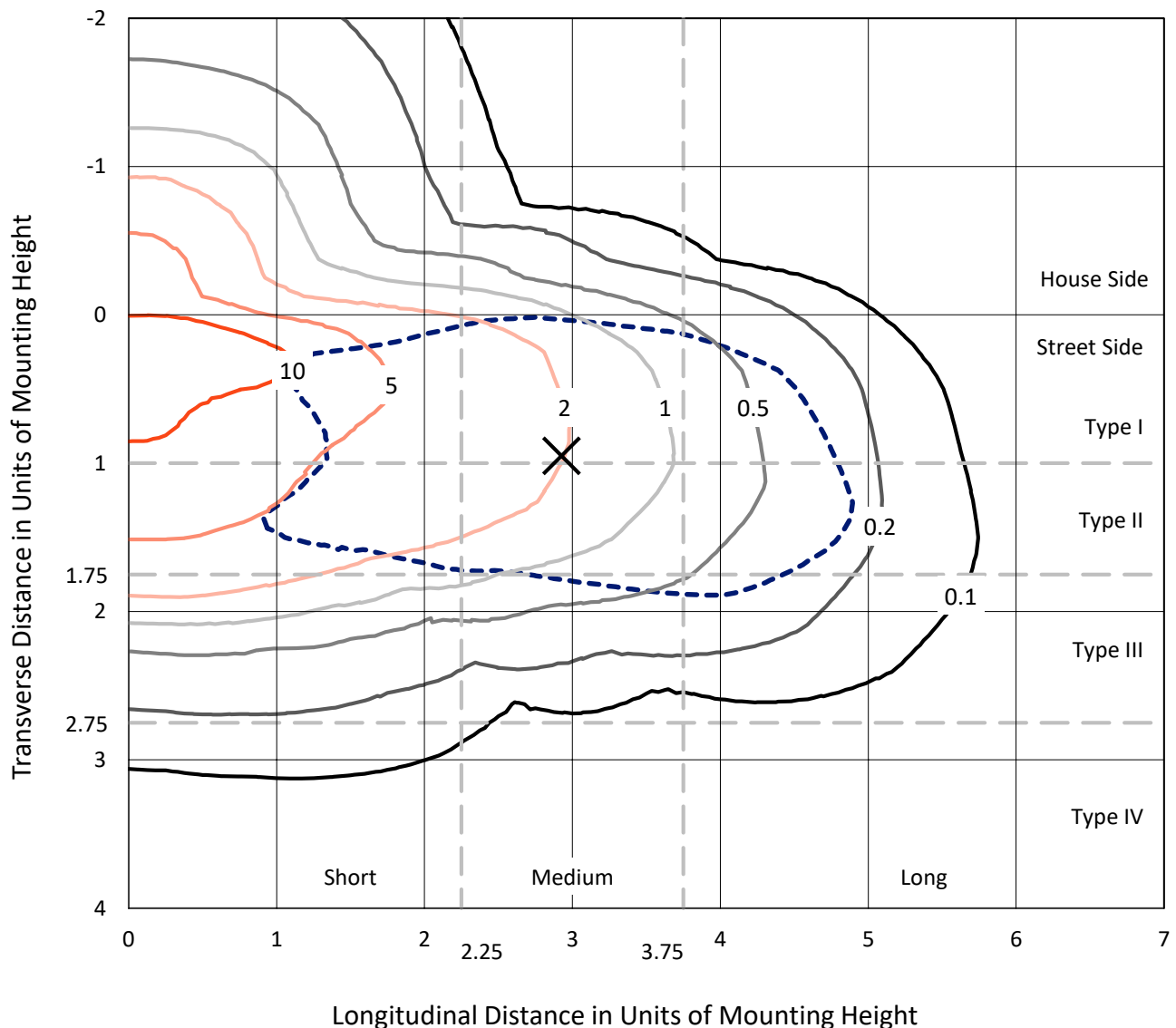
Input Watts (W): 374  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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 CATALOG NUMBER: GLEON-SA9B-740-U-T2

## Iso-Footcandle Lines of Horizontal Illumination

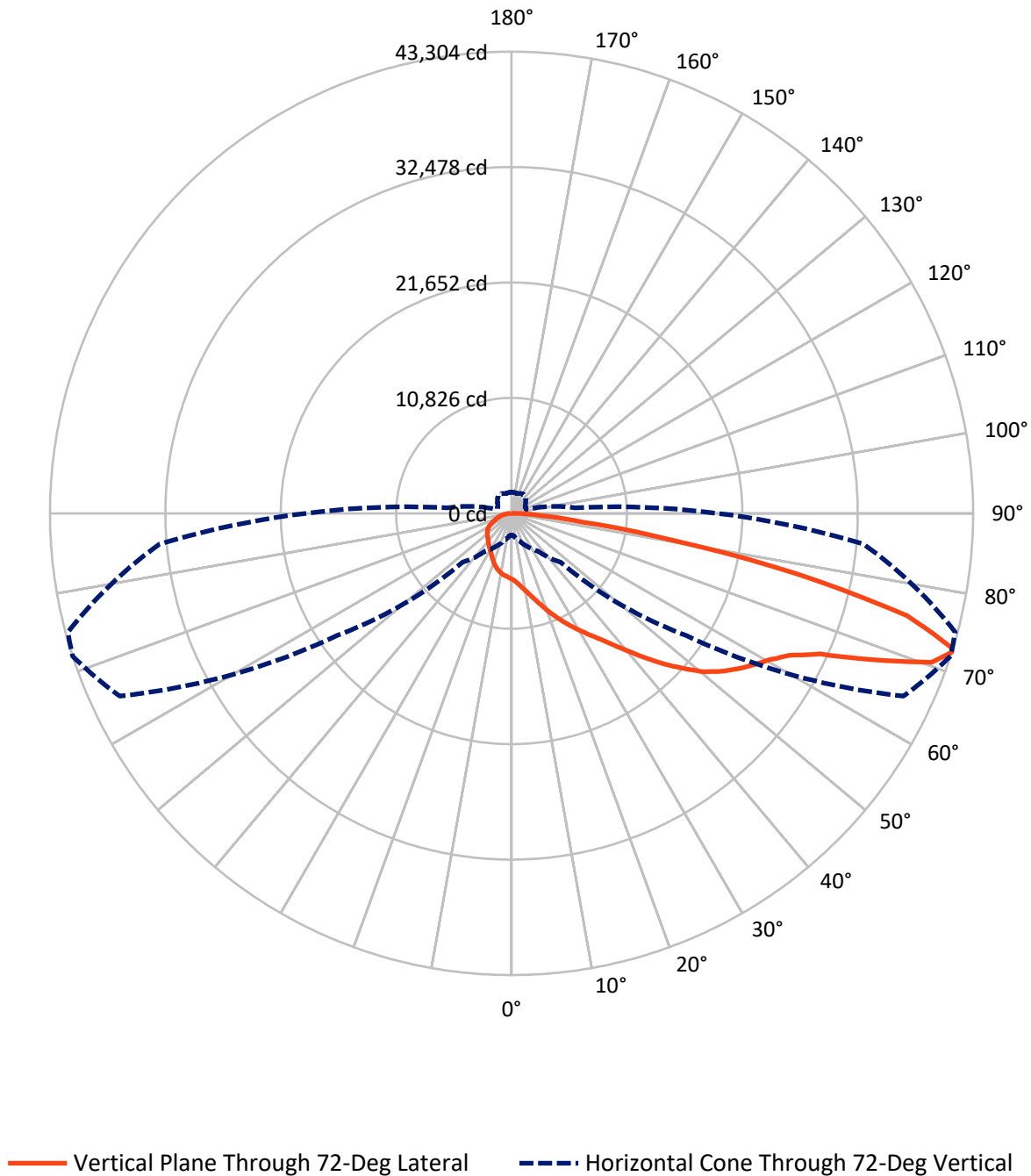
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 13.6 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    | 9300.2   | 0.0    | 9300.2  |
|                    | % Fixture | 18.6     | 0.0    | 18.6    |
| <b>Street Side</b> | Lumens    | 40833.8  | 0.0    | 40833.8 |
|                    | % Fixture | 81.4     | 0.0    | 81.4    |
| <b>Total</b>       | Lumens    | 50134.0  | 0.0    | 50134.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 618.0   | 1.2       |
| 10°-20°   | 1997.2  | 4.0       |
| 20°-30°   | 3499.7  | 7.0       |
| 30°-40°   | 5188.9  | 10.4      |
| 40°-50°   | 7589.2  | 15.1      |
| 50°-60°   | 10442.7 | 20.8      |
| 60°-70°   | 11625.8 | 23.2      |
| 70°-80°   | 7877.7  | 15.7      |
| 80°-90°   | 1294.8  | 2.6       |
| 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°    | 50134.0 | 100.0     |
| 0°-180°   | 50134.0 | 100.0     |

**Coefficient of Utilization**



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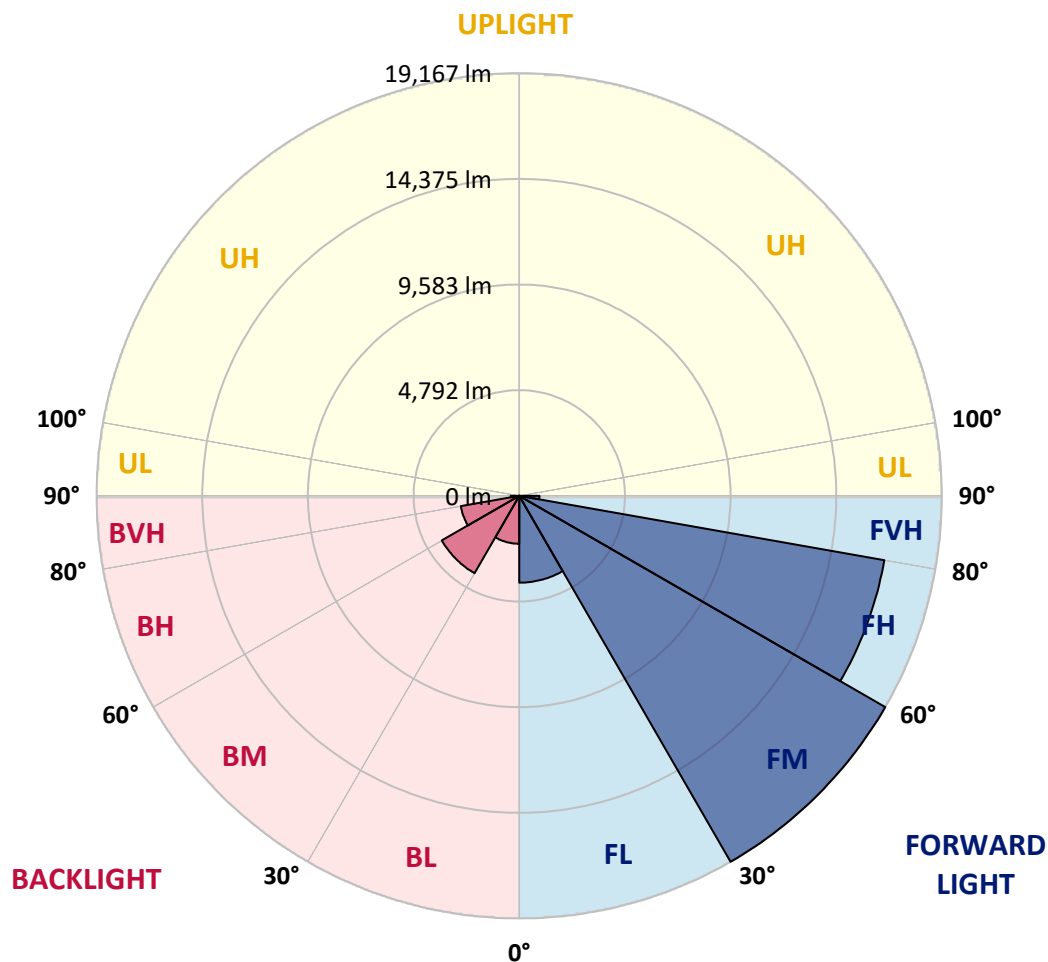
CATALOG NUMBER: GLEON-SA9B-740-U-T2

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 3940.8  | 7.9       |                         |      |         |
| FM   | (30°-60°)   | 19166.8 | 38.2      |                         |      |         |
| FH   | (60°-80°)   | 16812.8 | 33.5      |                         |      | G5      |
| FVH  | (80°-90°)   | 913.3   | 1.8       |                         |      | G5      |
| BL   | (0°-30°)    | 2174.0  | 4.3       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 4054.0  | 8.1       | B3/5000                 |      |         |
| BH   | (60°-80°)   | 2690.7  | 5.4       | B4/5000                 |      | G4/5000 |
| BVH  | (80°-90°)   | 381.5   | 0.8       |                         |      | G3/500  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B4-U0-G5**

Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 72°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 6167.8  | 6167.8  | 6167.8  | 6167.8  | 6167.8  | 6167.8  | 6167.8  | 6167.8  | 6167.8  | 6167.8  | 6167.8  |
| 2.5°  | 6813.4  | 6803.0  | 6766.8  | 6766.8  | 6697.7  | 6639.0  | 6528.6  | 6454.3  | 6366.3  | 6335.2  | 6231.7  |
| 5°    | 7472.8  | 7476.3  | 7431.4  | 7400.3  | 7298.5  | 7174.2  | 6986.0  | 6815.1  | 6644.2  | 6575.2  | 6362.9  |
| 7.5°  | 8026.9  | 8020.0  | 8007.9  | 7982.0  | 7887.1  | 7759.4  | 7505.6  | 7251.9  | 6999.8  | 6896.3  | 6530.3  |
| 10°   | 8382.5  | 8398.1  | 8408.4  | 8420.5  | 8380.8  | 8289.3  | 8049.4  | 7740.4  | 7410.7  | 7269.1  | 6730.5  |
| 12.5° | 8562.1  | 8589.7  | 8638.0  | 8720.9  | 8786.5  | 8776.1  | 8601.8  | 8273.8  | 7881.9  | 7704.1  | 6980.8  |
| 15°   | 8667.4  | 8703.6  | 8779.6  | 8928.0  | 9112.7  | 9218.0  | 9171.4  | 8874.5  | 8437.8  | 8218.5  | 7286.4  |
| 17.5° | 8733.0  | 8762.3  | 8879.7  | 9078.2  | 9352.7  | 9632.3  | 9754.9  | 9506.3  | 9066.1  | 8815.8  | 7636.8  |
| 20°   | 8777.8  | 8800.3  | 8947.0  | 9180.0  | 9535.6  | 9981.0  | 10322.8 | 10260.7 | 9758.3  | 9433.8  | 8002.8  |
| 22.5° | 8878.0  | 8896.9  | 9036.8  | 9271.5  | 9665.1  | 10239.9 | 10870.0 | 10963.2 | 10488.5 | 10120.8 | 8394.6  |
| 25°   | 9157.6  | 9157.6  | 9275.0  | 9439.0  | 9808.4  | 10464.4 | 11332.6 | 11745.2 | 11234.3 | 10806.1 | 8757.1  |
| 27.5° | 9691.0  | 9685.8  | 9729.0  | 9786.0  | 10065.6 | 10692.2 | 11745.2 | 12435.7 | 12007.6 | 11539.8 | 9109.3  |
| 30°   | 10322.8 | 10357.3 | 10362.5 | 10334.9 | 10466.1 | 10977.0 | 12126.7 | 13164.2 | 12786.1 | 12282.1 | 9470.1  |
| 32.5° | 11135.9 | 11158.3 | 11132.4 | 11040.9 | 11021.9 | 11381.0 | 12501.3 | 13927.2 | 13628.5 | 13057.1 | 9799.8  |
| 35°   | 12168.1 | 12125.0 | 12043.8 | 11857.4 | 11679.6 | 11921.3 | 12929.4 | 14690.1 | 14574.5 | 13994.5 | 10253.8 |
| 37.5° | 13274.6 | 13276.4 | 13176.2 | 12753.3 | 12508.2 | 12611.8 | 13519.8 | 15555.0 | 15719.0 | 15109.6 | 10835.5 |
| 40°   | 14161.9 | 14208.5 | 14270.7 | 13714.8 | 13397.2 | 13540.5 | 14270.7 | 16557.9 | 17072.3 | 16431.9 | 11593.3 |
| 42.5° | 14781.6 | 14835.1 | 15011.2 | 14662.5 | 14332.8 | 14598.7 | 15154.5 | 17628.2 | 18591.4 | 17957.9 | 12480.6 |
| 45°   | 15437.6 | 15466.9 | 15591.2 | 15441.1 | 15230.5 | 15829.5 | 16150.5 | 18736.4 | 20198.5 | 19584.0 | 13473.2 |
| 47.5° | 16128.1 | 16159.2 | 16286.9 | 16186.8 | 16076.3 | 16979.1 | 17189.7 | 19780.8 | 21738.3 | 21370.6 | 14533.1 |
| 50°   | 16980.8 | 17001.6 | 17122.4 | 16941.1 | 16975.7 | 17845.7 | 18118.4 | 20738.8 | 23352.3 | 22976.0 | 15596.4 |
| 52.5° | 18144.3 | 18149.5 | 18316.9 | 18152.9 | 17990.7 | 18480.9 | 18917.7 | 21641.6 | 24617.6 | 24439.8 | 16659.8 |
| 55°   | 19055.8 | 19111.0 | 19659.9 | 19625.4 | 19532.2 | 19057.5 | 19585.7 | 22501.3 | 25746.6 | 25831.2 | 17788.7 |
| 57.5° | 18474.0 | 18689.8 | 19801.5 | 20585.2 | 21348.2 | 20492.0 | 20488.5 | 23469.7 | 26796.1 | 27196.6 | 19029.9 |
| 60°   | 16179.9 | 16473.3 | 18111.5 | 19849.8 | 22237.2 | 22988.1 | 22363.2 | 24652.2 | 27856.0 | 28550.0 | 20585.2 |
| 62.5° | 11555.3 | 12038.7 | 14258.6 | 17034.4 | 21018.5 | 24641.8 | 26178.2 | 26528.6 | 29297.4 | 30117.4 | 22606.6 |
| 65°   | 5841.5  | 6207.5  | 8068.4  | 11412.1 | 16792.7 | 23561.2 | 30324.5 | 30637.0 | 31802.2 | 32530.6 | 25719.0 |
| 67.5° | 3549.1  | 3687.2  | 4595.2  | 6347.3  | 10295.2 | 18353.2 | 31677.9 | 37484.9 | 36649.4 | 37036.1 | 30157.1 |
| 70°   | 2615.2  | 2717.1  | 3283.3  | 4215.4  | 5920.9  | 10769.9 | 27524.6 | 42371.8 | 41822.9 | 41779.7 | 33436.9 |
| 72°   | 2036.9  | 2111.2  | 2611.8  | 3405.8  | 4329.4  | 6461.2  | 19949.9 | 40567.9 | 43304.0 | 43086.5 | 33136.6 |
| 72.5° | 1931.6  | 1997.2  | 2453.0  | 3205.6  | 4091.1  | 5857.1  | 17937.2 | 39350.9 | 43197.0 | 43098.6 | 32748.2 |
| 75°   | 1520.8  | 1567.4  | 1816.0  | 2478.9  | 3202.1  | 3323.0  | 9829.1  | 30495.4 | 38320.4 | 39913.7 | 29454.5 |
| 77.5° | 1258.4  | 1265.3  | 1396.5  | 1803.9  | 2496.1  | 2349.4  | 4828.2  | 21158.3 | 27440.0 | 29192.1 | 20864.8 |
| 80°   | 1025.4  | 1034.0  | 1096.2  | 1265.3  | 1888.5  | 1738.3  | 2292.4  | 12166.4 | 15363.4 | 15382.4 | 9922.3  |
| 82.5° | 816.5   | 818.2   | 887.3   | 925.3   | 1356.8  | 1242.9  | 1313.7  | 5712.1  | 6713.3  | 6457.8  | 3566.4  |
| 85°   | 574.8   | 562.7   | 866.6   | 759.5   | 887.3   | 797.5   | 725.0   | 2261.4  | 2775.8  | 2654.9  | 1116.9  |
| 87.5° | 191.6   | 198.5   | 384.9   | 492.0   | 517.9   | 452.3   | 322.8   | 866.6   | 1047.8  | 1039.2  | 353.9   |
| 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-SA9B-740-U-T2

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 6167.8  | 6167.8 | 6167.8 | 6167.8 | 6167.8 | 6167.8 | 6167.8 | 6167.8 | 6167.8 | 6167.8 | 6167.8 |
| 2.5°  | 6198.9  | 6143.6 | 6062.5 | 5972.7 | 5902.0 | 5829.5 | 5775.9 | 5748.3 | 5717.2 | 5691.4 | 5722.4 |
| 5°    | 6264.5  | 6160.9 | 5988.3 | 5819.1 | 5694.8 | 5584.3 | 5504.9 | 5463.5 | 5425.5 | 5399.6 | 5403.1 |
| 7.5°  | 6371.5  | 6204.0 | 5914.0 | 5667.2 | 5494.6 | 5375.5 | 5294.3 | 5266.7 | 5242.5 | 5235.6 | 5244.3 |
| 10°   | 6485.4  | 6238.6 | 5815.6 | 5487.7 | 5290.9 | 5192.5 | 5156.2 | 5175.2 | 5192.5 | 5208.0 | 5225.3 |
| 12.5° | 6614.9  | 6269.6 | 5672.4 | 5277.1 | 5109.6 | 5071.6 | 5107.9 | 5190.7 | 5251.2 | 5287.4 | 5309.9 |
| 15°   | 6784.1  | 6297.3 | 5506.6 | 5066.5 | 4954.3 | 4997.4 | 5120.0 | 5263.2 | 5368.5 | 5435.9 | 5446.2 |
| 17.5° | 6939.4  | 6295.5 | 5294.3 | 4854.1 | 4828.2 | 4954.3 | 5139.0 | 5340.9 | 5482.5 | 5577.4 | 5596.4 |
| 20°   | 7099.9  | 6248.9 | 5047.5 | 4647.0 | 4700.5 | 4907.6 | 5147.6 | 5391.0 | 5561.9 | 5672.4 | 5698.3 |
| 22.5° | 7250.1  | 6167.8 | 4776.5 | 4458.8 | 4593.5 | 4845.5 | 5114.8 | 5361.6 | 5532.5 | 5622.3 | 5649.9 |
| 25°   | 7352.0  | 6026.2 | 4502.0 | 4300.0 | 4498.5 | 4769.6 | 5007.8 | 5206.3 | 5334.0 | 5378.9 | 5385.8 |
| 27.5° | 7403.8  | 5841.5 | 4243.1 | 4161.9 | 4400.1 | 4645.3 | 4809.3 | 4907.6 | 4943.9 | 4940.4 | 4933.5 |
| 30°   | 7410.7  | 5598.1 | 4020.4 | 4049.7 | 4286.2 | 4462.3 | 4540.0 | 4521.0 | 4474.4 | 4395.0 | 4401.9 |
| 32.5° | 7388.2  | 5323.7 | 3833.9 | 3942.7 | 4141.2 | 4239.6 | 4243.1 | 4151.6 | 4027.3 | 3901.3 | 3866.7 |
| 35°   | 7395.1  | 5054.4 | 3669.9 | 3821.9 | 3965.1 | 4008.3 | 3968.6 | 3833.9 | 3664.8 | 3502.5 | 3468.0 |
| 37.5° | 7471.1  | 4819.6 | 3528.4 | 3682.0 | 3770.1 | 3780.4 | 3723.5 | 3581.9 | 3457.6 | 3298.8 | 3285.0 |
| 40°   | 7652.3  | 4652.2 | 3393.8 | 3524.9 | 3575.0 | 3580.2 | 3499.1 | 3398.9 | 3409.3 | 3324.7 | 3323.0 |
| 42.5° | 7978.6  | 4579.7 | 3274.6 | 3361.0 | 3392.0 | 3402.4 | 3340.2 | 3276.4 | 3366.1 | 3310.9 | 3291.9 |
| 45°   | 8399.8  | 4596.9 | 3174.5 | 3200.4 | 3257.4 | 3305.7 | 3267.7 | 3190.1 | 3224.6 | 2984.6 | 2905.2 |
| 47.5° | 8886.6  | 4707.4 | 3095.1 | 3062.3 | 3160.7 | 3252.2 | 3193.5 | 3076.1 | 2953.6 | 2715.3 | 2670.5 |
| 50°   | 9456.2  | 4878.3 | 3022.6 | 2925.9 | 3055.4 | 3179.7 | 3121.0 | 2953.6 | 2768.9 | 2653.2 | 2637.7 |
| 52.5° | 10050.1 | 5087.2 | 2950.1 | 2775.8 | 2922.5 | 3124.5 | 3095.1 | 2925.9 | 2698.1 | 2584.2 | 2563.4 |
| 55°   | 10723.3 | 5297.8 | 2858.6 | 2601.4 | 2779.2 | 3098.6 | 3083.0 | 2825.8 | 2644.6 | 2580.7 | 2565.2 |
| 57.5° | 11560.5 | 5537.7 | 2737.8 | 2420.2 | 2644.6 | 3005.4 | 2957.0 | 2765.4 | 2589.3 | 2541.0 | 2535.8 |
| 60°   | 12651.5 | 5891.6 | 2563.4 | 2226.8 | 2480.6 | 2862.1 | 2851.7 | 2677.4 | 2501.3 | 2466.8 | 2459.9 |
| 62.5° | 14287.9 | 6476.8 | 2323.5 | 2033.5 | 2297.6 | 2618.7 | 2713.6 | 2558.3 | 2408.1 | 2406.4 | 2409.8 |
| 65°   | 16825.5 | 7357.2 | 2062.8 | 1864.3 | 2112.9 | 2413.3 | 2553.1 | 2435.7 | 2313.1 | 2347.7 | 2352.8 |
| 67.5° | 19767.0 | 8087.3 | 1807.4 | 1698.6 | 1924.7 | 2218.2 | 2408.1 | 2313.1 | 2187.1 | 2276.9 | 2278.6 |
| 70°   | 20745.7 | 7434.8 | 1582.9 | 1534.6 | 1729.7 | 2030.0 | 2251.0 | 2178.5 | 2050.8 | 2140.5 | 2131.9 |
| 72°   | 19306.1 | 6002.1 | 1437.9 | 1410.3 | 1582.9 | 1874.7 | 2111.2 | 2052.5 | 1926.5 | 1986.9 | 1964.4 |
| 72.5° | 18852.1 | 5722.4 | 1401.7 | 1379.3 | 1543.2 | 1835.0 | 2074.9 | 2021.4 | 1895.4 | 1947.2 | 1926.5 |
| 75°   | 16816.9 | 4969.8 | 1204.9 | 1210.1 | 1346.5 | 1641.6 | 1871.2 | 1854.0 | 1724.5 | 1729.7 | 1722.8 |
| 77.5° | 12197.5 | 3644.1 | 1015.0 | 1049.5 | 1146.2 | 1443.1 | 1665.8 | 1655.4 | 1513.9 | 1488.0 | 1482.8 |
| 80°   | 5660.3  | 1859.1 | 826.9  | 842.4  | 942.5  | 1206.6 | 1420.7 | 1406.9 | 1292.9 | 1260.1 | 1241.2 |
| 82.5° | 1938.5  | 883.8  | 621.4  | 631.8  | 730.2  | 971.9  | 1232.5 | 1223.9 | 1128.9 | 1065.1 | 1025.4 |
| 85°   | 692.2   | 440.2  | 435.0  | 424.7  | 521.3  | 764.7  | 1073.7 | 1027.1 | 887.3  | 756.1  | 752.6  |
| 87.5° | 224.4   | 188.2  | 224.4  | 222.7  | 303.8  | 517.9  | 780.3  | 664.6  | 643.9  | 535.1  | 524.8  |
| 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            |

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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

REPORT NUMBER: SP1-2101-121-2

### Photopic Flux vs. Wavelength



#####

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

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: 10425.8

S/P: 1.47

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

REPORT NUMBER: SP1-2101-121-2

### Melanopic Flux vs. Wavelength



**Melanopic Lumens: 3927.2**

**M/P: 0.55**

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

### 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)