

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: P319350

Luminaire Tested: **GLEON-SA6A-740-U-SL2**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P319350  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-20)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA6A-740-U-SL2  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(6) 70 CRI, 4000K, 615mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL  
LIGHT ELIMINATOR OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 27305 lumens  
Efficiency: N/A  
Efficacy: 141.5 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B3 - U0 - G5

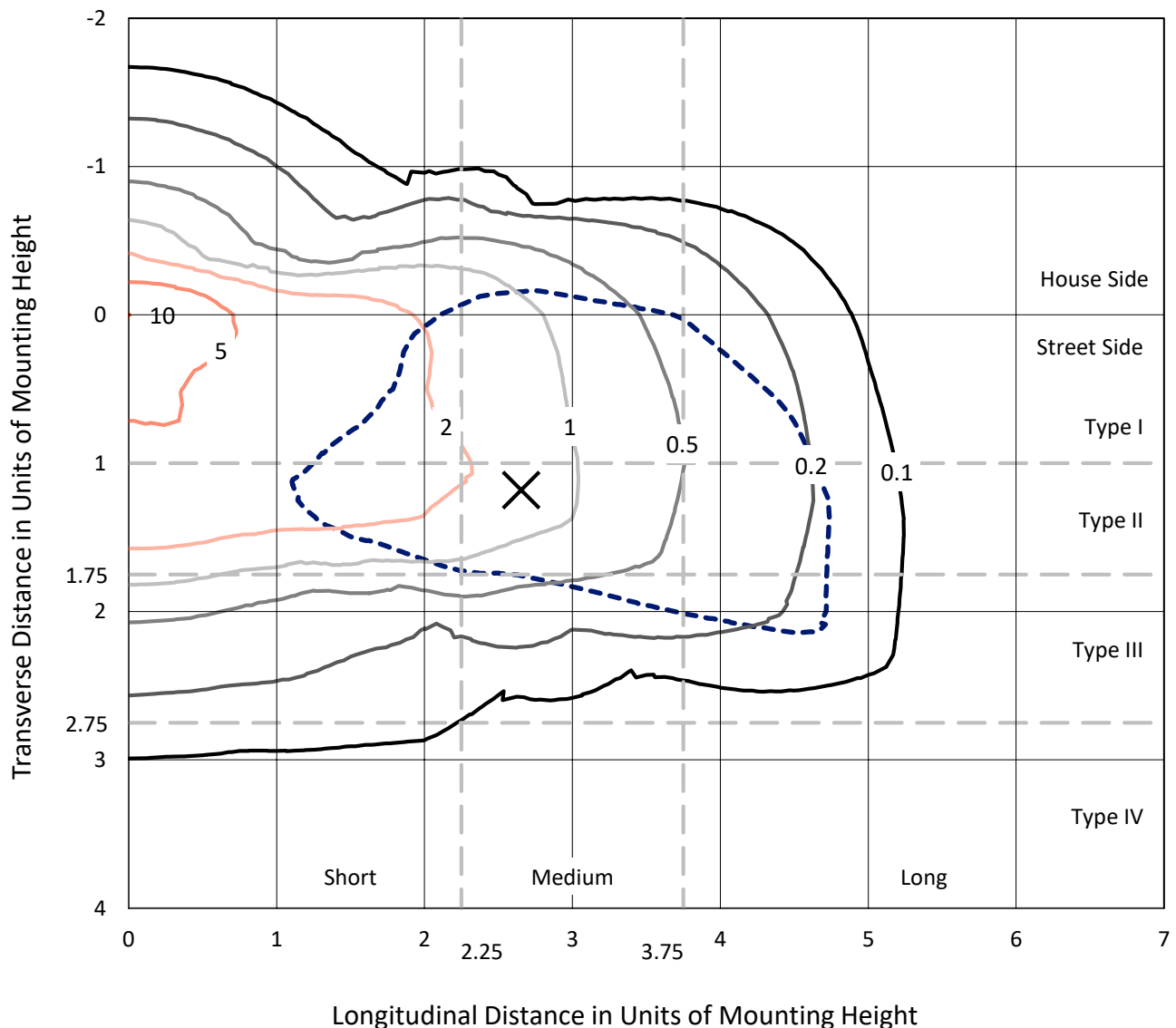
Input Watts (W): 193  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

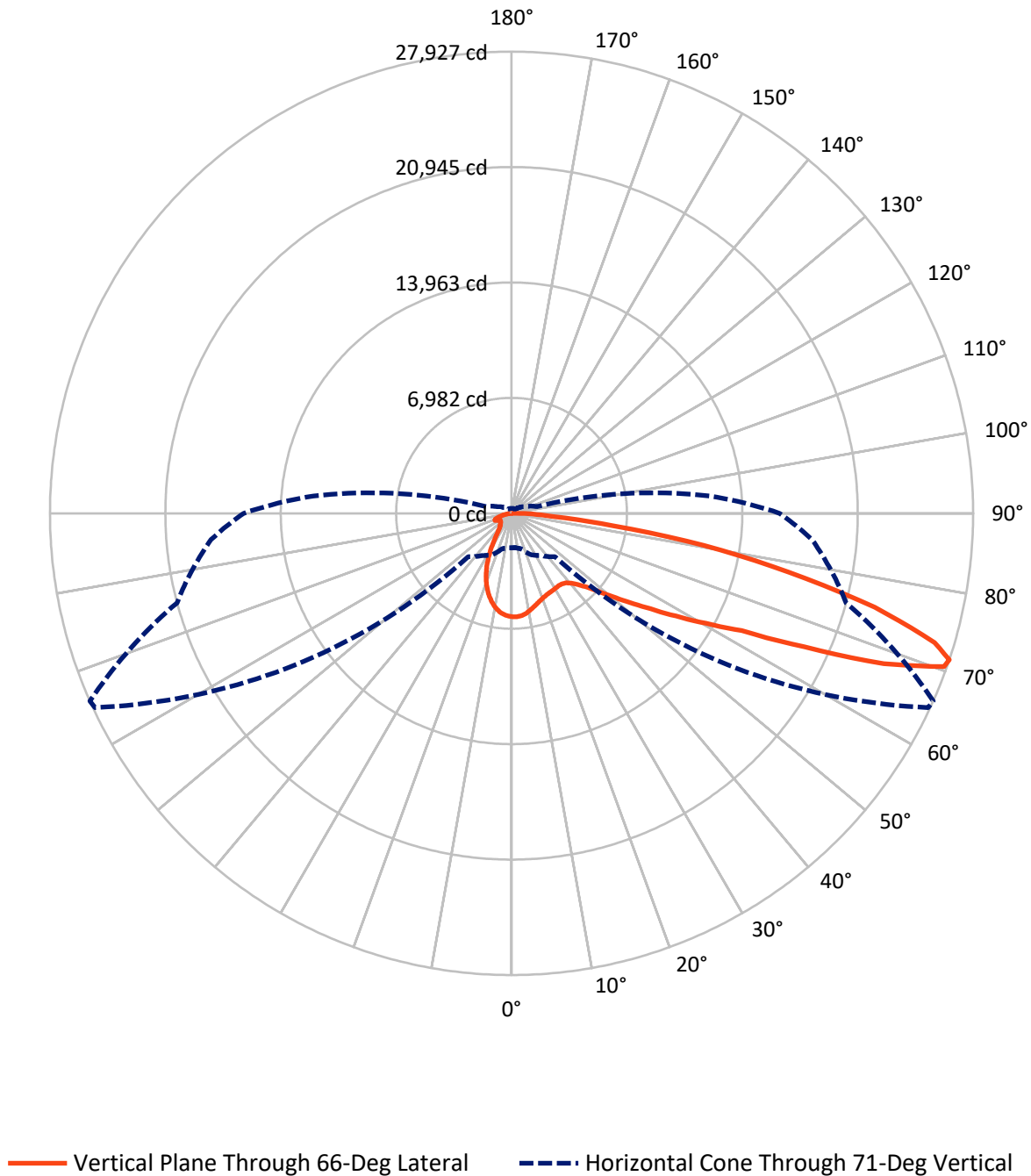
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 10 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    | 5060.4   | 0.0    | 5060.4  |
|                    | % Fixture | 18.5     | 0.0    | 18.5    |
| <b>Street Side</b> | Lumens    | 22244.6  | 0.0    | 22244.6 |
|                    | % Fixture | 81.5     | 0.0    | 81.5    |
| <b>Total</b>       | Lumens    | 27305.0  | 0.0    | 27305.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 550.6   | 2.0       |
| 10°-20°   | 1320.6  | 4.8       |
| 20°-30°   | 1773.8  | 6.5       |
| 30°-40°   | 2333.5  | 8.5       |
| 40°-50°   | 3394.6  | 12.4      |
| 50°-60°   | 5302.7  | 19.4      |
| 60°-70°   | 6642.5  | 24.3      |
| 70°-80°   | 5066.7  | 18.6      |
| 80°-90°   | 920.1   | 3.4       |
| 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°    | 27305.0 | 100.0     |
| 0°-180°   | 27305.0 | 100.0     |

**Coefficient of Utilization**



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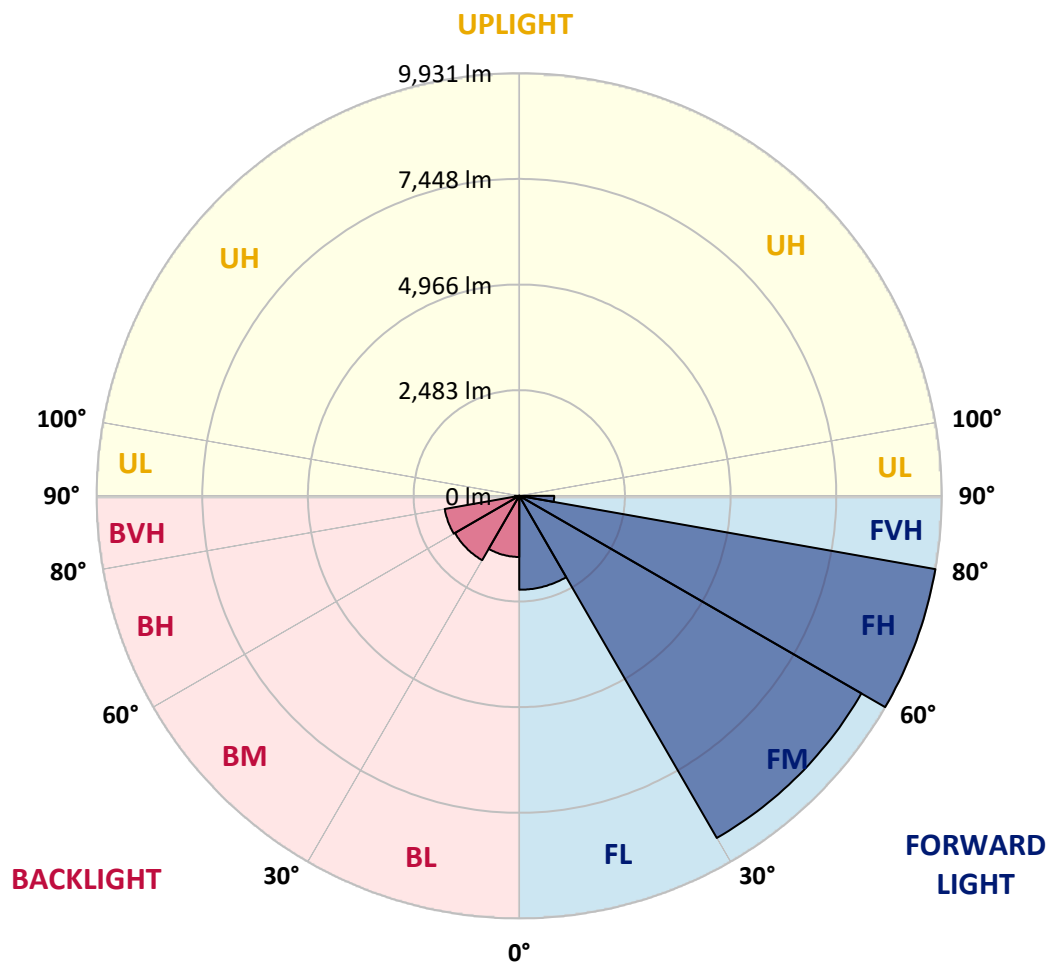
CATALOG NUMBER: GLEON-SA6A-740-U-SL2

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|--------|-----------|-------------------------|------|----------|
|      |             |        |           | B                       | U    | G        |
| FL   | (0°-30°)    | 2208.0 | 8.1       |                         |      |          |
| FM   | (30°-60°)   | 9285.1 | 34.0      |                         |      |          |
| FH   | (60°-80°)   | 9931.1 | 36.4      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 820.5  | 3.0       |                         |      | G5       |
| BL   | (0°-30°)    | 1437.0 | 5.3       | B3/2500                 |      |          |
| BM   | (30°-60°)   | 1745.7 | 6.4       | B2/2500                 |      |          |
| BH   | (60°-80°)   | 1778.1 | 6.5       | B3/2500                 |      | G3/2500  |
| BVH  | (80°-90°)   | 99.6   | 0.4       |                         |      | G1/100   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |          |

**BUG Rating: B3-U0-G5**

Type III Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°     | 35°     | 45°     | 55°     | 65°     | 66°     | 75°     | 85°     |
|-------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 6255.0 | 6255.0 | 6255.0 | 6255.0  | 6255.0  | 6255.0  | 6255.0  | 6255.0  | 6255.0  | 6255.0  | 6255.0  |
| 2.5°  | 6139.1 | 6129.7 | 6157.9 | 6187.2  | 6198.5  | 6217.3  | 6245.6  | 6261.6  | 6260.7  | 6263.5  | 6254.1  |
| 5°    | 5731.8 | 5719.6 | 5776.1 | 5822.3  | 5910.9  | 6010.9  | 6132.5  | 6219.2  | 6221.1  | 6270.1  | 6283.3  |
| 7.5°  | 5346.3 | 5337.8 | 5402.8 | 5477.3  | 5580.0  | 5732.8  | 5929.8  | 6116.5  | 6127.8  | 6260.7  | 6306.9  |
| 10°   | 5037.0 | 5035.1 | 5098.3 | 5179.4  | 5299.1  | 5469.7  | 5696.0  | 5969.4  | 5986.4  | 6215.5  | 6310.7  |
| 12.5° | 4795.7 | 4799.5 | 4854.1 | 4946.5  | 5072.9  | 5251.0  | 5496.1  | 5804.4  | 5831.8  | 6143.8  | 6289.0  |
| 15°   | 4617.5 | 4632.6 | 4676.9 | 4770.2  | 4894.7  | 5075.7  | 5327.4  | 5651.7  | 5693.2  | 6063.7  | 6276.7  |
| 17.5° | 4515.7 | 4532.7 | 4563.8 | 4641.1  | 4758.0  | 4932.4  | 5170.9  | 5526.3  | 5564.0  | 6002.4  | 6277.7  |
| 20°   | 4485.5 | 4499.7 | 4517.6 | 4564.7  | 4663.7  | 4822.1  | 5047.4  | 5413.2  | 5453.7  | 5953.4  | 6287.1  |
| 22.5° | 4544.9 | 4555.3 | 4557.2 | 4553.4  | 4613.7  | 4742.9  | 4957.8  | 5330.2  | 5373.6  | 5921.3  | 6293.7  |
| 25°   | 4672.2 | 4686.3 | 4676.0 | 4641.1  | 4621.3  | 4700.5  | 4911.6  | 5275.5  | 5318.9  | 5897.8  | 6280.5  |
| 27.5° | 4863.6 | 4865.5 | 4857.0 | 4811.7  | 4718.4  | 4705.2  | 4897.5  | 5243.5  | 5285.0  | 5870.4  | 6253.2  |
| 30°   | 5123.8 | 5136.0 | 5120.9 | 5059.7  | 4906.9  | 4780.6  | 4914.5  | 5212.4  | 5250.1  | 5835.5  | 6208.9  |
| 32.5° | 5428.3 | 5458.4 | 5457.5 | 5393.4  | 5174.7  | 4949.4  | 4984.2  | 5193.5  | 5222.8  | 5798.8  | 6155.1  |
| 35°   | 5744.1 | 5785.6 | 5862.9 | 5835.5  | 5565.0  | 5216.2  | 5118.1  | 5223.7  | 5243.5  | 5794.0  | 6117.4  |
| 37.5° | 6072.2 | 6113.6 | 6273.0 | 6346.5  | 6029.7  | 5598.0  | 5329.3  | 5330.2  | 5339.7  | 5851.6  | 6114.6  |
| 40°   | 6415.3 | 6459.6 | 6699.1 | 6890.5  | 6632.1  | 6081.6  | 5669.6  | 5552.7  | 5542.3  | 5993.0  | 6170.2  |
| 42.5° | 6896.1 | 6935.7 | 7223.2 | 7467.4  | 7300.5  | 6701.0  | 6140.0  | 5895.9  | 5874.2  | 6270.1  | 6348.4  |
| 45°   | 7504.2 | 7538.1 | 7843.6 | 8104.7  | 8018.9  | 7408.0  | 6731.1  | 6368.2  | 6364.4  | 6732.1  | 6709.4  |
| 47.5° | 8227.2 | 8253.6 | 8528.0 | 8780.6  | 8811.7  | 8221.6  | 7474.0  | 7096.9  | 7035.6  | 7365.6  | 7268.5  |
| 50°   | 8980.5 | 9009.7 | 9196.4 | 9467.9  | 9698.9  | 9310.5  | 8429.9  | 7989.7  | 7907.7  | 8201.8  | 8060.4  |
| 52.5° | 9479.2 | 9517.9 | 9680.0 | 10024.1 | 10696.3 | 10504.0 | 9560.3  | 9071.9  | 8947.5  | 9215.2  | 9106.8  |
| 55°   | 9256.7 | 9343.4 | 9591.4 | 10142.9 | 11493.8 | 12327.2 | 10954.6 | 10334.3 | 10193.8 | 10416.3 | 10352.2 |
| 57.5° | 8245.2 | 8363.9 | 8702.4 | 9553.7  | 11606.0 | 13933.6 | 13062.5 | 11821.0 | 11722.0 | 11657.9 | 11687.1 |
| 60°   | 6396.5 | 6510.5 | 6930.0 | 8039.6  | 10824.5 | 15106.4 | 16234.8 | 13653.6 | 13510.3 | 12904.2 | 12930.6 |
| 62.5° | 4527.0 | 4469.5 | 4757.0 | 5568.7  | 8795.7  | 15244.0 | 19844.6 | 16104.7 | 15633.4 | 14220.2 | 14104.3 |
| 65°   | 3452.3 | 3439.1 | 3568.3 | 3826.6  | 5327.4  | 13597.1 | 21995.0 | 20224.5 | 19488.2 | 15768.2 | 15494.8 |
| 67.5° | 2836.7 | 2813.1 | 2940.4 | 3316.5  | 3430.6  | 8772.1  | 22042.1 | 25004.2 | 24281.1 | 17695.1 | 17103.1 |
| 70°   | 2332.3 | 2305.9 | 2424.7 | 2910.2  | 3170.4  | 4448.8  | 18551.1 | 27803.1 | 27764.5 | 20134.9 | 18317.3 |
| 71°   | 2091.0 | 2072.1 | 2214.5 | 2753.7  | 3114.8  | 3707.8  | 16017.1 | 27810.7 | 27926.6 | 20960.8 | 18245.7 |
| 72.5° | 1702.6 | 1709.2 | 1860.0 | 2451.1  | 3073.3  | 3274.1  | 11771.9 | 26514.4 | 26759.5 | 21748.0 | 17594.3 |
| 75°   | 1131.3 | 1136.9 | 1334.9 | 1885.5  | 2980.0  | 3203.4  | 6470.0  | 22248.5 | 22699.2 | 21276.6 | 16054.8 |
| 77.5° | 759.8  | 758.0  | 892.8  | 1293.4  | 2596.3  | 3203.4  | 3793.6  | 16640.2 | 17135.2 | 16929.6 | 12377.2 |
| 80°   | 523.2  | 519.4  | 614.7  | 892.8   | 1965.6  | 3242.1  | 2932.8  | 11661.6 | 11811.5 | 9142.6  | 5030.4  |
| 82.5° | 320.5  | 323.4  | 401.6  | 630.7   | 1337.7  | 2917.8  | 2768.8  | 6358.7  | 6195.7  | 2564.2  | 1256.7  |
| 85°   | 183.8  | 182.9  | 256.4  | 427.1   | 858.8   | 2462.4  | 2700.0  | 2736.8  | 2510.5  | 772.1   | 454.4   |
| 87.5° | 66.0   | 70.7   | 137.6  | 236.6   | 492.1   | 1714.8  | 2290.8  | 1423.5  | 1283.1  | 348.8   | 205.5   |
| 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: P319350

CATALOG NUMBER: GLEON-SA6A-740-U-SL2

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 6255.0  | 6255.0  | 6255.0 | 6255.0 | 6255.0 | 6255.0 | 6255.0 | 6255.0 | 6255.0 | 6255.0 | 6255.0 |
| 2.5°  | 6247.5  | 6253.2  | 6246.6 | 6208.9 | 6176.8 | 6124.9 | 6095.7 | 6055.2 | 6042.9 | 6037.3 | 6052.4 |
| 5°    | 6271.1  | 6273.0  | 6217.3 | 6118.4 | 6007.1 | 5876.1 | 5781.8 | 5665.8 | 5611.2 | 5587.6 | 5602.7 |
| 7.5°  | 6292.8  | 6284.3  | 6162.7 | 5973.2 | 5767.7 | 5539.5 | 5336.8 | 5151.1 | 5042.7 | 4998.4 | 5002.2 |
| 10°   | 6295.6  | 6259.8  | 6064.6 | 5771.4 | 5452.8 | 5118.1 | 4807.0 | 4520.4 | 4339.4 | 4221.6 | 4257.4 |
| 12.5° | 6266.4  | 6206.0  | 5920.4 | 5510.3 | 5068.1 | 4611.9 | 4191.4 | 3761.5 | 3503.2 | 3383.5 | 3387.2 |
| 15°   | 6243.7  | 6134.4  | 5743.1 | 5203.0 | 4609.0 | 4004.7 | 3430.6 | 2925.3 | 2650.0 | 2527.5 | 2470.0 |
| 17.5° | 6224.9  | 6057.1  | 5537.6 | 4857.0 | 4067.0 | 3300.5 | 2610.4 | 2159.8 | 2009.0 | 1973.1 | 1958.1 |
| 20°   | 6198.5  | 5975.1  | 5308.5 | 4456.3 | 3449.5 | 2512.4 | 1906.2 | 1683.7 | 1684.7 | 1726.1 | 1731.8 |
| 22.5° | 6161.7  | 5881.7  | 5064.4 | 4006.6 | 2786.7 | 1829.8 | 1494.2 | 1430.1 | 1495.2 | 1574.4 | 1588.5 |
| 25°   | 6107.0  | 5771.4  | 4792.9 | 3509.8 | 2124.9 | 1406.6 | 1276.5 | 1273.6 | 1352.8 | 1435.8 | 1448.0 |
| 27.5° | 6029.7  | 5627.2  | 4491.2 | 2976.2 | 1565.9 | 1195.4 | 1143.5 | 1163.3 | 1221.8 | 1282.1 | 1286.8 |
| 30°   | 5926.0  | 5459.4  | 4158.4 | 2413.4 | 1227.4 | 1064.3 | 1058.7 | 1076.6 | 1112.4 | 1154.9 | 1158.6 |
| 32.5° | 5812.0  | 5288.7  | 3803.0 | 1868.5 | 1051.1 | 993.6  | 999.3  | 1007.8 | 1024.8 | 1041.7 | 1045.5 |
| 35°   | 5708.3  | 5114.3  | 3439.1 | 1419.8 | 967.2  | 947.4  | 943.7  | 941.8  | 943.7  | 938.0  | 939.0  |
| 37.5° | 5641.3  | 4970.1  | 3060.1 | 1130.3 | 919.2  | 906.9  | 895.6  | 881.5  | 865.4  | 856.0  | 857.9  |
| 40°   | 5616.8  | 4862.6  | 2676.4 | 976.7  | 879.6  | 871.1  | 849.4  | 819.2  | 800.4  | 794.7  | 794.7  |
| 42.5° | 5682.8  | 4807.0  | 2305.9 | 899.4  | 846.6  | 832.4  | 796.6  | 761.7  | 747.6  | 746.6  | 745.7  |
| 45°   | 5884.6  | 4829.6  | 1953.3 | 856.9  | 816.4  | 789.1  | 741.9  | 712.7  | 703.3  | 705.2  | 704.2  |
| 47.5° | 6246.6  | 4972.0  | 1651.7 | 828.7  | 786.2  | 750.4  | 697.6  | 674.1  | 662.7  | 662.7  | 663.7  |
| 50°   | 6862.2  | 5304.8  | 1411.3 | 805.1  | 760.8  | 714.6  | 665.6  | 636.3  | 621.3  | 620.3  | 620.3  |
| 52.5° | 7758.7  | 5900.6  | 1261.4 | 785.3  | 732.5  | 682.5  | 633.5  | 596.8  | 578.8  | 575.1  | 573.2  |
| 55°   | 8882.4  | 6754.7  | 1219.9 | 772.1  | 694.8  | 647.7  | 594.9  | 558.1  | 538.3  | 529.8  | 528.9  |
| 57.5° | 10139.1 | 7793.6  | 1301.9 | 756.1  | 656.1  | 606.2  | 552.4  | 517.6  | 496.8  | 486.5  | 485.5  |
| 60°   | 11410.9 | 8927.7  | 1636.6 | 733.4  | 624.1  | 560.9  | 509.1  | 477.0  | 456.3  | 445.0  | 443.1  |
| 62.5° | 12684.5 | 10123.1 | 2320.1 | 731.6  | 601.5  | 517.6  | 464.8  | 437.4  | 417.6  | 405.4  | 402.5  |
| 65°   | 14121.2 | 11431.6 | 3096.9 | 781.5  | 593.9  | 478.0  | 419.5  | 397.8  | 380.9  | 369.6  | 368.6  |
| 67.5° | 15771.0 | 12908.9 | 3022.4 | 884.3  | 619.4  | 442.1  | 377.1  | 360.1  | 347.9  | 338.4  | 337.5  |
| 70°   | 16545.0 | 12677.9 | 1878.9 | 956.9  | 655.2  | 407.3  | 336.6  | 324.3  | 314.9  | 308.3  | 305.4  |
| 71°   | 16220.7 | 12037.8 | 1575.3 | 948.4  | 651.4  | 392.2  | 320.5  | 311.1  | 301.7  | 296.0  | 293.2  |
| 72.5° | 15336.4 | 10978.1 | 1314.2 | 882.4  | 609.0  | 364.8  | 299.8  | 290.4  | 281.9  | 275.3  | 273.4  |
| 75°   | 13762.0 | 9804.4  | 1052.1 | 705.2  | 485.5  | 308.3  | 263.0  | 252.7  | 246.1  | 242.3  | 238.5  |
| 77.5° | 10116.5 | 6997.0  | 813.6  | 557.2  | 357.3  | 251.7  | 224.4  | 216.8  | 210.2  | 204.6  | 201.7  |
| 80°   | 3875.6  | 2710.4  | 547.7  | 415.7  | 262.1  | 198.9  | 181.0  | 177.2  | 170.6  | 166.9  | 166.9  |
| 82.5° | 1043.6  | 809.8   | 292.2  | 251.7  | 175.3  | 145.2  | 138.6  | 136.7  | 131.0  | 123.5  | 124.4  |
| 85°   | 422.3   | 357.3   | 164.0  | 138.6  | 107.5  | 85.8   | 93.3   | 94.3   | 87.7   | 78.2   | 79.2   |
| 87.5° | 185.7   | 151.8   | 91.4   | 61.3   | 47.1   | 33.0   | 42.4   | 42.4   | 38.7   | 32.1   | 29.2   |
| 90°   | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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

Report Prepared for

Cooper Lighting Solutions

MCGRAW, INVUE, LUMARK AND STREETWORKS

DATA VALID FOR LUMINAIRES UTILIZING SA LIGHT ENGINES

Report Number: SP1-2101-121-2

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

Test Date: 03/05/2021

### Test Information

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

SHIELD, DRIVER PROGRAMMED @ 615mA.

### Spectral Parameters

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



### Test Conditions

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

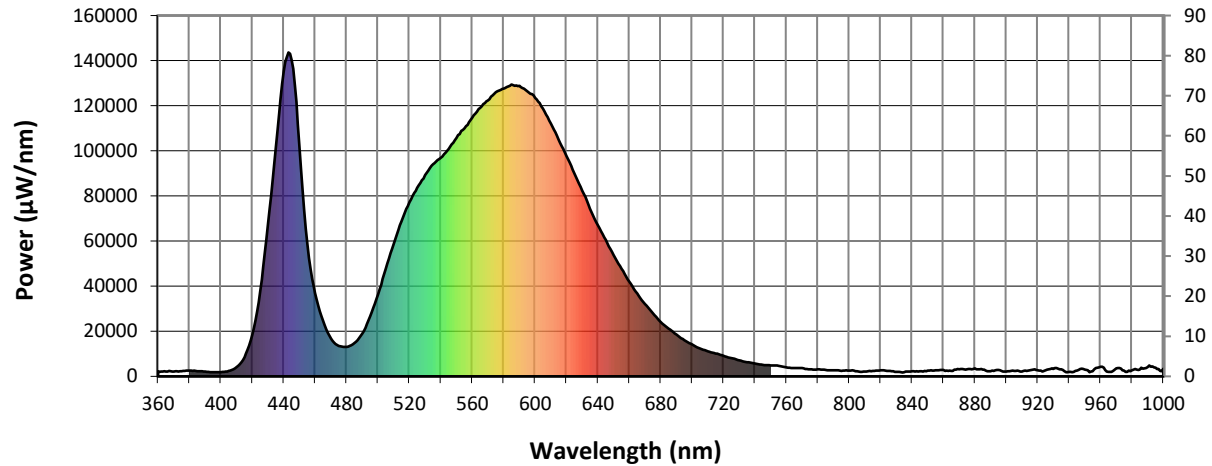
REPORT NUMBER: SP1-2101-121-2

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



REPORT NUMBER: SP1-2101-121-2

### Photopic Flux vs. Wavelength



#####

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

REPORT NUMBER: SP1-2101-121-2

### Scotopic Flux vs. Wavelength



Scotopic Lumens: 10425.8

S/P: 1.47

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

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### 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              |           |                  |                  |

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TM-30-18

### Summary

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



### Color Vector Graphics



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

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



**Color Rendition by Hue-Angle Bin**


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**TM-30-18**

**Measure Comparisons**



(END OF REPORT)