

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: P320020

Luminaire Tested: **GLEON-SA6D-740-U-SL4**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P320020  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-24)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA6D-740-U-SL4  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(6) 70 CRI, 4000K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV  
SPILL LIGHT ELIMINATOR OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 44097 lumens  
Efficiency: N/A  
Efficacy: 115.4 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B3 - U0 - G5

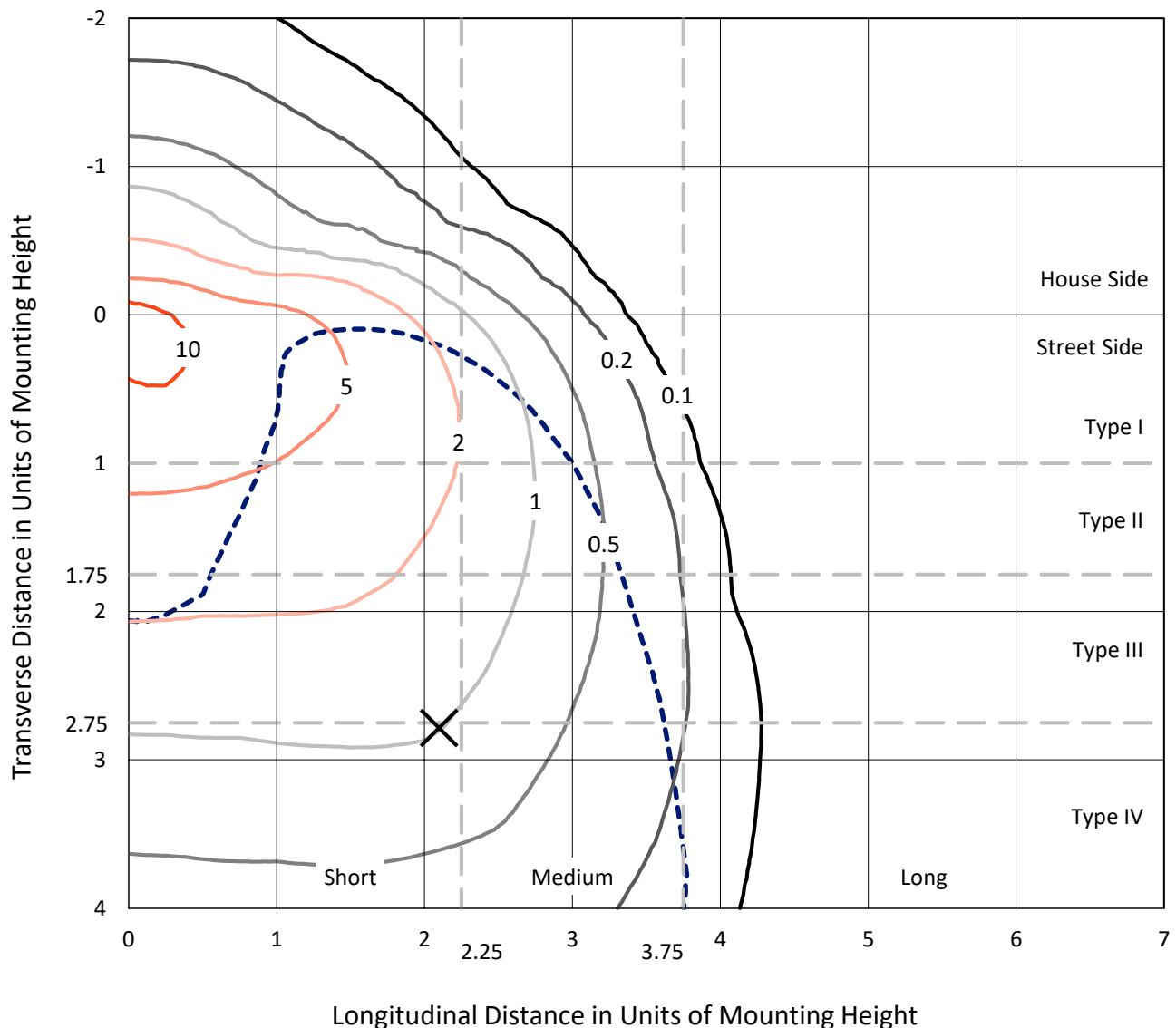
Input Watts (W): 382  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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 CATALOG NUMBER: GLEON-SA6D-740-U-SL4

## Iso-Footcandle Lines of Horizontal Illumination

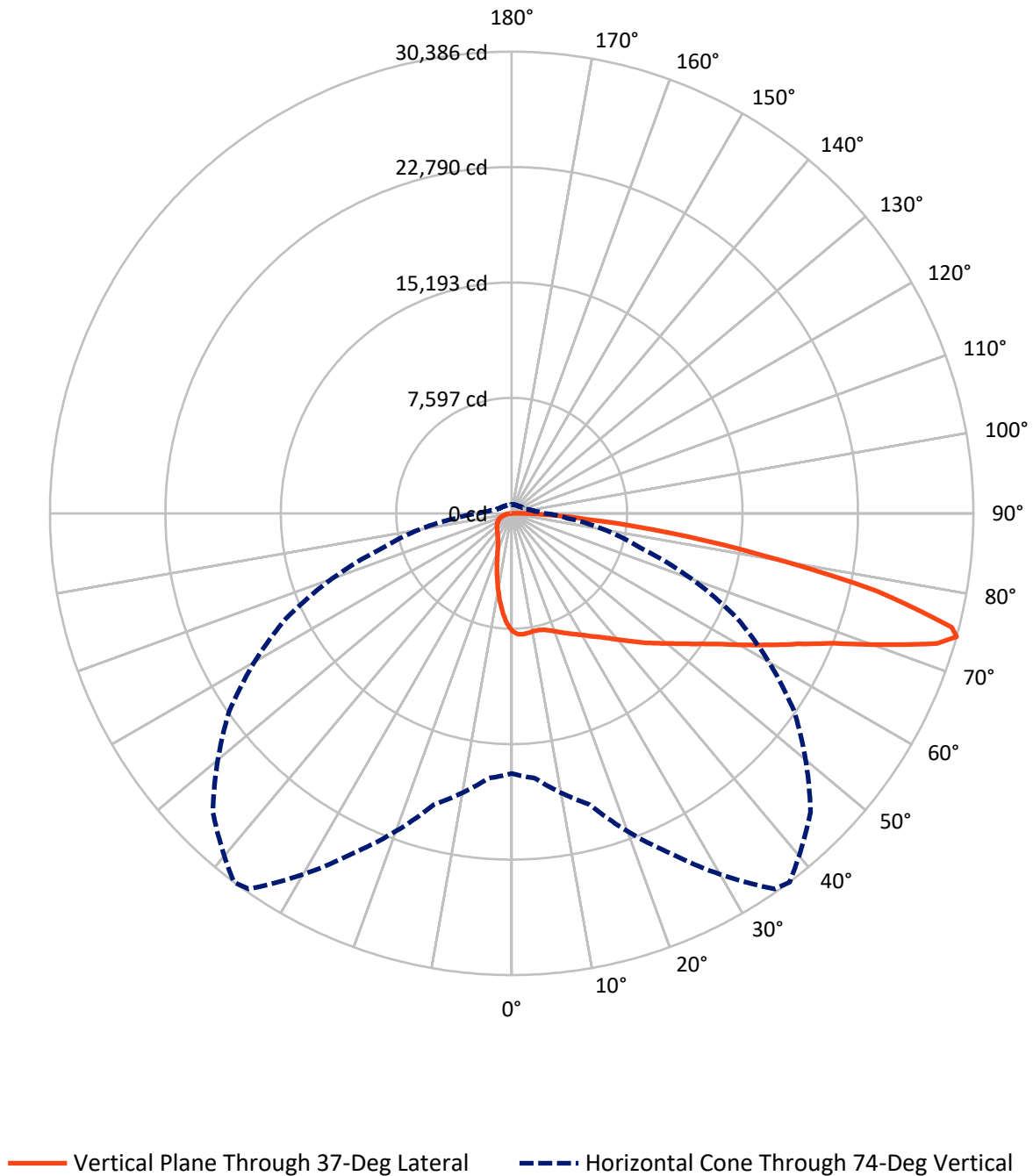
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 12.6 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 6067.4   | 0.0    | 6067.4  |
|                    | % Fixture | 13.8     | 0.0    | 13.8    |
| <b>Street Side</b> | Lumens    | 38029.6  | 0.0    | 38029.6 |
|                    | % Fixture | 86.2     | 0.0    | 86.2    |
| <b>Total</b>       | Lumens    | 44097.0  | 0.0    | 44097.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 684.2   | 1.6       |
| 10°-20°   | 1753.8  | 4.0       |
| 20°-30°   | 2702.3  | 6.1       |
| 30°-40°   | 3929.5  | 8.9       |
| 40°-50°   | 5783.6  | 13.1      |
| 50°-60°   | 8122.0  | 18.4      |
| 60°-70°   | 10280.0 | 23.3      |
| 70°-80°   | 9051.9  | 20.5      |
| 80°-90°   | 1789.7  | 4.1       |
| 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°    | 44097.0 | 100.0     |
| 0°-180°   | 44097.0 | 100.0     |

**Coefficient of Utilization**



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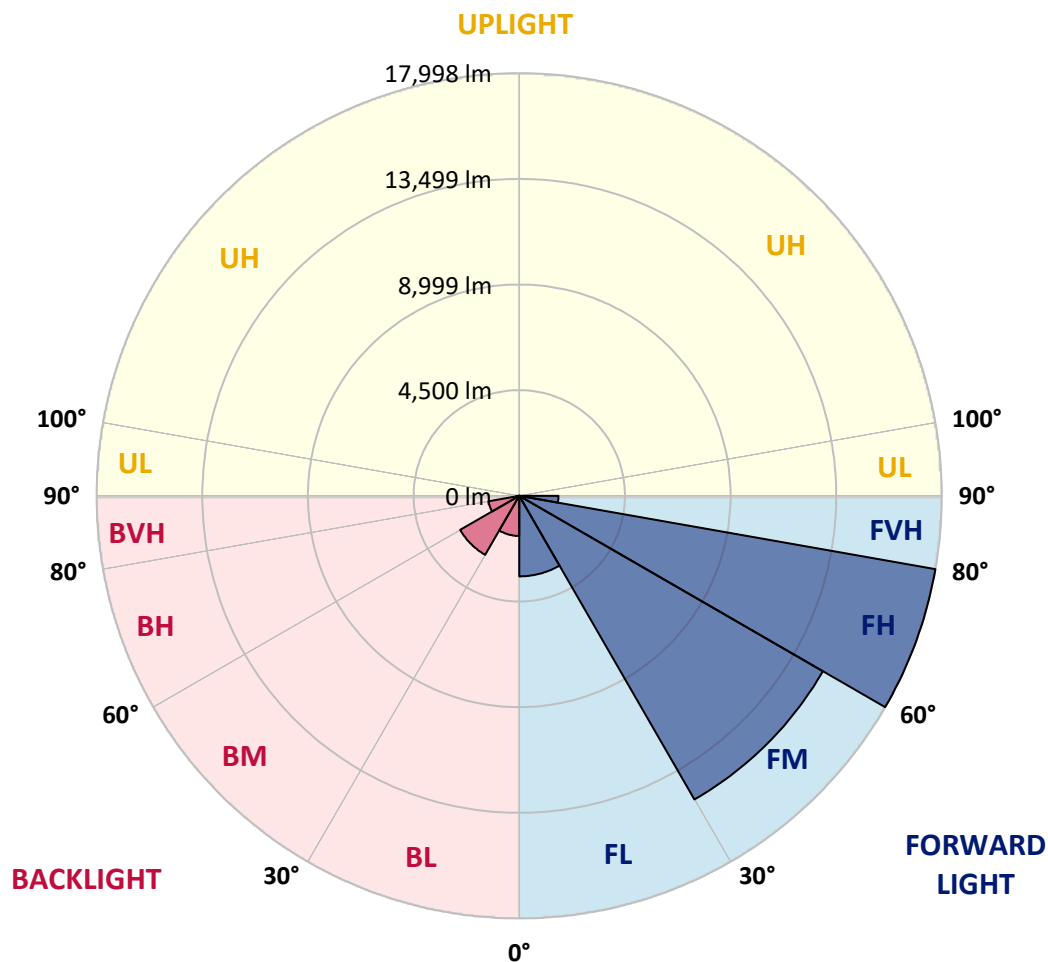
CATALOG NUMBER: GLEON-SA6D-740-U-SL4

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 3431.3  | 7.8       |                         |      |         |
| FM   | (30°-60°)   | 14931.6 | 33.9      |                         |      |         |
| FH   | (60°-80°)   | 17998.1 | 40.8      |                         |      | G5      |
| FVH  | (80°-90°)   | 1668.6  | 3.8       |                         |      | G5      |
| BL   | (0°-30°)    | 1709.1  | 3.9       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 2903.5  | 6.6       | B3/5000                 |      |         |
| BH   | (60°-80°)   | 1333.7  | 3.0       | B3/2500                 |      | G3/2500 |
| BVH  | (80°-90°)   | 121.2   | 0.3       |                         |      | G2/225  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

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

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 37°     | 45°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 7769.7  | 7769.7  | 7769.7  | 7769.7  | 7769.7  | 7769.7  | 7769.7  | 7769.7  | 7769.7  | 7769.7  | 7769.7  |
| 2.5°  | 8035.3  | 8036.9  | 8035.3  | 8022.9  | 7993.4  | 7968.5  | 7948.4  | 7918.8  | 7853.6  | 7803.9  | 7729.3  |
| 5°    | 8111.5  | 8102.1  | 8095.9  | 8072.6  | 8026.0  | 7998.1  | 7959.2  | 7903.3  | 7796.1  | 7696.7  | 7575.6  |
| 7.5°  | 8075.7  | 8064.9  | 8050.9  | 8022.9  | 7970.1  | 7946.8  | 7892.4  | 7819.4  | 7690.5  | 7560.0  | 7386.0  |
| 10°   | 7965.4  | 7962.3  | 7956.1  | 7949.9  | 7904.9  | 7886.2  | 7836.5  | 7758.8  | 7631.5  | 7473.0  | 7269.6  |
| 12.5° | 7842.7  | 7850.5  | 7875.3  | 7908.0  | 7887.8  | 7878.5  | 7847.4  | 7794.6  | 7664.1  | 7493.2  | 7247.8  |
| 15°   | 7765.1  | 7786.8  | 7853.6  | 7939.0  | 7956.1  | 7953.0  | 7945.2  | 7911.1  | 7772.8  | 7583.3  | 7297.5  |
| 17.5° | 7738.7  | 7774.4  | 7901.8  | 8043.1  | 8092.8  | 8103.7  | 8106.8  | 8047.8  | 7894.0  | 7693.6  | 7348.8  |
| 20°   | 7786.8  | 7831.9  | 8018.3  | 8212.4  | 8291.6  | 8297.9  | 8283.9  | 8181.4  | 8008.9  | 7788.4  | 7376.7  |
| 22.5° | 7932.8  | 7973.2  | 8206.2  | 8425.2  | 8515.3  | 8524.6  | 8482.7  | 8327.4  | 8130.1  | 7900.2  | 7415.6  |
| 25°   | 8214.0  | 8263.7  | 8496.7  | 8715.7  | 8762.3  | 8763.8  | 8703.3  | 8510.7  | 8288.5  | 8057.1  | 7499.4  |
| 27.5° | 8580.6  | 8630.3  | 8840.0  | 9054.3  | 9029.5  | 9015.5  | 8933.2  | 8740.5  | 8495.1  | 8273.0  | 7648.6  |
| 30°   | 8989.1  | 9043.4  | 9242.3  | 9394.5  | 9335.5  | 9307.5  | 9240.7  | 8992.2  | 8782.5  | 8568.1  | 7876.9  |
| 32.5° | 9411.6  | 9461.3  | 9635.3  | 9739.3  | 9664.8  | 9652.3  | 9551.4  | 9324.6  | 9156.8  | 9018.6  | 8246.6  |
| 35°   | 9845.0  | 9880.7  | 10051.6 | 10110.6 | 10011.2 | 10008.1 | 9980.1  | 9772.0  | 9666.3  | 9731.6  | 8784.0  |
| 37.5° | 10287.7 | 10297.0 | 10443.0 | 10446.1 | 10416.6 | 10429.0 | 10458.5 | 10328.0 | 10357.6 | 10561.0 | 9483.0  |
| 40°   | 10682.2 | 10707.1 | 10812.7 | 10845.3 | 10896.6 | 10940.1 | 11087.6 | 11002.2 | 11230.5 | 11590.9 | 10352.9 |
| 42.5° | 10974.2 | 11022.4 | 11191.7 | 11275.6 | 11441.8 | 11510.1 | 11718.3 | 11797.5 | 12257.3 | 12797.8 | 11387.4 |
| 45°   | 11221.2 | 11295.8 | 11567.6 | 11740.0 | 12021.2 | 12140.8 | 12439.0 | 12704.6 | 13417.6 | 14107.3 | 12476.3 |
| 47.5° | 11488.4 | 11583.1 | 11923.3 | 12252.6 | 12634.7 | 12769.9 | 13312.0 | 13709.6 | 14655.6 | 15424.5 | 13503.0 |
| 50°   | 11881.4 | 11954.4 | 12286.8 | 12804.0 | 13280.9 | 13454.9 | 14205.1 | 14775.2 | 15913.8 | 16679.6 | 14393.1 |
| 52.5° | 12429.7 | 12401.7 | 12682.9 | 13408.3 | 14048.3 | 14262.6 | 15158.9 | 15909.1 | 17189.1 | 17815.1 | 15144.9 |
| 55°   | 12981.1 | 12934.5 | 13131.8 | 14040.5 | 14943.0 | 15168.2 | 16208.9 | 17047.7 | 18402.2 | 18837.1 | 15721.2 |
| 57.5° | 13594.7 | 13506.1 | 13672.3 | 14753.5 | 15961.9 | 16230.7 | 17384.8 | 18257.8 | 19595.2 | 19663.5 | 16087.8 |
| 60°   | 14226.9 | 14107.3 | 14293.7 | 15637.3 | 17255.9 | 17572.7 | 18761.0 | 19438.3 | 20719.8 | 20325.2 | 16205.8 |
| 62.5° | 14779.9 | 14696.0 | 14983.4 | 16623.7 | 18714.4 | 19062.4 | 20112.4 | 20693.4 | 21828.8 | 20600.2 | 15780.2 |
| 65°   | 15262.9 | 15276.9 | 15774.0 | 17732.7 | 20340.8 | 20712.0 | 21662.6 | 22240.5 | 22701.8 | 20437.1 | 14784.5 |
| 67.5° | 15839.2 | 15918.5 | 16766.6 | 19192.9 | 22388.0 | 22795.0 | 23918.1 | 23927.4 | 23189.6 | 19480.2 | 12824.2 |
| 70°   | 16679.6 | 16842.7 | 18131.9 | 21218.4 | 25299.0 | 25858.2 | 26724.9 | 24918.4 | 22504.5 | 16886.2 | 10090.4 |
| 72.5° | 17425.2 | 17729.6 | 19584.3 | 23535.9 | 28846.8 | 29270.8 | 28366.8 | 24346.8 | 19641.8 | 12654.9 | 6286.3  |
| 74°   | 17122.3 | 17499.7 | 19848.4 | 24677.6 | 30182.6 | 30386.1 | 27812.2 | 22678.5 | 16376.7 | 8763.8  | 3653.4  |
| 75°   | 16469.9 | 16880.0 | 19463.1 | 24666.8 | 30013.3 | 29899.9 | 26473.3 | 20772.6 | 13487.5 | 5977.2  | 2431.0  |
| 77.5° | 13291.8 | 13725.2 | 16400.0 | 21140.7 | 24609.3 | 24502.1 | 20336.1 | 13934.9 | 5907.3  | 1960.3  | 1234.9  |
| 80°   | 7727.8  | 8058.6  | 10180.5 | 13425.4 | 16594.1 | 16788.3 | 13374.1 | 6895.2  | 2323.8  | 1101.3  | 837.2   |
| 82.5° | 3432.8  | 3661.2  | 4917.8  | 6853.3  | 10014.3 | 10264.4 | 7003.9  | 3613.0  | 1435.3  | 669.5   | 503.3   |
| 85°   | 2252.3  | 2421.6  | 2985.5  | 3263.5  | 4768.7  | 4939.6  | 3428.2  | 2813.1  | 947.5   | 368.1   | 369.7   |
| 87.5° | 1620.1  | 1783.2  | 2218.1  | 1937.0  | 2188.6  | 2072.1  | 1865.5  | 2603.4  | 380.6   | 209.7   | 124.3   |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |



REPORT NUMBER: P320020

CATALOG NUMBER: GLEON-SA6D-740-U-SL4

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 7769.7  | 7769.7 | 7769.7 | 7769.7 | 7769.7 | 7769.7 | 7769.7 | 7769.7 | 7769.7 | 7769.7 | 7769.7 |
| 2.5°  | 7696.7  | 7671.9 | 7615.9 | 7510.3 | 7451.3 | 7401.6 | 7319.3 | 7271.1 | 7249.4 | 7247.8 | 7257.1 |
| 5°    | 7505.7  | 7448.2 | 7303.7 | 7126.6 | 6985.3 | 6856.4 | 6696.4 | 6600.1 | 6531.7 | 6491.3 | 6502.2 |
| 7.5°  | 7283.5  | 7193.4 | 6966.7 | 6683.9 | 6457.2 | 6207.1 | 5960.1 | 5812.5 | 5697.6 | 5612.2 | 5627.7 |
| 10°   | 7131.3  | 7007.0 | 6676.2 | 6269.2 | 5891.8 | 5528.3 | 5188.1 | 4984.6 | 4823.1 | 4698.8 | 4708.1 |
| 12.5° | 7080.0  | 6912.3 | 6454.1 | 5910.4 | 5380.7 | 4883.6 | 4439.4 | 4127.2 | 3961.0 | 3819.6 | 3830.5 |
| 15°   | 7087.8  | 6862.6 | 6267.7 | 5587.3 | 4920.9 | 4294.9 | 3755.9 | 3390.9 | 3165.7 | 3067.8 | 3069.4 |
| 17.5° | 7094.0  | 6805.1 | 6071.9 | 5240.9 | 4465.8 | 3745.1 | 3159.5 | 2789.8 | 2577.0 | 2486.9 | 2488.4 |
| 20°   | 7073.8  | 6711.9 | 5829.6 | 4843.3 | 3990.5 | 3240.2 | 2673.3 | 2359.5 | 2198.0 | 2128.1 | 2128.1 |
| 22.5° | 7047.4  | 6601.6 | 5556.2 | 4444.1 | 3521.4 | 2802.2 | 2325.3 | 2086.1 | 1992.9 | 1946.3 | 1944.8 |
| 25°   | 7059.9  | 6519.3 | 5276.6 | 4034.0 | 3089.6 | 2452.7 | 2093.9 | 1935.4 | 1873.3 | 1843.8 | 1842.2 |
| 27.5° | 7126.6  | 6480.5 | 5018.8 | 3625.5 | 2712.1 | 2190.2 | 1938.5 | 1826.7 | 1786.3 | 1767.7 | 1767.7 |
| 30°   | 7247.8  | 6480.5 | 4750.1 | 3277.5 | 2398.3 | 1996.0 | 1818.9 | 1742.8 | 1714.9 | 1702.4 | 1702.4 |
| 32.5° | 7459.1  | 6516.2 | 4490.7 | 2932.7 | 2148.2 | 1843.8 | 1719.5 | 1668.3 | 1646.5 | 1640.3 | 1640.3 |
| 35°   | 7822.5  | 6637.3 | 4237.5 | 2606.5 | 1946.3 | 1719.5 | 1624.8 | 1595.3 | 1579.7 | 1578.2 | 1582.8 |
| 37.5° | 8333.6  | 6884.3 | 3999.8 | 2365.7 | 1803.4 | 1618.6 | 1545.6 | 1522.3 | 1512.9 | 1520.7 | 1526.9 |
| 40°   | 8976.7  | 7219.8 | 3783.9 | 2148.2 | 1694.7 | 1537.8 | 1472.5 | 1457.0 | 1452.4 | 1463.2 | 1472.5 |
| 42.5° | 9753.3  | 7673.4 | 3606.8 | 1991.4 | 1610.8 | 1469.4 | 1410.4 | 1391.8 | 1387.1 | 1399.5 | 1412.0 |
| 45°   | 10593.7 | 8161.2 | 3482.5 | 1874.9 | 1545.6 | 1418.2 | 1356.1 | 1335.9 | 1326.5 | 1332.8 | 1346.7 |
| 47.5° | 11357.9 | 8622.5 | 3432.8 | 1792.5 | 1483.4 | 1374.7 | 1307.9 | 1283.0 | 1267.5 | 1264.4 | 1275.3 |
| 50°   | 12002.5 | 8965.8 | 3456.1 | 1742.8 | 1433.7 | 1326.5 | 1261.3 | 1233.3 | 1210.0 | 1196.1 | 1203.8 |
| 52.5° | 12471.6 | 9181.7 | 3477.9 | 1721.1 | 1394.9 | 1273.7 | 1210.0 | 1183.6 | 1152.6 | 1129.3 | 1129.3 |
| 55°   | 12811.8 | 9231.4 | 3429.7 | 1704.0 | 1365.4 | 1216.3 | 1152.6 | 1127.7 | 1096.6 | 1070.2 | 1067.1 |
| 57.5° | 12945.4 | 9091.6 | 3251.1 | 1679.1 | 1345.2 | 1161.9 | 1092.0 | 1073.3 | 1046.9 | 1015.9 | 1014.3 |
| 60°   | 12765.2 | 8659.8 | 2906.3 | 1626.3 | 1318.8 | 1116.8 | 1031.4 | 1019.0 | 1006.6 | 977.0  | 975.5  |
| 62.5° | 12041.4 | 7712.2 | 2460.5 | 1519.1 | 1266.0 | 1068.7 | 975.5  | 981.7  | 983.3  | 963.1  | 960.0  |
| 65°   | 10728.8 | 6410.6 | 2025.5 | 1379.4 | 1186.7 | 1011.2 | 918.0  | 947.5  | 964.6  | 961.5  | 956.8  |
| 67.5° | 8821.3  | 4989.3 | 1716.4 | 1231.8 | 1082.7 | 932.0  | 855.9  | 890.1  | 904.0  | 914.9  | 911.8  |
| 70°   | 6547.3  | 3518.3 | 1419.7 | 1076.5 | 956.8  | 838.8  | 775.1  | 792.2  | 782.9  | 795.3  | 800.0  |
| 72.5° | 3650.3  | 2111.0 | 1157.2 | 921.1  | 826.4  | 730.1  | 685.0  | 681.9  | 661.7  | 661.7  | 661.7  |
| 74°   | 2190.2  | 1548.7 | 1017.4 | 824.8  | 747.1  | 658.6  | 619.8  | 605.8  | 587.2  | 588.7  | 587.2  |
| 75°   | 1761.5  | 1331.2 | 933.5  | 761.1  | 691.2  | 616.7  | 577.8  | 559.2  | 545.2  | 545.2  | 543.7  |
| 77.5° | 1112.2  | 1011.2 | 751.8  | 605.8  | 553.0  | 507.9  | 481.5  | 456.7  | 456.7  | 455.1  | 453.6  |
| 80°   | 840.3   | 804.6  | 585.6  | 458.2  | 424.1  | 389.9  | 372.8  | 361.9  | 361.9  | 366.6  | 365.0  |
| 82.5° | 576.3   | 605.8  | 411.6  | 320.0  | 302.9  | 278.0  | 274.9  | 276.5  | 271.8  | 265.6  | 264.1  |
| 85°   | 421.0   | 455.1  | 278.0  | 201.9  | 184.8  | 169.3  | 181.7  | 188.0  | 180.2  | 166.2  | 160.0  |
| 87.5° | 161.5   | 298.2  | 149.1  | 83.9   | 77.7   | 66.8   | 77.7   | 80.8   | 87.0   | 68.3   | 69.9   |
| 90°   | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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

Report Prepared for

Cooper Lighting Solutions

MCGRAW, INVUE, LUMARK AND STREETWORKS

DATA VALID FOR LUMINAIRES UTILIZING SA LIGHT ENGINES

Report Number: SP1-2101-121-2

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

Test Date: 03/05/2021

### Test Information

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

SHIELD, DRIVER PROGRAMMED @ 615mA.

### Spectral Parameters

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



### Test Conditions

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

REPORT NUMBER: SP1-2101-121-2

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

REPORT NUMBER: SP1-2101-121-2

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 4000K 4-step quadrangle

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

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

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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              |           |                  |                  |

### 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**


REPORT NUMBER: SP1-2101-121-2

**TM-30-18**

**Measure Comparisons**



(END OF REPORT)