

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: P319004

Luminaire Tested: **GLEON-SA0B-730-U-T4W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P319004  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-18)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA0B-730-U-T4W  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(10) 70 CRI, 3000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV WIDE OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

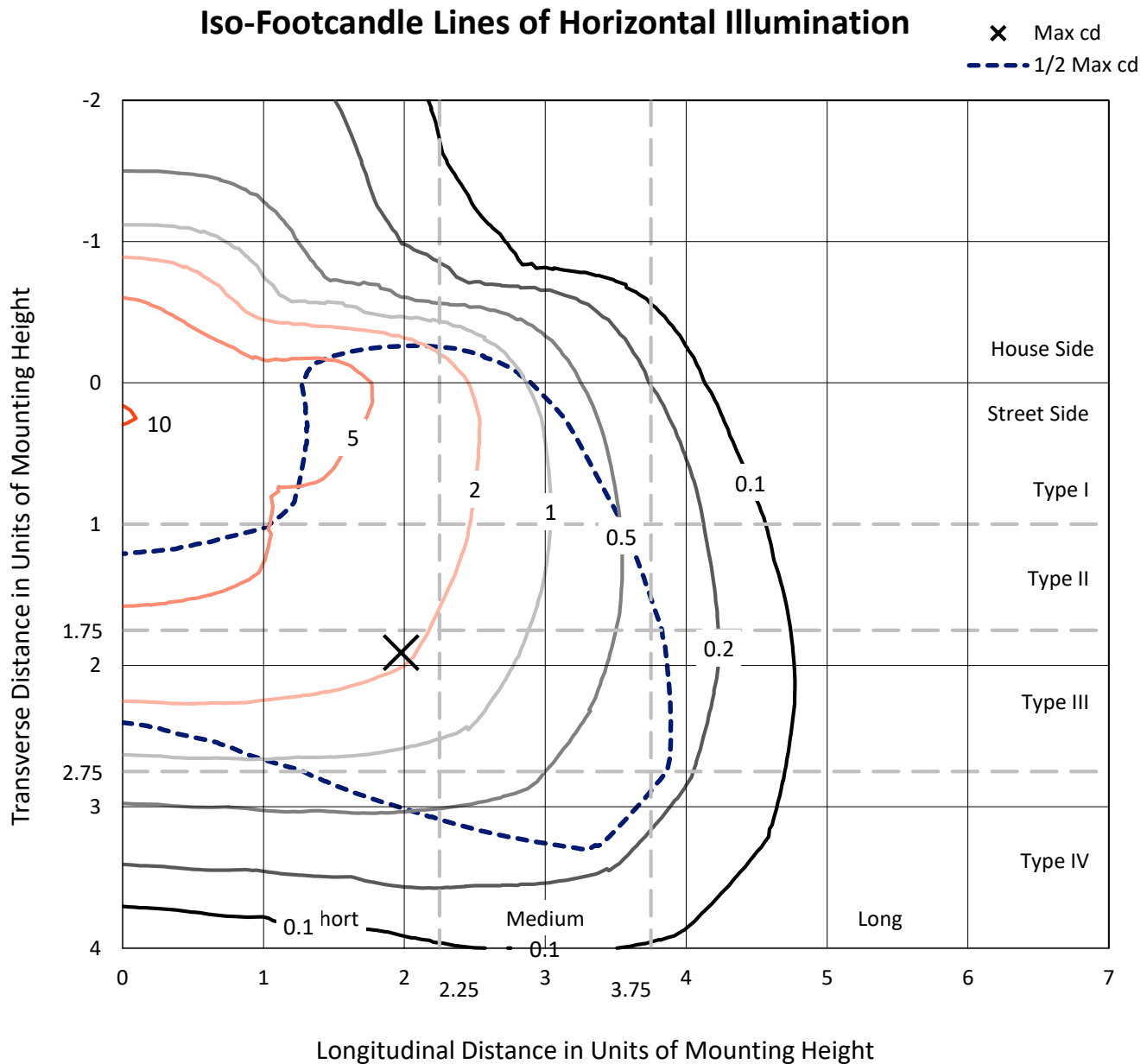
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 51152 lumens  
Efficiency: N/A  
Efficacy: 122.1 lumens/watt  
Luminous Opening: Rectangular (W 2.5' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B4 - U0 - G5

Input Watts (W): 419  
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



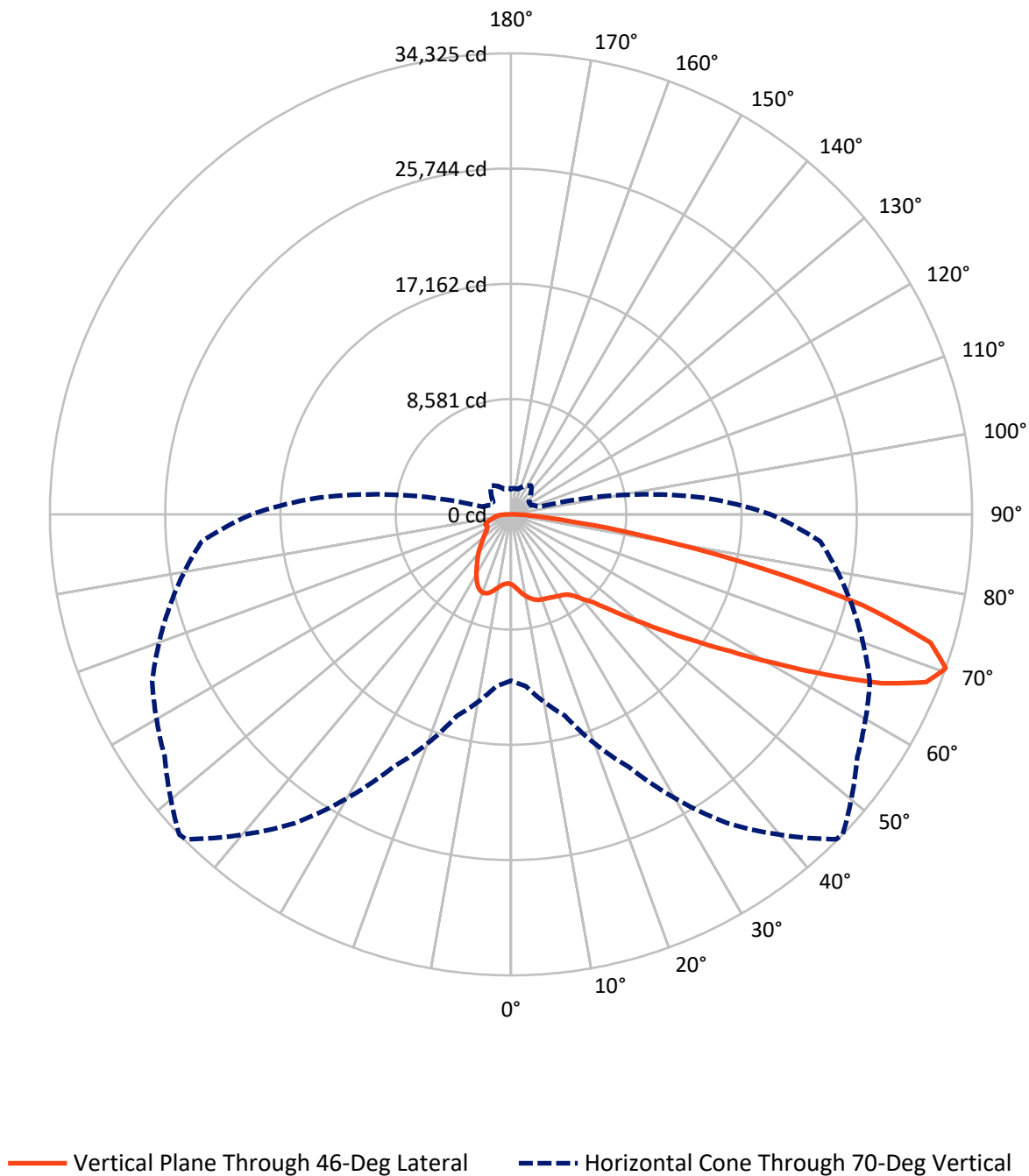
REPORT NUMBER: P319004  
CATALOG NUMBER: GLEON-SA0B-730-U-T4W



Based on 25 foot mounting height. Maximum calculated value = 10.4 fc  
Type IV - Short - N/A

REPORT NUMBER: P319004  
CATALOG NUMBER: GLEON-SA0B-730-U-T4W

## Luminous Intensity Polar Plot



REPORT NUMBER: P319004

CATALOG NUMBER: GLEON-SA0B-730-U-T4W

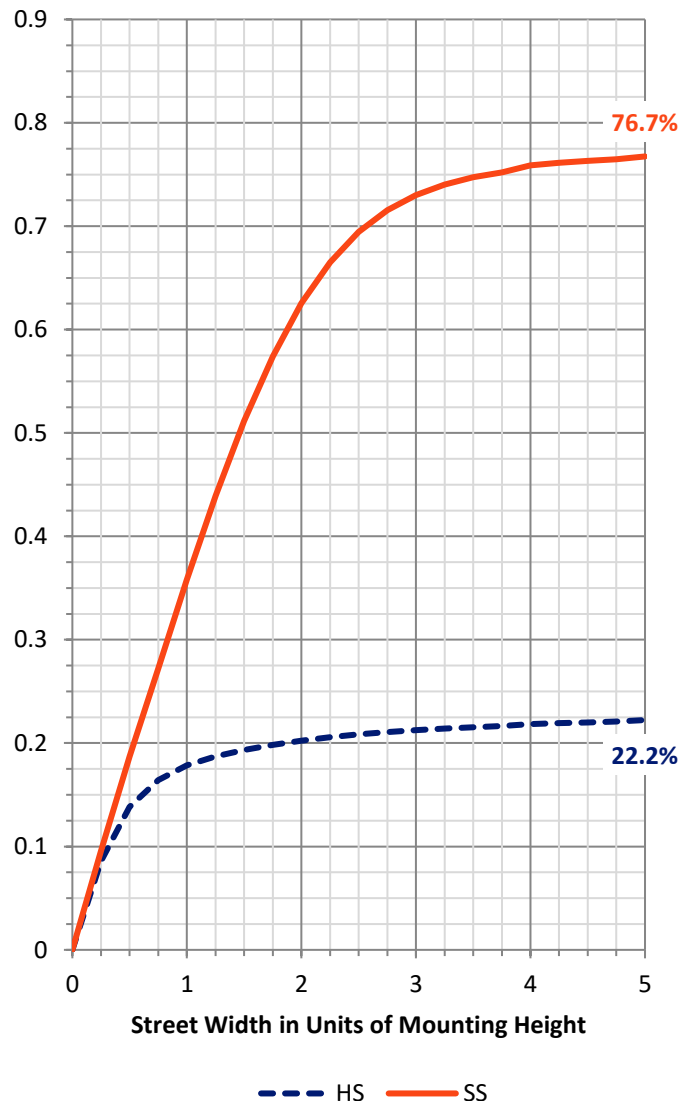
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 11723.9  | 0.0    | 11723.9 |
|                    | % Fixture | 22.9     | 0.0    | 22.9    |
| <b>Street Side</b> | Lumens    | 39428.1  | 0.0    | 39428.1 |
|                    | % Fixture | 77.1     | 0.0    | 77.1    |
| <b>Total</b>       | Lumens    | 51152.0  | 0.0    | 51152.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 531.3   | 1.0       |
| 10°-20°   | 1770.0  | 3.5       |
| 20°-30°   | 2951.3  | 5.8       |
| 30°-40°   | 4188.0  | 8.2       |
| 40°-50°   | 6160.4  | 12.0      |
| 50°-60°   | 10432.6 | 20.4      |
| 60°-70°   | 14808.9 | 29.0      |
| 70°-80°   | 8996.5  | 17.6      |
| 80°-90°   | 1312.9  | 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°    | 51152.0 | 100.0     |
| 0°-180°   | 51152.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P319004

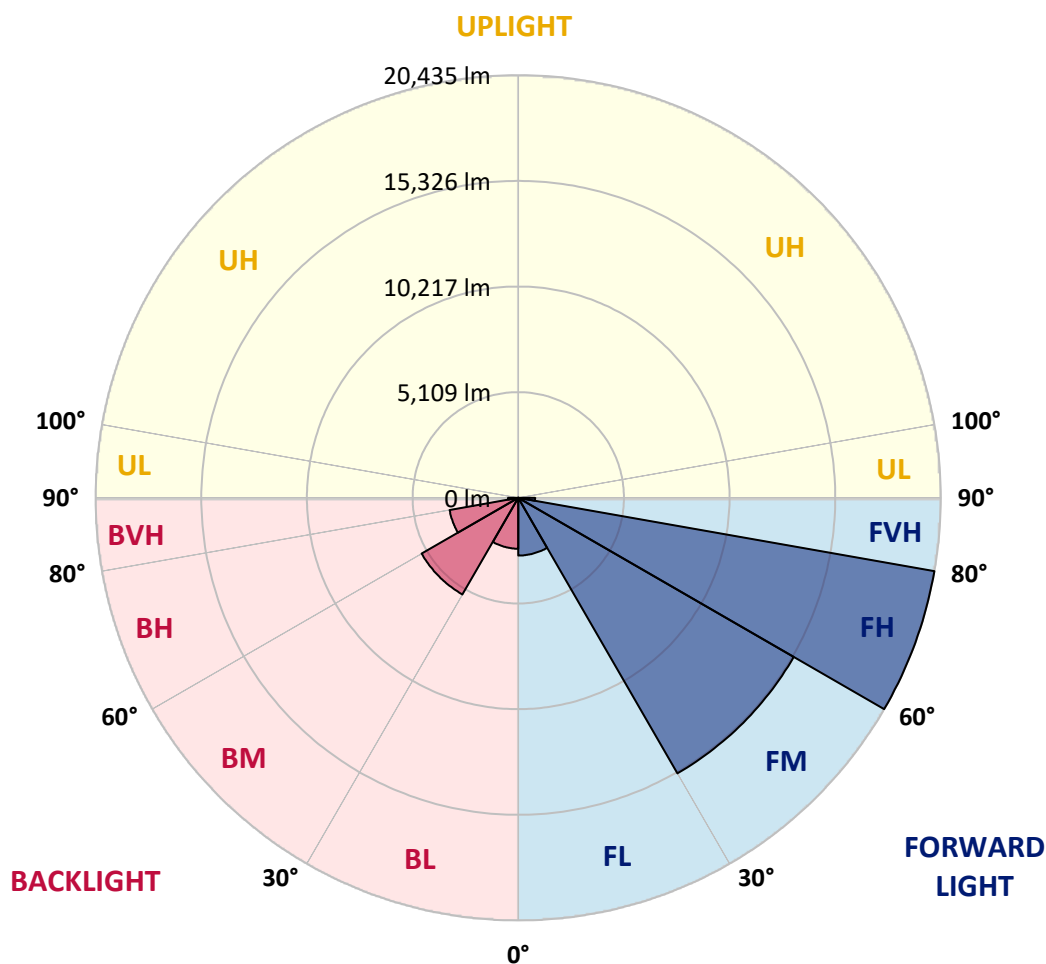
CATALOG NUMBER: GLEON-SA0B-730-U-T4W

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 2791.1  | 5.5       |                         |      |         |
| FM   | (30°-60°)   | 15384.2 | 30.1      |                         |      |         |
| FH   | (60°-80°)   | 20434.9 | 39.9      |                         |      | G5      |
| FVH  | (80°-90°)   | 817.8   | 1.6       |                         |      | G5      |
| BL   | (0°-30°)    | 2461.5  | 4.8       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 5396.8  | 10.6      | B4/8500                 |      |         |
| BH   | (60°-80°)   | 3370.5  | 6.6       | B4/5000                 |      | G4/5000 |
| BVH  | (80°-90°)   | 495.1   | 1.0       |                         |      | 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 IV Short





REPORT NUMBER: P319004

CATALOG NUMBER: GLEON-SA0B-730-U-T4W

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 46°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 5211.4  | 5211.4  | 5211.4  | 5211.4  | 5211.4  | 5211.4  | 5211.4  | 5211.4  | 5211.4  | 5211.4  | 5211.4  |
| 2.5°  | 5472.2  | 5475.7  | 5482.7  | 5465.2  | 5416.2  | 5402.2  | 5396.9  | 5346.2  | 5312.9  | 5263.9  | 5221.9  |
| 5°    | 5909.9  | 5913.4  | 5902.9  | 5853.8  | 5745.3  | 5664.8  | 5657.8  | 5542.2  | 5437.2  | 5325.2  | 5241.1  |
| 7.5°  | 6366.8  | 6372.0  | 6338.7  | 6246.0  | 6093.7  | 5953.6  | 5944.9  | 5787.3  | 5628.0  | 5458.2  | 5332.2  |
| 10°   | 6771.1  | 6750.1  | 6695.9  | 6566.3  | 6386.0  | 6214.5  | 6207.5  | 6042.9  | 5859.1  | 5654.3  | 5486.2  |
| 12.5° | 7040.7  | 7023.2  | 6953.2  | 6795.6  | 6597.8  | 6440.3  | 6426.3  | 6274.0  | 6095.4  | 5871.3  | 5670.0  |
| 15°   | 7189.5  | 7201.8  | 7107.2  | 6928.7  | 6736.1  | 6603.1  | 6590.8  | 6482.3  | 6323.0  | 6097.2  | 5866.1  |
| 17.5° | 7208.8  | 7219.3  | 7128.2  | 6951.4  | 6793.9  | 6702.9  | 6697.6  | 6625.8  | 6510.3  | 6293.2  | 6051.7  |
| 20°   | 7096.7  | 7103.7  | 7028.5  | 6883.2  | 6779.9  | 6751.9  | 6750.1  | 6718.6  | 6632.8  | 6440.3  | 6205.7  |
| 22.5° | 6933.9  | 6939.2  | 6884.9  | 6779.9  | 6744.9  | 6788.6  | 6800.9  | 6788.6  | 6727.4  | 6547.1  | 6326.5  |
| 25°   | 6893.7  | 6890.2  | 6834.1  | 6727.4  | 6757.1  | 6849.9  | 6865.7  | 6870.9  | 6828.9  | 6671.3  | 6480.5  |
| 27.5° | 7088.0  | 7075.7  | 6968.9  | 6797.4  | 6816.6  | 6928.7  | 6949.7  | 7000.4  | 6974.2  | 6835.9  | 6655.6  |
| 30°   | 7649.9  | 7628.9  | 7410.1  | 7063.5  | 6968.9  | 7026.7  | 7053.0  | 7133.5  | 7138.7  | 7023.2  | 6888.4  |
| 32.5° | 8598.7  | 8572.4  | 8180.3  | 7560.6  | 7226.3  | 7126.5  | 7151.0  | 7271.8  | 7336.6  | 7247.3  | 7102.0  |
| 35°   | 9797.8  | 9768.1  | 9253.4  | 8406.1  | 7656.9  | 7317.3  | 7334.8  | 7431.1  | 7560.6  | 7434.6  | 7242.0  |
| 37.5° | 11047.7 | 10975.9 | 10480.5 | 9400.5  | 8341.4  | 7725.2  | 7725.2  | 7737.4  | 7798.7  | 7536.1  | 7406.6  |
| 40°   | 12290.6 | 12218.8 | 11770.7 | 10569.8 | 9227.1  | 8367.6  | 8327.4  | 8056.0  | 8007.0  | 7781.2  | 7737.4  |
| 42.5° | 13446.0 | 13425.0 | 13160.6 | 11891.5 | 10267.0 | 8999.6  | 8943.6  | 8483.2  | 8493.7  | 8353.6  | 8355.4  |
| 45°   | 14674.9 | 14674.9 | 14459.5 | 13225.4 | 11478.4 | 10014.9 | 9958.9  | 9281.4  | 9386.4  | 9321.7  | 9477.5  |
| 47.5° | 15677.9 | 15709.4 | 15679.7 | 14615.3 | 12887.5 | 11305.1 | 11203.5 | 10387.8 | 10681.9 | 10904.2 | 11357.6 |
| 50°   | 16702.0 | 16751.0 | 16756.3 | 16140.1 | 14590.8 | 12838.5 | 12723.0 | 11856.5 | 12512.9 | 13150.1 | 14041.2 |
| 52.5° | 18188.2 | 18298.5 | 17859.1 | 17661.3 | 16677.5 | 14659.1 | 14545.3 | 13745.3 | 14841.2 | 15735.7 | 17270.9 |
| 55°   | 19565.9 | 19469.6 | 19156.3 | 19278.8 | 18911.2 | 16731.8 | 16646.0 | 15944.0 | 17435.5 | 18597.8 | 20591.7 |
| 57.5° | 20311.6 | 20304.6 | 20619.7 | 21144.9 | 21319.9 | 19287.6 | 19215.8 | 18533.1 | 20360.6 | 21234.2 | 23709.5 |
| 60°   | 21186.9 | 21199.2 | 21979.9 | 23172.0 | 23893.3 | 22470.1 | 22438.6 | 21920.4 | 23201.8 | 23695.4 | 26155.0 |
| 62.5° | 21309.4 | 21530.0 | 22874.4 | 24926.1 | 26302.0 | 26188.2 | 26258.3 | 24971.6 | 25743.6 | 25659.6 | 27980.8 |
| 65°   | 19900.3 | 20190.8 | 22624.1 | 25456.5 | 28696.8 | 30254.8 | 30319.5 | 28040.3 | 27748.0 | 27338.3 | 28633.7 |
| 67.5° | 17011.8 | 17442.5 | 20085.8 | 24302.9 | 29486.3 | 33260.5 | 33351.5 | 30419.3 | 29411.0 | 27907.3 | 27061.8 |
| 70°   | 12379.9 | 12857.8 | 15518.6 | 20756.3 | 28078.8 | 34221.5 | 34324.8 | 31471.4 | 29474.0 | 26288.0 | 23102.0 |
| 72.5° | 7478.3  | 7853.0  | 10046.4 | 15280.6 | 23698.9 | 32471.0 | 32654.8 | 30137.5 | 26909.5 | 22267.0 | 17059.1 |
| 75°   | 3284.0  | 3529.1  | 4857.8  | 8805.3  | 16966.3 | 26865.7 | 27095.0 | 25796.1 | 21864.4 | 16182.1 | 10083.2 |
| 77.5° | 1398.7  | 1468.7  | 1992.1  | 3825.0  | 9591.3  | 18358.0 | 18673.1 | 18848.2 | 14834.2 | 8805.3  | 4260.8  |
| 80°   | 871.8   | 899.8   | 1127.4  | 1731.3  | 4488.4  | 10310.7 | 10650.3 | 11089.7 | 7366.3  | 3236.8  | 1488.0  |
| 82.5° | 530.4   | 561.9   | 749.2   | 1046.8  | 2337.0  | 4674.0  | 4836.8  | 5146.6  | 2858.6  | 1398.7  | 770.2   |
| 85°   | 318.6   | 341.4   | 458.6   | 661.7   | 1330.4  | 1838.1  | 1836.3  | 2030.6  | 1346.2  | 899.8   | 406.1   |
| 87.5° | 152.3   | 169.8   | 245.1   | 343.1   | 670.5   | 689.7   | 646.0   | 731.7   | 817.5   | 589.9   | 204.8   |
| 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: P319004

CATALOG NUMBER: GLEON-SA0B-730-U-T4W

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 5211.4  | 5211.4  | 5211.4 | 5211.4 | 5211.4 | 5211.4 | 5211.4 | 5211.4 | 5211.4 | 5211.4 | 5211.4 |
| 2.5°  | 5207.9  | 5200.9  | 5178.1 | 5160.6 | 5157.1 | 5146.6 | 5137.9 | 5143.1 | 5150.1 | 5151.9 | 5151.9 |
| 5°    | 5206.1  | 5186.9  | 5157.1 | 5144.9 | 5160.6 | 5181.6 | 5207.9 | 5242.9 | 5263.9 | 5279.7 | 5290.2 |
| 7.5°  | 5290.2  | 5253.4  | 5220.1 | 5213.1 | 5244.6 | 5300.7 | 5360.2 | 5433.7 | 5484.5 | 5519.5 | 5526.5 |
| 10°   | 5430.2  | 5384.7  | 5351.4 | 5358.4 | 5414.5 | 5495.0 | 5579.0 | 5673.5 | 5750.6 | 5797.8 | 5801.3 |
| 12.5° | 5591.3  | 5547.5  | 5516.0 | 5545.7 | 5638.5 | 5736.6 | 5824.1 | 5906.4 | 5976.4 | 6023.6 | 6023.6 |
| 15°   | 5776.8  | 5745.3  | 5708.5 | 5776.8 | 5902.9 | 5990.4 | 6027.1 | 6067.4 | 6105.9 | 6140.9 | 6133.9 |
| 17.5° | 5955.4  | 5925.6  | 5906.4 | 5986.9 | 6118.2 | 6158.4 | 6133.9 | 6104.2 | 6104.2 | 6123.4 | 6126.9 |
| 20°   | 6109.4  | 6083.2  | 6095.4 | 6174.2 | 6242.5 | 6200.4 | 6109.4 | 6014.9 | 5976.4 | 5986.9 | 5997.4 |
| 22.5° | 6244.2  | 6232.0  | 6268.7 | 6305.5 | 6256.5 | 6109.4 | 5941.4 | 5813.6 | 5766.3 | 5762.8 | 5766.3 |
| 25°   | 6401.8  | 6400.0  | 6445.5 | 6379.0 | 6161.9 | 5890.6 | 5664.8 | 5540.5 | 5514.2 | 5535.2 | 5570.3 |
| 27.5° | 6597.8  | 6617.1  | 6639.8 | 6396.5 | 5969.4 | 5559.7 | 5330.4 | 5244.6 | 5270.9 | 5321.7 | 5354.9 |
| 30°   | 6848.2  | 6900.7  | 6851.7 | 6352.7 | 5692.8 | 5181.6 | 4962.8 | 4938.3 | 5010.1 | 5081.8 | 5116.9 |
| 32.5° | 7091.5  | 7173.8  | 7054.7 | 6239.0 | 5335.7 | 4780.8 | 4610.9 | 4603.9 | 4691.5 | 4761.5 | 4810.5 |
| 35°   | 7287.5  | 7450.3  | 7207.0 | 6013.1 | 4922.5 | 4411.4 | 4287.1 | 4239.8 | 4271.3 | 4353.6 | 4409.6 |
| 37.5° | 7543.1  | 7814.5  | 7312.0 | 5668.3 | 4474.4 | 4106.8 | 3961.5 | 3853.0 | 3825.0 | 3858.2 | 3886.2 |
| 40°   | 8010.5  | 8369.4  | 7361.1 | 5186.9 | 4036.8 | 3802.2 | 3655.1 | 3495.8 | 3385.6 | 3305.0 | 3306.8 |
| 42.5° | 8773.8  | 9092.4  | 7329.6 | 4602.2 | 3632.4 | 3504.6 | 3338.3 | 3154.5 | 2975.9 | 2793.9 | 2779.9 |
| 45°   | 10013.1 | 10167.2 | 7235.0 | 3982.5 | 3277.0 | 3193.0 | 3037.2 | 2853.4 | 2615.3 | 2408.8 | 2389.5 |
| 47.5° | 11996.5 | 11655.2 | 7088.0 | 3441.6 | 2963.7 | 2928.7 | 2785.1 | 2573.3 | 2321.2 | 2154.9 | 2140.9 |
| 50°   | 14701.1 | 13803.1 | 7016.2 | 3010.9 | 2687.1 | 2697.6 | 2580.3 | 2356.2 | 2118.2 | 1995.6 | 1981.6 |
| 52.5° | 17936.1 | 16304.6 | 7154.5 | 2678.3 | 2464.8 | 2501.5 | 2414.0 | 2203.9 | 2004.4 | 1908.1 | 1894.1 |
| 55°   | 21291.9 | 18895.4 | 7303.3 | 2436.8 | 2254.7 | 2326.5 | 2296.7 | 2123.4 | 1943.1 | 1853.8 | 1841.6 |
| 57.5° | 24164.6 | 20829.8 | 7005.7 | 2240.7 | 2067.4 | 2179.4 | 2205.7 | 2072.7 | 1911.6 | 1831.1 | 1817.1 |
| 60°   | 25972.9 | 21608.8 | 6225.0 | 2056.9 | 1918.6 | 2062.1 | 2153.2 | 2058.6 | 1923.9 | 1916.9 | 1906.3 |
| 62.5° | 26830.7 | 21540.5 | 5053.8 | 1911.6 | 1825.8 | 2011.4 | 2191.7 | 2137.4 | 2063.9 | 2126.9 | 2132.2 |
| 65°   | 26445.6 | 20511.2 | 3763.7 | 1815.3 | 1759.3 | 2030.6 | 2307.2 | 2286.2 | 2104.2 | 2167.2 | 2175.9 |
| 67.5° | 23910.8 | 18055.2 | 2786.9 | 1731.3 | 1685.8 | 2084.9 | 2517.3 | 2335.2 | 2025.4 | 2070.9 | 2042.9 |
| 70°   | 19326.1 | 14314.2 | 2149.7 | 1636.8 | 1610.5 | 2077.9 | 2611.8 | 2305.5 | 1939.6 | 1950.1 | 1874.8 |
| 72.5° | 13326.9 | 9761.1  | 1748.8 | 1549.2 | 1502.0 | 1894.1 | 2545.3 | 2232.0 | 1867.8 | 1787.3 | 1687.5 |
| 75°   | 7247.3  | 5239.4  | 1486.2 | 1458.2 | 1311.2 | 1663.0 | 2422.8 | 2179.4 | 1803.1 | 1696.3 | 1640.3 |
| 77.5° | 2851.6  | 2174.2  | 1290.2 | 1333.9 | 1146.6 | 1468.7 | 2286.2 | 2079.7 | 1713.8 | 1573.7 | 1545.7 |
| 80°   | 1164.1  | 1109.8  | 1069.6 | 1153.6 | 985.6  | 1284.9 | 2121.7 | 1962.4 | 1607.0 | 1460.0 | 1403.9 |
| 82.5° | 660.0   | 689.7   | 831.5  | 910.3  | 800.0  | 1183.4 | 2042.9 | 1867.8 | 1479.2 | 1307.7 | 1241.1 |
| 85°   | 337.9   | 404.4   | 579.4  | 653.0  | 588.2  | 1006.6 | 1881.8 | 1635.0 | 1186.9 | 1001.3 | 1006.6 |
| 87.5° | 162.8   | 225.8   | 365.9  | 409.6  | 381.6  | 728.2  | 1405.7 | 1185.1 | 924.3  | 731.7  | 709.0  |
| 90°   | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

Data in this report applies to families of products SA1C-730-U-5WQ .

### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-2-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-730-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 2993   | CRI (Ra): | 71.8 |      |       |
| CIE u':                   | 0.2508 | R1:       | 67.5 | R9:  | -38.3 |
| CIE v':                   | 0.5215 | R2:       | 82.9 | R10: | 62.5  |
| Duv:                      | 0.0000 | R3:       | 94.7 | R11: | 63.7  |
| CIE x:                    | 0.4374 | R4:       | 67.7 | R12: | 57.8  |
| CIE y:                    | 0.4043 | R5:       | 67.9 | R13: | 70.4  |
| CIE z:                    | 0.1583 | R6:       | 77.6 | R14: | 97.3  |
| Peak Wavelength (nm):     | 593    | R7:       | 76.0 |      |       |
| Dominant Wavelength (nm): | 582    | R8:       | 40.5 |      |       |
| Purity:                   | 53     |           |      |      |       |
| Rf:                       | 75.7   |           |      |      |       |
| Rg:                       | 93.9   |           |      |      |       |



### Test Conditions

Stabilization Time: 53M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-2-R4

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

REPORT NUMBER: SP1-1908-441-2-R4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-2-R4

**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       | 2397             | NR               | 490       | 24908            | NR               | 620       | 118784           | NR               | 750       | 5037             | NR               | 880       | 2677             | NR               |
| 365       | 2084             | NR               | 495       | 30998            | NR               | 625       | 108951           | NR               | 755       | 4413             | NR               | 885       | 2940             | NR               |
| 370       | 2143             | NR               | 500       | 37103            | NR               | 630       | 99573            | NR               | 760       | 4189             | NR               | 890       | 3116             | NR               |
| 375       | 2413             | NR               | 505       | 42987            | NR               | 635       | 90444            | NR               | 765       | 3677             | NR               | 895       | 3345             | NR               |
| 380       | 2172             | NR               | 510       | 48702            | NR               | 640       | 80749            | NR               | 770       | 3366             | NR               | 900       | 2312             | NR               |
| 385       | 1997             | NR               | 515       | 53741            | NR               | 645       | 71664            | NR               | 775       | 3211             | NR               | 905       | 2829             | NR               |
| 390       | 1830             | NR               | 520       | 57283            | NR               | 650       | 63936            | NR               | 780       | 2682             | NR               | 910       | 2783             | NR               |
| 395       | 1861             | NR               | 525       | 61876            | NR               | 655       | 56611            | NR               | 785       | 2804             | NR               | 915       | 2662             | NR               |
| 400       | 1717             | NR               | 530       | 65398            | NR               | 660       | 49763            | NR               | 790       | 2581             | NR               | 920       | 3047             | NR               |
| 405       | 1761             | NR               | 535       | 69597            | NR               | 665       | 42891            | NR               | 795       | 2711             | NR               | 925       | 2256             | NR               |
| 410       | 2680             | NR               | 540       | 74214            | NR               | 670       | 36939            | NR               | 800       | 2609             | NR               | 930       | 2976             | NR               |
| 415       | 4374             | NR               | 545       | 79911            | NR               | 675       | 31946            | NR               | 805       | 2581             | NR               | 935       | 3503             | NR               |
| 420       | 8071             | NR               | 550       | 86153            | NR               | 680       | 27385            | NR               | 810       | 2404             | NR               | 940       | 4226             | NR               |
| 425       | 15169            | NR               | 555       | 93952            | NR               | 685       | 23504            | NR               | 815       | 2556             | NR               | 945       | 2930             | NR               |
| 430       | 26038            | NR               | 560       | 102904           | NR               | 690       | 20210            | NR               | 820       | 2742             | NR               | 950       | 2115             | NR               |
| 435       | 41316            | NR               | 565       | 112009           | NR               | 695       | 17459            | NR               | 825       | 2014             | NR               | 955       | 2634             | NR               |
| 440       | 59674            | NR               | 570       | 121662           | NR               | 700       | 15207            | NR               | 830       | 2488             | NR               | 960       | 4200             | NR               |
| 445       | 72751            | NR               | 575       | 130476           | NR               | 705       | 13322            | NR               | 835       | 2625             | NR               | 965       | 1982             | NR               |
| 450       | 65091            | NR               | 580       | 137926           | NR               | 710       | 11676            | NR               | 840       | 2754             | NR               | 970       | 3613             | NR               |
| 455       | 44894            | NR               | 585       | 143406           | NR               | 715       | 10626            | NR               | 845       | 2708             | NR               | 975       | 4034             | NR               |
| 460       | 32712            | NR               | 590       | 147039           | NR               | 720       | 9416             | NR               | 850       | 2608             | NR               | 980       | 3922             | NR               |
| 465       | 25296            | NR               | 595       | 147365           | NR               | 725       | 8333             | NR               | 855       | 2605             | NR               | 985       | 1909             | NR               |
| 470       | 19318            | NR               | 600       | 145800           | NR               | 730       | 7134             | NR               | 860       | 1765             | NR               | 990       | 3617             | NR               |
| 475       | 17265            | NR               | 605       | 141363           | NR               | 735       | 6437             | NR               | 865       | 2581             | NR               | 995       | 4767             | NR               |
| 480       | 18260            | NR               | 610       | 134199           | NR               | 740       | 5834             | NR               | 870       | 3016             | NR               | 1000      | 2528             | NR               |
| 485       | 20845            | NR               | 615       | 127683           | NR               | 745       | 5500             | NR               | 875       | 3952             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-2-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 8494.8

S/P: 1.23

| 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       | 2397             | NR               | 490       | 24908            | NR               | 620       | 118784           | NR               | 750       | 5037             | NR               | 880       | 2677             | NR               |
| 365       | 2084             | NR               | 495       | 30998            | NR               | 625       | 108951           | NR               | 755       | 4413             | NR               | 885       | 2940             | NR               |
| 370       | 2143             | NR               | 500       | 37103            | NR               | 630       | 99573            | NR               | 760       | 4189             | NR               | 890       | 3116             | NR               |
| 375       | 2413             | NR               | 505       | 42987            | NR               | 635       | 90444            | NR               | 765       | 3677             | NR               | 895       | 3345             | NR               |
| 380       | 2172             | NR               | 510       | 48702            | NR               | 640       | 80749            | NR               | 770       | 3366             | NR               | 900       | 2312             | NR               |
| 385       | 1997             | NR               | 515       | 53741            | NR               | 645       | 71664            | NR               | 775       | 3211             | NR               | 905       | 2829             | NR               |
| 390       | 1830             | NR               | 520       | 57283            | NR               | 650       | 63936            | NR               | 780       | 2682             | NR               | 910       | 2783             | NR               |
| 395       | 1861             | NR               | 525       | 61876            | NR               | 655       | 56611            | NR               | 785       | 2804             | NR               | 915       | 2662             | NR               |
| 400       | 1717             | NR               | 530       | 65398            | NR               | 660       | 49763            | NR               | 790       | 2581             | NR               | 920       | 3047             | NR               |
| 405       | 1761             | NR               | 535       | 69597            | NR               | 665       | 42891            | NR               | 795       | 2711             | NR               | 925       | 2256             | NR               |
| 410       | 2680             | NR               | 540       | 74214            | NR               | 670       | 36939            | NR               | 800       | 2609             | NR               | 930       | 2976             | NR               |
| 415       | 4374             | NR               | 545       | 79911            | NR               | 675       | 31946            | NR               | 805       | 2581             | NR               | 935       | 3503             | NR               |
| 420       | 8071             | NR               | 550       | 86153            | NR               | 680       | 27385            | NR               | 810       | 2404             | NR               | 940       | 4226             | NR               |
| 425       | 15169            | NR               | 555       | 93952            | NR               | 685       | 23504            | NR               | 815       | 2556             | NR               | 945       | 2930             | NR               |
| 430       | 26038            | NR               | 560       | 102904           | NR               | 690       | 20210            | NR               | 820       | 2742             | NR               | 950       | 2115             | NR               |
| 435       | 41316            | NR               | 565       | 112009           | NR               | 695       | 17459            | NR               | 825       | 2014             | NR               | 955       | 2634             | NR               |
| 440       | 59674            | NR               | 570       | 121662           | NR               | 700       | 15207            | NR               | 830       | 2488             | NR               | 960       | 4200             | NR               |
| 445       | 72751            | NR               | 575       | 130476           | NR               | 705       | 13322            | NR               | 835       | 2625             | NR               | 965       | 1982             | NR               |
| 450       | 65091            | NR               | 580       | 137926           | NR               | 710       | 11676            | NR               | 840       | 2754             | NR               | 970       | 3613             | NR               |
| 455       | 44894            | NR               | 585       | 143406           | NR               | 715       | 10626            | NR               | 845       | 2708             | NR               | 975       | 4034             | NR               |
| 460       | 32712            | NR               | 590       | 147039           | NR               | 720       | 9416             | NR               | 850       | 2608             | NR               | 980       | 3922             | NR               |
| 465       | 25296            | NR               | 595       | 147365           | NR               | 725       | 8333             | NR               | 855       | 2605             | NR               | 985       | 1909             | NR               |
| 470       | 19318            | NR               | 600       | 145800           | NR               | 730       | 7134             | NR               | 860       | 1765             | NR               | 990       | 3617             | NR               |
| 475       | 17265            | NR               | 605       | 141363           | NR               | 735       | 6437             | NR               | 865       | 2581             | NR               | 995       | 4767             | NR               |
| 480       | 18260            | NR               | 610       | 134199           | NR               | 740       | 5834             | NR               | 870       | 3016             | NR               | 1000      | 2528             | NR               |
| 485       | 20845            | NR               | 615       | 127683           | NR               | 745       | 5500             | NR               | 875       | 3952             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-2-R4

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 3101.5 M/P: 0.45**

| 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       | 2397             | NR               | 490       | 24908            | NR               | 620       | 118784           | NR               | 750       | 5037             | NR               | 880       | 2677             | NR               |
| 365       | 2084             | NR               | 495       | 30998            | NR               | 625       | 108951           | NR               | 755       | 4413             | NR               | 885       | 2940             | NR               |
| 370       | 2143             | NR               | 500       | 37103            | NR               | 630       | 99573            | NR               | 760       | 4189             | NR               | 890       | 3116             | NR               |
| 375       | 2413             | NR               | 505       | 42987            | NR               | 635       | 90444            | NR               | 765       | 3677             | NR               | 895       | 3345             | NR               |
| 380       | 2172             | NR               | 510       | 48702            | NR               | 640       | 80749            | NR               | 770       | 3366             | NR               | 900       | 2312             | NR               |
| 385       | 1997             | NR               | 515       | 53741            | NR               | 645       | 71664            | NR               | 775       | 3211             | NR               | 905       | 2829             | NR               |
| 390       | 1830             | NR               | 520       | 57283            | NR               | 650       | 63936            | NR               | 780       | 2682             | NR               | 910       | 2783             | NR               |
| 395       | 1861             | NR               | 525       | 61876            | NR               | 655       | 56611            | NR               | 785       | 2804             | NR               | 915       | 2662             | NR               |
| 400       | 1717             | NR               | 530       | 65398            | NR               | 660       | 49763            | NR               | 790       | 2581             | NR               | 920       | 3047             | NR               |
| 405       | 1761             | NR               | 535       | 69597            | NR               | 665       | 42891            | NR               | 795       | 2711             | NR               | 925       | 2256             | NR               |
| 410       | 2680             | NR               | 540       | 74214            | NR               | 670       | 36939            | NR               | 800       | 2609             | NR               | 930       | 2976             | NR               |
| 415       | 4374             | NR               | 545       | 79911            | NR               | 675       | 31946            | NR               | 805       | 2581             | NR               | 935       | 3503             | NR               |
| 420       | 8071             | NR               | 550       | 86153            | NR               | 680       | 27385            | NR               | 810       | 2404             | NR               | 940       | 4226             | NR               |
| 425       | 15169            | NR               | 555       | 93952            | NR               | 685       | 23504            | NR               | 815       | 2556             | NR               | 945       | 2930             | NR               |
| 430       | 26038            | NR               | 560       | 102904           | NR               | 690       | 20210            | NR               | 820       | 2742             | NR               | 950       | 2115             | NR               |
| 435       | 41316            | NR               | 565       | 112009           | NR               | 695       | 17459            | NR               | 825       | 2014             | NR               | 955       | 2634             | NR               |
| 440       | 59674            | NR               | 570       | 121662           | NR               | 700       | 15207            | NR               | 830       | 2488             | NR               | 960       | 4200             | NR               |
| 445       | 72751            | NR               | 575       | 130476           | NR               | 705       | 13322            | NR               | 835       | 2625             | NR               | 965       | 1982             | NR               |
| 450       | 65091            | NR               | 580       | 137926           | NR               | 710       | 11676            | NR               | 840       | 2754             | NR               | 970       | 3613             | NR               |
| 455       | 44894            | NR               | 585       | 143406           | NR               | 715       | 10626            | NR               | 845       | 2708             | NR               | 975       | 4034             | NR               |
| 460       | 32712            | NR               | 590       | 147039           | NR               | 720       | 9416             | NR               | 850       | 2608             | NR               | 980       | 3922             | NR               |
| 465       | 25296            | NR               | 595       | 147365           | NR               | 725       | 8333             | NR               | 855       | 2605             | NR               | 985       | 1909             | NR               |
| 470       | 19318            | NR               | 600       | 145800           | NR               | 730       | 7134             | NR               | 860       | 1765             | NR               | 990       | 3617             | NR               |
| 475       | 17265            | NR               | 605       | 141363           | NR               | 735       | 6437             | NR               | 865       | 2581             | NR               | 995       | 4767             | NR               |
| 480       | 18260            | NR               | 610       | 134199           | NR               | 740       | 5834             | NR               | 870       | 3016             | NR               | 1000      | 2528             | NR               |
| 485       | 20845            | NR               | 615       | 127683           | NR               | 745       | 5500             | NR               | 875       | 3952             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-2-R4

**TM-30-18**

**Summary**

$R_f = 75.7$   
 $R_g = 93.9$   
 CIE  $R_a = 71.8$   
 $R_g = -38.3$



**Color Vector Graphics**



REPORT NUMBER: SP1-1908-441-2-R4

**TM-30-18**

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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 |            |



REPORT NUMBER: SP1-1908-441-2-R4

**TM-30-18**

**Color Rendition by Hue-Angle Bin**



REPORT NUMBER: SP1-1908-441-2-R4

**TM-30-18**

**Measure Comparisons**



(END OF REPORT)