

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: P317804

Luminaire Tested: **GLEON-SA0B-750-U-T3R**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P317804  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-10)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA0B-750-U-T3R  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(10) 70 CRI, 5000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
ROADWAY OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 57831 lumens  
Efficiency: N/A  
Efficacy: 138.0 lumens/watt  
Luminous Opening: Rectangular (W 2.5' x L: 1' x H: 0')  
IES Classification: Type IV - Medium  
BUG Rating: B4 - U0 - G5

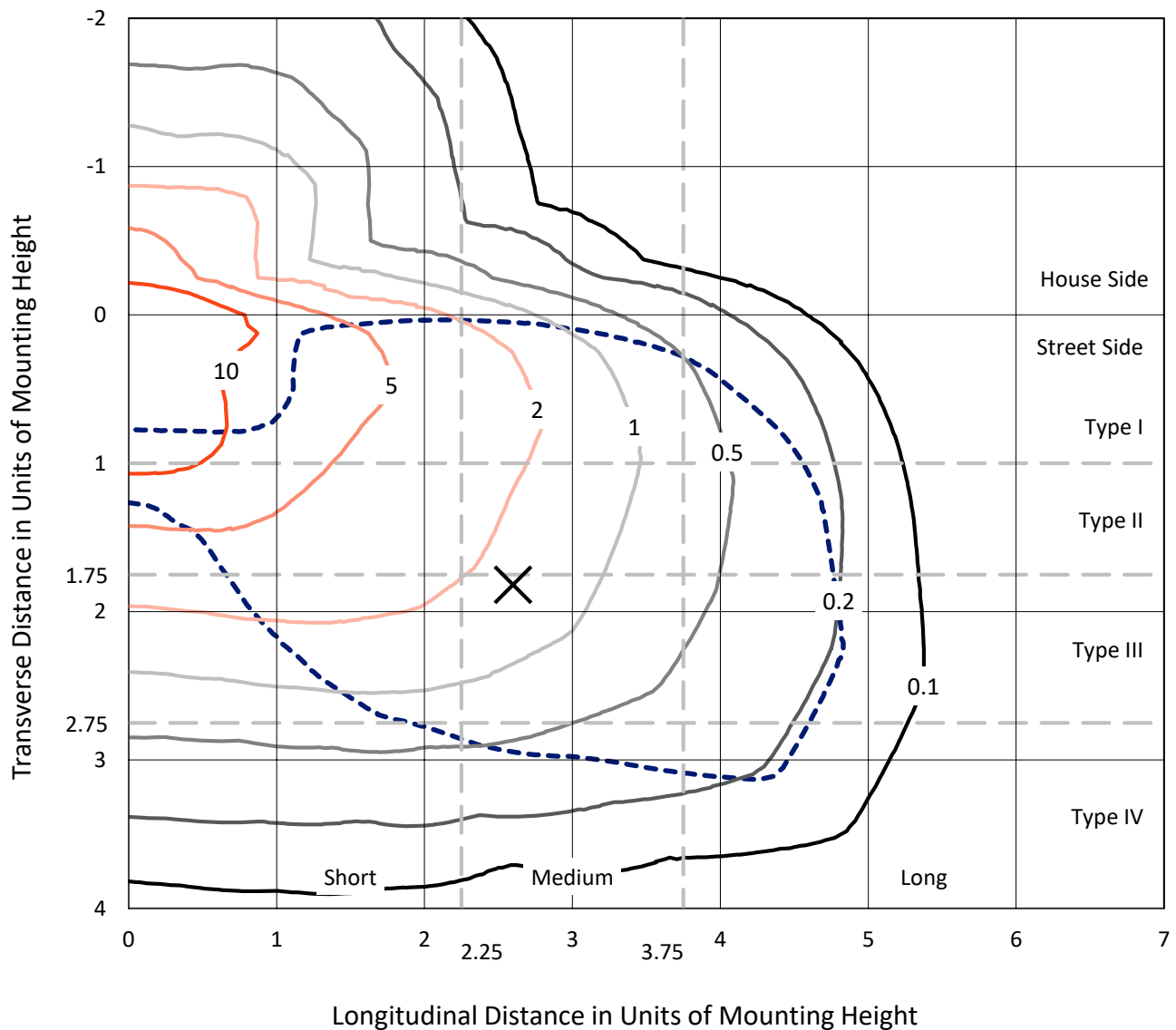
Input Watts (W): 419  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P317804  
 CATALOG NUMBER: GLEON-SA0B-750-U-T3R

## Iso-Footcandle Lines of Horizontal Illumination

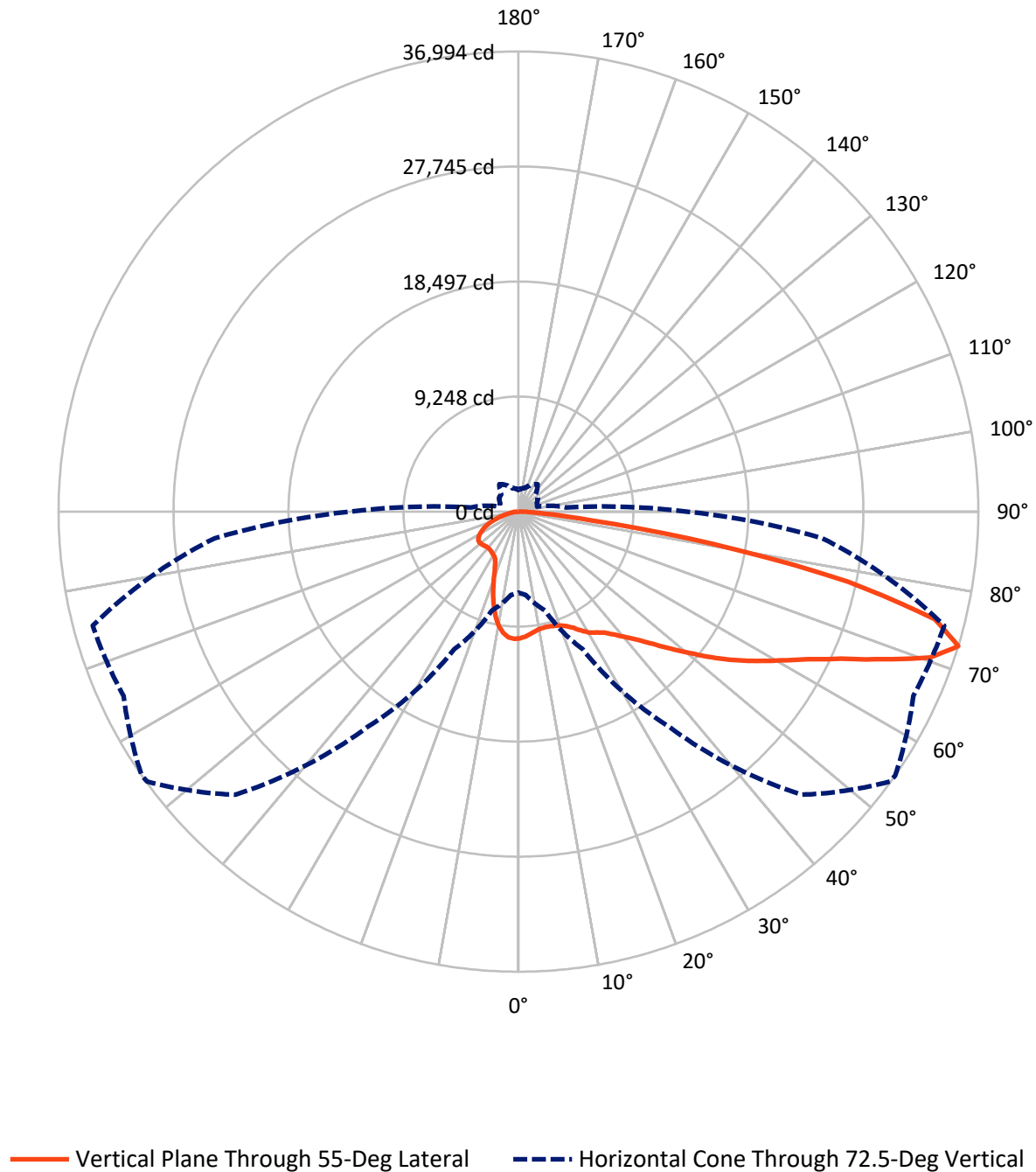
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 16.4 fc  
 Type IV - Medium - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GLEON-SA0B-750-U-T3R

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 10748.9  | 0.0    | 10748.9 |
|                    | % Fixture | 18.6     | 0.0    | 18.6    |
| <b>Street Side</b> | Lumens    | 47082.1  | 0.0    | 47082.1 |
|                    | % Fixture | 81.4     | 0.0    | 81.4    |
| <b>Total</b>       | Lumens    | 57831.0  | 0.0    | 57831.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 923.0   | 1.6       |
| 10°-20°   | 2457.3  | 4.2       |
| 20°-30°   | 4051.6  | 7.0       |
| 30°-40°   | 5993.3  | 10.4      |
| 40°-50°   | 8365.3  | 14.5      |
| 50°-60°   | 10891.9 | 18.8      |
| 60°-70°   | 13385.9 | 23.1      |
| 70°-80°   | 10492.9 | 18.1      |
| 80°-90°   | 1269.8  | 2.2       |
| 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°    | 57831.0 | 100.0     |
| 0°-180°   | 57831.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P317804

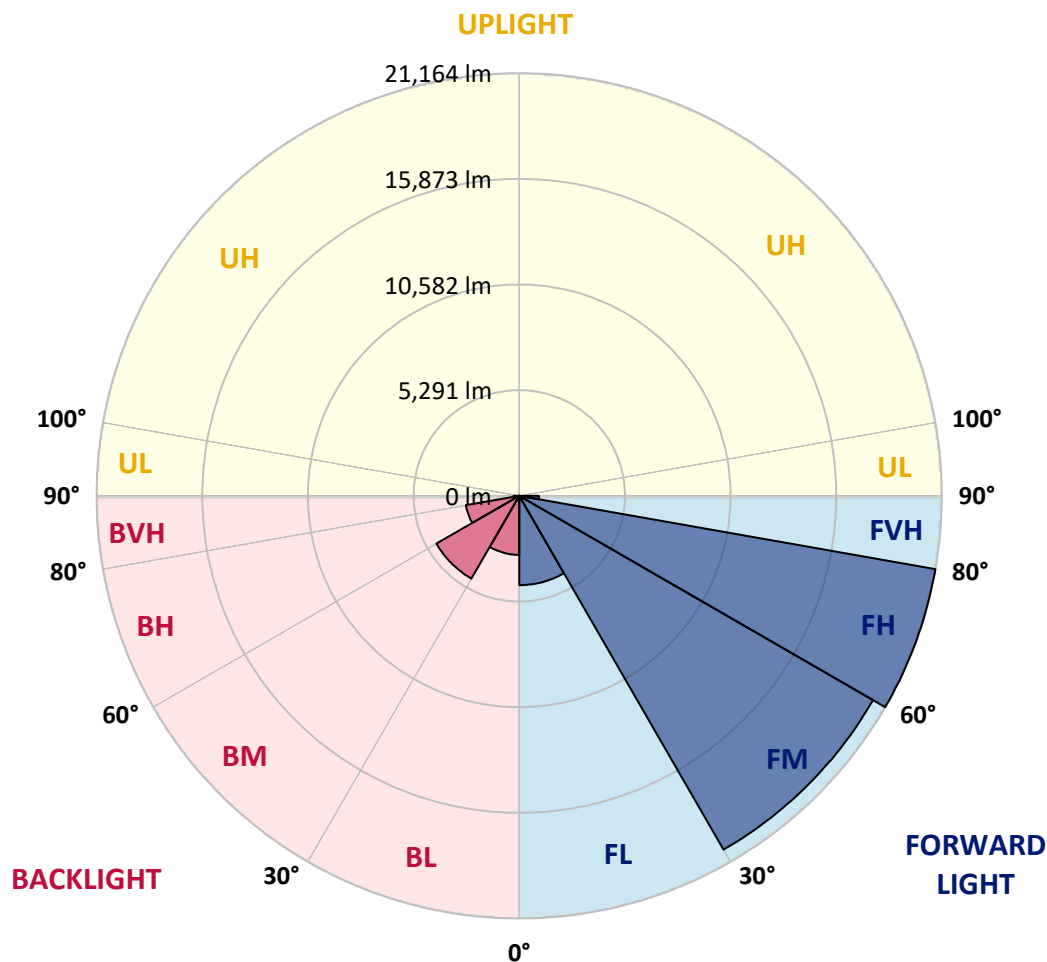
CATALOG NUMBER: GLEON-SA0B-750-U-T3R

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 4474.4  | 7.7       |                         |      |         |
| FM   | (30°-60°)   | 20461.8 | 35.4      |                         |      |         |
| FH   | (60°-80°)   | 21164.2 | 36.6      |                         |      | G5      |
| FVH  | (80°-90°)   | 981.7   | 1.7       |                         |      | G5      |
| BL   | (0°-30°)    | 2957.5  | 5.1       | B4/5000                 |      |         |
| BM   | (30°-60°)   | 4788.8  | 8.3       | B3/5000                 |      |         |
| BH   | (60°-80°)   | 2714.6  | 4.7       | B4/5000                 |      | G4/5000 |
| BVH  | (80°-90°)   | 288.1   | 0.5       |                         |      | 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 Medium



REPORT NUMBER: P317804

CATALOG NUMBER: GLEON-SA0B-750-U-T3R

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 54°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 |
| 2.5°  | 9868.1  | 9844.6  | 9873.9  | 9915.0  | 9959.9  | 10020.4 | 10055.6 | 10071.2 | 10131.8 | 10155.2 | 10206.0 |
| 5°    | 9411.0  | 9399.3  | 9448.1  | 9518.4  | 9618.1  | 9758.7  | 9872.0  | 9893.5  | 10053.6 | 10166.9 | 10270.5 |
| 7.5°  | 9078.9  | 9078.9  | 9135.6  | 9219.6  | 9330.9  | 9520.4  | 9680.6  | 9709.9  | 9981.4  | 10225.5 | 10417.0 |
| 10°   | 8815.3  | 8825.0  | 8891.4  | 8991.1  | 9121.9  | 9323.1  | 9536.0  | 9569.2  | 9961.8  | 10362.3 | 10667.0 |
| 12.5° | 8639.5  | 8662.9  | 8723.4  | 8813.3  | 8975.4  | 9219.6  | 9489.1  | 9534.1  | 10002.9 | 10557.6 | 10967.8 |
| 15°   | 8750.8  | 8789.9  | 8795.7  | 8832.8  | 8922.7  | 9188.3  | 9516.5  | 9563.4  | 10090.8 | 10756.8 | 11309.6 |
| 17.5° | 9239.1  | 9252.8  | 9192.2  | 9114.1  | 9071.1  | 9241.1  | 9598.5  | 9647.4  | 10196.2 | 10954.1 | 11637.8 |
| 20°   | 9981.4  | 9973.6  | 9842.7  | 9631.7  | 9413.0  | 9440.3  | 9733.3  | 9784.1  | 10338.8 | 11128.0 | 11965.9 |
| 22.5° | 10919.0 | 10891.6 | 10690.4 | 10301.7 | 9928.6  | 9772.4  | 9969.7  | 10012.6 | 10553.7 | 11376.0 | 12317.5 |
| 25°   | 12055.8 | 11995.2 | 11729.6 | 11208.0 | 10659.2 | 10256.8 | 10325.2 | 10366.2 | 10866.2 | 11653.4 | 12639.8 |
| 27.5° | 13255.1 | 13194.6 | 12856.6 | 12225.7 | 11495.2 | 10868.2 | 10815.4 | 10850.6 | 11221.7 | 11858.5 | 12878.1 |
| 30°   | 14509.1 | 14444.7 | 14136.0 | 13429.0 | 12382.0 | 11501.0 | 11272.5 | 11286.2 | 11471.7 | 11969.8 | 13073.5 |
| 32.5° | 15769.0 | 15708.5 | 15362.7 | 14542.3 | 13345.0 | 12180.8 | 11602.6 | 11585.0 | 11622.1 | 12085.1 | 13294.2 |
| 35°   | 17046.5 | 17069.9 | 16665.6 | 15757.3 | 14411.5 | 12936.7 | 11993.3 | 11956.2 | 11874.1 | 12321.4 | 13606.7 |
| 37.5° | 18413.8 | 18398.2 | 17874.7 | 16925.4 | 15526.8 | 13757.1 | 12553.9 | 12548.0 | 12264.8 | 12768.7 | 14097.0 |
| 40°   | 19327.9 | 19337.7 | 19019.3 | 18120.8 | 16653.9 | 14665.4 | 13272.7 | 13259.0 | 12887.9 | 13438.7 | 14739.6 |
| 42.5° | 19685.4 | 19749.8 | 19831.9 | 19261.5 | 17833.6 | 15718.2 | 14130.2 | 14110.7 | 13757.1 | 14399.7 | 15495.5 |
| 45°   | 19710.8 | 19839.7 | 20347.5 | 20275.3 | 19029.1 | 16923.4 | 15226.0 | 15171.3 | 14917.4 | 15677.2 | 16398.0 |
| 47.5° | 19492.0 | 19624.8 | 20468.7 | 20878.8 | 20097.5 | 18195.0 | 16507.4 | 16464.4 | 16245.6 | 17275.0 | 17374.6 |
| 50°   | 19013.4 | 19140.4 | 20218.6 | 21173.8 | 20976.5 | 19417.8 | 17984.1 | 17870.8 | 17753.6 | 19120.9 | 18491.9 |
| 52.5° | 18116.9 | 18361.0 | 19884.6 | 21244.1 | 21502.0 | 20503.8 | 19536.9 | 19462.7 | 19527.2 | 21068.3 | 19611.2 |
| 55°   | 15993.6 | 16267.1 | 19023.2 | 21185.5 | 21890.7 | 21416.0 | 21089.8 | 21085.9 | 21419.9 | 23111.5 | 20812.4 |
| 57.5° | 14804.1 | 14997.5 | 17269.1 | 21085.9 | 22351.6 | 22322.3 | 22627.1 | 22664.2 | 23314.6 | 25336.3 | 22070.4 |
| 60°   | 14132.1 | 14335.3 | 16380.4 | 20716.7 | 23066.5 | 23494.3 | 24195.6 | 24269.8 | 25240.6 | 27799.4 | 23584.2 |
| 62.5° | 13520.8 | 13743.4 | 15829.6 | 19964.7 | 23908.4 | 25170.3 | 26074.6 | 26141.0 | 27279.8 | 30330.9 | 25047.2 |
| 65°   | 12475.7 | 12727.7 | 15022.8 | 19470.5 | 24674.1 | 27356.0 | 28463.5 | 28508.4 | 29621.8 | 32983.5 | 26166.4 |
| 67.5° | 10999.0 | 11229.5 | 13501.2 | 18378.6 | 25240.6 | 30010.5 | 31639.6 | 31665.0 | 31944.3 | 34856.7 | 26738.8 |
| 70°   | 9274.3  | 9362.2  | 11333.1 | 16124.5 | 24570.6 | 32493.2 | 35120.4 | 35126.2 | 34061.7 | 36056.0 | 26645.0 |
| 72.5° | 6516.2  | 6723.3  | 8227.3  | 12206.2 | 21115.2 | 32190.4 | 36927.2 | 36993.6 | 35046.1 | 35450.5 | 24515.9 |
| 75°   | 3996.5  | 4215.2  | 5160.6  | 7397.2  | 13395.7 | 25316.7 | 34118.3 | 34579.3 | 33200.3 | 31608.3 | 20027.2 |
| 77.5° | 2672.1  | 2754.2  | 3367.5  | 4312.9  | 6068.9  | 14565.8 | 26230.9 | 27098.2 | 27580.6 | 23050.9 | 12807.8 |
| 80°   | 1490.4  | 1646.6  | 2232.6  | 2679.9  | 2699.5  | 5787.6  | 15728.0 | 15931.1 | 15345.1 | 9178.6  | 3951.5  |
| 82.5° | 789.1   | 875.1   | 1490.4  | 1574.4  | 1472.8  | 1937.7  | 5861.9  | 5867.7  | 4902.8  | 2461.2  | 1173.9  |
| 85°   | 611.4   | 683.7   | 1021.6  | 961.0   | 752.0   | 859.5   | 1933.8  | 2039.2  | 1668.1  | 1007.9  | 382.8   |
| 87.5° | 304.7   | 378.9   | 693.4   | 609.4   | 294.9   | 246.1   | 691.5   | 738.3   | 658.3   | 394.6   | 138.7   |
| 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: P317804

CATALOG NUMBER: GLEON-SA0B-750-U-T3R

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°    | 115°    | 125°    | 135°    | 145°    | 155°    | 165°    | 175°    | 180°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 | 10200.1 |
| 2.5°  | 10225.5 | 10243.1 | 10264.6 | 10241.2 | 10233.4 | 10202.1 | 10149.4 | 10137.6 | 10110.3 | 10112.2 | 10127.9 |
| 5°    | 10315.4 | 10344.7 | 10333.0 | 10243.1 | 10135.7 | 9985.3  | 9829.0  | 9696.2  | 9608.3  | 9602.4  | 9596.6  |
| 7.5°  | 10487.3 | 10506.8 | 10415.0 | 10159.1 | 9858.3  | 9510.6  | 9182.5  | 8895.3  | 8721.5  | 8678.5  | 8668.8  |
| 10°   | 10756.8 | 10752.9 | 10501.0 | 9985.3  | 9385.6  | 8764.5  | 8237.1  | 7838.6  | 7606.2  | 7537.8  | 7520.2  |
| 12.5° | 11057.6 | 11012.7 | 10530.3 | 9668.8  | 8717.6  | 7856.2  | 7188.2  | 6744.8  | 6502.5  | 6424.4  | 6404.9  |
| 15°   | 11368.2 | 11256.9 | 10458.0 | 9196.1  | 7897.2  | 6877.6  | 6176.3  | 5766.1  | 5635.3  | 5592.3  | 5584.5  |
| 17.5° | 11657.3 | 11442.4 | 10250.9 | 8555.5  | 6961.6  | 5902.9  | 5356.0  | 5191.9  | 5223.1  | 5279.8  | 5281.7  |
| 20°   | 11940.5 | 11567.5 | 9918.9  | 7746.8  | 5975.2  | 5100.1  | 4914.5  | 5035.6  | 5184.1  | 5299.3  | 5314.9  |
| 22.5° | 12219.9 | 11655.4 | 9491.1  | 6813.1  | 5092.3  | 4648.9  | 4779.7  | 5000.5  | 5170.4  | 5295.4  | 5316.9  |
| 25°   | 12454.3 | 11676.8 | 8901.2  | 5816.9  | 4478.9  | 4478.9  | 4715.3  | 4924.3  | 5092.3  | 5215.3  | 5236.8  |
| 27.5° | 12540.2 | 11532.3 | 8069.1  | 4895.0  | 4170.3  | 4400.8  | 4625.4  | 4799.3  | 4941.9  | 5072.7  | 5096.2  |
| 30°   | 12573.4 | 11264.7 | 7108.1  | 4154.7  | 4043.3  | 4316.8  | 4504.3  | 4652.8  | 4787.5  | 4910.6  | 4932.1  |
| 32.5° | 12579.3 | 10942.4 | 6088.4  | 3734.7  | 3955.4  | 4228.9  | 4353.9  | 4484.8  | 4629.3  | 4678.2  | 4686.0  |
| 35°   | 12616.4 | 10561.5 | 5014.1  | 3519.9  | 3873.4  | 4146.9  | 4246.5  | 4340.2  | 4105.8  | 4123.4  | 4139.0  |
| 37.5° | 12723.8 | 10184.5 | 4115.6  | 3398.7  | 3820.7  | 4103.9  | 4223.0  | 3883.2  | 3699.6  | 3656.6  | 3650.7  |
| 40°   | 12925.0 | 9782.1  | 3449.5  | 3301.1  | 3801.1  | 4125.4  | 4072.6  | 3625.3  | 3308.9  | 3072.5  | 3037.4  |
| 42.5° | 13204.3 | 9348.5  | 3023.7  | 3236.6  | 3814.8  | 4228.9  | 3863.6  | 3377.3  | 2851.8  | 2699.5  | 2679.9  |
| 45°   | 13518.8 | 8893.4  | 2793.2  | 3191.7  | 3861.7  | 4309.0  | 3820.7  | 3047.2  | 2638.9  | 2523.7  | 2513.9  |
| 47.5° | 13823.5 | 8336.7  | 2674.1  | 3172.2  | 3926.1  | 4244.5  | 3639.0  | 2945.6  | 2537.3  | 2476.8  | 2482.6  |
| 50°   | 14173.2 | 7834.7  | 2601.8  | 3150.7  | 3982.8  | 4203.5  | 3433.9  | 2892.8  | 2498.3  | 2572.5  | 2650.6  |
| 52.5° | 14468.1 | 7315.1  | 2537.3  | 3107.7  | 4004.3  | 4131.2  | 3381.2  | 2902.6  | 2498.3  | 2640.9  | 2715.1  |
| 55°   | 14817.8 | 6922.5  | 2463.1  | 3017.9  | 3963.3  | 3926.1  | 3344.1  | 2961.2  | 2527.6  | 2437.7  | 2445.5  |
| 57.5° | 15269.0 | 6793.6  | 2381.1  | 2877.2  | 3826.5  | 3627.3  | 3326.5  | 3017.9  | 2510.0  | 2453.3  | 2472.9  |
| 60°   | 15894.0 | 6930.3  | 2347.9  | 2693.6  | 3613.6  | 3392.9  | 3328.4  | 2988.6  | 2386.9  | 2289.3  | 2291.2  |
| 62.5° | 16489.8 | 7082.7  | 2345.9  | 2578.4  | 3351.9  | 3183.9  | 3283.5  | 2892.8  | 2324.4  | 2267.8  | 2289.3  |
| 65°   | 16685.1 | 6928.4  | 2252.2  | 2449.4  | 3056.9  | 2933.9  | 3201.5  | 2791.3  | 2277.6  | 2191.6  | 2187.7  |
| 67.5° | 16423.4 | 6449.8  | 2062.7  | 2240.4  | 2719.0  | 2642.8  | 3094.0  | 2670.2  | 2203.3  | 2133.0  | 2121.3  |
| 70°   | 15646.0 | 5381.3  | 1828.3  | 1965.0  | 2334.2  | 2314.7  | 2924.1  | 2529.5  | 2103.7  | 2043.2  | 1992.4  |
| 72.5° | 13554.0 | 3834.3  | 1541.2  | 1634.9  | 1900.6  | 1963.1  | 2689.7  | 2345.9  | 1963.1  | 1832.2  | 1754.1  |
| 75°   | 11131.9 | 2838.1  | 1265.7  | 1285.3  | 1443.5  | 1613.4  | 2367.4  | 2131.1  | 1797.0  | 1574.4  | 1513.8  |
| 77.5° | 6817.0  | 1736.5  | 1007.9  | 1015.7  | 1035.3  | 1287.2  | 1949.4  | 1890.8  | 1586.1  | 1312.6  | 1269.6  |
| 80°   | 2207.2  | 947.4   | 728.6   | 765.7   | 707.1   | 943.4   | 1507.9  | 1609.5  | 1361.5  | 1097.8  | 1050.9  |
| 82.5° | 839.9   | 552.8   | 492.2   | 517.6   | 490.3   | 632.9   | 1099.7  | 1289.2  | 1115.3  | 902.4   | 734.4   |
| 85°   | 406.3   | 312.5   | 291.0   | 326.2   | 302.8   | 324.2   | 703.2   | 949.3   | 845.8   | 587.9   | 546.9   |
| 87.5° | 144.5   | 138.7   | 111.3   | 150.4   | 128.9   | 115.2   | 214.9   | 478.6   | 558.6   | 404.3   | 361.4   |
| 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: SP1-1908-441-4-R4

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-4-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-750-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 4884   | CRI (Ra): | 73.5 |      |       |
| CIE u':                   | 0.2101 | R1:       | 70.5 | R9:  | -28.4 |
| CIE v':                   | 0.4904 | R2:       | 77.7 | R10: | 48.6  |
| Duv:                      | 0.0037 | R3:       | 84.6 | R11: | 73.2  |
| CIE x:                    | 0.3493 | R4:       | 74.7 | R12: | 50.7  |
| CIE y:                    | 0.3624 | R5:       | 71.9 | R13: | 71.2  |
| CIE z:                    | 0.2884 | R6:       | 70.7 | R14: | 91.4  |
| Peak Wavelength (nm):     | 444    | R7:       | 81.2 |      |       |
| Dominant Wavelength (nm): | 571    | R8:       | 56.9 |      |       |
| Purity:                   | 13.7   |           |      |      |       |
| Rf:                       | 74.9   |           |      |      |       |
| Rg:                       | 96.3   |           |      |      |       |



### Test Conditions

Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-4-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: SP1-1908-441-4-R4

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 5000K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-4-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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-4-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 13493.5

S/P: 1.77

| 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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-4-R4

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5378.9 M/P: 0.71**

| 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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-4-R4

**TM-30-18**

**Summary**

$R_f = 74.9$   
 $R_g = 96.3$   
 CIE  $R_a = 73.5$   
 $R_g = -28.4$

**Spectral Power Distribution Comparison**



**Color Vector Graphics**



REPORT NUMBER: SP1-1908-441-4-R4

**TM-30-18**

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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 90 | CES76 = 52 |
| CES02 = 60 | CES27 = 84 | CES52 = 91 | CES77 = 71 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 58 | CES54 = 83 | CES79 = 80 |
| CES05 = 46 | CES30 = 67 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 63 | CES56 = 73 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 72 | CES82 = 90 |
| CES08 = 38 | CES33 = 69 | CES58 = 73 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 88 | CES84 = 88 |
| CES10 = 73 | CES35 = 83 | CES60 = 93 | CES85 = 84 |
| CES11 = 56 | CES36 = 95 | CES61 = 88 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 85 | CES87 = 78 |
| CES13 = 41 | CES38 = 76 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 93 | CES64 = 74 | CES89 = 75 |
| CES15 = 70 | CES40 = 86 | CES65 = 67 | CES90 = 77 |
| CES16 = 46 | CES41 = 87 | CES66 = 69 | CES91 = 89 |
| CES17 = 49 | CES42 = 78 | CES67 = 67 | CES92 = 66 |
| CES18 = 55 | CES43 = 75 | CES68 = 73 | CES93 = 80 |
| CES19 = 71 | CES44 = 99 | CES69 = 81 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 63 | CES95 = 71 |
| CES21 = 85 | CES46 = 81 | CES71 = 60 | CES96 = 78 |
| CES22 = 77 | CES47 = 80 | CES72 = 86 | CES97 = 85 |
| CES23 = 91 | CES48 = 72 | CES73 = 53 | CES98 = 75 |
| CES24 = 90 | CES49 = 81 | CES74 = 96 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 58 |            |



REPORT NUMBER: SP1-1908-441-4-R4

**TM-30-18**

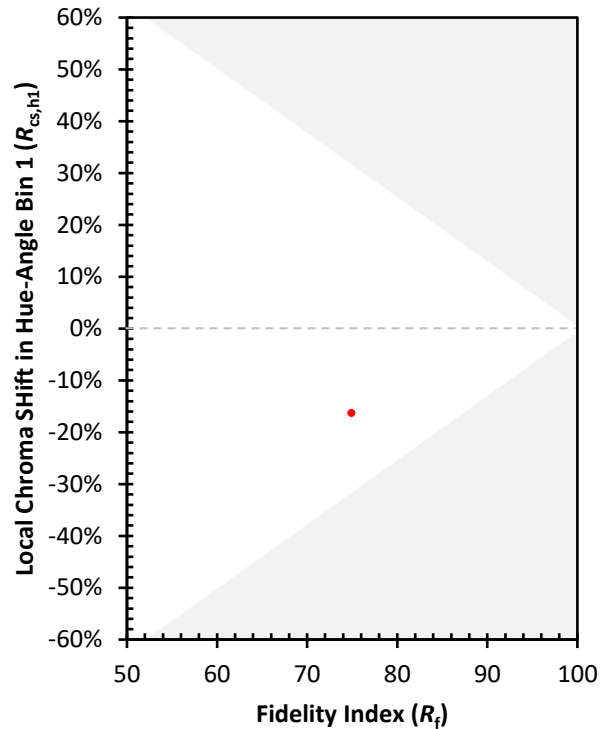
Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-4-R4

**TM-30-18**

**Measure Comparisons**



(END OF REPORT)