

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: P321329

Luminaire Tested: **GLEON-SA5C-750-U-T2R-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321329  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-9)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA5C-750-U-T2R-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(5) 70 CRI, 5000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II  
ROADWAY OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 28535 lumens  
Efficiency: N/A  
Efficacy: 102.3 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B1 - U0 - G3

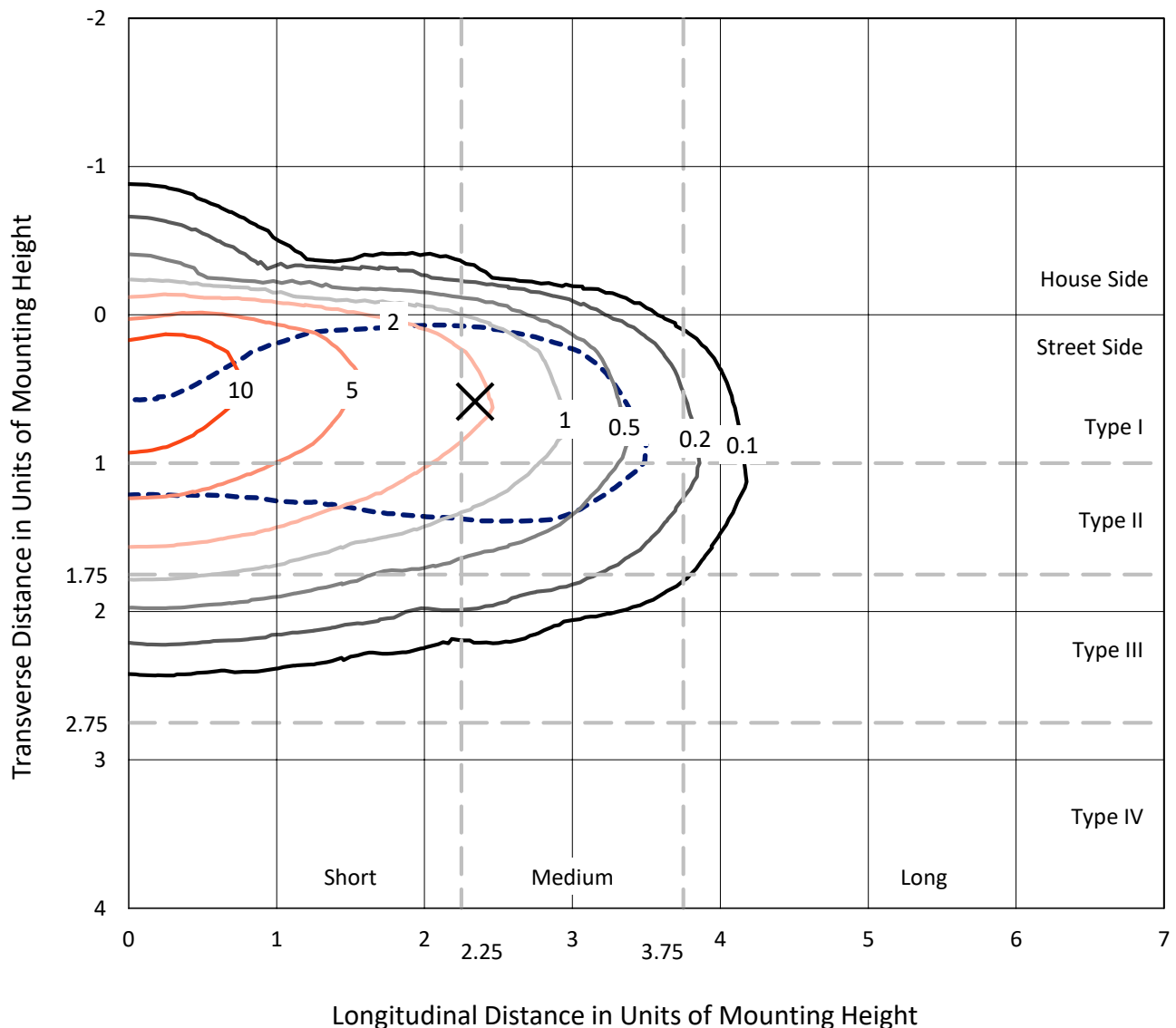
Input Watts (W): 279  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P321329  
 CATALOG NUMBER: GLEON-SA5C-750-U-T2R-HSS

## Iso-Footcandle Lines of Horizontal Illumination

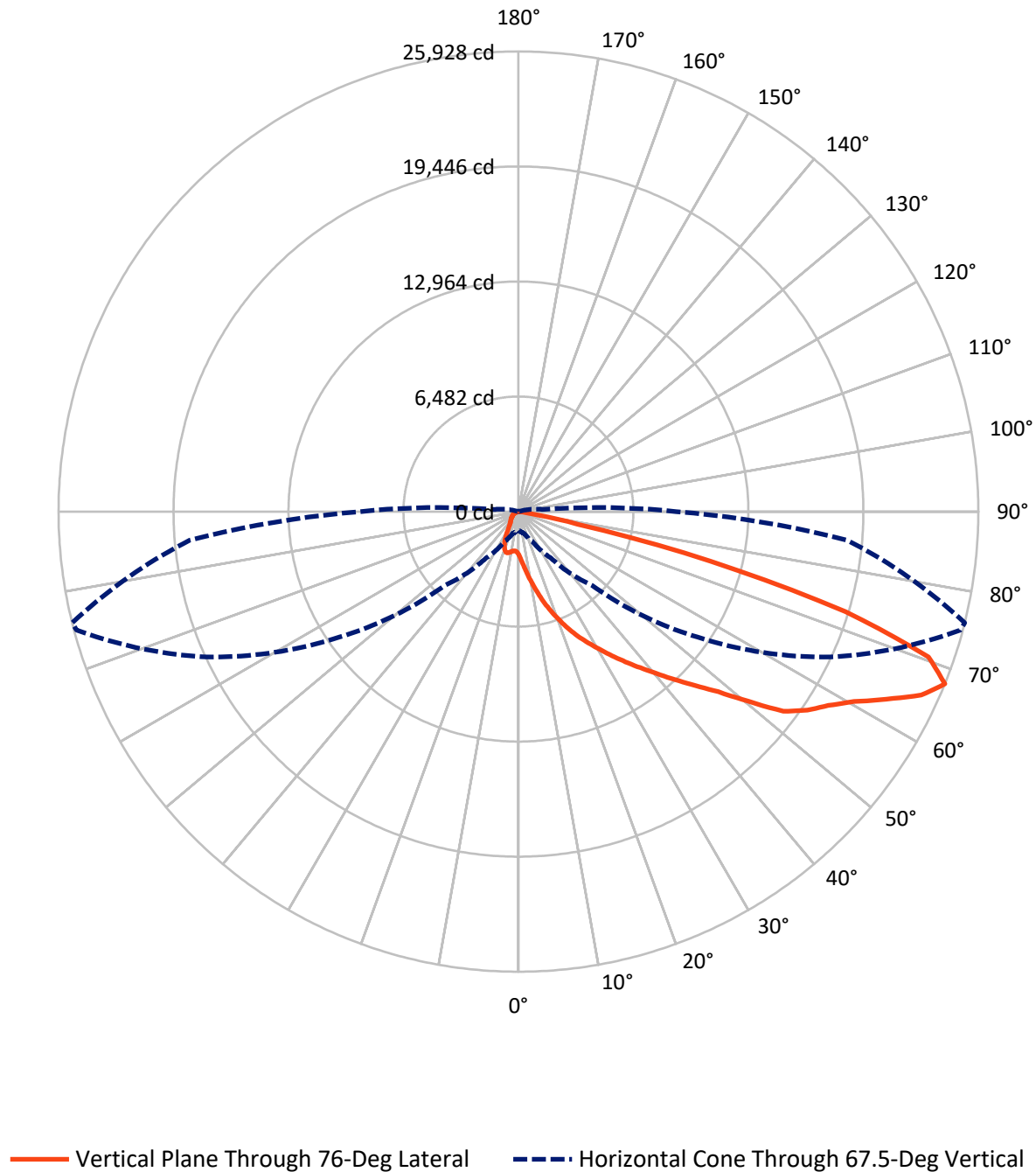
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 13.6 fc  
 Type II - Medium - N/A

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CATALOG NUMBER: GLEON-SA5C-750-U-T2R-HSS

## Luminous Intensity Polar Plot



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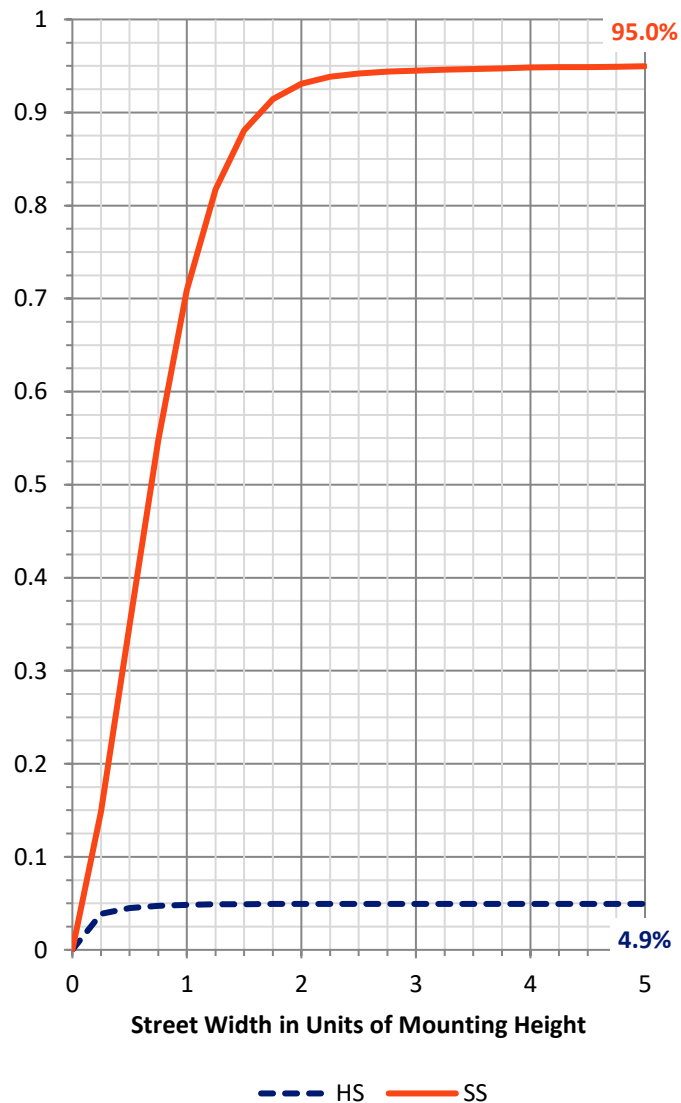
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1417.0   | 0.0    | 1417.0  |
|                    | % Fixture | 5.0      | 0.0    | 5.0     |
| <b>Street Side</b> | Lumens    | 27118.0  | 0.0    | 27118.0 |
|                    | % Fixture | 95.0     | 0.0    | 95.0    |
| <b>Total</b>       | Lumens    | 28535.0  | 0.0    | 28535.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 301.0   | 1.1       |
| 10°-20°   | 1193.2  | 4.2       |
| 20°-30°   | 2427.8  | 8.5       |
| 30°-40°   | 4213.8  | 14.8      |
| 40°-50°   | 5953.6  | 20.9      |
| 50°-60°   | 6751.6  | 23.7      |
| 60°-70°   | 5599.8  | 19.6      |
| 70°-80°   | 2028.4  | 7.1       |
| 80°-90°   | 65.8    | 0.2       |
| 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°    | 28535.0 | 100.0     |
| 0°-180°   | 28535.0 | 100.0     |

**Coefficient of Utilization**



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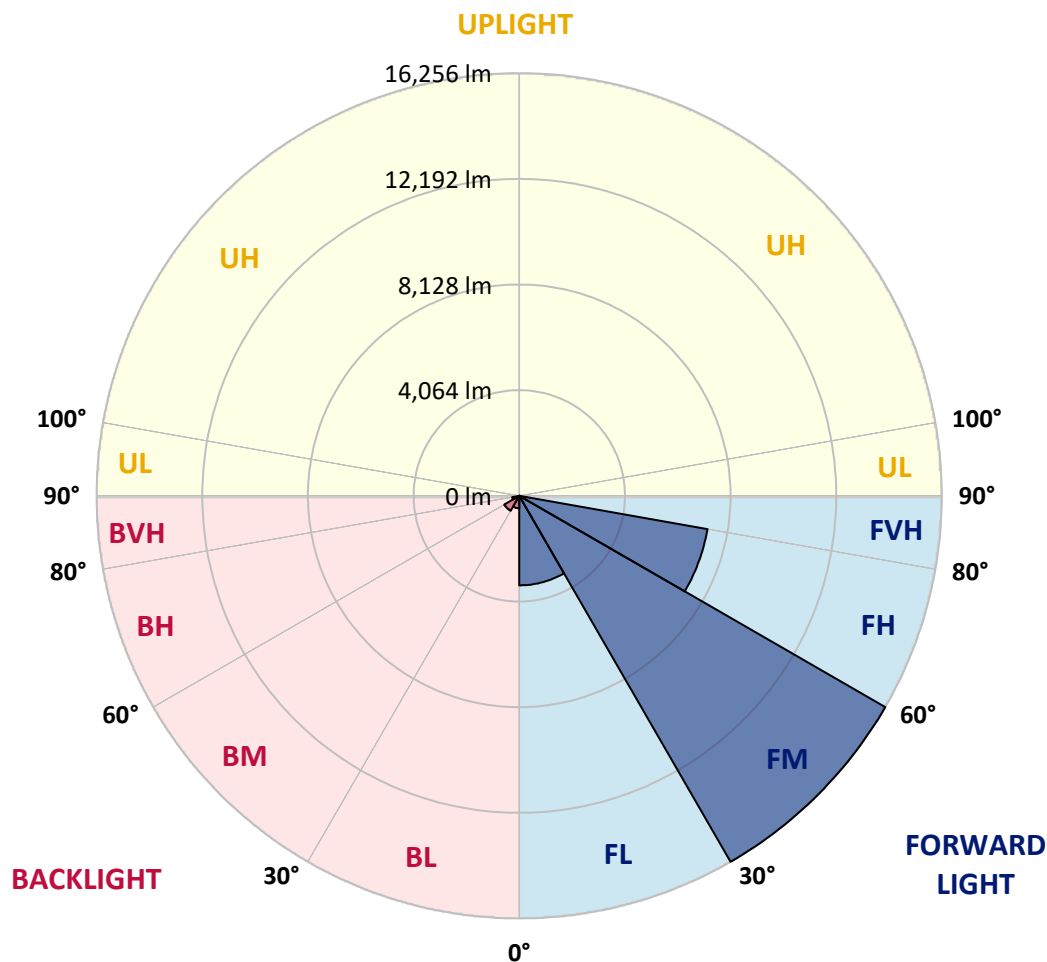
CATALOG NUMBER: GLEON-SA5C-750-U-T2R-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 3444.1  | 12.1      |                         |      |         |
| FM   | (30°-60°)   | 16255.8 | 57.0      |                         |      |         |
| FH   | (60°-80°)   | 7354.4  | 25.8      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 63.7    | 0.2       |                         |      | G1/100  |
| BL   | (0°-30°)    | 477.9   | 1.7       | B1/500                  |      |         |
| BM   | (30°-60°)   | 663.2   | 2.3       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 273.8   | 1.0       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 2.1     | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G3**

Type II Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 76°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 2420.6  | 2420.6  | 2420.6  | 2420.6  | 2420.6  | 2420.6  | 2420.6  | 2420.6  | 2420.6  | 2420.6  | 2420.6  |
| 2.5°  | 3613.4  | 3532.1  | 3550.9  | 3498.4  | 3403.3  | 3208.3  | 3042.0  | 2884.5  | 2700.7  | 2694.4  | 2543.1  |
| 5°    | 4872.4  | 4803.7  | 4794.9  | 4688.7  | 4516.1  | 4184.8  | 3862.2  | 3494.6  | 3084.5  | 3054.5  | 2733.2  |
| 7.5°  | 6015.2  | 5960.2  | 5940.2  | 5813.9  | 5492.6  | 5170.0  | 4749.9  | 4209.8  | 3568.4  | 3513.4  | 2989.5  |
| 10°   | 6892.9  | 6866.7  | 6871.7  | 6781.7  | 6506.6  | 6206.5  | 5655.1  | 4966.2  | 4117.3  | 4032.2  | 3297.1  |
| 12.5° | 7558.1  | 7564.4  | 7609.4  | 7554.4  | 7400.6  | 7178.0  | 6589.1  | 5772.7  | 4724.9  | 4608.6  | 3648.4  |
| 15°   | 8047.0  | 8078.2  | 8160.8  | 8229.5  | 8218.3  | 8025.7  | 7485.6  | 6591.6  | 5370.1  | 5241.3  | 4039.7  |
| 17.5° | 8363.3  | 8398.3  | 8518.3  | 8670.9  | 8810.9  | 8765.9  | 8350.8  | 7381.8  | 6022.7  | 5873.9  | 4458.6  |
| 20°   | 8640.9  | 8682.1  | 8810.9  | 9012.2  | 9273.5  | 9329.8  | 9057.2  | 8148.3  | 6674.1  | 6492.8  | 4891.2  |
| 22.5° | 9242.3  | 9241.0  | 9319.8  | 9437.3  | 9686.1  | 9831.2  | 9658.6  | 8859.7  | 7318.0  | 7129.3  | 5332.6  |
| 25°   | 10330.0 | 10288.8 | 10261.3 | 10168.7 | 10223.8 | 10313.8 | 10217.5 | 9524.8  | 7965.7  | 7774.4  | 5780.2  |
| 27.5° | 11622.9 | 11647.9 | 11425.3 | 11176.5 | 10983.9 | 10891.4 | 10733.9 | 10141.2 | 8588.4  | 8378.3  | 6217.8  |
| 30°   | 12986.9 | 12994.4 | 12731.9 | 12414.3 | 11990.4 | 11639.1 | 11366.5 | 10730.1 | 9228.5  | 8999.7  | 6642.9  |
| 32.5° | 14217.2 | 14168.5 | 13908.4 | 13475.8 | 12940.7 | 12545.6 | 11979.2 | 11387.8 | 9906.2  | 9684.9  | 7115.5  |
| 35°   | 15192.5 | 15135.0 | 14818.6 | 14424.8 | 13869.7 | 13472.1 | 12790.6 | 12044.2 | 10618.9 | 10402.6 | 7589.4  |
| 37.5° | 15905.2 | 15837.6 | 15512.6 | 15107.5 | 14628.6 | 14397.3 | 13732.1 | 12758.1 | 11396.5 | 11164.0 | 8088.2  |
| 40°   | 16152.7 | 16094.0 | 15890.2 | 15593.8 | 15208.7 | 15156.2 | 14731.1 | 13579.6 | 12243.0 | 11995.4 | 8653.4  |
| 42.5° | 16005.2 | 15947.7 | 15875.1 | 15775.1 | 15615.1 | 15665.1 | 15673.8 | 14516.1 | 13183.2 | 12939.4 | 9277.3  |
| 45°   | 15420.0 | 15368.8 | 15443.8 | 15590.1 | 15788.9 | 16036.4 | 16534.1 | 15522.6 | 14233.5 | 13973.4 | 9998.7  |
| 47.5° | 14558.6 | 14521.1 | 14728.6 | 15093.7 | 15675.1 | 16357.8 | 17320.5 | 16580.3 | 15412.5 | 15171.2 | 10898.9 |
| 50°   | 13333.3 | 13327.0 | 13742.1 | 14408.5 | 15302.5 | 16512.8 | 18133.2 | 17783.1 | 17050.4 | 16796.6 | 12150.5 |
| 52.5° | 11425.3 | 11437.8 | 12254.3 | 13320.8 | 14648.6 | 16407.8 | 18655.8 | 19328.5 | 18955.9 | 18692.1 | 13234.5 |
| 55°   | 9608.6  | 9683.6  | 10262.5 | 11800.4 | 13645.9 | 16017.7 | 18835.9 | 20049.9 | 20007.4 | 19757.4 | 13837.1 |
| 57.5° | 7829.4  | 7965.7  | 8523.3  | 9959.9  | 12181.7 | 15118.7 | 18737.1 | 20362.5 | 20790.1 | 20598.8 | 14632.3 |
| 60°   | 5901.4  | 5964.0  | 6606.6  | 7949.5  | 10302.5 | 13478.3 | 18020.7 | 20532.5 | 21860.4 | 21727.8 | 15786.4 |
| 62.5° | 3754.7  | 3911.0  | 4481.1  | 5776.4  | 8022.0  | 11200.3 | 16812.9 | 20530.0 | 23199.4 | 23272.0 | 17275.5 |
| 65°   | 1978.0  | 2160.5  | 2463.1  | 3579.6  | 5512.6  | 8655.9  | 14996.2 | 20337.5 | 24842.4 | 24943.6 | 18439.5 |
| 67.5° | 1066.5  | 1119.0  | 1279.1  | 1858.0  | 3197.0  | 5863.9  | 12326.8 | 19387.3 | 25793.8 | 25927.6 | 18602.1 |
| 70°   | 780.2   | 808.9   | 869.0   | 1027.8  | 1609.1  | 3405.8  | 8994.7  | 17233.0 | 24567.3 | 24517.3 | 16527.8 |
| 72.5° | 598.9   | 643.9   | 688.9   | 752.7   | 925.2   | 1817.9  | 5600.1  | 13494.6 | 19602.3 | 19272.2 | 12354.3 |
| 75°   | 472.6   | 480.1   | 543.9   | 601.4   | 693.9   | 1035.3  | 2486.9  | 7859.4  | 11964.2 | 11182.7 | 6406.6  |
| 77.5° | 377.6   | 382.6   | 420.1   | 470.1   | 557.6   | 680.2   | 770.2   | 3092.0  | 3819.7  | 3408.3  | 1390.3  |
| 80°   | 223.8   | 236.3   | 312.6   | 362.6   | 462.6   | 428.9   | 281.3   | 671.4   | 596.4   | 540.1   | 233.8   |
| 82.5° | 125.0   | 135.0   | 176.3   | 286.3   | 322.6   | 205.1   | 140.0   | 181.3   | 140.0   | 136.3   | 66.3    |
| 85°   | 0.0     | 6.3     | 113.8   | 177.5   | 131.3   | 45.0    | 58.8    | 60.0    | 41.3    | 38.8    | 26.3    |
| 87.5° | 0.0     | 0.0     | 35.0    | 33.8    | 5.0     | 7.5     | 13.8    | 20.0    | 16.3    | 16.3    | 13.8    |
| 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: P321329

CATALOG NUMBER: GLEON-SA5C-750-U-T2R-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2420.6 | 2420.6 | 2420.6 | 2420.6 | 2420.6 | 2420.6 | 2420.6 | 2420.6 | 2420.6 | 2420.6 | 2420.6 |
| 2.5°  | 2468.1 | 2400.6 | 2273.1 | 2148.0 | 2043.0 | 1956.7 | 1879.2 | 1848.0 | 1822.9 | 1819.2 | 1799.2 |
| 5°    | 2578.1 | 2441.8 | 2198.0 | 1998.0 | 1864.2 | 1769.2 | 1687.9 | 1637.9 | 1599.1 | 1584.1 | 1570.4 |
| 7.5°  | 2744.4 | 2538.1 | 2188.0 | 1958.0 | 1797.9 | 1637.9 | 1487.9 | 1325.3 | 1224.1 | 1185.3 | 1162.8 |
| 10°   | 2947.0 | 2665.7 | 2225.5 | 1946.7 | 1666.7 | 1329.1 | 1080.3 | 874.0  | 790.2  | 762.7  | 755.2  |
| 12.5° | 3183.3 | 2824.4 | 2290.6 | 1876.7 | 1386.6 | 944.0  | 745.2  | 675.2  | 656.4  | 647.7  | 647.7  |
| 15°   | 3454.6 | 2998.2 | 2336.8 | 1674.2 | 1025.3 | 713.9  | 645.2  | 612.7  | 592.6  | 581.4  | 582.6  |
| 17.5° | 3732.2 | 3168.3 | 2314.3 | 1380.3 | 756.4  | 635.2  | 583.9  | 548.9  | 521.4  | 510.1  | 507.6  |
| 20°   | 4012.2 | 3325.8 | 2189.3 | 1027.8 | 640.2  | 576.4  | 518.9  | 480.1  | 452.6  | 441.4  | 438.9  |
| 22.5° | 4302.3 | 3459.6 | 1969.2 | 753.9  | 575.1  | 511.4  | 455.1  | 416.4  | 390.1  | 380.1  | 375.1  |
| 25°   | 4584.9 | 3568.4 | 1661.7 | 610.1  | 513.9  | 450.1  | 396.3  | 360.1  | 336.3  | 326.3  | 325.1  |
| 27.5° | 4848.7 | 3637.1 | 1305.3 | 538.9  | 460.1  | 395.1  | 346.3  | 313.8  | 293.8  | 286.3  | 285.1  |
| 30°   | 5086.2 | 3643.4 | 965.2  | 486.4  | 412.6  | 347.6  | 302.6  | 273.8  | 256.3  | 248.8  | 246.3  |
| 32.5° | 5326.3 | 3590.9 | 702.7  | 438.9  | 368.8  | 306.3  | 262.6  | 240.1  | 227.6  | 221.3  | 221.3  |
| 35°   | 5552.6 | 3469.6 | 547.6  | 397.6  | 326.3  | 266.3  | 231.3  | 215.1  | 207.6  | 201.3  | 201.3  |
| 37.5° | 5773.9 | 3295.8 | 465.1  | 361.3  | 286.3  | 232.6  | 203.8  | 193.8  | 187.5  | 181.3  | 181.3  |
| 40°   | 5999.0 | 3077.0 | 422.6  | 327.6  | 253.8  | 206.3  | 181.3  | 172.5  | 166.3  | 161.3  | 160.0  |
| 42.5° | 6275.3 | 2824.4 | 395.1  | 296.3  | 225.1  | 182.5  | 160.0  | 150.0  | 145.0  | 140.0  | 137.5  |
| 45°   | 6595.4 | 2606.9 | 372.6  | 265.1  | 201.3  | 162.5  | 138.8  | 128.8  | 121.3  | 115.0  | 113.8  |
| 47.5° | 7056.7 | 2449.4 | 342.6  | 231.3  | 178.8  | 141.3  | 120.0  | 108.8  | 97.5   | 91.3   | 90.0   |
| 50°   | 7645.6 | 2319.3 | 303.8  | 201.3  | 156.3  | 120.0  | 100.0  | 86.3   | 76.3   | 70.0   | 70.0   |
| 52.5° | 7938.2 | 2149.3 | 268.8  | 175.0  | 131.3  | 101.3  | 81.3   | 65.0   | 60.0   | 53.8   | 53.8   |
| 55°   | 8055.7 | 2019.2 | 233.8  | 148.8  | 108.8  | 83.8   | 63.8   | 50.0   | 46.3   | 42.5   | 41.3   |
| 57.5° | 8385.8 | 1981.7 | 203.8  | 126.3  | 90.0   | 66.3   | 48.8   | 37.5   | 35.0   | 30.0   | 30.0   |
| 60°   | 8917.2 | 2000.5 | 176.3  | 107.5  | 72.5   | 51.3   | 36.3   | 28.8   | 26.3   | 21.3   | 21.3   |
| 62.5° | 9491.1 | 1976.7 | 148.8  | 92.5   | 56.3   | 37.5   | 25.0   | 21.3   | 21.3   | 12.5   | 11.3   |
| 65°   | 9601.1 | 1760.4 | 127.5  | 76.3   | 43.8   | 27.5   | 16.3   | 13.8   | 18.8   | 2.5    | 0.0    |
| 67.5° | 8910.9 | 1365.3 | 110.0  | 58.8   | 32.5   | 21.3   | 12.5   | 6.3    | 16.3   | 0.0    | 0.0    |
| 70°   | 7125.5 | 867.7  | 88.8   | 42.5   | 25.0   | 17.5   | 10.0   | 2.5    | 12.5   | 0.0    | 0.0    |
| 72.5° | 5038.7 | 503.9  | 70.0   | 30.0   | 21.3   | 13.8   | 7.5    | 0.0    | 7.5    | 0.0    | 0.0    |
| 75°   | 2548.1 | 268.8  | 43.8   | 22.5   | 16.3   | 10.0   | 5.0    | 0.0    | 1.3    | 0.0    | 0.0    |
| 77.5° | 551.4  | 125.0  | 27.5   | 16.3   | 11.3   | 6.3    | 2.5    | 0.0    | 0.0    | 0.0    | 0.0    |
| 80°   | 120.0  | 55.0   | 17.5   | 10.0   | 6.3    | 3.8    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 43.8   | 28.8   | 8.8    | 5.0    | 2.5    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 23.8   | 15.0   | 5.0    | 2.5    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 12.5   | 5.0    | 1.3    | 1.3    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 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: SP1-1908-441-4-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            |

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CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5000K 4-step quadrangle

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**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               |           |                  |                  |

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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               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



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

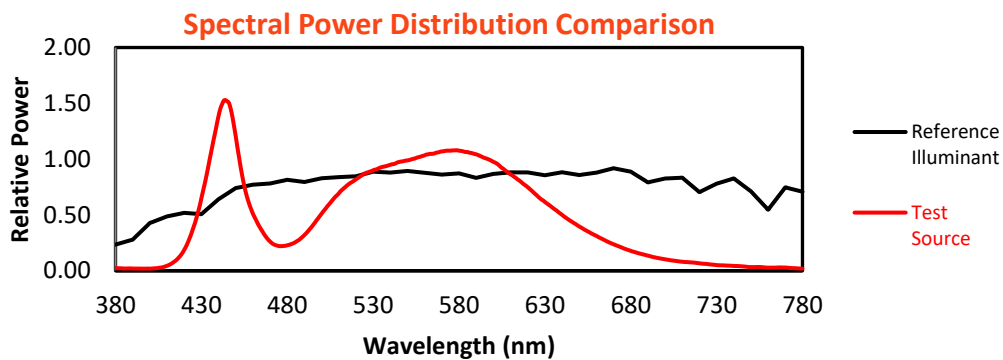
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 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               |           |                  |                  |

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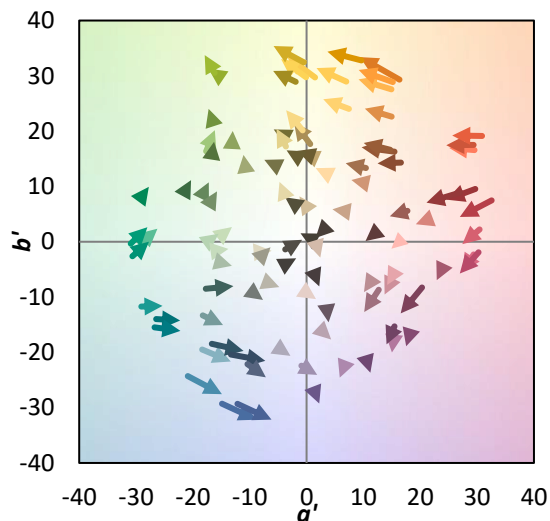
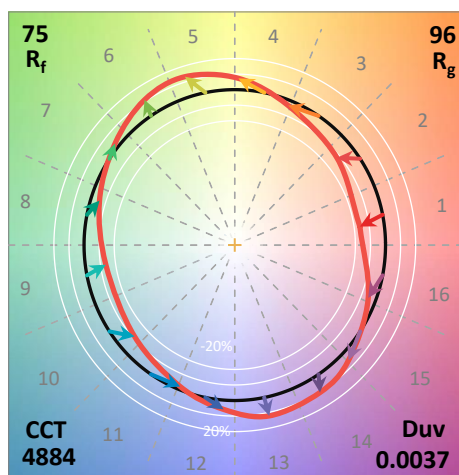
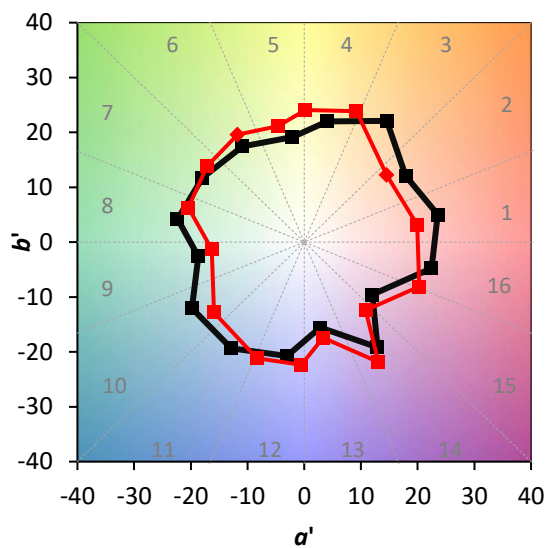
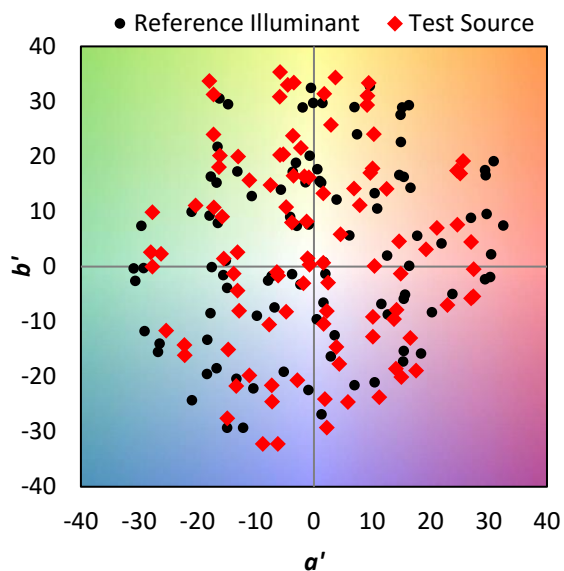
**TM-30-18**

### Summary

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



### Color Vector Graphics



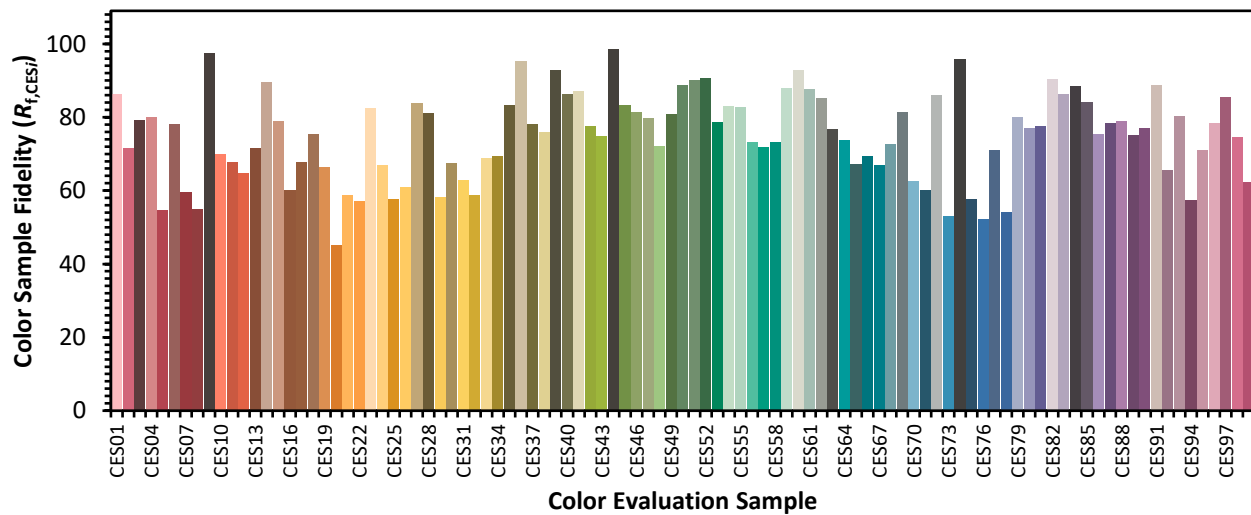


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**Individual Sample Fidelity Index ( $R_{f,i}$ )**

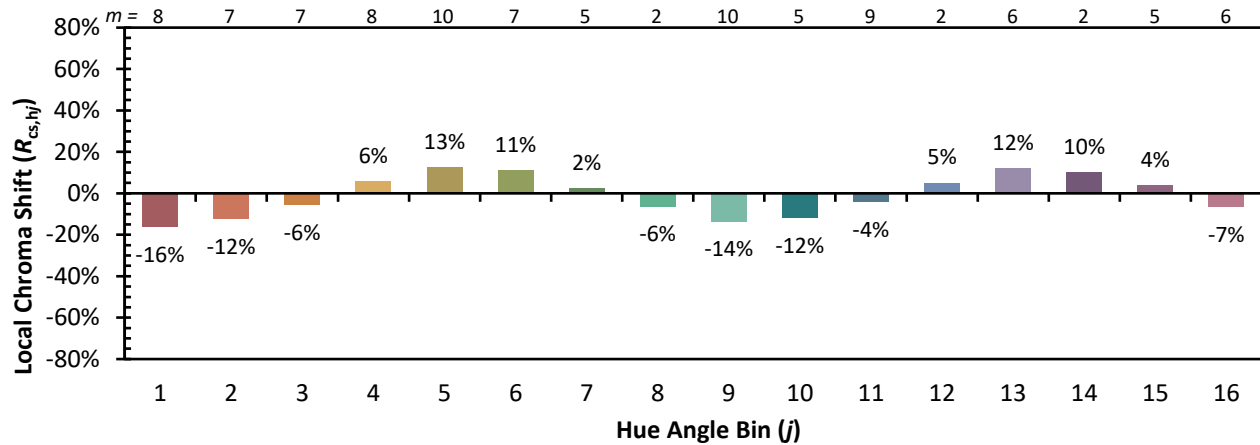
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 90 | CES76 = 52 |
| CES02 = 60 | CES27 = 84 | CES52 = 91 | CES77 = 71 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 58 | CES54 = 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 |            |



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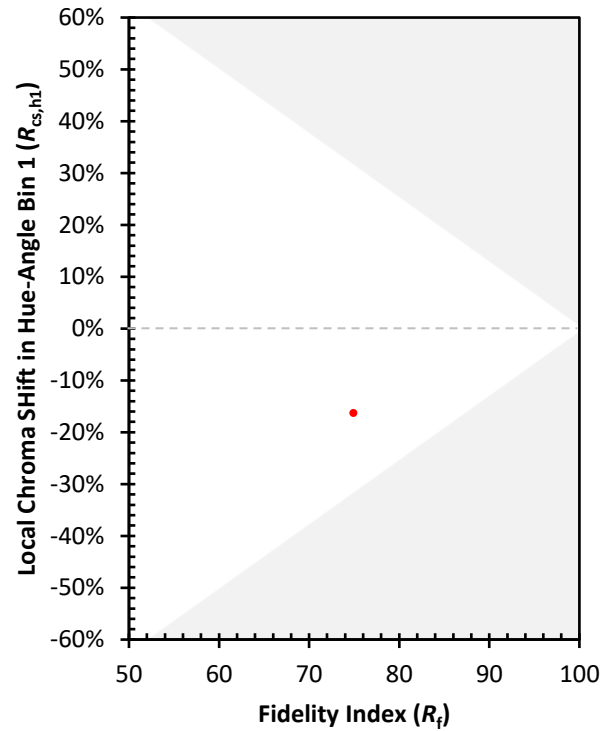
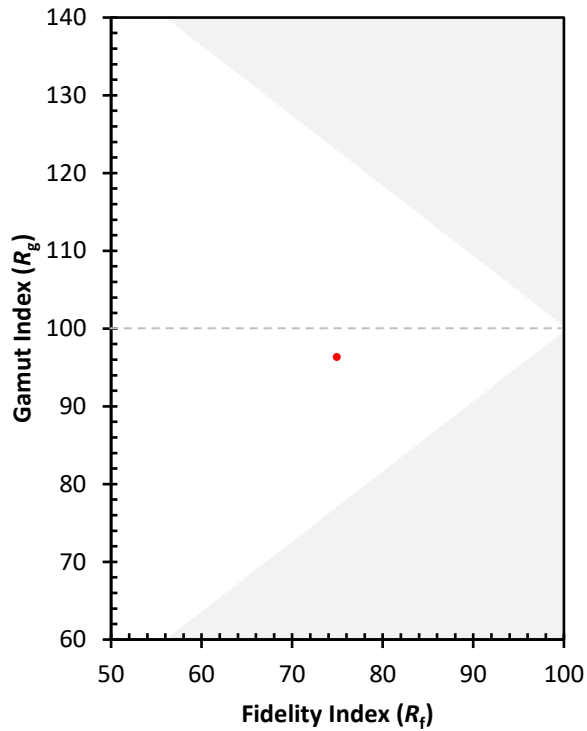
Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)