

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: P319956

Luminaire Tested: **GLEON-SA2B-730-U-SL4**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P319956  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-24)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA2B-730-U-SL4  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(2) 70 CRI, 3000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV SPILL  
LIGHT ELIMINATOR OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10118 lumens  
Efficiency: N/A  
Efficacy: 119.0 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G3

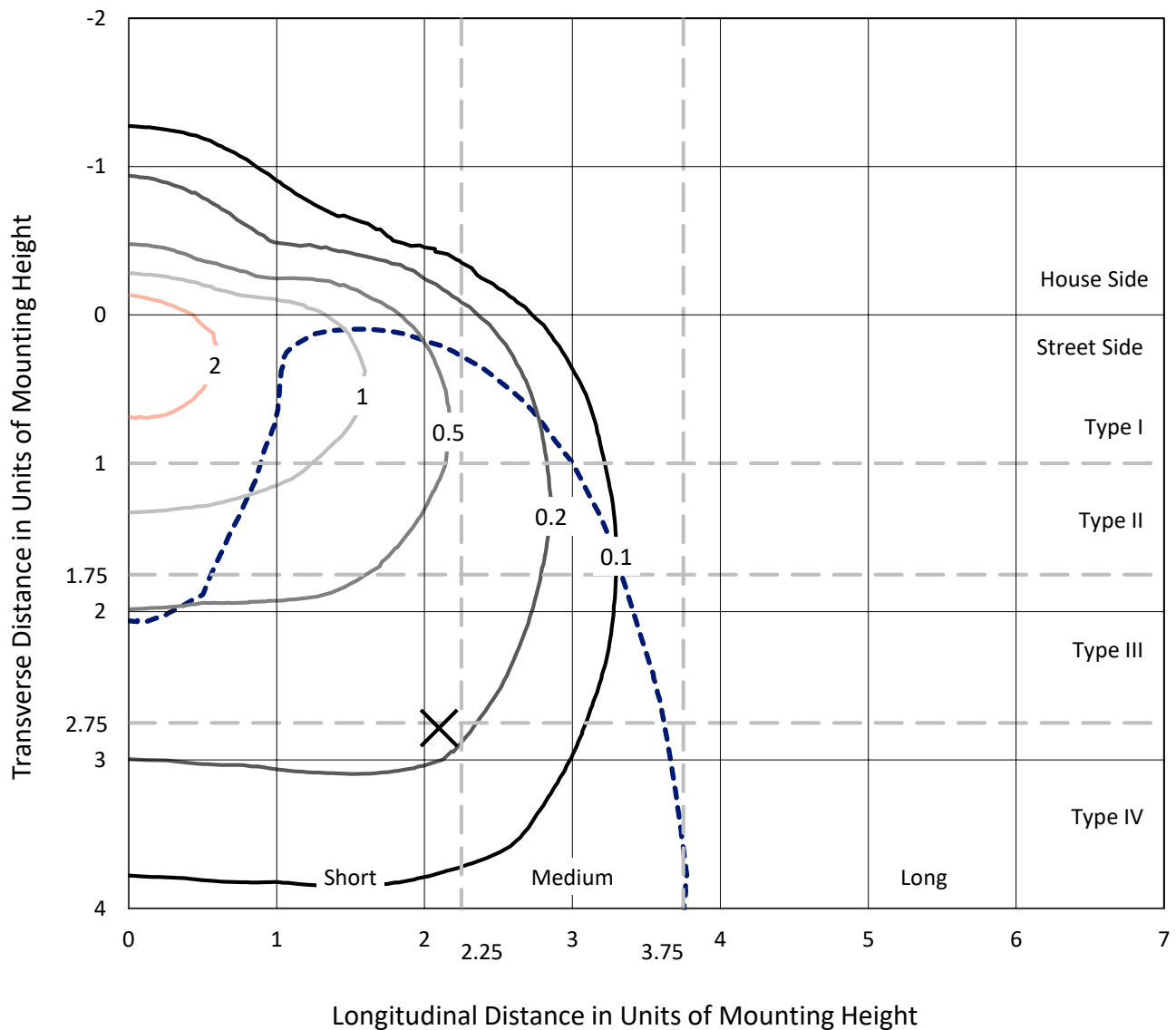
Input Watts (W): 85  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P319956  
 CATALOG NUMBER: GLEON-SA2B-730-U-SL4

## Iso-Footcandle Lines of Horizontal Illumination

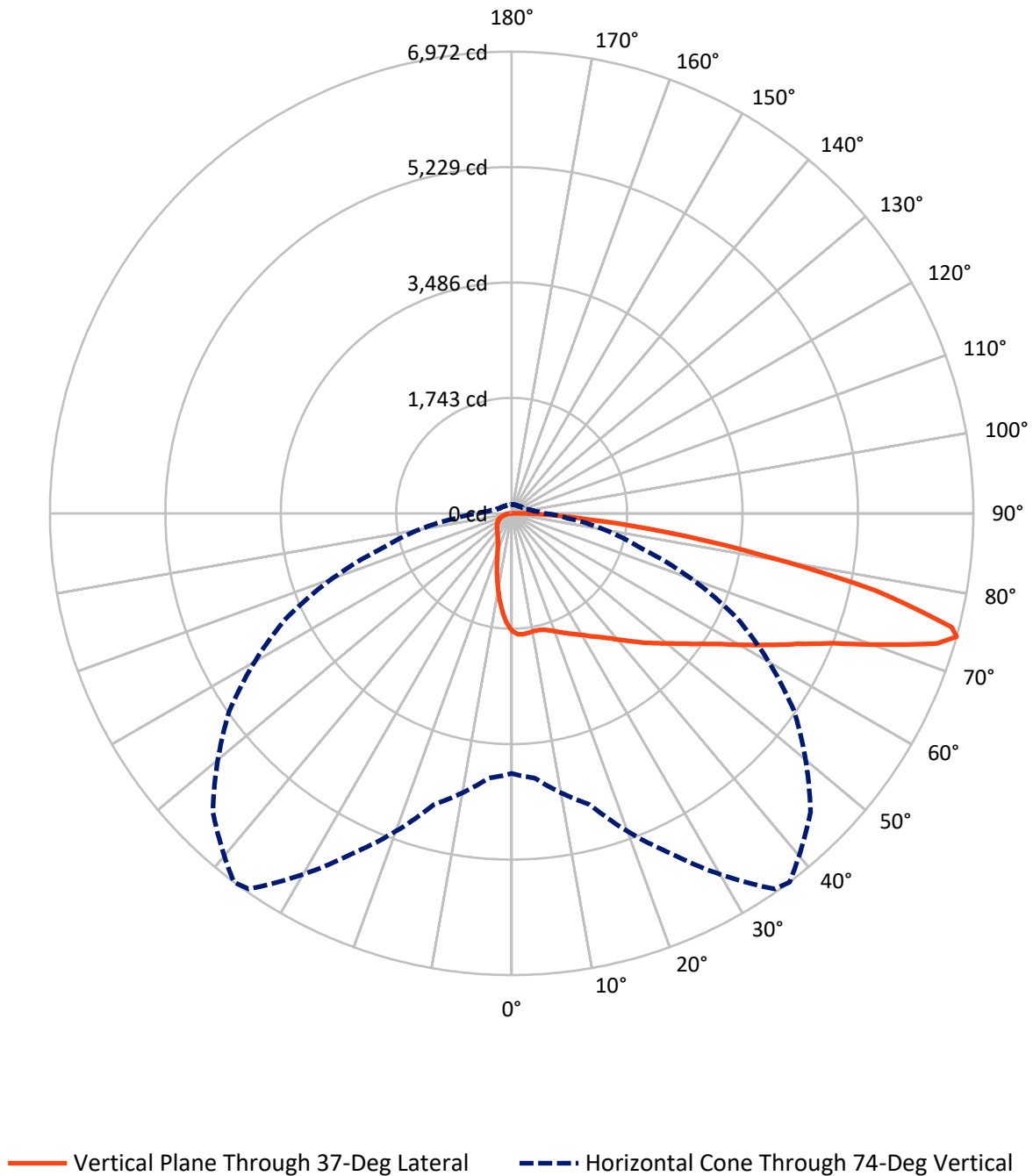
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 2.9 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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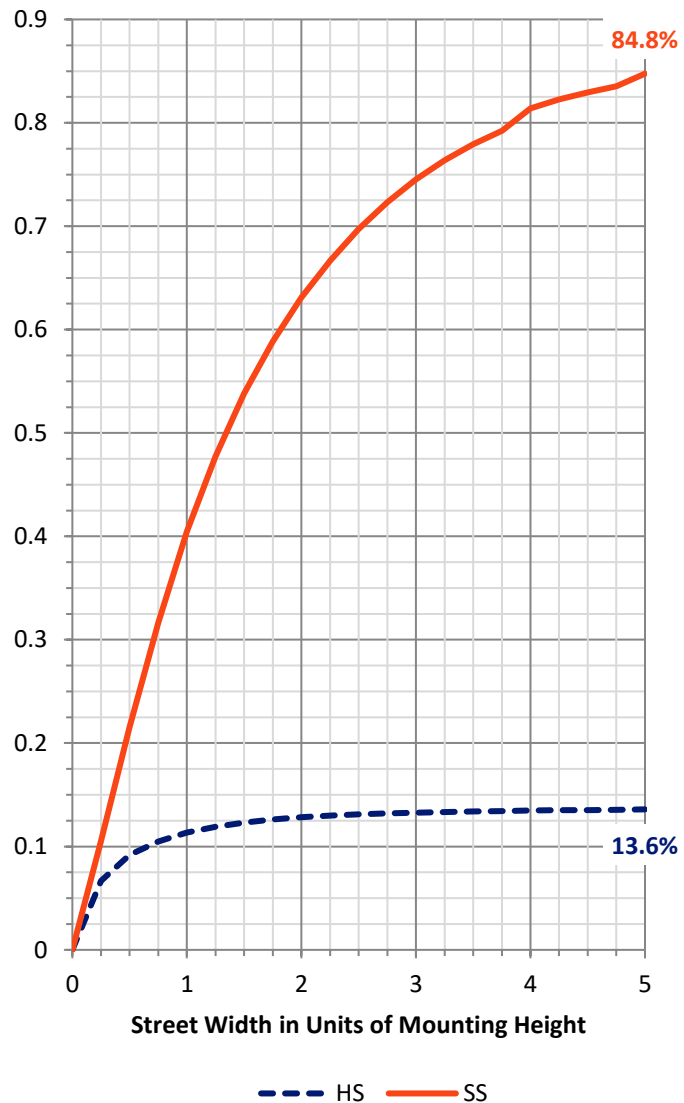
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1392.2   | 0.0    | 1392.2  |
|                    | % Fixture | 13.8     | 0.0    | 13.8    |
| <b>Street Side</b> | Lumens    | 8725.8   | 0.0    | 8725.8  |
|                    | % Fixture | 86.2     | 0.0    | 86.2    |
| <b>Total</b>       | Lumens    | 10118.0  | 0.0    | 10118.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 157.0   | 1.6       |
| 10°-20°   | 402.4   | 4.0       |
| 20°-30°   | 620.0   | 6.1       |
| 30°-40°   | 901.6   | 8.9       |
| 40°-50°   | 1327.0  | 13.1      |
| 50°-60°   | 1863.6  | 18.4      |
| 60°-70°   | 2358.7  | 23.3      |
| 70°-80°   | 2076.9  | 20.5      |
| 80°-90°   | 410.6   | 4.1       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 10118.0 | 100.0     |
| 0°-180°   | 10118.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P319956

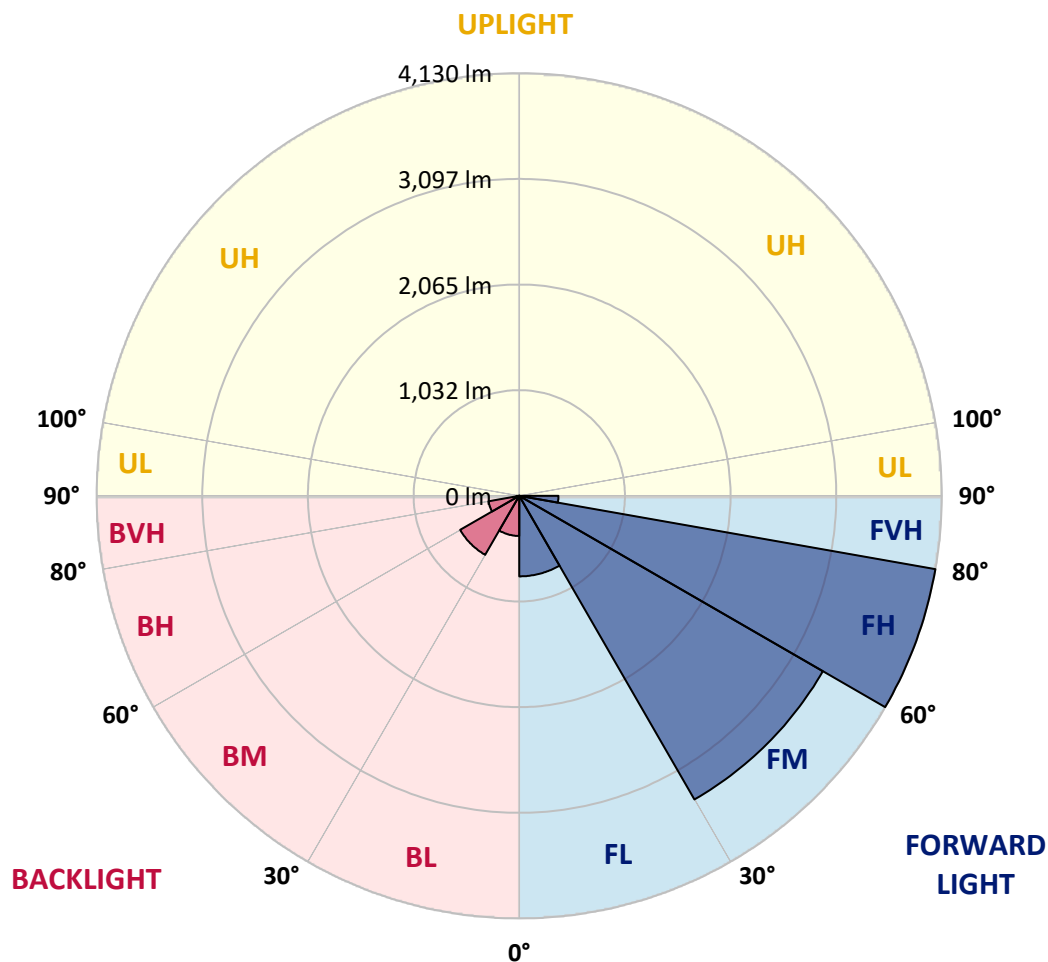
CATALOG NUMBER: GLEON-SA2B-730-U-SL4

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 787.3  | 7.8       |                         |      |         |
| FM   | (30°-60°)   | 3426.0 | 33.9      |                         |      |         |
| FH   | (60°-80°)   | 4129.7 | 40.8      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 382.8  | 3.8       |                         |      | G3/500  |
| BL   | (0°-30°)    | 392.1  | 3.9       | B1/500                  |      |         |
| BM   | (30°-60°)   | 666.2  | 6.6       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 306.0  | 3.0       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 27.8   | 0.3       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

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

Type IV Short





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CATALOG NUMBER: GLEON-SA2B-730-U-SL4

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 37°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 |
| 2.5°  | 1843.7 | 1844.1 | 1843.7 | 1840.8 | 1834.1 | 1828.4 | 1823.7 | 1817.0 | 1802.0 | 1790.6 | 1773.5 |
| 5°    | 1861.2 | 1859.0 | 1857.6 | 1852.3 | 1841.6 | 1835.1 | 1826.2 | 1813.4 | 1788.8 | 1766.0 | 1738.2 |
| 7.5°  | 1853.0 | 1850.5 | 1847.3 | 1840.8 | 1828.7 | 1823.4 | 1810.9 | 1794.2 | 1764.6 | 1734.6 | 1694.7 |
| 10°   | 1827.7 | 1826.9 | 1825.5 | 1824.1 | 1813.8 | 1809.5 | 1798.1 | 1780.3 | 1751.0 | 1714.7 | 1668.0 |
| 12.5° | 1799.5 | 1801.3 | 1807.0 | 1814.5 | 1809.8 | 1807.7 | 1800.6 | 1788.5 | 1758.5 | 1719.3 | 1663.0 |
| 15°   | 1781.7 | 1786.7 | 1802.0 | 1821.6 | 1825.5 | 1824.8 | 1823.0 | 1815.2 | 1783.5 | 1740.0 | 1674.4 |
| 17.5° | 1775.6 | 1783.8 | 1813.0 | 1845.5 | 1856.9 | 1859.4 | 1860.1 | 1846.5 | 1811.3 | 1765.3 | 1686.2 |
| 20°   | 1786.7 | 1797.0 | 1839.8 | 1884.3 | 1902.5 | 1903.9 | 1900.7 | 1877.2 | 1837.6 | 1787.0 | 1692.6 |
| 22.5° | 1820.2 | 1829.4 | 1882.9 | 1933.2 | 1953.8 | 1956.0 | 1946.3 | 1910.7 | 1865.4 | 1812.7 | 1701.5 |
| 25°   | 1884.7 | 1896.1 | 1949.6 | 1999.8 | 2010.5 | 2010.9 | 1997.0 | 1952.8 | 1901.8 | 1848.7 | 1720.7 |
| 27.5° | 1968.8 | 1980.2 | 2028.3 | 2077.5 | 2071.8 | 2068.6 | 2049.7 | 2005.5 | 1949.2 | 1898.2 | 1755.0 |
| 30°   | 2062.5 | 2075.0 | 2120.6 | 2155.6 | 2142.0 | 2135.6 | 2120.3 | 2063.2 | 2015.1 | 1965.9 | 1807.3 |
| 32.5° | 2159.5 | 2170.9 | 2210.8 | 2234.7 | 2217.6 | 2214.7 | 2191.6 | 2139.5 | 2101.0 | 2069.3 | 1892.2 |
| 35°   | 2258.9 | 2267.1 | 2306.3 | 2319.9 | 2297.0 | 2296.3 | 2289.9 | 2242.2 | 2217.9 | 2232.9 | 2015.5 |
| 37.5° | 2360.5 | 2362.6 | 2396.1 | 2396.8 | 2390.1 | 2392.9 | 2399.7 | 2369.8 | 2376.5 | 2423.2 | 2175.9 |
| 40°   | 2451.0 | 2456.7 | 2481.0 | 2488.4 | 2500.2 | 2510.2 | 2544.0 | 2524.4 | 2576.8 | 2659.5 | 2375.5 |
| 42.5° | 2518.0 | 2529.1 | 2567.9 | 2587.2 | 2625.3 | 2641.0 | 2688.7 | 2706.9 | 2812.4 | 2936.4 | 2612.8 |
| 45°   | 2574.7 | 2591.8 | 2654.2 | 2693.7 | 2758.2 | 2785.7 | 2854.1 | 2915.1 | 3078.7 | 3236.9 | 2862.7 |
| 47.5° | 2636.0 | 2657.7 | 2735.8 | 2811.3 | 2899.0 | 2930.0 | 3054.4 | 3145.7 | 3362.7 | 3539.1 | 3098.3 |
| 50°   | 2726.2 | 2742.9 | 2819.2 | 2937.9 | 3047.3 | 3087.2 | 3259.4 | 3390.2 | 3651.4 | 3827.1 | 3302.5 |
| 52.5° | 2852.0 | 2845.6 | 2910.1 | 3076.5 | 3223.4 | 3272.5 | 3478.2 | 3650.3 | 3944.0 | 4087.6 | 3475.0 |
| 55°   | 2978.5 | 2967.8 | 3013.1 | 3221.6 | 3428.6 | 3480.3 | 3719.1 | 3911.6 | 4222.4 | 4322.2 | 3607.2 |
| 57.5° | 3119.3 | 3099.0 | 3137.1 | 3385.2 | 3662.4 | 3724.1 | 3988.9 | 4189.2 | 4496.1 | 4511.8 | 3691.3 |
| 60°   | 3264.3 | 3236.9 | 3279.7 | 3588.0 | 3959.3 | 4032.0 | 4304.7 | 4460.1 | 4754.1 | 4663.6 | 3718.4 |
| 62.5° | 3391.2 | 3372.0 | 3437.9 | 3814.3 | 4294.0 | 4373.8 | 4614.8 | 4748.1 | 5008.6 | 4726.7 | 3620.7 |
| 65°   | 3502.1 | 3505.3 | 3619.3 | 4068.8 | 4667.2 | 4752.3 | 4970.5 | 5103.0 | 5208.9 | 4689.3 | 3392.3 |
| 67.5° | 3634.3 | 3652.5 | 3847.1 | 4403.8 | 5136.9 | 5230.3 | 5488.0 | 5490.1 | 5320.8 | 4469.7 | 2942.5 |
| 70°   | 3827.1 | 3864.5 | 4160.3 | 4868.5 | 5804.8 | 5933.1 | 6132.0 | 5717.5 | 5163.6 | 3874.5 | 2315.2 |
| 72.5° | 3998.2 | 4068.0 | 4493.6 | 5400.3 | 6618.9 | 6716.2 | 6508.7 | 5586.3 | 4506.8 | 2903.7 | 1442.4 |
| 74°   | 3928.7 | 4015.3 | 4554.2 | 5662.3 | 6925.4 | 6972.1 | 6381.5 | 5203.6 | 3757.6 | 2010.9 | 838.3  |
| 75°   | 3779.0 | 3873.1 | 4465.8 | 5659.8 | 6886.5 | 6860.5 | 6074.3 | 4766.2 | 3094.7 | 1371.5 | 557.8  |
| 77.5° | 3049.8 | 3149.2 | 3763.0 | 4850.7 | 5646.6 | 5622.0 | 4666.1 | 3197.3 | 1355.4 | 449.8  | 283.3  |
| 80°   | 1773.1 | 1849.0 | 2335.9 | 3080.4 | 3807.5 | 3852.1 | 3068.7 | 1582.1 | 533.2  | 252.7  | 192.1  |
| 82.5° | 787.7  | 840.1  | 1128.4 | 1572.5 | 2297.8 | 2355.1 | 1607.0 | 829.0  | 329.3  | 153.6  | 115.5  |
| 85°   | 516.8  | 555.6  | 685.0  | 748.8  | 1094.2 | 1133.4 | 786.6  | 645.5  | 217.4  | 84.5   | 84.8   |
| 87.5° | 371.7  | 409.2  | 509.0  | 444.4  | 502.2  | 475.4  | 428.0  | 597.3  | 87.3   | 48.1   | 28.5   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



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CATALOG NUMBER: GLEON-SA2B-730-U-SL4

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 | 1782.8 |
| 2.5°  | 1766.0 | 1760.3 | 1747.5 | 1723.2 | 1709.7 | 1698.3 | 1679.4 | 1668.3 | 1663.4 | 1663.0 | 1665.1 |
| 5°    | 1722.2 | 1709.0 | 1675.8 | 1635.2 | 1602.8 | 1573.2 | 1536.5 | 1514.4 | 1498.7 | 1489.4 | 1491.9 |
| 7.5°  | 1671.2 | 1650.5 | 1598.5 | 1533.6 | 1481.6 | 1424.2 | 1367.5 | 1333.7 | 1307.3 | 1287.7 | 1291.3 |
| 10°   | 1636.3 | 1607.8 | 1531.8 | 1438.5 | 1351.9 | 1268.5 | 1190.4 | 1143.7 | 1106.6 | 1078.1 | 1080.3 |
| 12.5° | 1624.5 | 1586.0 | 1480.9 | 1356.1 | 1234.6 | 1120.5 | 1018.6 | 947.0  | 908.8  | 876.4  | 878.9  |
| 15°   | 1626.3 | 1574.6 | 1438.1 | 1282.0 | 1129.1 | 985.5  | 861.8  | 778.0  | 726.4  | 703.9  | 704.3  |
| 17.5° | 1627.7 | 1561.4 | 1393.2 | 1202.5 | 1024.7 | 859.3  | 724.9  | 640.1  | 591.3  | 570.6  | 571.0  |
| 20°   | 1623.1 | 1540.0 | 1337.6 | 1111.3 | 915.6  | 743.5  | 613.4  | 541.4  | 504.3  | 488.3  | 488.3  |
| 22.5° | 1617.0 | 1514.7 | 1274.9 | 1019.7 | 808.0  | 643.0  | 533.5  | 478.7  | 457.3  | 446.6  | 446.2  |
| 25°   | 1619.9 | 1495.8 | 1210.7 | 925.6  | 708.9  | 562.8  | 480.4  | 444.1  | 429.8  | 423.1  | 422.7  |
| 27.5° | 1635.2 | 1486.9 | 1151.6 | 831.9  | 622.3  | 502.5  | 444.8  | 419.1  | 409.9  | 405.6  | 405.6  |
| 30°   | 1663.0 | 1486.9 | 1089.9 | 752.0  | 550.3  | 458.0  | 417.4  | 399.9  | 393.5  | 390.6  | 390.6  |
| 32.5° | 1711.5 | 1495.1 | 1030.4 | 672.9  | 492.9  | 423.1  | 394.5  | 382.8  | 377.8  | 376.4  | 376.4  |
| 35°   | 1794.9 | 1522.9 | 972.3  | 598.1  | 446.6  | 394.5  | 372.8  | 366.0  | 362.5  | 362.1  | 363.2  |
| 37.5° | 1912.1 | 1579.6 | 917.8  | 542.8  | 413.8  | 371.4  | 354.6  | 349.3  | 347.1  | 348.9  | 350.3  |
| 40°   | 2059.7 | 1656.6 | 868.2  | 492.9  | 388.8  | 352.8  | 337.9  | 334.3  | 333.2  | 335.7  | 337.9  |
| 42.5° | 2237.9 | 1760.7 | 827.6  | 456.9  | 369.6  | 337.2  | 323.6  | 319.3  | 318.3  | 321.1  | 324.0  |
| 45°   | 2430.7 | 1872.6 | 799.1  | 430.2  | 354.6  | 325.4  | 311.1  | 306.5  | 304.4  | 305.8  | 309.0  |
| 47.5° | 2606.1 | 1978.4 | 787.7  | 411.3  | 340.4  | 315.4  | 300.1  | 294.4  | 290.8  | 290.1  | 292.6  |
| 50°   | 2754.0 | 2057.2 | 793.0  | 399.9  | 329.0  | 304.4  | 289.4  | 283.0  | 277.6  | 274.4  | 276.2  |
| 52.5° | 2861.6 | 2106.7 | 798.0  | 394.9  | 320.1  | 292.3  | 277.6  | 271.6  | 264.5  | 259.1  | 259.1  |
| 55°   | 2939.7 | 2118.1 | 786.9  | 391.0  | 313.3  | 279.1  | 264.5  | 258.8  | 251.6  | 245.6  | 244.9  |
| 57.5° | 2970.3 | 2086.1 | 746.0  | 385.3  | 308.6  | 266.6  | 250.6  | 246.3  | 240.2  | 233.1  | 232.7  |
| 60°   | 2929.0 | 1987.0 | 666.8  | 373.2  | 302.6  | 256.3  | 236.7  | 233.8  | 231.0  | 224.2  | 223.8  |
| 62.5° | 2762.9 | 1769.6 | 564.6  | 348.6  | 290.5  | 245.2  | 223.8  | 225.2  | 225.6  | 221.0  | 220.3  |
| 65°   | 2461.7 | 1470.9 | 464.8  | 316.5  | 272.3  | 232.0  | 210.6  | 217.4  | 221.3  | 220.6  | 219.5  |
| 67.5° | 2024.0 | 1144.8 | 393.8  | 282.6  | 248.4  | 213.8  | 196.4  | 204.2  | 207.4  | 209.9  | 209.2  |
| 70°   | 1502.3 | 807.3  | 325.8  | 247.0  | 219.5  | 192.5  | 177.8  | 181.8  | 179.6  | 182.5  | 183.6  |
| 72.5° | 837.6  | 484.4  | 265.5  | 211.3  | 189.6  | 167.5  | 157.2  | 156.5  | 151.8  | 151.8  | 151.8  |
| 74°   | 502.5  | 355.3  | 233.4  | 189.3  | 171.4  | 151.1  | 142.2  | 139.0  | 134.7  | 135.1  | 134.7  |
| 75°   | 404.2  | 305.4  | 214.2  | 174.6  | 158.6  | 141.5  | 132.6  | 128.3  | 125.1  | 125.1  | 124.7  |
| 77.5° | 255.2  | 232.0  | 172.5  | 139.0  | 126.9  | 116.5  | 110.5  | 104.8  | 104.8  | 104.4  | 104.1  |
| 80°   | 192.8  | 184.6  | 134.4  | 105.1  | 97.3   | 89.5   | 85.5   | 83.0   | 83.0   | 84.1   | 83.8   |
| 82.5° | 132.2  | 139.0  | 94.4   | 73.4   | 69.5   | 63.8   | 63.1   | 63.4   | 62.4   | 60.9   | 60.6   |
| 85°   | 96.6   | 104.4  | 63.8   | 46.3   | 42.4   | 38.8   | 41.7   | 43.1   | 41.3   | 38.1   | 36.7   |
| 87.5° | 37.1   | 68.4   | 34.2   | 19.2   | 17.8   | 15.3   | 17.8   | 18.5   | 20.0   | 15.7   | 16.0   |
| 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 .

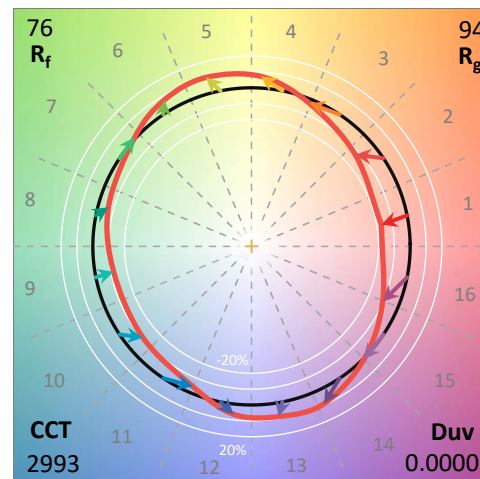
### Test Information

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

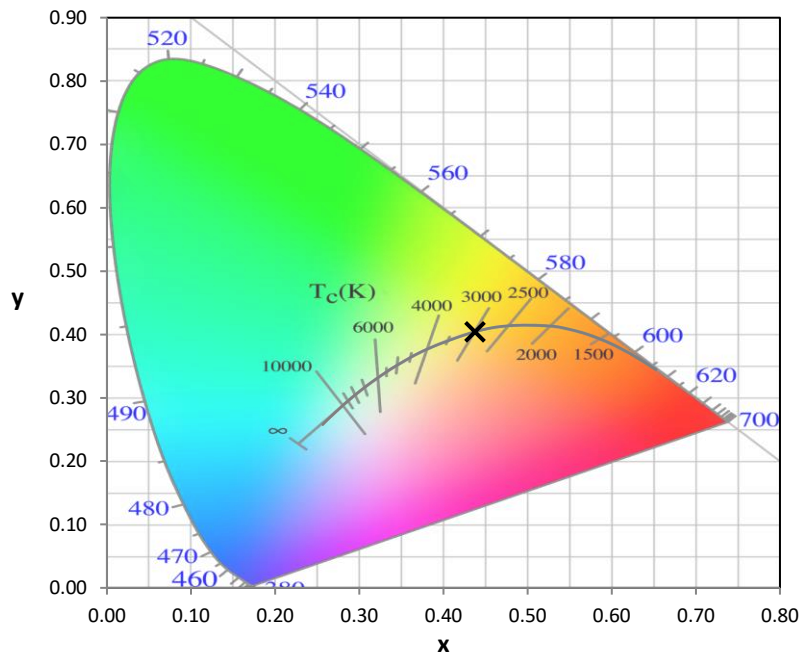
Stabilization Time: 53M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7

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            |

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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 3000K 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       | 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               |           |                  |                  |

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**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               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 3101.5**

**M/P: 0.45**

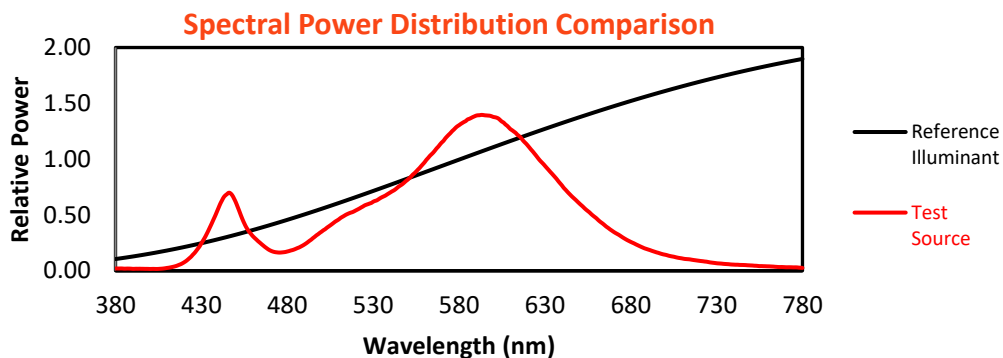
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------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

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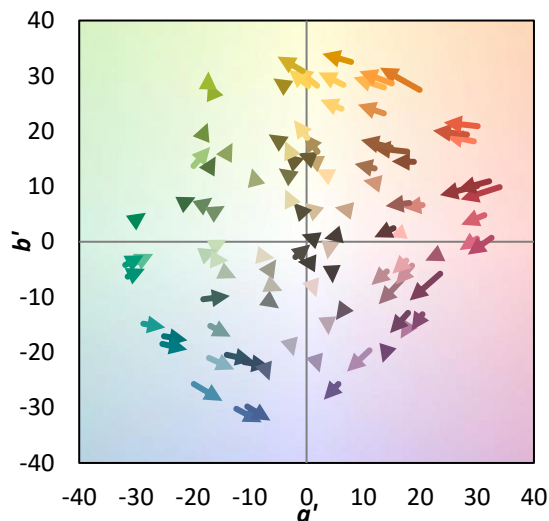
**TM-30-18**

**Summary**

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



**Color Vector Graphics**



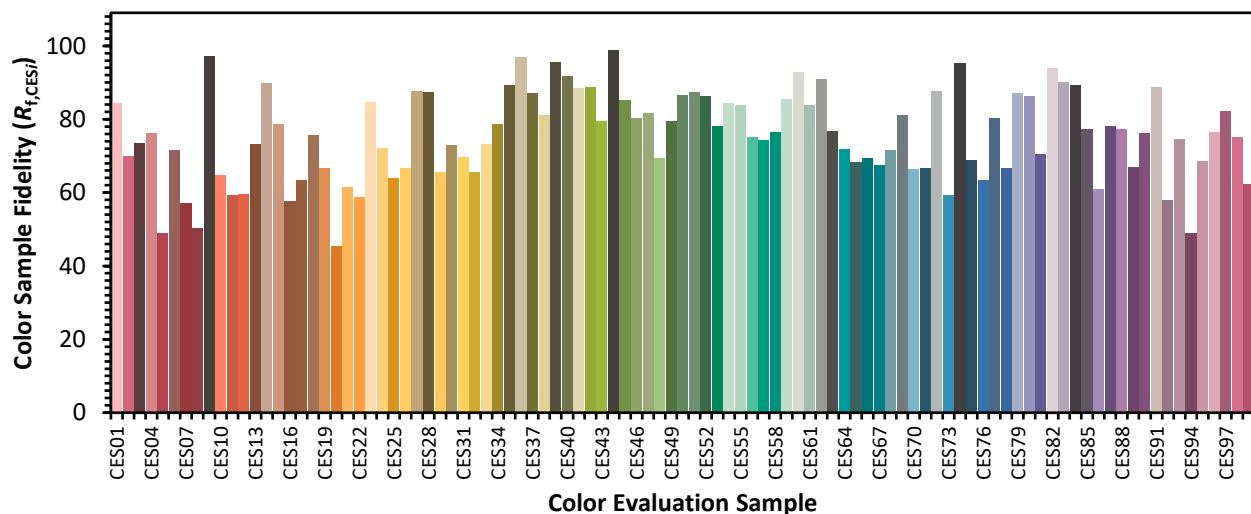


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**Individual Sample Fidelity Index ( $R_{f,i}$ )**

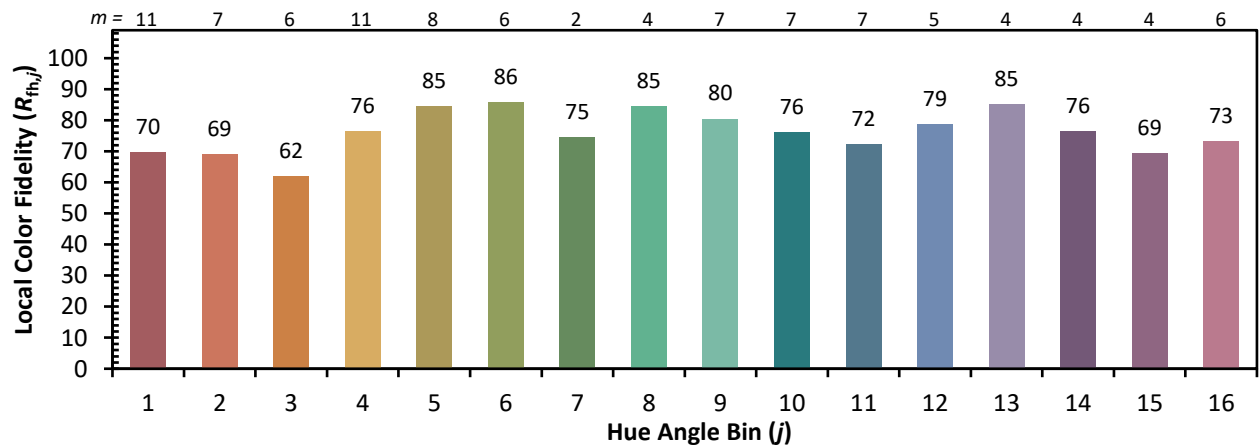
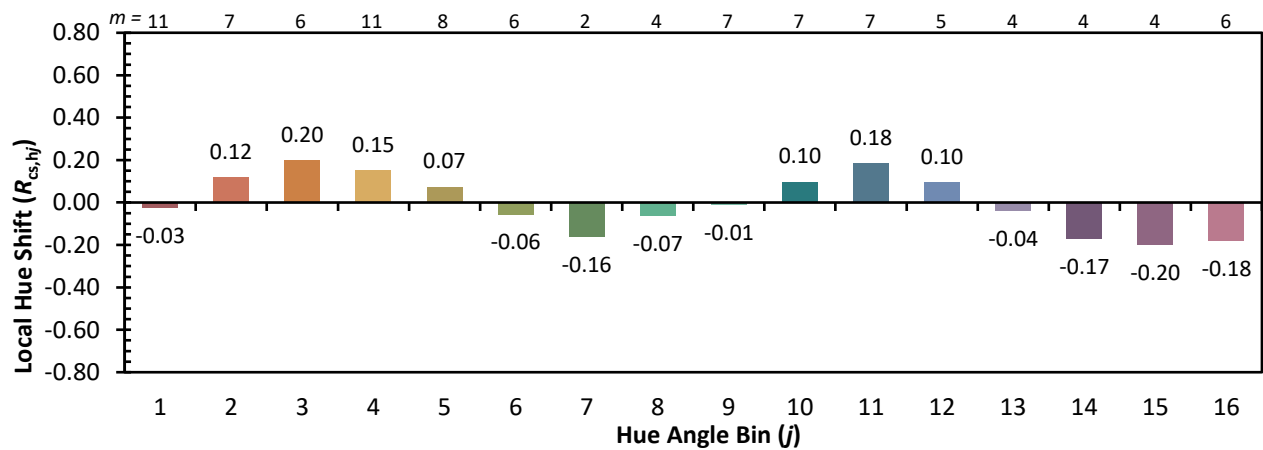
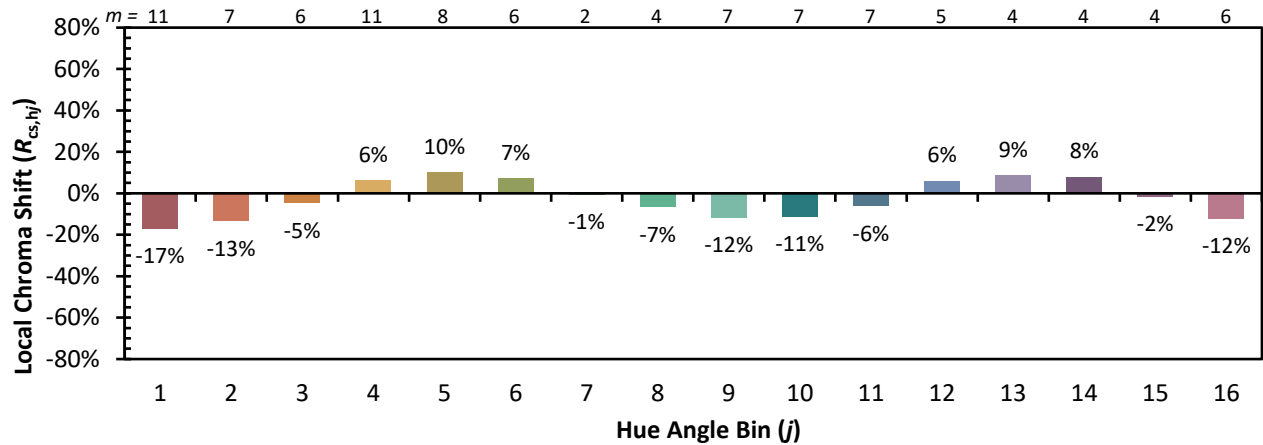
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 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 |            |



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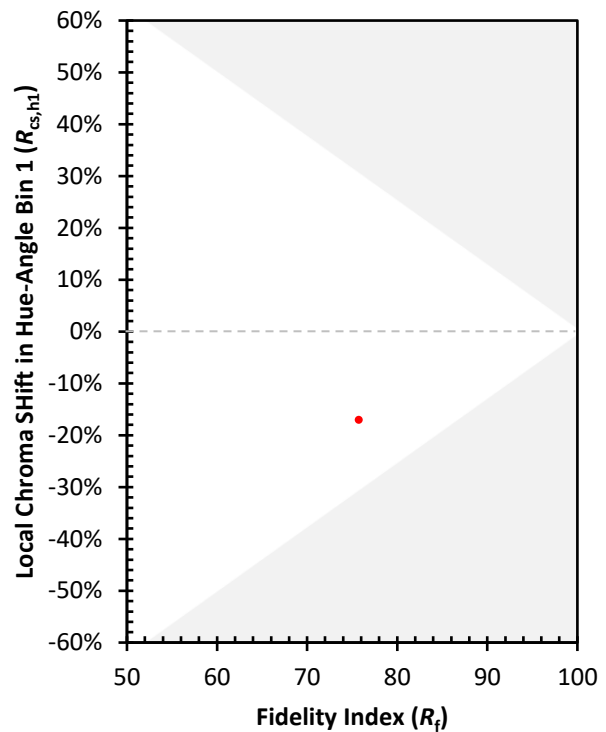
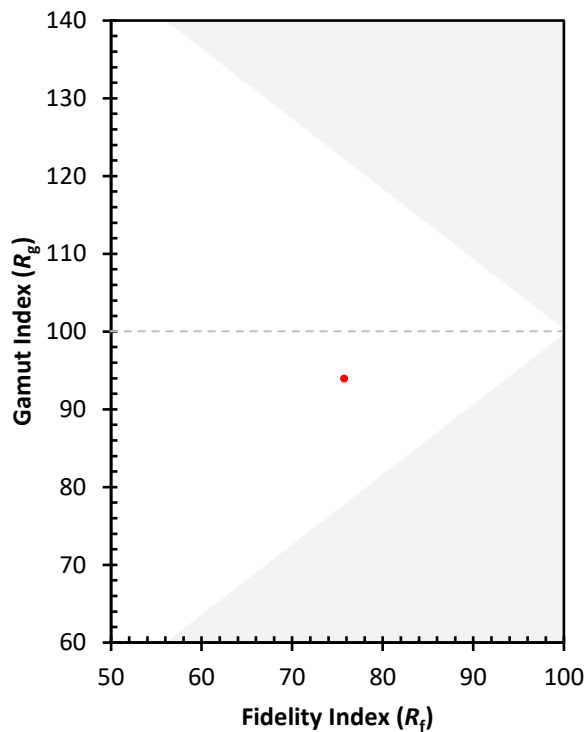
**Color Rendition by Hue-Angle Bin**



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**Measure Comparisons**



(END OF REPORT)