

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: P318145

Luminaire Tested: **GLEON-SA1A-760-U-T2**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P318145  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-12)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA1A-760-U-T2  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(1) 70 CRI, 5700K, 615mA LIGHTSQUARE WITH 16 LEDS AND TYPE II OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4787 lumens  
Efficiency: N/A  
Efficacy: 140.8 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B1 - U0 - G1

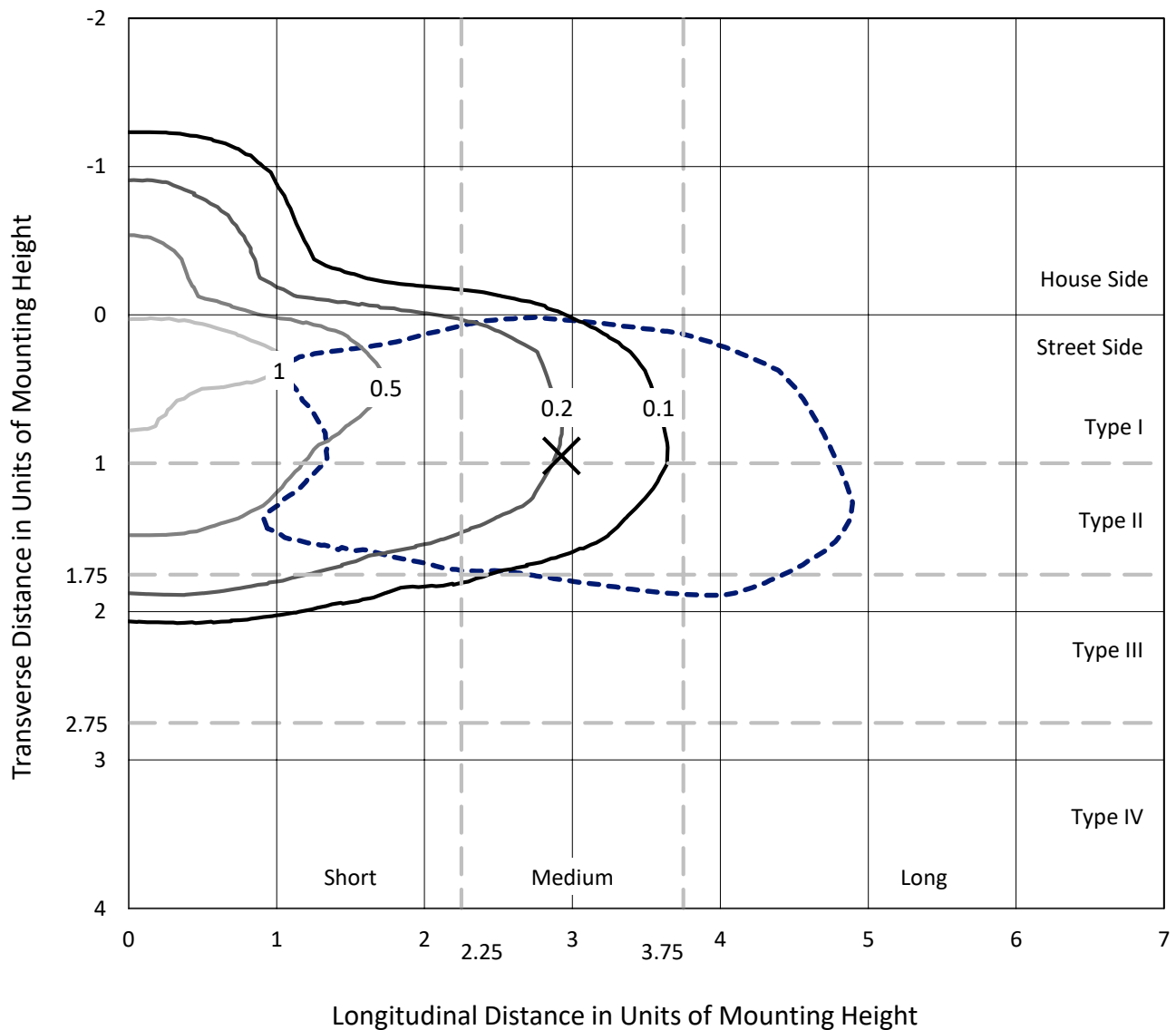
Input Watts (W): 34  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P318145  
 CATALOG NUMBER: GLEON-SA1A-760-U-T2

## Iso-Footcandle Lines of Horizontal Illumination

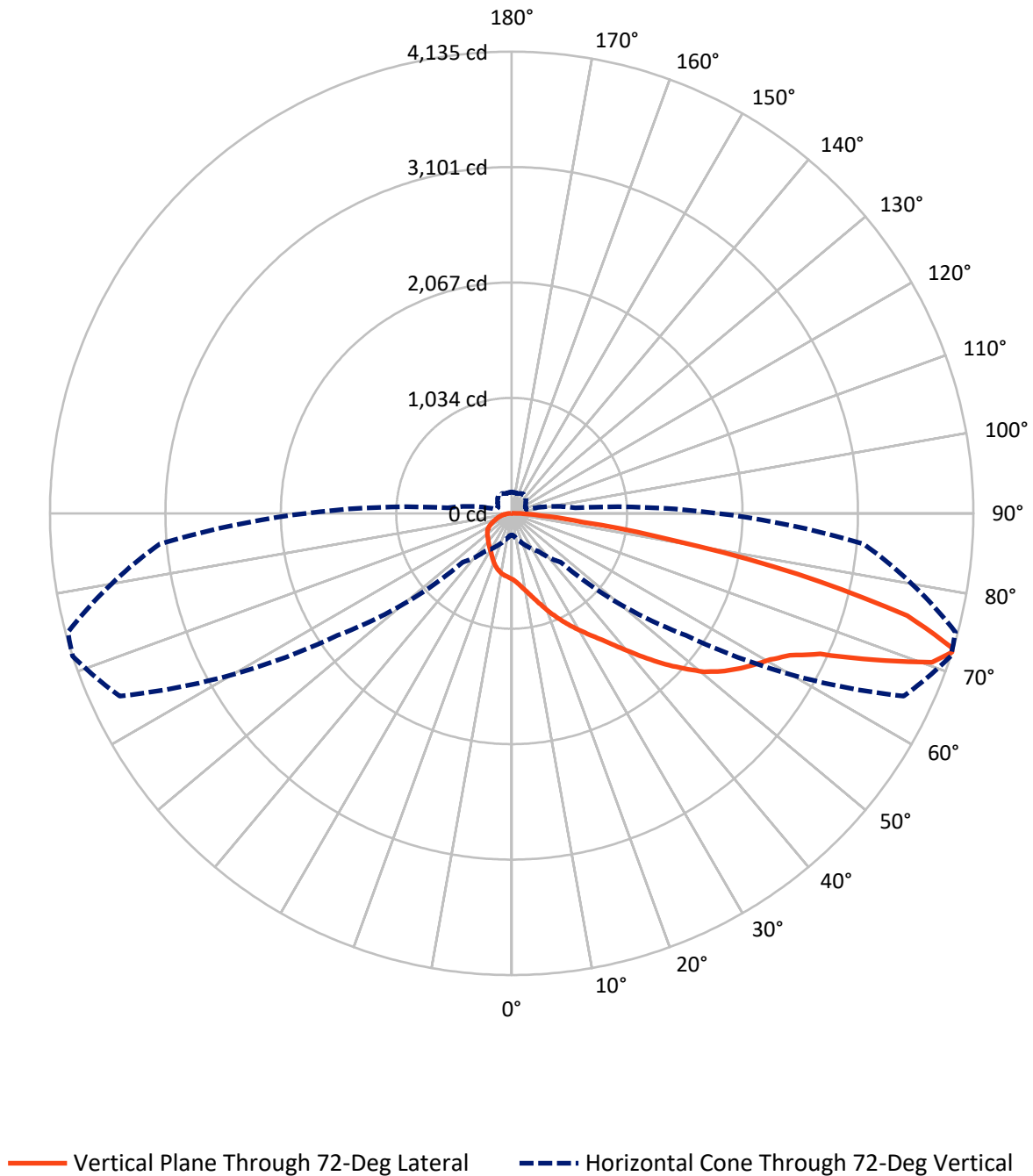
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.3 fc  
 Type III - Medium - N/A

REPORT NUMBER: P318145  
CATALOG NUMBER: GLEON-SA1A-760-U-T2

## Luminous Intensity Polar Plot



REPORT NUMBER: P318145

CATALOG NUMBER: GLEON-SA1A-760-U-T2

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 888.0    | 0.0    | 888.0  |
|                    | % Fixture | 18.6     | 0.0    | 18.6   |
| <b>Street Side</b> | Lumens    | 3899.0   | 0.0    | 3899.0 |
|                    | % Fixture | 81.4     | 0.0    | 81.4   |
| <b>Total</b>       | Lumens    | 4787.0   | 0.0    | 4787.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 59.0   | 1.2       |
| 10°-20°   | 190.7  | 4.0       |
| 20°-30°   | 334.2  | 7.0       |
| 30°-40°   | 495.5  | 10.4      |
| 40°-50°   | 724.6  | 15.1      |
| 50°-60°   | 997.1  | 20.8      |
| 60°-70°   | 1110.1 | 23.2      |
| 70°-80°   | 752.2  | 15.7      |
| 80°-90°   | 123.6  | 2.6       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 4787.0 | 100.0     |
| 0°-180°   | 4787.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P318145

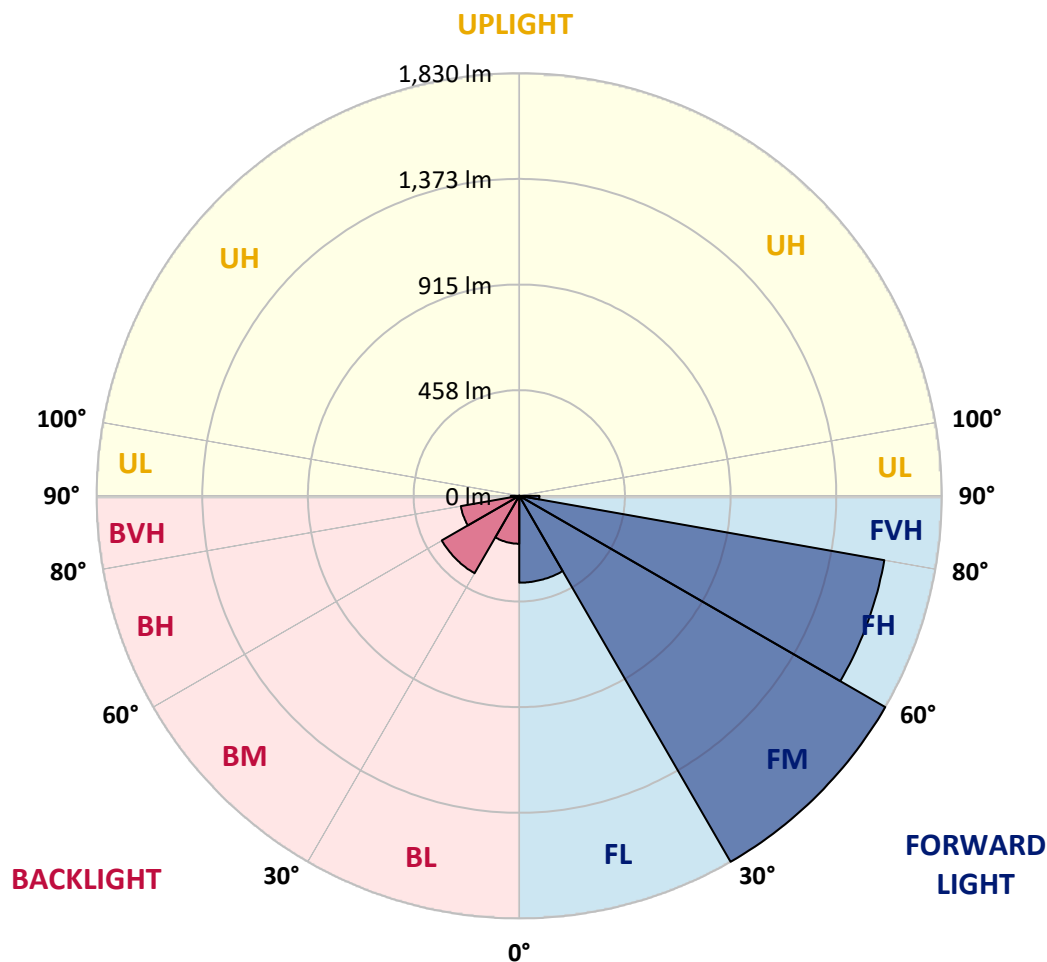
CATALOG NUMBER: GLEON-SA1A-760-U-T2

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 376.3  | 7.9       |                         |      |         |
| FM   | (30°-60°)   | 1830.1 | 38.2      |                         |      |         |
| FH   | (60°-80°)   | 1605.4 | 33.5      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 87.2   | 1.8       |                         |      | G1/100  |
| BL   | (0°-30°)    | 207.6  | 4.3       | B1/500                  |      |         |
| BM   | (30°-60°)   | 387.1  | 8.1       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 256.9  | 5.4       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 36.4   | 0.8       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G1**

Type III Medium



REPORT NUMBER: P318145

CATALOG NUMBER: GLEON-SA1A-760-U-T2

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 72°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 588.9  | 588.9  | 588.9  | 588.9  | 588.9  | 588.9  | 588.9  | 588.9  | 588.9  | 588.9  | 588.9  |
| 2.5°  | 650.6  | 649.6  | 646.1  | 646.1  | 639.5  | 633.9  | 623.4  | 616.3  | 607.9  | 604.9  | 595.0  |
| 5°    | 713.5  | 713.9  | 709.6  | 706.6  | 696.9  | 685.0  | 667.1  | 650.7  | 634.4  | 627.8  | 607.6  |
| 7.5°  | 766.4  | 765.8  | 764.6  | 762.2  | 753.1  | 740.9  | 716.7  | 692.4  | 668.4  | 658.5  | 623.5  |
| 10°   | 800.4  | 801.9  | 802.9  | 804.0  | 800.2  | 791.5  | 768.6  | 739.1  | 707.6  | 694.1  | 642.7  |
| 12.5° | 817.5  | 820.2  | 824.8  | 832.7  | 839.0  | 838.0  | 821.3  | 790.0  | 752.6  | 735.6  | 666.6  |
| 15°   | 827.6  | 831.1  | 838.3  | 852.5  | 870.1  | 880.2  | 875.7  | 847.4  | 805.7  | 784.7  | 695.7  |
| 17.5° | 833.9  | 836.7  | 847.9  | 866.8  | 893.0  | 919.7  | 931.4  | 907.7  | 865.7  | 841.8  | 729.2  |
| 20°   | 838.1  | 840.3  | 854.3  | 876.5  | 910.5  | 953.0  | 985.7  | 979.7  | 931.8  | 900.8  | 764.1  |
| 22.5° | 847.7  | 849.5  | 862.9  | 885.3  | 922.9  | 977.8  | 1037.9 | 1046.8 | 1001.5 | 966.4  | 801.6  |
| 25°   | 874.4  | 874.4  | 885.6  | 901.3  | 936.5  | 999.2  | 1082.1 | 1121.5 | 1072.7 | 1031.8 | 836.2  |
| 27.5° | 925.3  | 924.8  | 929.0  | 934.4  | 961.1  | 1020.9 | 1121.5 | 1187.4 | 1146.5 | 1101.9 | 869.8  |
| 30°   | 985.7  | 989.0  | 989.5  | 986.8  | 999.3  | 1048.1 | 1157.9 | 1257.0 | 1220.9 | 1172.7 | 904.2  |
| 32.5° | 1063.3 | 1065.4 | 1063.0 | 1054.2 | 1052.4 | 1086.7 | 1193.7 | 1329.8 | 1301.3 | 1246.7 | 935.7  |
| 35°   | 1161.9 | 1157.7 | 1150.0 | 1132.2 | 1115.2 | 1138.3 | 1234.6 | 1402.7 | 1391.6 | 1336.3 | 979.1  |
| 37.5° | 1267.5 | 1267.7 | 1258.1 | 1217.7 | 1194.3 | 1204.2 | 1290.9 | 1485.3 | 1500.9 | 1442.7 | 1034.6 |
| 40°   | 1352.2 | 1356.7 | 1362.6 | 1309.5 | 1279.2 | 1292.9 | 1362.6 | 1581.0 | 1630.1 | 1569.0 | 1107.0 |
| 42.5° | 1411.4 | 1416.5 | 1433.3 | 1400.0 | 1368.6 | 1393.9 | 1447.0 | 1683.2 | 1775.2 | 1714.7 | 1191.7 |
| 45°   | 1474.0 | 1476.8 | 1488.7 | 1474.4 | 1454.3 | 1511.5 | 1542.1 | 1789.0 | 1928.6 | 1870.0 | 1286.5 |
| 47.5° | 1540.0 | 1542.9 | 1555.1 | 1545.6 | 1535.0 | 1621.2 | 1641.3 | 1888.7 | 2075.7 | 2040.6 | 1387.7 |
| 50°   | 1621.4 | 1623.4 | 1634.9 | 1617.6 | 1620.9 | 1704.0 | 1730.0 | 1980.2 | 2229.8 | 2193.8 | 1489.2 |
| 52.5° | 1732.5 | 1733.0 | 1749.0 | 1733.3 | 1717.8 | 1764.6 | 1806.3 | 2066.4 | 2350.6 | 2333.6 | 1590.7 |
| 55°   | 1819.5 | 1824.8 | 1877.2 | 1873.9 | 1865.0 | 1819.7 | 1870.1 | 2148.5 | 2458.4 | 2466.5 | 1698.5 |
| 57.5° | 1764.0 | 1784.6 | 1890.7 | 1965.6 | 2038.4 | 1956.7 | 1956.3 | 2241.0 | 2558.6 | 2596.8 | 1817.0 |
| 60°   | 1544.9 | 1572.9 | 1729.4 | 1895.3 | 2123.3 | 2195.0 | 2135.3 | 2353.9 | 2659.8 | 2726.1 | 1965.6 |
| 62.5° | 1103.4 | 1149.5 | 1361.5 | 1626.5 | 2006.9 | 2352.9 | 2499.6 | 2533.1 | 2797.4 | 2875.7 | 2158.6 |
| 65°   | 557.8  | 592.7  | 770.4  | 1089.7 | 1603.4 | 2249.7 | 2895.5 | 2925.3 | 3036.6 | 3106.2 | 2455.8 |
| 67.5° | 338.9  | 352.1  | 438.8  | 606.1  | 983.0  | 1752.4 | 3024.7 | 3579.2 | 3499.4 | 3536.4 | 2879.5 |
| 70°   | 249.7  | 259.4  | 313.5  | 402.5  | 565.4  | 1028.4 | 2628.2 | 4045.8 | 3993.4 | 3989.3 | 3192.7 |
| 72°   | 194.5  | 201.6  | 249.4  | 325.2  | 413.4  | 616.9  | 1904.9 | 3873.6 | 4134.8 | 4114.1 | 3164.0 |
| 72.5° | 184.4  | 190.7  | 234.2  | 306.1  | 390.6  | 559.3  | 1712.7 | 3757.4 | 4124.6 | 4115.2 | 3126.9 |
| 75°   | 145.2  | 149.7  | 173.4  | 236.7  | 305.8  | 317.3  | 938.5  | 2911.8 | 3659.0 | 3811.1 | 2812.4 |
| 77.5° | 120.2  | 120.8  | 133.3  | 172.2  | 238.3  | 224.3  | 461.0  | 2020.3 | 2620.1 | 2787.4 | 1992.3 |
| 80°   | 97.9   | 98.7   | 104.7  | 120.8  | 180.3  | 166.0  | 218.9  | 1161.7 | 1467.0 | 1468.8 | 947.4  |
| 82.5° | 78.0   | 78.1   | 84.7   | 88.3   | 129.6  | 118.7  | 125.4  | 545.4  | 641.0  | 616.6  | 340.5  |
| 85°   | 54.9   | 53.7   | 82.7   | 72.5   | 84.7   | 76.1   | 69.2   | 215.9  | 265.0  | 253.5  | 106.6  |
| 87.5° | 18.3   | 19.0   | 36.8   | 47.0   | 49.4   | 43.2   | 30.8   | 82.7   | 100.0  | 99.2   | 33.8   |
| 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: P318145

CATALOG NUMBER: GLEON-SA1A-760-U-T2

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 588.9  | 588.9 | 588.9 | 588.9 | 588.9 | 588.9 | 588.9 | 588.9 | 588.9 | 588.9 | 588.9 |
| 2.5°  | 591.9  | 586.6 | 578.9 | 570.3 | 563.5 | 556.6 | 551.5 | 548.9 | 545.9 | 543.4 | 546.4 |
| 5°    | 598.2  | 588.3 | 571.8 | 555.6 | 543.8 | 533.2 | 525.6 | 521.7 | 518.1 | 515.6 | 515.9 |
| 7.5°  | 608.4  | 592.4 | 564.7 | 541.1 | 524.6 | 513.3 | 505.5 | 502.9 | 500.6 | 499.9 | 500.7 |
| 10°   | 619.3  | 595.7 | 555.3 | 524.0 | 505.2 | 495.8 | 492.3 | 494.2 | 495.8 | 497.3 | 498.9 |
| 12.5° | 631.6  | 598.7 | 541.6 | 503.9 | 487.9 | 484.3 | 487.7 | 495.6 | 501.4 | 504.9 | 507.0 |
| 15°   | 647.8  | 601.3 | 525.8 | 483.8 | 473.1 | 477.2 | 488.9 | 502.6 | 512.6 | 519.0 | 520.0 |
| 17.5° | 662.6  | 601.1 | 505.5 | 463.5 | 461.0 | 473.1 | 490.7 | 510.0 | 523.5 | 532.6 | 534.4 |
| 20°   | 677.9  | 596.7 | 482.0 | 443.7 | 448.8 | 468.6 | 491.5 | 514.8 | 531.1 | 541.6 | 544.1 |
| 22.5° | 692.3  | 588.9 | 456.1 | 425.7 | 438.6 | 462.7 | 488.4 | 512.0 | 528.3 | 536.8 | 539.5 |
| 25°   | 702.0  | 575.4 | 429.9 | 410.6 | 429.5 | 455.4 | 478.2 | 497.1 | 509.3 | 513.6 | 514.3 |
| 27.5° | 706.9  | 557.8 | 405.1 | 397.4 | 420.1 | 443.5 | 459.2 | 468.6 | 472.1 | 471.7 | 471.1 |
| 30°   | 707.6  | 534.5 | 383.9 | 386.7 | 409.3 | 426.1 | 433.5 | 431.7 | 427.2 | 419.6 | 420.3 |
| 32.5° | 705.5  | 508.3 | 366.1 | 376.5 | 395.4 | 404.8 | 405.1 | 396.4 | 384.5 | 372.5 | 369.2 |
| 35°   | 706.1  | 482.6 | 350.4 | 364.9 | 378.6 | 382.7 | 378.9 | 366.1 | 349.9 | 334.4 | 331.1 |
| 37.5° | 713.4  | 460.2 | 336.9 | 351.6 | 360.0 | 361.0 | 355.5 | 342.0 | 330.1 | 315.0 | 313.7 |
| 40°   | 730.7  | 444.2 | 324.0 | 336.6 | 341.4 | 341.9 | 334.1 | 324.5 | 325.5 | 317.5 | 317.3 |
| 42.5° | 761.8  | 437.3 | 312.7 | 320.9 | 323.9 | 324.9 | 318.9 | 312.8 | 321.4 | 316.1 | 314.3 |
| 45°   | 802.0  | 438.9 | 303.1 | 305.6 | 311.0 | 315.6 | 312.0 | 304.6 | 307.9 | 285.0 | 277.4 |
| 47.5° | 848.5  | 449.5 | 295.5 | 292.4 | 301.8 | 310.5 | 304.9 | 293.7 | 282.0 | 259.3 | 255.0 |
| 50°   | 902.9  | 465.8 | 288.6 | 279.4 | 291.7 | 303.6 | 298.0 | 282.0 | 264.4 | 253.3 | 251.9 |
| 52.5° | 959.6  | 485.7 | 281.7 | 265.0 | 279.1 | 298.3 | 295.5 | 279.4 | 257.6 | 246.7 | 244.8 |
| 55°   | 1023.9 | 505.9 | 273.0 | 248.4 | 265.4 | 295.9 | 294.4 | 269.8 | 252.5 | 246.4 | 244.9 |
| 57.5° | 1103.8 | 528.8 | 261.4 | 231.1 | 252.5 | 287.0 | 282.3 | 264.1 | 247.2 | 242.6 | 242.1 |
| 60°   | 1208.0 | 562.6 | 244.8 | 212.6 | 236.9 | 273.3 | 272.3 | 255.6 | 238.8 | 235.5 | 234.9 |
| 62.5° | 1364.3 | 618.4 | 221.9 | 194.2 | 219.4 | 250.0 | 259.1 | 244.3 | 229.9 | 229.8 | 230.1 |
| 65°   | 1606.6 | 702.5 | 197.0 | 178.0 | 201.7 | 230.4 | 243.8 | 232.6 | 220.9 | 224.2 | 224.7 |
| 67.5° | 1887.4 | 772.2 | 172.6 | 162.2 | 183.8 | 211.8 | 229.9 | 220.9 | 208.8 | 217.4 | 217.6 |
| 70°   | 1980.9 | 709.9 | 151.1 | 146.5 | 165.2 | 193.8 | 214.9 | 208.0 | 195.8 | 204.4 | 203.6 |
| 72°   | 1843.4 | 573.1 | 137.3 | 134.7 | 151.1 | 179.0 | 201.6 | 196.0 | 183.9 | 189.7 | 187.6 |
| 72.5° | 1800.1 | 546.4 | 133.8 | 131.7 | 147.4 | 175.2 | 198.1 | 193.0 | 181.0 | 185.9 | 183.9 |
| 75°   | 1605.7 | 474.5 | 115.0 | 115.5 | 128.6 | 156.8 | 178.7 | 177.0 | 164.7 | 165.2 | 164.5 |
| 77.5° | 1164.7 | 347.9 | 96.9  | 100.2 | 109.4 | 137.8 | 159.1 | 158.1 | 144.6 | 142.1 | 141.6 |
| 80°   | 540.5  | 177.5 | 79.0  | 80.4  | 90.0  | 115.2 | 135.7 | 134.3 | 123.5 | 120.3 | 118.5 |
| 82.5° | 185.1  | 84.4  | 59.3  | 60.3  | 69.7  | 92.8  | 117.7 | 116.9 | 107.8 | 101.7 | 97.9  |
| 85°   | 66.1   | 42.0  | 41.5  | 40.5  | 49.8  | 73.0  | 102.5 | 98.1  | 84.7  | 72.2  | 71.9  |
| 87.5° | 21.4   | 18.0  | 21.4  | 21.3  | 29.0  | 49.4  | 74.5  | 63.5  | 61.5  | 51.1  | 50.1  |
| 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: SP1-1908-441-9-R4

Test Date: 10/23/2019

Luminaire Tested: SA1C-760-U-5WQ

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

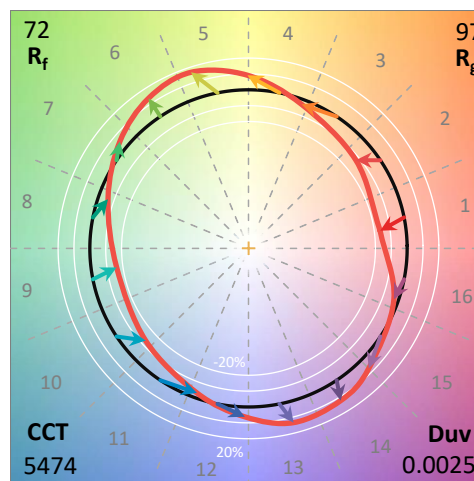
### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-9-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-760-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):                  | 5474   | CRI (Ra): | 71.7 |      |       |
| CIE u':                   | 0.2052 | R1:       | 70.6 | R9:  | -27.1 |
| CIE v':                   | 0.4804 | R2:       | 74.6 | R10: | 40.8  |
| Duv:                      | 0.0025 | R3:       | 78.3 | R11: | 74.6  |
| CIE x:                    | 0.3330 | R4:       | 73.8 | R12: | 50.4  |
| CIE y:                    | 0.3466 | R5:       | 72.4 | R13: | 70.0  |
| CIE z:                    | 0.3204 | R6:       | 67.5 | R14: | 87.8  |
| Peak Wavelength (nm):     | 442    | R7:       | 77.5 |      |       |
| Dominant Wavelength (nm): | 554    | R8:       | 58.9 |      |       |
| Purity:                   | 4.1    |           |      |      |       |
| Rf:                       | 72.1   |           |      |      |       |
| Rg:                       | 97.2   |           |      |      |       |



### Test Conditions

Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.6/31%  
 Sphere Temperature (°C): 25.9

REPORT NUMBER: SP1-1908-441-9-R4

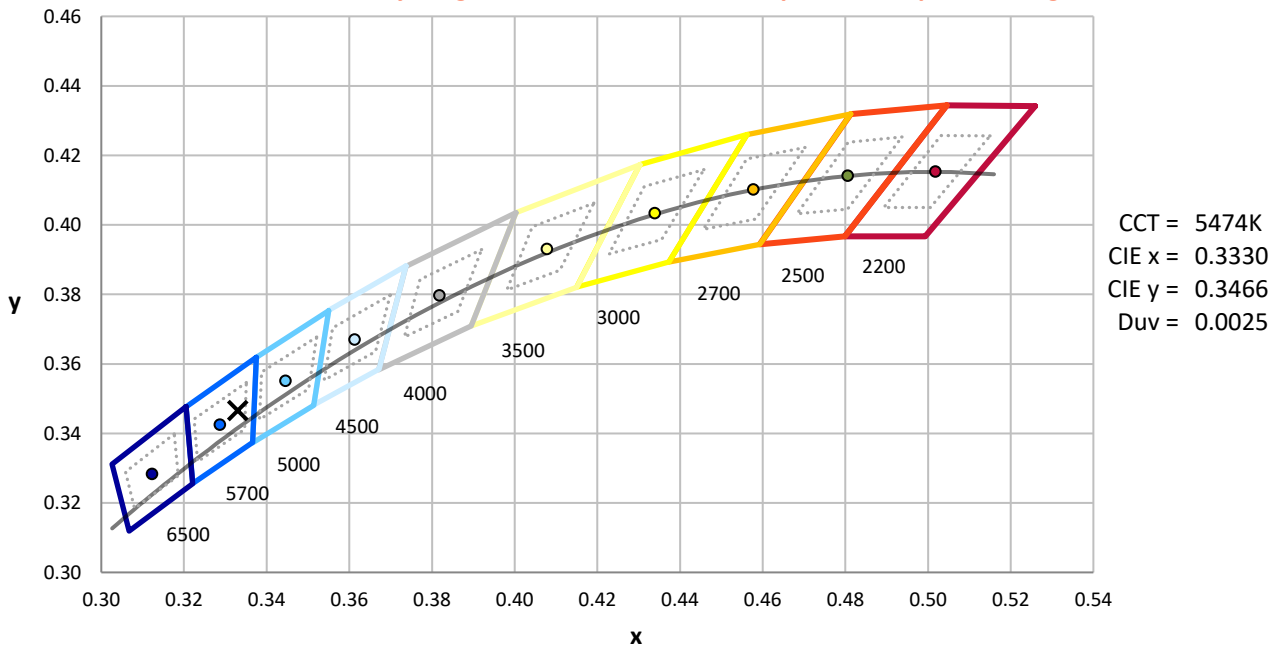
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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: SP1-1908-441-9-R4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5700K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-9-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       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-9-R4

**Scotopic Flux vs. Wavelength**



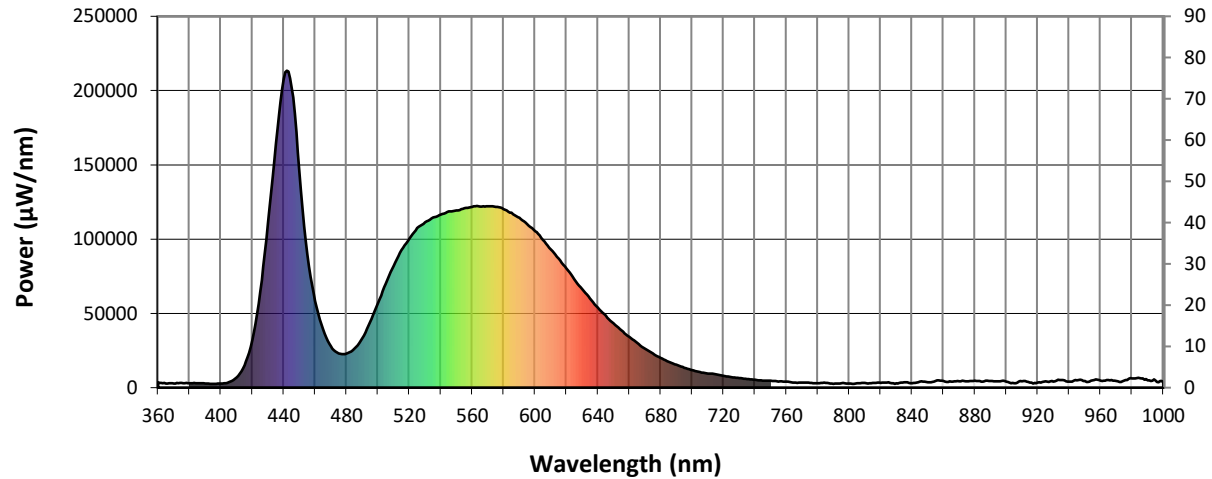
**Scotopic Lumens: 13759.3**

**S/P: 1.85**

| 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       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-9-R4

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5527.6 M/P: 0.74**

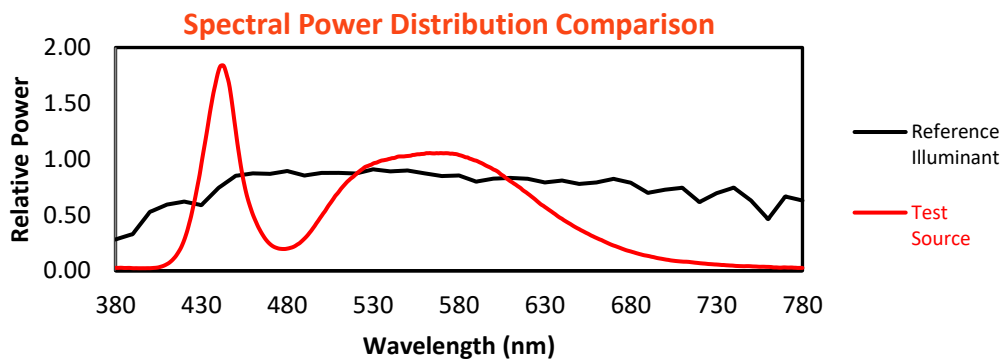
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-9-R4

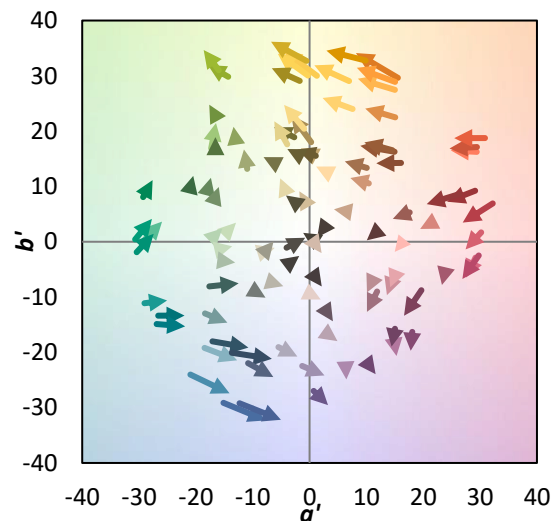
**TM-30-18**

**Summary**

$R_f = 72.1$   
 $R_g = 97.2$   
 CIE  $R_a = 71.7$   
 $R_g = -27.1$



**Color Vector Graphics**



REPORT NUMBER: SP1-1908-441-9-R4

**TM-30-18**

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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 54 | CES51 = 88 | CES76 = 43 |
| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
| CES11 = 55 | CES36 = 90 | CES61 = 88 | CES86 = 76 |
| CES12 = 61 | CES37 = 72 | CES62 = 81 | CES87 = 75 |
| CES13 = 41 | CES38 = 68 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
| CES16 = 46 | CES41 = 84 | CES66 = 66 | CES91 = 92 |
| CES17 = 48 | CES42 = 70 | CES67 = 64 | CES92 = 70 |
| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
| CES21 = 85 | CES46 = 78 | CES71 = 55 | CES96 = 79 |
| CES22 = 77 | CES47 = 76 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 |            |



REPORT NUMBER: SP1-1908-441-9-R4

**TM-30-18**

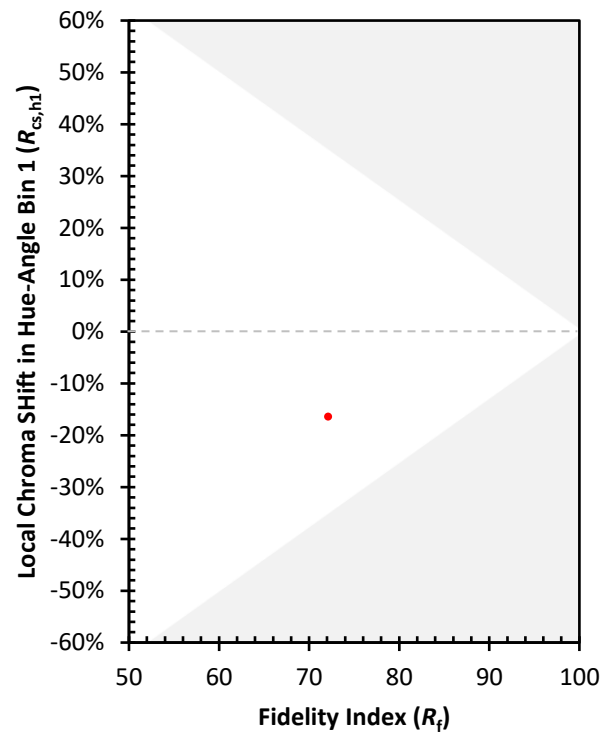
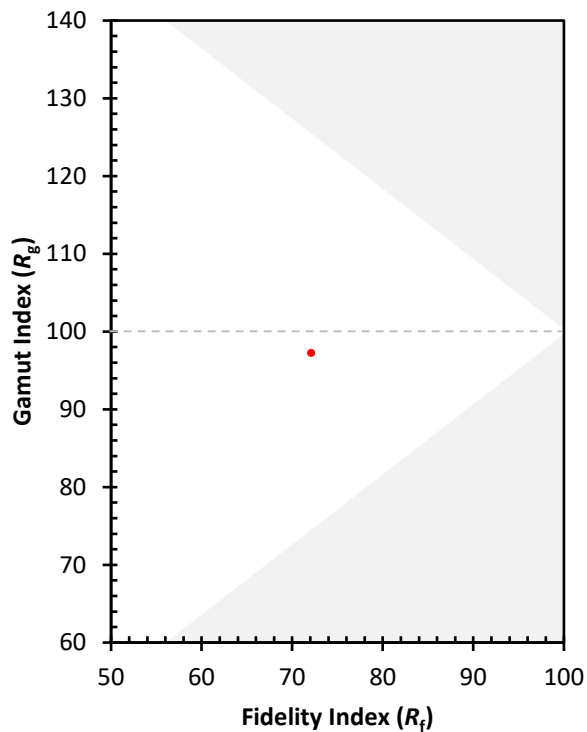
Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-9-R4

**TM-30-18**

**Measure Comparisons**



(END OF REPORT)