

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: P321365

Luminaire Tested: **GLEON-SA1C-760-U-T2R-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321365  
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-SA1C-760-U-T2R-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(1) 70 CRI, 5700K, 1050mA LIGHTSQUARE WITH 16 LEDS AND TYPE II ROADWAY  
OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5978 lumens  
Efficiency: N/A  
Efficacy: 101.3 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B0 - U0 - G1

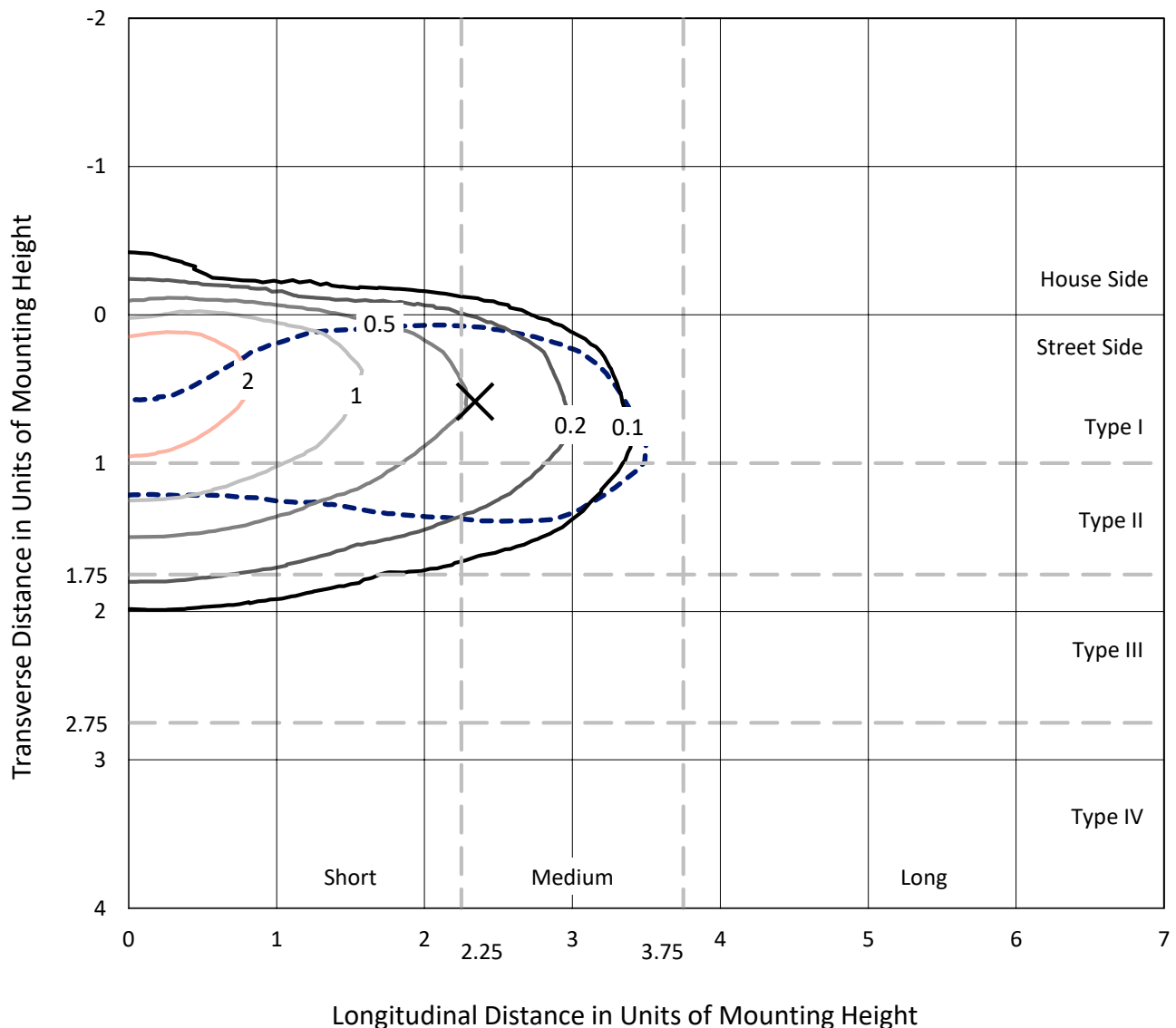
Input Watts (W): 59  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

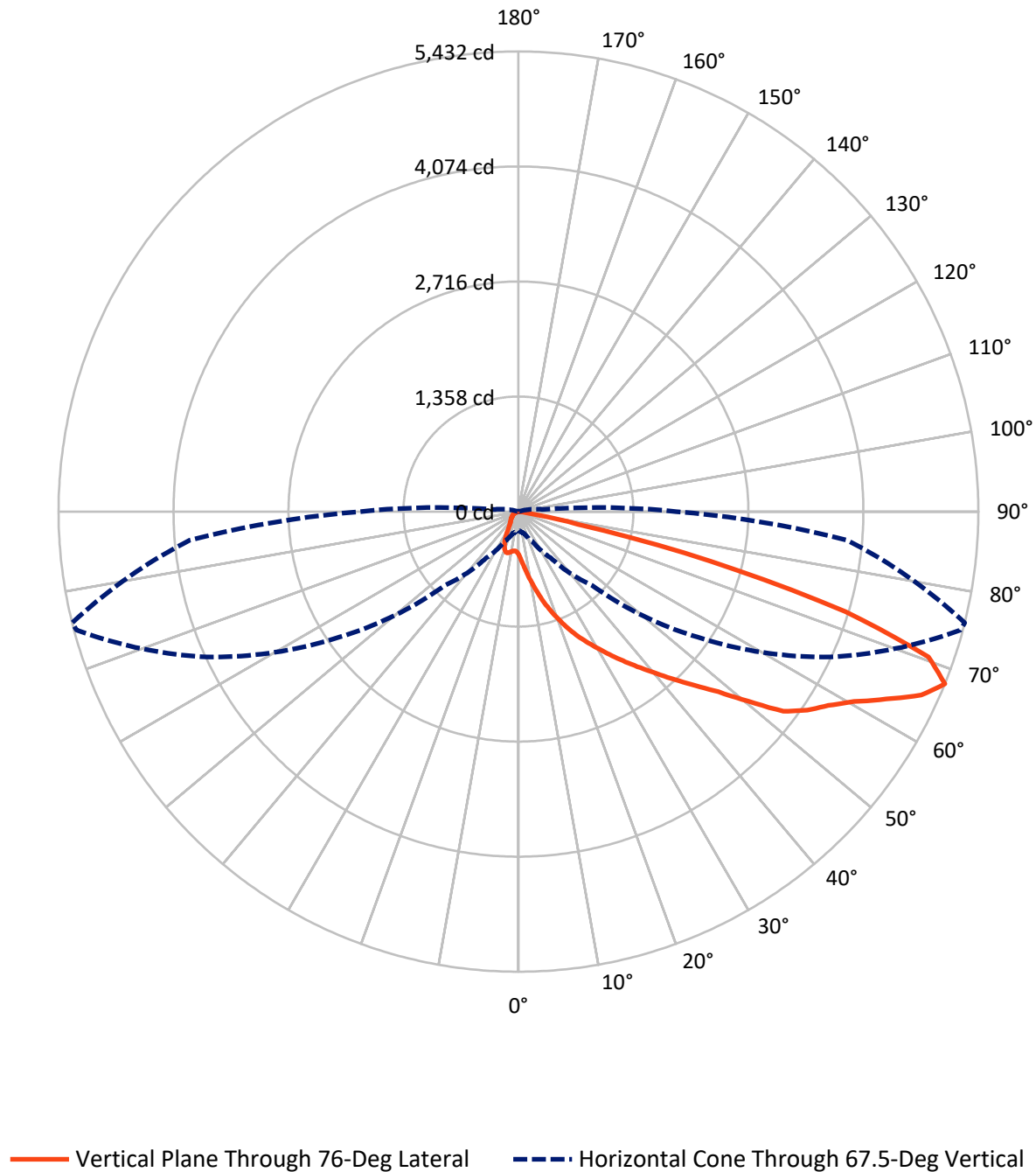
× Max cd  
 - - - 1/2 Max cd



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

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 296.9    | 0.0    | 296.9  |
|                    | % Fixture | 5.0      | 0.0    | 5.0    |
| <b>Street Side</b> | Lumens    | 5681.2   | 0.0    | 5681.2 |
|                    | % Fixture | 95.0     | 0.0    | 95.0   |
| <b>Total</b>       | Lumens    | 5978.0   | 0.0    | 5978.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 63.1   | 1.1       |
| 10°-20°   | 250.0  | 4.2       |
| 20°-30°   | 508.6  | 8.5       |
| 30°-40°   | 882.8  | 14.8      |
| 40°-50°   | 1247.3 | 20.9      |
| 50°-60°   | 1414.5 | 23.7      |
| 60°-70°   | 1173.2 | 19.6      |
| 70°-80°   | 425.0  | 7.1       |
| 80°-90°   | 13.8   | 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°    | 5978.0 | 100.0     |
| 0°-180°   | 5978.0 | 100.0     |

**Coefficient of Utilization**



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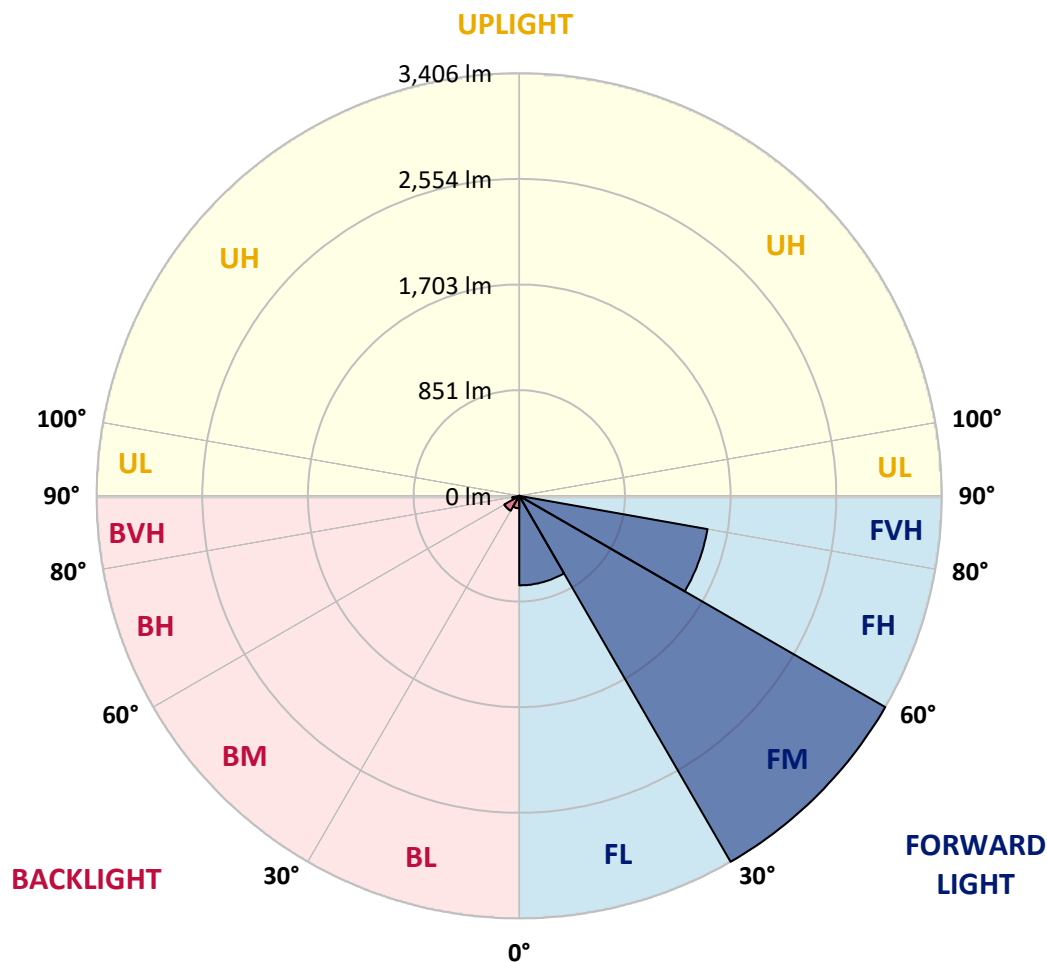
CATALOG NUMBER: GLEON-SA1C-760-U-T2R-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 721.5  | 12.1      |                         |      |         |
| FM   | (30°-60°)   | 3405.5 | 57.0      |                         |      |         |
| FH   | (60°-80°)   | 1540.7 | 25.8      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 13.3   | 0.2       |                         |      | G1/100  |
| BL   | (0°-30°)    | 100.1  | 1.7       | B0/110                  |      |         |
| BM   | (30°-60°)   | 138.9  | 2.3       | B0/220                  |      |         |
| BH   | (60°-80°)   | 57.4   | 1.0       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 0.4    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G1**

Type II Medium



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CATALOG NUMBER: GLEON-SA1C-760-U-T2R-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 76°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 507.1  | 507.1  | 507.1  | 507.1  | 507.1  | 507.1  | 507.1  | 507.1  | 507.1  | 507.1  | 507.1  |
| 2.5°  | 757.0  | 740.0  | 743.9  | 732.9  | 713.0  | 672.1  | 637.3  | 604.3  | 565.8  | 564.5  | 532.8  |
| 5°    | 1020.8 | 1006.4 | 1004.5 | 982.3  | 946.1  | 876.7  | 809.1  | 732.1  | 646.2  | 639.9  | 572.6  |
| 7.5°  | 1260.2 | 1248.6 | 1244.5 | 1218.0 | 1150.7 | 1083.1 | 995.1  | 881.9  | 747.6  | 736.0  | 626.3  |
| 10°   | 1444.1 | 1438.6 | 1439.6 | 1420.7 | 1363.1 | 1300.2 | 1184.7 | 1040.4 | 862.6  | 844.7  | 690.7  |
| 12.5° | 1583.4 | 1584.7 | 1594.1 | 1582.6 | 1550.4 | 1503.8 | 1380.4 | 1209.4 | 989.9  | 965.5  | 764.3  |
| 15°   | 1685.8 | 1692.4 | 1709.7 | 1724.1 | 1721.7 | 1681.4 | 1568.2 | 1380.9 | 1125.0 | 1098.0 | 846.3  |
| 17.5° | 1752.1 | 1759.4 | 1784.6 | 1816.5 | 1845.9 | 1836.4 | 1749.5 | 1546.5 | 1261.7 | 1230.6 | 934.1  |
| 20°   | 1810.2 | 1818.9 | 1845.9 | 1888.0 | 1942.8 | 1954.6 | 1897.5 | 1707.0 | 1398.2 | 1360.2 | 1024.7 |
| 22.5° | 1936.2 | 1936.0 | 1952.5 | 1977.1 | 2029.2 | 2059.6 | 2023.5 | 1856.1 | 1533.1 | 1493.6 | 1117.2 |
| 25°   | 2164.1 | 2155.5 | 2149.7 | 2130.3 | 2141.8 | 2160.7 | 2140.5 | 1995.4 | 1668.8 | 1628.7 | 1210.9 |
| 27.5° | 2435.0 | 2440.2 | 2393.6 | 2341.4 | 2301.1 | 2281.7 | 2248.7 | 2124.6 | 1799.2 | 1755.2 | 1302.6 |
| 30°   | 2720.7 | 2722.3 | 2667.3 | 2600.8 | 2512.0 | 2438.4 | 2381.3 | 2247.9 | 1933.3 | 1885.4 | 1391.7 |
| 32.5° | 2978.5 | 2968.3 | 2913.8 | 2823.1 | 2711.0 | 2628.3 | 2509.6 | 2385.7 | 2075.3 | 2029.0 | 1490.7 |
| 35°   | 3182.8 | 3170.7 | 3104.5 | 3022.0 | 2905.7 | 2822.4 | 2679.6 | 2523.2 | 2224.6 | 2179.3 | 1589.9 |
| 37.5° | 3332.1 | 3317.9 | 3249.8 | 3165.0 | 3064.6 | 3016.2 | 2876.8 | 2672.8 | 2387.5 | 2338.8 | 1694.5 |
| 40°   | 3383.9 | 3371.6 | 3328.9 | 3266.9 | 3186.2 | 3175.2 | 3086.1 | 2844.9 | 2564.9 | 2513.0 | 1812.9 |
| 42.5° | 3353.0 | 3341.0 | 3325.8 | 3304.8 | 3271.3 | 3281.8 | 3283.6 | 3041.1 | 2761.9 | 2710.8 | 1943.6 |
| 45°   | 3230.5 | 3219.7 | 3235.4 | 3266.1 | 3307.7 | 3359.6 | 3463.8 | 3251.9 | 2981.9 | 2927.4 | 2094.7 |
| 47.5° | 3050.0 | 3042.1 | 3085.6 | 3162.1 | 3283.9 | 3426.9 | 3628.6 | 3473.5 | 3228.9 | 3178.3 | 2283.3 |
| 50°   | 2793.3 | 2792.0 | 2878.9 | 3018.5 | 3205.8 | 3459.4 | 3798.9 | 3725.5 | 3572.0 | 3518.8 | 2545.5 |
| 52.5° | 2393.6 | 2396.2 | 2567.2 | 2790.7 | 3068.8 | 3437.4 | 3908.3 | 4049.3 | 3971.2 | 3915.9 | 2772.6 |
| 55°   | 2013.0 | 2028.7 | 2150.0 | 2472.1 | 2858.8 | 3355.7 | 3946.1 | 4200.4 | 4191.5 | 4139.1 | 2898.8 |
| 57.5° | 1640.2 | 1668.8 | 1785.6 | 2086.6 | 2552.0 | 3167.3 | 3925.4 | 4265.9 | 4355.5 | 4315.4 | 3065.4 |
| 60°   | 1236.3 | 1249.4 | 1384.1 | 1665.4 | 2158.4 | 2823.7 | 3775.3 | 4301.5 | 4579.7 | 4551.9 | 3307.2 |
| 62.5° | 786.6  | 819.3  | 938.8  | 1210.1 | 1680.6 | 2346.4 | 3522.2 | 4301.0 | 4860.2 | 4875.4 | 3619.2 |
| 65°   | 414.4  | 452.6  | 516.0  | 749.9  | 1154.9 | 1813.4 | 3141.7 | 4260.6 | 5204.4 | 5225.6 | 3863.0 |
| 67.5° | 223.4  | 234.4  | 268.0  | 389.2  | 669.8  | 1228.5 | 2582.4 | 4061.6 | 5403.7 | 5431.8 | 3897.1 |
| 70°   | 163.4  | 169.5  | 182.0  | 215.3  | 337.1  | 713.5  | 1884.4 | 3610.3 | 5146.8 | 5136.3 | 3462.5 |
| 72.5° | 125.5  | 134.9  | 144.3  | 157.7  | 193.8  | 380.9  | 1173.2 | 2827.1 | 4106.6 | 4037.5 | 2588.2 |
| 75°   | 99.0   | 100.6  | 113.9  | 126.0  | 145.4  | 216.9  | 521.0  | 1646.5 | 2506.5 | 2342.8 | 1342.2 |
| 77.5° | 79.1   | 80.2   | 88.0   | 98.5   | 116.8  | 142.5  | 161.4  | 647.8  | 800.2  | 714.0  | 291.3  |
| 80°   | 46.9   | 49.5   | 65.5   | 76.0   | 96.9   | 89.8   | 58.9   | 140.7  | 124.9  | 113.2  | 49.0   |
| 82.5° | 26.2   | 28.3   | 36.9   | 60.0   | 67.6   | 43.0   | 29.3   | 38.0   | 29.3   | 28.6   | 13.9   |
| 85°   | 0.0    | 1.3    | 23.8   | 37.2   | 27.5   | 9.4    | 12.3   | 12.6   | 8.6    | 8.1    | 5.5    |
| 87.5° | 0.0    | 0.0    | 7.3    | 7.1    | 1.0    | 1.6    | 2.9    | 4.2    | 3.4    | 3.4    | 2.9    |
| 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-SA1C-760-U-T2R-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 507.1  | 507.1 | 507.1 | 507.1 | 507.1 | 507.1 | 507.1 | 507.1 | 507.1 | 507.1 | 507.1 |
| 2.5°  | 517.1  | 502.9 | 476.2 | 450.0 | 428.0 | 409.9 | 393.7 | 387.1 | 381.9 | 381.1 | 376.9 |
| 5°    | 540.1  | 511.6 | 460.5 | 418.6 | 390.5 | 370.6 | 353.6 | 343.1 | 335.0 | 331.9 | 329.0 |
| 7.5°  | 574.9  | 531.7 | 458.4 | 410.2 | 376.7 | 343.1 | 311.7 | 277.7 | 256.4 | 248.3 | 243.6 |
| 10°   | 617.4  | 558.4 | 466.2 | 407.8 | 349.2 | 278.4 | 226.3 | 183.1 | 165.5 | 159.8 | 158.2 |
| 12.5° | 666.9  | 591.7 | 479.9 | 393.2 | 290.5 | 197.8 | 156.1 | 141.4 | 137.5 | 135.7 | 135.7 |
| 15°   | 723.7  | 628.1 | 489.6 | 350.7 | 214.8 | 149.6 | 135.2 | 128.3 | 124.2 | 121.8 | 122.1 |
| 17.5° | 781.9  | 663.7 | 484.8 | 289.2 | 158.5 | 133.1 | 122.3 | 115.0 | 109.2 | 106.9 | 106.3 |
| 20°   | 840.6  | 696.7 | 458.6 | 215.3 | 134.1 | 120.8 | 108.7 | 100.6 | 94.8  | 92.5  | 91.9  |
| 22.5° | 901.3  | 724.8 | 412.5 | 157.9 | 120.5 | 107.1 | 95.3  | 87.2  | 81.7  | 79.6  | 78.6  |
| 25°   | 960.5  | 747.6 | 348.1 | 127.8 | 107.7 | 94.3  | 83.0  | 75.4  | 70.5  | 68.4  | 68.1  |
| 27.5° | 1015.8 | 762.0 | 273.5 | 112.9 | 96.4  | 82.8  | 72.6  | 65.7  | 61.6  | 60.0  | 59.7  |
| 30°   | 1065.6 | 763.3 | 202.2 | 101.9 | 86.4  | 72.8  | 63.4  | 57.4  | 53.7  | 52.1  | 51.6  |
| 32.5° | 1115.8 | 752.3 | 147.2 | 91.9  | 77.3  | 64.2  | 55.0  | 50.3  | 47.7  | 46.4  | 46.4  |
| 35°   | 1163.3 | 726.9 | 114.7 | 83.3  | 68.4  | 55.8  | 48.5  | 45.1  | 43.5  | 42.2  | 42.2  |
| 37.5° | 1209.6 | 690.5 | 97.4  | 75.7  | 60.0  | 48.7  | 42.7  | 40.6  | 39.3  | 38.0  | 38.0  |
| 40°   | 1256.8 | 644.6 | 88.5  | 68.6  | 53.2  | 43.2  | 38.0  | 36.1  | 34.8  | 33.8  | 33.5  |
| 42.5° | 1314.7 | 591.7 | 82.8  | 62.1  | 47.1  | 38.2  | 33.5  | 31.4  | 30.4  | 29.3  | 28.8  |
| 45°   | 1381.7 | 546.1 | 78.1  | 55.5  | 42.2  | 34.1  | 29.1  | 27.0  | 25.4  | 24.1  | 23.8  |
| 47.5° | 1478.4 | 513.1 | 71.8  | 48.5  | 37.5  | 29.6  | 25.1  | 22.8  | 20.4  | 19.1  | 18.9  |
| 50°   | 1601.7 | 485.9 | 63.7  | 42.2  | 32.7  | 25.1  | 21.0  | 18.1  | 16.0  | 14.7  | 14.7  |
| 52.5° | 1663.0 | 450.3 | 56.3  | 36.7  | 27.5  | 21.2  | 17.0  | 13.6  | 12.6  | 11.3  | 11.3  |
| 55°   | 1687.7 | 423.0 | 49.0  | 31.2  | 22.8  | 17.5  | 13.4  | 10.5  | 9.7   | 8.9   | 8.6   |
| 57.5° | 1756.8 | 415.2 | 42.7  | 26.5  | 18.9  | 13.9  | 10.2  | 7.9   | 7.3   | 6.3   | 6.3   |
| 60°   | 1868.1 | 419.1 | 36.9  | 22.5  | 15.2  | 10.7  | 7.6   | 6.0   | 5.5   | 4.5   | 4.5   |
| 62.5° | 1988.4 | 414.1 | 31.2  | 19.4  | 11.8  | 7.9   | 5.2   | 4.5   | 4.5   | 2.6   | 2.4   |
| 65°   | 2011.4 | 368.8 | 26.7  | 16.0  | 9.2   | 5.8   | 3.4   | 2.9   | 3.9   | 0.5   | 0.0   |
| 67.5° | 1866.8 | 286.0 | 23.1  | 12.3  | 6.8   | 4.5   | 2.6   | 1.3   | 3.4   | 0.0   | 0.0   |
| 70°   | 1492.8 | 181.8 | 18.6  | 8.9   | 5.2   | 3.7   | 2.1   | 0.5   | 2.6   | 0.0   | 0.0   |
| 72.5° | 1055.6 | 105.6 | 14.7  | 6.3   | 4.5   | 2.9   | 1.6   | 0.0   | 1.6   | 0.0   | 0.0   |
| 75°   | 533.8  | 56.3  | 9.2   | 4.7   | 3.4   | 2.1   | 1.0   | 0.0   | 0.3   | 0.0   | 0.0   |
| 77.5° | 115.5  | 26.2  | 5.8   | 3.4   | 2.4   | 1.3   | 0.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 25.1   | 11.5  | 3.7   | 2.1   | 1.3   | 0.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 9.2    | 6.0   | 1.8   | 1.0   | 0.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 5.0    | 3.1   | 1.0   | 0.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 2.6    | 1.0   | 0.3   | 0.3   | 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: SP1-1908-441-9-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

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| 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 5700K 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       | 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               |           |                  |                  |

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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               |           |                  |                  |

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**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               |           |                  |                  |

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**Summary**

$R_f = 72.1$   
 $R_g = 97.2$   
 CIE  $R_a = 71.7$   
 $R_9 = -27.1$



**Color Vector Graphics**



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**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 |            |



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Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)