

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: P321056

Luminaire Tested: **GLEON-SA2D-760-U-AFL**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321056  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-29)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA2D-760-U-AFL  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(2) 70 CRI, 5700K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND AUTOMOTIVE  
FRONTLINE OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16286 lumens  
Efficiency: N/A  
Efficacy: 126.2 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B2 - U0 - G2

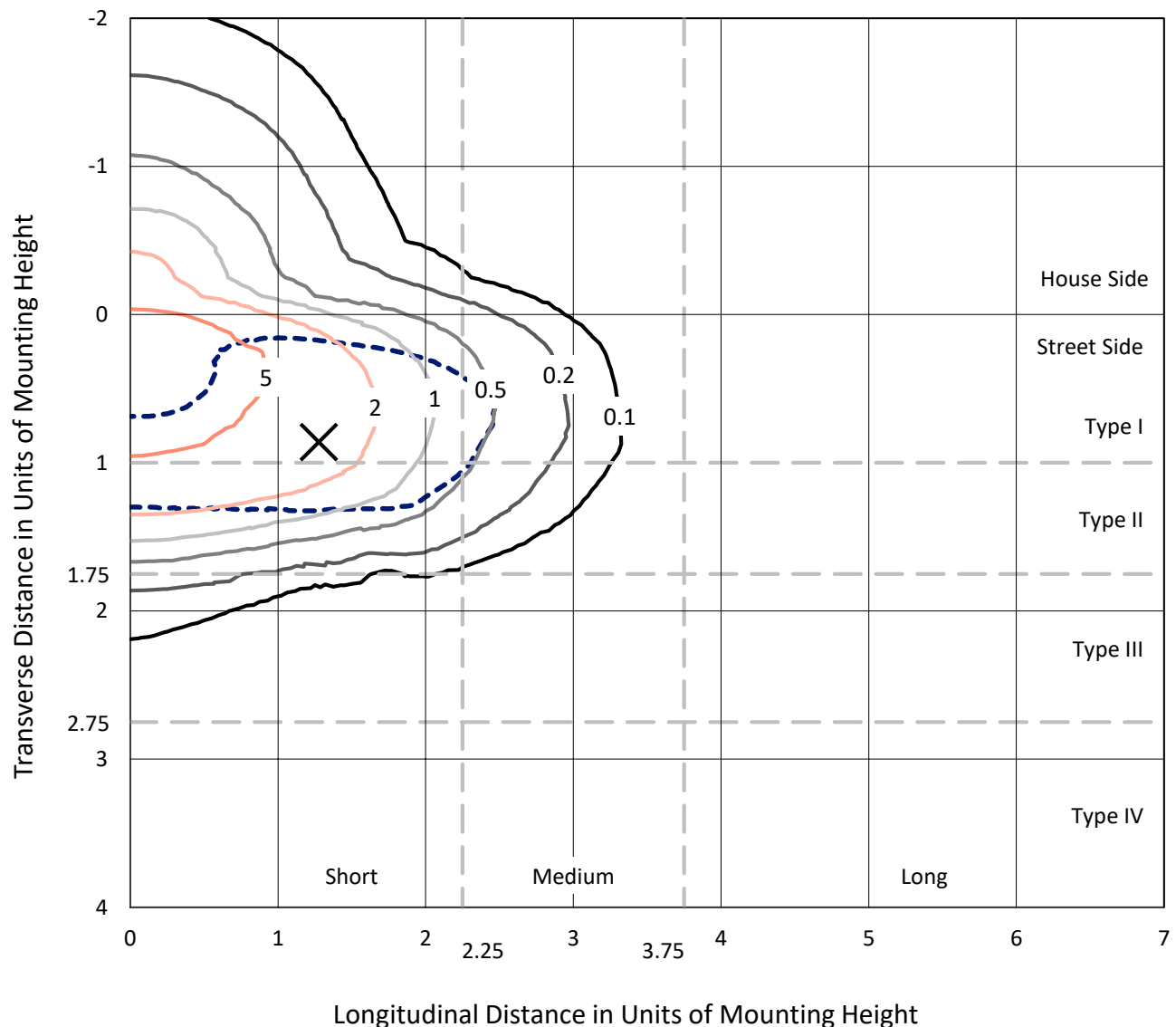
Input Watts (W): 129  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P321056  
 CATALOG NUMBER: GLEON-SA2D-760-U-AFL

## Iso-Footcandle Lines of Horizontal Illumination

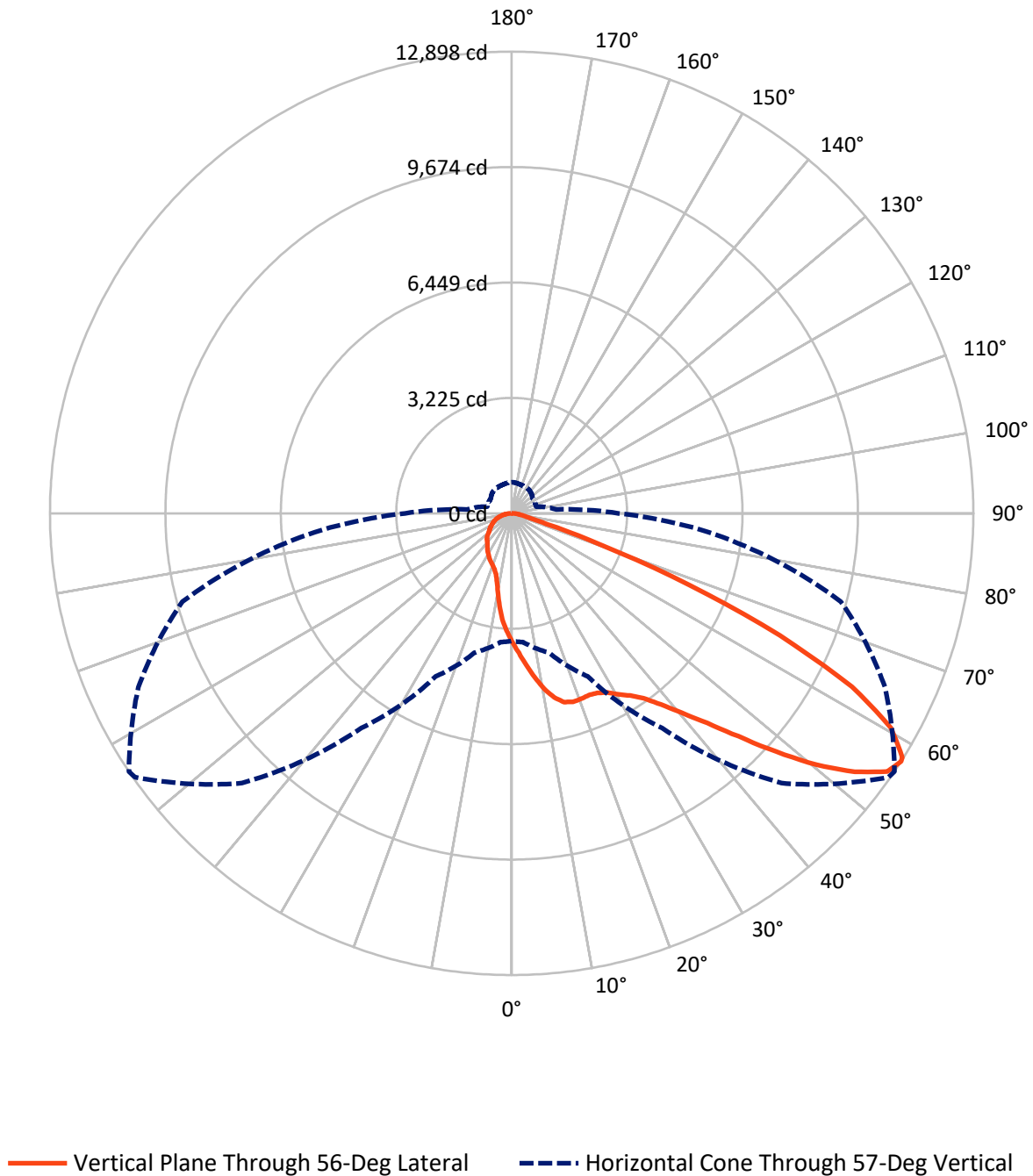
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 8 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GLEON-SA2D-760-U-AFL

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2807.4   | 0.0    | 2807.4  |
|                    | % Fixture | 17.2     | 0.0    | 17.2    |
| <b>Street Side</b> | Lumens    | 13478.6  | 0.0    | 13478.6 |
|                    | % Fixture | 82.8     | 0.0    | 82.8    |
| <b>Total</b>       | Lumens    | 16286.0  | 0.0    | 16286.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 345.1   | 2.1       |
| 10°-20°   | 975.6   | 6.0       |
| 20°-30°   | 1589.0  | 9.8       |
| 30°-40°   | 2375.4  | 14.6      |
| 40°-50°   | 3603.0  | 22.1      |
| 50°-60°   | 4038.3  | 24.8      |
| 60°-70°   | 2385.2  | 14.6      |
| 70°-80°   | 781.5   | 4.8       |
| 80°-90°   | 193.1   | 1.2       |
| 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°    | 16286.0 | 100.0     |
| 0°-180°   | 16286.0 | 100.0     |

**Coefficient of Utilization**



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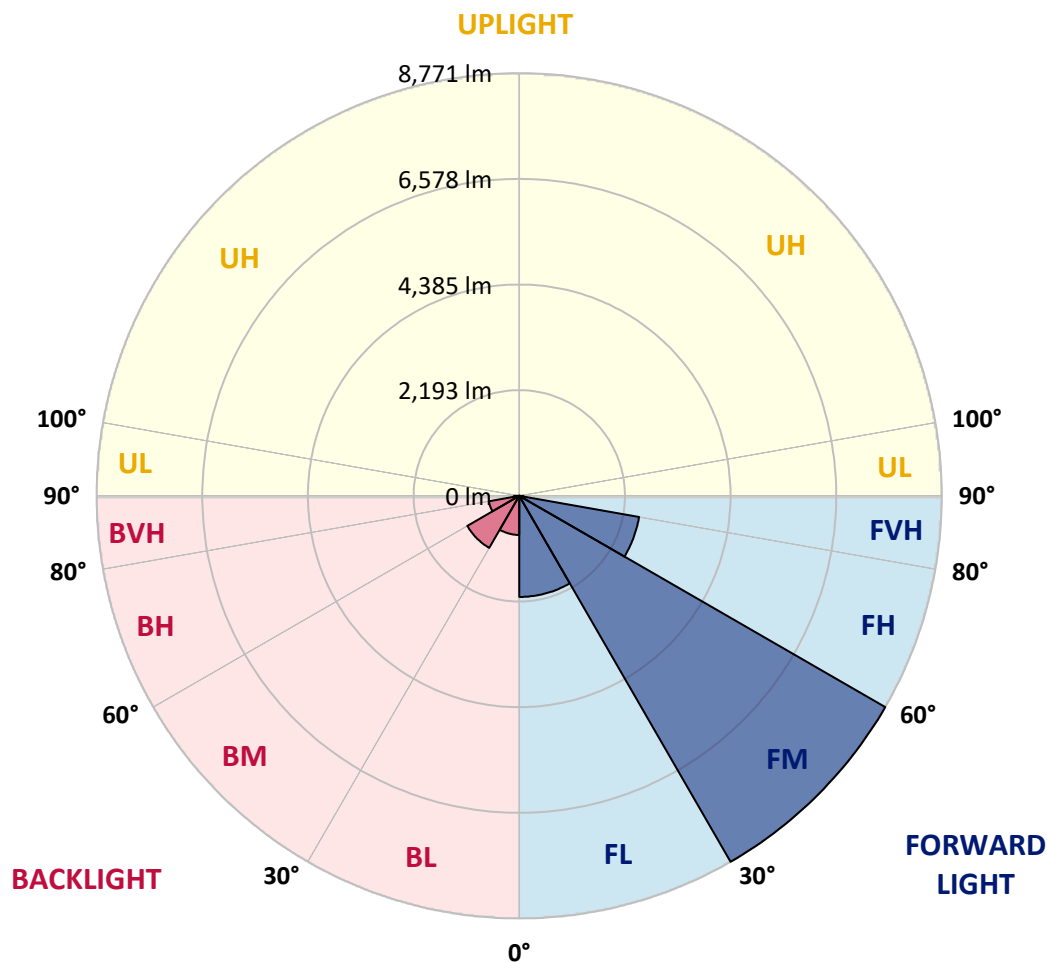
CATALOG NUMBER: GLEON-SA2D-760-U-AFL

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 2097.9 | 12.9      |                         |      |         |
| FM   | (30°-60°)   | 8770.5 | 53.9      |                         |      |         |
| FH   | (60°-80°)   | 2525.2 | 15.5      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 85.0   | 0.5       |                         |      | G1/100  |
| BL   | (0°-30°)    | 811.8  | 5.0       | B2/1000                 |      |         |
| BM   | (30°-60°)   | 1246.1 | 7.7       | B2/2500                 |      |         |
| BH   | (60°-80°)   | 641.5  | 3.9       | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 108.1  | 0.7       |                         |      | G2/225  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G2**

Type II Short





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CATALOG NUMBER: GLEON-SA2D-760-U-AFL

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°     | 45°     | 55°     | 56°     | 65°     | 75°    | 85°    |
|-------|--------|--------|--------|--------|---------|---------|---------|---------|---------|--------|--------|
| 0°    | 3612.2 | 3612.2 | 3612.2 | 3612.2 | 3612.2  | 3612.2  | 3612.2  | 3612.2  | 3612.2  | 3612.2 | 3612.2 |
| 2.5°  | 4147.9 | 4185.9 | 4169.1 | 4110.9 | 4066.2  | 4002.9  | 3932.4  | 3911.1  | 3836.7  | 3753.3 | 3653.1 |
| 5°    | 4804.4 | 4785.4 | 4757.9 | 4667.3 | 4571.6  | 4460.2  | 4283.3  | 4255.3  | 4089.7  | 3901.1 | 3701.8 |
| 7.5°  | 5178.3 | 5176.6 | 5160.4 | 5107.2 | 5019.9  | 4874.4  | 4661.1  | 4628.1  | 4377.9  | 4074.6 | 3765.6 |
| 10°   | 5124.0 | 5120.1 | 5146.9 | 5202.3 | 5228.6  | 5198.4  | 5018.8  | 4985.7  | 4678.5  | 4266.5 | 3839.5 |
| 12.5° | 4815.6 | 4817.8 | 4860.9 | 4977.3 | 5135.7  | 5326.0  | 5296.9  | 5280.7  | 4990.2  | 4483.7 | 3929.0 |
| 15°   | 4575.5 | 4580.5 | 4614.7 | 4716.0 | 4902.9  | 5248.2  | 5465.9  | 5471.5  | 5291.9  | 4723.2 | 4033.7 |
| 17.5° | 4470.3 | 4480.9 | 4496.6 | 4567.6 | 4738.9  | 5093.2  | 5506.2  | 5536.5  | 5556.1  | 4971.7 | 4134.4 |
| 20°   | 4503.8 | 4513.9 | 4518.4 | 4563.7 | 4704.2  | 4999.2  | 5478.3  | 5532.6  | 5758.7  | 5205.7 | 4235.2 |
| 22.5° | 4654.4 | 4660.6 | 4663.4 | 4675.1 | 4784.2  | 5026.0  | 5459.8  | 5516.9  | 5905.3  | 5415.6 | 4311.3 |
| 25°   | 4904.0 | 4899.5 | 4881.6 | 4866.5 | 4939.8  | 5132.4  | 5502.3  | 5556.6  | 6024.5  | 5605.9 | 4361.1 |
| 27.5° | 5202.9 | 5197.3 | 5162.6 | 5121.2 | 5163.2  | 5298.0  | 5624.9  | 5668.0  | 6131.4  | 5783.9 | 4386.3 |
| 30°   | 5561.7 | 5547.1 | 5481.6 | 5432.4 | 5448.6  | 5546.5  | 5826.9  | 5866.1  | 6296.5  | 5985.9 | 4410.9 |
| 32.5° | 5976.4 | 5960.7 | 5866.1 | 5784.4 | 5784.4  | 5866.1  | 6035.2  | 6067.6  | 6436.5  | 6214.3 | 4450.7 |
| 35°   | 6495.8 | 6476.2 | 6353.1 | 6215.9 | 6177.3  | 6218.7  | 6318.9  | 6341.9  | 6688.3  | 6501.9 | 4522.9 |
| 37.5° | 7108.1 | 7081.8 | 6922.3 | 6738.7 | 6654.2  | 6651.9  | 6724.1  | 6771.1  | 7090.7  | 6879.7 | 4645.4 |
| 40°   | 7722.1 | 7703.6 | 7564.2 | 7419.8 | 7254.2  | 7201.0  | 7312.4  | 7326.9  | 7616.8  | 7348.8 | 4802.2 |
| 42.5° | 8196.7 | 8193.3 | 8167.6 | 8186.6 | 8017.0  | 7909.6  | 7996.9  | 8008.6  | 8259.4  | 7856.4 | 4968.9 |
| 45°   | 8447.4 | 8453.0 | 8577.8 | 8854.3 | 8917.0  | 8838.6  | 8881.7  | 8885.1  | 8993.7  | 8368.5 | 5121.7 |
| 47.5° | 8246.5 | 8275.6 | 8591.3 | 9209.7 | 9723.0  | 9983.2  | 9911.6  | 9953.0  | 9705.6  | 8808.4 | 5241.5 |
| 50°   | 7463.5 | 7499.3 | 8036.6 | 9051.3 | 10099.1 | 11090.8 | 11053.3 | 11043.8 | 10279.9 | 9130.8 | 5306.4 |
| 52.5° | 6493.5 | 6521.5 | 6964.8 | 8228.0 | 9823.1  | 11703.2 | 12047.4 | 11998.1 | 10790.3 | 9372.0 | 5318.7 |
| 55°   | 5016.5 | 5060.2 | 5485.0 | 6584.8 | 8707.1  | 11469.2 | 12778.3 | 12734.1 | 11255.4 | 9498.5 | 5304.2 |
| 57°   | 3566.4 | 3612.2 | 4034.3 | 5025.5 | 7324.7  | 10659.3 | 12851.1 | 12898.1 | 11506.7 | 9519.8 | 5320.4 |
| 57.5° | 3182.4 | 3229.4 | 3647.5 | 4610.2 | 6893.7  | 10366.6 | 12788.4 | 12866.8 | 11552.0 | 9516.4 | 5329.4 |
| 60°   | 1602.4 | 1620.3 | 1886.7 | 2573.5 | 4357.8  | 8380.8  | 11970.7 | 12172.7 | 11592.9 | 9351.9 | 5368.0 |
| 62.5° | 996.3  | 983.4  | 975.0  | 1185.4 | 2120.1  | 5557.7  | 10283.2 | 10672.2 | 10811.0 | 8953.4 | 5274.5 |
| 65°   | 875.9  | 851.9  | 759.5  | 742.7  | 936.4   | 2699.4  | 7743.9  | 8228.0  | 9140.3  | 8325.4 | 5051.8 |
| 67.5° | 822.7  | 799.2  | 695.1  | 632.5  | 633.0   | 1070.1  | 4807.8  | 5352.9  | 7120.4  | 7263.7 | 4526.2 |
| 70°   | 767.9  | 746.6  | 649.2  | 575.4  | 539.0   | 592.7   | 2211.9  | 2625.5  | 4641.5  | 5709.4 | 3783.0 |
| 72.5° | 697.4  | 682.8  | 590.5  | 514.4  | 475.7   | 443.8   | 846.8   | 1000.2  | 2687.1  | 3834.4 | 2627.2 |
| 75°   | 623.5  | 610.1  | 531.1  | 458.4  | 411.4   | 349.2   | 476.9   | 513.8   | 1365.1  | 1961.7 | 1293.4 |
| 77.5° | 542.3  | 534.5  | 472.4  | 405.2  | 367.7   | 289.4   | 337.5   | 355.4   | 585.4   | 841.2  | 648.7  |
| 80°   | 431.5  | 446.6  | 413.1  | 361.0  | 326.3   | 231.7   | 239.0   | 250.7   | 340.9   | 410.8  | 368.3  |
| 82.5° | 281.0  | 307.3  | 323.5  | 293.3  | 268.7   | 182.5   | 171.8   | 176.9   | 222.2   | 250.7  | 160.1  |
| 85°   | 117.0  | 131.5  | 212.7  | 192.0  | 178.5   | 133.2   | 115.3   | 117.5   | 137.7   | 142.7  | 65.5   |
| 87.5° | 52.1   | 55.4   | 93.5   | 87.9   | 75.6    | 45.9    | 49.3    | 53.7    | 73.3    | 69.4   | 25.2   |
| 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: P321056

CATALOG NUMBER: GLEON-SA2D-760-U-AFL

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3612.2 | 3612.2 | 3612.2 | 3612.2 | 3612.2 | 3612.2 | 3612.2 | 3612.2 | 3612.2 | 3612.2 | 3612.2 |
| 2.5°  | 3615.6 | 3568.6 | 3488.0 | 3399.0 | 3326.2 | 3268.0 | 3209.3 | 3169.0 | 3122.0 | 3096.8 | 3083.9 |
| 5°    | 3618.4 | 3526.1 | 3356.5 | 3182.4 | 3026.8 | 2884.7 | 2749.2 | 2645.1 | 2547.7 | 2495.1 | 2480.6 |
| 7.5°  | 3630.2 | 3491.4 | 3217.1 | 2930.5 | 2654.1 | 2401.6 | 2206.9 | 2084.9 | 1997.0 | 1957.8 | 1946.6 |
| 10°   | 3639.7 | 3450.5 | 3044.7 | 2620.5 | 2244.4 | 1988.6 | 1837.5 | 1769.2 | 1739.0 | 1733.9 | 1728.9 |
| 12.5° | 3662.1 | 3408.5 | 2863.4 | 2297.0 | 1925.9 | 1749.0 | 1696.4 | 1691.9 | 1700.3 | 1712.7 | 1712.7 |
| 15°   | 3697.3 | 3367.1 | 2656.3 | 2019.4 | 1723.3 | 1661.2 | 1671.8 | 1696.4 | 1719.4 | 1738.4 | 1741.2 |
| 17.5° | 3723.1 | 3316.2 | 2433.5 | 1797.2 | 1615.3 | 1632.1 | 1670.1 | 1704.8 | 1728.3 | 1746.8 | 1748.5 |
| 20°   | 3741.5 | 3237.3 | 2195.7 | 1627.6 | 1553.1 | 1605.2 | 1652.8 | 1683.6 | 1699.8 | 1718.3 | 1721.1 |
| 22.5° | 3732.0 | 3131.5 | 1984.7 | 1506.1 | 1502.8 | 1566.0 | 1611.4 | 1648.3 | 1636.0 | 1618.1 | 1629.8 |
| 25°   | 3686.1 | 2986.0 | 1767.5 | 1415.5 | 1449.6 | 1513.4 | 1569.4 | 1544.7 | 1503.3 | 1495.5 | 1500.0 |
| 27.5° | 3604.4 | 2800.1 | 1566.6 | 1331.5 | 1388.0 | 1464.7 | 1461.4 | 1436.7 | 1422.2 | 1412.1 | 1418.3 |
| 30°   | 3516.5 | 2598.6 | 1390.8 | 1258.2 | 1319.8 | 1383.0 | 1370.1 | 1369.6 | 1355.0 | 1338.8 | 1346.6 |
| 32.5° | 3429.8 | 2396.0 | 1251.5 | 1197.7 | 1268.3 | 1276.7 | 1304.6 | 1313.0 | 1284.5 | 1250.4 | 1248.1 |
| 35°   | 3354.2 | 2204.6 | 1145.7 | 1142.9 | 1206.1 | 1207.3 | 1248.1 | 1236.4 | 1165.3 | 1130.0 | 1130.0 |
| 37.5° | 3297.7 | 2013.8 | 1065.1 | 1093.6 | 1124.4 | 1153.5 | 1174.2 | 1125.5 | 1113.8 | 1094.2 | 1093.6 |
| 40°   | 3273.1 | 1845.9 | 1014.7 | 1056.1 | 1066.8 | 1103.7 | 1050.5 | 1069.6 | 1075.2 | 1065.1 | 1065.1 |
| 42.5° | 3247.3 | 1699.8 | 971.1  | 1027.6 | 1025.9 | 1020.9 | 994.0  | 1018.6 | 1041.0 | 1041.6 | 1039.9 |
| 45°   | 3221.6 | 1573.9 | 932.4  | 966.6  | 990.1  | 935.8  | 940.8  | 967.1  | 998.5  | 1009.7 | 1009.7 |
| 47.5° | 3193.0 | 1474.2 | 897.2  | 902.2  | 938.6  | 902.2  | 898.3  | 918.5  | 955.4  | 973.3  | 977.2  |
| 50°   | 3130.4 | 1384.7 | 856.9  | 845.7  | 855.8  | 868.1  | 871.4  | 881.0  | 921.8  | 950.4  | 957.1  |
| 52.5° | 3043.6 | 1304.6 | 805.4  | 793.6  | 793.6  | 840.1  | 855.8  | 858.6  | 893.3  | 927.4  | 934.1  |
| 55°   | 2971.4 | 1253.7 | 752.2  | 750.0  | 747.7  | 810.4  | 837.3  | 841.8  | 865.8  | 892.7  | 896.1  |
| 57°   | 2976.4 | 1249.8 | 711.4  | 713.6  | 713.0  | 780.2  | 819.9  | 829.5  | 841.8  | 864.7  | 868.6  |
| 57.5° | 2979.2 | 1252.6 | 702.4  | 703.5  | 703.0  | 771.8  | 814.9  | 825.5  | 835.1  | 859.1  | 863.0  |
| 60°   | 3021.2 | 1259.9 | 666.0  | 653.7  | 656.5  | 727.0  | 786.4  | 799.8  | 806.0  | 837.9  | 842.9  |
| 62.5° | 2959.1 | 1227.4 | 636.9  | 607.3  | 607.3  | 680.0  | 746.6  | 767.9  | 777.4  | 820.5  | 828.9  |
| 65°   | 2778.9 | 1136.2 | 602.8  | 554.7  | 560.3  | 633.0  | 699.1  | 733.8  | 748.3  | 802.0  | 811.0  |
| 67.5° | 2500.7 | 1030.4 | 566.4  | 507.6  | 513.2  | 583.8  | 649.8  | 687.3  | 710.2  | 781.9  | 789.2  |
| 70°   | 2138.6 | 901.1  | 517.2  | 457.8  | 464.5  | 530.0  | 591.6  | 634.1  | 668.3  | 762.9  | 765.1  |
| 72.5° | 1576.7 | 738.8  | 448.3  | 403.0  | 410.3  | 467.3  | 532.8  | 582.1  | 628.0  | 715.3  | 714.2  |
| 75°   | 937.5  | 577.6  | 372.2  | 347.6  | 352.6  | 405.8  | 479.7  | 539.5  | 608.4  | 696.8  | 707.5  |
| 77.5° | 568.6  | 434.9  | 303.4  | 291.0  | 297.2  | 351.5  | 441.6  | 505.4  | 600.0  | 657.1  | 653.7  |
| 80°   | 343.7  | 310.6  | 242.3  | 234.5  | 240.7  | 300.6  | 408.6  | 479.7  | 524.4  | 561.4  | 561.4  |
| 82.5° | 179.7  | 189.7  | 178.0  | 171.8  | 180.2  | 244.0  | 371.6  | 418.6  | 463.4  | 397.9  | 371.6  |
| 85°   | 73.3   | 99.1   | 108.0  | 107.5  | 112.5  | 169.0  | 320.7  | 358.2  | 298.9  | 283.8  | 290.5  |
| 87.5° | 24.6   | 42.0   | 52.6   | 45.3   | 47.6   | 106.3  | 222.2  | 172.9  | 205.4  | 143.3  | 136.0  |
| 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

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            |

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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  $R_a = 71.7$   
 $R_g = -27.1$



**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)