

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: P319449

Luminaire Tested: **GLEON-SA5C-760-U-SL2**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P319449  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-20)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA5C-760-U-SL2  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(5) 70 CRI, 5700K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II  
SPILL LIGHT ELIMINATOR OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 34630 lumens  
Efficiency: N/A  
Efficacy: 124.1 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B3 - U0 - G5

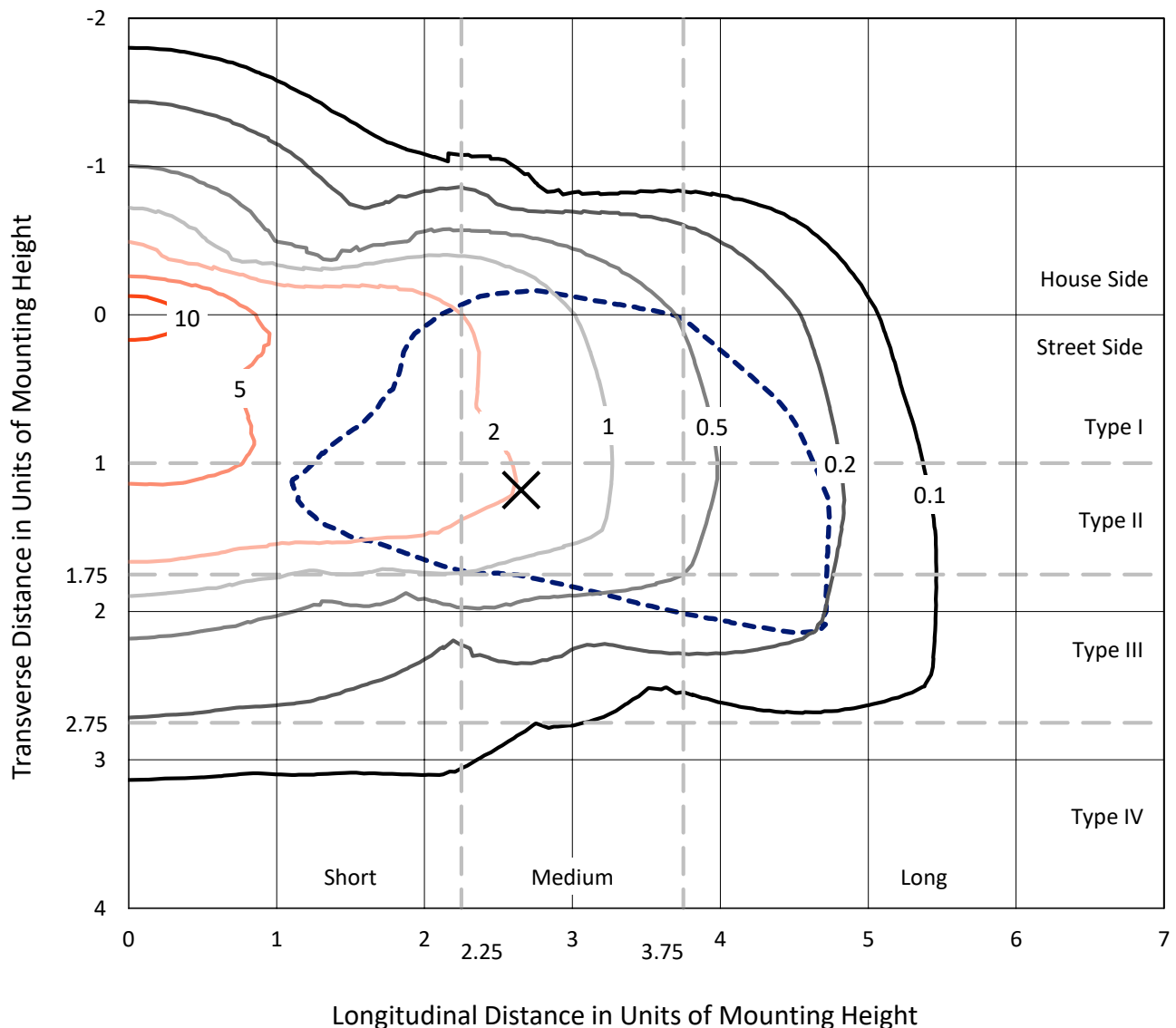
Input Watts (W): 279  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

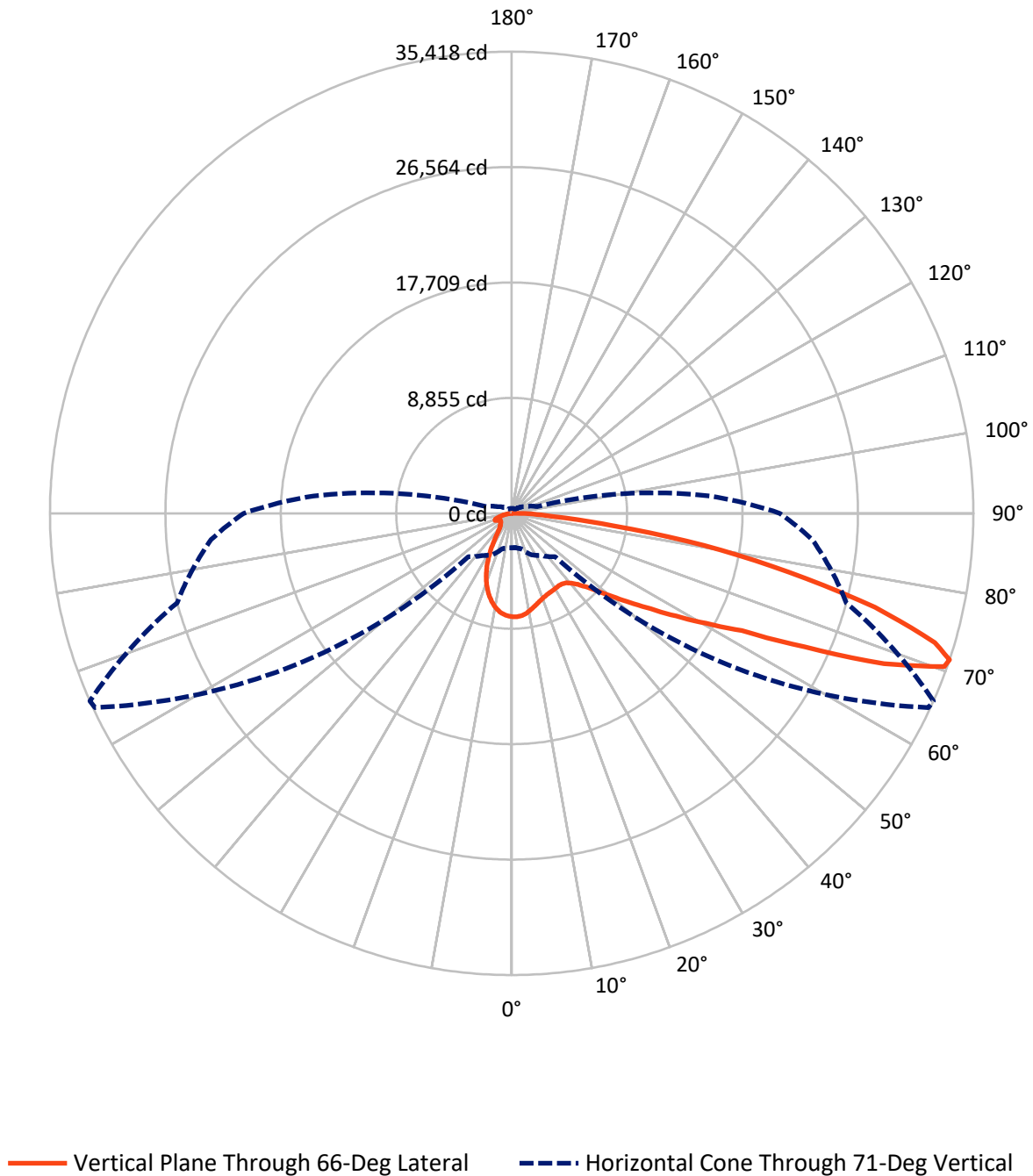
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 12.7 fc  
 Type III - 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    | 6417.9   | 0.0    | 6417.9  |
|                    | % Fixture | 18.5     | 0.0    | 18.5    |
| <b>Street Side</b> | Lumens    | 28212.1  | 0.0    | 28212.1 |
|                    | % Fixture | 81.5     | 0.0    | 81.5    |
| <b>Total</b>       | Lumens    | 34630.0  | 0.0    | 34630.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 698.3   | 2.0       |
| 10°-20°   | 1674.8  | 4.8       |
| 20°-30°   | 2249.7  | 6.5       |
| 30°-40°   | 2959.5  | 8.5       |
| 40°-50°   | 4305.2  | 12.4      |
| 50°-60°   | 6725.2  | 19.4      |
| 60°-70°   | 8424.4  | 24.3      |
| 70°-80°   | 6426.0  | 18.6      |
| 80°-90°   | 1166.9  | 3.4       |
| 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°    | 34630.0 | 100.0     |
| 0°-180°   | 34630.0 | 100.0     |

**Coefficient of Utilization**



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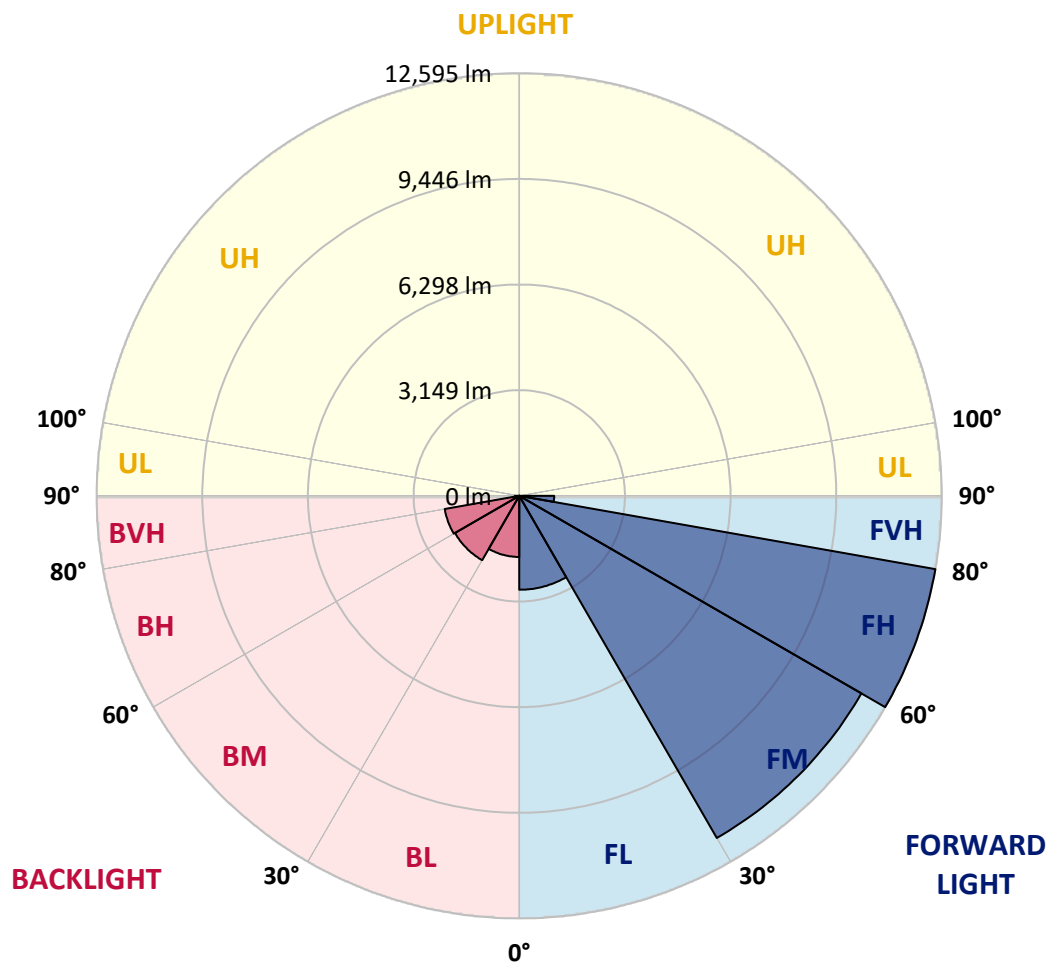
CATALOG NUMBER: GLEON-SA5C-760-U-SL2

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 2800.3  | 8.1       |                         |      |         |
| FM   | (30°-60°)   | 11775.9 | 34.0      |                         |      |         |
| FH   | (60°-80°)   | 12595.3 | 36.4      |                         |      | G5      |
| FVH  | (80°-90°)   | 1040.6  | 3.0       |                         |      | G5      |
| BL   | (0°-30°)    | 1822.5  | 5.3       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 2214.0  | 6.4       | B2/2500                 |      |         |
| BH   | (60°-80°)   | 2255.1  | 6.5       | B3/2500                 |      | G3/2500 |
| BVH  | (80°-90°)   | 126.3   | 0.4       |                         |      | G2/225  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G5**

Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 66°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 7933.1  | 7933.1  | 7933.1  | 7933.1  | 7933.1  | 7933.1  | 7933.1  | 7933.1  | 7933.1  | 7933.1  | 7933.1  |
| 2.5°  | 7786.0  | 7774.0  | 7809.9  | 7847.0  | 7861.3  | 7885.2  | 7921.1  | 7941.4  | 7940.2  | 7943.8  | 7931.9  |
| 5°    | 7269.5  | 7253.9  | 7325.7  | 7384.3  | 7496.7  | 7623.4  | 7777.6  | 7887.6  | 7890.0  | 7952.2  | 7968.9  |
| 7.5°  | 6780.5  | 6769.7  | 6852.2  | 6946.7  | 7077.0  | 7270.7  | 7520.6  | 7757.3  | 7771.7  | 7940.2  | 7998.8  |
| 10°   | 6388.3  | 6385.9  | 6466.0  | 6568.8  | 6720.7  | 6937.1  | 7224.0  | 7570.8  | 7592.3  | 7882.8  | 8003.6  |
| 12.5° | 6082.2  | 6087.0  | 6156.3  | 6273.5  | 6433.7  | 6659.7  | 6970.6  | 7361.5  | 7396.2  | 7792.0  | 7976.1  |
| 15°   | 5856.2  | 5875.4  | 5931.6  | 6049.9  | 6207.8  | 6437.3  | 6756.6  | 7167.9  | 7220.5  | 7690.3  | 7960.6  |
| 17.5° | 5727.1  | 5748.6  | 5788.1  | 5886.1  | 6034.4  | 6255.6  | 6558.1  | 7008.8  | 7056.7  | 7612.6  | 7961.8  |
| 20°   | 5688.8  | 5706.8  | 5729.5  | 5789.3  | 5914.8  | 6115.7  | 6401.4  | 6865.4  | 6916.8  | 7550.5  | 7973.7  |
| 22.5° | 5764.2  | 5777.3  | 5779.7  | 5774.9  | 5851.5  | 6015.3  | 6287.9  | 6760.1  | 6815.1  | 7509.8  | 7982.1  |
| 25°   | 5925.6  | 5943.5  | 5930.4  | 5886.1  | 5861.0  | 5961.5  | 6229.3  | 6690.8  | 6745.8  | 7479.9  | 7965.3  |
| 27.5° | 6168.3  | 6170.7  | 6159.9  | 6102.5  | 5984.2  | 5967.4  | 6211.3  | 6650.1  | 6702.8  | 7445.2  | 7930.7  |
| 30°   | 6498.3  | 6513.8  | 6494.7  | 6417.0  | 6223.3  | 6063.1  | 6232.9  | 6610.7  | 6658.5  | 7401.0  | 7874.5  |
| 32.5° | 6884.5  | 6922.7  | 6921.6  | 6840.2  | 6562.9  | 6277.1  | 6321.3  | 6586.8  | 6623.8  | 7354.4  | 7806.3  |
| 35°   | 7285.0  | 7337.6  | 7435.7  | 7401.0  | 7057.9  | 6615.5  | 6491.1  | 6625.0  | 6650.1  | 7348.4  | 7758.5  |
| 37.5° | 7701.1  | 7753.7  | 7955.8  | 8049.0  | 7647.3  | 7099.7  | 6758.9  | 6760.1  | 6772.1  | 7421.3  | 7754.9  |
| 40°   | 8136.3  | 8192.5  | 8496.2  | 8738.9  | 8411.3  | 7713.1  | 7190.6  | 7042.3  | 7029.2  | 7600.7  | 7825.5  |
| 42.5° | 8746.1  | 8796.3  | 9161.0  | 9470.7  | 9259.0  | 8498.6  | 7787.2  | 7477.5  | 7450.0  | 7952.2  | 8051.4  |
| 45°   | 9517.3  | 9560.3  | 9947.7  | 10278.9 | 10170.1 | 9395.3  | 8536.9  | 8076.5  | 8071.8  | 8538.1  | 8509.4  |
| 47.5° | 10434.3 | 10467.8 | 10815.7 | 11136.2 | 11175.6 | 10427.2 | 9479.0  | 9000.8  | 8923.1  | 9341.5  | 9218.4  |
| 50°   | 11389.7 | 11426.7 | 11663.5 | 12007.8 | 12300.7 | 11808.1 | 10691.4 | 10133.0 | 10029.0 | 10402.1 | 10222.7 |
| 52.5° | 12022.1 | 12071.2 | 12276.8 | 12713.2 | 13565.7 | 13321.8 | 12125.0 | 11505.6 | 11347.8 | 11687.4 | 11549.9 |
| 55°   | 11740.0 | 11850.0 | 12164.4 | 12863.9 | 14577.2 | 15634.2 | 13893.3 | 13106.6 | 12928.4 | 13210.6 | 13129.3 |
| 57.5° | 10457.1 | 10607.7 | 11036.9 | 12116.6 | 14719.5 | 17671.5 | 16566.8 | 14992.1 | 14866.6 | 14785.3 | 14822.3 |
| 60°   | 8112.4  | 8257.1  | 8789.1  | 10196.4 | 13728.3 | 19158.9 | 20590.1 | 17316.4 | 17134.7 | 16365.9 | 16399.4 |
| 62.5° | 5741.5  | 5668.5  | 6033.2  | 7062.6  | 11155.3 | 19333.5 | 25168.2 | 20425.1 | 19827.3 | 18035.0 | 17888.0 |
| 65°   | 4378.4  | 4361.7  | 4525.5  | 4853.1  | 6756.6  | 17244.7 | 27895.4 | 25650.0 | 24716.2 | 19998.3 | 19651.5 |
| 67.5° | 3597.7  | 3567.8  | 3729.2  | 4206.3  | 4350.9  | 11125.4 | 27955.2 | 31711.9 | 30794.9 | 22442.1 | 21691.3 |
| 70°   | 2958.0  | 2924.5  | 3075.2  | 3690.9  | 4020.9  | 5642.2  | 23527.8 | 35261.8 | 35212.8 | 25536.5 | 23231.3 |
| 71°   | 2651.9  | 2628.0  | 2808.6  | 3492.5  | 3950.4  | 4702.4  | 20313.9 | 35271.3 | 35418.4 | 26583.8 | 23140.4 |
| 72.5° | 2159.3  | 2167.7  | 2359.0  | 3108.7  | 3897.8  | 4152.5  | 14929.9 | 33627.3 | 33938.2 | 27582.2 | 22314.2 |
| 75°   | 1434.8  | 1441.9  | 1693.0  | 2391.3  | 3779.4  | 4062.8  | 8205.7  | 28217.1 | 28788.6 | 26984.4 | 20361.7 |
| 77.5° | 963.7   | 961.3   | 1132.3  | 1640.4  | 3292.8  | 4062.8  | 4811.3  | 21104.2 | 21731.9 | 21471.3 | 15697.5 |
| 80°   | 663.6   | 658.8   | 779.6   | 1132.3  | 2492.9  | 4111.8  | 3719.6  | 14790.1 | 14980.2 | 11595.3 | 6379.9  |
| 82.5° | 406.5   | 410.1   | 509.3   | 799.9   | 1696.6  | 3700.5  | 3511.6  | 8064.6  | 7857.7  | 3252.1  | 1593.8  |
| 85°   | 233.1   | 232.0   | 325.2   | 541.6   | 1089.2  | 3123.0  | 3424.3  | 3470.9  | 3184.0  | 979.2   | 576.3   |
| 87.5° | 83.7    | 89.7    | 174.6   | 300.1   | 624.1   | 2174.9  | 2905.4  | 1805.4  | 1627.3  | 442.4   | 260.6   |
| 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: P319449

CATALOG NUMBER: GLEON-SA5C-760-U-SL2

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 7933.1  | 7933.1  | 7933.1 | 7933.1 | 7933.1 | 7933.1 | 7933.1 | 7933.1 | 7933.1 | 7933.1 | 7933.1 |
| 2.5°  | 7923.5  | 7930.7  | 7922.3 | 7874.5 | 7833.8 | 7768.1 | 7731.0 | 7679.6 | 7664.0 | 7656.9 | 7676.0 |
| 5°    | 7953.4  | 7955.8  | 7885.2 | 7759.7 | 7618.6 | 7452.4 | 7332.9 | 7185.8 | 7116.4 | 7086.6 | 7105.7 |
| 7.5°  | 7980.9  | 7970.1  | 7815.9 | 7575.6 | 7314.9 | 7025.6 | 6768.5 | 6533.0 | 6395.5 | 6339.3 | 6344.1 |
| 10°   | 7984.5  | 7939.0  | 7691.5 | 7319.7 | 6915.6 | 6491.1 | 6096.6 | 5733.1 | 5503.5 | 5354.1 | 5399.5 |
| 12.5° | 7947.4  | 7870.9  | 7508.6 | 6988.5 | 6427.8 | 5849.1 | 5315.8 | 4770.6 | 4443.0 | 4291.1 | 4295.9 |
| 15°   | 7918.7  | 7780.0  | 7283.8 | 6598.7 | 5845.5 | 5079.1 | 4350.9 | 3710.1 | 3360.9 | 3205.5 | 3132.6 |
| 17.5° | 7894.8  | 7682.0  | 7023.2 | 6159.9 | 5158.0 | 4185.9 | 3310.7 | 2739.2 | 2547.9 | 2502.5 | 2483.3 |
| 20°   | 7861.3  | 7578.0  | 6732.6 | 5651.8 | 4374.8 | 3186.4 | 2417.6 | 2135.4 | 2136.6 | 2189.2 | 2196.4 |
| 22.5° | 7814.7  | 7459.6  | 6423.0 | 5081.5 | 3534.3 | 2320.7 | 1895.1 | 1813.8 | 1896.3 | 1996.7 | 2014.7 |
| 25°   | 7745.3  | 7319.7  | 6078.6 | 4451.4 | 2695.0 | 1783.9 | 1618.9 | 1615.3 | 1715.7 | 1821.0 | 1836.5 |
| 27.5° | 7647.3  | 7136.8  | 5696.0 | 3774.6 | 1986.0 | 1516.1 | 1450.3 | 1475.4 | 1549.5 | 1626.1 | 1632.0 |
| 30°   | 7515.8  | 6923.9  | 5274.0 | 3060.8 | 1556.7 | 1349.9 | 1342.7 | 1365.4 | 1410.9 | 1464.7 | 1469.4 |
| 32.5° | 7371.1  | 6707.5  | 4823.2 | 2369.8 | 1333.1 | 1260.2 | 1267.4 | 1278.1 | 1299.7 | 1321.2 | 1326.0 |
| 35°   | 7239.6  | 6486.3  | 4361.7 | 1800.6 | 1226.7 | 1201.6 | 1196.8 | 1194.4 | 1196.8 | 1189.7 | 1190.9 |
| 37.5° | 7154.7  | 6303.4  | 3881.0 | 1433.6 | 1165.7 | 1150.2 | 1135.9 | 1117.9 | 1097.6 | 1085.6 | 1088.0 |
| 40°   | 7123.6  | 6167.1  | 3394.4 | 1238.7 | 1115.5 | 1104.8 | 1077.3 | 1039.0 | 1015.1 | 1007.9 | 1007.9 |
| 42.5° | 7207.3  | 6096.6  | 2924.5 | 1140.6 | 1073.7 | 1055.7 | 1010.3 | 966.1  | 948.1  | 946.9  | 945.8  |
| 45°   | 7463.2  | 6125.3  | 2477.4 | 1086.8 | 1035.4 | 1000.7 | 941.0  | 903.9  | 891.9  | 894.3  | 893.1  |
| 47.5° | 7922.3  | 6305.8  | 2094.8 | 1051.0 | 997.2  | 951.7  | 884.8  | 854.9  | 840.5  | 840.5  | 841.7  |
| 50°   | 8703.1  | 6727.9  | 1789.9 | 1021.1 | 964.9  | 906.3  | 844.1  | 807.1  | 787.9  | 786.7  | 786.7  |
| 52.5° | 9840.1  | 7483.5  | 1599.8 | 996.0  | 929.0  | 865.6  | 803.5  | 756.8  | 734.1  | 729.3  | 726.9  |
| 55°   | 11265.3 | 8566.8  | 1547.2 | 979.2  | 881.2  | 821.4  | 754.4  | 707.8  | 682.7  | 671.9  | 670.8  |
| 57.5° | 12859.1 | 9884.3  | 1651.2 | 958.9  | 832.2  | 768.8  | 700.6  | 656.4  | 630.1  | 616.9  | 615.8  |
| 60°   | 14472.0 | 11322.7 | 2075.6 | 930.2  | 791.5  | 711.4  | 645.6  | 605.0  | 578.7  | 564.3  | 562.0  |
| 62.5° | 16087.3 | 12838.8 | 2942.5 | 927.8  | 762.8  | 656.4  | 589.4  | 554.8  | 529.7  | 514.1  | 510.5  |
| 65°   | 17909.5 | 14498.3 | 3927.7 | 991.2  | 753.3  | 606.2  | 532.1  | 504.6  | 483.0  | 468.7  | 467.5  |
| 67.5° | 20001.8 | 16371.9 | 3833.2 | 1121.5 | 785.5  | 560.8  | 478.3  | 456.7  | 441.2  | 429.2  | 428.0  |
| 70°   | 20983.5 | 16078.9 | 2382.9 | 1213.6 | 831.0  | 516.5  | 426.8  | 411.3  | 399.3  | 391.0  | 387.4  |
| 71°   | 20572.2 | 15267.1 | 1997.9 | 1202.8 | 826.2  | 497.4  | 406.5  | 394.6  | 382.6  | 375.4  | 371.8  |
| 72.5° | 19450.6 | 13923.2 | 1666.7 | 1119.1 | 772.4  | 462.7  | 380.2  | 368.3  | 357.5  | 349.1  | 346.7  |
| 75°   | 17453.9 | 12434.6 | 1334.3 | 894.3  | 615.8  | 391.0  | 333.6  | 320.4  | 312.1  | 307.3  | 302.5  |
| 77.5° | 12830.4 | 8874.0  | 1031.8 | 706.6  | 453.1  | 319.2  | 284.6  | 275.0  | 266.6  | 259.5  | 255.9  |
| 80°   | 4915.3  | 3437.5  | 694.7  | 527.3  | 332.4  | 252.3  | 229.6  | 224.8  | 216.4  | 211.6  | 211.6  |
| 82.5° | 1323.6  | 1027.1  | 370.6  | 319.2  | 222.4  | 184.1  | 175.8  | 173.4  | 166.2  | 156.6  | 157.8  |
| 85°   | 535.6   | 453.1   | 208.0  | 175.8  | 136.3  | 108.8  | 118.4  | 119.6  | 111.2  | 99.2   | 100.4  |
| 87.5° | 235.5   | 192.5   | 116.0  | 77.7   | 59.8   | 41.8   | 53.8   | 53.8   | 49.0   | 40.7   | 37.1   |
| 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

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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  $R_a = 71.7$   
 $R_g = -27.1$



**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)