

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: P323814

Luminaire Tested: **GLEON-SA0C-730-U-SL4-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P323814  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-25)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA0C-730-U-SL4-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(10) 70 CRI, 3000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV  
SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 51745 lumens  
Efficiency: N/A  
Efficacy: 92.7 lumens/watt  
Luminous Opening: Rectangular (W 2.5' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B3 - U0 - G5

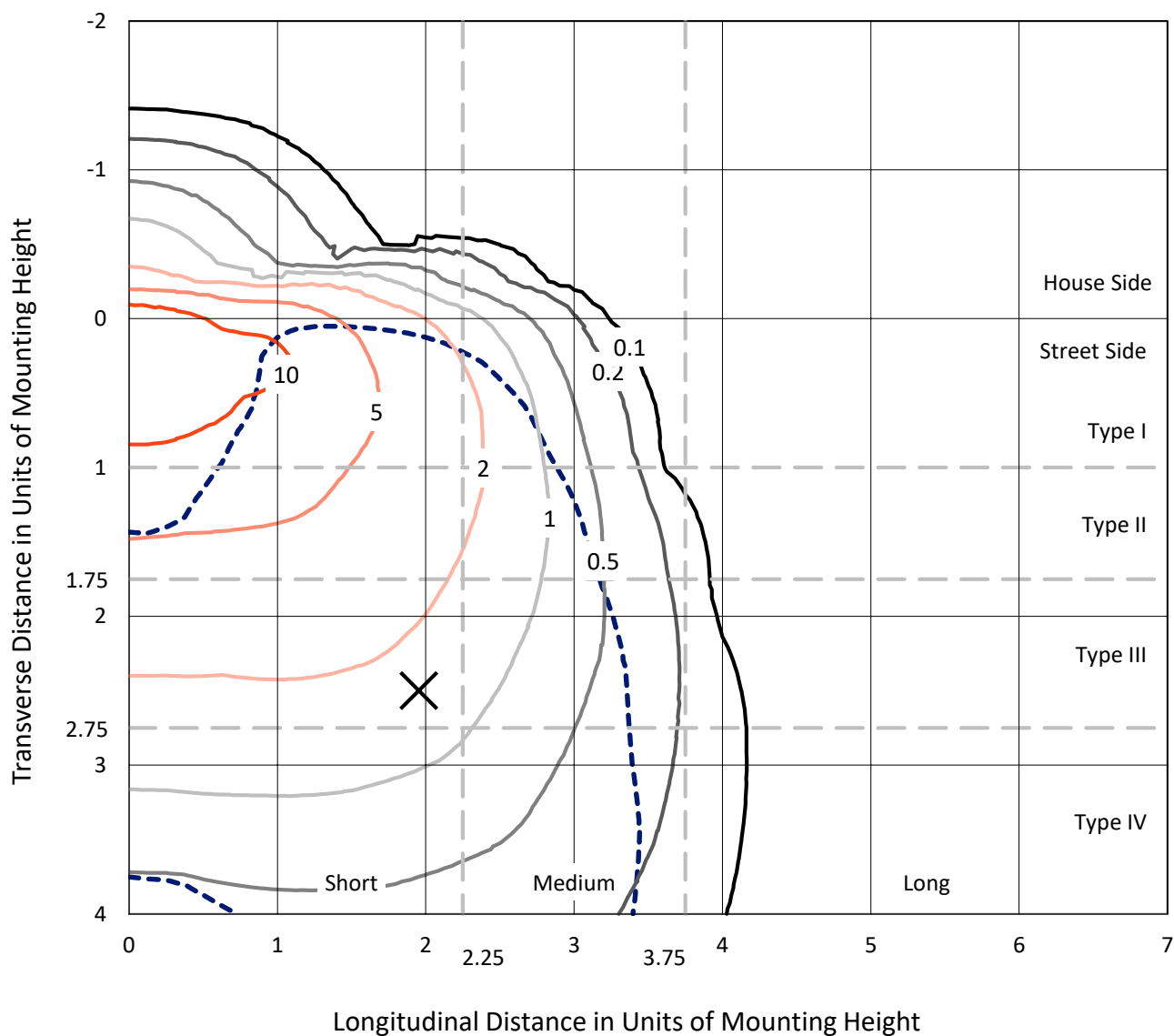
Input Watts (W): 558  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

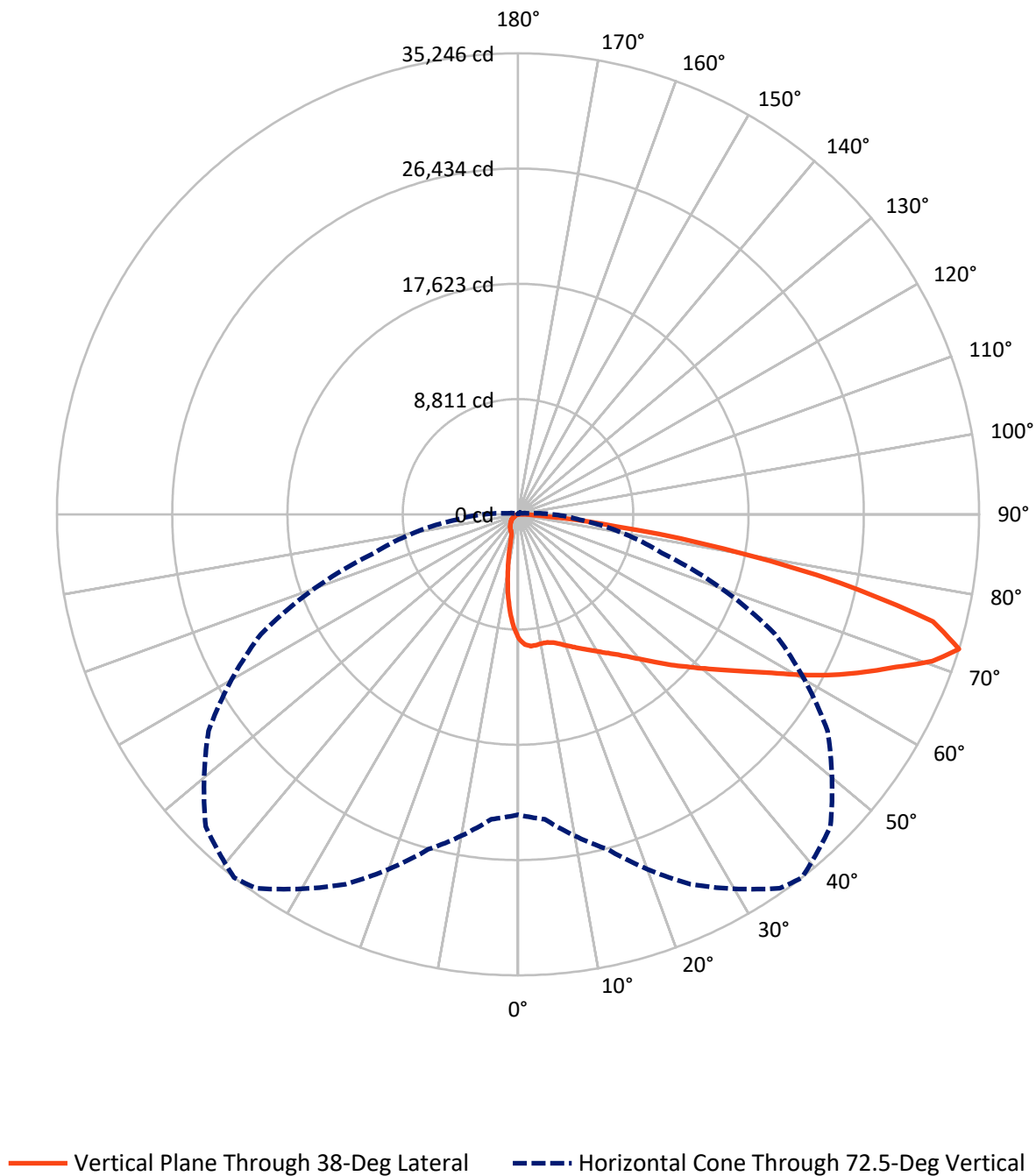
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 16.1 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GLEON-SA0C-730-U-SL4-HSS

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 4354.5   | 0.0    | 4354.5  |
|                    | % Fixture | 8.4      | 0.0    | 8.4     |
| <b>Street Side</b> | Lumens    | 47390.5  | 0.0    | 47390.5 |
|                    | % Fixture | 91.6     | 0.0    | 91.6    |
| <b>Total</b>       | Lumens    | 51745.0  | 0.0    | 51745.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 810.9   | 1.6       |
| 10°-20°   | 1982.9  | 3.8       |
| 20°-30°   | 3153.7  | 6.1       |
| 30°-40°   | 4741.3  | 9.2       |
| 40°-50°   | 7233.2  | 14.0      |
| 50°-60°   | 10223.0 | 19.8      |
| 60°-70°   | 12823.0 | 24.8      |
| 70°-80°   | 9588.0  | 18.5      |
| 80°-90°   | 1188.9  | 2.3       |
| 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°    | 51745.0 | 100.0     |
| 0°-180°   | 51745.0 | 100.0     |

**Coefficient of Utilization**



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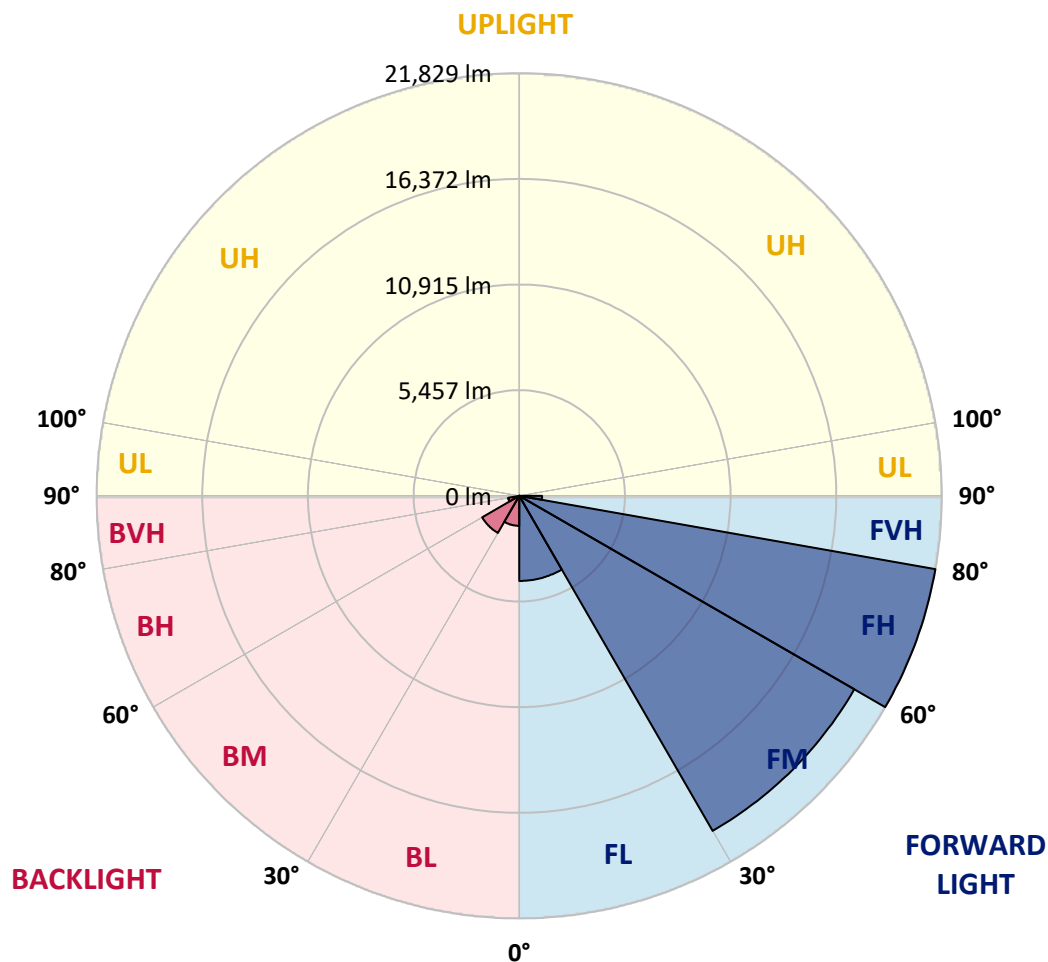
CATALOG NUMBER: GLEON-SA0C-730-U-SL4-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 4397.1  | 8.5       |                         |      |         |
| FM   | (30°-60°)   | 19986.2 | 38.6      |                         |      |         |
| FH   | (60°-80°)   | 21829.4 | 42.2      |                         |      | G5      |
| FVH  | (80°-90°)   | 1177.8  | 2.3       |                         |      | G5      |
| BL   | (0°-30°)    | 1550.5  | 3.0       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 2211.3  | 4.3       | B2/2500                 |      |         |
| BH   | (60°-80°)   | 581.7   | 1.1       | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 11.1    | 0.0       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

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

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 38°     | 45°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 9515.7  | 9515.7  | 9515.7  | 9515.7  | 9515.7  | 9515.7  | 9515.7  | 9515.7  | 9515.7  | 9515.7  | 9515.7  |
| 2.5°  | 10100.3 | 10102.4 | 10078.8 | 10040.1 | 9990.7  | 9964.9  | 9921.9  | 9853.1  | 9780.1  | 9649.0  | 9507.1  |
| 5°    | 10306.6 | 10306.6 | 10276.5 | 10224.9 | 10145.4 | 10121.8 | 10040.1 | 9930.5  | 9780.1  | 9567.3  | 9328.8  |
| 7.5°  | 10285.1 | 10289.4 | 10248.5 | 10194.8 | 10115.3 | 10093.8 | 9995.0  | 9872.5  | 9685.5  | 9427.6  | 9122.5  |
| 10°   | 10173.3 | 10184.1 | 10151.8 | 10126.0 | 10053.0 | 10029.3 | 9936.9  | 9814.4  | 9627.5  | 9352.4  | 9002.1  |
| 12.5° | 10059.4 | 10070.2 | 10080.9 | 10104.6 | 10059.4 | 10050.8 | 9977.8  | 9874.6  | 9696.3  | 9410.4  | 9015.0  |
| 15°   | 9986.4  | 10007.9 | 10085.2 | 10177.6 | 10188.4 | 10179.8 | 10132.5 | 10035.8 | 9855.3  | 9558.7  | 9107.4  |
| 17.5° | 9986.4  | 10020.7 | 10181.9 | 10358.1 | 10420.5 | 10426.9 | 10386.1 | 10250.7 | 10035.8 | 9717.7  | 9193.4  |
| 20°   | 10070.2 | 10117.5 | 10368.9 | 10618.2 | 10721.3 | 10721.3 | 10641.8 | 10452.7 | 10201.3 | 9861.7  | 9251.4  |
| 22.5° | 10285.1 | 10347.4 | 10663.3 | 10951.3 | 11060.9 | 11037.2 | 10929.8 | 10654.7 | 10373.2 | 10025.0 | 9324.5  |
| 25°   | 10708.4 | 10755.7 | 11084.5 | 11374.6 | 11441.2 | 11387.5 | 11252.1 | 10899.7 | 10592.4 | 10246.4 | 9457.7  |
| 27.5° | 11254.3 | 11260.7 | 11600.3 | 11845.2 | 11804.4 | 11767.9 | 11598.1 | 11207.0 | 10908.3 | 10562.3 | 9687.7  |
| 30°   | 11853.8 | 11853.8 | 12152.5 | 12339.5 | 12214.9 | 12184.8 | 12015.0 | 11578.8 | 11312.3 | 10992.1 | 10014.3 |
| 32.5° | 12434.1 | 12459.9 | 12702.7 | 12820.9 | 12681.2 | 12651.1 | 12485.6 | 12049.4 | 11849.5 | 11647.5 | 10523.6 |
| 35°   | 12995.0 | 13014.3 | 13244.2 | 13308.7 | 13175.5 | 13184.1 | 13065.9 | 12696.2 | 12621.0 | 12595.2 | 11290.8 |
| 37.5° | 13538.6 | 13542.9 | 13777.2 | 13818.0 | 13751.4 | 13824.5 | 13835.2 | 13508.6 | 13648.2 | 13856.7 | 12371.7 |
| 40°   | 14035.1 | 14039.4 | 14271.5 | 14376.8 | 14490.7 | 14585.2 | 14669.0 | 14494.9 | 14957.0 | 15440.5 | 13659.0 |
| 42.5° | 14432.6 | 14477.8 | 14772.2 | 14972.0 | 15272.9 | 15453.4 | 15681.2 | 15672.6 | 16515.0 | 17241.4 | 15214.9 |
| 45°   | 14782.9 | 14860.3 | 15270.7 | 15621.0 | 16136.8 | 16424.7 | 16781.5 | 17060.8 | 18268.6 | 19246.4 | 16790.1 |
| 47.5° | 15244.9 | 15318.0 | 15786.5 | 16360.3 | 17048.0 | 17426.2 | 18017.1 | 18621.0 | 20196.2 | 21214.8 | 18328.7 |
| 50°   | 15896.1 | 15863.9 | 16325.9 | 17149.0 | 18032.2 | 18528.6 | 19371.0 | 20275.7 | 22108.8 | 22929.7 | 19233.5 |
| 52.5° | 16590.2 | 16577.3 | 16919.0 | 18006.4 | 19192.6 | 19772.9 | 20886.0 | 21986.3 | 23937.6 | 24111.7 | 19648.2 |
| 55°   | 17449.8 | 17357.4 | 17645.4 | 18984.2 | 20570.1 | 21193.4 | 22504.2 | 23679.7 | 25394.6 | 24777.9 | 19856.7 |
| 57.5° | 18350.2 | 18197.7 | 18472.7 | 20073.7 | 22123.9 | 22861.0 | 24296.5 | 25330.2 | 26363.8 | 25233.5 | 19854.5 |
| 60°   | 19280.8 | 19100.2 | 19426.9 | 21436.2 | 24053.7 | 24906.8 | 26239.2 | 26445.5 | 27268.6 | 25463.4 | 19708.4 |
| 62.5° | 20058.7 | 19951.2 | 20436.9 | 22893.2 | 26209.1 | 27047.2 | 27706.9 | 27459.8 | 28031.4 | 25641.8 | 19366.7 |
| 65°   | 20881.8 | 20888.2 | 21672.6 | 24593.1 | 28499.9 | 29065.1 | 29121.0 | 28775.0 | 28669.7 | 25605.2 | 18210.6 |
| 67.5° | 21994.9 | 22098.1 | 23406.8 | 26901.1 | 30728.4 | 31164.7 | 31160.4 | 30199.8 | 29136.0 | 24152.5 | 15646.8 |
| 70°   | 23172.6 | 23415.4 | 25405.4 | 29542.2 | 33161.1 | 33603.8 | 33376.0 | 31106.7 | 27434.0 | 19530.0 | 11073.8 |
| 72.5° | 22974.9 | 23396.1 | 26516.4 | 31207.7 | 34908.2 | 35245.6 | 33765.0 | 28878.1 | 21683.3 | 11351.0 | 4714.9  |
| 75°   | 17724.9 | 18212.7 | 24313.7 | 29557.2 | 33075.1 | 32772.1 | 29011.4 | 22472.0 | 11849.5 | 3167.6  | 1061.6  |
| 77.5° | 9363.2  | 9623.2  | 16061.6 | 22517.1 | 25790.0 | 25156.1 | 20436.9 | 12466.3 | 3612.5  | 784.4   | 477.1   |
| 80°   | 4904.0  | 4964.2  | 6999.3  | 12775.8 | 15917.6 | 15921.9 | 12111.7 | 5475.6  | 1489.3  | 401.9   | 320.2   |
| 82.5° | 2626.1  | 2677.6  | 3698.4  | 5903.3  | 8340.2  | 7560.2  | 4637.5  | 3012.9  | 866.0   | 227.8   | 307.3   |
| 85°   | 631.8   | 642.5   | 2097.4  | 2697.0  | 3279.4  | 2342.4  | 1377.5  | 2529.4  | 234.2   | 133.2   | 249.3   |
| 87.5° | 242.8   | 247.1   | 777.9   | 1166.9  | 836.0   | 541.5   | 644.7   | 943.4   | 30.1    | 51.6    | 38.7    |
| 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-SA0C-730-U-SL4-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 9515.7  | 9515.7  | 9515.7 | 9515.7 | 9515.7 | 9515.7 | 9515.7 | 9515.7 | 9515.7 | 9515.7 | 9515.7 |
| 2.5°  | 9421.2  | 9365.3  | 9227.8 | 9053.7 | 8899.0 | 8787.2 | 8619.6 | 8510.0 | 8436.9 | 8434.8 | 8406.9 |
| 5°    | 9182.6  | 9068.7  | 8772.2 | 8419.7 | 8099.5 | 7811.6 | 7472.0 | 7203.4 | 7003.6 | 6971.3 | 6902.6 |
| 7.5°  | 8926.9  | 8739.9  | 8284.4 | 7734.2 | 7197.0 | 6651.1 | 6017.2 | 5623.9 | 5286.5 | 5125.3 | 5108.2 |
| 10°   | 8770.0  | 8507.9  | 7861.0 | 7065.9 | 6223.5 | 5335.9 | 4506.4 | 3932.7 | 3517.9 | 3399.7 | 3311.6 |
| 12.5° | 8737.8  | 8391.8  | 7534.4 | 6438.4 | 5234.9 | 4061.6 | 3144.0 | 2533.7 | 2202.7 | 2097.4 | 2069.5 |
| 15°   | 8770.0  | 8338.1  | 7259.3 | 5817.3 | 4233.5 | 2881.8 | 2110.3 | 1755.7 | 1631.1 | 1601.0 | 1598.8 |
| 17.5° | 8789.4  | 8273.6  | 6947.7 | 5127.5 | 3262.2 | 2058.7 | 1616.0 | 1512.9 | 1493.5 | 1491.4 | 1495.7 |
| 20°   | 8787.2  | 8174.8  | 6575.9 | 4358.2 | 2426.2 | 1618.2 | 1461.3 | 1439.8 | 1435.5 | 1437.7 | 1435.5 |
| 22.5° | 8772.2  | 8058.7  | 6167.6 | 3565.2 | 1833.1 | 1446.3 | 1394.7 | 1381.8 | 1379.7 | 1379.7 | 1379.7 |
| 25°   | 8800.1  | 7966.3  | 5718.5 | 2806.6 | 1510.7 | 1366.8 | 1334.5 | 1323.8 | 1321.6 | 1321.6 | 1317.3 |
| 27.5° | 8901.1  | 7914.7  | 5226.3 | 2159.7 | 1364.6 | 1295.8 | 1270.1 | 1267.9 | 1261.5 | 1259.3 | 1263.6 |
| 30°   | 9064.4  | 7914.7  | 4687.0 | 1680.5 | 1276.5 | 1222.8 | 1203.4 | 1199.1 | 1197.0 | 1194.8 | 1197.0 |
| 32.5° | 9352.4  | 7974.9  | 4098.1 | 1396.8 | 1192.7 | 1141.1 | 1128.2 | 1134.7 | 1128.2 | 1128.2 | 1128.2 |
| 35°   | 9872.5  | 8155.4  | 3481.4 | 1218.5 | 1104.6 | 1061.6 | 1048.7 | 1057.3 | 1053.0 | 1053.0 | 1050.9 |
| 37.5° | 10631.1 | 8490.7  | 2860.3 | 1111.0 | 1027.2 | 982.1  | 964.9  | 977.8  | 973.5  | 973.5  | 971.3  |
| 40°   | 11555.1 | 8978.5  | 2269.3 | 1029.4 | 952.0  | 904.7  | 889.7  | 896.1  | 885.4  | 885.4  | 889.7  |
| 42.5° | 12696.2 | 9597.4  | 1753.6 | 949.9  | 876.8  | 831.7  | 823.1  | 816.6  | 797.3  | 786.5  | 788.7  |
| 45°   | 13964.1 | 10242.1 | 1366.8 | 872.5  | 805.9  | 769.3  | 756.4  | 739.3  | 707.0  | 685.5  | 687.7  |
| 47.5° | 15096.7 | 10738.5 | 1111.0 | 797.3  | 741.4  | 713.5  | 694.1  | 661.9  | 614.6  | 588.8  | 591.0  |
| 50°   | 15691.9 | 10813.7 | 945.6  | 722.1  | 681.2  | 653.3  | 625.4  | 575.9  | 520.1  | 492.1  | 490.0  |
| 52.5° | 15844.5 | 10461.3 | 823.1  | 653.3  | 621.1  | 588.8  | 552.3  | 485.7  | 423.4  | 393.3  | 389.0  |
| 55°   | 15900.4 | 9924.0  | 713.5  | 588.8  | 556.6  | 520.1  | 472.8  | 397.6  | 339.5  | 309.5  | 307.3  |
| 57.5° | 15715.6 | 9122.5  | 627.5  | 530.8  | 492.1  | 447.0  | 389.0  | 318.1  | 262.2  | 238.5  | 238.5  |
| 60°   | 15305.1 | 8037.2  | 560.9  | 468.5  | 425.5  | 373.9  | 313.8  | 247.1  | 195.6  | 176.2  | 176.2  |
| 62.5° | 14486.4 | 6631.8  | 498.6  | 404.0  | 363.2  | 309.5  | 253.6  | 187.0  | 137.5  | 126.8  | 128.9  |
| 65°   | 12941.2 | 5030.8  | 436.2  | 346.0  | 309.5  | 255.7  | 197.7  | 133.2  | 92.4   | 92.4   | 96.7   |
| 67.5° | 10553.7 | 3494.3  | 371.8  | 294.4  | 266.5  | 208.5  | 150.4  | 92.4   | 64.5   | 73.1   | 81.7   |
| 70°   | 6986.4  | 1959.9  | 318.1  | 242.8  | 227.8  | 165.5  | 111.7  | 62.3   | 51.6   | 68.8   | 83.8   |
| 72.5° | 2636.8  | 762.9   | 266.5  | 195.6  | 197.7  | 126.8  | 79.5   | 47.3   | 47.3   | 75.2   | 98.9   |
| 75°   | 735.0   | 373.9   | 191.3  | 144.0  | 154.7  | 92.4   | 58.0   | 40.8   | 45.1   | 86.0   | 116.0  |
| 77.5° | 431.9   | 275.1   | 124.6  | 83.8   | 105.3  | 64.5   | 38.7   | 32.2   | 38.7   | 73.1   | 111.7  |
| 80°   | 348.1   | 146.1   | 73.1   | 43.0   | 58.0   | 36.5   | 25.8   | 19.3   | 10.7   | 27.9   | 58.0   |
| 82.5° | 348.1   | 88.1    | 34.4   | 30.1   | 30.1   | 19.3   | 12.9   | 8.6    | 2.1    | 0.0    | 15.0   |
| 85°   | 234.2   | 36.5    | 21.5   | 19.3   | 15.0   | 6.4    | 4.3    | 2.1    | 0.0    | 0.0    | 0.0    |
| 87.5° | 38.7    | 15.0    | 8.6    | 4.3    | 2.1    | 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: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

Data in this report applies to families of products SA1C-730-U-5WQ .

### Test Information

Test Method: LM-79-2008  
Report Number: SP1-1908-441-2-R4  
Test Lab: COOPER LIGHTING SOLUTIONS  
Photometer: SP1 - 76IN SPHERE  
Measurement Geometry:  $4\pi$   
Issue Date: 10/28/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: MCGRAW-EDISON  
Catalog Number: **SA1C-730-U-5WQ**  
Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 2993   | CRI (Ra): | 71.8 |      |       |
| CIE u':                   | 0.2508 | R1:       | 67.5 | R9:  | -38.3 |
| CIE v':                   | 0.5215 | R2:       | 82.9 | R10: | 62.5  |
| Duv:                      | 0.0000 | R3:       | 94.7 | R11: | 63.7  |
| CIE x:                    | 0.4374 | R4:       | 67.7 | R12: | 57.8  |
| CIE y:                    | 0.4043 | R5:       | 67.9 | R13: | 70.4  |
| CIE z:                    | 0.1583 | R6:       | 77.6 | R14: | 97.3  |
| Peak Wavelength (nm):     | 593    | R7:       | 76.0 |      |       |
| Dominant Wavelength (nm): | 582    | R8:       | 40.5 |      |       |
| Purity:                   | 53     |           |      |      |       |
| Rf:                       | 75.7   |           |      |      |       |
| Rg:                       | 93.9   |           |      |      |       |



### Test Conditions

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

REPORT NUMBER: SP1-1908-441-2-R4

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

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CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 3000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2397             | NR               | 490       | 24908            | NR               | 620       | 118784           | NR               | 750       | 5037             | NR               | 880       | 2677             | NR               |
| 365       | 2084             | NR               | 495       | 30998            | NR               | 625       | 108951           | NR               | 755       | 4413             | NR               | 885       | 2940             | NR               |
| 370       | 2143             | NR               | 500       | 37103            | NR               | 630       | 99573            | NR               | 760       | 4189             | NR               | 890       | 3116             | NR               |
| 375       | 2413             | NR               | 505       | 42987            | NR               | 635       | 90444            | NR               | 765       | 3677             | NR               | 895       | 3345             | NR               |
| 380       | 2172             | NR               | 510       | 48702            | NR               | 640       | 80749            | NR               | 770       | 3366             | NR               | 900       | 2312             | NR               |
| 385       | 1997             | NR               | 515       | 53741            | NR               | 645       | 71664            | NR               | 775       | 3211             | NR               | 905       | 2829             | NR               |
| 390       | 1830             | NR               | 520       | 57283            | NR               | 650       | 63936            | NR               | 780       | 2682             | NR               | 910       | 2783             | NR               |
| 395       | 1861             | NR               | 525       | 61876            | NR               | 655       | 56611            | NR               | 785       | 2804             | NR               | 915       | 2662             | NR               |
| 400       | 1717             | NR               | 530       | 65398            | NR               | 660       | 49763            | NR               | 790       | 2581             | NR               | 920       | 3047             | NR               |
| 405       | 1761             | NR               | 535       | 69597            | NR               | 665       | 42891            | NR               | 795       | 2711             | NR               | 925       | 2256             | NR               |
| 410       | 2680             | NR               | 540       | 74214            | NR               | 670       | 36939            | NR               | 800       | 2609             | NR               | 930       | 2976             | NR               |
| 415       | 4374             | NR               | 545       | 79911            | NR               | 675       | 31946            | NR               | 805       | 2581             | NR               | 935       | 3503             | NR               |
| 420       | 8071             | NR               | 550       | 86153            | NR               | 680       | 27385            | NR               | 810       | 2404             | NR               | 940       | 4226             | NR               |
| 425       | 15169            | NR               | 555       | 93952            | NR               | 685       | 23504            | NR               | 815       | 2556             | NR               | 945       | 2930             | NR               |
| 430       | 26038            | NR               | 560       | 102904           | NR               | 690       | 20210            | NR               | 820       | 2742             | NR               | 950       | 2115             | NR               |
| 435       | 41316            | NR               | 565       | 112009           | NR               | 695       | 17459            | NR               | 825       | 2014             | NR               | 955       | 2634             | NR               |
| 440       | 59674            | NR               | 570       | 121662           | NR               | 700       | 15207            | NR               | 830       | 2488             | NR               | 960       | 4200             | NR               |
| 445       | 72751            | NR               | 575       | 130476           | NR               | 705       | 13322            | NR               | 835       | 2625             | NR               | 965       | 1982             | NR               |
| 450       | 65091            | NR               | 580       | 137926           | NR               | 710       | 11676            | NR               | 840       | 2754             | NR               | 970       | 3613             | NR               |
| 455       | 44894            | NR               | 585       | 143406           | NR               | 715       | 10626            | NR               | 845       | 2708             | NR               | 975       | 4034             | NR               |
| 460       | 32712            | NR               | 590       | 147039           | NR               | 720       | 9416             | NR               | 850       | 2608             | NR               | 980       | 3922             | NR               |
| 465       | 25296            | NR               | 595       | 147365           | NR               | 725       | 8333             | NR               | 855       | 2605             | NR               | 985       | 1909             | NR               |
| 470       | 19318            | NR               | 600       | 145800           | NR               | 730       | 7134             | NR               | 860       | 1765             | NR               | 990       | 3617             | NR               |
| 475       | 17265            | NR               | 605       | 141363           | NR               | 735       | 6437             | NR               | 865       | 2581             | NR               | 995       | 4767             | NR               |
| 480       | 18260            | NR               | 610       | 134199           | NR               | 740       | 5834             | NR               | 870       | 3016             | NR               | 1000      | 2528             | NR               |
| 485       | 20845            | NR               | 615       | 127683           | NR               | 745       | 5500             | NR               | 875       | 3952             | NR               |           |                  |                  |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 8494.8

S/P: 1.23

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2397             | NR               | 490       | 24908            | NR               | 620       | 118784           | NR               | 750       | 5037             | NR               | 880       | 2677             | NR               |
| 365       | 2084             | NR               | 495       | 30998            | NR               | 625       | 108951           | NR               | 755       | 4413             | NR               | 885       | 2940             | NR               |
| 370       | 2143             | NR               | 500       | 37103            | NR               | 630       | 99573            | NR               | 760       | 4189             | NR               | 890       | 3116             | NR               |
| 375       | 2413             | NR               | 505       | 42987            | NR               | 635       | 90444            | NR               | 765       | 3677             | NR               | 895       | 3345             | NR               |
| 380       | 2172             | NR               | 510       | 48702            | NR               | 640       | 80749            | NR               | 770       | 3366             | NR               | 900       | 2312             | NR               |
| 385       | 1997             | NR               | 515       | 53741            | NR               | 645       | 71664            | NR               | 775       | 3211             | NR               | 905       | 2829             | NR               |
| 390       | 1830             | NR               | 520       | 57283            | NR               | 650       | 63936            | NR               | 780       | 2682             | NR               | 910       | 2783             | NR               |
| 395       | 1861             | NR               | 525       | 61876            | NR               | 655       | 56611            | NR               | 785       | 2804             | NR               | 915       | 2662             | NR               |
| 400       | 1717             | NR               | 530       | 65398            | NR               | 660       | 49763            | NR               | 790       | 2581             | NR               | 920       | 3047             | NR               |
| 405       | 1761             | NR               | 535       | 69597            | NR               | 665       | 42891            | NR               | 795       | 2711             | NR               | 925       | 2256             | NR               |
| 410       | 2680             | NR               | 540       | 74214            | NR               | 670       | 36939            | NR               | 800       | 2609             | NR               | 930       | 2976             | NR               |
| 415       | 4374             | NR               | 545       | 79911            | NR               | 675       | 31946            | NR               | 805       | 2581             | NR               | 935       | 3503             | NR               |
| 420       | 8071             | NR               | 550       | 86153            | NR               | 680       | 27385            | NR               | 810       | 2404             | NR               | 940       | 4226             | NR               |
| 425       | 15169            | NR               | 555       | 93952            | NR               | 685       | 23504            | NR               | 815       | 2556             | NR               | 945       | 2930             | NR               |
| 430       | 26038            | NR               | 560       | 102904           | NR               | 690       | 20210            | NR               | 820       | 2742             | NR               | 950       | 2115             | NR               |
| 435       | 41316            | NR               | 565       | 112009           | NR               | 695       | 17459            | NR               | 825       | 2014             | NR               | 955       | 2634             | NR               |
| 440       | 59674            | NR               | 570       | 121662           | NR               | 700       | 15207            | NR               | 830       | 2488             | NR               | 960       | 4200             | NR               |
| 445       | 72751            | NR               | 575       | 130476           | NR               | 705       | 13322            | NR               | 835       | 2625             | NR               | 965       | 1982             | NR               |
| 450       | 65091            | NR               | 580       | 137926           | NR               | 710       | 11676            | NR               | 840       | 2754             | NR               | 970       | 3613             | NR               |
| 455       | 44894            | NR               | 585       | 143406           | NR               | 715       | 10626            | NR               | 845       | 2708             | NR               | 975       | 4034             | NR               |
| 460       | 32712            | NR               | 590       | 147039           | NR               | 720       | 9416             | NR               | 850       | 2608             | NR               | 980       | 3922             | NR               |
| 465       | 25296            | NR               | 595       | 147365           | NR               | 725       | 8333             | NR               | 855       | 2605             | NR               | 985       | 1909             | NR               |
| 470       | 19318            | NR               | 600       | 145800           | NR               | 730       | 7134             | NR               | 860       | 1765             | NR               | 990       | 3617             | NR               |
| 475       | 17265            | NR               | 605       | 141363           | NR               | 735       | 6437             | NR               | 865       | 2581             | NR               | 995       | 4767             | NR               |
| 480       | 18260            | NR               | 610       | 134199           | NR               | 740       | 5834             | NR               | 870       | 3016             | NR               | 1000      | 2528             | NR               |
| 485       | 20845            | NR               | 615       | 127683           | NR               | 745       | 5500             | NR               | 875       | 3952             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 3101.5 M/P: 0.45**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2397             | NR               | 490       | 24908            | NR               | 620       | 118784           | NR               | 750       | 5037             | NR               | 880       | 2677             | NR               |
| 365       | 2084             | NR               | 495       | 30998            | NR               | 625       | 108951           | NR               | 755       | 4413             | NR               | 885       | 2940             | NR               |
| 370       | 2143             | NR               | 500       | 37103            | NR               | 630       | 99573            | NR               | 760       | 4189             | NR               | 890       | 3116             | NR               |
| 375       | 2413             | NR               | 505       | 42987            | NR               | 635       | 90444            | NR               | 765       | 3677             | NR               | 895       | 3345             | NR               |
| 380       | 2172             | NR               | 510       | 48702            | NR               | 640       | 80749            | NR               | 770       | 3366             | NR               | 900       | 2312             | NR               |
| 385       | 1997             | NR               | 515       | 53741            | NR               | 645       | 71664            | NR               | 775       | 3211             | NR               | 905       | 2829             | NR               |
| 390       | 1830             | NR               | 520       | 57283            | NR               | 650       | 63936            | NR               | 780       | 2682             | NR               | 910       | 2783             | NR               |
| 395       | 1861             | NR               | 525       | 61876            | NR               | 655       | 56611            | NR               | 785       | 2804             | NR               | 915       | 2662             | NR               |
| 400       | 1717             | NR               | 530       | 65398            | NR               | 660       | 49763            | NR               | 790       | 2581             | NR               | 920       | 3047             | NR               |
| 405       | 1761             | NR               | 535       | 69597            | NR               | 665       | 42891            | NR               | 795       | 2711             | NR               | 925       | 2256             | NR               |
| 410       | 2680             | NR               | 540       | 74214            | NR               | 670       | 36939            | NR               | 800       | 2609             | NR               | 930       | 2976             | NR               |
| 415       | 4374             | NR               | 545       | 79911            | NR               | 675       | 31946            | NR               | 805       | 2581             | NR               | 935       | 3503             | NR               |
| 420       | 8071             | NR               | 550       | 86153            | NR               | 680       | 27385            | NR               | 810       | 2404             | NR               | 940       | 4226             | NR               |
| 425       | 15169            | NR               | 555       | 93952            | NR               | 685       | 23504            | NR               | 815       | 2556             | NR               | 945       | 2930             | NR               |
| 430       | 26038            | NR               | 560       | 102904           | NR               | 690       | 20210            | NR               | 820       | 2742             | NR               | 950       | 2115             | NR               |
| 435       | 41316            | NR               | 565       | 112009           | NR               | 695       | 17459            | NR               | 825       | 2014             | NR               | 955       | 2634             | NR               |
| 440       | 59674            | NR               | 570       | 121662           | NR               | 700       | 15207            | NR               | 830       | 2488             | NR               | 960       | 4200             | NR               |
| 445       | 72751            | NR               | 575       | 130476           | NR               | 705       | 13322            | NR               | 835       | 2625             | NR               | 965       | 1982             | NR               |
| 450       | 65091            | NR               | 580       | 137926           | NR               | 710       | 11676            | NR               | 840       | 2754             | NR               | 970       | 3613             | NR               |
| 455       | 44894            | NR               | 585       | 143406           | NR               | 715       | 10626            | NR               | 845       | 2708             | NR               | 975       | 4034             | NR               |
| 460       | 32712            | NR               | 590       | 147039           | NR               | 720       | 9416             | NR               | 850       | 2608             | NR               | 980       | 3922             | NR               |
| 465       | 25296            | NR               | 595       | 147365           | NR               | 725       | 8333             | NR               | 855       | 2605             | NR               | 985       | 1909             | NR               |
| 470       | 19318            | NR               | 600       | 145800           | NR               | 730       | 7134             | NR               | 860       | 1765             | NR               | 990       | 3617             | NR               |
| 475       | 17265            | NR               | 605       | 141363           | NR               | 735       | 6437             | NR               | 865       | 2581             | NR               | 995       | 4767             | NR               |
| 480       | 18260            | NR               | 610       | 134199           | NR               | 740       | 5834             | NR               | 870       | 3016             | NR               | 1000      | 2528             | NR               |
| 485       | 20845            | NR               | 615       | 127683           | NR               | 745       | 5500             | NR               | 875       | 3952             | NR               |           |                  |                  |

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**Summary**

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



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 |            |



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**Color Rendition by Hue-Angle Bin**



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**Measure Comparisons**



(END OF REPORT)