

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: P319630

Luminaire Tested: **GLEON-SA6A-730-U-SL3**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P319630  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-22)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA6A-730-U-SL3  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(6) 70 CRI, 3000K, 615mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
SPILL LIGHT ELIMINATOR OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 25385 lumens  
Efficiency: N/A  
Efficacy: 131.5 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B3 - U0 - G4

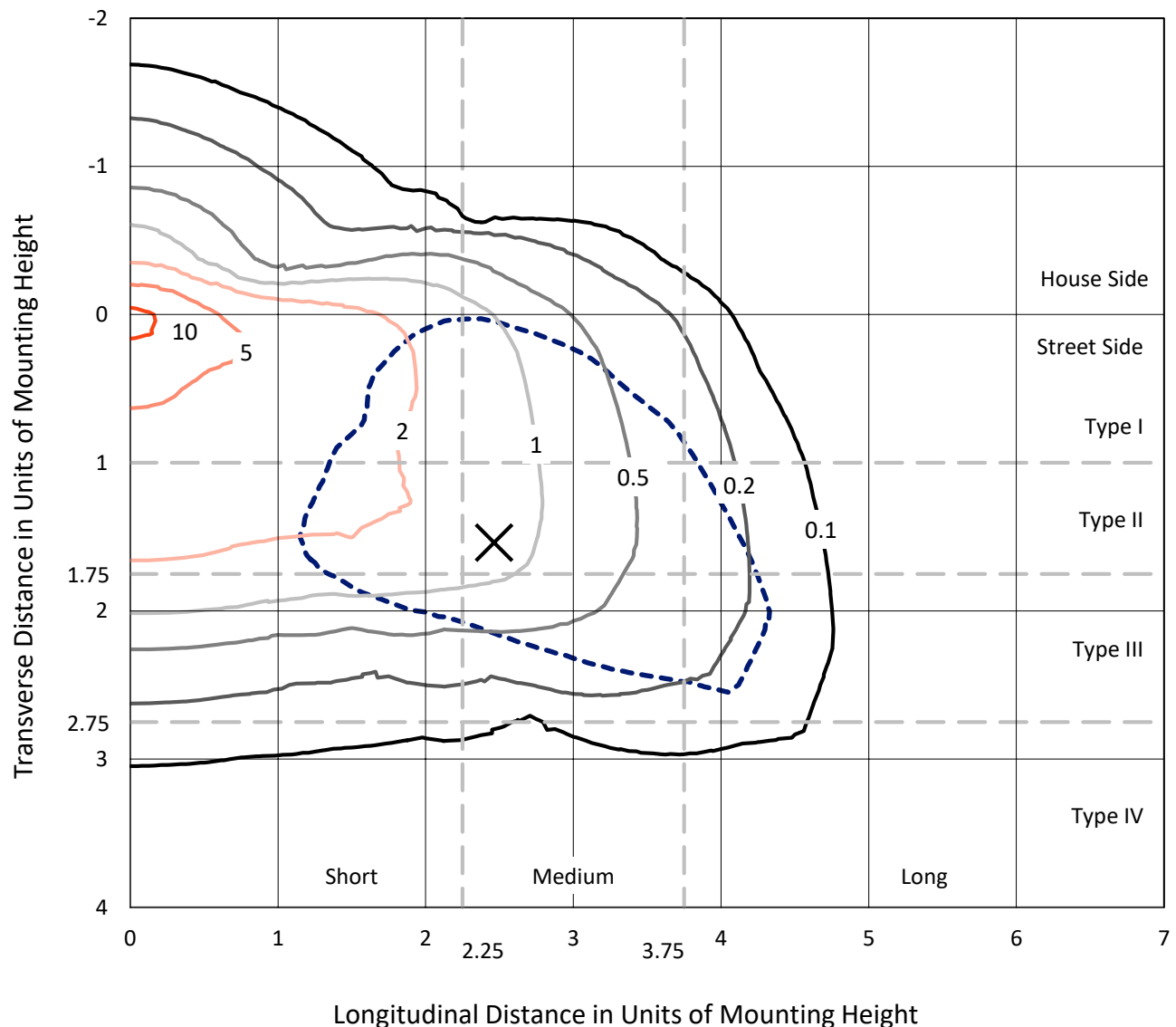
Input Watts (W): 193  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P319630  
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## Iso-Footcandle Lines of Horizontal Illumination

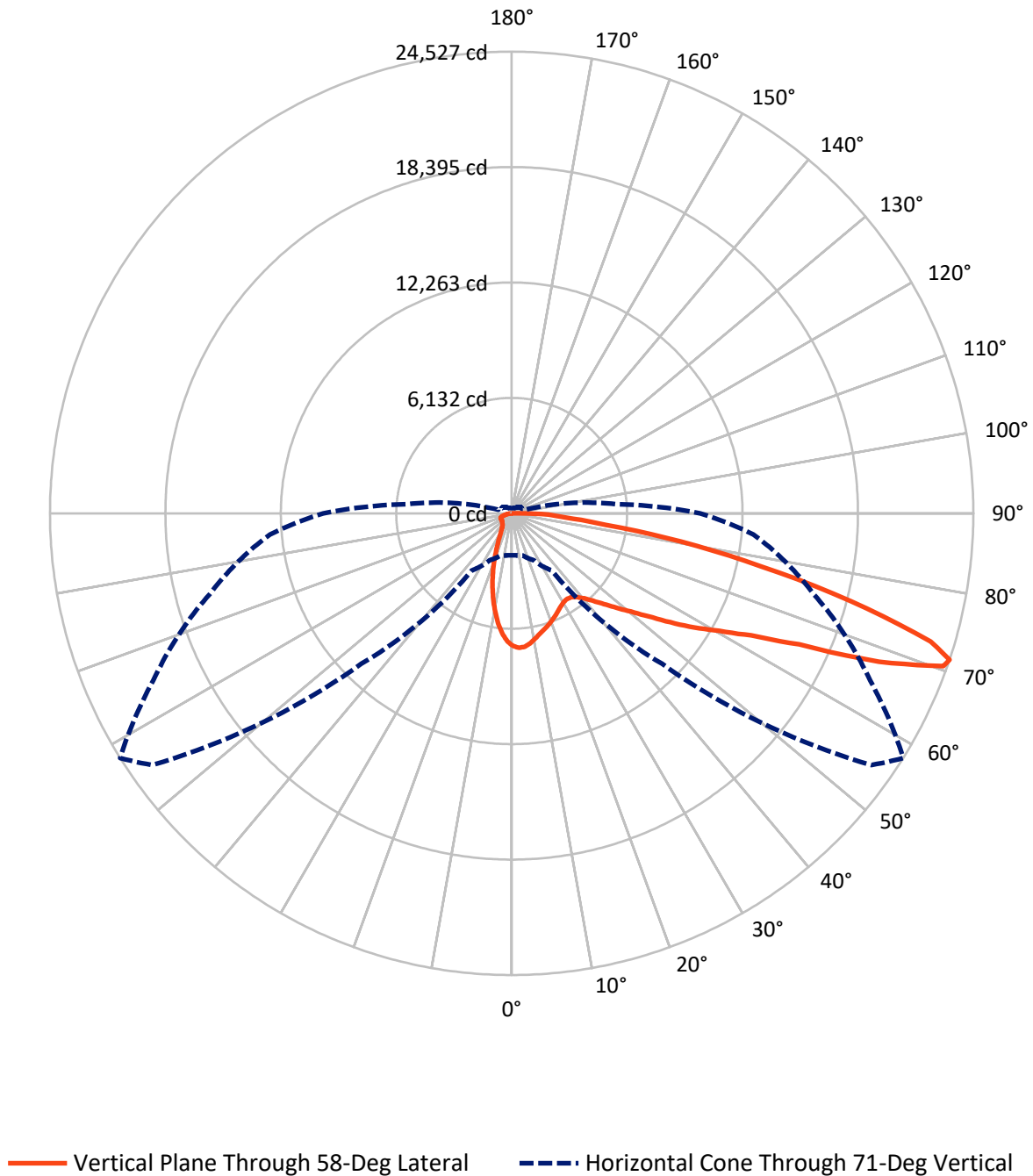
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 11.3 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    | 3795.2   | 0.0    | 3795.2  |
|                    | % Fixture | 15.0     | 0.0    | 15.0    |
| <b>Street Side</b> | Lumens    | 21589.8  | 0.0    | 21589.8 |
|                    | % Fixture | 85.0     | 0.0    | 85.0    |
| <b>Total</b>       | Lumens    | 25385.0  | 0.0    | 25385.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 606.8   | 2.4       |
| 10°-20°   | 1349.2  | 5.3       |
| 20°-30°   | 1714.7  | 6.8       |
| 30°-40°   | 2184.2  | 8.6       |
| 40°-50°   | 3097.3  | 12.2      |
| 50°-60°   | 4793.2  | 18.9      |
| 60°-70°   | 6525.3  | 25.7      |
| 70°-80°   | 4353.2  | 17.1      |
| 80°-90°   | 761.1   | 3.0       |
| 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°    | 25385.0 | 100.0     |
| 0°-180°   | 25385.0 | 100.0     |

**Coefficient of Utilization**



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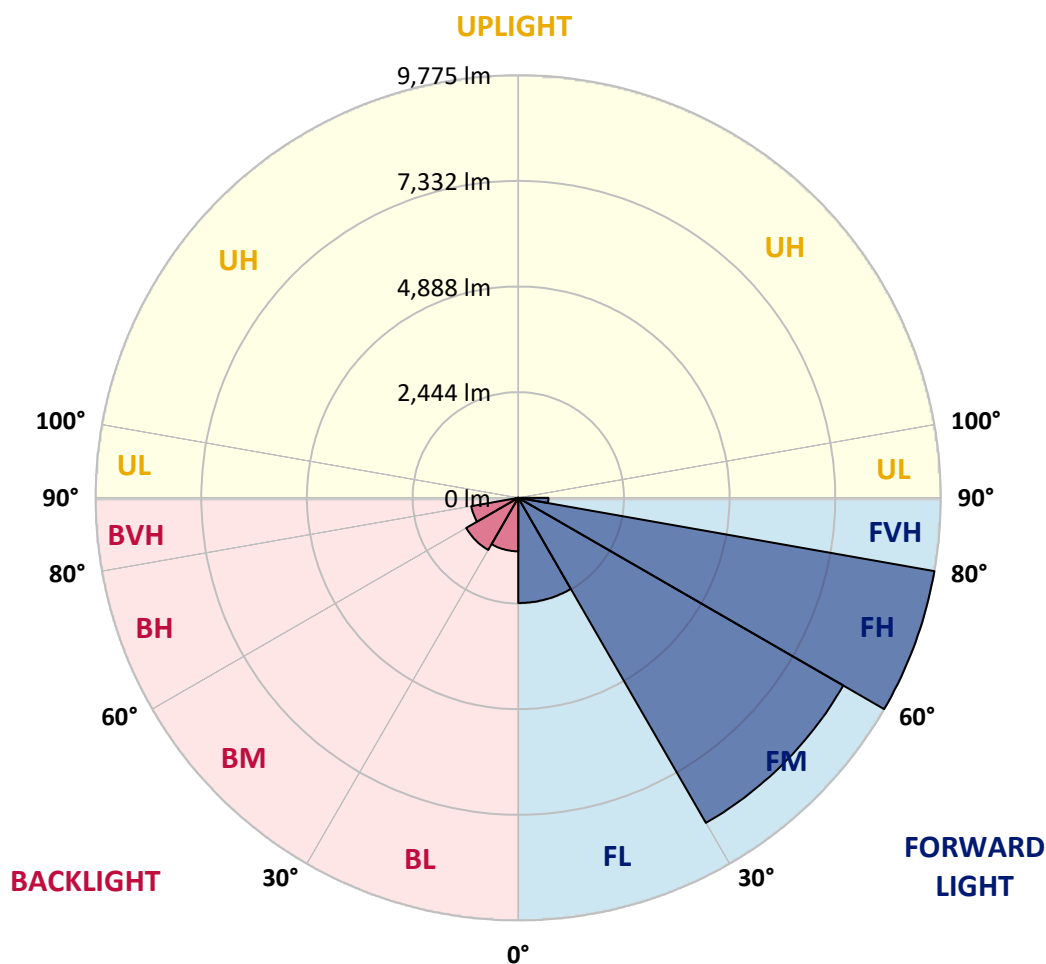
CATALOG NUMBER: GLEON-SA6A-730-U-SL3

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|--------|-----------|-------------------------|------|----------|
|      |             |        |           | B                       | U    | G        |
| FL   | (0°-30°)    | 2433.6 | 9.6       |                         |      |          |
| FM   | (30°-60°)   | 8682.9 | 34.2      |                         |      |          |
| FH   | (60°-80°)   | 9775.5 | 38.5      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 697.8  | 2.7       |                         |      | G4/750   |
| BL   | (0°-30°)    | 1237.1 | 4.9       | B3/2500                 |      |          |
| BM   | (30°-60°)   | 1391.8 | 5.5       | B2/2500                 |      |          |
| BH   | (60°-80°)   | 1103.0 | 4.3       | B3/2500                 |      | G3/2500  |
| BVH  | (80°-90°)   | 63.2   | 0.2       |                         |      | G1/100   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |          |

**BUG Rating: B3-U0-G4**

Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°     | 45°     | 55°     | 58°     | 65°     | 75°     | 85°     |
|-------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 7033.3 | 7033.3 | 7033.3 | 7033.3 | 7033.3  | 7033.3  | 7033.3  | 7033.3  | 7033.3  | 7033.3  | 7033.3  |
| 2.5°  | 7219.9 | 7210.2 | 7213.7 | 7206.7 | 7189.9  | 7173.1  | 7148.3  | 7152.7  | 7118.2  | 7066.9  | 7003.3  |
| 5°    | 7083.7 | 7080.2 | 7106.7 | 7121.8 | 7134.1  | 7124.4  | 7117.3  | 7126.2  | 7075.8  | 7005.0  | 6894.5  |
| 7.5°  | 6798.1 | 6759.2 | 6792.8 | 6843.2 | 6891.0  | 6927.2  | 6975.0  | 6981.2  | 6949.3  | 6875.1  | 6730.0  |
| 10°   | 6392.3 | 6355.1 | 6404.6 | 6483.3 | 6578.8  | 6665.5  | 6761.9  | 6779.6  | 6785.8  | 6718.5  | 6542.6  |
| 12.5° | 5971.4 | 5943.1 | 5992.6 | 6103.1 | 6261.4  | 6394.9  | 6548.8  | 6575.3  | 6630.1  | 6585.0  | 6369.3  |
| 15°   | 5594.7 | 5584.1 | 5644.2 | 5752.9 | 5935.1  | 6139.4  | 6361.3  | 6409.9  | 6502.8  | 6487.8  | 6234.0  |
| 17.5° | 5269.3 | 5266.6 | 5312.6 | 5426.7 | 5628.3  | 5886.5  | 6174.7  | 6257.0  | 6394.9  | 6412.6  | 6122.6  |
| 20°   | 5027.0 | 5021.7 | 5053.5 | 5137.5 | 5345.3  | 5638.0  | 5973.1  | 6086.3  | 6285.3  | 6347.2  | 6007.6  |
| 22.5° | 4897.0 | 4896.1 | 4897.0 | 4936.8 | 5106.6  | 5378.9  | 5776.8  | 5914.8  | 6178.3  | 6295.0  | 5880.3  |
| 25°   | 4874.9 | 4872.2 | 4852.8 | 4848.4 | 4944.7  | 5162.3  | 5582.3  | 5734.4  | 6076.6  | 6258.7  | 5759.1  |
| 27.5° | 4932.4 | 4935.9 | 4910.3 | 4868.7 | 4888.1  | 5019.9  | 5413.4  | 5576.1  | 5995.2  | 6251.7  | 5675.1  |
| 30°   | 5051.7 | 5050.0 | 5027.9 | 4984.5 | 4946.5  | 4966.8  | 5293.1  | 5455.8  | 5940.4  | 6282.6  | 5617.7  |
| 32.5° | 5183.5 | 5193.2 | 5188.8 | 5164.9 | 5108.3  | 5027.0  | 5256.9  | 5416.0  | 5924.5  | 6356.9  | 5592.9  |
| 35°   | 5341.8 | 5352.4 | 5384.2 | 5402.8 | 5336.5  | 5205.6  | 5334.7  | 5472.6  | 5970.5  | 6496.6  | 5632.7  |
| 37.5° | 5492.1 | 5519.5 | 5608.8 | 5687.5 | 5630.9  | 5485.0  | 5541.6  | 5639.8  | 6112.8  | 6716.8  | 5739.7  |
| 40°   | 5665.4 | 5689.3 | 5835.2 | 6002.3 | 5993.5  | 5842.3  | 5875.0  | 5940.4  | 6364.0  | 7032.5  | 5933.3  |
| 42.5° | 5836.1 | 5883.8 | 6095.2 | 6332.1 | 6400.2  | 6266.7  | 6318.9  | 6353.4  | 6717.7  | 7450.7  | 6271.1  |
| 45°   | 6063.3 | 6114.6 | 6408.2 | 6693.8 | 6853.0  | 6777.8  | 6860.9  | 6874.2  | 7162.4  | 8020.2  | 6761.9  |
| 47.5° | 6407.3 | 6465.7 | 6807.9 | 7107.6 | 7350.8  | 7358.7  | 7495.8  | 7490.5  | 7717.8  | 8671.9  | 7380.0  |
| 50°   | 6943.1 | 7027.2 | 7307.5 | 7587.8 | 7883.1  | 8047.6  | 8230.6  | 8205.0  | 8383.6  | 9366.0  | 8091.8  |
| 52.5° | 7645.2 | 7684.2 | 7892.0 | 8098.9 | 8465.8  | 8834.6  | 9097.2  | 9074.2  | 9138.7  | 10079.6 | 8900.0  |
| 55°   | 8373.0 | 8402.2 | 8487.9 | 8601.1 | 9094.5  | 9695.8  | 10251.1 | 10214.9 | 10051.3 | 10820.6 | 9698.5  |
| 57.5° | 9027.3 | 9086.6 | 9145.8 | 9192.7 | 9727.7  | 10596.0 | 11431.6 | 11434.3 | 11041.7 | 11620.0 | 10523.5 |
| 60°   | 9129.0 | 9181.2 | 9572.9 | 9942.5 | 10810.9 | 11796.8 | 12695.2 | 12668.7 | 12066.5 | 12487.4 | 11443.1 |
| 62.5° | 8069.7 | 8187.3 | 8841.6 | 9824.9 | 11854.3 | 13993.3 | 14307.2 | 14274.5 | 13292.1 | 13556.5 | 12513.9 |
| 65°   | 5783.0 | 5916.5 | 6706.2 | 8183.8 | 11348.5 | 16413.5 | 17216.4 | 16776.0 | 14963.3 | 14871.4 | 13767.8 |
| 67.5° | 3336.3 | 3368.1 | 3710.3 | 4897.0 | 8640.9  | 16539.9 | 21654.5 | 21038.1 | 17558.6 | 16363.1 | 14381.5 |
| 70°   | 2467.1 | 2466.2 | 2547.5 | 3013.5 | 4675.9  | 13499.0 | 23765.2 | 24317.8 | 20290.9 | 16853.8 | 13514.0 |
| 71°   | 2231.0 | 2233.6 | 2324.7 | 2743.0 | 3703.2  | 11299.0 | 23316.8 | 24526.5 | 21010.7 | 16611.6 | 12886.2 |
| 72.5° | 1908.2 | 1917.1 | 2043.5 | 2460.0 | 3115.2  | 7792.0  | 21385.6 | 23274.4 | 21352.0 | 16013.8 | 11903.8 |
| 75°   | 1447.5 | 1467.9 | 1642.9 | 2073.6 | 2847.3  | 3951.7  | 15695.5 | 18585.2 | 18968.1 | 14130.4 | 8845.2  |
| 77.5° | 1032.8 | 1055.8 | 1253.9 | 1743.7 | 2706.7  | 2978.2  | 10511.1 | 13556.5 | 13958.8 | 9055.6  | 3989.7  |
| 80°   | 652.6  | 680.0  | 829.4  | 1387.4 | 2543.1  | 2827.8  | 6605.4  | 9112.2  | 7611.6  | 2897.7  | 1015.1  |
| 82.5° | 382.9  | 404.1  | 514.6  | 906.4  | 2077.1  | 2723.5  | 3886.3  | 5050.8  | 2962.2  | 875.4   | 461.6   |
| 85°   | 221.9  | 231.7  | 321.0  | 577.4  | 1508.5  | 2570.5  | 2855.3  | 2823.4  | 1285.7  | 428.0   | 218.4   |
| 87.5° | 103.5  | 115.0  | 190.1  | 301.5  | 837.4   | 1863.1  | 2256.6  | 1949.8  | 799.4   | 200.7   | 102.6   |
| 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-SA6A-730-U-SL3

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 7033.3  | 7033.3 | 7033.3 | 7033.3 | 7033.3 | 7033.3 | 7033.3 | 7033.3 | 7033.3 | 7033.3 | 7033.3 |
| 2.5°  | 6972.3  | 6957.3 | 6894.5 | 6838.8 | 6780.4 | 6704.4 | 6620.4 | 6609.8 | 6558.5 | 6568.2 | 6550.5 |
| 5°    | 6834.4  | 6796.4 | 6645.2 | 6508.1 | 6346.3 | 6201.3 | 6043.9 | 5971.4 | 5867.0 | 5859.9 | 5833.4 |
| 7.5°  | 6637.2  | 6566.5 | 6332.1 | 6072.2 | 5812.2 | 5564.6 | 5319.7 | 5158.7 | 4994.3 | 4924.4 | 4918.2 |
| 10°   | 6415.2  | 6295.0 | 5950.1 | 5565.5 | 5190.6 | 4828.9 | 4478.7 | 4219.7 | 3986.2 | 3875.7 | 3871.3 |
| 12.5° | 6204.8  | 6027.1 | 5554.0 | 5030.5 | 4517.6 | 4049.0 | 3568.8 | 3228.4 | 2935.7 | 2837.6 | 2796.0 |
| 15°   | 6026.2  | 5775.9 | 5168.5 | 4499.1 | 3876.6 | 3225.8 | 2679.3 | 2321.2 | 2050.6 | 1956.9 | 1939.2 |
| 17.5° | 5852.9  | 5531.0 | 4773.2 | 3962.3 | 3209.8 | 2494.5 | 1947.1 | 1681.0 | 1536.8 | 1498.8 | 1497.9 |
| 20°   | 5680.4  | 5279.0 | 4360.2 | 3413.2 | 2565.2 | 1865.8 | 1497.0 | 1377.7 | 1329.0 | 1324.6 | 1317.5 |
| 22.5° | 5485.0  | 5011.9 | 3926.1 | 2862.3 | 2001.9 | 1467.0 | 1272.4 | 1224.7 | 1218.5 | 1234.4 | 1234.4 |
| 25°   | 5302.0  | 4746.7 | 3485.7 | 2322.9 | 1557.2 | 1223.8 | 1136.3 | 1126.5 | 1143.3 | 1171.6 | 1174.3 |
| 27.5° | 5131.3  | 4491.1 | 3056.0 | 1843.7 | 1247.7 | 1077.9 | 1041.6 | 1053.1 | 1083.2 | 1115.9 | 1116.8 |
| 30°   | 4990.7  | 4249.7 | 2638.6 | 1452.8 | 1054.0 | 969.1  | 963.0  | 985.9  | 1018.7 | 1044.3 | 1050.5 |
| 32.5° | 4882.0  | 4043.7 | 2235.4 | 1168.1 | 927.6  | 887.8  | 893.1  | 912.5  | 932.9  | 947.0  | 956.8  |
| 35°   | 4831.6  | 3866.8 | 1863.1 | 985.1  | 847.1  | 825.0  | 832.1  | 842.7  | 851.5  | 862.1  | 870.1  |
| 37.5° | 4840.4  | 3729.8 | 1530.6 | 871.0  | 793.2  | 781.7  | 781.7  | 781.7  | 781.7  | 787.0  | 787.9  |
| 40°   | 4922.6  | 3651.1 | 1260.1 | 798.5  | 756.9  | 744.5  | 734.8  | 726.0  | 718.9  | 722.4  | 720.7  |
| 42.5° | 5133.1  | 3644.0 | 1062.0 | 752.5  | 727.7  | 707.4  | 687.9  | 675.6  | 666.7  | 670.3  | 672.0  |
| 45°   | 5490.3  | 3732.4 | 928.5  | 719.8  | 700.3  | 669.4  | 644.6  | 631.4  | 625.2  | 636.7  | 638.4  |
| 47.5° | 5952.8  | 3925.2 | 847.1  | 695.9  | 674.7  | 634.0  | 607.5  | 595.1  | 596.9  | 613.7  | 618.1  |
| 50°   | 6548.8  | 4238.2 | 808.2  | 680.9  | 657.0  | 603.9  | 576.5  | 565.9  | 571.2  | 595.1  | 600.4  |
| 52.5° | 7203.1  | 4689.2 | 812.6  | 676.5  | 645.5  | 581.8  | 552.7  | 540.3  | 549.1  | 571.2  | 575.6  |
| 55°   | 7958.3  | 5231.2 | 886.0  | 682.6  | 628.7  | 567.7  | 533.2  | 512.0  | 519.1  | 539.4  | 542.9  |
| 57.5° | 8797.4  | 5852.0 | 1033.7 | 680.9  | 607.5  | 554.4  | 512.9  | 481.0  | 486.3  | 498.7  | 502.3  |
| 60°   | 9671.1  | 6601.8 | 1262.7 | 686.2  | 597.8  | 538.5  | 485.5  | 445.7  | 443.9  | 454.5  | 456.3  |
| 62.5° | 10719.8 | 7469.3 | 1524.5 | 689.7  | 603.9  | 518.2  | 449.2  | 410.3  | 405.0  | 407.6  | 409.4  |
| 65°   | 11800.3 | 8097.1 | 1426.3 | 675.6  | 623.4  | 501.4  | 417.4  | 375.8  | 366.1  | 364.3  | 365.2  |
| 67.5° | 11833.9 | 7424.2 | 1000.1 | 647.3  | 631.4  | 492.5  | 393.5  | 346.6  | 330.7  | 324.5  | 323.6  |
| 70°   | 10612.8 | 6031.5 | 779.0  | 617.2  | 599.5  | 478.4  | 371.4  | 322.8  | 298.9  | 289.2  | 288.3  |
| 71°   | 10016.8 | 5552.2 | 738.4  | 602.2  | 575.6  | 464.2  | 361.7  | 312.1  | 287.4  | 276.8  | 275.0  |
| 72.5° | 9082.2  | 4977.5 | 688.8  | 578.3  | 529.7  | 428.0  | 343.1  | 297.1  | 271.5  | 259.1  | 256.4  |
| 75°   | 6517.8  | 3254.9 | 591.6  | 515.5  | 438.6  | 341.3  | 300.6  | 267.0  | 244.9  | 229.9  | 228.1  |
| 77.5° | 2511.3  | 1295.4 | 447.4  | 428.9  | 336.0  | 267.0  | 247.6  | 230.8  | 214.9  | 199.8  | 199.0  |
| 80°   | 776.4   | 579.2  | 326.3  | 322.8  | 243.2  | 199.0  | 192.8  | 188.3  | 182.2  | 166.2  | 162.7  |
| 82.5° | 414.7   | 332.5  | 224.6  | 208.7  | 159.2  | 132.6  | 139.7  | 141.5  | 142.4  | 125.6  | 123.8  |
| 85°   | 198.1   | 176.0  | 126.4  | 118.5  | 92.8   | 74.3   | 85.8   | 92.8   | 93.7   | 76.9   | 71.6   |
| 87.5° | 94.6    | 92.0   | 59.2   | 45.1   | 34.5   | 24.8   | 30.1   | 37.1   | 40.7   | 29.2   | 25.6   |
| 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)