

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: P319342

Luminaire Tested: **GLEON-SA8D-730-U-SL2**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P319342  
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-SA8D-730-U-SL2  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(8) 70 CRI, 3000K, 1200mA 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: 55479 lumens  
Efficiency: N/A  
Efficacy: 108.6 lumens/watt  
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B4 - U0 - G5

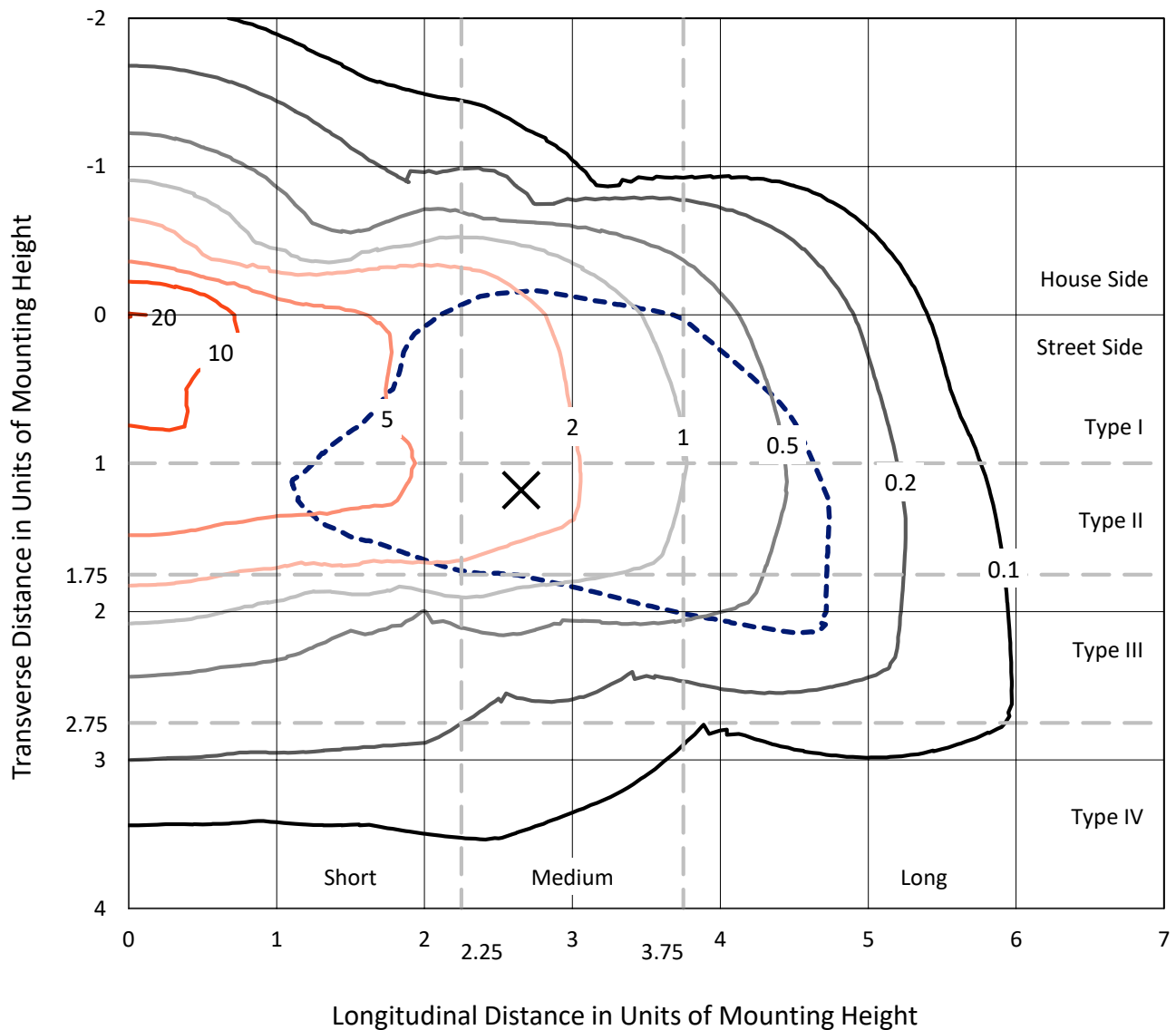
Input Watts (W): 511  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

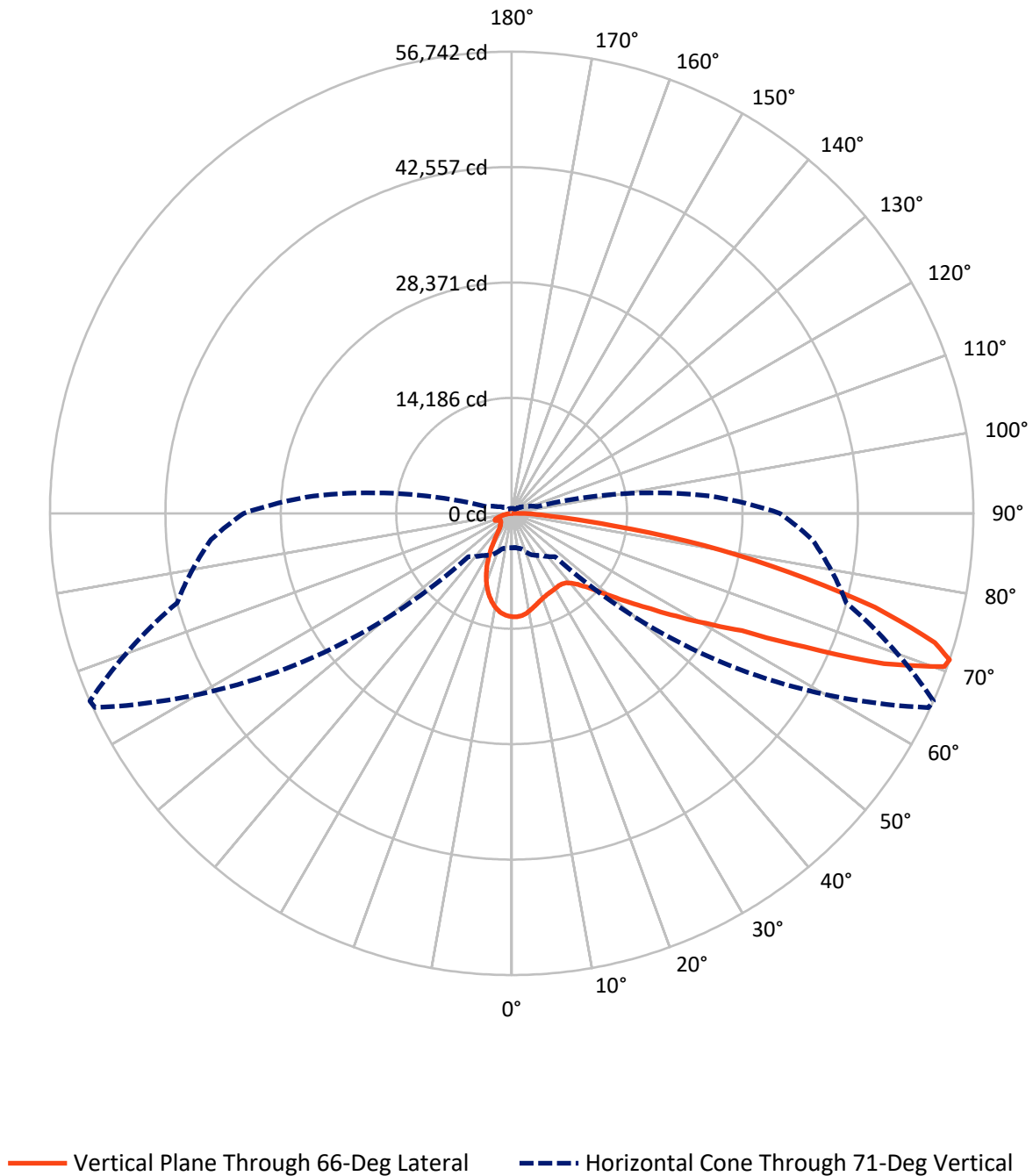
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 20.3 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    | 10281.8  | 0.0    | 10281.8 |
|                    | % Fixture | 18.5     | 0.0    | 18.5    |
| <b>Street Side</b> | Lumens    | 45197.2  | 0.0    | 45197.2 |
|                    | % Fixture | 81.5     | 0.0    | 81.5    |
| <b>Total</b>       | Lumens    | 55479.0  | 0.0    | 55479.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 1118.7  | 2.0       |
| 10°-20°   | 2683.1  | 4.8       |
| 20°-30°   | 3604.1  | 6.5       |
| 30°-40°   | 4741.2  | 8.5       |
| 40°-50°   | 6897.2  | 12.4      |
| 50°-60°   | 10774.1 | 19.4      |
| 60°-70°   | 13496.4 | 24.3      |
| 70°-80°   | 10294.7 | 18.6      |
| 80°-90°   | 1869.4  | 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°    | 55479.0 | 100.0     |
| 0°-180°   | 55479.0 | 100.0     |

**Coefficient of Utilization**



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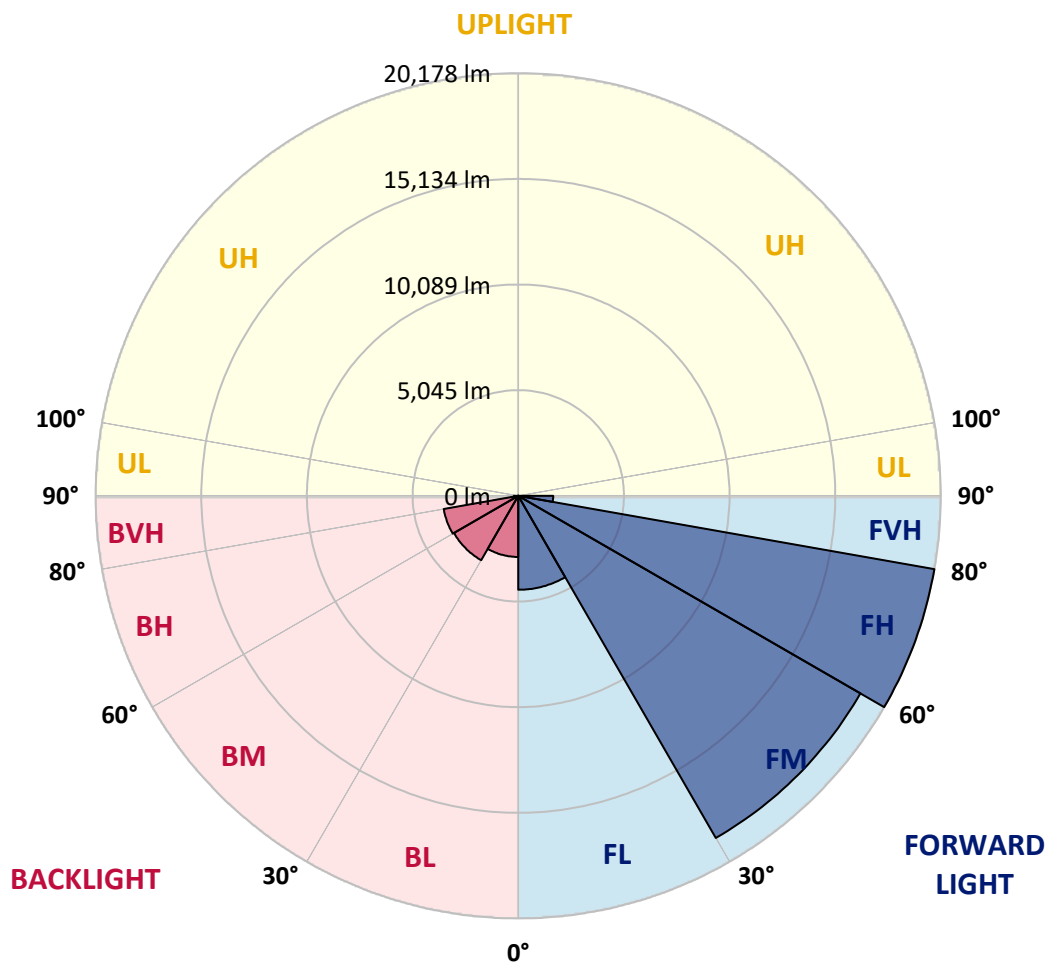
CATALOG NUMBER: GLEON-SA8D-730-U-SL2

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 4486.2  | 8.1       |                         |      |         |
| FM   | (30°-60°)   | 18865.6 | 34.0      |                         |      |         |
| FH   | (60°-80°)   | 20178.3 | 36.4      |                         |      | G5      |
| FVH  | (80°-90°)   | 1667.1  | 3.0       |                         |      | G5      |
| BL   | (0°-30°)    | 2919.8  | 5.3       | B4/5000                 |      |         |
| BM   | (30°-60°)   | 3546.9  | 6.4       | B3/5000                 |      |         |
| BH   | (60°-80°)   | 3612.8  | 6.5       | B4/5000                 |      | G4/5000 |
| BVH  | (80°-90°)   | 202.4   | 0.4       |                         |      | G2/225  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B4-U0-G5**

Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 66°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 |
| 2.5°  | 12473.6 | 12454.4 | 12511.9 | 12571.3 | 12594.2 | 12632.5 | 12690.0 | 12722.6 | 12720.7 | 12726.4 | 12707.2 |
| 5°    | 11646.1 | 11621.2 | 11736.1 | 11830.0 | 12010.0 | 12213.1 | 12460.2 | 12636.4 | 12640.2 | 12739.8 | 12766.6 |
| 7.5°  | 10862.6 | 10845.4 | 10977.6 | 11128.9 | 11337.7 | 11648.0 | 12048.3 | 12427.6 | 12450.6 | 12720.7 | 12814.5 |
| 10°   | 10234.4 | 10230.5 | 10358.9 | 10523.6 | 10766.9 | 11113.6 | 11573.3 | 12128.8 | 12163.3 | 12628.7 | 12822.2 |
| 12.5° | 9744.0  | 9751.7  | 9862.8  | 10050.5 | 10307.2 | 10669.2 | 11167.2 | 11793.6 | 11849.1 | 12483.1 | 12778.1 |
| 15°   | 9382.0  | 9412.6  | 9502.7  | 9692.3  | 9945.1  | 10312.9 | 10824.3 | 11483.3 | 11567.5 | 12320.3 | 12753.2 |
| 17.5° | 9175.1  | 9209.6  | 9272.8  | 9429.9  | 9667.4  | 10021.8 | 10506.4 | 11228.5 | 11305.1 | 12195.8 | 12755.1 |
| 20°   | 9113.8  | 9142.6  | 9178.9  | 9274.7  | 9475.8  | 9797.6  | 10255.4 | 10998.6 | 11081.0 | 12096.2 | 12774.3 |
| 22.5° | 9234.5  | 9255.6  | 9259.4  | 9251.7  | 9374.3  | 9636.7  | 10073.5 | 10830.1 | 10918.2 | 12031.1 | 12787.7 |
| 25°   | 9493.1  | 9521.8  | 9500.7  | 9429.9  | 9389.6  | 9550.5  | 9979.6  | 10719.0 | 10807.1 | 11983.2 | 12760.9 |
| 27.5° | 9881.9  | 9885.8  | 9868.5  | 9776.6  | 9586.9  | 9560.1  | 9950.9  | 10653.9 | 10738.1 | 11927.7 | 12705.3 |
| 30°   | 10410.6 | 10435.5 | 10404.9 | 10280.3 | 9970.0  | 9713.4  | 9985.4  | 10590.7 | 10667.3 | 11856.8 | 12615.3 |
| 32.5° | 11029.3 | 11090.6 | 11088.7 | 10958.4 | 10514.0 | 10056.2 | 10127.1 | 10552.3 | 10611.7 | 11782.1 | 12506.1 |
| 35°   | 11671.0 | 11755.3 | 11912.3 | 11856.8 | 11307.0 | 10598.3 | 10399.1 | 10613.6 | 10653.9 | 11772.5 | 12429.5 |
| 37.5° | 12337.6 | 12421.8 | 12745.6 | 12895.0 | 12251.4 | 11374.1 | 10828.2 | 10830.1 | 10849.2 | 11889.3 | 12423.8 |
| 40°   | 13034.8 | 13124.8 | 13611.4 | 14000.2 | 13475.4 | 12356.7 | 11519.7 | 11282.1 | 11261.1 | 12176.7 | 12536.8 |
| 42.5° | 14011.7 | 14092.1 | 14676.4 | 15172.5 | 14833.4 | 13615.2 | 12475.5 | 11979.4 | 11935.3 | 12739.8 | 12898.8 |
| 45°   | 15247.2 | 15316.1 | 15936.7 | 16467.3 | 16293.0 | 15051.8 | 13676.5 | 12939.0 | 12931.4 | 13678.4 | 13632.4 |
| 47.5° | 16716.3 | 16770.0 | 17327.4 | 17840.7 | 17903.9 | 16704.8 | 15185.9 | 14419.7 | 14295.2 | 14965.6 | 14768.3 |
| 50°   | 18246.8 | 18306.2 | 18685.4 | 19237.1 | 19706.4 | 18917.2 | 17128.2 | 16233.6 | 16067.0 | 16664.6 | 16377.3 |
| 52.5° | 19260.1 | 19338.6 | 19668.1 | 20367.2 | 21733.0 | 21342.2 | 19424.8 | 18432.6 | 18179.8 | 18723.8 | 18503.5 |
| 55°   | 18808.0 | 18984.3 | 19488.0 | 20608.6 | 23353.4 | 25046.7 | 22257.8 | 20997.4 | 20712.0 | 21164.1 | 21033.8 |
| 57.5° | 16752.7 | 16994.1 | 17681.7 | 19411.4 | 23581.4 | 28310.7 | 26540.8 | 24018.1 | 23817.0 | 23686.7 | 23746.1 |
| 60°   | 12996.5 | 13228.3 | 14080.6 | 16335.2 | 21993.5 | 30693.5 | 32986.4 | 27741.8 | 27450.6 | 26219.0 | 26272.6 |
| 62.5° | 9198.1  | 9081.3  | 9665.5  | 11314.7 | 17871.4 | 30973.2 | 40320.7 | 32722.0 | 31764.3 | 28893.0 | 28657.4 |
| 65°   | 7014.5  | 6987.6  | 7250.1  | 7774.9  | 10824.3 | 27626.9 | 44689.9 | 41092.6 | 39596.7 | 32038.2 | 31482.7 |
| 67.5° | 5763.7  | 5715.8  | 5974.4  | 6738.6  | 6970.4  | 17823.5 | 44785.7 | 50804.1 | 49334.9 | 35953.4 | 34750.5 |
| 70°   | 4738.9  | 4685.2  | 4926.6  | 5913.1  | 6441.7  | 9039.1  | 37692.7 | 56491.1 | 56412.6 | 40910.7 | 37217.6 |
| 71°   | 4248.5  | 4210.2  | 4499.4  | 5595.1  | 6328.7  | 7533.6  | 32543.9 | 56506.5 | 56742.1 | 42588.6 | 37072.1 |
| 72.5° | 3459.3  | 3472.8  | 3779.2  | 4980.2  | 6244.4  | 6652.4  | 23918.5 | 53872.7 | 54370.7 | 44188.1 | 35748.5 |
| 75°   | 2298.6  | 2310.1  | 2712.3  | 3830.9  | 6054.8  | 6508.8  | 13145.9 | 45205.2 | 46120.8 | 43230.3 | 32620.5 |
| 77.5° | 1543.9  | 1540.0  | 1814.0  | 2628.0  | 5275.2  | 6508.8  | 7707.9  | 33810.0 | 34815.6 | 34398.1 | 25148.2 |
| 80°   | 1063.1  | 1055.4  | 1248.9  | 1814.0  | 3993.8  | 6587.3  | 5959.0  | 23694.4 | 23999.0 | 18576.3 | 10221.0 |
| 82.5° | 651.3   | 657.0   | 816.0   | 1281.5  | 2718.1  | 5928.4  | 5625.7  | 12919.9 | 12588.5 | 5210.1  | 2553.3  |
| 85°   | 373.5   | 371.6   | 521.0   | 867.7   | 1745.0  | 5003.2  | 5485.9  | 5560.6  | 5100.9  | 1568.8  | 923.3   |
| 87.5° | 134.1   | 143.7   | 279.7   | 480.8   | 999.9   | 3484.2  | 4654.6  | 2892.4  | 2607.0  | 708.7   | 417.6   |
| 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: P319342

CATALOG NUMBER: GLEON-SA8D-730-U-SL2

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°    | 115°    | 125°    | 135°    | 145°    | 155°    | 165°    | 175°    | 180°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 | 12709.2 |
| 2.5°  | 12693.8 | 12705.3 | 12691.9 | 12615.3 | 12550.2 | 12444.8 | 12385.4 | 12303.1 | 12278.2 | 12266.7 | 12297.3 |
| 5°    | 12741.7 | 12745.6 | 12632.5 | 12431.4 | 12205.4 | 11939.1 | 11747.6 | 11512.0 | 11400.9 | 11353.0 | 11383.7 |
| 7.5°  | 12785.8 | 12768.5 | 12521.4 | 12136.4 | 11718.9 | 11255.3 | 10843.5 | 10466.1 | 10245.9 | 10155.8 | 10163.5 |
| 10°   | 12791.5 | 12718.7 | 12322.2 | 11726.5 | 11079.1 | 10399.1 | 9767.0  | 9184.7  | 8816.9  | 8577.5  | 8650.3  |
| 12.5° | 12732.2 | 12609.6 | 12029.2 | 11195.9 | 10297.6 | 9370.5  | 8516.2  | 7642.7  | 7117.9  | 6874.6  | 6882.3  |
| 15°   | 12686.2 | 12464.0 | 11669.1 | 10571.5 | 9364.7  | 8136.9  | 6970.4  | 5943.7  | 5384.4  | 5135.4  | 5018.5  |
| 17.5° | 12647.9 | 12306.9 | 11251.5 | 9868.5  | 8263.4  | 6706.1  | 5303.9  | 4388.3  | 4081.9  | 4009.1  | 3978.4  |
| 20°   | 12594.2 | 12140.3 | 10786.0 | 9054.4  | 7008.7  | 5104.7  | 3873.1  | 3421.0  | 3423.0  | 3507.2  | 3518.7  |
| 22.5° | 12519.5 | 11950.6 | 10289.9 | 8140.8  | 5662.1  | 3717.9  | 3036.0  | 2905.8  | 3037.9  | 3198.8  | 3227.6  |
| 25°   | 12408.4 | 11726.5 | 9738.3  | 7131.3  | 4317.5  | 2857.9  | 2593.6  | 2587.8  | 2748.7  | 2917.3  | 2942.2  |
| 27.5° | 12251.4 | 11433.5 | 9125.3  | 6047.1  | 3181.6  | 2428.8  | 2323.5  | 2363.7  | 2482.5  | 2605.0  | 2614.6  |
| 30°   | 12040.7 | 11092.5 | 8449.2  | 4903.6  | 2493.9  | 2162.6  | 2151.1  | 2187.5  | 2260.3  | 2346.5  | 2354.1  |
| 32.5° | 11808.9 | 10745.8 | 7727.0  | 3796.5  | 2135.8  | 2018.9  | 2030.4  | 2047.6  | 2082.1  | 2116.6  | 2124.3  |
| 35°   | 11598.2 | 10391.4 | 6987.6  | 2884.7  | 1965.3  | 1925.1  | 1917.4  | 1913.6  | 1917.4  | 1905.9  | 1907.8  |
| 37.5° | 11462.2 | 10098.4 | 6217.6  | 2296.7  | 1867.6  | 1842.7  | 1819.7  | 1791.0  | 1758.4  | 1739.2  | 1743.1  |
| 40°   | 11412.4 | 9880.0  | 5438.0  | 1984.4  | 1787.1  | 1769.9  | 1725.8  | 1664.5  | 1626.2  | 1614.7  | 1614.7  |
| 42.5° | 11546.5 | 9767.0  | 4685.2  | 1827.4  | 1720.1  | 1691.4  | 1618.6  | 1547.7  | 1519.0  | 1517.1  | 1515.1  |
| 45°   | 11956.4 | 9813.0  | 3968.9  | 1741.2  | 1658.8  | 1603.3  | 1507.5  | 1448.1  | 1428.9  | 1432.8  | 1430.9  |
| 47.5° | 12691.9 | 10102.2 | 3355.9  | 1683.7  | 1597.5  | 1524.7  | 1417.5  | 1369.6  | 1346.6  | 1346.6  | 1348.5  |
| 50°   | 13942.7 | 10778.4 | 2867.5  | 1635.8  | 1545.8  | 1451.9  | 1352.3  | 1292.9  | 1262.3  | 1260.4  | 1260.4  |
| 52.5° | 15764.3 | 11988.9 | 2562.9  | 1595.6  | 1488.3  | 1386.8  | 1287.2  | 1212.5  | 1176.1  | 1168.4  | 1164.6  |
| 55°   | 18047.6 | 13724.4 | 2478.6  | 1568.8  | 1411.7  | 1315.9  | 1208.7  | 1134.0  | 1093.7  | 1076.5  | 1074.6  |
| 57.5° | 20600.9 | 15835.2 | 2645.3  | 1536.2  | 1333.2  | 1231.6  | 1122.5  | 1051.6  | 1009.5  | 988.4   | 986.5   |
| 60°   | 23184.9 | 18139.5 | 3325.3  | 1490.2  | 1268.0  | 1139.7  | 1034.4  | 969.2   | 927.1   | 904.1   | 900.3   |
| 62.5° | 25772.7 | 20568.4 | 4714.0  | 1486.4  | 1222.1  | 1051.6  | 944.3   | 888.8   | 848.6   | 823.7   | 817.9   |
| 65°   | 28691.9 | 23227.0 | 6292.3  | 1587.9  | 1206.7  | 971.1   | 852.4   | 808.3   | 773.9   | 750.9   | 749.0   |
| 67.5° | 32044.0 | 26228.6 | 6141.0  | 1796.7  | 1258.5  | 898.4   | 766.2   | 731.7   | 706.8   | 687.7   | 685.7   |
| 70°   | 33616.6 | 25759.3 | 3817.5  | 1944.2  | 1331.3  | 827.5   | 683.8   | 658.9   | 639.8   | 626.4   | 620.6   |
| 71°   | 32957.6 | 24458.7 | 3200.8  | 1927.0  | 1323.6  | 796.8   | 651.3   | 632.1   | 613.0   | 601.5   | 595.7   |
| 72.5° | 31160.9 | 22305.7 | 2670.2  | 1792.9  | 1237.4  | 741.3   | 609.1   | 590.0   | 572.7   | 559.3   | 555.5   |
| 75°   | 27962.1 | 19920.9 | 2137.7  | 1432.8  | 986.5   | 626.4   | 534.4   | 513.3   | 499.9   | 492.3   | 484.6   |
| 77.5° | 20554.9 | 14216.6 | 1653.1  | 1132.0  | 726.0   | 511.4   | 455.9   | 440.6   | 427.2   | 415.7   | 409.9   |
| 80°   | 7874.5  | 5507.0  | 1112.9  | 844.7   | 532.5   | 404.2   | 367.8   | 360.1   | 346.7   | 339.0   | 339.0   |
| 82.5° | 2120.4  | 1645.4  | 593.8   | 511.4   | 356.3   | 295.0   | 281.6   | 277.7   | 266.3   | 250.9   | 252.8   |
| 85°   | 858.1   | 726.0   | 333.3   | 281.6   | 218.4   | 174.3   | 189.6   | 191.5   | 178.1   | 159.0   | 160.9   |
| 87.5° | 377.3   | 308.4   | 185.8   | 124.5   | 95.8    | 67.0    | 86.2    | 86.2    | 78.5    | 65.1    | 59.4    |
| 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

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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 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)