

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



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: P317644

Luminaire Tested: **GLEON-SA0B-722-U-T2R**

Issue Date: 3/3/2020

### Test Information

Test Method: LM-79-08  
Report Number: P317644  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-8)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA0B-722-U-T2R  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(10) 70 CRI, 2200K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II  
ROADWAY OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

### Summary

Lumens per Lamp: N/A  
Luminaire Lumens: 43320 lumens  
Efficiency: N/A  
Efficacy: 103.4 lumens/watt  
Luminous Opening: Rectangular (W 2.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B3 - U0 - G4

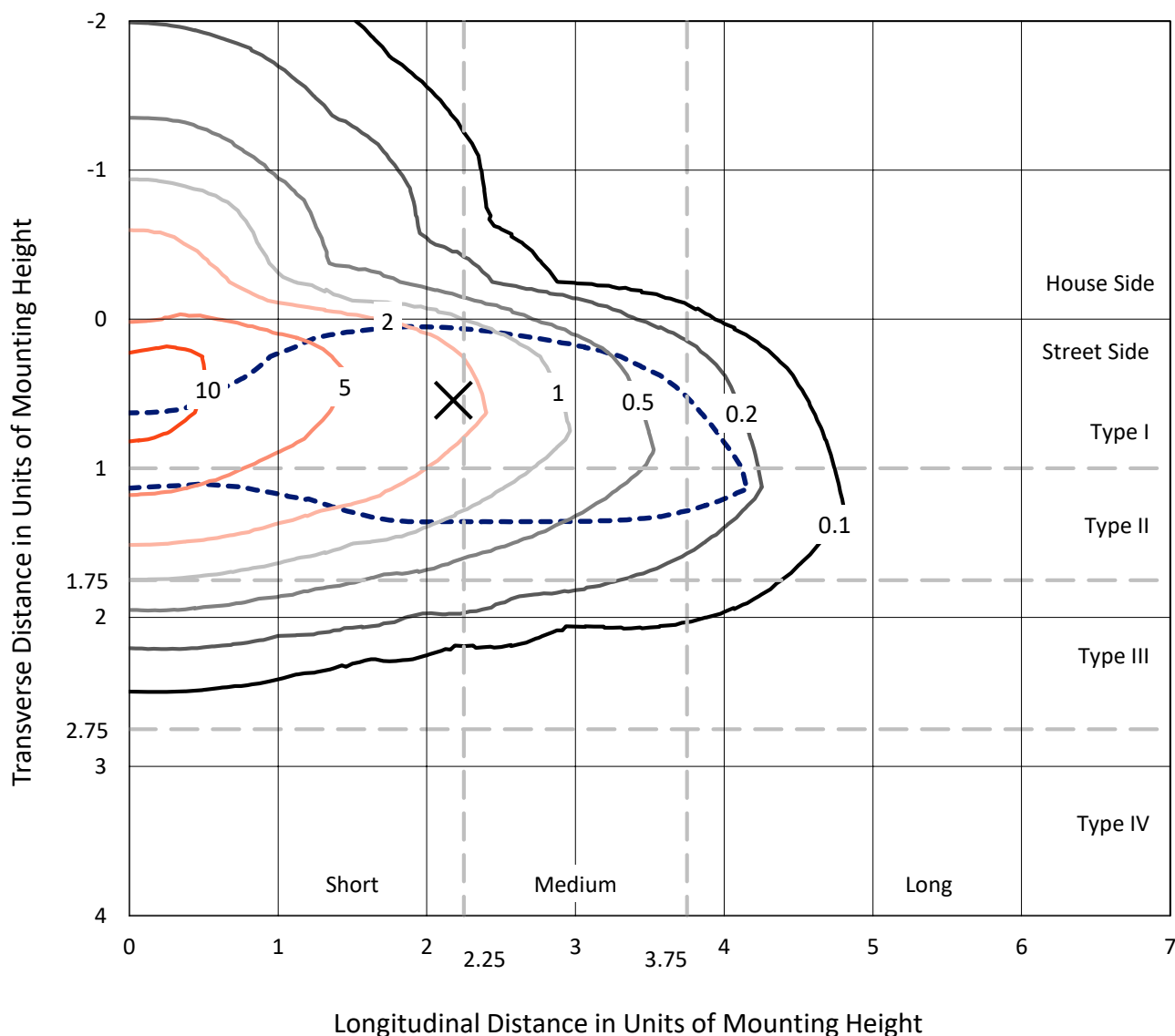
Input Watts (W): 419  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P317644  
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## Iso-Footcandle Lines of Horizontal Illumination

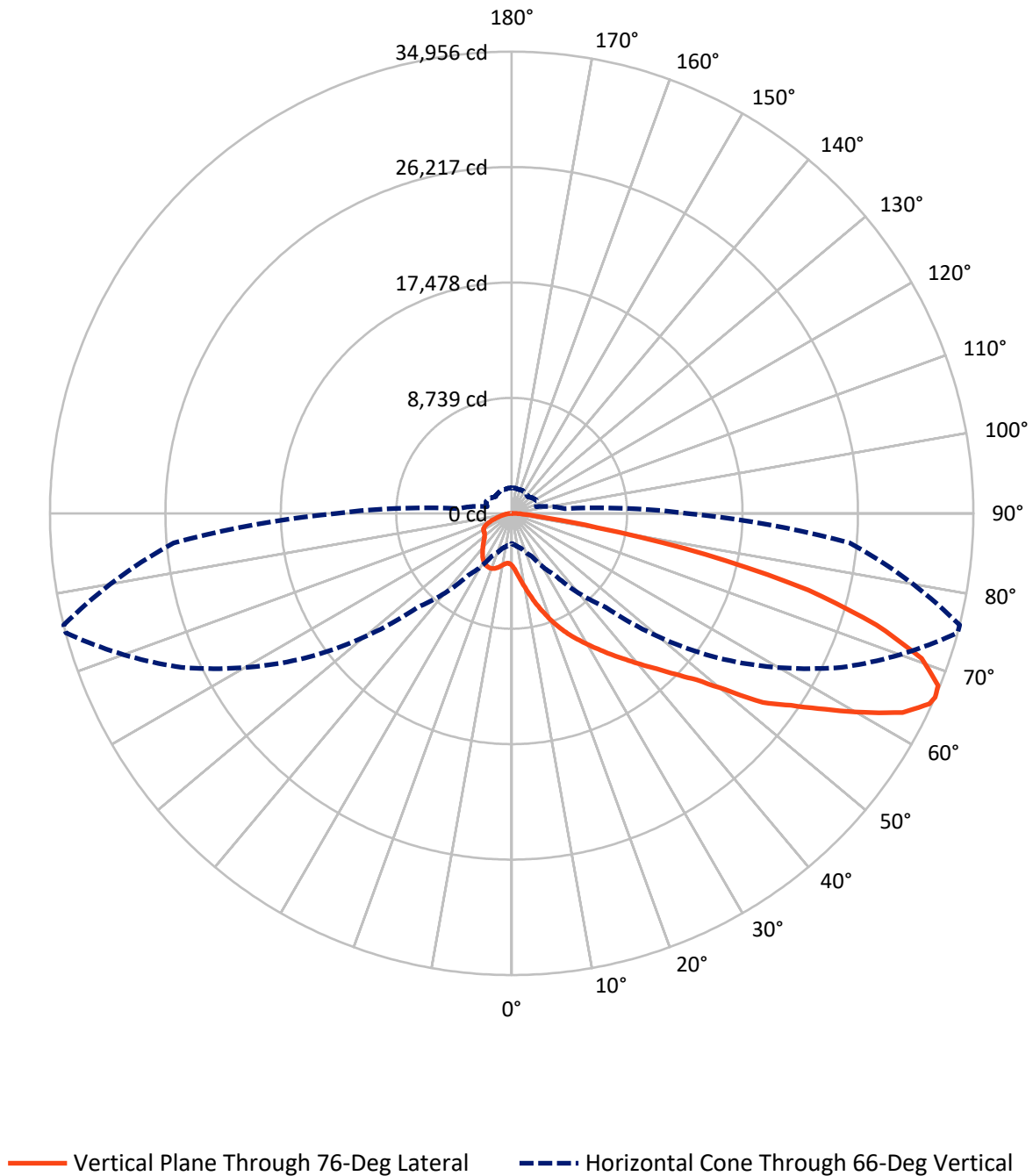
✕ Max cd  
 - - - 1/2 Max cd



Based on 30 foot mounting height. Maximum calculated value = 11.7 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GLEON-SA0B-722-U-T2R

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 7289.3   | 0.0    | 7289.3  |
|                    | % Fixture | 16.8     | 0.0    | 16.8    |
| <b>Street Side</b> | Lumens    | 36030.7  | 0.0    | 36030.7 |
|                    | % Fixture | 83.2     | 0.0    | 83.2    |
| <b>Total</b>       | Lumens    | 43320.0  | 0.0    | 43320.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 478.4   | 1.1       |
| 10°-20°   | 1889.2  | 4.4       |
| 20°-30°   | 3671.1  | 8.5       |
| 30°-40°   | 5992.1  | 13.8      |
| 40°-50°   | 8186.6  | 18.9      |
| 50°-60°   | 9535.7  | 22.0      |
| 60°-70°   | 8549.0  | 19.7      |
| 70°-80°   | 4320.3  | 10.0      |
| 80°-90°   | 697.7   | 1.6       |
| 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°    | 43320.0 | 100.0     |
| 0°-180°   | 43320.0 | 100.0     |

**Coefficient of Utilization**



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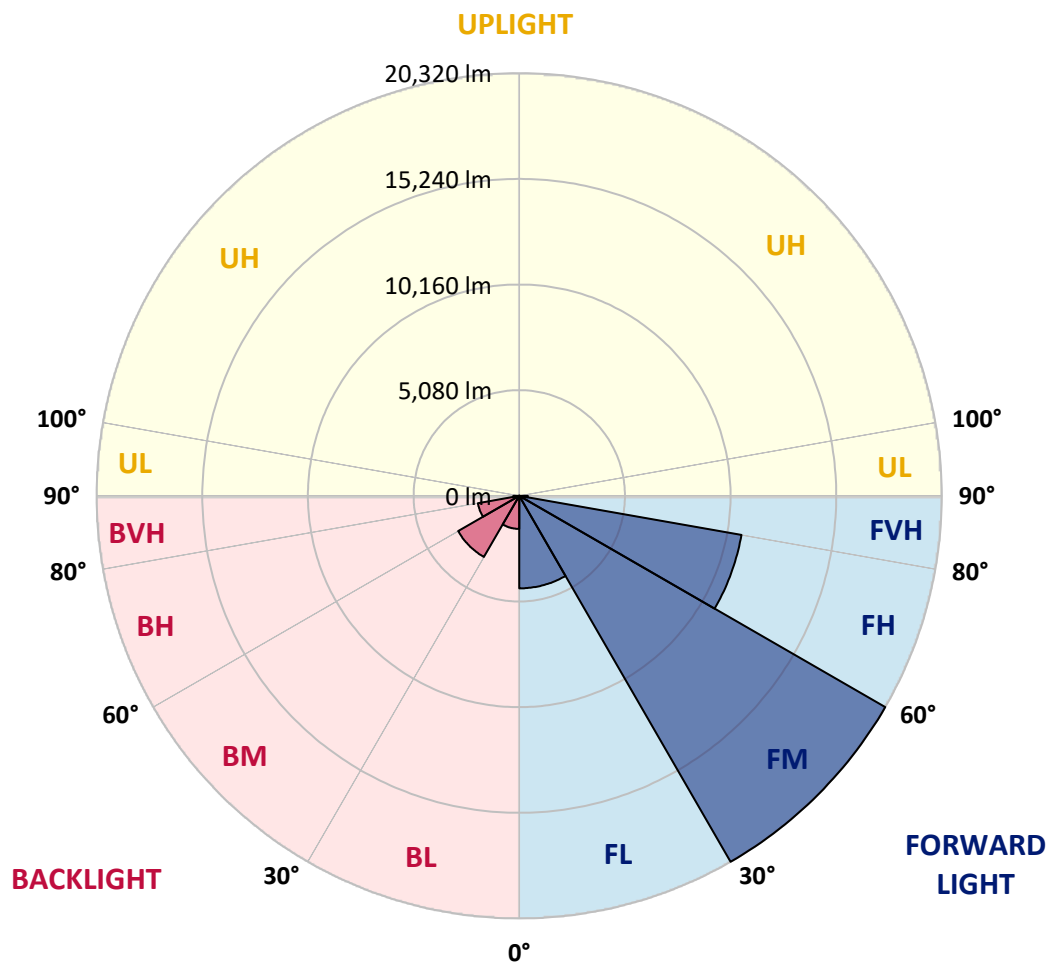
CATALOG NUMBER: GLEON-SA0B-722-U-T2R

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|---------|-----------|-------------------------|------|----------|
|      |             |         |           | B                       | U    | G        |
| FL   | (0°-30°)    | 4448.8  | 10.3      |                         |      |          |
| FM   | (30°-60°)   | 20320.1 | 46.9      |                         |      |          |
| FH   | (60°-80°)   | 10849.8 | 25.0      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 412.0   | 1.0       |                         |      | G3/500   |
| BL   | (0°-30°)    | 1589.8  | 3.7       | B3/2500                 |      |          |
| BM   | (30°-60°)   | 3394.3  | 7.8       | B3/5000                 |      |          |
| BH   | (60°-80°)   | 2019.5  | 4.7       | B3/2500                 |      | G3/2500  |
| BVH  | (80°-90°)   | 285.7   | 0.7       |                         |      | G3/500   |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |          |

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

Type II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 76°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 3956.1  | 3956.1  | 3956.1  | 3956.1  | 3956.1  | 3956.1  | 3956.1  | 3956.1  | 3956.1  | 3956.1  | 3956.1  |
| 2.5°  | 5251.8  | 5172.3  | 5165.0  | 5048.8  | 5022.3  | 4800.3  | 4637.0  | 4466.4  | 4272.3  | 4234.0  | 4081.1  |
| 5°    | 6745.9  | 6738.6  | 6637.1  | 6447.4  | 6298.9  | 5919.4  | 5544.4  | 5147.3  | 4712.0  | 4641.4  | 4297.3  |
| 7.5°  | 8090.1  | 8078.4  | 8000.4  | 7796.0  | 7581.3  | 7115.1  | 6579.8  | 5970.9  | 5265.0  | 5160.6  | 4590.0  |
| 10°   | 9110.8  | 9106.4  | 9079.9  | 8929.9  | 8747.5  | 8300.4  | 7709.2  | 6878.3  | 5907.7  | 5765.0  | 4956.1  |
| 12.5° | 9899.1  | 9907.9  | 9925.5  | 9872.6  | 9785.8  | 9404.9  | 8799.0  | 7840.1  | 6593.0  | 6451.8  | 5363.5  |
| 15°   | 10432.9 | 10459.4 | 10550.6 | 10625.6 | 10671.2 | 10437.3 | 9850.5  | 8824.0  | 7360.7  | 7191.6  | 5815.0  |
| 17.5° | 10702.0 | 10731.5 | 10888.8 | 11115.3 | 11324.1 | 11300.6 | 10834.4 | 9762.3  | 8097.5  | 7934.2  | 6300.3  |
| 20°   | 10934.4 | 10956.5 | 11132.9 | 11405.0 | 11774.2 | 11937.4 | 11675.6 | 10665.3 | 8904.9  | 8710.8  | 6815.1  |
| 22.5° | 11608.0 | 11635.9 | 11688.9 | 11843.3 | 12169.8 | 12469.8 | 12343.3 | 11519.7 | 9644.6  | 9463.7  | 7303.3  |
| 25°   | 12908.0 | 12941.9 | 12827.2 | 12696.3 | 12758.0 | 12966.9 | 12990.4 | 12299.2 | 10394.7 | 10190.2 | 7828.4  |
| 27.5° | 14474.3 | 14522.8 | 14327.2 | 13990.5 | 13696.3 | 13615.4 | 13587.5 | 12937.5 | 11110.9 | 10874.1 | 8347.5  |
| 30°   | 16008.2 | 16092.0 | 15837.6 | 15400.8 | 14861.1 | 14481.7 | 14200.8 | 13562.5 | 11816.8 | 11590.3 | 8837.2  |
| 32.5° | 17506.8 | 17473.0 | 17103.9 | 16677.4 | 16045.0 | 15569.9 | 14890.5 | 14233.1 | 12611.0 | 12350.7 | 9324.0  |
| 35°   | 18533.3 | 18545.1 | 18202.4 | 17696.5 | 17093.6 | 16728.8 | 15814.1 | 14956.7 | 13421.3 | 13181.6 | 9877.0  |
| 37.5° | 19406.9 | 19352.5 | 18964.2 | 18492.2 | 17973.0 | 17817.1 | 16895.0 | 15753.8 | 14299.3 | 14037.5 | 10465.3 |
| 40°   | 19698.1 | 19634.9 | 19380.4 | 19040.7 | 18624.5 | 18611.3 | 18087.7 | 16656.8 | 15292.0 | 15033.2 | 11128.5 |
| 42.5° | 19521.6 | 19440.7 | 19336.3 | 19243.7 | 19115.7 | 19174.6 | 19208.4 | 17715.6 | 16383.2 | 16093.5 | 11896.2 |
| 45°   | 18870.1 | 18748.1 | 18821.6 | 19023.1 | 19301.0 | 19633.4 | 20220.2 | 18887.8 | 17605.3 | 17362.7 | 12797.7 |
| 47.5° | 17868.6 | 17758.3 | 17987.7 | 18418.6 | 19174.6 | 20015.8 | 21177.6 | 20182.0 | 19064.3 | 18823.1 | 14081.6 |
| 50°   | 16459.7 | 16492.1 | 16820.0 | 17603.9 | 18746.6 | 20192.3 | 22357.1 | 21895.3 | 21185.0 | 20959.9 | 15833.2 |
| 52.5° | 14147.8 | 14153.7 | 15077.3 | 16364.1 | 17987.7 | 20101.1 | 23011.5 | 24085.1 | 24080.7 | 23808.6 | 17500.9 |
| 55°   | 12000.6 | 12131.5 | 12862.4 | 14572.8 | 16758.2 | 19736.3 | 23468.9 | 25149.9 | 25982.3 | 25663.1 | 19055.4 |
| 57.5° | 9903.5  | 9979.9  | 10672.6 | 12390.4 | 15003.7 | 18764.2 | 23938.0 | 26427.9 | 28173.6 | 27972.1 | 20987.9 |
| 60°   | 7518.0  | 7635.7  | 8351.9  | 9938.8  | 12759.5 | 17039.1 | 23982.2 | 27761.8 | 30792.8 | 30589.9 | 23145.4 |
| 62.5° | 4879.7  | 5082.6  | 5753.2  | 7240.1  | 10044.7 | 14558.1 | 22958.6 | 28633.9 | 33275.3 | 33203.2 | 25060.2 |
| 65°   | 2804.6  | 2957.5  | 3423.7  | 4570.8  | 6929.8  | 11443.3 | 20524.6 | 28298.6 | 34803.3 | 34762.1 | 25776.4 |
| 66°   | 2291.3  | 2386.9  | 2744.3  | 3572.2  | 5718.0  | 10049.1 | 19109.8 | 27591.2 | 34954.8 | 34956.3 | 25694.0 |
| 67.5° | 1832.5  | 1875.1  | 2035.4  | 2557.5  | 4219.3  | 7965.1  | 16581.8 | 26030.8 | 34766.6 | 34818.0 | 25163.1 |
| 70°   | 1516.3  | 1538.3  | 1588.3  | 1714.8  | 2303.1  | 4803.2  | 11769.7 | 21976.2 | 32876.8 | 32916.5 | 23090.9 |
| 72.5° | 1360.4  | 1373.6  | 1392.7  | 1410.4  | 1625.1  | 2684.0  | 7188.6  | 17580.3 | 28825.1 | 28876.5 | 19933.4 |
| 75°   | 1232.4  | 1239.8  | 1236.8  | 1238.3  | 1363.3  | 1710.4  | 3714.9  | 13125.7 | 23307.1 | 23204.2 | 15269.9 |
| 77.5° | 1082.4  | 1089.8  | 1075.1  | 1078.0  | 1205.9  | 1314.8  | 1848.6  | 9188.7  | 15728.8 | 15002.3 | 8603.4  |
| 80°   | 914.8   | 920.6   | 914.8   | 925.0   | 1050.1  | 992.7   | 1075.1  | 5169.4  | 6954.8  | 6578.3  | 3059.0  |
| 82.5° | 691.2   | 716.2   | 733.9   | 775.0   | 864.8   | 705.9   | 719.2   | 2013.3  | 2117.8  | 2016.3  | 938.3   |
| 85°   | 303.0   | 369.1   | 553.0   | 592.7   | 650.0   | 423.6   | 472.1   | 820.6   | 861.8   | 835.3   | 341.2   |
| 87.5° | 79.4    | 86.8    | 273.5   | 344.1   | 360.3   | 191.2   | 245.6   | 373.5   | 394.1   | 373.5   | 113.2   |
| 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-SA0B-722-U-T2R

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3956.1  | 3956.1 | 3956.1 | 3956.1 | 3956.1 | 3956.1 | 3956.1 | 3956.1 | 3956.1 | 3956.1 | 3956.1 |
| 2.5°  | 4000.2  | 3928.2 | 3798.7 | 3684.0 | 3597.3 | 3538.4 | 3479.6 | 3450.2 | 3432.5 | 3414.9 | 3417.8 |
| 5°    | 4128.2  | 3982.6 | 3760.5 | 3603.1 | 3514.9 | 3459.0 | 3429.6 | 3417.8 | 3410.5 | 3392.8 | 3392.8 |
| 7.5°  | 4320.8  | 4114.9 | 3809.0 | 3647.3 | 3578.1 | 3535.5 | 3517.8 | 3512.0 | 3503.1 | 3482.5 | 3485.5 |
| 10°   | 4563.5  | 4275.2 | 3910.5 | 3753.1 | 3689.9 | 3642.8 | 3617.8 | 3609.0 | 3592.8 | 3569.3 | 3572.2 |
| 12.5° | 4848.8  | 4473.8 | 4044.3 | 3879.6 | 3803.1 | 3739.9 | 3698.7 | 3673.7 | 3645.8 | 3614.9 | 3616.4 |
| 15°   | 5160.6  | 4690.0 | 4188.5 | 3992.9 | 3888.4 | 3800.2 | 3734.0 | 3691.4 | 3647.3 | 3609.0 | 3607.5 |
| 17.5° | 5476.8  | 4898.8 | 4298.8 | 4054.6 | 3913.4 | 3797.3 | 3707.6 | 3641.4 | 3587.0 | 3539.9 | 3535.5 |
| 20°   | 5818.0  | 5087.0 | 4360.5 | 4048.7 | 3866.4 | 3728.1 | 3609.0 | 3526.7 | 3466.4 | 3419.3 | 3411.9 |
| 22.5° | 6165.0  | 5263.5 | 4370.8 | 3988.4 | 3762.0 | 3592.8 | 3467.8 | 3376.7 | 3314.9 | 3266.4 | 3248.7 |
| 25°   | 6482.7  | 5400.3 | 4328.2 | 3872.3 | 3616.4 | 3434.0 | 3311.9 | 3219.3 | 3169.3 | 3111.9 | 3094.3 |
| 27.5° | 6772.4  | 5495.9 | 4242.9 | 3723.7 | 3453.1 | 3273.7 | 3159.0 | 3079.6 | 3025.2 | 2981.0 | 2966.3 |
| 30°   | 7032.7  | 5547.4 | 4103.2 | 3547.2 | 3285.5 | 3122.2 | 3025.2 | 2970.7 | 2923.7 | 2867.8 | 2857.5 |
| 32.5° | 7279.8  | 5547.4 | 3923.7 | 3354.6 | 3119.3 | 2988.4 | 2931.0 | 2897.2 | 2844.3 | 2789.9 | 2775.1 |
| 35°   | 7526.9  | 5513.5 | 3712.0 | 3153.1 | 2966.3 | 2892.8 | 2889.9 | 2850.2 | 2769.3 | 2695.7 | 2676.6 |
| 37.5° | 7787.2  | 5444.4 | 3473.7 | 2964.9 | 2841.3 | 2850.2 | 2875.2 | 2786.9 | 2672.2 | 2567.8 | 2539.8 |
| 40°   | 8081.3  | 5348.8 | 3226.6 | 2801.6 | 2736.9 | 2831.0 | 2835.4 | 2695.7 | 2472.2 | 2376.6 | 2351.6 |
| 42.5° | 8426.9  | 5253.2 | 2997.2 | 2657.5 | 2654.6 | 2773.7 | 2760.4 | 2498.7 | 2364.8 | 2316.3 | 2303.1 |
| 45°   | 8881.4  | 5198.8 | 2779.6 | 2520.7 | 2589.8 | 2681.0 | 2632.5 | 2389.8 | 2333.9 | 2306.0 | 2294.2 |
| 47.5° | 9597.6  | 5226.7 | 2579.5 | 2411.9 | 2525.1 | 2588.4 | 2394.2 | 2345.7 | 2306.0 | 2272.2 | 2260.4 |
| 50°   | 10494.7 | 5210.6 | 2417.8 | 2336.9 | 2451.6 | 2491.3 | 2286.9 | 2288.4 | 2267.8 | 2229.5 | 2211.9 |
| 52.5° | 11169.7 | 5084.1 | 2313.4 | 2294.2 | 2386.9 | 2319.2 | 2219.2 | 2232.5 | 2222.2 | 2166.3 | 2147.2 |
| 55°   | 11821.2 | 4975.3 | 2260.4 | 2278.1 | 2339.8 | 2104.5 | 2139.8 | 2172.2 | 2161.9 | 2107.5 | 2098.6 |
| 57.5° | 12631.6 | 4954.7 | 2228.1 | 2282.5 | 2300.1 | 1997.2 | 2063.3 | 2106.0 | 2098.6 | 2075.1 | 2070.7 |
| 60°   | 13624.3 | 4960.6 | 2198.6 | 2289.8 | 2256.0 | 1917.7 | 1991.3 | 2045.7 | 2050.1 | 2045.7 | 2042.8 |
| 62.5° | 14169.9 | 4800.3 | 2125.1 | 2269.2 | 2178.1 | 1848.6 | 1916.3 | 1995.7 | 1997.2 | 2006.0 | 2004.5 |
| 65°   | 13706.6 | 4320.8 | 1988.3 | 2197.2 | 2047.2 | 1791.3 | 1851.6 | 1938.3 | 1916.3 | 1956.0 | 1956.0 |
| 66°   | 13256.6 | 4044.3 | 1920.7 | 2150.1 | 1991.3 | 1769.2 | 1831.0 | 1908.9 | 1881.0 | 1935.4 | 1935.4 |
| 67.5° | 12337.4 | 3578.1 | 1798.6 | 2050.1 | 1911.9 | 1738.3 | 1807.4 | 1860.4 | 1822.2 | 1903.0 | 1897.2 |
| 70°   | 10657.9 | 2767.8 | 1553.0 | 1823.6 | 1781.0 | 1692.7 | 1775.1 | 1763.3 | 1707.4 | 1831.0 | 1807.4 |
| 72.5° | 8985.8  | 2103.1 | 1247.1 | 1526.6 | 1582.4 | 1635.4 | 1729.5 | 1639.8 | 1569.2 | 1656.0 | 1604.5 |
| 75°   | 6972.4  | 1581.0 | 985.3  | 1186.8 | 1336.8 | 1545.7 | 1675.1 | 1497.1 | 1395.7 | 1386.8 | 1358.9 |
| 77.5° | 3769.3  | 1085.4 | 780.9  | 905.9  | 1061.8 | 1433.9 | 1638.3 | 1344.2 | 1191.2 | 1155.9 | 1133.9 |
| 80°   | 1492.7  | 705.9  | 567.7  | 686.8  | 742.7  | 1272.1 | 1550.1 | 1166.2 | 982.4  | 947.1  | 913.3  |
| 82.5° | 616.2   | 417.7  | 366.2  | 460.3  | 483.8  | 1088.3 | 1391.3 | 955.9  | 758.9  | 1050.1 | 1114.8 |
| 85°   | 264.7   | 229.4  | 217.7  | 238.2  | 273.5  | 763.3  | 1107.4 | 729.5  | 819.2  | 730.9  | 580.9  |
| 87.5° | 79.4    | 97.1   | 92.7   | 91.2   | 100.0  | 182.4  | 589.7  | 405.9  | 601.5  | 228.0  | 170.6  |
| 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: SP1-1908-441-10-R4

Test Date: 10/25/2019

Luminaire Tested: SA1C-722-U-5WQ

Data in this report applies to families of products SA1C-722-U-5WQ.

### Test Information

Test Method: LM-79-2008 Report  
 Number: SP1-1908-441-10-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-722-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |         |           |      |      |       |
|---------------------------|---------|-----------|------|------|-------|
| CCT (K):                  | 2237    | CRI (Ra): | 72.0 |      |       |
| CIE u':                   | 0.2876  | R1:       | 68.9 | R9:  | -17.4 |
| CIE v':                   | 0.5346  | R2:       | 83.0 | R10: | 61.3  |
| Duv:                      | -0.0006 | R3:       | 95.2 | R11: | 59.8  |
| CIE x:                    | 0.5005  | R4:       | 66.2 | R12: | 50.5  |
| CIE y:                    | 0.4134  | R5:       | 65.9 | R13: | 71.1  |
| CIE z:                    | 0.0860  | R6:       | 76.3 | R14: | 96.9  |
| Peak Wavelength (nm):     | 603     | R7:       | 76.7 |      |       |
| Dominant Wavelength (nm): | 587     | R8:       | 43.8 |      |       |
| Purity:                   | 74.5    |           |      |      |       |
| Rf:                       | 69.8    |           |      |      |       |
| Rg:                       | 99.2    |           |      |      |       |



### Test Conditions

Stabilization Time: 71M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.7/41%  
 Sphere Temperature (°C): 25.6

REPORT NUMBER: SP1-1908-441-10-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 2200K 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       | 1768             | NR               | 490       | 5206             | NR               | 620       | 130919           | NR               | 750       | 8553             | NR               | 880       | 2713             | NR               |
| 365       | 1569             | NR               | 495       | 7286             | NR               | 625       | 125335           | NR               | 755       | 7696             | NR               | 885       | 2316             | NR               |
| 370       | 1594             | NR               | 500       | 10654            | NR               | 630       | 118388           | NR               | 760       | 6978             | NR               | 890       | 2539             | NR               |
| 375       | 1744             | NR               | 505       | 15189            | NR               | 635       | 111855           | NR               | 765       | 6377             | NR               | 895       | 1933             | NR               |
| 380       | 1659             | NR               | 510       | 20541            | NR               | 640       | 104062           | NR               | 770       | 5600             | NR               | 900       | 2216             | NR               |
| 385       | 1504             | NR               | 515       | 26492            | NR               | 645       | 96365            | NR               | 775       | 5000             | NR               | 905       | 2067             | NR               |
| 390       | 1541             | NR               | 520       | 32294            | NR               | 650       | 88651            | NR               | 780       | 4709             | NR               | 910       | 1959             | NR               |
| 395       | 1355             | NR               | 525       | 38123            | NR               | 655       | 81152            | NR               | 785       | 4305             | NR               | 915       | 1874             | NR               |
| 400       | 1243             | NR               | 530       | 43232            | NR               | 660       | 73523            | NR               | 790       | 4040             | NR               | 920       | 1484             | NR               |
| 405       | 1417             | NR               | 535       | 48012            | NR               | 665       | 66123            | NR               | 795       | 3642             | NR               | 925       | 1914             | NR               |
| 410       | 2147             | NR               | 540       | 52623            | NR               | 670       | 58677            | NR               | 800       | 3594             | NR               | 930       | 1948             | NR               |
| 415       | 3837             | NR               | 545       | 57516            | NR               | 675       | 52349            | NR               | 805       | 3190             | NR               | 935       | 2079             | NR               |
| 420       | 7159             | NR               | 550       | 62613            | NR               | 680       | 46159            | NR               | 810       | 3241             | NR               | 940       | 2263             | NR               |
| 425       | 12599            | NR               | 555       | 68554            | NR               | 685       | 40525            | NR               | 815       | 2732             | NR               | 945       | 1688             | NR               |
| 430       | 19019            | NR               | 560       | 75325            | NR               | 690       | 35615            | NR               | 820       | 2612             | NR               | 950       | 1560             | NR               |
| 435       | 24875            | NR               | 565       | 82533            | NR               | 695       | 31158            | NR               | 825       | 2966             | NR               | 955       | 2826             | NR               |
| 440       | 29103            | NR               | 570       | 90909            | NR               | 700       | 27409            | NR               | 830       | 2574             | NR               | 960       | 1477             | NR               |
| 445       | 29901            | NR               | 575       | 99621            | NR               | 705       | 24204            | NR               | 835       | 2633             | NR               | 965       | 1568             | NR               |
| 450       | 24862            | NR               | 580       | 108484           | NR               | 710       | 21558            | NR               | 840       | 2526             | NR               | 970       | 2030             | NR               |
| 455       | 15942            | NR               | 585       | 116679           | NR               | 715       | 19222            | NR               | 845       | 2631             | NR               | 975       | 1986             | NR               |
| 460       | 9916             | NR               | 590       | 123752           | NR               | 720       | 17310            | NR               | 850       | 2079             | NR               | 980       | 2540             | NR               |
| 465       | 7051             | NR               | 595       | 129324           | NR               | 725       | 15280            | NR               | 855       | 2309             | NR               | 985       | 1139             | NR               |
| 470       | 5227             | NR               | 600       | 134082           | NR               | 730       | 13282            | NR               | 860       | 2528             | NR               | 990       | 2018             | NR               |
| 475       | 4257             | NR               | 605       | 135698           | NR               | 735       | 11753            | NR               | 865       | 2121             | NR               | 995       | 3445             | NR               |
| 480       | 4052             | NR               | 610       | 135144           | NR               | 740       | 10654            | NR               | 870       | 2751             | NR               | 1000      | 3704             | NR               |
| 485       | 4298             | NR               | 615       | 134180           | NR               | 745       | 9451             | NR               | 875       | 2317             | NR               |           |                  |                  |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 4696.9**

**S/P: 0.85**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1768             | NR               | 490       | 5206             | NR               | 620       | 130919           | NR               | 750       | 8553             | NR               | 880       | 2713             | NR               |
| 365       | 1569             | NR               | 495       | 7286             | NR               | 625       | 125335           | NR               | 755       | 7696             | NR               | 885       | 2316             | NR               |
| 370       | 1594             | NR               | 500       | 10654            | NR               | 630       | 118388           | NR               | 760       | 6978             | NR               | 890       | 2539             | NR               |
| 375       | 1744             | NR               | 505       | 15189            | NR               | 635       | 111855           | NR               | 765       | 6377             | NR               | 895       | 1933             | NR               |
| 380       | 1659             | NR               | 510       | 20541            | NR               | 640       | 104062           | NR               | 770       | 5600             | NR               | 900       | 2216             | NR               |
| 385       | 1504             | NR               | 515       | 26492            | NR               | 645       | 96365            | NR               | 775       | 5000             | NR               | 905       | 2067             | NR               |
| 390       | 1541             | NR               | 520       | 32294            | NR               | 650       | 88651            | NR               | 780       | 4709             | NR               | 910       | 1959             | NR               |
| 395       | 1355             | NR               | 525       | 38123            | NR               | 655       | 81152            | NR               | 785       | 4305             | NR               | 915       | 1874             | NR               |
| 400       | 1243             | NR               | 530       | 43232            | NR               | 660       | 73523            | NR               | 790       | 4040             | NR               | 920       | 1484             | NR               |
| 405       | 1417             | NR               | 535       | 48012            | NR               | 665       | 66123            | NR               | 795       | 3642             | NR               | 925       | 1914             | NR               |
| 410       | 2147             | NR               | 540       | 52623            | NR               | 670       | 58677            | NR               | 800       | 3594             | NR               | 930       | 1948             | NR               |
| 415       | 3837             | NR               | 545       | 57516            | NR               | 675       | 52349            | NR               | 805       | 3190             | NR               | 935       | 2079             | NR               |
| 420       | 7159             | NR               | 550       | 62613            | NR               | 680       | 46159            | NR               | 810       | 3241             | NR               | 940       | 2263             | NR               |
| 425       | 12599            | NR               | 555       | 68554            | NR               | 685       | 40525            | NR               | 815       | 2732             | NR               | 945       | 1688             | NR               |
| 430       | 19019            | NR               | 560       | 75325            | NR               | 690       | 35615            | NR               | 820       | 2612             | NR               | 950       | 1560             | NR               |
| 435       | 24875            | NR               | 565       | 82533            | NR               | 695       | 31158            | NR               | 825       | 2966             | NR               | 955       | 2826             | NR               |
| 440       | 29103            | NR               | 570       | 90909            | NR               | 700       | 27409            | NR               | 830       | 2574             | NR               | 960       | 1477             | NR               |
| 445       | 29901            | NR               | 575       | 99621            | NR               | 705       | 24204            | NR               | 835       | 2633             | NR               | 965       | 1568             | NR               |
| 450       | 24862            | NR               | 580       | 108484           | NR               | 710       | 21558            | NR               | 840       | 2526             | NR               | 970       | 2030             | NR               |
| 455       | 15942            | NR               | 585       | 116679           | NR               | 715       | 19222            | NR               | 845       | 2631             | NR               | 975       | 1986             | NR               |
| 460       | 9916             | NR               | 590       | 123752           | NR               | 720       | 17310            | NR               | 850       | 2079             | NR               | 980       | 2540             | NR               |
| 465       | 7051             | NR               | 595       | 129324           | NR               | 725       | 15280            | NR               | 855       | 2309             | NR               | 985       | 1139             | NR               |
| 470       | 5227             | NR               | 600       | 134082           | NR               | 730       | 13282            | NR               | 860       | 2528             | NR               | 990       | 2018             | NR               |
| 475       | 4257             | NR               | 605       | 135698           | NR               | 735       | 11753            | NR               | 865       | 2121             | NR               | 995       | 3445             | NR               |
| 480       | 4052             | NR               | 610       | 135144           | NR               | 740       | 10654            | NR               | 870       | 2751             | NR               | 1000      | 3704             | NR               |
| 485       | 4298             | NR               | 615       | 134180           | NR               | 745       | 9451             | NR               | 875       | 2317             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 1470.8 M/P: 0.27**

| 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       | 1768             | NR               | 490       | 5206             | NR               | 620       | 130919           | NR               | 750       | 8553             | NR               | 880       | 2713             | NR               |
| 365       | 1569             | NR               | 495       | 7286             | NR               | 625       | 125335           | NR               | 755       | 7696             | NR               | 885       | 2316             | NR               |
| 370       | 1594             | NR               | 500       | 10654            | NR               | 630       | 118388           | NR               | 760       | 6978             | NR               | 890       | 2539             | NR               |
| 375       | 1744             | NR               | 505       | 15189            | NR               | 635       | 111855           | NR               | 765       | 6377             | NR               | 895       | 1933             | NR               |
| 380       | 1659             | NR               | 510       | 20541            | NR               | 640       | 104062           | NR               | 770       | 5600             | NR               | 900       | 2216             | NR               |
| 385       | 1504             | NR               | 515       | 26492            | NR               | 645       | 96365            | NR               | 775       | 5000             | NR               | 905       | 2067             | NR               |
| 390       | 1541             | NR               | 520       | 32294            | NR               | 650       | 88651            | NR               | 780       | 4709             | NR               | 910       | 1959             | NR               |
| 395       | 1355             | NR               | 525       | 38123            | NR               | 655       | 81152            | NR               | 785       | 4305             | NR               | 915       | 1874             | NR               |
| 400       | 1243             | NR               | 530       | 43232            | NR               | 660       | 73523            | NR               | 790       | 4040             | NR               | 920       | 1484             | NR               |
| 405       | 1417             | NR               | 535       | 48012            | NR               | 665       | 66123            | NR               | 795       | 3642             | NR               | 925       | 1914             | NR               |
| 410       | 2147             | NR               | 540       | 52623            | NR               | 670       | 58677            | NR               | 800       | 3594             | NR               | 930       | 1948             | NR               |
| 415       | 3837             | NR               | 545       | 57516            | NR               | 675       | 52349            | NR               | 805       | 3190             | NR               | 935       | 2079             | NR               |
| 420       | 7159             | NR               | 550       | 62613            | NR               | 680       | 46159            | NR               | 810       | 3241             | NR               | 940       | 2263             | NR               |
| 425       | 12599            | NR               | 555       | 68554            | NR               | 685       | 40525            | NR               | 815       | 2732             | NR               | 945       | 1688             | NR               |
| 430       | 19019            | NR               | 560       | 75325            | NR               | 690       | 35615            | NR               | 820       | 2612             | NR               | 950       | 1560             | NR               |
| 435       | 24875            | NR               | 565       | 82533            | NR               | 695       | 31158            | NR               | 825       | 2966             | NR               | 955       | 2826             | NR               |
| 440       | 29103            | NR               | 570       | 90909            | NR               | 700       | 27409            | NR               | 830       | 2574             | NR               | 960       | 1477             | NR               |
| 445       | 29901            | NR               | 575       | 99621            | NR               | 705       | 24204            | NR               | 835       | 2633             | NR               | 965       | 1568             | NR               |
| 450       | 24862            | NR               | 580       | 108484           | NR               | 710       | 21558            | NR               | 840       | 2526             | NR               | 970       | 2030             | NR               |
| 455       | 15942            | NR               | 585       | 116679           | NR               | 715       | 19222            | NR               | 845       | 2631             | NR               | 975       | 1986             | NR               |
| 460       | 9916             | NR               | 590       | 123752           | NR               | 720       | 17310            | NR               | 850       | 2079             | NR               | 980       | 2540             | NR               |
| 465       | 7051             | NR               | 595       | 129324           | NR               | 725       | 15280            | NR               | 855       | 2309             | NR               | 985       | 1139             | NR               |
| 470       | 5227             | NR               | 600       | 134082           | NR               | 730       | 13282            | NR               | 860       | 2528             | NR               | 990       | 2018             | NR               |
| 475       | 4257             | NR               | 605       | 135698           | NR               | 735       | 11753            | NR               | 865       | 2121             | NR               | 995       | 3445             | NR               |
| 480       | 4052             | NR               | 610       | 135144           | NR               | 740       | 10654            | NR               | 870       | 2751             | NR               | 1000      | 3704             | NR               |
| 485       | 4298             | NR               | 615       | 134180           | NR               | 745       | 9451             | NR               | 875       | 2317             | NR               |           |                  |                  |

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### Summary

$R_f = 69.8$   
 $R_g = 99.2$   
 CIE  $R_a = 72.0$   
 $R_g = -17.4$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 56 | CES51 = 74 | CES76 = 56 |
| CES02 = 65 | CES27 = 76 | CES52 = 76 | CES77 = 81 |
| CES03 = 32 | CES28 = 83 | CES53 = 65 | CES78 = 63 |
| CES04 = 72 | CES29 = 46 | CES54 = 78 | CES79 = 84 |
| CES05 = 52 | CES30 = 48 | CES55 = 75 | CES80 = 84 |
| CES06 = 52 | CES31 = 51 | CES56 = 65 | CES81 = 63 |
| CES07 = 44 | CES32 = 51 | CES57 = 62 | CES82 = 92 |
| CES08 = 42 | CES33 = 53 | CES58 = 66 | CES83 = 83 |
| CES09 = 29 | CES34 = 70 | CES59 = 84 | CES84 = 92 |
| CES10 = 78 | CES35 = 85 | CES60 = 90 | CES85 = 81 |
| CES11 = 61 | CES36 = 78 | CES61 = 84 | CES86 = 56 |
| CES12 = 68 | CES37 = 80 | CES62 = 70 | CES87 = 78 |
| CES13 = 45 | CES38 = 53 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 84 | CES65 = 67 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 90 |
| CES17 = 51 | CES42 = 79 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 64 | CES68 = 69 | CES93 = 79 |
| CES19 = 74 | CES44 = 98 | CES69 = 80 | CES94 = 52 |
| CES20 = 68 | CES45 = 73 | CES70 = 63 | CES95 = 76 |
| CES21 = 89 | CES46 = 67 | CES71 = 63 | CES96 = 78 |
| CES22 = 81 | CES47 = 60 | CES72 = 87 | CES97 = 77 |
| CES23 = 92 | CES48 = 48 | CES73 = 56 | CES98 = 71 |
| CES24 = 92 | CES49 = 64 | CES74 = 87 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 |            |



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Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)