

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269

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1121 Highway 74 South  
Peachtree City, GA 30269

Scaled data based on original data using  
LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: STREETWORKS

Report Number: P1456849

Luminaire Tested: GLAN-SB4C-935-U-T3LG

Issue Date: 05/20/2026

**Test Information**

Test Method: LM-79-2024  
Report Number: P1456849  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 5/22/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: GLAN-SB4C-935-U-T3LG  
Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 615mA 4xLight Square  
PACKAGE 90CRI 3500K FIXTURE w/ TYPE III LOW GLARE  
Light Source: (104) 3500K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

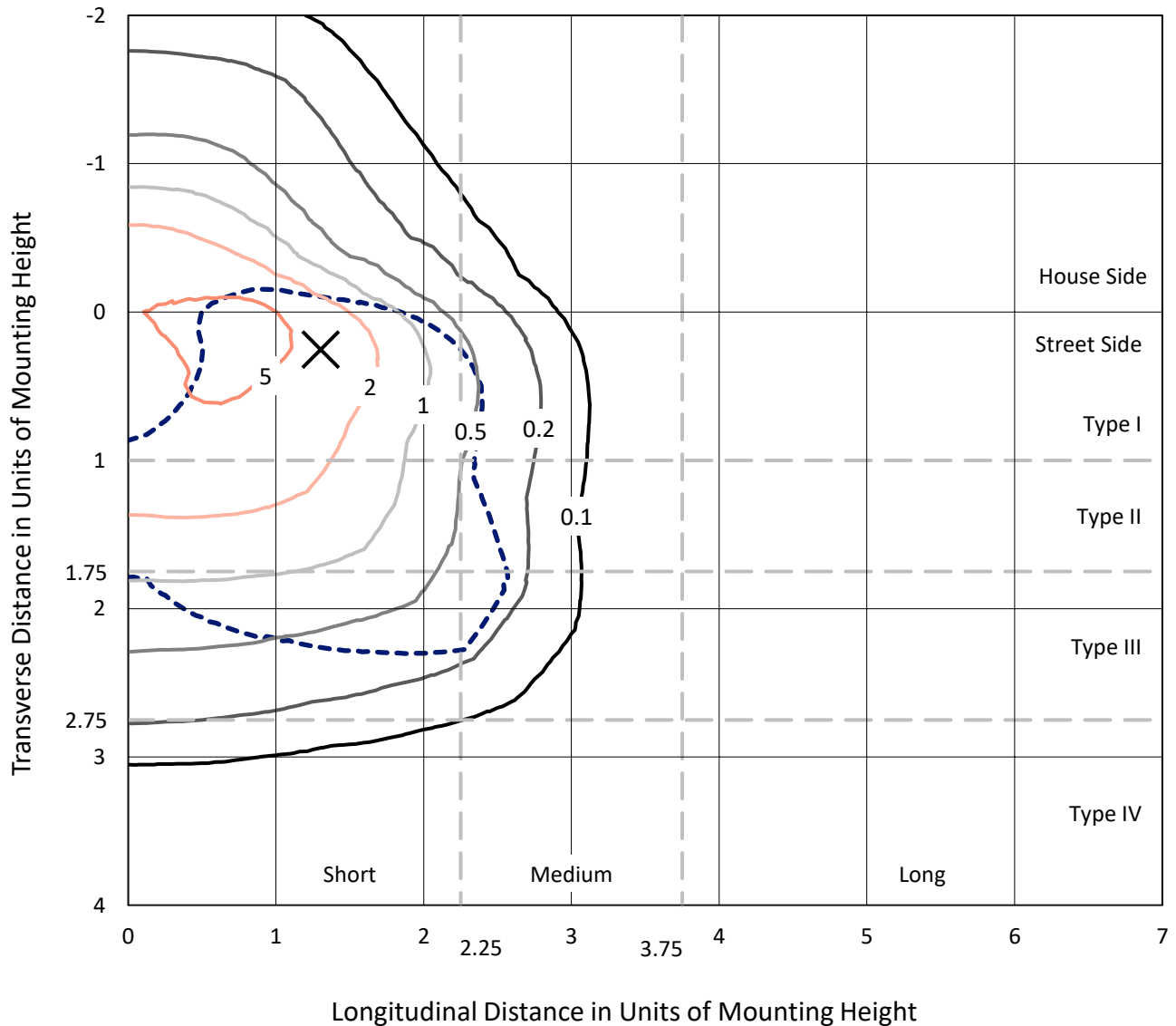
Lumens per Lamp: N/A  
Luminaire Lumens: 20380.5 lumens  
Efficiency: N/A  
Efficacy: 101.5 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B3 - U0 - G3  
  
Input Watts (W): 200.7  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

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CATALOG NUMBER: GLAN-SB4C-935-U-T3LG

### Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

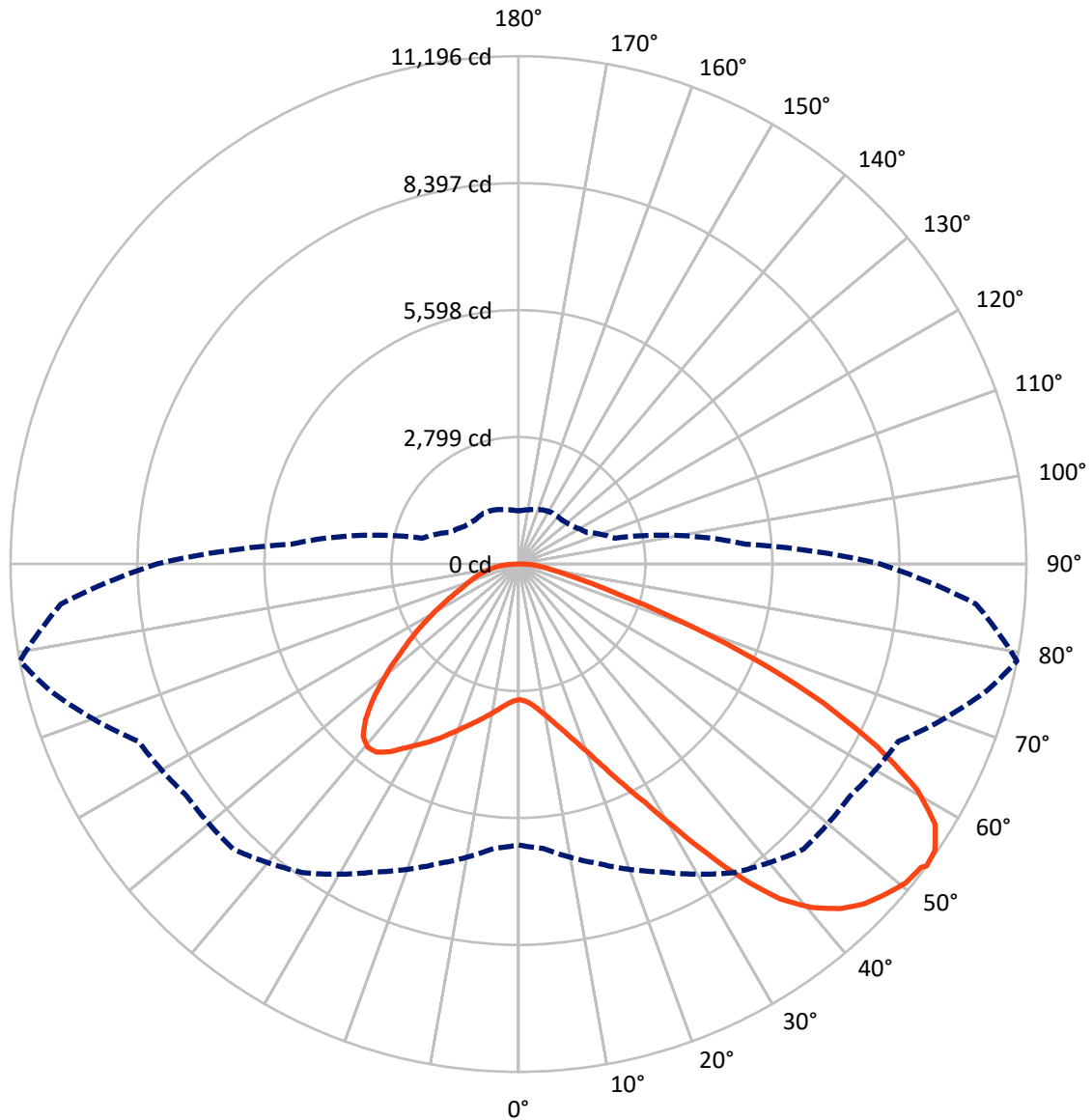


Based on 25 foot mounting height. Maximum calculated value = 7.5 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 79-Deg Lateral      - - - Horizontal Cone Through 53-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 5137.8   | 0.0    | 5137.8  |
|                    | % Fixture | 25.2     | 0.0    | 25.2    |
| <b>Street Side</b> | Lumens    | 15242.7  | 0.0    | 15242.7 |
|                    | % Fixture | 74.8     | 0.0    | 74.8    |
| <b>Total</b>       | Lumens    | 20380.5  | 0.0    | 20380.5 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 285.1   | 1.4       |
| 10°-20°   | 882.8   | 4.3       |
| 20°-30°   | 1687.8  | 8.3       |
| 30°-40°   | 2897.9  | 14.2      |
| 40°-50°   | 4059.0  | 19.9      |
| 50°-60°   | 4606.5  | 22.6      |
| 60°-70°   | 4039.6  | 19.8      |
| 70°-80°   | 1579.6  | 7.8       |
| 80°-90°   | 342.2   | 1.7       |
| 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°    | 20380.5 | 100.0     |
| 0°-180°   | 20380.5 | 100.0     |



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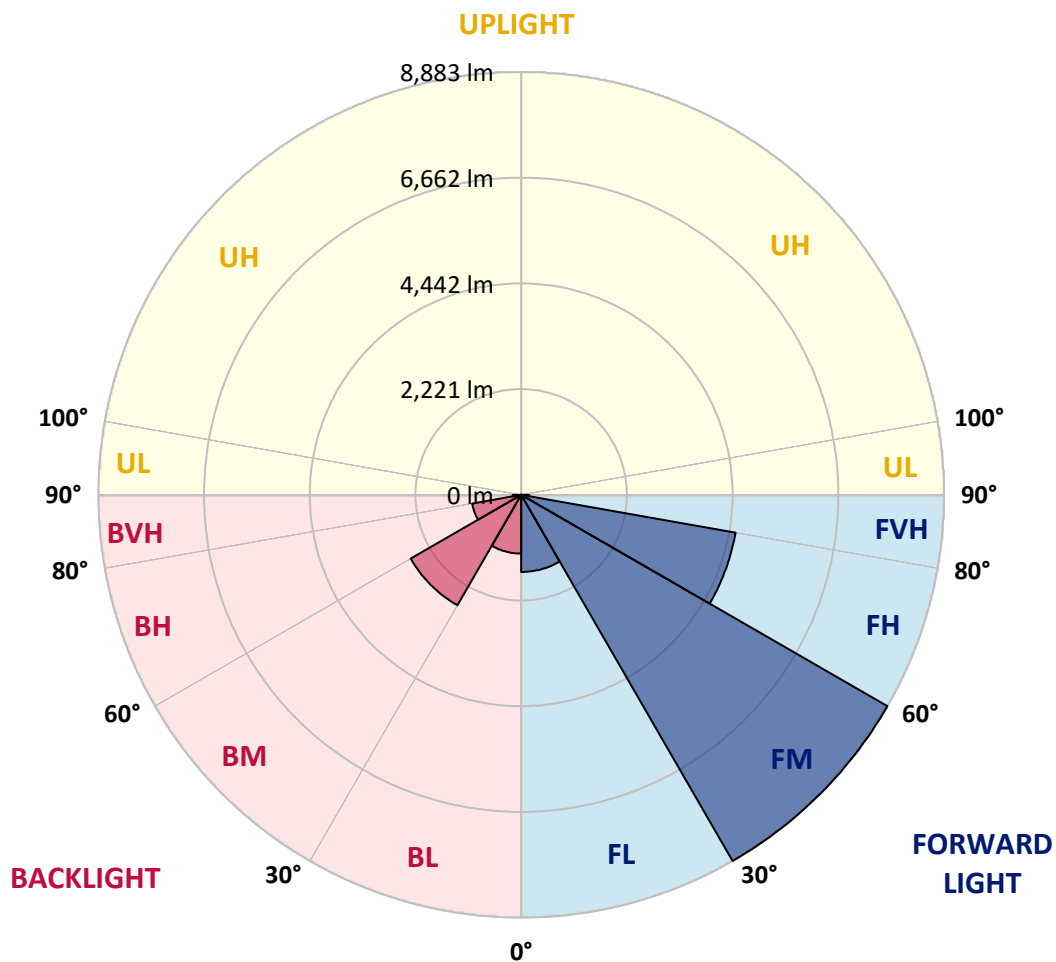
CATALOG NUMBER: GLAN-SB4C-935-U-T3LG

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1620.1 | 7.9       |                         |      |         |
| FM   | (30°-60°)   | 8883.1 | 43.6      |                         |      |         |
| FH   | (60°-80°)   | 4573.5 | 22.4      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 166.0  | 0.8       |                         |      | G2/225  |
| BL   | (0°-30°)    | 1235.7 | 6.1       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 2680.3 | 13.2      | B3/5000                 |      |         |
| BH   | (60°-80°)   | 1045.6 | 5.1       | B3/2500                 |      | G3/2500 |
| BVH  | (80°-90°)   | 176.2  | 0.9       |                         |      | G2/225  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G3**

Type III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°     | 79°     | 85°     |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| 0°    | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9  | 2991.9  | 2991.9  |
| 2.5°  | 2996.5 | 2996.5 | 2978.3 | 2996.5 | 2987.4 | 3001.0 | 3010.1 | 3010.1 | 3028.2  | 3023.7  | 3023.7  |
| 5°    | 2946.5 | 2937.4 | 2932.9 | 2964.7 | 2982.8 | 3019.2 | 3060.0 | 3078.2 | 3110.0  | 3110.0  | 3114.5  |
| 7.5°  | 2814.9 | 2810.3 | 2833.0 | 2896.6 | 2955.6 | 3046.4 | 3132.7 | 3182.6 | 3232.5  | 3241.6  | 3241.6  |
| 10°   | 2733.1 | 2728.6 | 2755.8 | 2833.0 | 2928.4 | 3060.0 | 3196.2 | 3300.6 | 3382.4  | 3405.1  | 3405.1  |
| 12.5° | 2733.1 | 2733.1 | 2755.8 | 2833.0 | 2932.9 | 3091.8 | 3277.9 | 3455.0 | 3582.1  | 3609.4  | 3600.3  |
| 15°   | 2810.3 | 2805.8 | 2833.0 | 2914.7 | 3010.1 | 3159.9 | 3386.9 | 3623.0 | 3795.5  | 3845.5  | 3850.0  |
| 17.5° | 2892.0 | 2887.5 | 2928.4 | 3032.8 | 3146.3 | 3296.1 | 3527.6 | 3818.2 | 4063.4  | 4126.9  | 4140.6  |
| 20°   | 3019.2 | 3014.6 | 3064.6 | 3164.4 | 3305.2 | 3477.7 | 3718.3 | 4049.8 | 4390.3  | 4458.4  | 4476.5  |
| 22.5° | 3164.4 | 3169.0 | 3223.5 | 3346.0 | 3486.8 | 3713.8 | 4008.9 | 4376.6 | 4785.2  | 4889.7  | 4907.8  |
| 25°   | 3468.6 | 3455.0 | 3500.4 | 3586.7 | 3736.5 | 4008.9 | 4372.1 | 4771.6 | 5257.4  | 5384.5  | 5407.2  |
| 27.5° | 3872.7 | 3850.0 | 3899.9 | 3986.2 | 4095.2 | 4349.4 | 4767.1 | 5212.0 | 5797.7  | 5956.6  | 5961.1  |
| 30°   | 4235.9 | 4222.3 | 4290.4 | 4467.4 | 4580.9 | 4776.2 | 5221.1 | 5729.6 | 6465.1  | 6696.6  | 6705.7  |
| 32.5° | 4549.2 | 4544.6 | 4671.7 | 4898.8 | 5157.5 | 5366.4 | 5797.7 | 6383.4 | 7309.5  | 7577.4  | 7518.4  |
| 35°   | 4848.8 | 4862.4 | 5021.3 | 5257.4 | 5602.5 | 6020.2 | 6456.0 | 7123.4 | 8199.4  | 8521.7  | 8426.4  |
| 37.5° | 5153.0 | 5162.1 | 5370.9 | 5675.1 | 6038.3 | 6583.1 | 7168.8 | 7927.0 | 8971.2  | 9370.7  | 9161.9  |
| 40°   | 5434.5 | 5461.7 | 5743.2 | 6070.1 | 6542.3 | 7096.2 | 7749.9 | 8485.4 | 9566.0  | 9960.9  | 9733.9  |
| 42.5° | 5716.0 | 5756.8 | 6061.0 | 6510.5 | 7014.4 | 7591.0 | 8154.0 | 8825.9 | 9947.3  | 10387.7 | 10038.1 |
| 45°   | 6006.5 | 6033.8 | 6410.6 | 6878.2 | 7450.3 | 7981.5 | 8385.5 | 9043.8 | 10210.7 | 10687.4 | 10210.7 |
| 47.5° | 6201.8 | 6256.2 | 6669.4 | 7209.7 | 7781.7 | 8281.1 | 8571.7 | 9134.7 | 10378.6 | 10882.6 | 10274.2 |
| 50°   | 6278.9 | 6356.1 | 6801.0 | 7400.3 | 8054.1 | 8562.6 | 8717.0 | 9184.6 | 10564.8 | 11055.1 | 10260.6 |
| 52.5° | 6265.3 | 6338.0 | 6823.7 | 7486.6 | 8272.0 | 8821.4 | 8857.7 | 9239.1 | 10696.4 | 11114.1 | 10142.6 |
| 53°   | 6192.7 | 6292.6 | 6837.4 | 7491.1 | 8303.8 | 8889.5 | 8921.3 | 9243.6 | 10714.6 | 11195.8 | 10124.4 |
| 55°   | 5943.0 | 5997.5 | 6696.6 | 7486.6 | 8453.6 | 9143.7 | 9098.3 | 9379.8 | 10764.5 | 11141.4 | 9924.6  |
| 57.5° | 5716.0 | 5770.4 | 6378.8 | 7400.3 | 8576.2 | 9502.4 | 9384.4 | 9357.1 | 10492.1 | 10832.6 | 9420.7  |
| 60°   | 5570.7 | 5588.8 | 6101.9 | 7127.9 | 8526.3 | 9752.1 | 9570.5 | 9089.3 | 9820.2  | 10101.7 | 8535.4  |
| 62.5° | 5448.1 | 5443.6 | 5897.6 | 6737.5 | 8335.6 | 9788.4 | 9606.8 | 8426.4 | 8835.0  | 8880.4  | 7354.9  |
| 65°   | 5171.2 | 5139.4 | 5579.8 | 6297.1 | 7940.6 | 9625.0 | 9161.9 | 7423.0 | 7527.5  | 7377.6  | 5906.7  |
| 67.5° | 4621.8 | 4553.7 | 4944.2 | 5625.2 | 7137.0 | 9161.9 | 8312.9 | 6256.2 | 5933.9  | 5634.2  | 4449.3  |
| 70°   | 3309.7 | 3309.7 | 3623.0 | 4304.0 | 5729.6 | 7917.9 | 7137.0 | 4735.3 | 4086.1  | 3818.2  | 2973.8  |
| 72.5° | 1620.8 | 1661.7 | 1988.6 | 2542.4 | 3840.9 | 5747.7 | 5466.3 | 3069.1 | 2478.9  | 2347.2  | 1906.8  |
| 75°   | 690.1  | 694.6  | 849.0  | 1125.9 | 1947.7 | 3400.5 | 3423.2 | 1770.6 | 1589.0  | 1525.5  | 1262.1  |
| 77.5° | 481.2  | 490.3  | 558.4  | 662.9  | 926.2  | 1561.8 | 1779.7 | 1071.5 | 1066.9  | 1021.5  | 898.9   |
| 80°   | 367.7  | 376.8  | 422.2  | 494.9  | 622.0  | 799.1  | 921.6  | 726.4  | 762.7   | 717.3   | 649.2   |
| 82.5° | 276.9  | 286.0  | 317.8  | 372.3  | 444.9  | 535.7  | 517.6  | 535.7  | 563.0   | 535.7   | 467.6   |
| 85°   | 186.1  | 190.7  | 213.4  | 258.8  | 286.0  | 322.3  | 322.3  | 390.4  | 408.6   | 399.5   | 367.7   |
| 87.5° | 95.3   | 95.3   | 113.5  | 136.2  | 145.3  | 149.8  | 131.7  | 172.5  | 195.2   | 213.4   | 172.5   |
| 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: P1456849

CATALOG NUMBER: GLAN-SB4C-935-U-T3LG

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 |
| 2.5°  | 3023.7 | 3028.2 | 3014.6 | 3010.1 | 3005.5 | 2982.8 | 2982.8 | 2960.1 | 2955.6 | 2960.1 | 2946.5 |
| 5°    | 3123.6 | 3114.5 | 3078.2 | 3050.9 | 3019.2 | 2955.6 | 2919.3 | 2869.3 | 2855.7 | 2842.1 | 2828.5 |
| 7.5°  | 3246.2 | 3232.5 | 3169.0 | 3096.3 | 3010.1 | 2887.5 | 2819.4 | 2737.7 | 2710.4 | 2687.7 | 2678.7 |
| 10°   | 3400.5 | 3373.3 | 3273.4 | 3119.0 | 2960.1 | 2810.3 | 2715.0 | 2615.1 | 2569.7 | 2560.6 | 2537.9 |
| 12.5° | 3600.3 | 3550.3 | 3364.2 | 3123.6 | 2914.7 | 2719.5 | 2615.1 | 2537.9 | 2519.7 | 2515.2 | 2492.5 |
| 15°   | 3822.8 | 3750.1 | 3450.5 | 3128.1 | 2855.7 | 2642.3 | 2578.8 | 2537.9 | 2537.9 | 2533.4 | 2519.7 |
| 17.5° | 4095.2 | 3977.1 | 3532.2 | 3110.0 | 2783.1 | 2619.6 | 2587.8 | 2551.5 | 2542.4 | 2547.0 | 2528.8 |
| 20°   | 4422.0 | 4226.8 | 3618.4 | 3087.3 | 2751.3 | 2624.2 | 2587.8 | 2537.9 | 2515.2 | 2510.7 | 2497.0 |
| 22.5° | 4798.9 | 4512.8 | 3713.8 | 3050.9 | 2751.3 | 2619.6 | 2560.6 | 2492.5 | 2447.1 | 2428.9 | 2410.8 |
| 25°   | 5230.2 | 4844.3 | 3813.7 | 3037.3 | 2760.4 | 2601.5 | 2506.1 | 2397.2 | 2324.5 | 2297.3 | 2283.7 |
| 27.5° | 5752.3 | 5193.9 | 3886.3 | 3050.9 | 2755.8 | 2560.6 | 2410.8 | 2270.0 | 2188.3 | 2142.9 | 2133.8 |
| 30°   | 6328.9 | 5570.7 | 3936.3 | 3073.6 | 2728.6 | 2483.4 | 2297.3 | 2138.4 | 2024.9 | 1970.4 | 1956.8 |
| 32.5° | 7009.9 | 5992.9 | 3986.2 | 3073.6 | 2660.5 | 2374.5 | 2165.6 | 1993.1 | 1875.1 | 1811.5 | 1802.4 |
| 35°   | 7763.5 | 6510.5 | 4031.6 | 3069.1 | 2578.8 | 2256.4 | 2034.0 | 1856.9 | 1734.3 | 1670.8 | 1666.2 |
| 37.5° | 8403.7 | 6900.9 | 4054.3 | 3023.7 | 2465.3 | 2120.2 | 1911.4 | 1734.3 | 1607.2 | 1539.1 | 1534.5 |
| 40°   | 8798.7 | 7064.4 | 4008.9 | 2932.9 | 2329.1 | 1979.5 | 1775.2 | 1611.7 | 1484.6 | 1402.9 | 1384.7 |
| 42.5° | 8948.5 | 6987.2 | 3863.6 | 2783.1 | 2165.6 | 1838.7 | 1661.7 | 1489.1 | 1321.2 | 1253.1 | 1239.4 |
| 45°   | 8898.6 | 6687.5 | 3554.9 | 2569.7 | 1984.0 | 1711.6 | 1561.8 | 1366.6 | 1257.6 | 1198.6 | 1194.0 |
| 47.5° | 8730.6 | 6224.5 | 3169.0 | 2301.8 | 1793.3 | 1598.1 | 1430.1 | 1334.8 | 1234.9 | 1171.3 | 1166.8 |
| 50°   | 8435.5 | 5729.6 | 2705.9 | 1997.6 | 1620.8 | 1480.1 | 1398.3 | 1321.2 | 1239.4 | 1189.5 | 1180.4 |
| 52.5° | 8058.7 | 5171.2 | 2279.1 | 1702.5 | 1471.0 | 1375.6 | 1366.6 | 1312.1 | 1248.5 | 1194.0 | 1171.3 |
| 53°   | 7972.4 | 5025.9 | 2197.4 | 1652.6 | 1448.3 | 1362.0 | 1357.5 | 1312.1 | 1239.4 | 1189.5 | 1171.3 |
| 55°   | 7559.2 | 4576.4 | 1938.6 | 1475.5 | 1334.8 | 1316.6 | 1357.5 | 1307.5 | 1216.7 | 1175.9 | 1162.3 |
| 57.5° | 6896.4 | 3986.2 | 1688.9 | 1312.1 | 1216.7 | 1262.1 | 1343.9 | 1289.4 | 1189.5 | 1116.9 | 1094.2 |
| 60°   | 6097.3 | 3309.7 | 1498.2 | 1203.1 | 1130.5 | 1194.0 | 1289.4 | 1225.8 | 1089.6 | 1053.3 | 1048.8 |
| 62.5° | 5143.9 | 2678.7 | 1352.9 | 1112.3 | 1057.8 | 1121.4 | 1207.7 | 1098.7 | 998.8  | 971.6  | 962.5  |
| 65°   | 4018.0 | 2129.3 | 1239.4 | 1044.2 | 985.2  | 1035.1 | 1094.2 | 1026.1 | 962.5  | 939.8  | 935.3  |
| 67.5° | 2987.4 | 1670.8 | 1148.6 | 985.2  | 912.6  | 944.3  | 1012.4 | 994.3  | 939.8  | 926.2  | 921.6  |
| 70°   | 2061.2 | 1357.5 | 1066.9 | 930.7  | 821.8  | 858.1  | 962.5  | 976.1  | 921.6  | 912.6  | 908.0  |
| 72.5° | 1443.7 | 1148.6 | 980.7  | 871.7  | 749.1  | 785.4  | 939.8  | 939.8  | 880.8  | 894.4  | 885.3  |
| 75°   | 1085.1 | 967.0  | 880.8  | 799.1  | 658.3  | 712.8  | 908.0  | 898.9  | 839.9  | 898.9  | 876.2  |
| 77.5° | 817.2  | 780.9  | 762.7  | 708.3  | 576.6  | 631.1  | 844.5  | 826.3  | 749.1  | 753.7  | 712.8  |
| 80°   | 594.8  | 603.8  | 653.8  | 603.8  | 481.2  | 522.1  | 712.8  | 703.7  | 608.4  | 626.5  | 576.6  |
| 82.5° | 426.8  | 449.5  | 558.4  | 485.8  | 349.6  | 372.3  | 490.3  | 531.2  | 476.7  | 449.5  | 458.5  |
| 85°   | 322.3  | 336.0  | 449.5  | 358.7  | 217.9  | 245.2  | 336.0  | 381.4  | 372.3  | 345.0  | 349.6  |
| 87.5° | 136.2  | 154.4  | 208.8  | 168.0  | 127.1  | 127.1  | 208.8  | 267.9  | 240.6  | 204.3  | 213.4  |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-15

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-935-U-5WQ

Data in this report applies to families of products including GSS-SB1A-935-U-5WQ

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-15  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-935-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI 3500K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 3455  
 CIE u': 0.2356  
 CIE v': 0.5159  
 Duv: 0.0028  
 CIE x: 0.4109  
 CIE y: 0.3999  
 CIE z: 0.1892  
 Peak Wavelength (nm): 616  
 Dominant Wavelength (nm): 579  
 Purity: 43.35383  
 Rf: 92.3  
 Rg: 98.5

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 92.2 |      |      |
| R1:       | 92.0 | R9:  | 59.8 |
| R2:       | 94.4 | R10: | 85.8 |
| R3:       | 95.6 | R11: | 93.2 |
| R4:       | 93.2 | R12: | 78.0 |
| R5:       | 91.4 | R13: | 92.5 |
| R6:       | 92.5 | R14: | 97.0 |
| R7:       | 94.5 | R15: | 88.4 |
| R8:       | 84.2 |      |      |



**Test Conditions**

Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-15

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/18/2024        | 12/18/2024           |
| Power Meter                    | INXT2011004           | 2/8/2024         | 2/8/2025             |
| AC Power Source                | IN0063                | 10/24/2023       | 10/24/2024           |
| DC Power Source                | IN0208                | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | IN0085                | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | IN0046                | 10/24/2023       | 10/24/2024           |

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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 3500K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360               | 0                           | NR                      | 490               | 410                         | NR                      | 620               | 997                         | NR                      | 750               | 74                          | NR                      | 880               | 1                           | NR                      |
| 365               | 0                           | NR                      | 495               | 454                         | NR                      | 625               | 988                         | NR                      | 755               | 64                          | NR                      | 885               | 1                           | NR                      |
| 370               | 0                           | NR                      | 500               | 493                         | NR                      | 630               | 973                         | NR                      | 760               | 54                          | NR                      | 890               | 1                           | NR                      |
| 375               | 0                           | NR                      | 505               | 530                         | NR                      | 635               | 946                         | NR                      | 765               | 47                          | NR                      | 895               | 1                           | NR                      |
| 380               | 0                           | NR                      | 510               | 564                         | NR                      | 640               | 913                         | NR                      | 770               | 40                          | NR                      | 900               | 1                           | NR                      |
| 385               | 0                           | NR                      | 515               | 599                         | NR                      | 645               | 870                         | NR                      | 775               | 34                          | NR                      | 905               | 1                           | NR                      |
| 390               | 0                           | NR                      | 520               | 634                         | NR                      | 650               | 826                         | NR                      | 780               | 29                          | NR                      | 910               | 1                           | NR                      |
| 395               | 0                           | NR                      | 525               | 664                         | NR                      | 655               | 774                         | NR                      | 785               | 25                          | NR                      | 915               | 1                           | NR                      |
| 400               | 2                           | NR                      | 530               | 695                         | NR                      | 660               | 720                         | NR                      | 790               | 21                          | NR                      | 920               | 1                           | NR                      |
| 405               | 4                           | NR                      | 535               | 722                         | NR                      | 665               | 664                         | NR                      | 795               | 18                          | NR                      | 925               | 1                           | NR                      |
| 410               | 9                           | NR                      | 540               | 741                         | NR                      | 670               | 605                         | NR                      | 800               | 16                          | NR                      | 930               | 0                           | NR                      |
| 415               | 17                          | NR                      | 545               | 762                         | NR                      | 675               | 550                         | NR                      | 805               | 13                          | NR                      | 935               | 0                           | NR                      |
| 420               | 32                          | NR                      | 550               | 777                         | NR                      | 680               | 497                         | NR                      | 810               | 12                          | NR                      | 940               | 0                           | NR                      |
| 425               | 61                          | NR                      | 555               | 789                         | NR                      | 685               | 445                         | NR                      | 815               | 10                          | NR                      | 945               | 0                           | NR                      |
| 430               | 114                         | NR                      | 560               | 800                         | NR                      | 690               | 398                         | NR                      | 820               | 9                           | NR                      | 950               | 0                           | NR                      |
| 435               | 218                         | NR                      | 565               | 813                         | NR                      | 695               | 352                         | NR                      | 825               | 7                           | NR                      | 955               | 0                           | NR                      |
| 440               | 427                         | NR                      | 570               | 828                         | NR                      | 700               | 309                         | NR                      | 830               | 6                           | NR                      | 960               | 0                           | NR                      |
| 445               | 684                         | NR                      | 575               | 846                         | NR                      | 705               | 273                         | NR                      | 835               | 5                           | NR                      | 965               | 0                           | NR                      |
| 450               | 611                         | NR                      | 580               | 866                         | NR                      | 710               | 237                         | NR                      | 840               | 5                           | NR                      | 970               | 0                           | NR                      |
| 455               | 461                         | NR                      | 585               | 888                         | NR                      | 715               | 208                         | NR                      | 845               | 4                           | NR                      | 975               | 0                           | NR                      |
| 460               | 427                         | NR                      | 590               | 913                         | NR                      | 720               | 181                         | NR                      | 850               | 4                           | NR                      | 980               | 0                           | NR                      |
| 465               | 349                         | NR                      | 595               | 936                         | NR                      | 725               | 157                         | NR                      | 855               | 3                           | NR                      | 985               | 0                           | NR                      |
| 470               | 298                         | NR                      | 600               | 957                         | NR                      | 730               | 136                         | NR                      | 860               | 3                           | NR                      | 990               | 1                           | NR                      |
| 475               | 312                         | NR                      | 605               | 976                         | NR                      | 735               | 117                         | NR                      | 865               | 2                           | NR                      | 995               | 0                           | NR                      |
| 480               | 335                         | NR                      | 610               | 990                         | NR                      | 740               | 100                         | NR                      | 870               | 2                           | NR                      | 1000              | 0                           | NR                      |
| 485               | 367                         | NR                      | 615               | 999                         | NR                      | 745               | 86                          | NR                      | 875               | 2                           | NR                      |                   |                             |                         |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.58**

| $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) |
|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|
| 360            | 0                        | NR                   | 490            | 410                      | NR                   | 620            | 997                      | NR                   | 750            | 74                       | NR                   | 880            | 1                        | NR                   |
| 365            | 0                        | NR                   | 495            | 454                      | NR                   | 625            | 988                      | NR                   | 755            | 64                       | NR                   | 885            | 1                        | NR                   |
| 370            | 0                        | NR                   | 500            | 493                      | NR                   | 630            | 973                      | NR                   | 760            | 54                       | NR                   | 890            | 1                        | NR                   |
| 375            | 0                        | NR                   | 505            | 530                      | NR                   | 635            | 946                      | NR                   | 765            | 47                       | NR                   | 895            | 1                        | NR                   |
| 380            | 0                        | NR                   | 510            | 564                      | NR                   | 640            | 913                      | NR                   | 770            | 40                       | NR                   | 900            | 1                        | NR                   |
| 385            | 0                        | NR                   | 515            | 599                      | NR                   | 645            | 870                      | NR                   | 775            | 34                       | NR                   | 905            | 1                        | NR                   |
| 390            | 0                        | NR                   | 520            | 634                      | NR                   | 650            | 826                      | NR                   | 780            | 29                       | NR                   | 910            | 1                        | NR                   |
| 395            | 0                        | NR                   | 525            | 664                      | NR                   | 655            | 774                      | NR                   | 785            | 25                       | NR                   | 915            | 1                        | NR                   |
| 400            | 2                        | NR                   | 530            | 695                      | NR                   | 660            | 720                      | NR                   | 790            | 21                       | NR                   | 920            | 1                        | NR                   |
| 405            | 4                        | NR                   | 535            | 722                      | NR                   | 665            | 664                      | NR                   | 795            | 18                       | NR                   | 925            | 1                        | NR                   |
| 410            | 9                        | NR                   | 540            | 741                      | NR                   | 670            | 605                      | NR                   | 800            | 16                       | NR                   | 930            | 0                        | NR                   |
| 415            | 17                       | NR                   | 545            | 762                      | NR                   | 675            | 550                      | NR                   | 805            | 13                       | NR                   | 935            | 0                        | NR                   |
| 420            | 32                       | NR                   | 550            | 777                      | NR                   | 680            | 497                      | NR                   | 810            | 12                       | NR                   | 940            | 0                        | NR                   |
| 425            | 61                       | NR                   | 555            | 789                      | NR                   | 685            | 445                      | NR                   | 815            | 10                       | NR                   | 945            | 0                        | NR                   |
| 430            | 114                      | NR                   | 560            | 800                      | NR                   | 690            | 398                      | NR                   | 820            | 9                        | NR                   | 950            | 0                        | NR                   |
| 435            | 218                      | NR                   | 565            | 813                      | NR                   | 695            | 352                      | NR                   | 825            | 7                        | NR                   | 955            | 0                        | NR                   |
| 440            | 427                      | NR                   | 570            | 828                      | NR                   | 700            | 309                      | NR                   | 830            | 6                        | NR                   | 960            | 0                        | NR                   |
| 445            | 684                      | NR                   | 575            | 846                      | NR                   | 705            | 273                      | NR                   | 835            | 5                        | NR                   | 965            | 0                        | NR                   |
| 450            | 611                      | NR                   | 580            | 866                      | NR                   | 710            | 237                      | NR                   | 840            | 5                        | NR                   | 970            | 0                        | NR                   |
| 455            | 461                      | NR                   | 585            | 888                      | NR                   | 715            | 208                      | NR                   | 845            | 4                        | NR                   | 975            | 0                        | NR                   |
| 460            | 427                      | NR                   | 590            | 913                      | NR                   | 720            | 181                      | NR                   | 850            | 4                        | NR                   | 980            | 0                        | NR                   |
| 465            | 349                      | NR                   | 595            | 936                      | NR                   | 725            | 157                      | NR                   | 855            | 3                        | NR                   | 985            | 0                        | NR                   |
| 470            | 298                      | NR                   | 600            | 957                      | NR                   | 730            | 136                      | NR                   | 860            | 3                        | NR                   | 990            | 1                        | NR                   |
| 475            | 312                      | NR                   | 605            | 976                      | NR                   | 735            | 117                      | NR                   | 865            | 2                        | NR                   | 995            | 0                        | NR                   |
| 480            | 335                      | NR                   | 610            | 990                      | NR                   | 740            | 100                      | NR                   | 870            | 2                        | NR                   | 1000           | 0                        | NR                   |
| 485            | 367                      | NR                   | 615            | 999                      | NR                   | 745            | 86                       | NR                   | 875            | 2                        | NR                   |                |                          |                      |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: NR**

**M/P: 3.14**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 410                      | NR            | 620    | 997                      | NR            | 750    | 74                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 454                      | NR            | 625    | 988                      | NR            | 755    | 64                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 493                      | NR            | 630    | 973                      | NR            | 760    | 54                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 530                      | NR            | 635    | 946                      | NR            | 765    | 47                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 564                      | NR            | 640    | 913                      | NR            | 770    | 40                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 599                      | NR            | 645    | 870                      | NR            | 775    | 34                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 634                      | NR            | 650    | 826                      | NR            | 780    | 29                       | NR            | 910    | 1                        | NR            |
| 395    | 0                        | NR            | 525    | 664                      | NR            | 655    | 774                      | NR            | 785    | 25                       | NR            | 915    | 1                        | NR            |
| 400    | 2                        | NR            | 530    | 695                      | NR            | 660    | 720                      | NR            | 790    | 21                       | NR            | 920    | 1                        | NR            |
| 405    | 4                        | NR            | 535    | 722                      | NR            | 665    | 664                      | NR            | 795    | 18                       | NR            | 925    | 1                        | NR            |
| 410    | 9                        | NR            | 540    | 741                      | NR            | 670    | 605                      | NR            | 800    | 16                       | NR            | 930    | 0                        | NR            |
| 415    | 17                       | NR            | 545    | 762                      | NR            | 675    | 550                      | NR            | 805    | 13                       | NR            | 935    | 0                        | NR            |
| 420    | 32                       | NR            | 550    | 777                      | NR            | 680    | 497                      | NR            | 810    | 12                       | NR            | 940    | 0                        | NR            |
| 425    | 61                       | NR            | 555    | 789                      | NR            | 685    | 445                      | NR            | 815    | 10                       | NR            | 945    | 0                        | NR            |
| 430    | 114                      | NR            | 560    | 800                      | NR            | 690    | 398                      | NR            | 820    | 9                        | NR            | 950    | 0                        | NR            |
| 435    | 218                      | NR            | 565    | 813                      | NR            | 695    | 352                      | NR            | 825    | 7                        | NR            | 955    | 0                        | NR            |
| 440    | 427                      | NR            | 570    | 828                      | NR            | 700    | 309                      | NR            | 830    | 6                        | NR            | 960    | 0                        | NR            |
| 445    | 684                      | NR            | 575    | 846                      | NR            | 705    | 273                      | NR            | 835    | 5                        | NR            | 965    | 0                        | NR            |
| 450    | 611                      | NR            | 580    | 866                      | NR            | 710    | 237                      | NR            | 840    | 5                        | NR            | 970    | 0                        | NR            |
| 455    | 461                      | NR            | 585    | 888                      | NR            | 715    | 208                      | NR            | 845    | 4                        | NR            | 975    | 0                        | NR            |
| 460    | 427                      | NR            | 590    | 913                      | NR            | 720    | 181                      | NR            | 850    | 4                        | NR            | 980    | 0                        | NR            |
| 465    | 349                      | NR            | 595    | 936                      | NR            | 725    | 157                      | NR            | 855    | 3                        | NR            | 985    | 0                        | NR            |
| 470    | 298                      | NR            | 600    | 957                      | NR            | 730    | 136                      | NR            | 860    | 3                        | NR            | 990    | 1                        | NR            |
| 475    | 312                      | NR            | 605    | 976                      | NR            | 735    | 117                      | NR            | 865    | 2                        | NR            | 995    | 0                        | NR            |
| 480    | 335                      | NR            | 610    | 990                      | NR            | 740    | 100                      | NR            | 870    | 2                        | NR            | 1000   | 0                        | NR            |
| 485    | 367                      | NR            | 615    | 999                      | NR            | 745    | 86                       | NR            | 875    | 2                        | NR            |        |                          |               |

**Summary**

$R_f = 92.3$   
 $R_g = 98.5$   
 CIE  $R_a = 92.2$   
 $R_9 = 59.8$

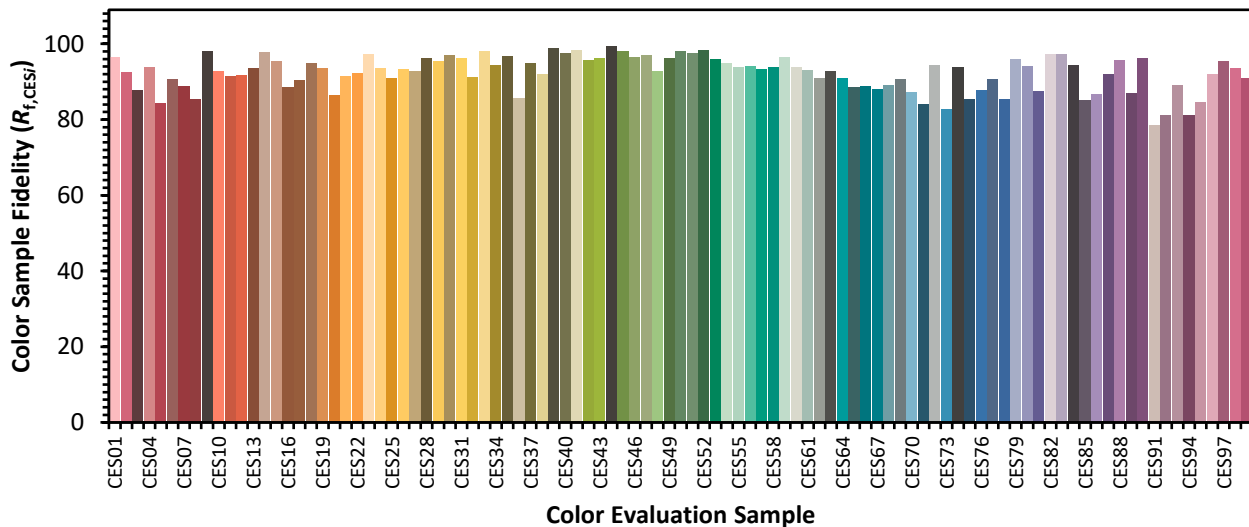


**Color Vector Graphics**

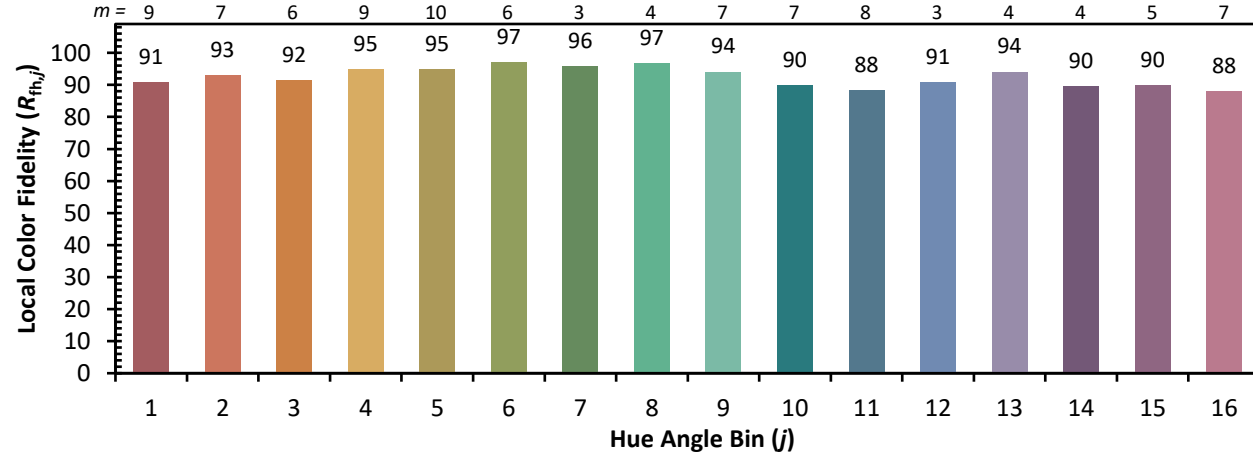


Individual Sample Fidelity Index ( $R_{f,i}$ )

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 93 | CES51 = 97 | CES76 = 88 |
| CES02 = 62 | CES27 = 93 | CES52 = 98 | CES77 = 91 |
| CES03 = 31 | CES28 = 96 | CES53 = 96 | CES78 = 85 |
| CES04 = 70 | CES29 = 95 | CES54 = 95 | CES79 = 96 |
| CES05 = 50 | CES30 = 97 | CES55 = 94 | CES80 = 94 |
| CES06 = 51 | CES31 = 96 | CES56 = 94 | CES81 = 87 |
| CES07 = 42 | CES32 = 91 | CES57 = 93 | CES82 = 97 |
| CES08 = 41 | CES33 = 98 | CES58 = 94 | CES83 = 97 |
| CES09 = 29 | CES34 = 94 | CES59 = 96 | CES84 = 94 |
| CES10 = 75 | CES35 = 97 | CES60 = 94 | CES85 = 85 |
| CES11 = 58 | CES36 = 86 | CES61 = 93 | CES86 = 87 |
| CES12 = 64 | CES37 = 95 | CES62 = 91 | CES87 = 92 |
| CES13 = 43 | CES38 = 92 | CES63 = 93 | CES88 = 96 |
| CES14 = 74 | CES39 = 99 | CES64 = 91 | CES89 = 87 |
| CES15 = 71 | CES40 = 98 | CES65 = 89 | CES90 = 96 |
| CES16 = 47 | CES41 = 98 | CES66 = 89 | CES91 = 78 |
| CES17 = 49 | CES42 = 96 | CES67 = 88 | CES92 = 81 |
| CES18 = 56 | CES43 = 96 | CES68 = 89 | CES93 = 89 |
| CES19 = 71 | CES44 = 99 | CES69 = 91 | CES94 = 81 |
| CES20 = 66 | CES45 = 98 | CES70 = 87 | CES95 = 85 |
| CES21 = 86 | CES46 = 97 | CES71 = 84 | CES96 = 92 |
| CES22 = 78 | CES47 = 97 | CES72 = 95 | CES97 = 95 |
| CES23 = 91 | CES48 = 93 | CES73 = 83 | CES98 = 94 |
| CES24 = 90 | CES49 = 96 | CES74 = 94 | CES99 = 91 |
| CES25 = 71 | CES50 = 98 | CES75 = 85 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)