

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: P1047594

Luminaire Tested: **GALN-SA2B-950-U-T3BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1047594  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA2B-950-U-T3BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 800mA 2xLight Square PACKAGE  
90CRI 5000K FIXTURE w/ TYPE III ANGLED BACKLIGHT CONTROL  
Light Source: (28) 5000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7591.8 lumens  
Efficiency: N/A  
Efficacy: 104.3 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B0 - U0 - G2

Input Watts (W): 72.8  
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

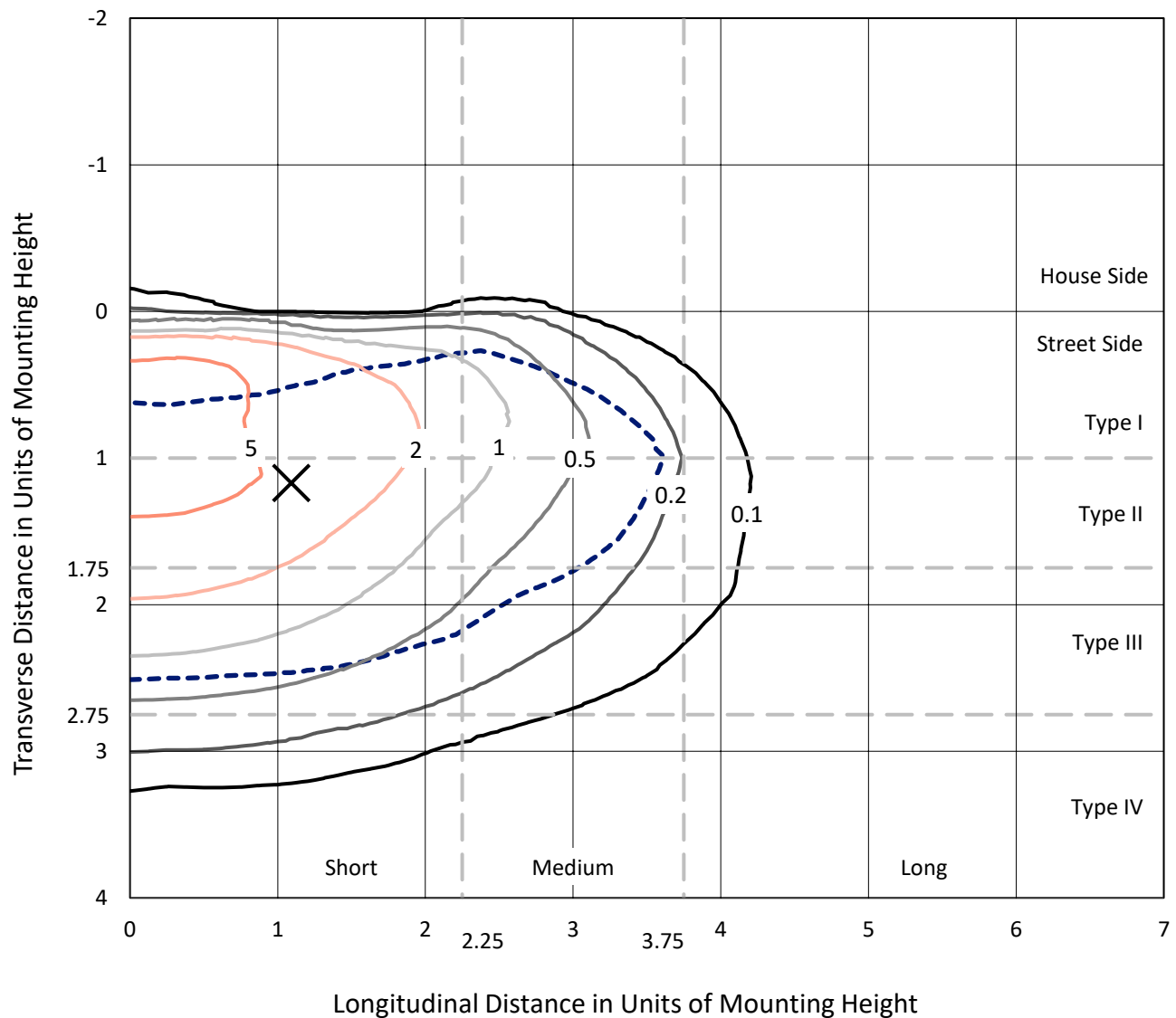


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CATALOG NUMBER: GALN-SA2B-950-U-T3BC

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

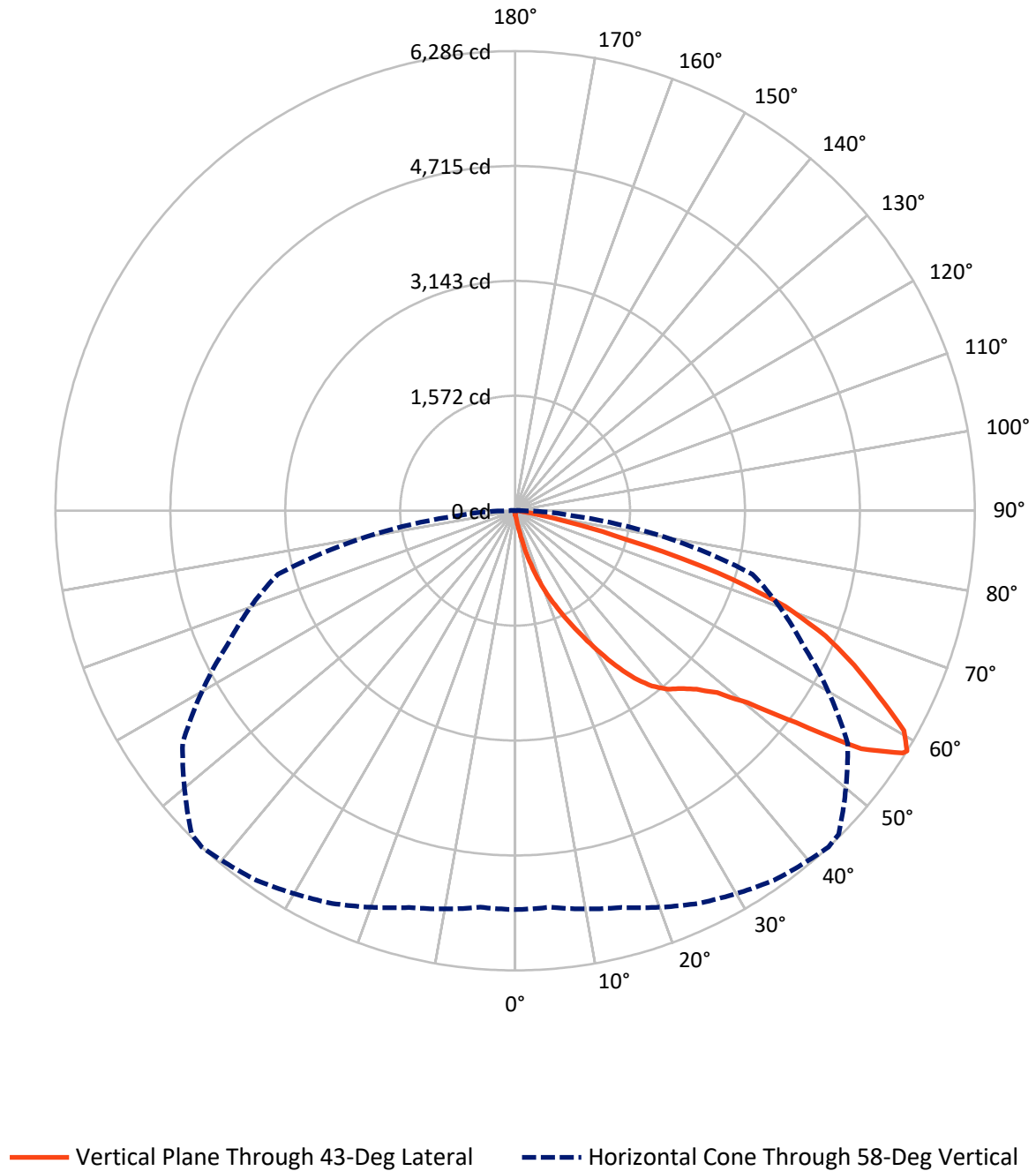


Based on 15 foot mounting height. Maximum calculated value = 8.5 fc  
 Type III - Short - N/A

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CATALOG NUMBER: GALN-SA2B-950-U-T3BC

## Luminous Intensity Polar Plot



REPORT NUMBER: P1047594

CATALOG NUMBER: GALN-SA2B-950-U-T3BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 27.7     | 0.0    | 27.7   |
|                    | % Fixture | 0.4      | 0.0    | 0.4    |
| <b>Street Side</b> | Lumens    | 7564.1   | 0.0    | 7564.1 |
|                    | % Fixture | 99.6     | 0.0    | 99.6   |
| <b>Total</b>       | Lumens    | 7591.8   | 0.0    | 7591.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 7.3    | 0.1       |
| 10°-20°   | 87.3   | 1.1       |
| 20°-30°   | 314.5  | 4.1       |
| 30°-40°   | 719.7  | 9.5       |
| 40°-50°   | 1213.8 | 16.0      |
| 50°-60°   | 2003.0 | 26.4      |
| 60°-70°   | 2238.7 | 29.5      |
| 70°-80°   | 924.3  | 12.2      |
| 80°-90°   | 83.3   | 1.1       |
| 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°    | 7591.8 | 100.0     |
| 0°-180°   | 7591.8 | 100.0     |



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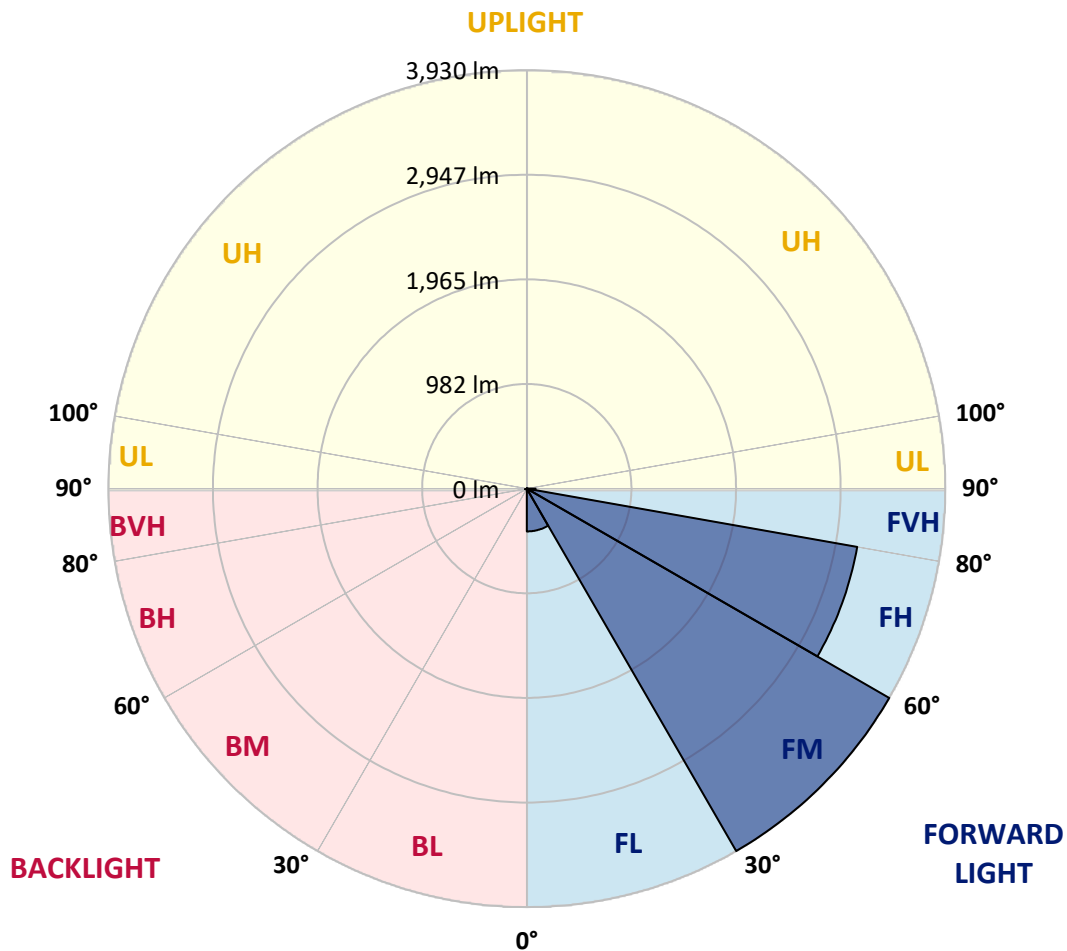
CATALOG NUMBER: GALN-SA2B-950-U-T3BC

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 401.9  | 5.3       |                         |      |         |
| FM   | (30°-60°)   | 3929.8 | 51.8      |                         |      |         |
| FH   | (60°-80°)   | 3150.3 | 41.5      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 82.2   | 1.1       |                         |      | G1/100  |
| BL   | (0°-30°)    | 7.2    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 6.6    | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 12.7   | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 1.1    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G2**

Type III Short



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CATALOG NUMBER: GALN-SA2B-950-U-T3BC

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 43°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 49.6   | 49.6   | 49.6   | 49.6   | 49.6   | 49.6   | 49.6   | 49.6   | 49.6   | 49.6   | 49.6   |
| 2.5°  | 59.6   | 61.6   | 59.6   | 59.6   | 59.6   | 57.6   | 57.6   | 55.6   | 55.6   | 53.6   | 51.6   |
| 5°    | 87.4   | 87.4   | 81.4   | 77.4   | 73.5   | 71.5   | 69.5   | 65.5   | 61.6   | 57.6   | 53.6   |
| 7.5°  | 194.6  | 194.6  | 176.7  | 152.9  | 121.1  | 103.2  | 99.3   | 81.4   | 69.5   | 61.6   | 53.6   |
| 10°   | 464.6  | 464.6  | 424.9  | 359.4  | 278.0  | 206.5  | 184.7  | 117.1  | 83.4   | 65.5   | 55.6   |
| 12.5° | 772.4  | 782.3  | 732.7  | 649.3  | 528.2  | 403.1  | 359.4  | 214.4  | 111.2  | 71.5   | 55.6   |
| 15°   | 1048.4 | 1024.6 | 1010.7 | 931.2  | 816.1  | 667.2  | 611.6  | 361.4  | 160.8  | 81.4   | 55.6   |
| 17.5° | 1235.0 | 1235.0 | 1215.2 | 1161.6 | 1056.3 | 925.3  | 879.6  | 583.8  | 260.1  | 93.3   | 57.6   |
| 20°   | 1453.4 | 1453.4 | 1417.7 | 1380.0 | 1286.7 | 1175.5 | 1131.8 | 830.0  | 403.1  | 119.1  | 57.6   |
| 22.5° | 1717.5 | 1721.5 | 1681.8 | 1614.3 | 1524.9 | 1401.8 | 1364.1 | 1058.3 | 583.8  | 158.8  | 59.6   |
| 25°   | 2039.2 | 2043.2 | 1985.6 | 1922.0 | 1785.0 | 1652.0 | 1594.4 | 1320.4 | 804.2  | 222.4  | 59.6   |
| 27.5° | 2394.6 | 2422.4 | 2337.0 | 2227.8 | 2082.9 | 1916.1 | 1872.4 | 1556.7 | 1022.6 | 313.7  | 63.5   |
| 30°   | 2837.4 | 2837.4 | 2724.2 | 2571.3 | 2414.5 | 2208.0 | 2152.4 | 1804.9 | 1254.9 | 434.8  | 67.5   |
| 32.5° | 3218.6 | 3188.8 | 3043.9 | 2883.1 | 2716.3 | 2523.7 | 2464.1 | 2065.0 | 1493.2 | 585.7  | 75.5   |
| 35°   | 3510.5 | 3484.7 | 3306.0 | 3133.2 | 2988.3 | 2811.6 | 2740.1 | 2347.0 | 1745.3 | 756.5  | 87.4   |
| 37.5° | 3760.7 | 3750.8 | 3508.5 | 3292.1 | 3196.8 | 3041.9 | 2978.4 | 2613.0 | 1993.5 | 941.2  | 101.3  |
| 40°   | 4034.7 | 4002.9 | 3744.8 | 3476.7 | 3333.8 | 3208.7 | 3151.1 | 2827.5 | 2231.8 | 1157.6 | 121.1  |
| 42.5° | 4269.0 | 4231.3 | 3998.9 | 3736.9 | 3492.6 | 3323.9 | 3268.3 | 3008.1 | 2464.1 | 1374.0 | 146.9  |
| 45°   | 4529.1 | 4509.2 | 4274.9 | 4076.4 | 3750.8 | 3480.7 | 3407.2 | 3153.1 | 2676.6 | 1632.1 | 180.7  |
| 47.5° | 4920.3 | 4884.5 | 4666.1 | 4503.3 | 4126.0 | 3719.0 | 3613.7 | 3302.0 | 2881.1 | 1886.3 | 232.3  |
| 50°   | 5375.0 | 5351.1 | 5222.1 | 5093.0 | 4717.7 | 4126.0 | 4000.9 | 3516.5 | 3109.4 | 2188.1 | 299.8  |
| 52.5° | 5746.3 | 5742.3 | 5758.2 | 5760.2 | 5476.2 | 4811.1 | 4624.4 | 3861.9 | 3371.5 | 2485.9 | 395.1  |
| 55°   | 5738.3 | 5756.2 | 5930.9 | 6131.5 | 6153.3 | 5746.3 | 5565.6 | 4443.7 | 3713.0 | 2853.3 | 528.2  |
| 57.5° | 5523.9 | 5510.0 | 5694.6 | 5996.4 | 6208.9 | 6252.6 | 6222.8 | 5347.2 | 4227.3 | 3296.1 | 732.7  |
| 58°   | 5454.4 | 5442.5 | 5617.2 | 5925.0 | 6169.2 | 6286.3 | 6256.5 | 5551.7 | 4342.5 | 3359.6 | 788.3  |
| 60°   | 5202.2 | 5204.2 | 5307.4 | 5587.4 | 5831.6 | 6109.6 | 6137.4 | 6135.4 | 4916.3 | 3784.5 | 1068.2 |
| 62.5° | 4868.6 | 4852.7 | 4948.1 | 5176.4 | 5390.8 | 5577.5 | 5625.1 | 6175.1 | 5756.2 | 4324.6 | 1602.4 |
| 65°   | 4408.0 | 4384.2 | 4485.4 | 4743.5 | 4973.9 | 5095.0 | 5097.0 | 5643.0 | 6151.3 | 4904.4 | 2364.8 |
| 67.5° | 3552.2 | 3532.3 | 3734.9 | 4066.5 | 4421.9 | 4580.7 | 4652.2 | 4896.4 | 5817.7 | 5297.5 | 2801.6 |
| 70°   | 2176.2 | 2217.9 | 2499.8 | 3020.1 | 3627.6 | 3919.5 | 4026.7 | 4102.2 | 4954.0 | 5237.9 | 2343.0 |
| 72.5° | 1004.7 | 955.1  | 1195.3 | 1558.7 | 2251.6 | 2900.9 | 3012.1 | 3308.0 | 3927.5 | 4547.0 | 1747.3 |
| 75°   | 468.6  | 450.7  | 506.3  | 681.1  | 1020.6 | 1566.6 | 1769.1 | 2640.8 | 3012.1 | 3163.0 | 1260.8 |
| 77.5° | 240.3  | 242.2  | 287.9  | 309.7  | 420.9  | 724.7  | 832.0  | 1737.4 | 2208.0 | 1765.2 | 845.9  |
| 80°   | 105.2  | 109.2  | 111.2  | 121.1  | 170.8  | 280.0  | 315.7  | 806.1  | 1509.0 | 899.5  | 462.6  |
| 82.5° | 67.5   | 69.5   | 69.5   | 69.5   | 81.4   | 111.2  | 127.1  | 323.6  | 752.5  | 446.8  | 143.0  |
| 85°   | 35.7   | 35.7   | 39.7   | 49.6   | 57.6   | 67.5   | 71.5   | 103.2  | 248.2  | 133.0  | 33.8   |
| 87.5° | 19.9   | 21.8   | 23.8   | 29.8   | 37.7   | 45.7   | 49.6   | 71.5   | 95.3   | 91.3   | 7.9    |
| 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: GALN-SA2B-950-U-T3BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 49.6  | 49.6 | 49.6 | 49.6 | 49.6 | 49.6 | 49.6 | 49.6 | 49.6 | 49.6 | 49.6 |
| 2.5°  | 51.6  | 49.6 | 47.7 | 45.7 | 43.7 | 41.7 | 41.7 | 41.7 | 41.7 | 41.7 | 41.7 |
| 5°    | 49.6  | 47.7 | 45.7 | 41.7 | 37.7 | 35.7 | 33.8 | 31.8 | 31.8 | 31.8 | 31.8 |
| 7.5°  | 49.6  | 47.7 | 41.7 | 37.7 | 33.8 | 29.8 | 25.8 | 25.8 | 25.8 | 25.8 | 25.8 |
| 10°   | 49.6  | 45.7 | 39.7 | 33.8 | 27.8 | 23.8 | 21.8 | 19.9 | 19.9 | 19.9 | 19.9 |
| 12.5° | 49.6  | 43.7 | 37.7 | 29.8 | 23.8 | 19.9 | 17.9 | 15.9 | 15.9 | 15.9 | 15.9 |
| 15°   | 49.6  | 43.7 | 35.7 | 27.8 | 21.8 | 15.9 | 13.9 | 11.9 | 11.9 | 11.9 | 11.9 |
| 17.5° | 47.7  | 41.7 | 33.8 | 23.8 | 17.9 | 11.9 | 9.9  | 7.9  | 7.9  | 9.9  | 9.9  |
| 20°   | 45.7  | 39.7 | 29.8 | 19.9 | 13.9 | 9.9  | 6.0  | 6.0  | 6.0  | 6.0  | 6.0  |
| 22.5° | 45.7  | 39.7 | 27.8 | 17.9 | 11.9 | 6.0  | 4.0  | 4.0  | 4.0  | 4.0  | 6.0  |
| 25°   | 45.7  | 37.7 | 23.8 | 13.9 | 7.9  | 4.0  | 2.0  | 2.0  | 2.0  | 2.0  | 2.0  |
| 27.5° | 45.7  | 37.7 | 21.8 | 11.9 | 6.0  | 4.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 30°   | 43.7  | 35.7 | 19.9 | 9.9  | 4.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 32.5° | 43.7  | 33.8 | 15.9 | 7.9  | 4.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 35°   | 45.7  | 31.8 | 13.9 | 6.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.0  |
| 37.5° | 47.7  | 29.8 | 11.9 | 4.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 49.6  | 27.8 | 11.9 | 4.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 53.6  | 27.8 | 9.9  | 4.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 57.6  | 27.8 | 7.9  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 65.5  | 29.8 | 7.9  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 71.5  | 31.8 | 6.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 79.4  | 29.8 | 6.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 89.4  | 29.8 | 6.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 97.3  | 27.8 | 6.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 58°   | 101.3 | 25.8 | 4.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 121.1 | 23.8 | 4.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 188.6 | 19.9 | 4.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 383.2 | 17.9 | 4.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 714.8 | 15.9 | 4.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 800.2 | 17.9 | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 504.3 | 13.9 | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 266.1 | 13.9 | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 133.0 | 13.9 | 2.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 61.6  | 9.9  | 2.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 25.8  | 6.0  | 4.0  | 2.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 11.9  | 6.0  | 4.0  | 4.0  | 2.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 6.0   | 6.0  | 6.0  | 4.0  | 4.0  | 2.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 90°   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-17

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-950-U-5WQ

Data in this report applies to families of products including GSS-SB1A-950-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-17  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-950-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI  
 5000K CCT 26 LEDS

### Spectral Parameters

CCT (K): 4765  
 CIE  $u'$ : 0.2105  
 CIE  $v'$ : 0.4941  
 Duv: 0.0052  
 CIE x: 0.3536  
 CIE y: 0.3689  
 CIE z: 0.2775  
 Peak Wavelength (nm): 449  
 Dominant Wavelength (nm): 571  
 Purity: 16.80041  
 Rf: 90.7  
 Rg: 98

CRI (Ra): 90.8  
 R1: 89.8  
 R2: 93.1  
 R3: 95.3  
 R4: 90.3  
 R5: 89.0  
 R6: 89.7  
 R7: 94.9  
 R8: 84.0  
 R9: 54.9  
 R10: 83.0  
 R11: 89.6  
 R12: 68.0  
 R13: 90.6  
 R14: 97.3  
 R15: 86.2



### Test Conditions

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

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| 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 5000K 7-step quadrangle

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### Photopic Flux vs. Wavelength

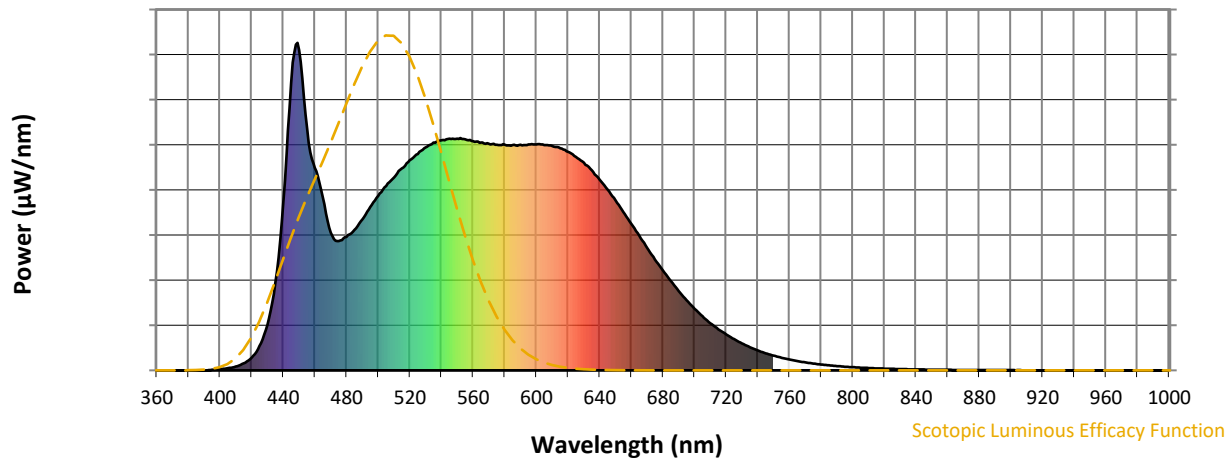


### Photopic Lumens: NR

| 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    | 462                      | NR            | 620    | 668                      | NR            | 750    | 45                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 498                      | NR            | 625    | 652                      | NR            | 755    | 39                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 533                      | NR            | 630    | 634                      | NR            | 760    | 33                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 562                      | NR            | 635    | 610                      | NR            | 765    | 28                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 590                      | NR            | 640    | 583                      | NR            | 770    | 24                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 617                      | NR            | 645    | 552                      | NR            | 775    | 21                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 642                      | NR            | 650    | 519                      | NR            | 780    | 18                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 661                      | NR            | 655    | 484                      | NR            | 785    | 15                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 681                      | NR            | 660    | 448                      | NR            | 790    | 13                       | NR            | 920    | 0                        | NR            |
| 405    | 7                        | NR            | 535    | 695                      | NR            | 665    | 411                      | NR            | 795    | 11                       | NR            | 925    | 0                        | NR            |
| 410    | 12                       | NR            | 540    | 702                      | NR            | 670    | 373                      | NR            | 800    | 10                       | NR            | 930    | 0                        | NR            |
| 415    | 21                       | NR            | 545    | 708                      | NR            | 675    | 338                      | NR            | 805    | 8                        | NR            | 935    | 0                        | NR            |
| 420    | 39                       | NR            | 550    | 707                      | NR            | 680    | 305                      | NR            | 810    | 7                        | NR            | 940    | 0                        | NR            |
| 425    | 74                       | NR            | 555    | 706                      | NR            | 685    | 272                      | NR            | 815    | 6                        | NR            | 945    | 0                        | NR            |
| 430    | 139                      | NR            | 560    | 700                      | NR            | 690    | 243                      | NR            | 820    | 5                        | NR            | 950    | 0                        | NR            |
| 435    | 270                      | NR            | 565    | 696                      | NR            | 695    | 214                      | NR            | 825    | 5                        | NR            | 955    | 0                        | NR            |
| 440    | 517                      | NR            | 570    | 692                      | NR            | 700    | 188                      | NR            | 830    | 4                        | NR            | 960    | 0                        | NR            |
| 445    | 877                      | NR            | 575    | 689                      | NR            | 705    | 165                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 978                      | NR            | 580    | 688                      | NR            | 710    | 144                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 738                      | NR            | 585    | 688                      | NR            | 715    | 125                      | NR            | 845    | 3                        | NR            | 975    | 0                        | NR            |
| 460    | 618                      | NR            | 590    | 689                      | NR            | 720    | 110                      | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 529                      | NR            | 595    | 690                      | NR            | 725    | 95                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 420                      | NR            | 600    | 690                      | NR            | 730    | 82                       | NR            | 860    | 2                        | NR            | 990    | 0                        | NR            |
| 475    | 395                      | NR            | 605    | 688                      | NR            | 735    | 71                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 408                      | NR            | 610    | 685                      | NR            | 740    | 61                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 429                      | NR            | 615    | 678                      | NR            | 745    | 52                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Scotopic Flux vs. Wavelength



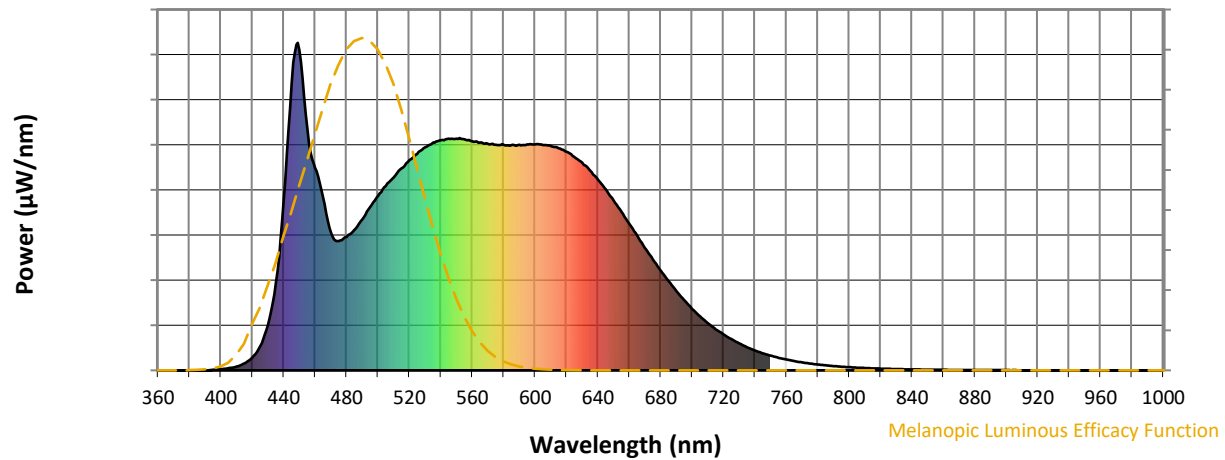
Scotopic Lumens: NR

S/P: 1.99

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>$(\phi/\text{nm})$ | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>$(\phi/\text{nm})$ | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>$(\phi/\text{nm})$ | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>$(\phi/\text{nm})$ | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>$(\phi/\text{nm})$ |
|-------------------|--------------------------------------|------------------------------|-------------------|--------------------------------------|------------------------------|-------------------|--------------------------------------|------------------------------|-------------------|--------------------------------------|------------------------------|-------------------|--------------------------------------|------------------------------|
| 360               | 0                                    | NR                           | 490               | 462                                  | NR                           | 620               | 668                                  | NR                           | 750               | 45                                   | NR                           | 880               | 1                                    | NR                           |
| 365               | 0                                    | NR                           | 495               | 498                                  | NR                           | 625               | 652                                  | NR                           | 755               | 39                                   | NR                           | 885               | 1                                    | NR                           |
| 370               | 0                                    | NR                           | 500               | 533                                  | NR                           | 630               | 634                                  | NR                           | 760               | 33                                   | NR                           | 890               | 1                                    | NR                           |
| 375               | 0                                    | NR                           | 505               | 562                                  | NR                           | 635               | 610                                  | NR                           | 765               | 28                                   | NR                           | 895               | 1                                    | NR                           |
| 380               | 0                                    | NR                           | 510               | 590                                  | NR                           | 640               | 583                                  | NR                           | 770               | 24                                   | NR                           | 900               | 1                                    | NR                           |
| 385               | 0                                    | NR                           | 515               | 617                                  | NR                           | 645               | 552                                  | NR                           | 775               | 21                                   | NR                           | 905               | 1                                    | NR                           |
| 390               | 0                                    | NR                           | 520               | 642                                  | NR                           | 650               | 519                                  | NR                           | 780               | 18                                   | NR                           | 910               | 0                                    | NR                           |
| 395               | 2                                    | NR                           | 525               | 661                                  | NR                           | 655               | 484                                  | NR                           | 785               | 15                                   | NR                           | 915               | 0                                    | NR                           |
| 400               | 4                                    | NR                           | 530               | 681                                  | NR                           | 660               | 448                                  | NR                           | 790               | 13                                   | NR                           | 920               | 0                                    | NR                           |
| 405               | 7                                    | NR                           | 535               | 695                                  | NR                           | 665               | 411                                  | NR                           | 795               | 11                                   | NR                           | 925               | 0                                    | NR                           |
| 410               | 12                                   | NR                           | 540               | 702                                  | NR                           | 670               | 373                                  | NR                           | 800               | 10                                   | NR                           | 930               | 0                                    | NR                           |
| 415               | 21                                   | NR                           | 545               | 708                                  | NR                           | 675               | 338                                  | NR                           | 805               | 8                                    | NR                           | 935               | 0                                    | NR                           |
| 420               | 39                                   | NR                           | 550               | 707                                  | NR                           | 680               | 305                                  | NR                           | 810               | 7                                    | NR                           | 940               | 0                                    | NR                           |
| 425               | 74                                   | NR                           | 555               | 706                                  | NR                           | 685               | 272                                  | NR                           | 815               | 6                                    | NR                           | 945               | 0                                    | NR                           |
| 430               | 139                                  | NR                           | 560               | 700                                  | NR                           | 690               | 243                                  | NR                           | 820               | 5                                    | NR                           | 950               | 0                                    | NR                           |
| 435               | 270                                  | NR                           | 565               | 696                                  | NR                           | 695               | 214                                  | NR                           | 825               | 5                                    | NR                           | 955               | 0                                    | NR                           |
| 440               | 517                                  | NR                           | 570               | 692                                  | NR                           | 700               | 188                                  | NR                           | 830               | 4                                    | NR                           | 960               | 0                                    | NR                           |
| 445               | 877                                  | NR                           | 575               | 689                                  | NR                           | 705               | 165                                  | NR                           | 835               | 3                                    | NR                           | 965               | 0                                    | NR                           |
| 450               | 978                                  | NR                           | 580               | 688                                  | NR                           | 710               | 144                                  | NR                           | 840               | 3                                    | NR                           | 970               | 0                                    | NR                           |
| 455               | 738                                  | NR                           | 585               | 688                                  | NR                           | 715               | 125                                  | NR                           | 845               | 3                                    | NR                           | 975               | 0                                    | NR                           |
| 460               | 618                                  | NR                           | 590               | 689                                  | NR                           | 720               | 110                                  | NR                           | 850               | 2                                    | NR                           | 980               | 0                                    | NR                           |
| 465               | 529                                  | NR                           | 595               | 690                                  | NR                           | 725               | 95                                   | NR                           | 855               | 2                                    | NR                           | 985               | 0                                    | NR                           |
| 470               | 420                                  | NR                           | 600               | 690                                  | NR                           | 730               | 82                                   | NR                           | 860               | 2                                    | NR                           | 990               | 0                                    | NR                           |
| 475               | 395                                  | NR                           | 605               | 688                                  | NR                           | 735               | 71                                   | NR                           | 865               | 1                                    | NR                           | 995               | 0                                    | NR                           |
| 480               | 408                                  | NR                           | 610               | 685                                  | NR                           | 740               | 61                                   | NR                           | 870               | 1                                    | NR                           | 1000              | 0                                    | NR                           |
| 485               | 429                                  | NR                           | 615               | 678                                  | NR                           | 745               | 52                                   | NR                           | 875               | 1                                    | NR                           |                   |                                      |                              |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 4.22

| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 462                         | NR               | 620       | 668                         | NR               | 750       | 45                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 498                         | NR               | 625       | 652                         | NR               | 755       | 39                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 533                         | NR               | 630       | 634                         | NR               | 760       | 33                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 562                         | NR               | 635       | 610                         | NR               | 765       | 28                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 590                         | NR               | 640       | 583                         | NR               | 770       | 24                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 617                         | NR               | 645       | 552                         | NR               | 775       | 21                          | NR               | 905       | 1                           | NR               |
| 390       | 0                           | NR               | 520       | 642                         | NR               | 650       | 519                         | NR               | 780       | 18                          | NR               | 910       | 0                           | NR               |
| 395       | 2                           | NR               | 525       | 661                         | NR               | 655       | 484                         | NR               | 785       | 15                          | NR               | 915       | 0                           | NR               |
| 400       | 4                           | NR               | 530       | 681                         | NR               | 660       | 448                         | NR               | 790       | 13                          | NR               | 920       | 0                           | NR               |
| 405       | 7                           | NR               | 535       | 695                         | NR               | 665       | 411                         | NR               | 795       | 11                          | NR               | 925       | 0                           | NR               |
| 410       | 12                          | NR               | 540       | 702                         | NR               | 670       | 373                         | NR               | 800       | 10                          | NR               | 930       | 0                           | NR               |
| 415       | 21                          | NR               | 545       | 708                         | NR               | 675       | 338                         | NR               | 805       | 8                           | NR               | 935       | 0                           | NR               |
| 420       | 39                          | NR               | 550       | 707                         | NR               | 680       | 305                         | NR               | 810       | 7                           | NR               | 940       | 0                           | NR               |
| 425       | 74                          | NR               | 555       | 706                         | NR               | 685       | 272                         | NR               | 815       | 6                           | NR               | 945       | 0                           | NR               |
| 430       | 139                         | NR               | 560       | 700                         | NR               | 690       | 243                         | NR               | 820       | 5                           | NR               | 950       | 0                           | NR               |
| 435       | 270                         | NR               | 565       | 696                         | NR               | 695       | 214                         | NR               | 825       | 5                           | NR               | 955       | 0                           | NR               |
| 440       | 517                         | NR               | 570       | 692                         | NR               | 700       | 188                         | NR               | 830       | 4                           | NR               | 960       | 0                           | NR               |
| 445       | 877                         | NR               | 575       | 689                         | NR               | 705       | 165                         | NR               | 835       | 3                           | NR               | 965       | 0                           | NR               |
| 450       | 978                         | NR               | 580       | 688                         | NR               | 710       | 144                         | NR               | 840       | 3                           | NR               | 970       | 0                           | NR               |
| 455       | 738                         | NR               | 585       | 688                         | NR               | 715       | 125                         | NR               | 845       | 3                           | NR               | 975       | 0                           | NR               |
| 460       | 618                         | NR               | 590       | 689                         | NR               | 720       | 110                         | NR               | 850       | 2                           | NR               | 980       | 0                           | NR               |
| 465       | 529                         | NR               | 595       | 690                         | NR               | 725       | 95                          | NR               | 855       | 2                           | NR               | 985       | 0                           | NR               |
| 470       | 420                         | NR               | 600       | 690                         | NR               | 730       | 82                          | NR               | 860       | 2                           | NR               | 990       | 0                           | NR               |
| 475       | 395                         | NR               | 605       | 688                         | NR               | 735       | 71                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 408                         | NR               | 610       | 685                         | NR               | 740       | 61                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 429                         | NR               | 615       | 678                         | NR               | 745       | 52                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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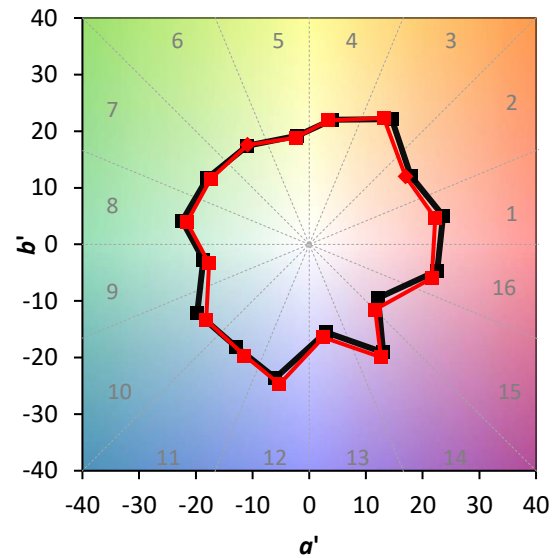
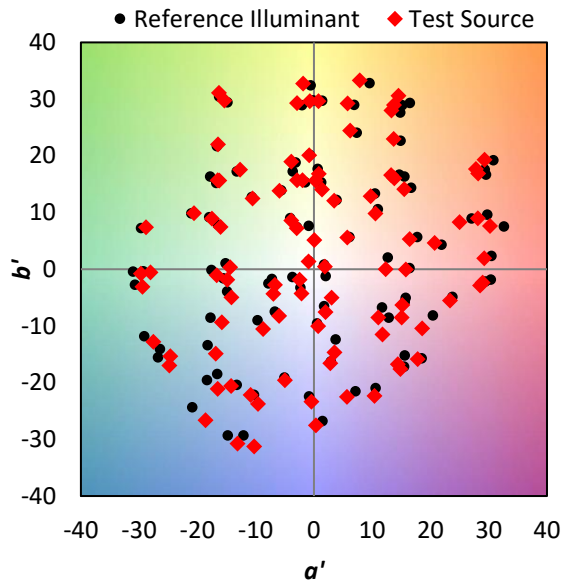
TM-30-18

### Summary

$R_f = 90.7$   
 $R_g = 98$   
 CIE  $R_a = 90.8$   
 $R_9 = 54.9$

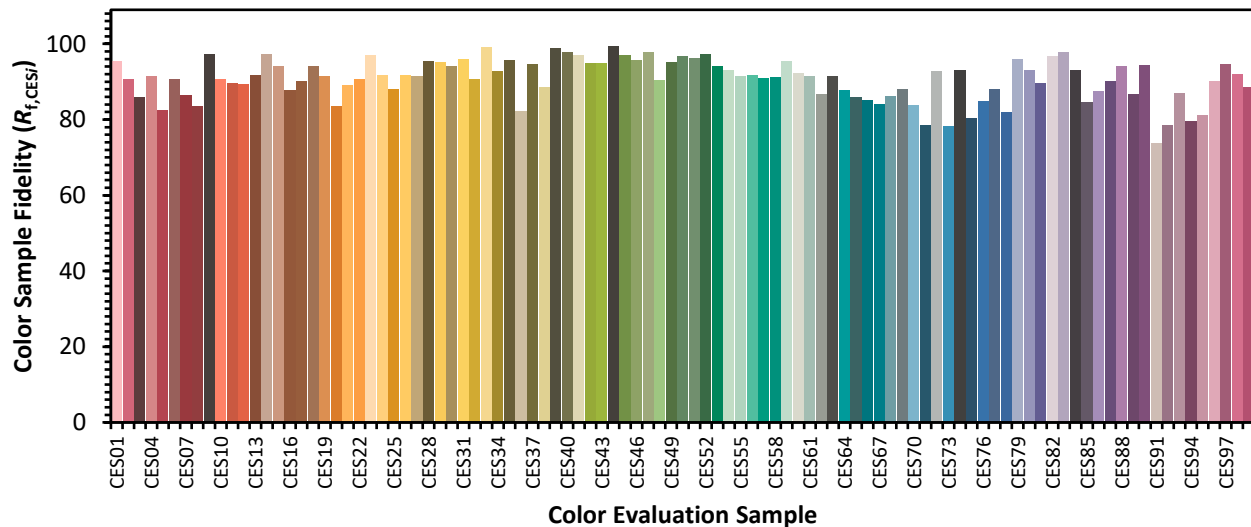


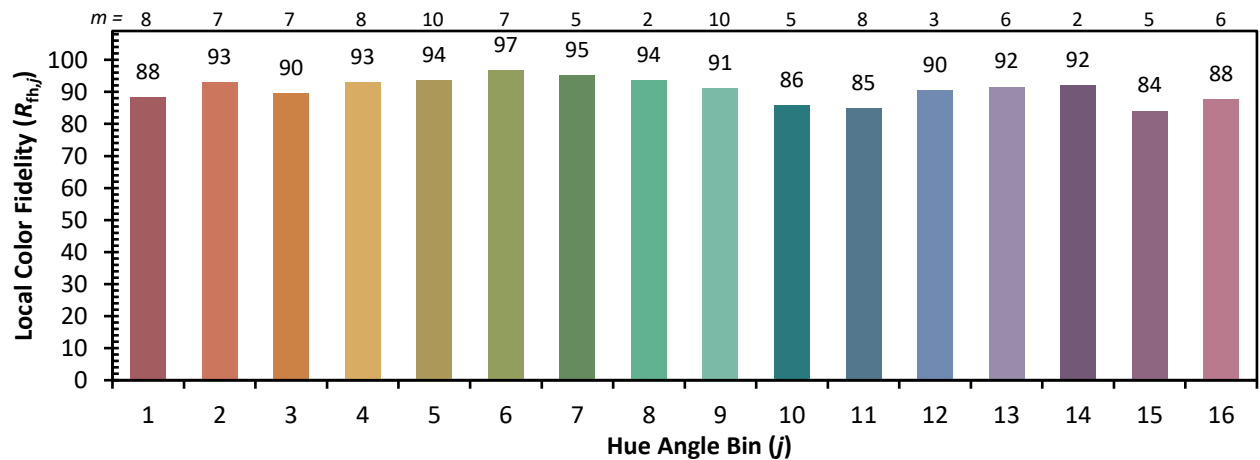
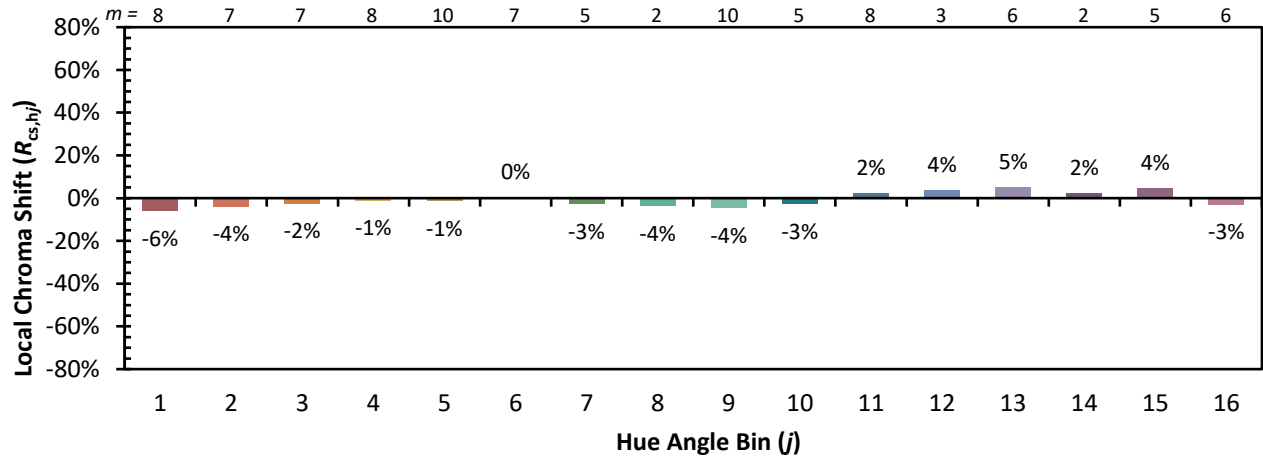
### Color Vector Graphics



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

|            |             |            |            |
|------------|-------------|------------|------------|
| CES01 = 85 | CES26 = 92  | CES51 = 96 | CES76 = 85 |
| CES02 = 60 | CES27 = 92  | CES52 = 97 | CES77 = 88 |
| CES03 = 31 | CES28 = 95  | CES53 = 94 | CES78 = 82 |
| CES04 = 69 | CES29 = 95  | CES54 = 93 | CES79 = 96 |
| CES05 = 48 | CES30 = 94  | CES55 = 92 | CES80 = 93 |
| CES06 = 50 | CES31 = 96  | CES56 = 92 | CES81 = 89 |
| CES07 = 41 | CES32 = 91  | CES57 = 91 | CES82 = 97 |
| CES08 = 40 | CES33 = 99  | CES58 = 91 | CES83 = 98 |
| CES09 = 29 | CES34 = 93  | CES59 = 95 | CES84 = 93 |
| CES10 = 73 | CES35 = 96  | CES60 = 92 | CES85 = 85 |
| CES11 = 56 | CES36 = 82  | CES61 = 92 | CES86 = 88 |
| CES12 = 62 | CES37 = 95  | CES62 = 87 | CES87 = 90 |
| CES13 = 42 | CES38 = 89  | CES63 = 91 | CES88 = 94 |
| CES14 = 74 | CES39 = 99  | CES64 = 88 | CES89 = 87 |
| CES15 = 71 | CES40 = 98  | CES65 = 86 | CES90 = 94 |
| CES16 = 46 | CES41 = 97  | CES66 = 85 | CES91 = 74 |
| CES17 = 48 | CES42 = 95  | CES67 = 84 | CES92 = 78 |
| CES18 = 56 | CES43 = 95  | CES68 = 86 | CES93 = 87 |
| CES19 = 70 | CES44 = 100 | CES69 = 88 | CES94 = 80 |
| CES20 = 65 | CES45 = 97  | CES70 = 84 | CES95 = 81 |
| CES21 = 85 | CES46 = 96  | CES71 = 79 | CES96 = 90 |
| CES22 = 77 | CES47 = 98  | CES72 = 93 | CES97 = 95 |
| CES23 = 91 | CES48 = 90  | CES73 = 78 | CES98 = 92 |
| CES24 = 90 | CES49 = 95  | CES74 = 93 | CES99 = 88 |
| CES25 = 70 | CES50 = 97  | CES75 = 80 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)