

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: P1047339

Luminaire Tested: **GALN-SA1C-835-U-T3BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1047339  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA1C-835-U-T3BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 1050mA 1xLight Square PACKAGE  
80CRI 3500K FIXTURE w/ TYPE III ANGLED BACKLIGHT CONTROL  
Light Source: (14) 3500K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5361.3 lumens  
Efficiency: N/A  
Efficacy: 106.8 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B0 - U0 - G2

Input Watts (W): 50.2  
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

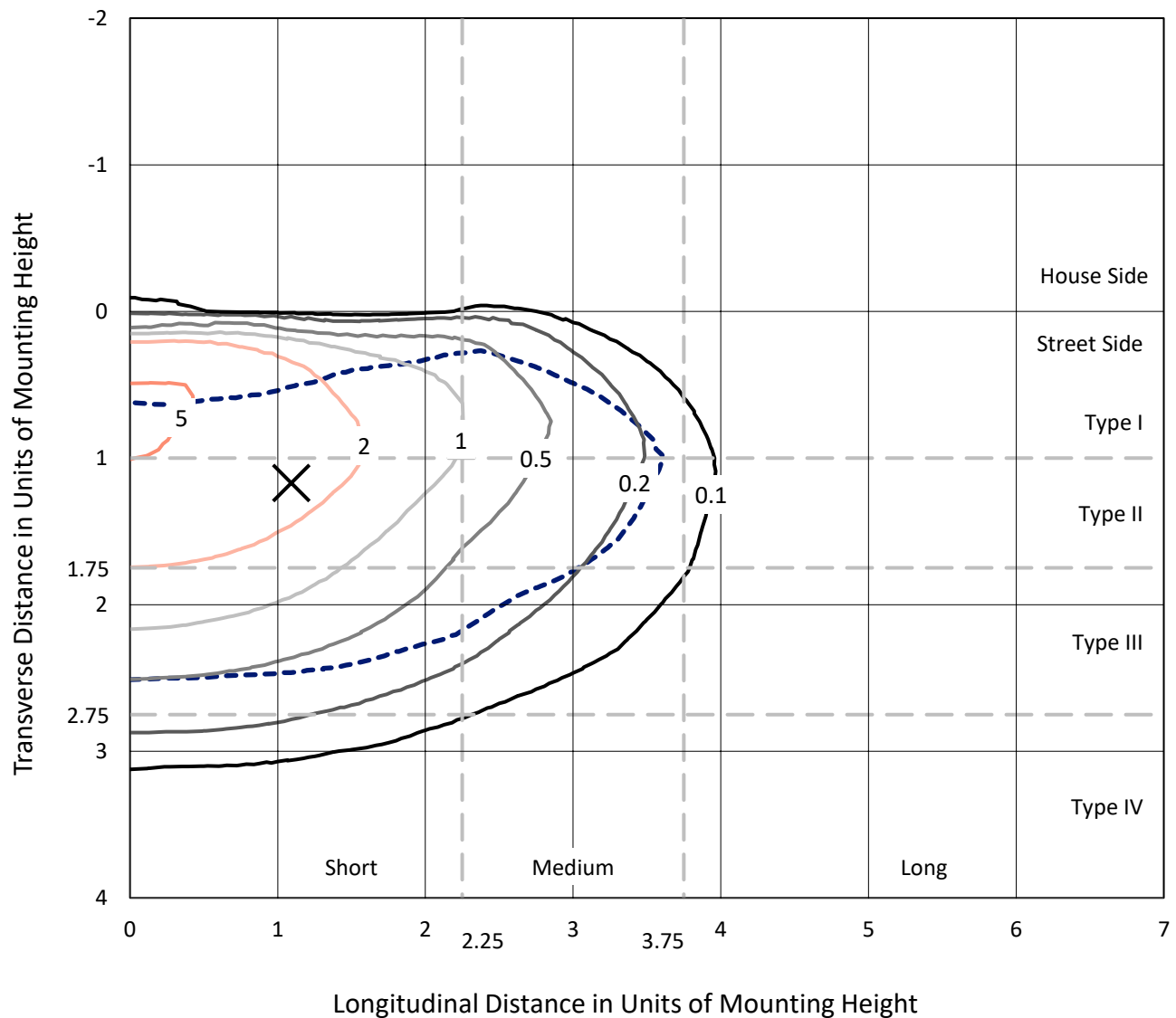


REPORT NUMBER: P1047339

CATALOG NUMBER: GALN-SA1C-835-U-T3BC

## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd  
 - - - 1/2 Max cd

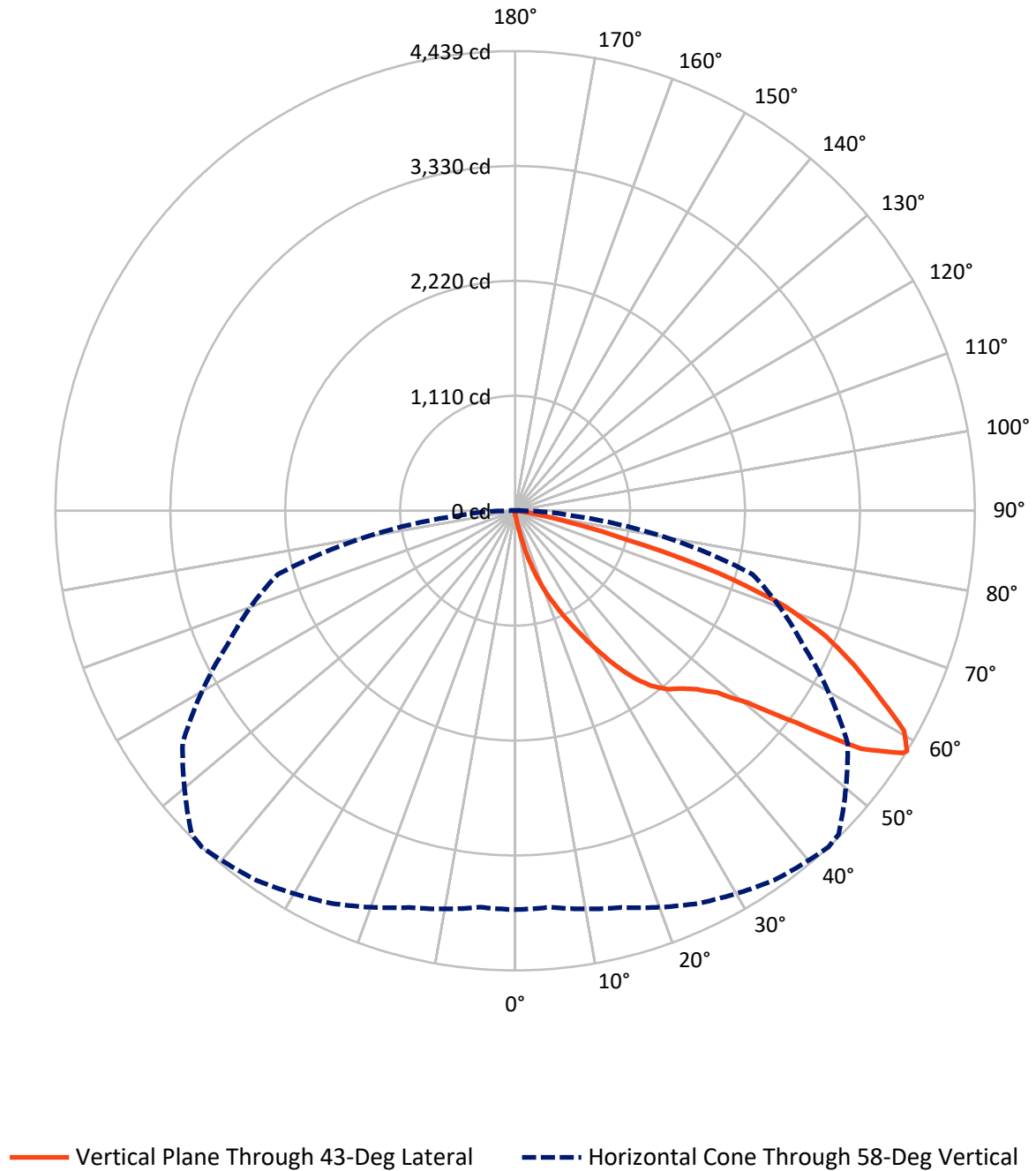


Based on 15 foot mounting height. Maximum calculated value = 6 fc  
 Type III - Short - N/A

REPORT NUMBER: P1047339

CATALOG NUMBER: GALN-SA1C-835-U-T3BC

## Luminous Intensity Polar Plot



REPORT NUMBER: P1047339

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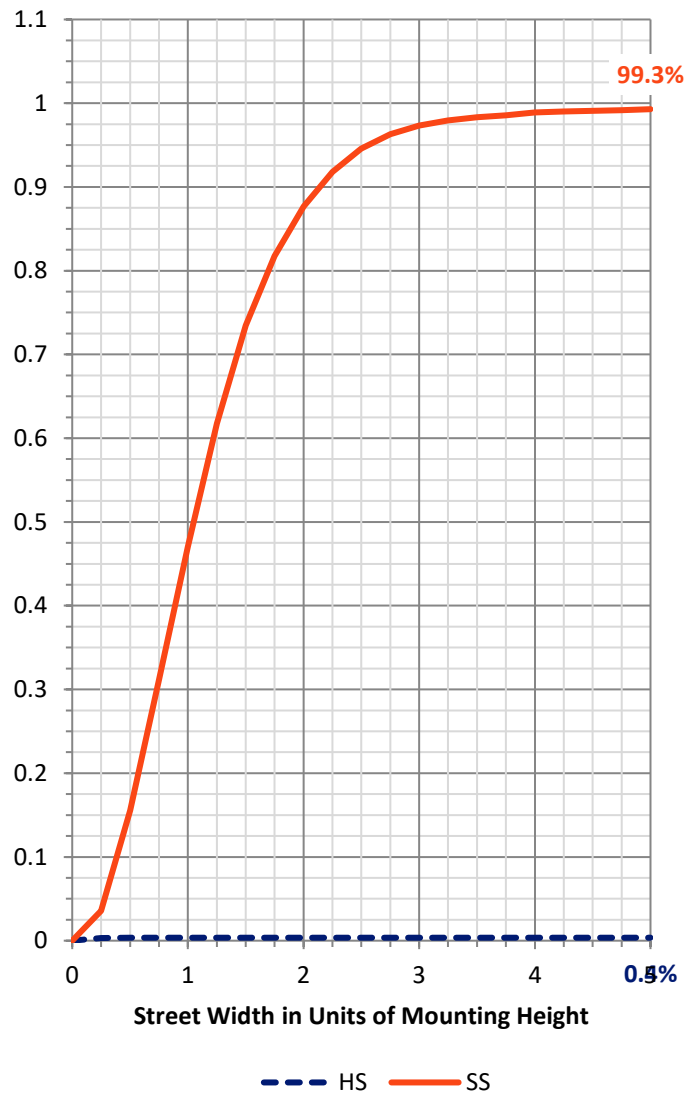
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 19.6     | 0.0    | 19.6   |
|                    | % Fixture | 0.4      | 0.0    | 0.4    |
| <b>Street Side</b> | Lumens    | 5341.8   | 0.0    | 5341.8 |
|                    | % Fixture | 99.6     | 0.0    | 99.6   |
| <b>Total</b>       | Lumens    | 5361.3   | 0.0    | 5361.3 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 5.1    | 0.1       |
| 10°-20°   | 61.6   | 1.1       |
| 20°-30°   | 222.1  | 4.1       |
| 30°-40°   | 508.2  | 9.5       |
| 40°-50°   | 857.2  | 16.0      |
| 50°-60°   | 1414.5 | 26.4      |
| 60°-70°   | 1580.9 | 29.5      |
| 70°-80°   | 652.7  | 12.2      |
| 80°-90°   | 58.8   | 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°    | 5361.3 | 100.0     |
| 0°-180°   | 5361.3 | 100.0     |



REPORT NUMBER: P1047339

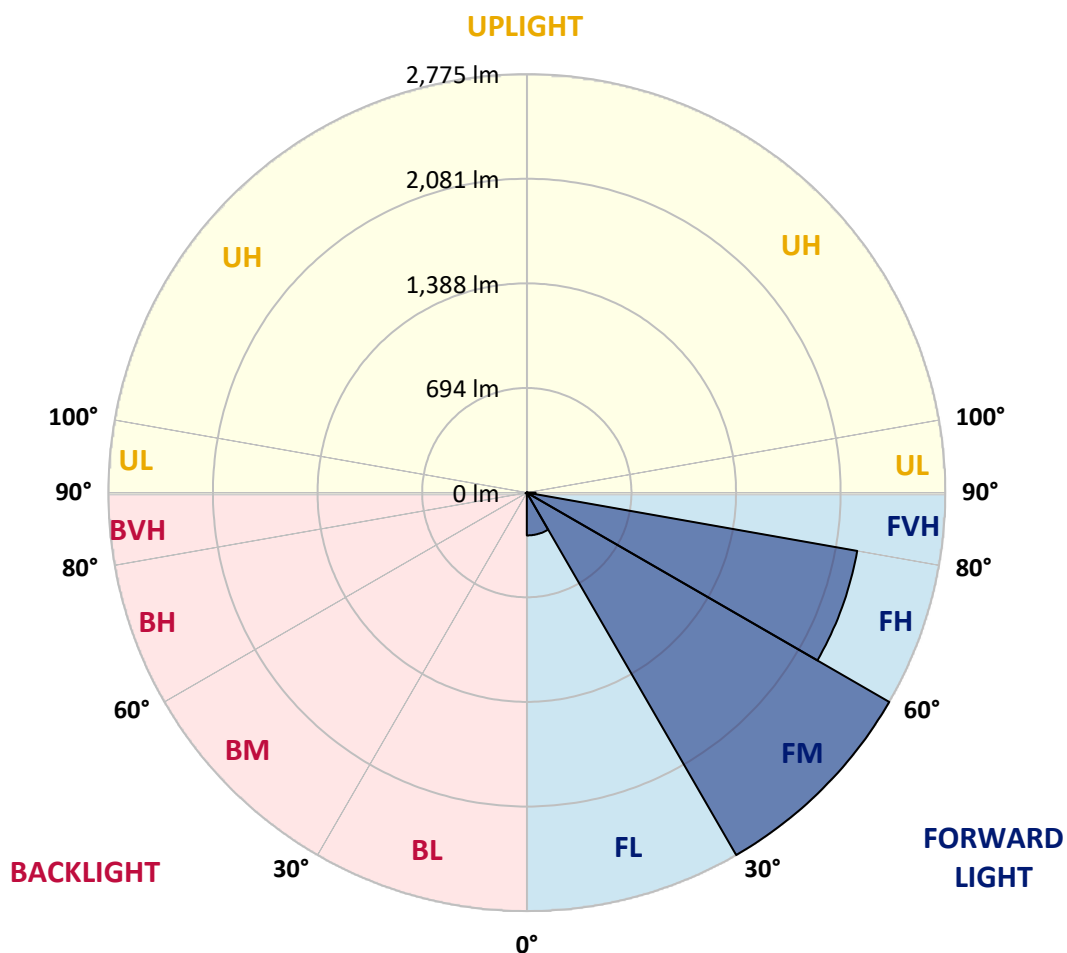
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 283.8  | 5.3       |                         |      |         |
| FM   | (30°-60°)   | 2775.2 | 51.8      |                         |      |         |
| FH   | (60°-80°)   | 2224.7 | 41.5      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 58.0   | 1.1       |                         |      | G1/100  |
| BL   | (0°-30°)    | 5.1    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 4.7    | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 9.0    | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 0.8    | 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





REPORT NUMBER: P1047339

CATALOG NUMBER: GALN-SA1C-835-U-T3BC

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 43°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 35.1   | 35.1   | 35.1   | 35.1   | 35.1   | 35.1   | 35.1   | 35.1   | 35.1   | 35.1   | 35.1   |
| 2.5°  | 42.1   | 43.5   | 42.1   | 42.1   | 42.1   | 40.7   | 40.7   | 39.3   | 39.3   | 37.9   | 36.5   |
| 5°    | 61.7   | 61.7   | 57.5   | 54.7   | 51.9   | 50.5   | 49.1   | 46.3   | 43.5   | 40.7   | 37.9   |
| 7.5°  | 137.4  | 137.4  | 124.8  | 108.0  | 85.5   | 72.9   | 70.1   | 57.5   | 49.1   | 43.5   | 37.9   |
| 10°   | 328.1  | 328.1  | 300.1  | 253.8  | 196.3  | 145.8  | 130.4  | 82.7   | 58.9   | 46.3   | 39.3   |
| 12.5° | 545.5  | 552.5  | 517.4  | 458.5  | 373.0  | 284.6  | 253.8  | 151.4  | 78.5   | 50.5   | 39.3   |
| 15°   | 740.4  | 723.5  | 713.7  | 657.6  | 576.3  | 471.1  | 431.9  | 255.2  | 113.6  | 57.5   | 39.3   |
| 17.5° | 872.2  | 872.2  | 858.2  | 820.3  | 746.0  | 653.4  | 621.2  | 412.2  | 183.7  | 65.9   | 40.7   |
| 20°   | 1026.4 | 1026.4 | 1001.2 | 974.5  | 908.6  | 830.1  | 799.3  | 586.1  | 284.6  | 84.1   | 40.7   |
| 22.5° | 1212.9 | 1215.7 | 1187.7 | 1140.0 | 1076.9 | 990.0  | 963.3  | 747.4  | 412.2  | 112.2  | 42.1   |
| 25°   | 1440.1 | 1442.9 | 1402.2 | 1357.3 | 1260.6 | 1166.6 | 1126.0 | 932.5  | 567.9  | 157.0  | 42.1   |
| 27.5° | 1691.1 | 1710.7 | 1650.4 | 1573.3 | 1470.9 | 1353.1 | 1322.3 | 1099.3 | 722.1  | 221.5  | 44.9   |
| 30°   | 2003.8 | 2003.8 | 1923.8 | 1815.9 | 1705.1 | 1559.3 | 1520.0 | 1274.6 | 886.2  | 307.1  | 47.7   |
| 32.5° | 2273.0 | 2251.9 | 2149.6 | 2036.0 | 1918.2 | 1782.2 | 1740.1 | 1458.3 | 1054.5 | 413.7  | 53.3   |
| 35°   | 2479.1 | 2460.9 | 2334.7 | 2212.7 | 2110.3 | 1985.5 | 1935.0 | 1657.4 | 1232.5 | 534.2  | 61.7   |
| 37.5° | 2655.8 | 2648.8 | 2477.7 | 2324.9 | 2257.6 | 2148.2 | 2103.3 | 1845.3 | 1407.8 | 664.6  | 71.5   |
| 40°   | 2849.3 | 2826.9 | 2644.6 | 2455.3 | 2354.3 | 2266.0 | 2225.3 | 1996.7 | 1576.1 | 817.5  | 85.5   |
| 42.5° | 3014.7 | 2988.1 | 2824.0 | 2639.0 | 2466.5 | 2347.3 | 2308.0 | 2124.3 | 1740.1 | 970.3  | 103.8  |
| 45°   | 3198.4 | 3184.4 | 3019.0 | 2878.7 | 2648.8 | 2458.1 | 2406.2 | 2226.7 | 1890.2 | 1152.6 | 127.6  |
| 47.5° | 3474.7 | 3449.4 | 3295.2 | 3180.2 | 2913.8 | 2626.3 | 2552.0 | 2331.9 | 2034.6 | 1332.1 | 164.1  |
| 50°   | 3795.8 | 3779.0 | 3687.8 | 3596.7 | 3331.6 | 2913.8 | 2825.4 | 2483.3 | 2195.9 | 1545.2 | 211.7  |
| 52.5° | 4058.0 | 4055.2 | 4066.4 | 4067.8 | 3867.3 | 3397.5 | 3265.7 | 2727.3 | 2380.9 | 1755.6 | 279.0  |
| 55°   | 4052.4 | 4065.0 | 4188.4 | 4330.0 | 4345.4 | 4058.0 | 3930.4 | 3138.1 | 2622.1 | 2015.0 | 373.0  |
| 57.5° | 3900.9 | 3891.1 | 4021.5 | 4234.7 | 4384.7 | 4415.6 | 4394.5 | 3776.1 | 2985.3 | 2327.7 | 517.4  |
| 58°   | 3851.9 | 3843.5 | 3966.8 | 4184.2 | 4356.7 | 4439.4 | 4418.4 | 3920.6 | 3066.6 | 2372.5 | 556.7  |
| 60°   | 3673.8 | 3675.2 | 3748.1 | 3945.8 | 4118.3 | 4314.6 | 4334.2 | 4332.8 | 3471.9 | 2672.6 | 754.4  |
| 62.5° | 3438.2 | 3427.0 | 3494.3 | 3655.6 | 3807.0 | 3938.8 | 3972.5 | 4360.9 | 4065.0 | 3054.0 | 1131.6 |
| 65°   | 3112.9 | 3096.1 | 3167.6 | 3349.9 | 3512.5 | 3598.1 | 3599.5 | 3985.1 | 4344.0 | 3463.5 | 1670.0 |
| 67.5° | 2508.5 | 2494.5 | 2637.6 | 2871.7 | 3122.7 | 3234.9 | 3285.4 | 3457.8 | 4108.5 | 3741.1 | 1978.5 |
| 70°   | 1536.8 | 1566.3 | 1765.4 | 2132.8 | 2561.8 | 2768.0 | 2843.7 | 2897.0 | 3498.5 | 3699.0 | 1654.6 |
| 72.5° | 709.5  | 674.5  | 844.1  | 1100.7 | 1590.1 | 2048.6 | 2127.1 | 2336.1 | 2773.6 | 3211.1 | 1233.9 |
| 75°   | 330.9  | 318.3  | 357.6  | 481.0  | 720.7  | 1106.3 | 1249.4 | 1864.9 | 2127.1 | 2233.7 | 890.4  |
| 77.5° | 169.7  | 171.1  | 203.3  | 218.7  | 297.3  | 511.8  | 587.5  | 1226.9 | 1559.3 | 1246.6 | 597.3  |
| 80°   | 74.3   | 77.1   | 78.5   | 85.5   | 120.6  | 197.7  | 223.0  | 569.3  | 1065.7 | 635.2  | 326.7  |
| 82.5° | 47.7   | 49.1   | 49.1   | 49.1   | 57.5   | 78.5   | 89.7   | 228.6  | 531.4  | 315.5  | 101.0  |
| 85°   | 25.2   | 25.2   | 28.0   | 35.1   | 40.7   | 47.7   | 50.5   | 72.9   | 175.3  | 93.9   | 23.8   |
| 87.5° | 14.0   | 15.4   | 16.8   | 21.0   | 26.6   | 32.3   | 35.1   | 50.5   | 67.3   | 64.5   | 5.6    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



REPORT NUMBER: P1047339

CATALOG NUMBER: GALN-SA1C-835-U-T3BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 35.1  | 35.1 | 35.1 | 35.1 | 35.1 | 35.1 | 35.1 | 35.1 | 35.1 | 35.1 | 35.1 |
| 2.5°  | 36.5  | 35.1 | 33.7 | 32.3 | 30.8 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 |
| 5°    | 35.1  | 33.7 | 32.3 | 29.4 | 26.6 | 25.2 | 23.8 | 22.4 | 22.4 | 22.4 | 22.4 |
| 7.5°  | 35.1  | 33.7 | 29.4 | 26.6 | 23.8 | 21.0 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 |
| 10°   | 35.1  | 32.3 | 28.0 | 23.8 | 19.6 | 16.8 | 15.4 | 14.0 | 14.0 | 14.0 | 14.0 |
| 12.5° | 35.1  | 30.8 | 26.6 | 21.0 | 16.8 | 14.0 | 12.6 | 11.2 | 11.2 | 11.2 | 11.2 |
| 15°   | 35.1  | 30.8 | 25.2 | 19.6 | 15.4 | 11.2 | 9.8  | 8.4  | 8.4  | 8.4  | 8.4  |
| 17.5° | 33.7  | 29.4 | 23.8 | 16.8 | 12.6 | 8.4  | 7.0  | 5.6  | 5.6  | 7.0  | 7.0  |
| 20°   | 32.3  | 28.0 | 21.0 | 14.0 | 9.8  | 7.0  | 4.2  | 4.2  | 4.2  | 4.2  | 4.2  |
| 22.5° | 32.3  | 28.0 | 19.6 | 12.6 | 8.4  | 4.2  | 2.8  | 2.8  | 2.8  | 2.8  | 4.2  |
| 25°   | 32.3  | 26.6 | 16.8 | 9.8  | 5.6  | 2.8  | 1.4  | 1.4  | 1.4  | 1.4  | 1.4  |
| 27.5° | 32.3  | 26.6 | 15.4 | 8.4  | 4.2  | 2.8  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 30°   | 30.8  | 25.2 | 14.0 | 7.0  | 2.8  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 32.5° | 30.8  | 23.8 | 11.2 | 5.6  | 2.8  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 35°   | 32.3  | 22.4 | 9.8  | 4.2  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.4  |
| 37.5° | 33.7  | 21.0 | 8.4  | 2.8  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 35.1  | 19.6 | 8.4  | 2.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 37.9  | 19.6 | 7.0  | 2.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 40.7  | 19.6 | 5.6  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 46.3  | 21.0 | 5.6  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 50.5  | 22.4 | 4.2  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 56.1  | 21.0 | 4.2  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 63.1  | 21.0 | 4.2  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 68.7  | 19.6 | 4.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 58°   | 71.5  | 18.2 | 2.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 85.5  | 16.8 | 2.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 133.2 | 14.0 | 2.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 270.6 | 12.6 | 2.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 504.8 | 11.2 | 2.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 565.1 | 12.6 | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 356.2 | 9.8  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 187.9 | 9.8  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 93.9  | 9.8  | 1.4  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 43.5  | 7.0  | 1.4  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 18.2  | 4.2  | 2.8  | 1.4  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 8.4   | 4.2  | 2.8  | 2.8  | 1.4  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 4.2   | 4.2  | 4.2  | 2.8  | 2.8  | 1.4  | 1.4  | 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: SP1-2407-184-10

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-835-U-5WQ

Data in this report applies to families of products including GSS-SB1A-835-U-5WQ

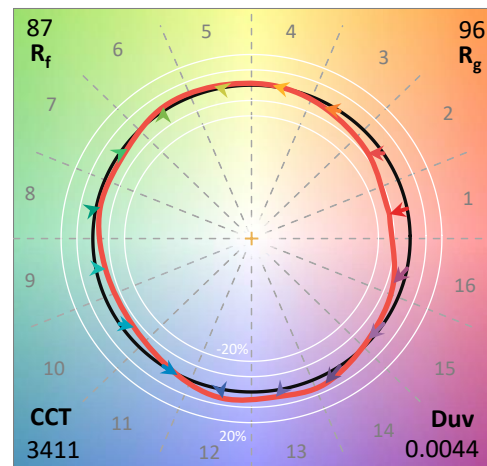
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-10  
 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-835-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 80 CRI 3500K CCT 26 LEDS

### Spectral Parameters

CCT (K): 3411  
 CIE  $u'$ : 0.2360  
 CIE  $v'$ : 0.5189  
 Duv: 0.0044  
 CIE x: 0.4154  
 CIE y: 0.4059  
 CIE z: 0.1787  
 Peak Wavelength (nm): 601  
 Dominant Wavelength (nm): 579  
 Purity: 46.51914  
 R<sub>f</sub>: 86.6  
 R<sub>g</sub>: 95.9

CRI (Ra): 83.5  
 R1: 81.1  
 R2: 88.9  
 R3: 97.2  
 R4: 83.8  
 R5: 81.7  
 R6: 86.9  
 R7: 86.1  
 R8: 62.2  
 R9: 6.3  
 R10: 75.4  
 R11: 84.1  
 R12: 69.7  
 R13: 82.8  
 R14: 98.5  
 R15: 72.6



### Test Conditions

Stabilization Time: 35M  
 Operation Time: 1H 35M  
 Sphere Temperature (°C): 25.2

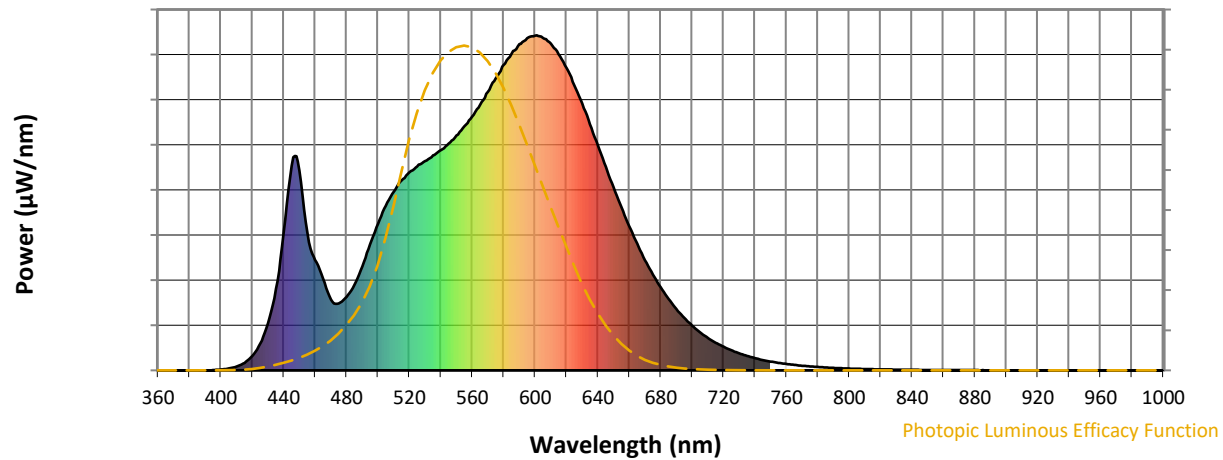
REPORT NUMBER: SP1-2407-184-10

| 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           |



REPORT NUMBER: SP1-2407-184-10

### Photopic Flux vs. Wavelength

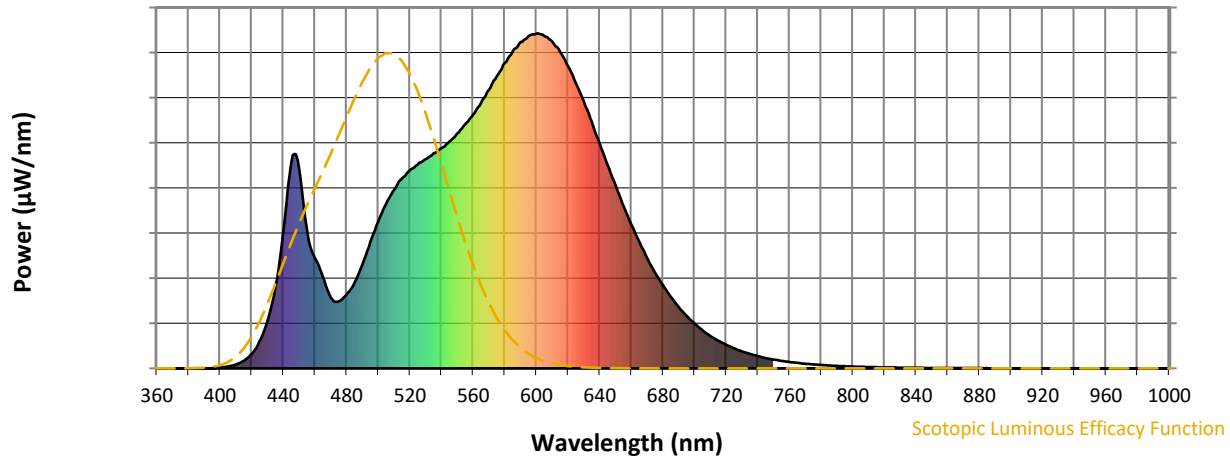


### Photopic Lumens: NR

| $\lambda$<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               | 311                                  | NR                             | 620               | 903                                  | NR                             | 750               | 26                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 376                                  | NR                             | 625               | 851                                  | NR                             | 755               | 22                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 438                                  | NR                             | 630               | 797                                  | NR                             | 760               | 19                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 491                                  | NR                             | 635               | 735                                  | NR                             | 765               | 16                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 533                                  | NR                             | 640               | 672                                  | NR                             | 770               | 14                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 566                                  | NR                             | 645               | 607                                  | NR                             | 775               | 12                                   | NR                             | 905               | 0                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 592                                  | NR                             | 650               | 546                                  | NR                             | 780               | 10                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 1                                    | NR                             | 525               | 608                                  | NR                             | 655               | 487                                  | NR                             | 785               | 9                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 3                                    | NR                             | 530               | 625                                  | NR                             | 660               | 429                                  | NR                             | 790               | 7                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 6                                    | NR                             | 535               | 642                                  | NR                             | 665               | 378                                  | NR                             | 795               | 6                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 12                                   | NR                             | 540               | 657                                  | NR                             | 670               | 329                                  | NR                             | 800               | 5                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 22                                   | NR                             | 545               | 677                                  | NR                             | 675               | 286                                  | NR                             | 805               | 5                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 43                                   | NR                             | 550               | 701                                  | NR                             | 680               | 248                                  | NR                             | 810               | 4                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 80                                   | NR                             | 555               | 728                                  | NR                             | 685               | 213                                  | NR                             | 815               | 3                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 140                                  | NR                             | 560               | 757                                  | NR                             | 690               | 184                                  | NR                             | 820               | 3                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 243                                  | NR                             | 565               | 793                                  | NR                             | 695               | 156                                  | NR                             | 825               | 3                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 412                                  | NR                             | 570               | 831                                  | NR                             | 700               | 134                                  | NR                             | 830               | 2                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 610                                  | NR                             | 575               | 872                                  | NR                             | 705               | 114                                  | NR                             | 835               | 2                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 597                                  | NR                             | 580               | 911                                  | NR                             | 710               | 97                                   | NR                             | 840               | 2                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 412                                  | NR                             | 585               | 944                                  | NR                             | 715               | 83                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 330                                  | NR                             | 590               | 974                                  | NR                             | 720               | 70                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 274                                  | NR                             | 595               | 992                                  | NR                             | 725               | 60                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 211                                  | NR                             | 600               | 999                                  | NR                             | 730               | 51                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 200                                  | NR                             | 605               | 992                                  | NR                             | 735               | 43                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 220                                  | NR                             | 610               | 975                                  | NR                             | 740               | 36                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 255                                  | NR                             | 615               | 944                                  | NR                             | 745               | 31                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-2407-184-10

### Scotopic Flux vs. Wavelength



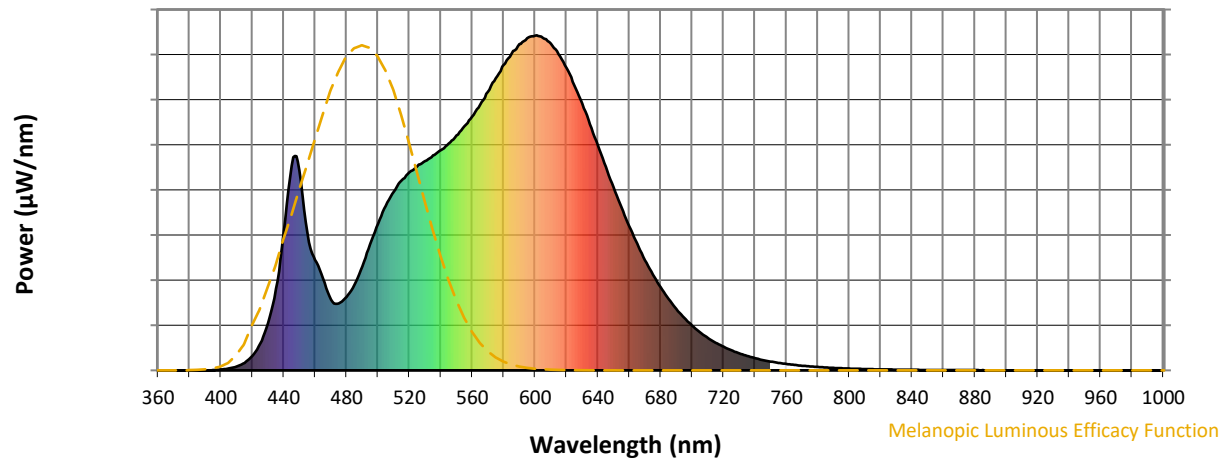
Scotopic Lumens: NR

S/P: 1.48

| 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       | 311                         | NR               | 620       | 903                         | NR               | 750       | 26                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 376                         | NR               | 625       | 851                         | NR               | 755       | 22                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 438                         | NR               | 630       | 797                         | NR               | 760       | 19                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 491                         | NR               | 635       | 735                         | NR               | 765       | 16                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 533                         | NR               | 640       | 672                         | NR               | 770       | 14                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 566                         | NR               | 645       | 607                         | NR               | 775       | 12                          | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 592                         | NR               | 650       | 546                         | NR               | 780       | 10                          | NR               | 910       | 0                           | NR               |
| 395       | 1                           | NR               | 525       | 608                         | NR               | 655       | 487                         | NR               | 785       | 9                           | NR               | 915       | 0                           | NR               |
| 400       | 3                           | NR               | 530       | 625                         | NR               | 660       | 429                         | NR               | 790       | 7                           | NR               | 920       | 0                           | NR               |
| 405       | 6                           | NR               | 535       | 642                         | NR               | 665       | 378                         | NR               | 795       | 6                           | NR               | 925       | 0                           | NR               |
| 410       | 12                          | NR               | 540       | 657                         | NR               | 670       | 329                         | NR               | 800       | 5                           | NR               | 930       | 0                           | NR               |
| 415       | 22                          | NR               | 545       | 677                         | NR               | 675       | 286                         | NR               | 805       | 5                           | NR               | 935       | 0                           | NR               |
| 420       | 43                          | NR               | 550       | 701                         | NR               | 680       | 248                         | NR               | 810       | 4                           | NR               | 940       | 0                           | NR               |
| 425       | 80                          | NR               | 555       | 728                         | NR               | 685       | 213                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 140                         | NR               | 560       | 757                         | NR               | 690       | 184                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 243                         | NR               | 565       | 793                         | NR               | 695       | 156                         | NR               | 825       | 3                           | NR               | 955       | 0                           | NR               |
| 440       | 412                         | NR               | 570       | 831                         | NR               | 700       | 134                         | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 610                         | NR               | 575       | 872                         | NR               | 705       | 114                         | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 597                         | NR               | 580       | 911                         | NR               | 710       | 97                          | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 412                         | NR               | 585       | 944                         | NR               | 715       | 83                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 330                         | NR               | 590       | 974                         | NR               | 720       | 70                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 274                         | NR               | 595       | 992                         | NR               | 725       | 60                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 211                         | NR               | 600       | 999                         | NR               | 730       | 51                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 200                         | NR               | 605       | 992                         | NR               | 735       | 43                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 220                         | NR               | 610       | 975                         | NR               | 740       | 36                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 255                         | NR               | 615       | 944                         | NR               | 745       | 31                          | NR               | 875       | 1                           | NR               |           |                             |                  |

REPORT NUMBER: SP1-2407-184-10

### Melanopic Flux vs. Wavelength


**Melanopic Lumens: NR**
**M/P: 2.88**

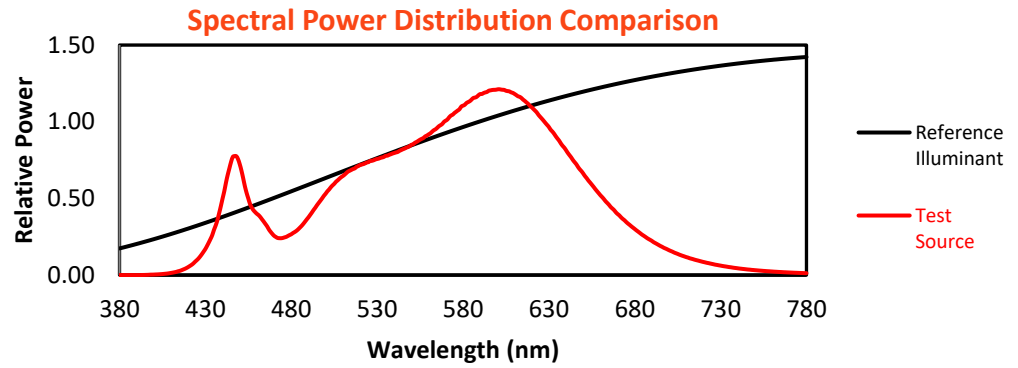
| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<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               | 311                                  | NR                             | 620               | 903                                  | NR                             | 750               | 26                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 376                                  | NR                             | 625               | 851                                  | NR                             | 755               | 22                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 438                                  | NR                             | 630               | 797                                  | NR                             | 760               | 19                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 491                                  | NR                             | 635               | 735                                  | NR                             | 765               | 16                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 533                                  | NR                             | 640               | 672                                  | NR                             | 770               | 14                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 566                                  | NR                             | 645               | 607                                  | NR                             | 775               | 12                                   | NR                             | 905               | 0                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 592                                  | NR                             | 650               | 546                                  | NR                             | 780               | 10                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 1                                    | NR                             | 525               | 608                                  | NR                             | 655               | 487                                  | NR                             | 785               | 9                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 3                                    | NR                             | 530               | 625                                  | NR                             | 660               | 429                                  | NR                             | 790               | 7                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 6                                    | NR                             | 535               | 642                                  | NR                             | 665               | 378                                  | NR                             | 795               | 6                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 12                                   | NR                             | 540               | 657                                  | NR                             | 670               | 329                                  | NR                             | 800               | 5                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 22                                   | NR                             | 545               | 677                                  | NR                             | 675               | 286                                  | NR                             | 805               | 5                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 43                                   | NR                             | 550               | 701                                  | NR                             | 680               | 248                                  | NR                             | 810               | 4                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 80                                   | NR                             | 555               | 728                                  | NR                             | 685               | 213                                  | NR                             | 815               | 3                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 140                                  | NR                             | 560               | 757                                  | NR                             | 690               | 184                                  | NR                             | 820               | 3                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 243                                  | NR                             | 565               | 793                                  | NR                             | 695               | 156                                  | NR                             | 825               | 3                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 412                                  | NR                             | 570               | 831                                  | NR                             | 700               | 134                                  | NR                             | 830               | 2                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 610                                  | NR                             | 575               | 872                                  | NR                             | 705               | 114                                  | NR                             | 835               | 2                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 597                                  | NR                             | 580               | 911                                  | NR                             | 710               | 97                                   | NR                             | 840               | 2                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 412                                  | NR                             | 585               | 944                                  | NR                             | 715               | 83                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 330                                  | NR                             | 590               | 974                                  | NR                             | 720               | 70                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 274                                  | NR                             | 595               | 992                                  | NR                             | 725               | 60                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 211                                  | NR                             | 600               | 999                                  | NR                             | 730               | 51                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 200                                  | NR                             | 605               | 992                                  | NR                             | 735               | 43                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 220                                  | NR                             | 610               | 975                                  | NR                             | 740               | 36                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 255                                  | NR                             | 615               | 944                                  | NR                             | 745               | 31                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-2407-184-10

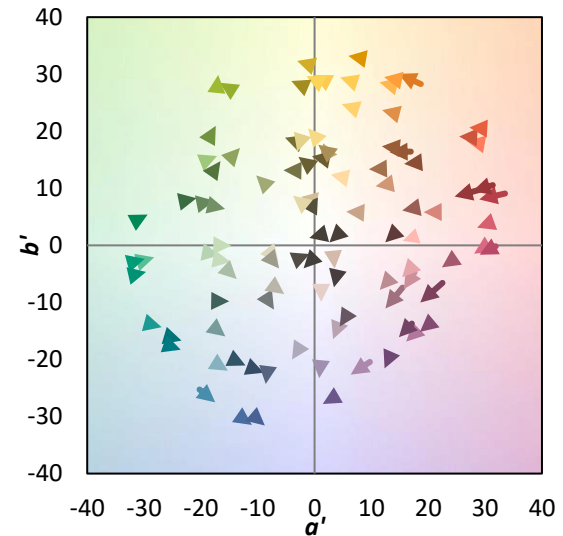
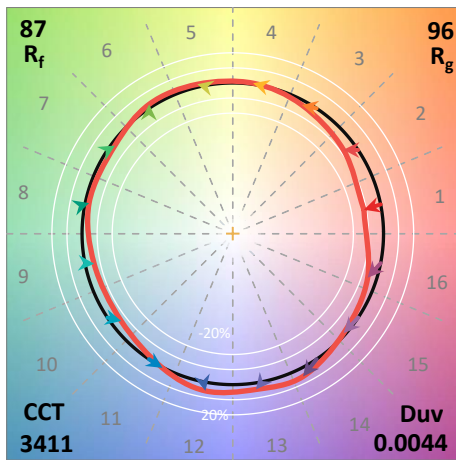
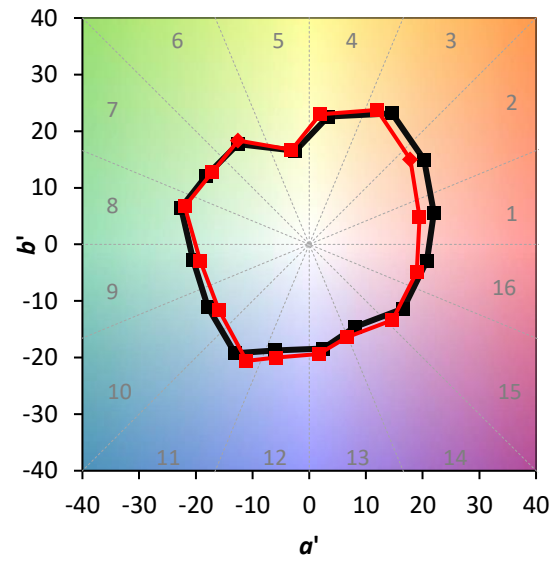
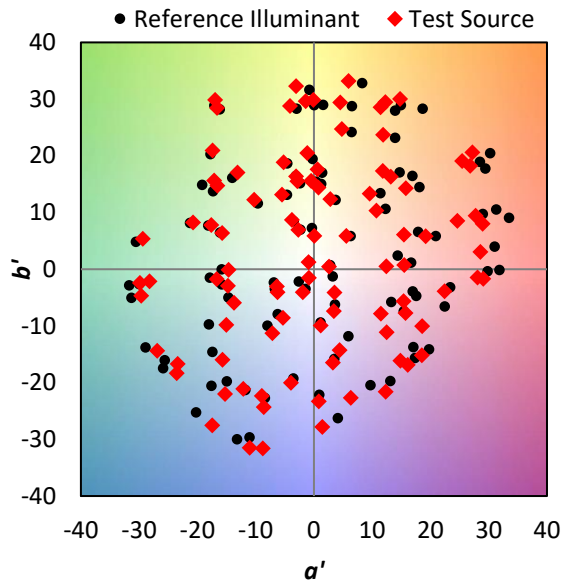
TM-30-18

### Summary

$R_f = 86.6$   
 $R_g = 95.9$   
 $CIE R_a = 83.5$   
 $R_9 = 6.3$

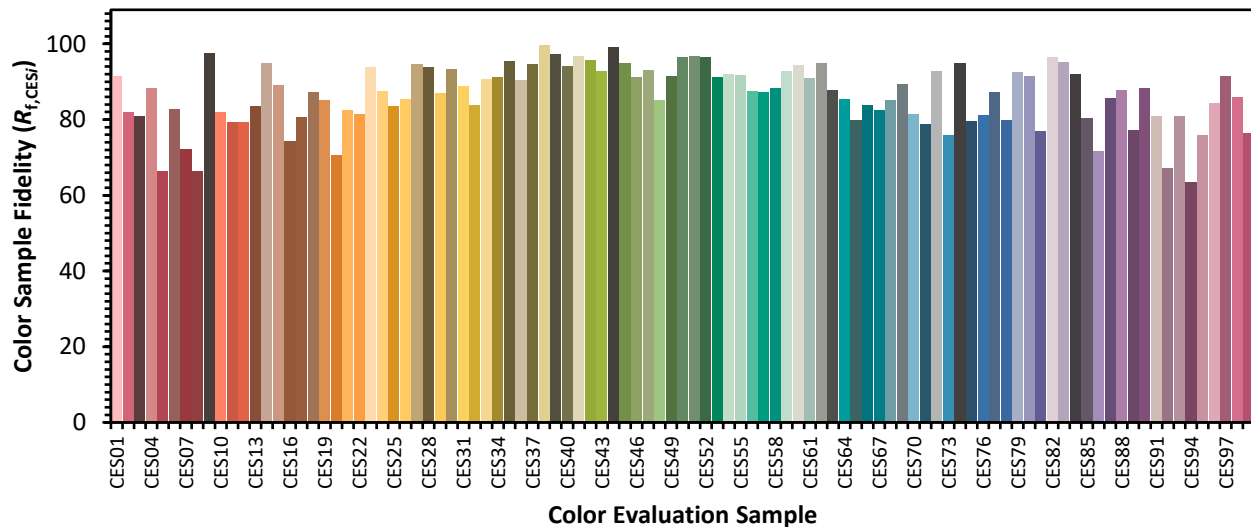


### Color Vector Graphics

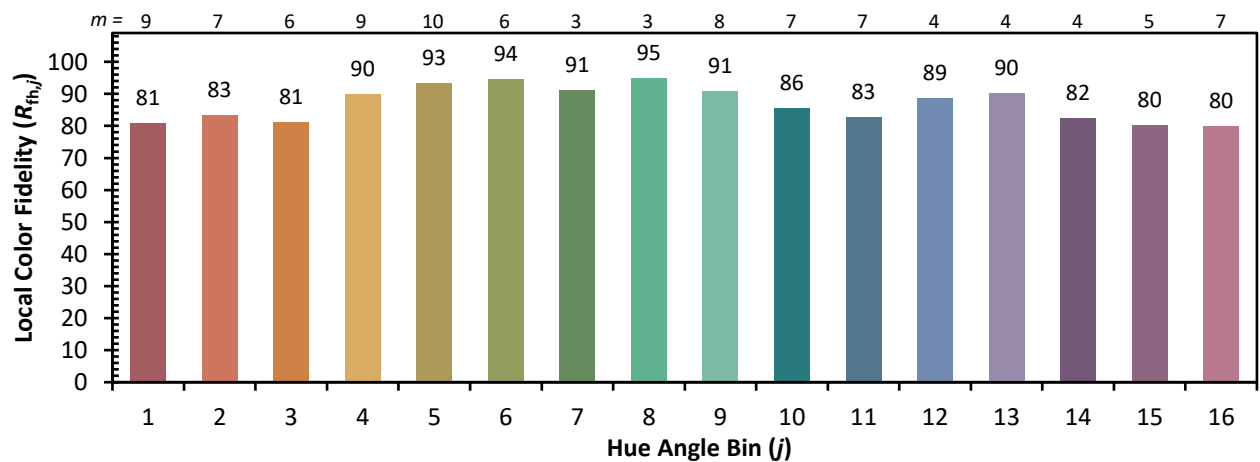
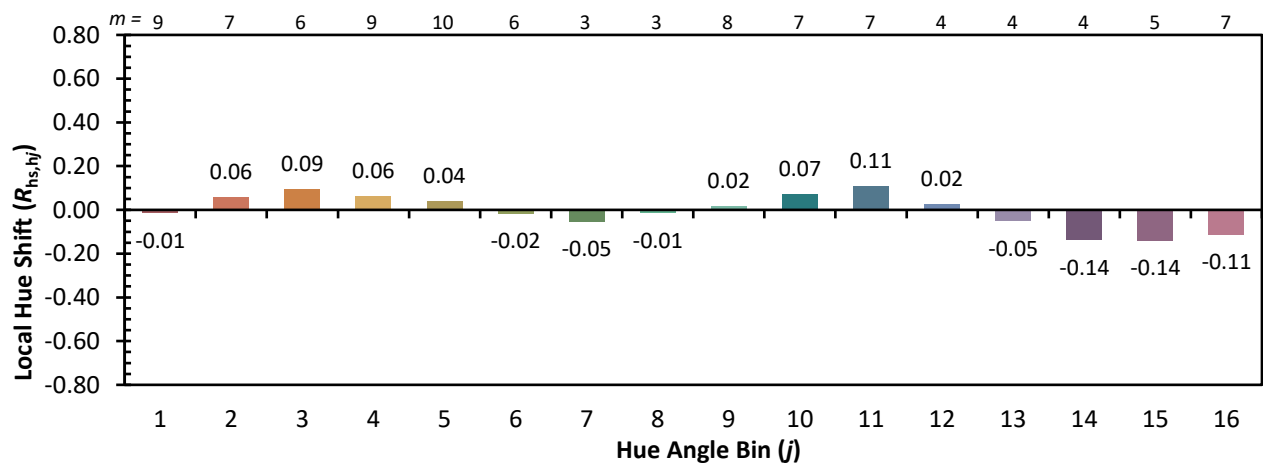
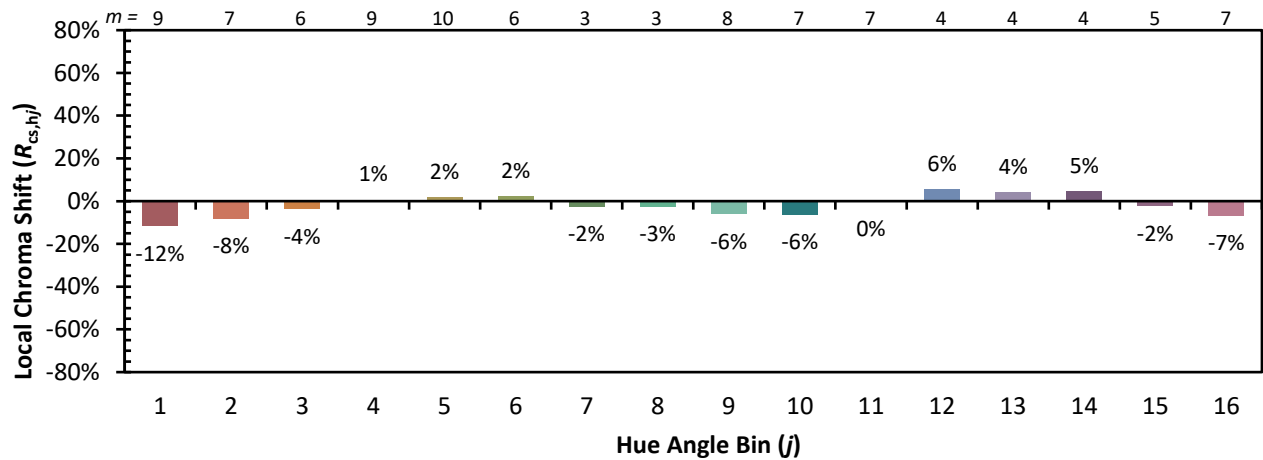


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

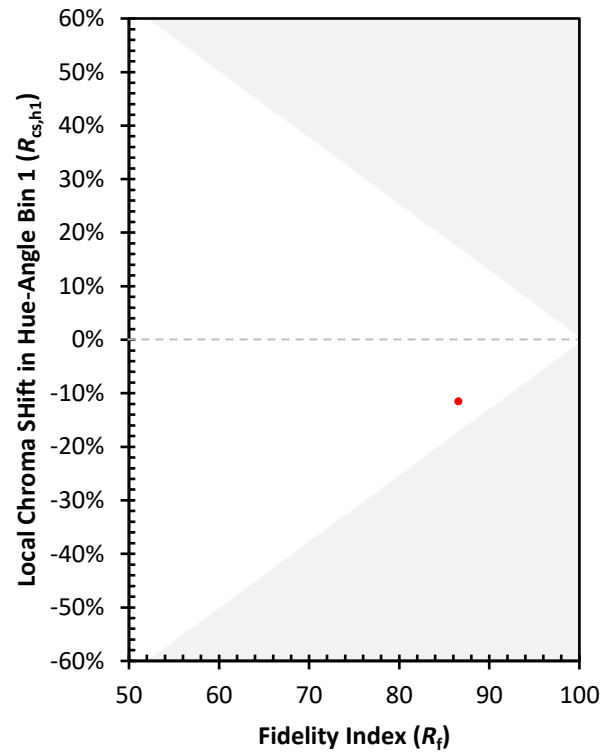
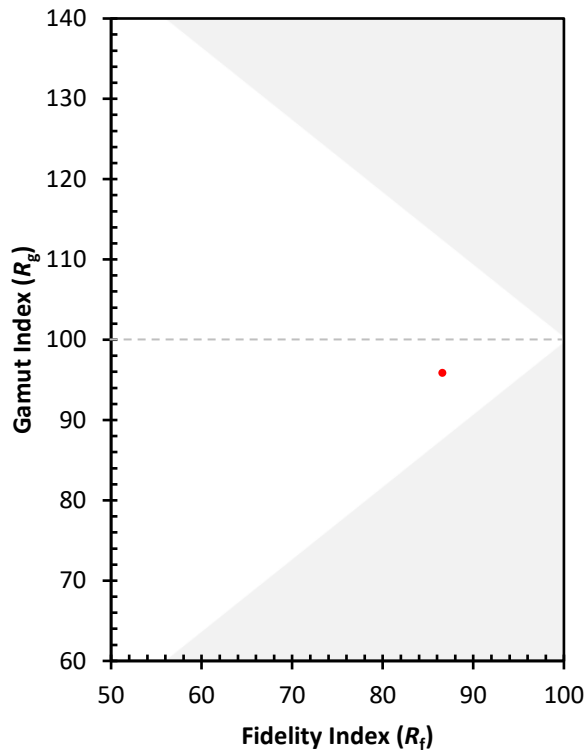
|            |             |            |            |
|------------|-------------|------------|------------|
| CES01 = 86 | CES26 = 85  | CES51 = 97 | CES76 = 81 |
| CES02 = 62 | CES27 = 95  | CES52 = 96 | CES77 = 87 |
| CES03 = 31 | CES28 = 94  | CES53 = 91 | CES78 = 80 |
| CES04 = 70 | CES29 = 87  | CES54 = 92 | CES79 = 93 |
| CES05 = 49 | CES30 = 93  | CES55 = 92 | CES80 = 91 |
| CES06 = 51 | CES31 = 89  | CES56 = 88 | CES81 = 77 |
| CES07 = 41 | CES32 = 84  | CES57 = 87 | CES82 = 96 |
| CES08 = 40 | CES33 = 91  | CES58 = 88 | CES83 = 95 |
| CES09 = 29 | CES34 = 91  | CES59 = 93 | CES84 = 92 |
| CES10 = 75 | CES35 = 95  | CES60 = 94 | CES85 = 80 |
| CES11 = 58 | CES36 = 90  | CES61 = 91 | CES86 = 72 |
| CES12 = 64 | CES37 = 95  | CES62 = 95 | CES87 = 86 |
| CES13 = 43 | CES38 = 100 | CES63 = 88 | CES88 = 88 |
| CES14 = 74 | CES39 = 97  | CES64 = 85 | CES89 = 77 |
| CES15 = 71 | CES40 = 94  | CES65 = 80 | CES90 = 88 |
| CES16 = 47 | CES41 = 97  | CES66 = 84 | CES91 = 81 |
| CES17 = 49 | CES42 = 96  | CES67 = 82 | CES92 = 67 |
| CES18 = 56 | CES43 = 93  | CES68 = 85 | CES93 = 81 |
| CES19 = 72 | CES44 = 99  | CES69 = 89 | CES94 = 63 |
| CES20 = 66 | CES45 = 95  | CES70 = 81 | CES95 = 76 |
| CES21 = 86 | CES46 = 91  | CES71 = 79 | CES96 = 84 |
| CES22 = 78 | CES47 = 93  | CES72 = 93 | CES97 = 92 |
| CES23 = 91 | CES48 = 85  | CES73 = 76 | CES98 = 86 |
| CES24 = 90 | CES49 = 92  | CES74 = 95 | CES99 = 77 |
| CES25 = 72 | CES50 = 96  | CES75 = 80 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)