

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: P1047589

Luminaire Tested: **GALN-SA1A-950-U-T3BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1047589  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA1A-950-U-T3BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 615mA 1xLight Square PACKAGE  
90CRI 5000K FIXTURE w/ TYPE III ANGLED BACKLIGHT CONTROL  
Light Source: (14) 5000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3024.4 lumens  
Efficiency: N/A  
Efficacy: 104.3 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B0 - U0 - G1

Input Watts (W): 29  
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



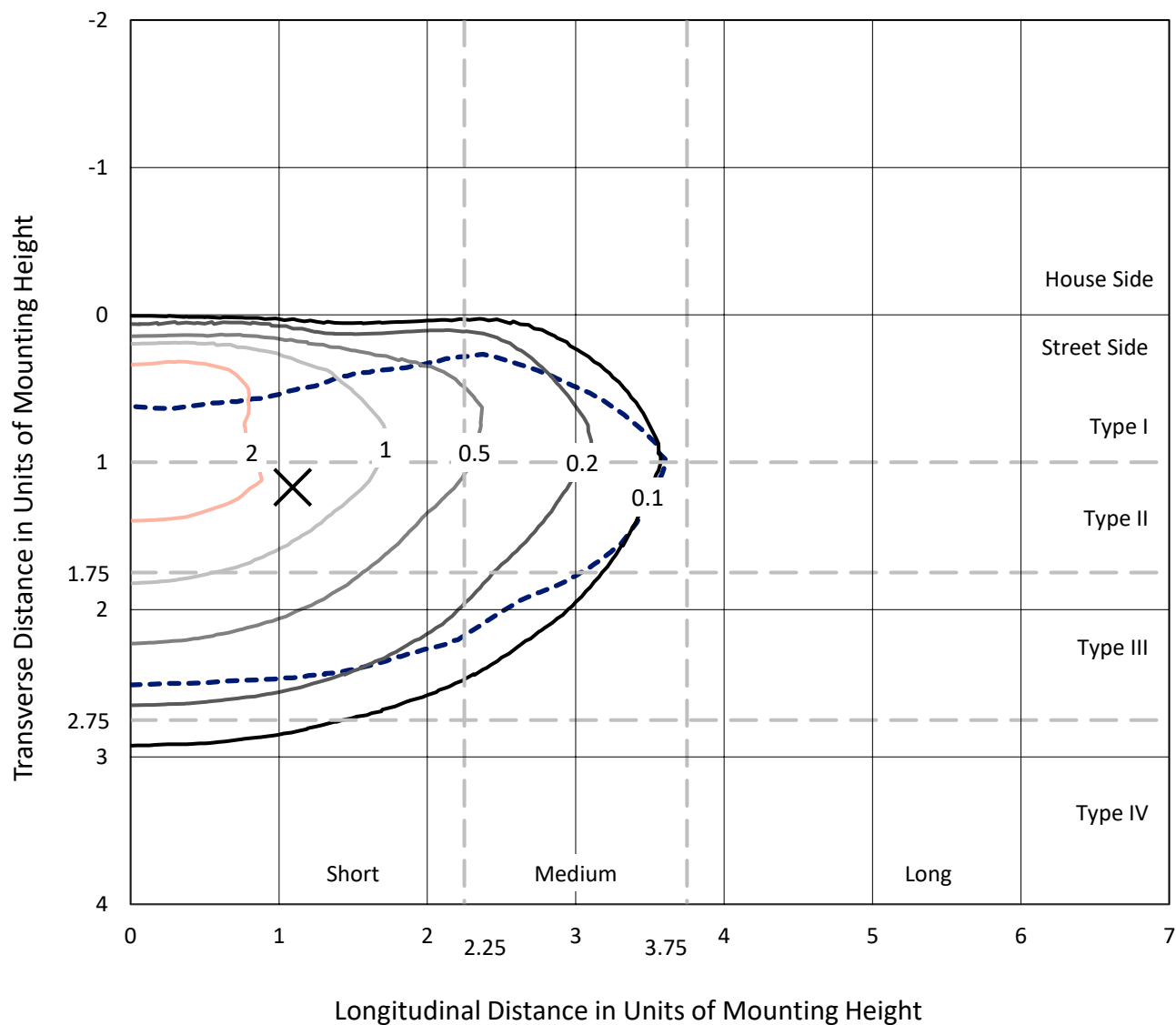
REPORT NUMBER: P1047589

CATALOG NUMBER: GALN-SA1A-950-U-T3BC

## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd

--- 1/2 Max cd

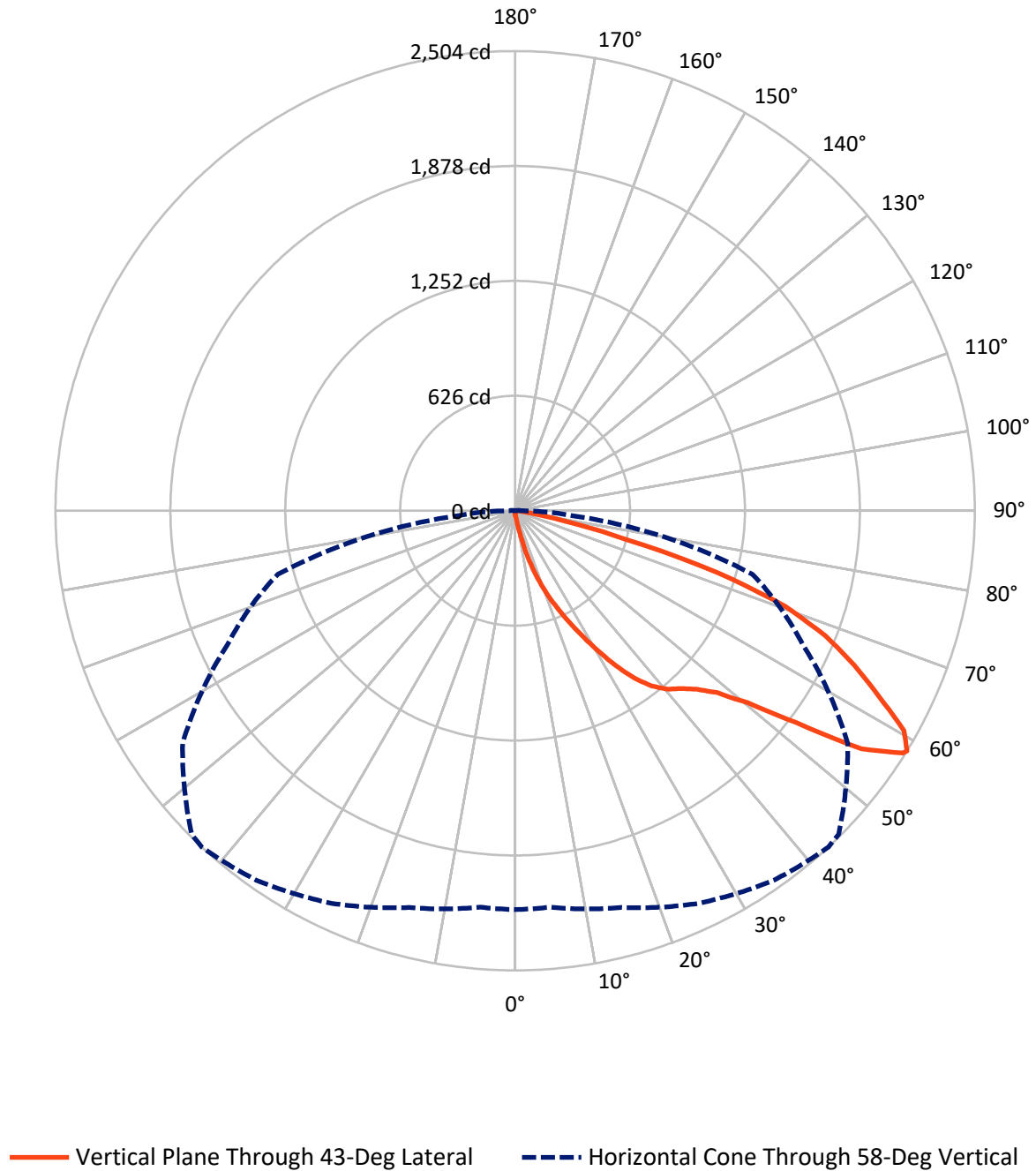


Based on 15 foot mounting height. Maximum calculated value = 3.4 fc  
 Type III - Short - N/A

REPORT NUMBER: P1047589

CATALOG NUMBER: GALN-SA1A-950-U-T3BC

## Luminous Intensity Polar Plot



REPORT NUMBER: P1047589

CATALOG NUMBER: GALN-SA1A-950-U-T3BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 11.1     | 0.0    | 11.1   |
|                    | % Fixture | 0.4      | 0.0    | 0.4    |
| <b>Street Side</b> | Lumens    | 3013.4   | 0.0    | 3013.4 |
|                    | % Fixture | 99.6     | 0.0    | 99.6   |
| <b>Total</b>       | Lumens    | 3024.4   | 0.0    | 3024.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 2.9    | 0.1       |
| 10°-20°   | 34.8   | 1.1       |
| 20°-30°   | 125.3  | 4.1       |
| 30°-40°   | 286.7  | 9.5       |
| 40°-50°   | 483.5  | 16.0      |
| 50°-60°   | 798.0  | 26.4      |
| 60°-70°   | 891.8  | 29.5      |
| 70°-80°   | 368.2  | 12.2      |
| 80°-90°   | 33.2   | 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°    | 3024.4 | 100.0     |
| 0°-180°   | 3024.4 | 100.0     |



REPORT NUMBER: P1047589

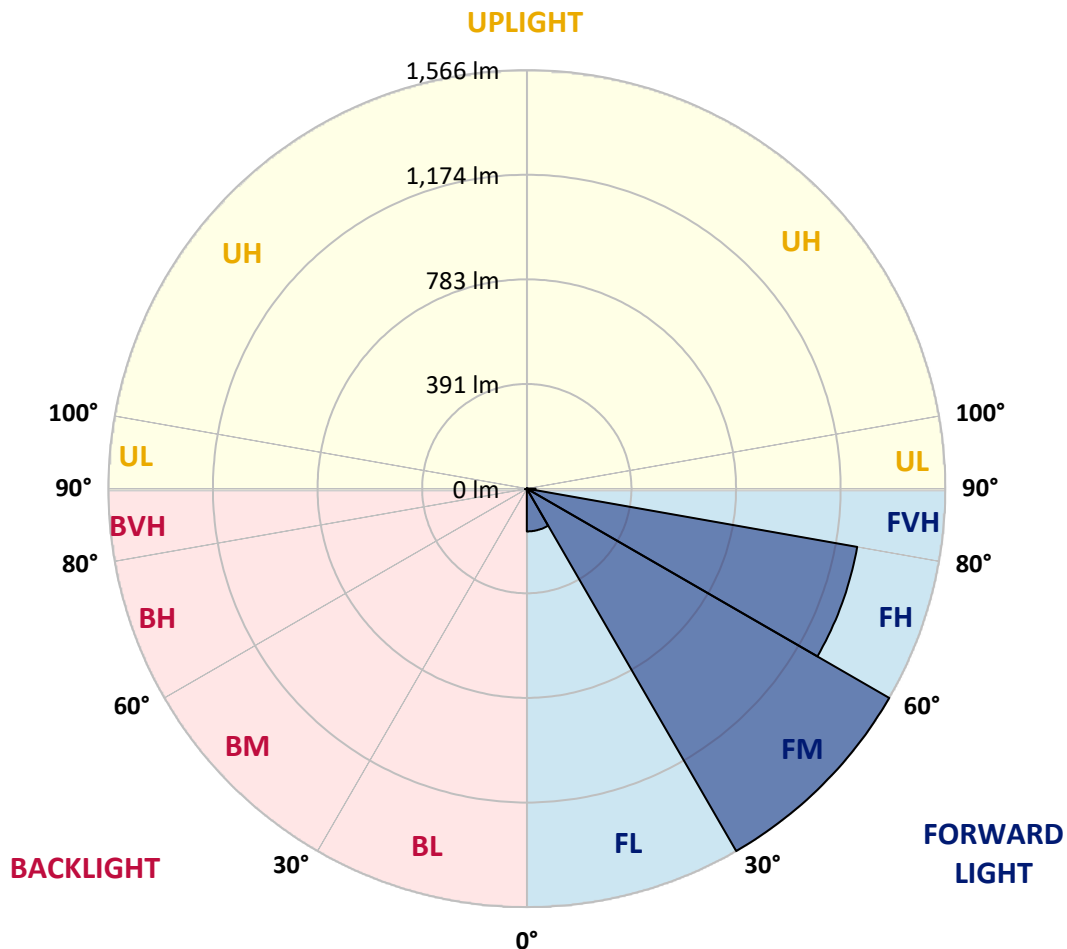
CATALOG NUMBER: GALN-SA1A-950-U-T3BC

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 160.1  | 5.3       |                         |      |         |
| FM   | (30°-60°)   | 1565.5 | 51.8      |                         |      |         |
| FH   | (60°-80°)   | 1255.0 | 41.5      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 32.7   | 1.1       |                         |      | G1/100  |
| BL   | (0°-30°)    | 2.9    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 2.7    | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 5.1    | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 0.5    | 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-G1**

Type III Short



REPORT NUMBER: P1047589

CATALOG NUMBER: GALN-SA1A-950-U-T3BC

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 43°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 19.8   | 19.8   | 19.8   | 19.8   | 19.8   | 19.8   | 19.8   | 19.8   | 19.8   | 19.8   | 19.8   |
| 2.5°  | 23.7   | 24.5   | 23.7   | 23.7   | 23.7   | 22.9   | 22.9   | 22.1   | 22.1   | 21.4   | 20.6   |
| 5°    | 34.8   | 34.8   | 32.4   | 30.8   | 29.3   | 28.5   | 27.7   | 26.1   | 24.5   | 22.9   | 21.4   |
| 7.5°  | 77.5   | 77.5   | 70.4   | 60.9   | 48.3   | 41.1   | 39.6   | 32.4   | 27.7   | 24.5   | 21.4   |
| 10°   | 185.1  | 185.1  | 169.3  | 143.2  | 110.7  | 82.3   | 73.6   | 46.7   | 33.2   | 26.1   | 22.1   |
| 12.5° | 307.7  | 311.7  | 291.9  | 258.7  | 210.4  | 160.6  | 143.2  | 85.4   | 44.3   | 28.5   | 22.1   |
| 15°   | 417.6  | 408.2  | 402.6  | 371.0  | 325.1  | 265.8  | 243.6  | 144.0  | 64.1   | 32.4   | 22.1   |
| 17.5° | 492.0  | 492.0  | 484.1  | 462.7  | 420.8  | 368.6  | 350.4  | 232.6  | 103.6  | 37.2   | 22.9   |
| 20°   | 579.0  | 579.0  | 564.8  | 549.7  | 512.6  | 468.3  | 450.9  | 330.6  | 160.6  | 47.5   | 22.9   |
| 22.5° | 684.2  | 685.8  | 670.0  | 643.1  | 607.5  | 558.4  | 543.4  | 421.6  | 232.6  | 63.3   | 23.7   |
| 25°   | 812.4  | 813.9  | 791.0  | 765.7  | 711.1  | 658.1  | 635.2  | 526.0  | 320.4  | 88.6   | 23.7   |
| 27.5° | 954.0  | 965.0  | 931.0  | 887.5  | 829.8  | 763.3  | 745.9  | 620.1  | 407.4  | 125.0  | 25.3   |
| 30°   | 1130.3 | 1130.3 | 1085.3 | 1024.3 | 961.9  | 879.6  | 857.4  | 719.0  | 499.9  | 173.2  | 26.9   |
| 32.5° | 1282.2 | 1270.4 | 1212.6 | 1148.5 | 1082.1 | 1005.4 | 981.6  | 822.6  | 594.8  | 233.3  | 30.1   |
| 35°   | 1398.5 | 1388.2 | 1317.0 | 1248.2 | 1190.5 | 1120.1 | 1091.6 | 935.0  | 695.3  | 301.4  | 34.8   |
| 37.5° | 1498.2 | 1494.2 | 1397.7 | 1311.5 | 1273.5 | 1211.8 | 1186.5 | 1041.0 | 794.2  | 374.9  | 40.3   |
| 40°   | 1607.3 | 1594.7 | 1491.8 | 1385.0 | 1328.1 | 1278.3 | 1255.3 | 1126.4 | 889.1  | 461.2  | 48.3   |
| 42.5° | 1700.7 | 1685.6 | 1593.1 | 1488.7 | 1391.4 | 1324.1 | 1302.0 | 1198.4 | 981.6  | 547.4  | 58.5   |
| 45°   | 1804.3 | 1796.4 | 1703.0 | 1623.9 | 1494.2 | 1386.6 | 1357.4 | 1256.1 | 1066.3 | 650.2  | 72.0   |
| 47.5° | 1960.1 | 1945.9 | 1858.9 | 1794.0 | 1643.7 | 1481.5 | 1439.6 | 1315.4 | 1147.7 | 751.5  | 92.5   |
| 50°   | 2141.2 | 2131.8 | 2080.3 | 2028.9 | 1879.4 | 1643.7 | 1593.9 | 1400.9 | 1238.7 | 871.7  | 119.4  |
| 52.5° | 2289.2 | 2287.6 | 2293.9 | 2294.7 | 2181.6 | 1916.6 | 1842.2 | 1538.5 | 1343.1 | 990.3  | 157.4  |
| 55°   | 2286.0 | 2293.1 | 2362.7 | 2442.6 | 2451.3 | 2289.2 | 2217.2 | 1770.3 | 1479.2 | 1136.7 | 210.4  |
| 57.5° | 2200.6 | 2195.0 | 2268.6 | 2388.8 | 2473.5 | 2490.9 | 2479.0 | 2130.2 | 1684.0 | 1313.1 | 291.9  |
| 58°   | 2172.9 | 2168.1 | 2237.7 | 2360.4 | 2457.6 | 2504.3 | 2492.5 | 2211.6 | 1729.9 | 1338.4 | 314.0  |
| 60°   | 2072.4 | 2073.2 | 2114.4 | 2225.9 | 2323.2 | 2433.9 | 2445.0 | 2444.2 | 1958.5 | 1507.7 | 425.6  |
| 62.5° | 1939.5 | 1933.2 | 1971.2 | 2062.1 | 2147.6 | 2221.9 | 2240.9 | 2460.0 | 2293.1 | 1722.8 | 638.3  |
| 65°   | 1756.0 | 1746.5 | 1786.9 | 1889.7 | 1981.5 | 2029.7 | 2030.5 | 2248.0 | 2450.5 | 1953.8 | 942.1  |
| 67.5° | 1415.1 | 1407.2 | 1487.9 | 1620.0 | 1761.6 | 1824.8 | 1853.3 | 1950.6 | 2317.6 | 2110.4 | 1116.1 |
| 70°   | 866.9  | 883.6  | 995.9  | 1203.1 | 1445.2 | 1561.4 | 1604.2 | 1634.2 | 1973.6 | 2086.7 | 933.4  |
| 72.5° | 400.2  | 380.5  | 476.2  | 620.9  | 897.0  | 1155.7 | 1200.0 | 1317.8 | 1564.6 | 1811.4 | 696.1  |
| 75°   | 186.7  | 179.6  | 201.7  | 271.3  | 406.6  | 624.1  | 704.8  | 1052.0 | 1200.0 | 1260.1 | 502.3  |
| 77.5° | 95.7   | 96.5   | 114.7  | 123.4  | 167.7  | 288.7  | 331.4  | 692.1  | 879.6  | 703.2  | 337.0  |
| 80°   | 41.9   | 43.5   | 44.3   | 48.3   | 68.0   | 111.5  | 125.8  | 321.1  | 601.2  | 358.3  | 184.3  |
| 82.5° | 26.9   | 27.7   | 27.7   | 27.7   | 32.4   | 44.3   | 50.6   | 128.9  | 299.8  | 178.0  | 57.0   |
| 85°   | 14.2   | 14.2   | 15.8   | 19.8   | 22.9   | 26.9   | 28.5   | 41.1   | 98.9   | 53.0   | 13.4   |
| 87.5° | 7.9    | 8.7    | 9.5    | 11.9   | 15.0   | 18.2   | 19.8   | 28.5   | 38.0   | 36.4   | 3.2    |
| 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: P1047589

CATALOG NUMBER: GALN-SA1A-950-U-T3BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 19.8  | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 |
| 2.5°  | 20.6  | 19.8 | 19.0 | 18.2 | 17.4 | 16.6 | 16.6 | 16.6 | 16.6 | 16.6 | 16.6 |
| 5°    | 19.8  | 19.0 | 18.2 | 16.6 | 15.0 | 14.2 | 13.4 | 12.7 | 12.7 | 12.7 | 12.7 |
| 7.5°  | 19.8  | 19.0 | 16.6 | 15.0 | 13.4 | 11.9 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 |
| 10°   | 19.8  | 18.2 | 15.8 | 13.4 | 11.1 | 9.5  | 8.7  | 7.9  | 7.9  | 7.9  | 7.9  |
| 12.5° | 19.8  | 17.4 | 15.0 | 11.9 | 9.5  | 7.9  | 7.1  | 6.3  | 6.3  | 6.3  | 6.3  |
| 15°   | 19.8  | 17.4 | 14.2 | 11.1 | 8.7  | 6.3  | 5.5  | 4.7  | 4.7  | 4.7  | 4.7  |
| 17.5° | 19.0  | 16.6 | 13.4 | 9.5  | 7.1  | 4.7  | 4.0  | 3.2  | 3.2  | 4.0  | 4.0  |
| 20°   | 18.2  | 15.8 | 11.9 | 7.9  | 5.5  | 4.0  | 2.4  | 2.4  | 2.4  | 2.4  | 2.4  |
| 22.5° | 18.2  | 15.8 | 11.1 | 7.1  | 4.7  | 2.4  | 1.6  | 1.6  | 1.6  | 1.6  | 2.4  |
| 25°   | 18.2  | 15.0 | 9.5  | 5.5  | 3.2  | 1.6  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  |
| 27.5° | 18.2  | 15.0 | 8.7  | 4.7  | 2.4  | 1.6  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| 30°   | 17.4  | 14.2 | 7.9  | 4.0  | 1.6  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 32.5° | 17.4  | 13.4 | 6.3  | 3.2  | 1.6  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 35°   | 18.2  | 12.7 | 5.5  | 2.4  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.8  |
| 37.5° | 19.0  | 11.9 | 4.7  | 1.6  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 19.8  | 11.1 | 4.7  | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 21.4  | 11.1 | 4.0  | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 22.9  | 11.1 | 3.2  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 26.1  | 11.9 | 3.2  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 28.5  | 12.7 | 2.4  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 31.6  | 11.9 | 2.4  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 35.6  | 11.9 | 2.4  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 38.8  | 11.1 | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 58°   | 40.3  | 10.3 | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 48.3  | 9.5  | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 75.1  | 7.9  | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 152.7 | 7.1  | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 284.8 | 6.3  | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 318.8 | 7.1  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 200.9 | 5.5  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 106.0 | 5.5  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 53.0  | 5.5  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 24.5  | 4.0  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 10.3  | 2.4  | 1.6  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 4.7   | 2.4  | 1.6  | 1.6  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 2.4   | 2.4  | 2.4  | 1.6  | 1.6  | 0.8  | 0.8  | 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

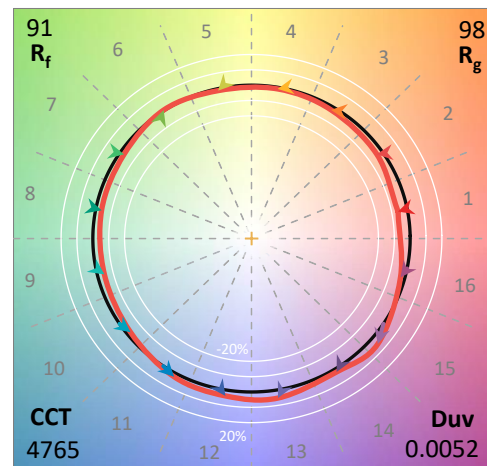
### Test Information

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  
 R<sub>f</sub>: 90.7  
 R<sub>g</sub>: 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

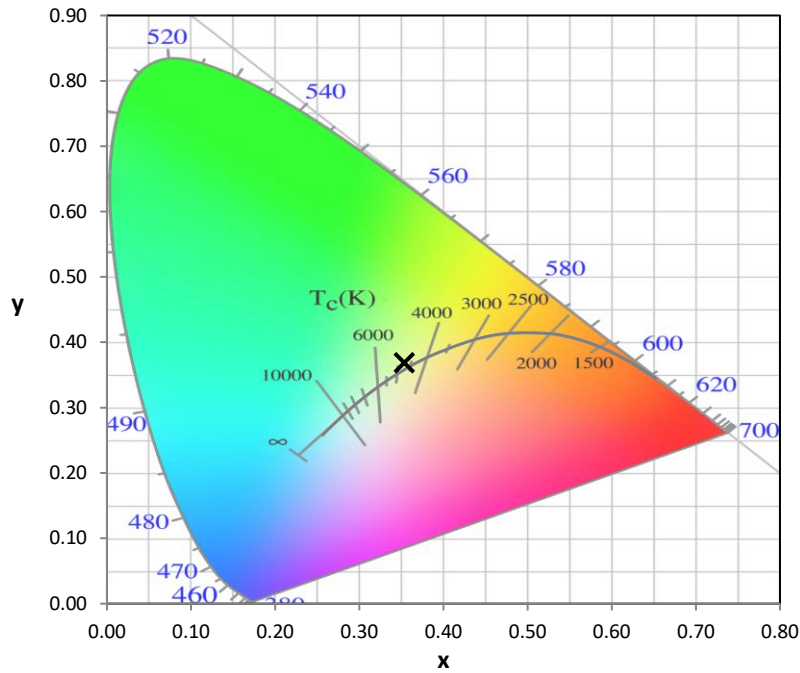
Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-17

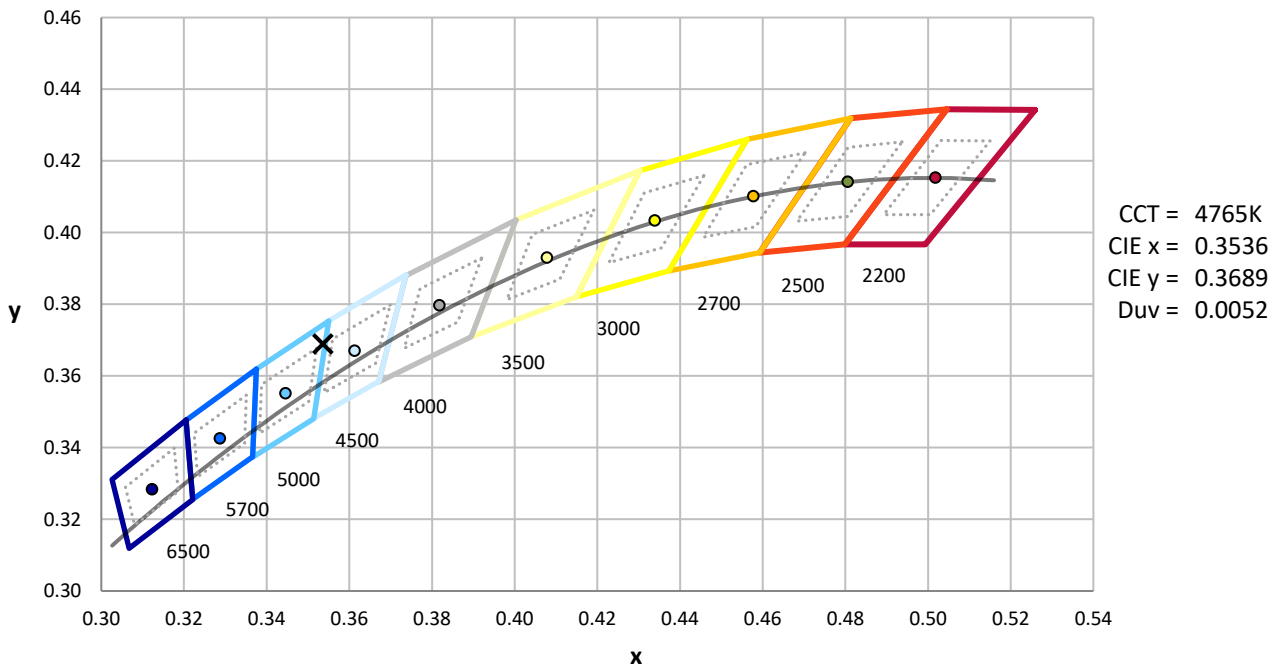
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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: SP1-2407-184-17

**CIE 1931 Chromaticity Diagram**



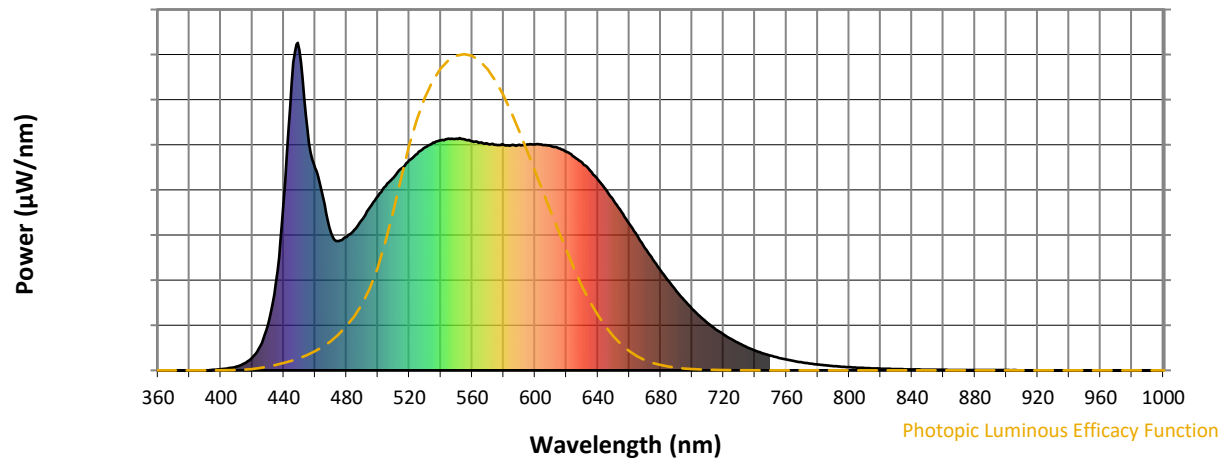
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 7-step quadrangle

REPORT NUMBER: SP1-2407-184-17

### Photopic Flux vs. Wavelength

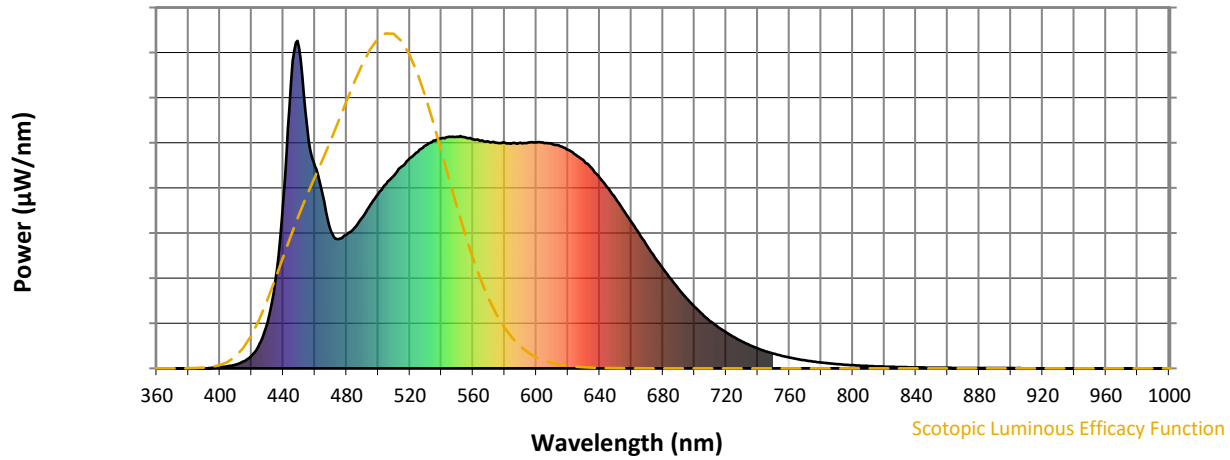


### Photopic Lumens: NR

| 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            |        |                          |               |

REPORT NUMBER: SP1-2407-184-17

### Scotopic Flux vs. Wavelength



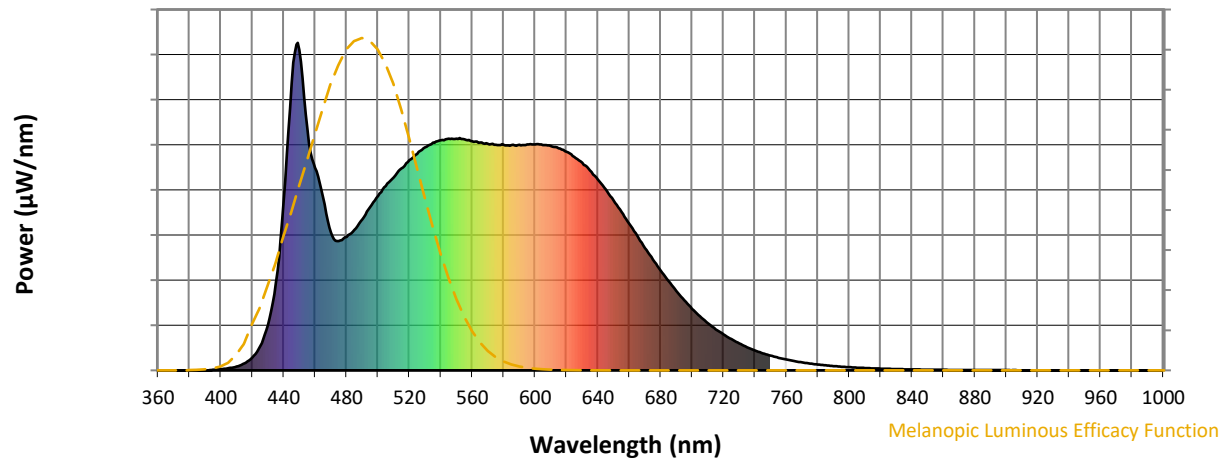
Scotopic Lumens: NR

S/P: 1.99

| 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            |        |                          |               |

REPORT NUMBER: SP1-2407-184-17

### Melanopic Flux vs. Wavelength


**Melanopic Lumens: NR**
**M/P: 4.22**

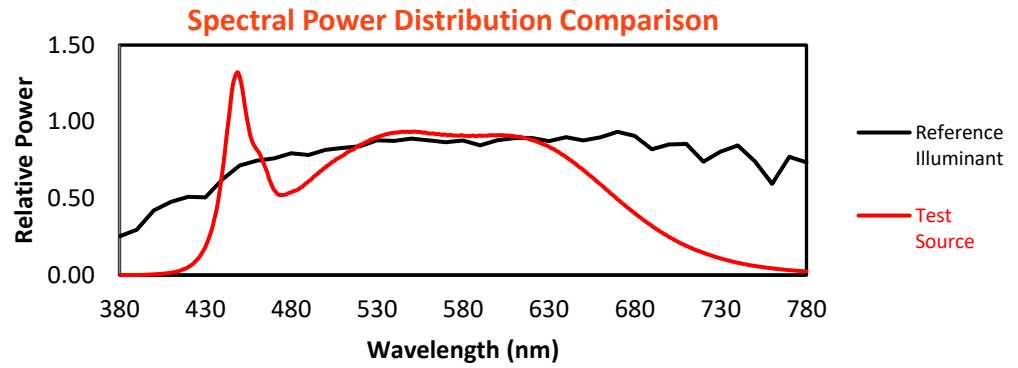
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | 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                             |                   |                                        |                                |

REPORT NUMBER: SP1-2407-184-17

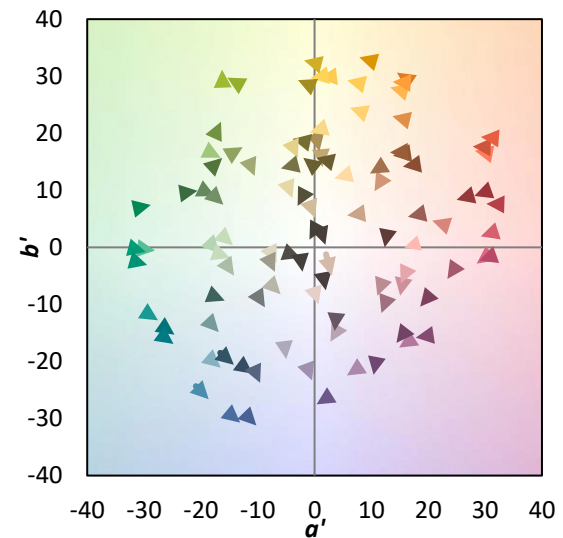
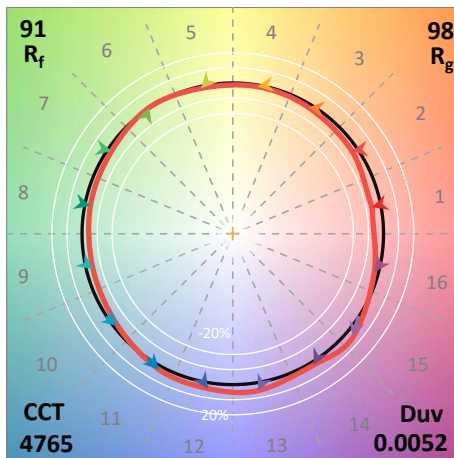
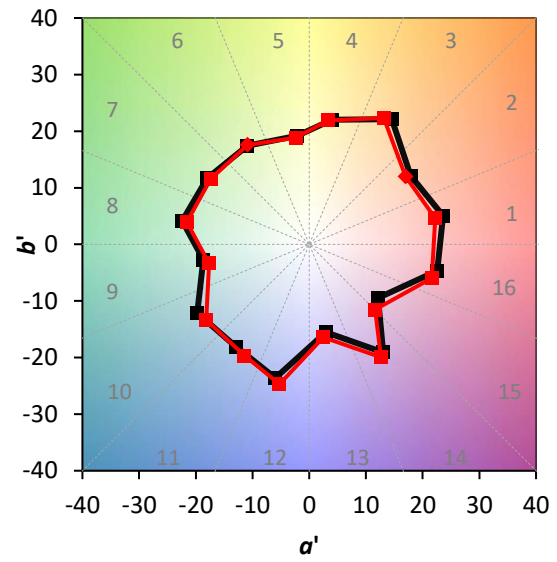
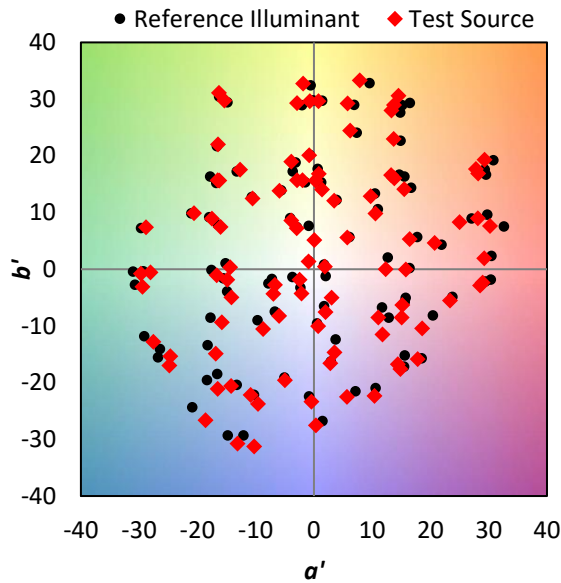
TM-30-18

### Summary

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

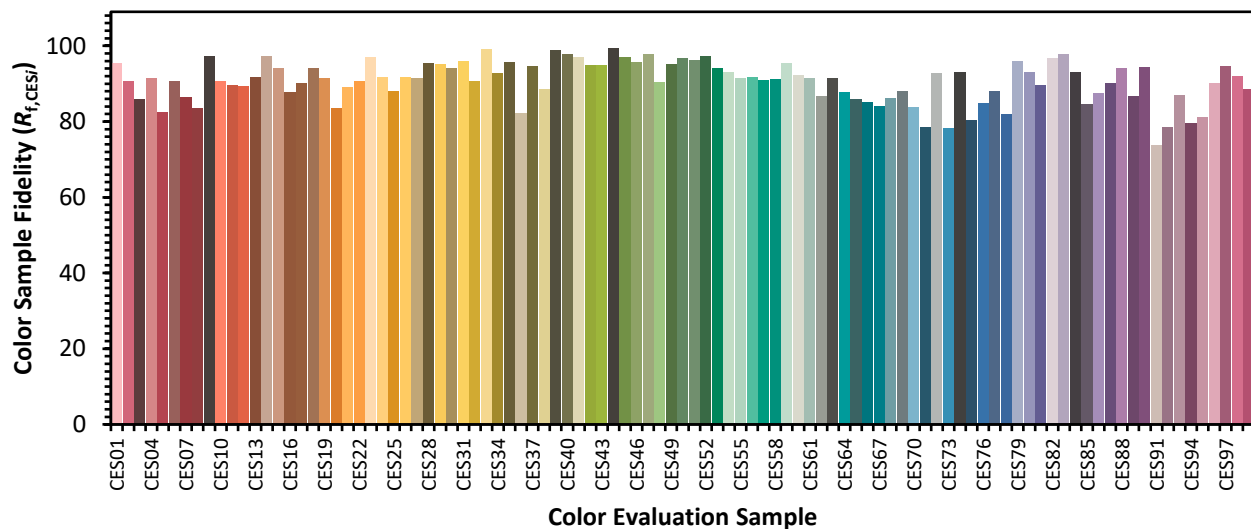


### Color Vector Graphics

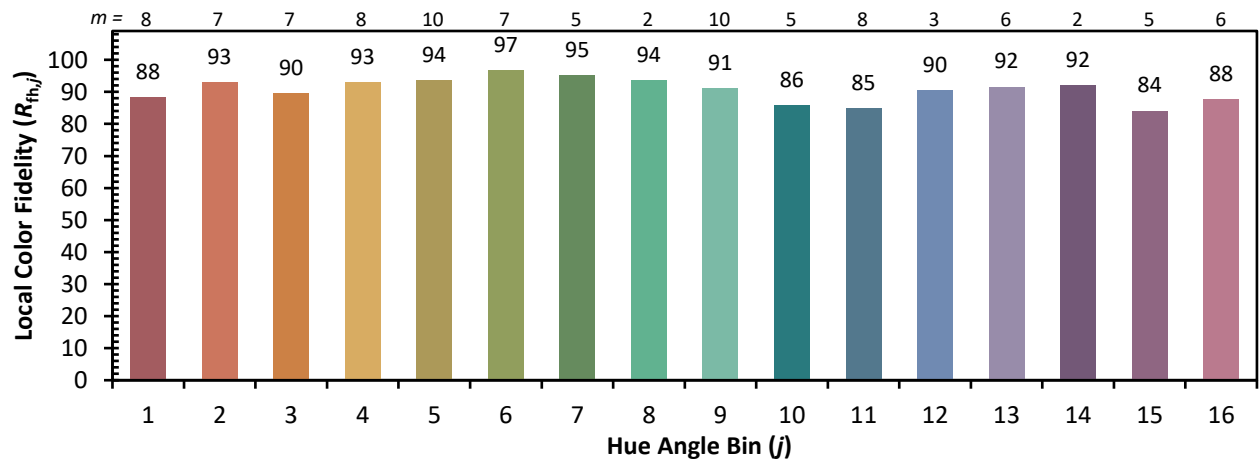
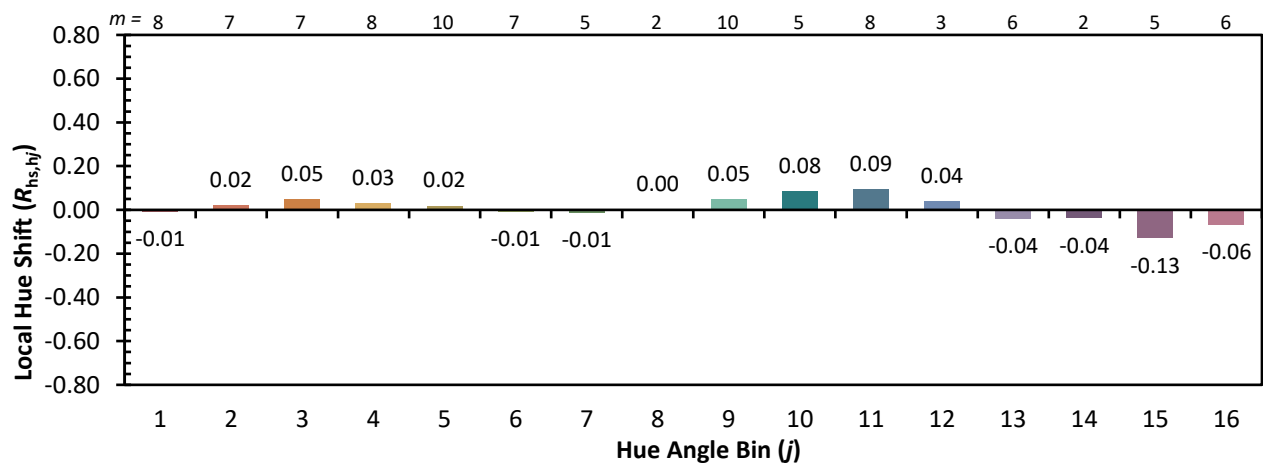
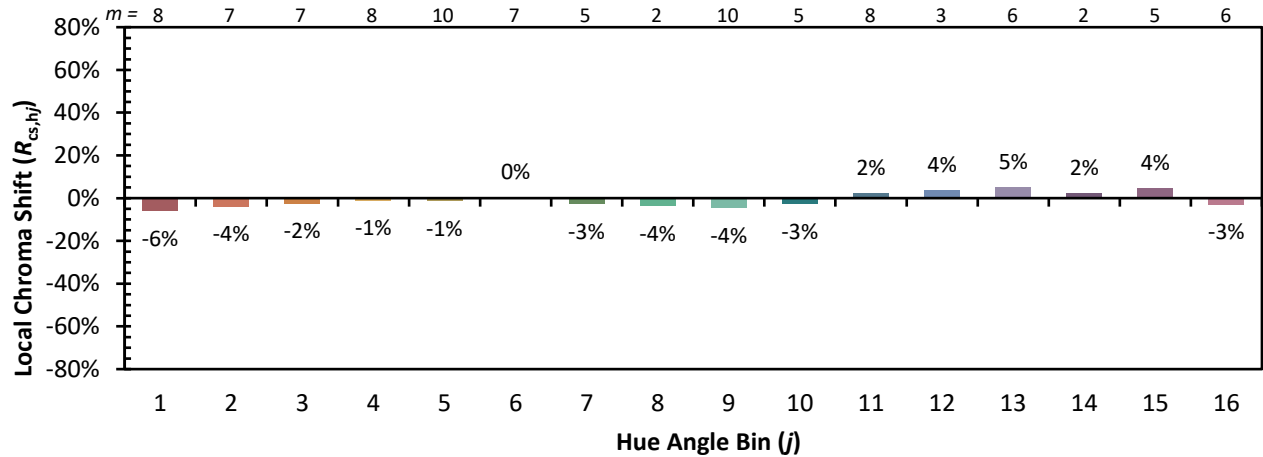


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

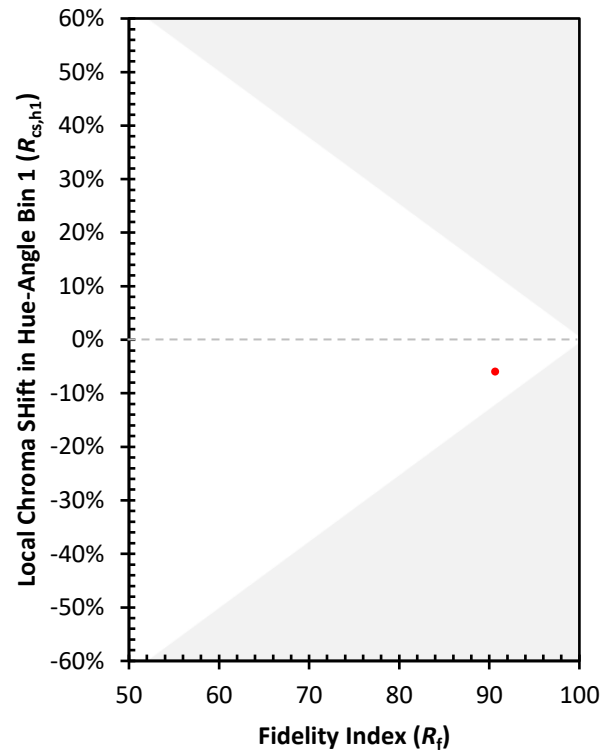
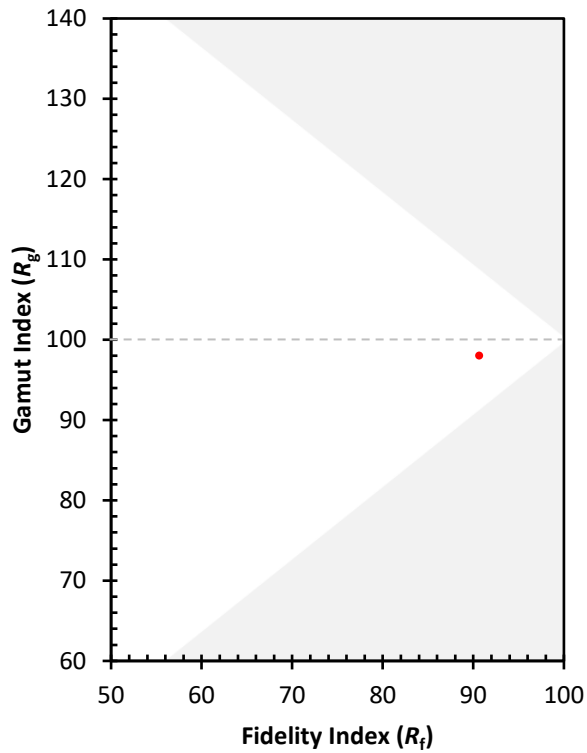
|            |             |            |            |
|------------|-------------|------------|------------|
| CES01 = 85 | CES26 = 92  | CES51 = 96 | CES76 = 85 |
| CES02 = 60 | CES27 = 92  | CES52 = 97 | CES77 = 88 |
| CES03 = 31 | CES28 = 95  | CES53 = 94 | CES78 = 82 |
| CES04 = 69 | CES29 = 95  | 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)