

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: STREETWORKS

Report Number: P1066397

Luminaire Tested: **NVN-SA5A-830-U-T4BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1066397  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: NVN-SA5A-830-U-T4BC  
Description: Navion AREA AND ROADWAY LUMINAIRE 615mA 5xLight Square PACKAGE  
80CRI 3000K FIXTURE w/ TYPE IV ANGLED BACKLIGHT CONTROL  
Light Source: (70) 3000K CCT, 80 CRI LEDs  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14076.6 lumens  
Efficiency: N/A  
Efficacy: 102.5 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B0 - U0 - G3

Input Watts (W): 137.4  
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

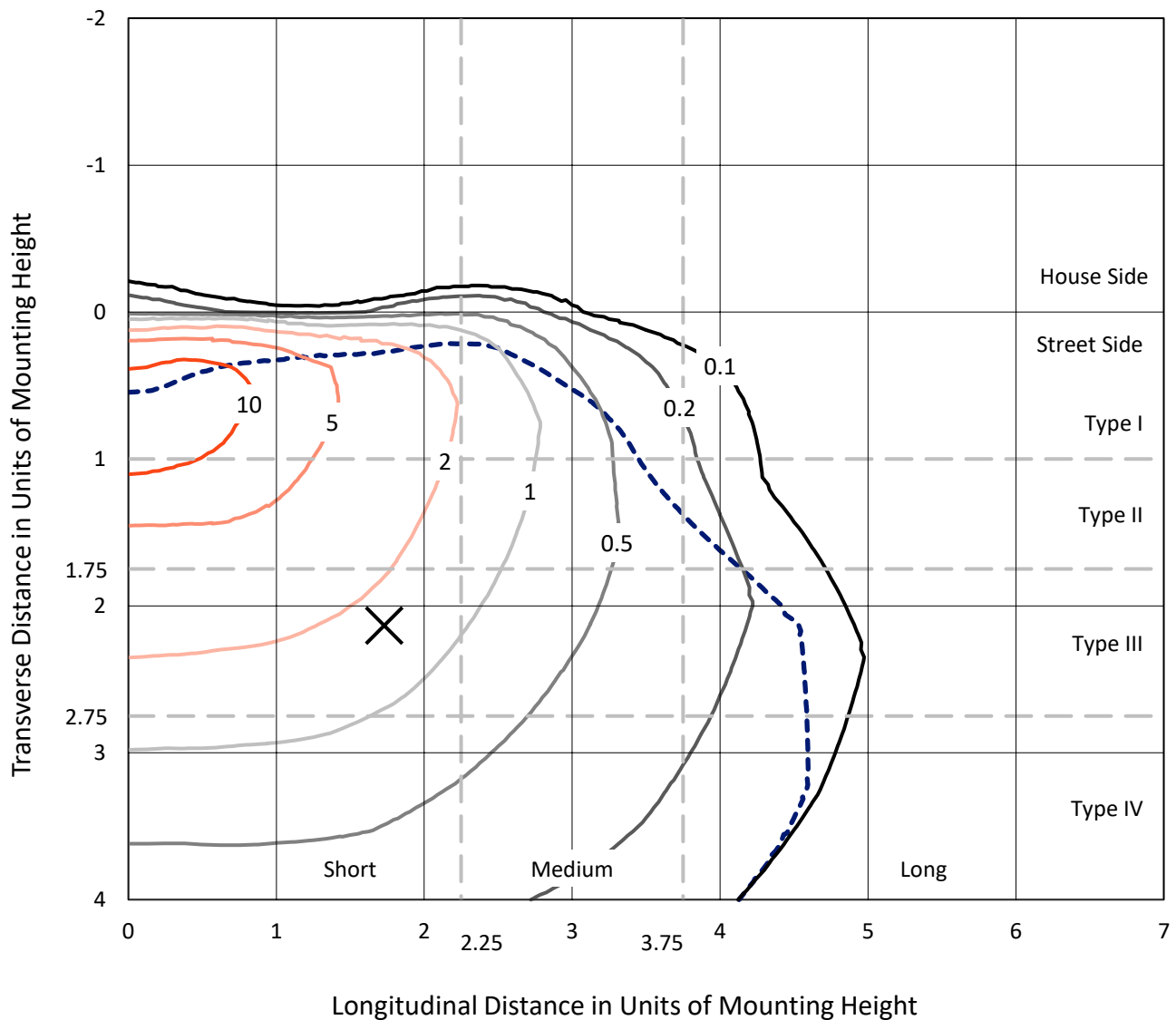


REPORT NUMBER: P1066397

CATALOG NUMBER: NVN-SA5A-830-U-T4BC

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

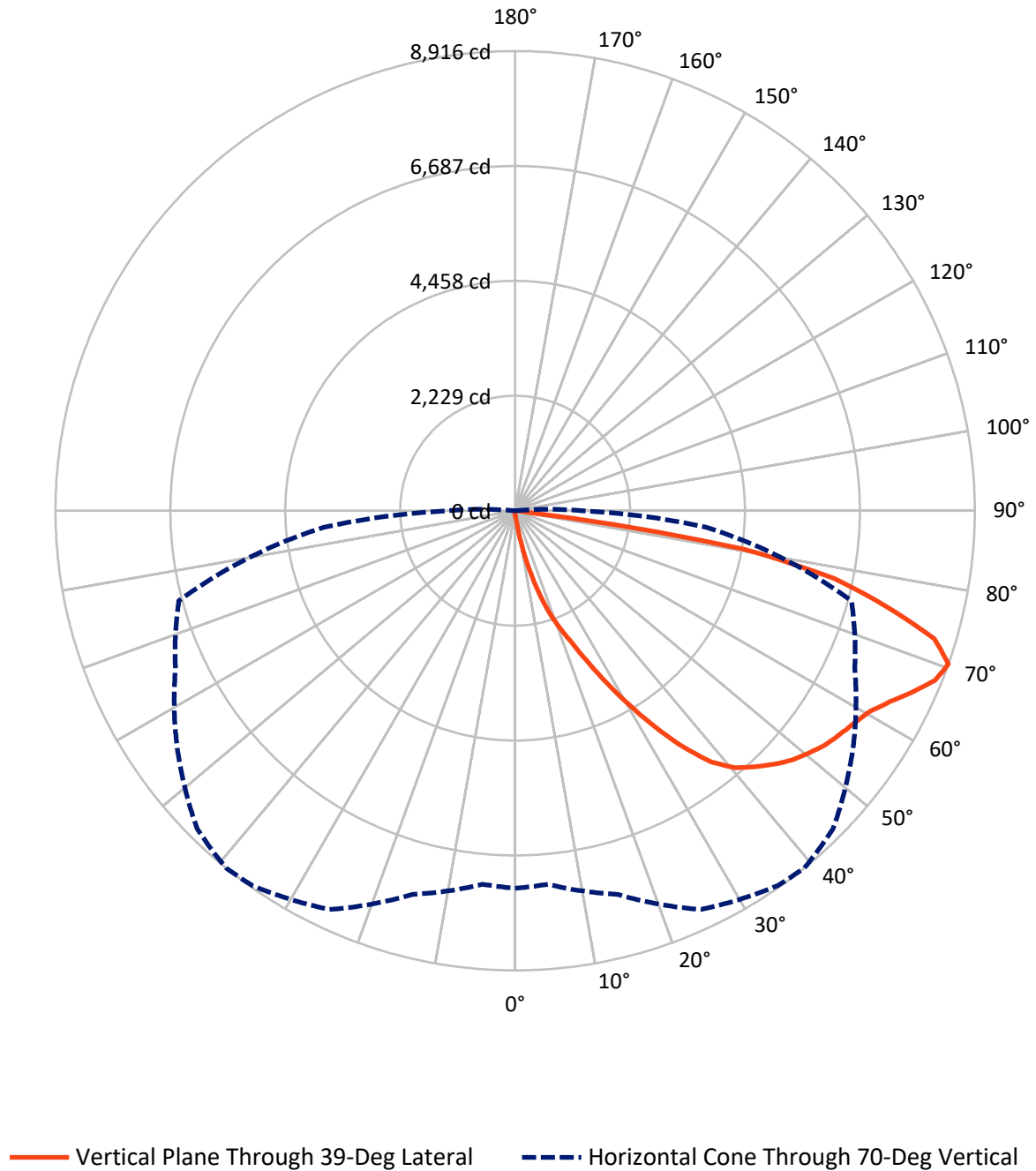


Based on 15 foot mounting height. Maximum calculated value = 15.3 fc  
 Type IV - Short - N/A

REPORT NUMBER: P1066397

CATALOG NUMBER: NVN-SA5A-830-U-T4BC

## Luminous Intensity Polar Plot



REPORT NUMBER: P1066397

CATALOG NUMBER: NVN-SA5A-830-U-T4BC

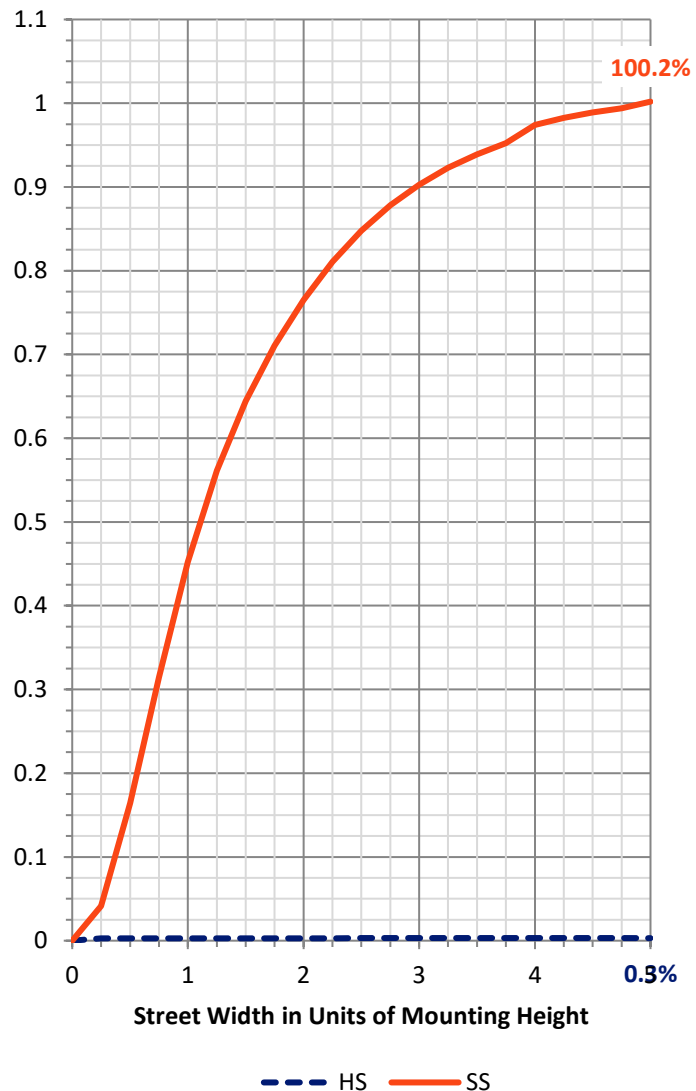
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 43.3     | 0.0    | 43.3    |
|                    | % Fixture | 0.3      | 0.0    | 0.3     |
| <b>Street Side</b> | Lumens    | 14033.3  | 0.0    | 14033.3 |
|                    | % Fixture | 99.7     | 0.0    | 99.7    |
| <b>Total</b>       | Lumens    | 14076.6  | 0.0    | 14076.6 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 14.8    | 0.1       |
| 10°-20°   | 173.1   | 1.2       |
| 20°-30°   | 587.3   | 4.2       |
| 30°-40°   | 1380.2  | 9.8       |
| 40°-50°   | 2241.1  | 15.9      |
| 50°-60°   | 2839.9  | 20.2      |
| 60°-70°   | 3607.5  | 25.6      |
| 70°-80°   | 2931.1  | 20.8      |
| 80°-90°   | 301.8   | 2.1       |
| 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°    | 14076.6 | 100.0     |
| 0°-180°   | 14076.6 | 100.0     |



REPORT NUMBER: P1066397

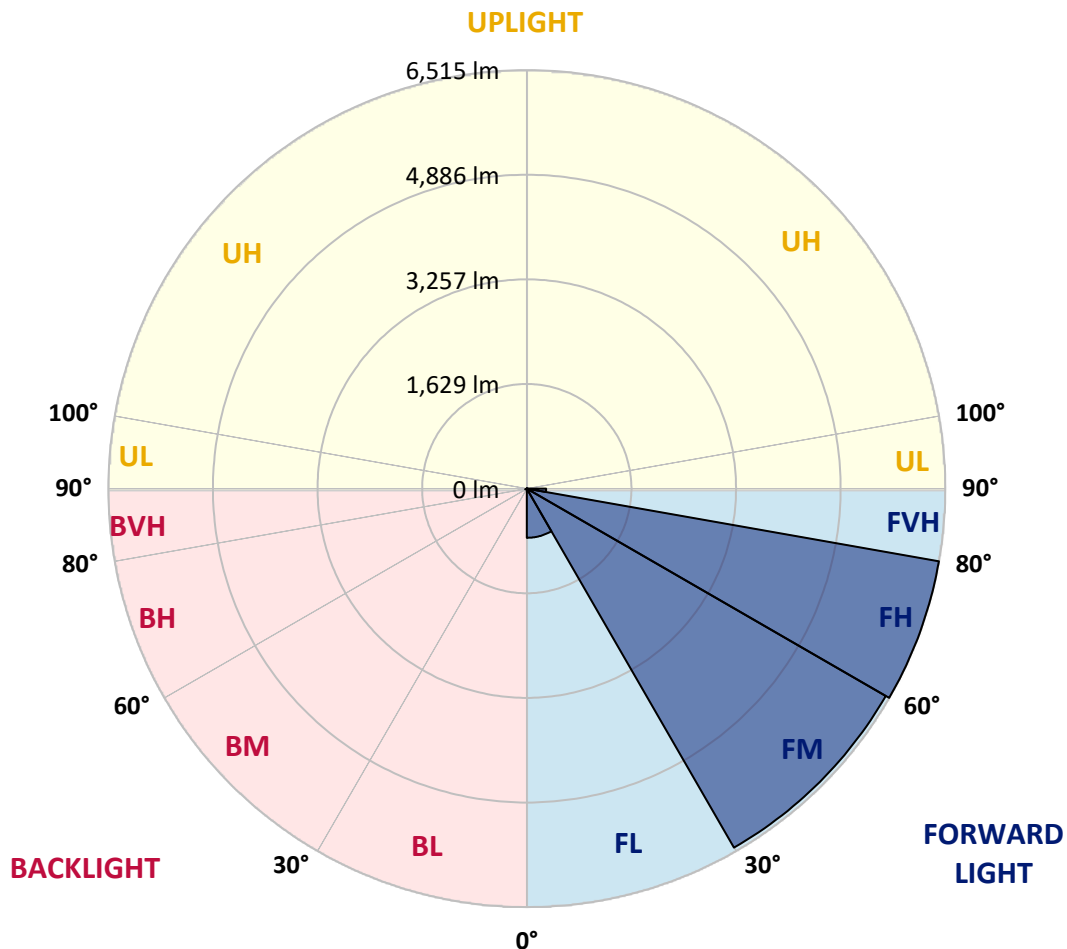
CATALOG NUMBER: NVN-SA5A-830-U-T4BC

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 765.7  | 5.4       |                         |      |         |
| FM   | (30°-60°)   | 6452.9 | 45.8      |                         |      |         |
| FH   | (60°-80°)   | 6514.7 | 46.3      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 300.0  | 2.1       |                         |      | G3/500  |
| BL   | (0°-30°)    | 9.4    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 8.3    | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 23.8   | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 1.8    | 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-G3**

Type IV Short



REPORT NUMBER: P1066397

CATALOG NUMBER: NVN-SA5A-830-U-T4BC

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 39°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 76.4   | 76.4   | 76.4   | 76.4   | 76.4   | 76.4   | 76.4   | 76.4   | 76.4   | 76.4   | 76.4   |
| 2.5°  | 99.4   | 99.4   | 99.4   | 95.5   | 95.5   | 91.7   | 91.7   | 87.9   | 84.1   | 84.1   | 80.3   |
| 5°    | 187.3  | 191.1  | 179.6  | 156.7  | 141.4  | 133.8  | 126.1  | 107.0  | 95.5   | 87.9   | 80.3   |
| 7.5°  | 512.1  | 496.8  | 473.9  | 397.5  | 305.7  | 259.9  | 221.7  | 156.7  | 114.7  | 91.7   | 80.3   |
| 10°   | 1077.7 | 1035.7 | 970.7  | 867.5  | 687.9  | 615.3  | 477.7  | 286.6  | 160.5  | 103.2  | 80.3   |
| 12.5° | 1582.2 | 1589.9 | 1509.6 | 1410.2 | 1192.4 | 1070.1 | 882.8  | 538.9  | 252.2  | 122.3  | 80.3   |
| 15°   | 1964.4 | 1956.7 | 1926.2 | 1845.9 | 1651.0 | 1532.5 | 1364.4 | 905.8  | 424.2  | 152.9  | 84.1   |
| 17.5° | 2266.3 | 2235.7 | 2224.3 | 2189.9 | 2063.8 | 1998.8 | 1815.3 | 1333.8 | 672.6  | 206.4  | 87.9   |
| 20°   | 2568.2 | 2560.6 | 2549.1 | 2510.9 | 2426.8 | 2381.0 | 2239.6 | 1765.7 | 1001.3 | 294.3  | 95.5   |
| 22.5° | 3007.7 | 2965.7 | 2973.3 | 2889.3 | 2820.5 | 2740.2 | 2625.6 | 2224.3 | 1379.7 | 420.4  | 107.0  |
| 25°   | 3523.7 | 3519.8 | 3458.7 | 3420.5 | 3305.8 | 3217.9 | 3065.1 | 2667.6 | 1800.1 | 607.7  | 118.5  |
| 27.5° | 4131.3 | 4089.3 | 4062.5 | 3997.6 | 3879.1 | 3779.7 | 3569.5 | 3107.1 | 2254.8 | 817.9  | 133.8  |
| 30°   | 4765.7 | 4765.7 | 4716.1 | 4616.7 | 4502.0 | 4379.7 | 4165.7 | 3569.5 | 2705.8 | 1085.4 | 152.9  |
| 32.5° | 5507.2 | 5522.5 | 5400.2 | 5251.1 | 5102.1 | 5018.0 | 4739.0 | 4093.1 | 3137.7 | 1391.1 | 175.8  |
| 35°   | 6225.7 | 6206.6 | 6004.0 | 5839.7 | 5728.8 | 5637.1 | 5400.2 | 4666.4 | 3626.9 | 1746.5 | 206.4  |
| 37.5° | 6913.6 | 6863.9 | 6527.6 | 6294.5 | 6244.8 | 6183.6 | 5946.7 | 5239.6 | 4112.2 | 2140.2 | 244.6  |
| 40°   | 7406.6 | 7330.2 | 6982.4 | 6661.3 | 6588.7 | 6554.3 | 6370.9 | 5759.4 | 4624.3 | 2579.7 | 294.3  |
| 42.5° | 7620.6 | 7532.7 | 7291.9 | 7032.1 | 6871.5 | 6791.3 | 6630.8 | 6183.6 | 5136.5 | 3068.9 | 366.9  |
| 45°   | 7662.6 | 7593.9 | 7421.9 | 7360.7 | 7142.9 | 7020.6 | 6802.7 | 6485.5 | 5614.2 | 3554.2 | 466.3  |
| 47.5° | 7509.8 | 7479.2 | 7376.0 | 7506.0 | 7395.1 | 7227.0 | 6963.3 | 6711.0 | 6038.4 | 4142.8 | 603.8  |
| 50°   | 7135.2 | 7112.3 | 7162.0 | 7502.1 | 7578.6 | 7387.5 | 7139.1 | 6886.8 | 6405.3 | 4750.5 | 798.7  |
| 52.5° | 6630.8 | 6626.9 | 6860.1 | 7402.8 | 7658.8 | 7540.3 | 7311.0 | 7062.6 | 6695.7 | 5339.0 | 1073.9 |
| 55°   | 6080.4 | 6145.4 | 6554.3 | 7311.0 | 7704.7 | 7651.2 | 7479.2 | 7219.3 | 6955.6 | 5885.5 | 1517.2 |
| 57.5° | 6034.6 | 6007.8 | 6401.5 | 7272.8 | 7731.4 | 7762.0 | 7647.4 | 7383.7 | 7177.3 | 6332.7 | 2109.6 |
| 60°   | 6493.2 | 6432.0 | 6581.1 | 7353.1 | 7849.9 | 7903.4 | 7815.5 | 7509.8 | 7398.9 | 6684.3 | 2889.3 |
| 62.5° | 7024.4 | 6967.1 | 7043.5 | 7662.6 | 8083.0 | 8159.5 | 8048.6 | 7639.7 | 7578.6 | 6928.9 | 3726.2 |
| 65°   | 7448.6 | 7402.8 | 7548.0 | 8125.1 | 8407.9 | 8472.9 | 8396.4 | 7880.5 | 7658.8 | 7127.6 | 4406.5 |
| 67.5° | 7517.4 | 7460.1 | 7762.0 | 8434.6 | 8736.6 | 8782.4 | 8721.3 | 8113.6 | 7632.1 | 7142.9 | 4563.2 |
| 70°   | 7322.5 | 7272.8 | 7704.7 | 8534.0 | 8878.0 | 8916.2 | 8721.3 | 8002.8 | 7269.0 | 6753.1 | 3730.0 |
| 72.5° | 6722.5 | 6760.7 | 7318.7 | 8293.2 | 8683.1 | 8507.3 | 8094.5 | 7444.8 | 6798.9 | 5725.0 | 2617.9 |
| 75°   | 5790.0 | 5832.0 | 6573.4 | 7632.1 | 7662.6 | 7448.6 | 7227.0 | 6848.6 | 6084.3 | 3772.1 | 1815.3 |
| 77.5° | 4116.0 | 3967.0 | 5075.3 | 6302.1 | 6191.3 | 6328.8 | 6348.0 | 5698.3 | 5094.4 | 1964.4 | 1215.3 |
| 80°   | 405.1  | 344.0  | 638.2  | 1807.7 | 3993.7 | 4463.8 | 4647.3 | 4391.2 | 3756.8 | 879.0  | 638.2  |
| 82.5° | 87.9   | 87.9   | 95.5   | 103.2  | 160.5  | 240.8  | 1104.5 | 2705.8 | 2426.8 | 447.1  | 206.4  |
| 85°   | 49.7   | 49.7   | 61.1   | 72.6   | 95.5   | 107.0  | 126.1  | 168.2  | 653.5  | 160.5  | 38.2   |
| 87.5° | 38.2   | 42.0   | 49.7   | 61.1   | 80.3   | 87.9   | 107.0  | 133.8  | 164.3  | 149.0  | 11.5   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

REPORT NUMBER: P1066397

CATALOG NUMBER: NVN-SA5A-830-U-T4BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 76.4   | 76.4 | 76.4 | 76.4 | 76.4 | 76.4 | 76.4 | 76.4 | 76.4 | 76.4 | 76.4 |
| 2.5°  | 80.3   | 76.4 | 72.6 | 68.8 | 65.0 | 65.0 | 61.1 | 61.1 | 61.1 | 61.1 | 61.1 |
| 5°    | 76.4   | 72.6 | 68.8 | 61.1 | 57.3 | 53.5 | 49.7 | 49.7 | 49.7 | 49.7 | 49.7 |
| 7.5°  | 76.4   | 72.6 | 65.0 | 57.3 | 49.7 | 45.9 | 42.0 | 38.2 | 38.2 | 42.0 | 42.0 |
| 10°   | 76.4   | 68.8 | 57.3 | 49.7 | 42.0 | 38.2 | 34.4 | 30.6 | 30.6 | 30.6 | 30.6 |
| 12.5° | 72.6   | 65.0 | 53.5 | 45.9 | 38.2 | 30.6 | 22.9 | 19.1 | 19.1 | 19.1 | 19.1 |
| 15°   | 68.8   | 61.1 | 49.7 | 38.2 | 26.8 | 19.1 | 15.3 | 11.5 | 11.5 | 11.5 | 11.5 |
| 17.5° | 68.8   | 57.3 | 45.9 | 34.4 | 19.1 | 11.5 | 7.6  | 3.8  | 3.8  | 3.8  | 7.6  |
| 20°   | 68.8   | 57.3 | 42.0 | 26.8 | 11.5 | 7.6  | 7.6  | 3.8  | 0.0  | 3.8  | 3.8  |
| 22.5° | 68.8   | 53.5 | 34.4 | 19.1 | 11.5 | 7.6  | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| 25°   | 72.6   | 53.5 | 30.6 | 15.3 | 7.6  | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 27.5° | 72.6   | 49.7 | 26.8 | 11.5 | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 30°   | 76.4   | 49.7 | 22.9 | 7.6  | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 32.5° | 76.4   | 45.9 | 15.3 | 7.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 35°   | 76.4   | 42.0 | 11.5 | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 37.5° | 76.4   | 38.2 | 11.5 | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 80.3   | 34.4 | 7.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 84.1   | 30.6 | 7.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 87.9   | 26.8 | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 99.4   | 26.8 | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 114.7  | 26.8 | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 137.6  | 26.8 | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 179.6  | 22.9 | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 259.9  | 22.9 | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 435.7  | 22.9 | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 764.4  | 22.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 1291.8 | 22.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 1685.4 | 26.8 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 1280.3 | 22.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 611.5  | 15.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 271.3  | 15.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 118.5  | 11.5 | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 45.9   | 7.6  | 3.8  | 3.8  | 3.8  | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 19.1   | 7.6  | 3.8  | 3.8  | 3.8  | 3.8  | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 11.5   | 7.6  | 7.6  | 7.6  | 3.8  | 3.8  | 3.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 7.6    | 7.6  | 7.6  | 7.6  | 7.6  | 3.8  | 3.8  | 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: SP1-2407-184-9

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-830-U-5WQ

Data in this report applies to families of products including GSS-SB1A-830-U-5WQ

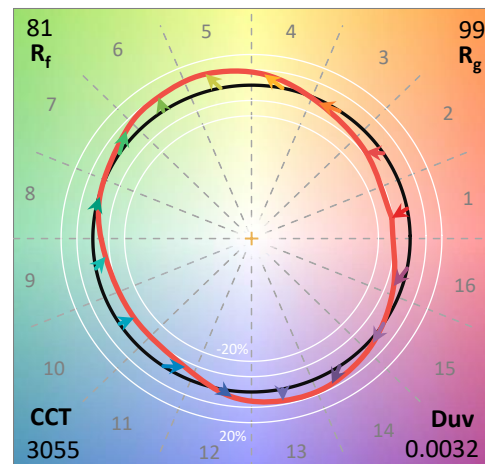
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-9  
 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-830-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 80 CRI  
 3000K CCT 26 LEDS

### Spectral Parameters

CCT (K): 3055  
 CIE  $u'$ : 0.2475  
 CIE  $v'$ : 0.5247  
 Duv: 0.0032  
 CIE x: 0.4377  
 CIE y: 0.4124  
 CIE z: 0.1499  
 Peak Wavelength (nm): 604  
 Dominant Wavelength (nm): 581  
 Purity: 55.16339  
 R<sub>f</sub>: 81.5  
 R<sub>g</sub>: 99.2

CRI (Ra): 80.9  
 R1: 79.5  
 R2: 85.6  
 R3: 92.1  
 R4: 82.4  
 R5: 78.9  
 R6: 81.7  
 R7: 85.1  
 R8: 61.9  
 R9: 6.8  
 R10: 67.1  
 R11: 82.5  
 R12: 63.4  
 R13: 80.2  
 R14: 95.1  
 R15: 71.7



### Test Conditions

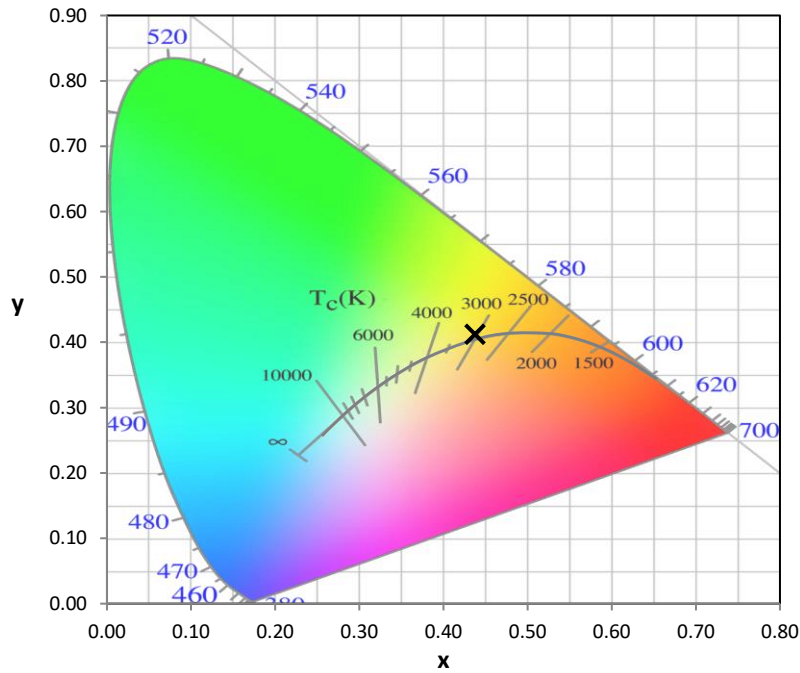
Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-9

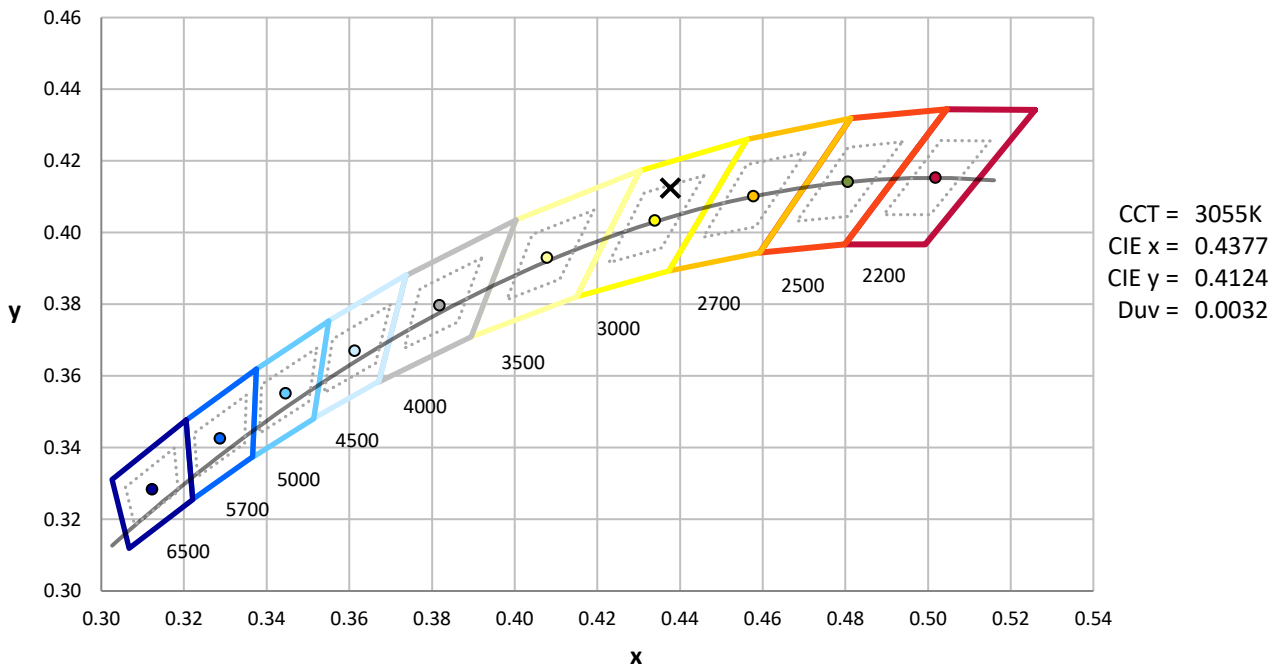
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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: SP1-2407-184-9

**CIE 1931 Chromaticity Diagram**



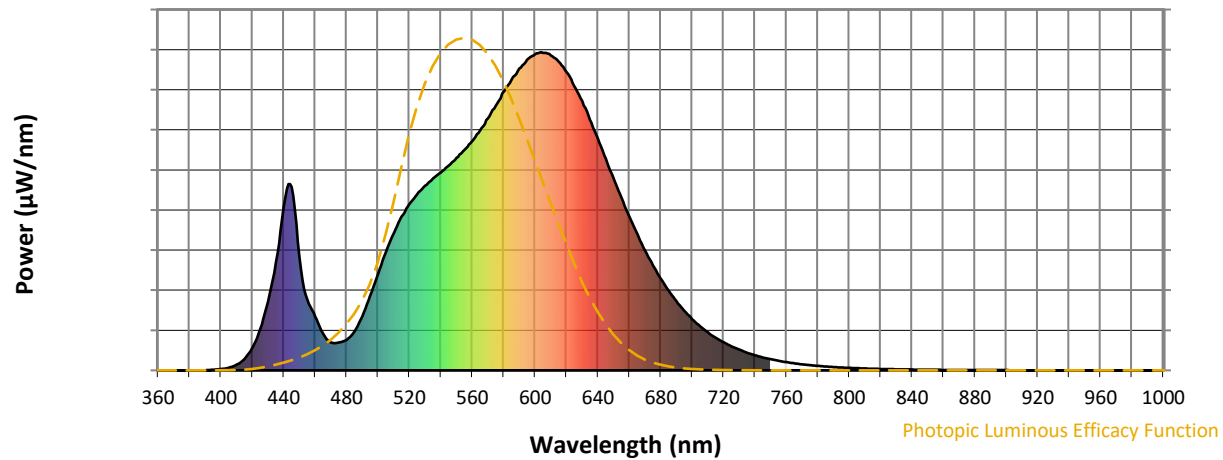
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-184-9

### Photopic Flux vs. Wavelength

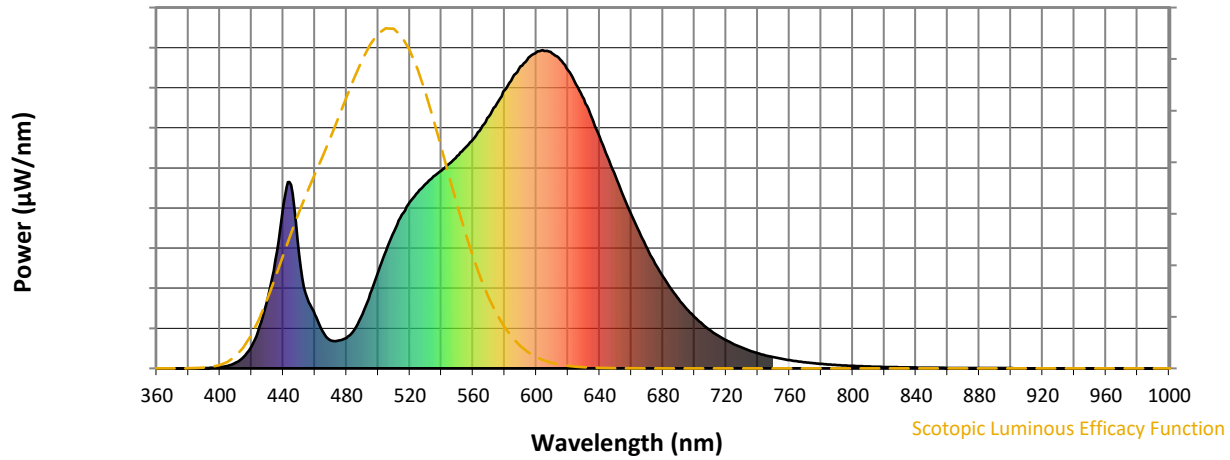


### Photopic Lumens: NR

| λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 170                      | NR            | 620    | 938                      | NR            | 750    | 35                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 234                      | NR            | 625    | 894                      | NR            | 755    | 30                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 302                      | NR            | 630    | 847                      | NR            | 760    | 26                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 371                      | NR            | 635    | 788                      | NR            | 765    | 22                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 431                      | NR            | 640    | 728                      | NR            | 770    | 19                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 482                      | NR            | 645    | 665                      | NR            | 775    | 16                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 523                      | NR            | 650    | 603                      | NR            | 780    | 14                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 553                      | NR            | 655    | 542                      | NR            | 785    | 12                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 580                      | NR            | 660    | 484                      | NR            | 790    | 11                       | NR            | 920    | 0                        | NR            |
| 405    | 8                        | NR            | 535    | 603                      | NR            | 665    | 430                      | NR            | 795    | 9                        | NR            | 925    | 0                        | NR            |
| 410    | 18                       | NR            | 540    | 622                      | NR            | 670    | 377                      | NR            | 800    | 8                        | NR            | 930    | 0                        | NR            |
| 415    | 36                       | NR            | 545    | 644                      | NR            | 675    | 330                      | NR            | 805    | 7                        | NR            | 935    | 0                        | NR            |
| 420    | 71                       | NR            | 550    | 668                      | NR            | 680    | 289                      | NR            | 810    | 6                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 693                      | NR            | 685    | 250                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 215                      | NR            | 560    | 720                      | NR            | 690    | 218                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 341                      | NR            | 565    | 754                      | NR            | 695    | 188                      | NR            | 825    | 4                        | NR            | 955    | 0                        | NR            |
| 440    | 514                      | NR            | 570    | 792                      | NR            | 700    | 161                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 576                      | NR            | 575    | 832                      | NR            | 705    | 139                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 358                      | NR            | 580    | 875                      | NR            | 710    | 119                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 222                      | NR            | 585    | 913                      | NR            | 715    | 102                      | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 170                      | NR            | 590    | 950                      | NR            | 720    | 88                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 115                      | NR            | 595    | 977                      | NR            | 725    | 76                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 88                       | NR            | 600    | 994                      | NR            | 730    | 65                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 87                       | NR            | 605    | 997                      | NR            | 735    | 56                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 96                       | NR            | 610    | 990                      | NR            | 740    | 47                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 122                      | NR            | 615    | 971                      | NR            | 745    | 41                       | NR            | 875    | 1                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2407-184-9

### Scotopic Flux vs. Wavelength



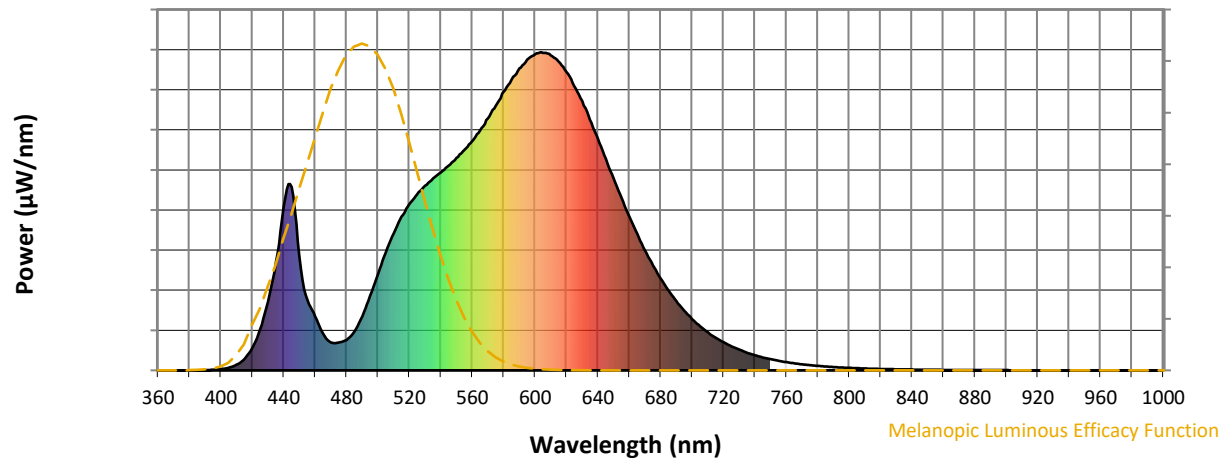
Scotopic Lumens: NR

S/P: 1.28

| 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       | 170                         | NR               | 620       | 938                         | NR               | 750       | 35                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 234                         | NR               | 625       | 894                         | NR               | 755       | 30                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 302                         | NR               | 630       | 847                         | NR               | 760       | 26                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 371                         | NR               | 635       | 788                         | NR               | 765       | 22                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 431                         | NR               | 640       | 728                         | NR               | 770       | 19                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 482                         | NR               | 645       | 665                         | NR               | 775       | 16                          | NR               | 905       | 1                           | NR               |
| 390       | 0                           | NR               | 520       | 523                         | NR               | 650       | 603                         | NR               | 780       | 14                          | NR               | 910       | 0                           | NR               |
| 395       | 2                           | NR               | 525       | 553                         | NR               | 655       | 542                         | NR               | 785       | 12                          | NR               | 915       | 0                           | NR               |
| 400       | 4                           | NR               | 530       | 580                         | NR               | 660       | 484                         | NR               | 790       | 11                          | NR               | 920       | 0                           | NR               |
| 405       | 8                           | NR               | 535       | 603                         | NR               | 665       | 430                         | NR               | 795       | 9                           | NR               | 925       | 0                           | NR               |
| 410       | 18                          | NR               | 540       | 622                         | NR               | 670       | 377                         | NR               | 800       | 8                           | NR               | 930       | 0                           | NR               |
| 415       | 36                          | NR               | 545       | 644                         | NR               | 675       | 330                         | NR               | 805       | 7                           | NR               | 935       | 0                           | NR               |
| 420       | 71                          | NR               | 550       | 668                         | NR               | 680       | 289                         | NR               | 810       | 6                           | NR               | 940       | 0                           | NR               |
| 425       | 131                         | NR               | 555       | 693                         | NR               | 685       | 250                         | NR               | 815       | 5                           | NR               | 945       | 0                           | NR               |
| 430       | 215                         | NR               | 560       | 720                         | NR               | 690       | 218                         | NR               | 820       | 4                           | NR               | 950       | 0                           | NR               |
| 435       | 341                         | NR               | 565       | 754                         | NR               | 695       | 188                         | NR               | 825       | 4                           | NR               | 955       | 0                           | NR               |
| 440       | 514                         | NR               | 570       | 792                         | NR               | 700       | 161                         | NR               | 830       | 3                           | NR               | 960       | 0                           | NR               |
| 445       | 576                         | NR               | 575       | 832                         | NR               | 705       | 139                         | NR               | 835       | 3                           | NR               | 965       | 0                           | NR               |
| 450       | 358                         | NR               | 580       | 875                         | NR               | 710       | 119                         | NR               | 840       | 3                           | NR               | 970       | 0                           | NR               |
| 455       | 222                         | NR               | 585       | 913                         | NR               | 715       | 102                         | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 170                         | NR               | 590       | 950                         | NR               | 720       | 88                          | NR               | 850       | 2                           | NR               | 980       | 0                           | NR               |
| 465       | 115                         | NR               | 595       | 977                         | NR               | 725       | 76                          | NR               | 855       | 2                           | NR               | 985       | 0                           | NR               |
| 470       | 88                          | NR               | 600       | 994                         | NR               | 730       | 65                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 87                          | NR               | 605       | 997                         | NR               | 735       | 56                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 96                          | NR               | 610       | 990                         | NR               | 740       | 47                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 122                         | NR               | 615       | 971                         | NR               | 745       | 41                          | NR               | 875       | 1                           | NR               |           |                             |                  |

REPORT NUMBER: SP1-2407-184-9

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.33

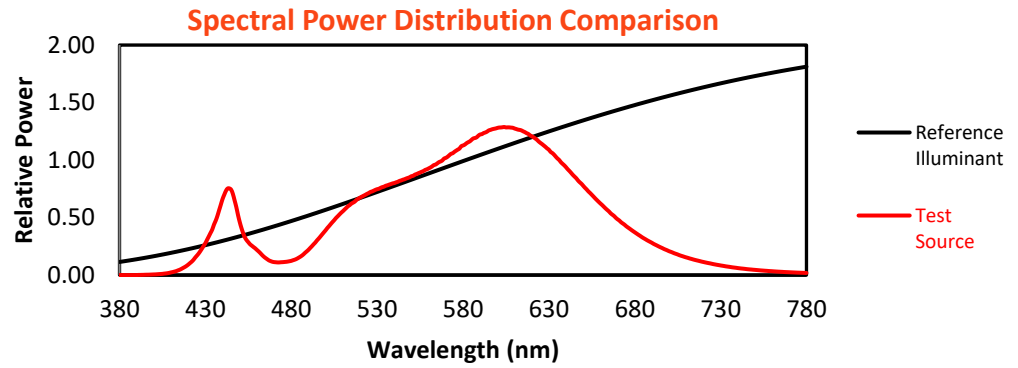
| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 170                         | NR               | 620       | 938                         | NR               | 750       | 35                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 234                         | NR               | 625       | 894                         | NR               | 755       | 30                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 302                         | NR               | 630       | 847                         | NR               | 760       | 26                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 371                         | NR               | 635       | 788                         | NR               | 765       | 22                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 431                         | NR               | 640       | 728                         | NR               | 770       | 19                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 482                         | NR               | 645       | 665                         | NR               | 775       | 16                          | NR               | 905       | 1                           | NR               |
| 390       | 0                           | NR               | 520       | 523                         | NR               | 650       | 603                         | NR               | 780       | 14                          | NR               | 910       | 0                           | NR               |
| 395       | 2                           | NR               | 525       | 553                         | NR               | 655       | 542                         | NR               | 785       | 12                          | NR               | 915       | 0                           | NR               |
| 400       | 4                           | NR               | 530       | 580                         | NR               | 660       | 484                         | NR               | 790       | 11                          | NR               | 920       | 0                           | NR               |
| 405       | 8                           | NR               | 535       | 603                         | NR               | 665       | 430                         | NR               | 795       | 9                           | NR               | 925       | 0                           | NR               |
| 410       | 18                          | NR               | 540       | 622                         | NR               | 670       | 377                         | NR               | 800       | 8                           | NR               | 930       | 0                           | NR               |
| 415       | 36                          | NR               | 545       | 644                         | NR               | 675       | 330                         | NR               | 805       | 7                           | NR               | 935       | 0                           | NR               |
| 420       | 71                          | NR               | 550       | 668                         | NR               | 680       | 289                         | NR               | 810       | 6                           | NR               | 940       | 0                           | NR               |
| 425       | 131                         | NR               | 555       | 693                         | NR               | 685       | 250                         | NR               | 815       | 5                           | NR               | 945       | 0                           | NR               |
| 430       | 215                         | NR               | 560       | 720                         | NR               | 690       | 218                         | NR               | 820       | 4                           | NR               | 950       | 0                           | NR               |
| 435       | 341                         | NR               | 565       | 754                         | NR               | 695       | 188                         | NR               | 825       | 4                           | NR               | 955       | 0                           | NR               |
| 440       | 514                         | NR               | 570       | 792                         | NR               | 700       | 161                         | NR               | 830       | 3                           | NR               | 960       | 0                           | NR               |
| 445       | 576                         | NR               | 575       | 832                         | NR               | 705       | 139                         | NR               | 835       | 3                           | NR               | 965       | 0                           | NR               |
| 450       | 358                         | NR               | 580       | 875                         | NR               | 710       | 119                         | NR               | 840       | 3                           | NR               | 970       | 0                           | NR               |
| 455       | 222                         | NR               | 585       | 913                         | NR               | 715       | 102                         | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 170                         | NR               | 590       | 950                         | NR               | 720       | 88                          | NR               | 850       | 2                           | NR               | 980       | 0                           | NR               |
| 465       | 115                         | NR               | 595       | 977                         | NR               | 725       | 76                          | NR               | 855       | 2                           | NR               | 985       | 0                           | NR               |
| 470       | 88                          | NR               | 600       | 994                         | NR               | 730       | 65                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 87                          | NR               | 605       | 997                         | NR               | 735       | 56                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 96                          | NR               | 610       | 990                         | NR               | 740       | 47                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 122                         | NR               | 615       | 971                         | NR               | 745       | 41                          | NR               | 875       | 1                           | NR               |           |                             |                  |

REPORT NUMBER: SP1-2407-184-9

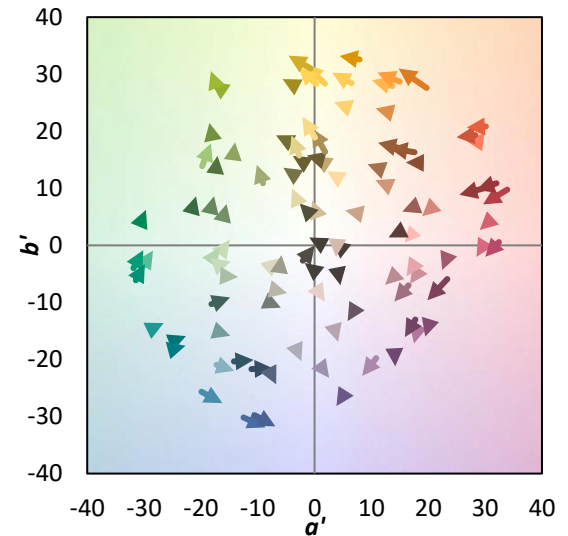
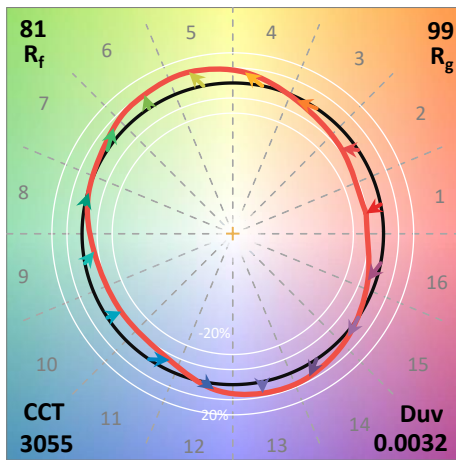
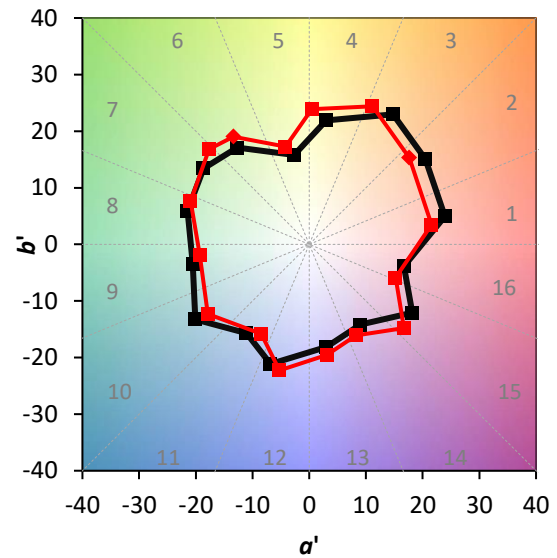
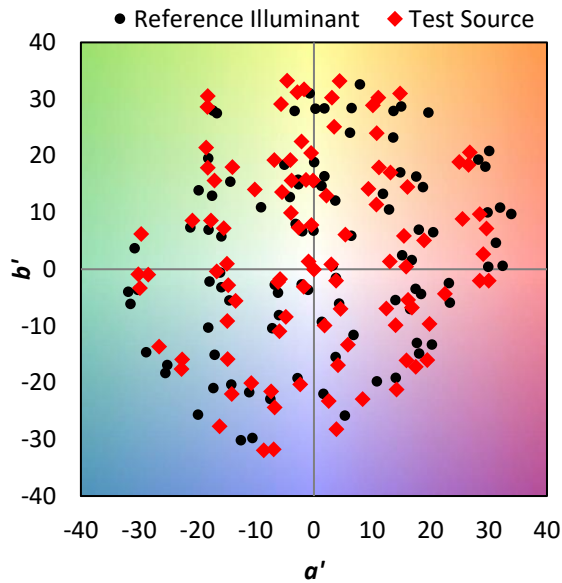
TM-30-18

### Summary

$R_f = 81.5$   
 $R_g = 99.2$   
 $CIE R_a = 80.9$   
 $R_g = 6.8$



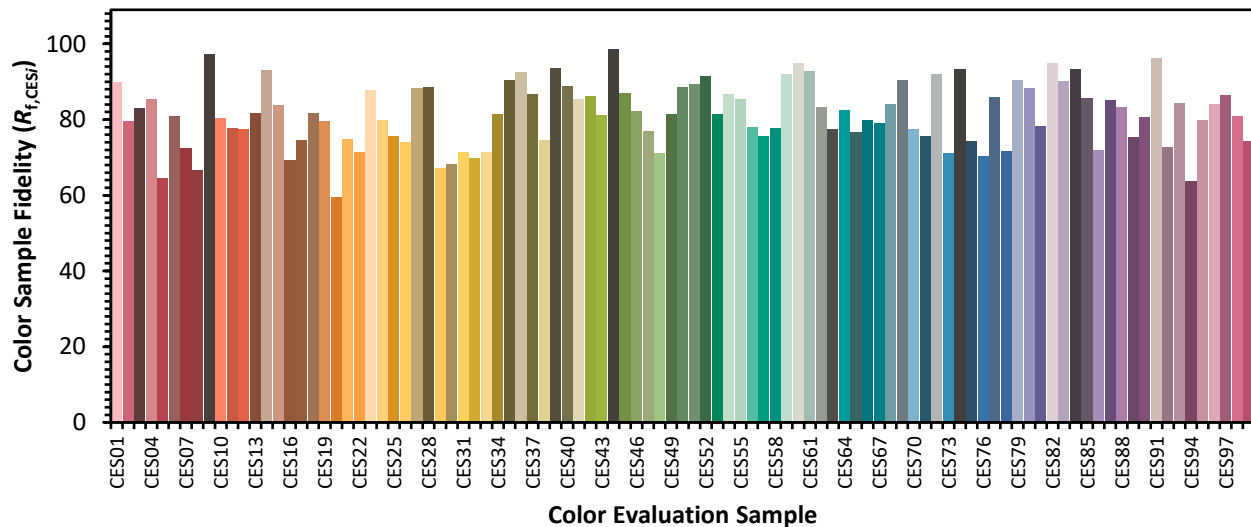
### Color Vector Graphics



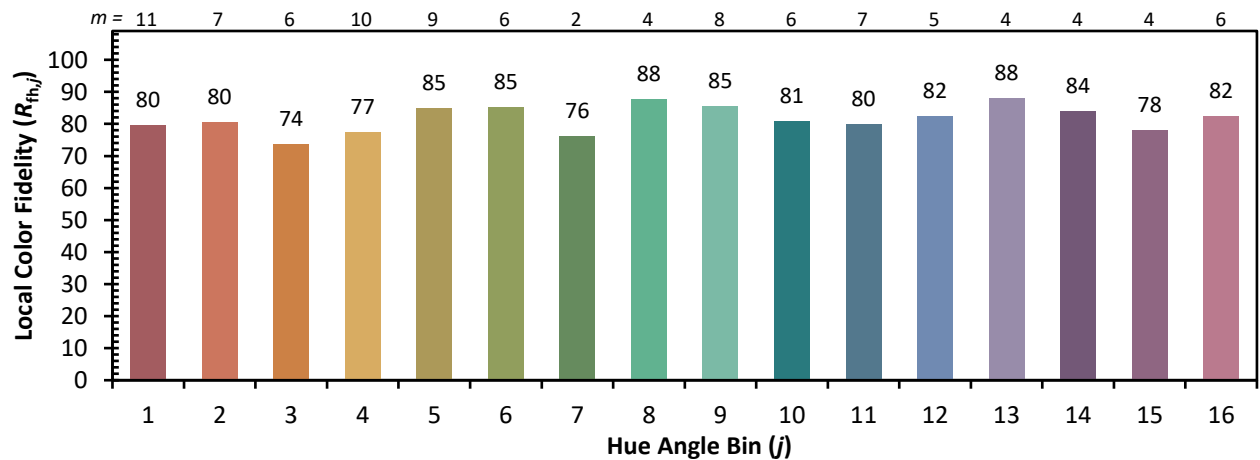
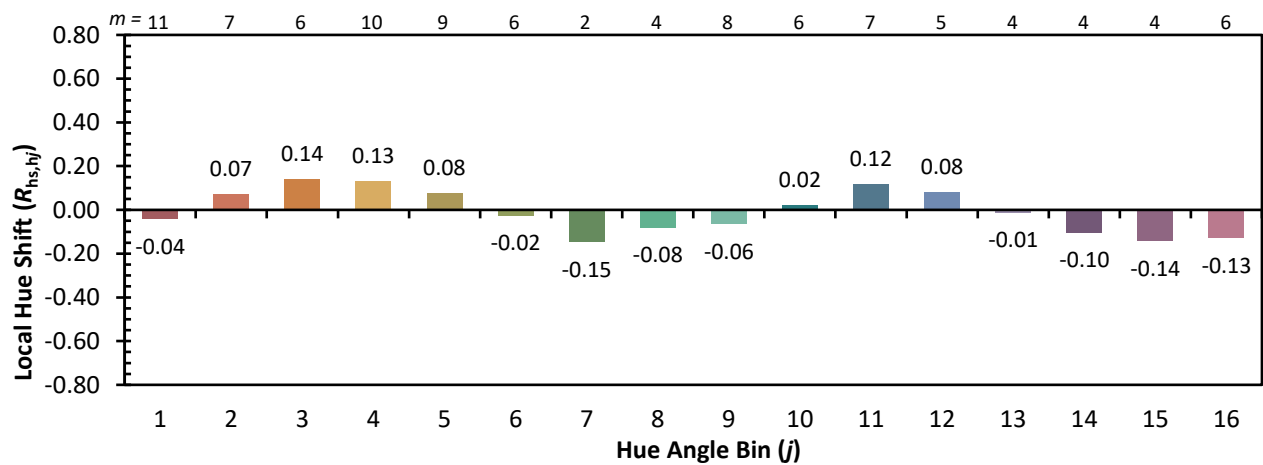
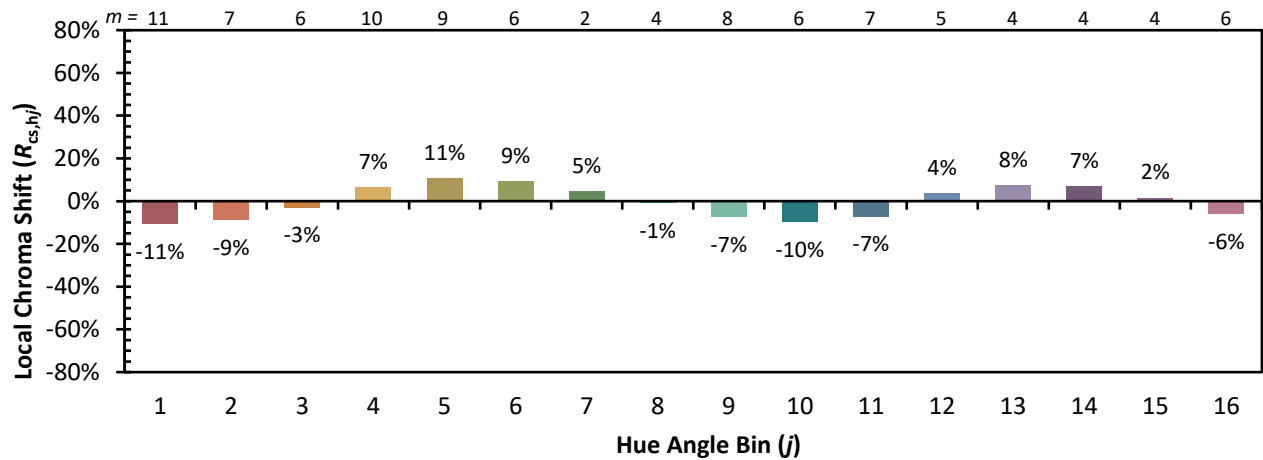


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

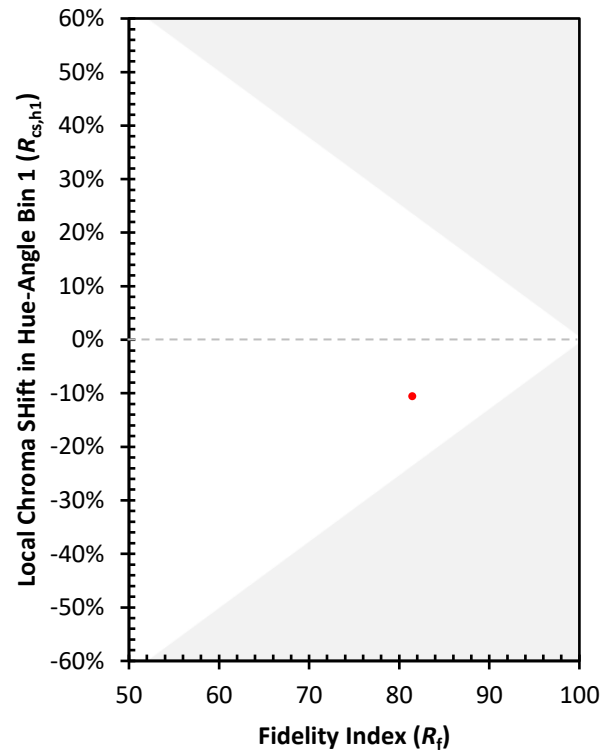
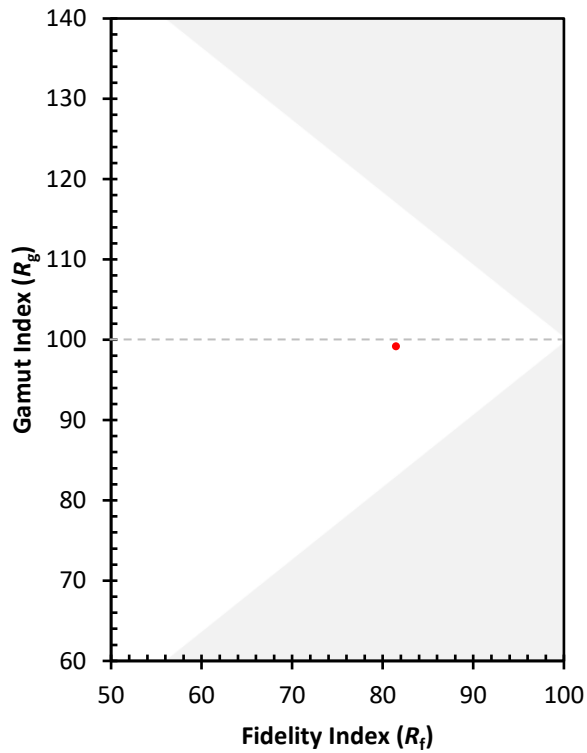
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 91 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 93 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 90 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 77 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)