

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: P1065821

Luminaire Tested: **NVN-SA5A-735-U-T3BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1065821  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: NVN-SA5A-735-U-T3BC  
Description: Navion AREA AND ROADWAY LUMINAIRE 615mA 5xLight Square PACKAGE  
70CRI 3500K FIXTURE w/ TYPE III ANGLED BACKLIGHT CONTROL  
Light Source: (70) 3500K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17223.6 lumens  
Efficiency: N/A  
Efficacy: 125.4 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')  
IES Classification: Type III - 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

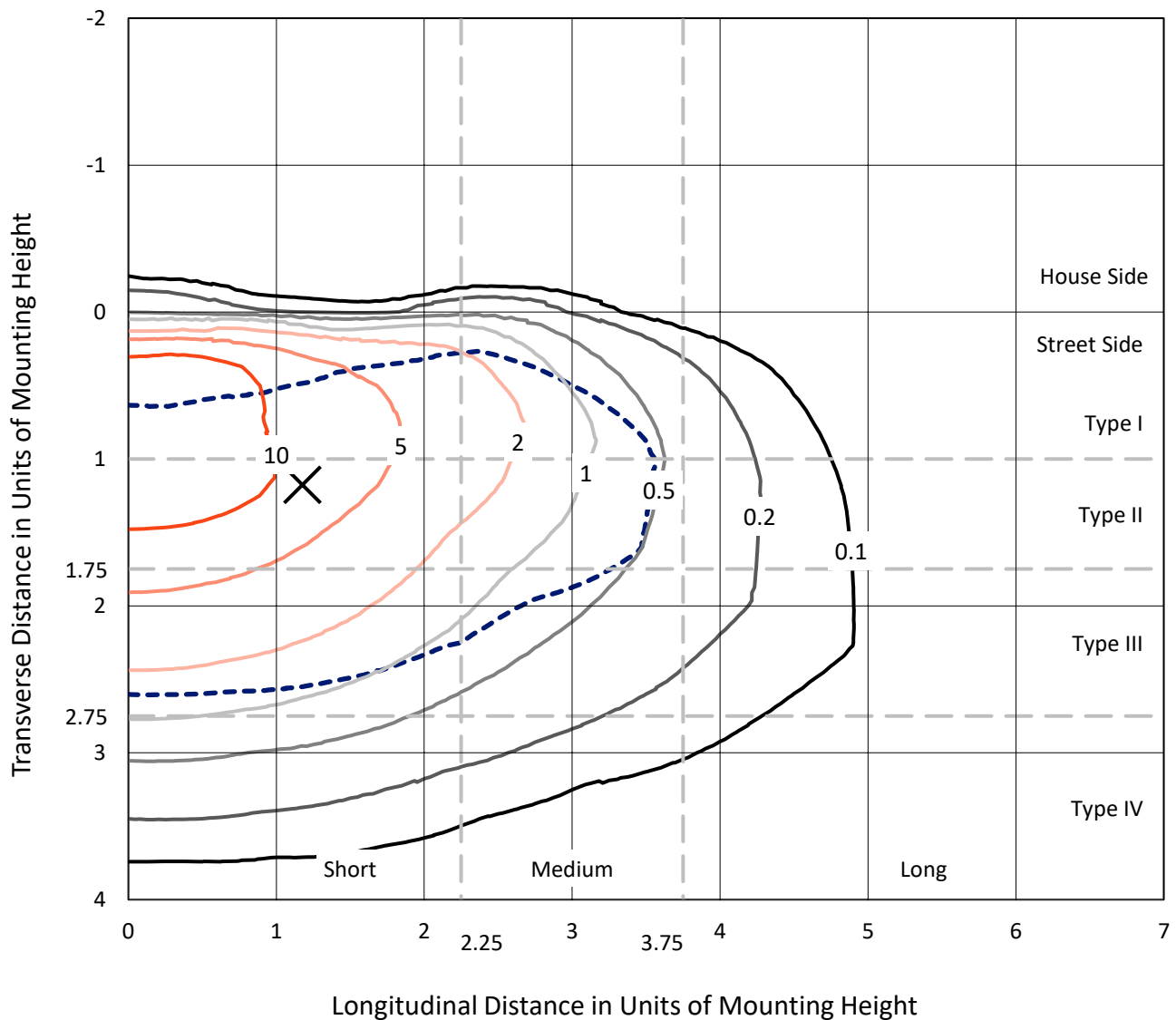


REPORT NUMBER: P1065821

CATALOG NUMBER: NVN-SA5A-735-U-T3BC

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

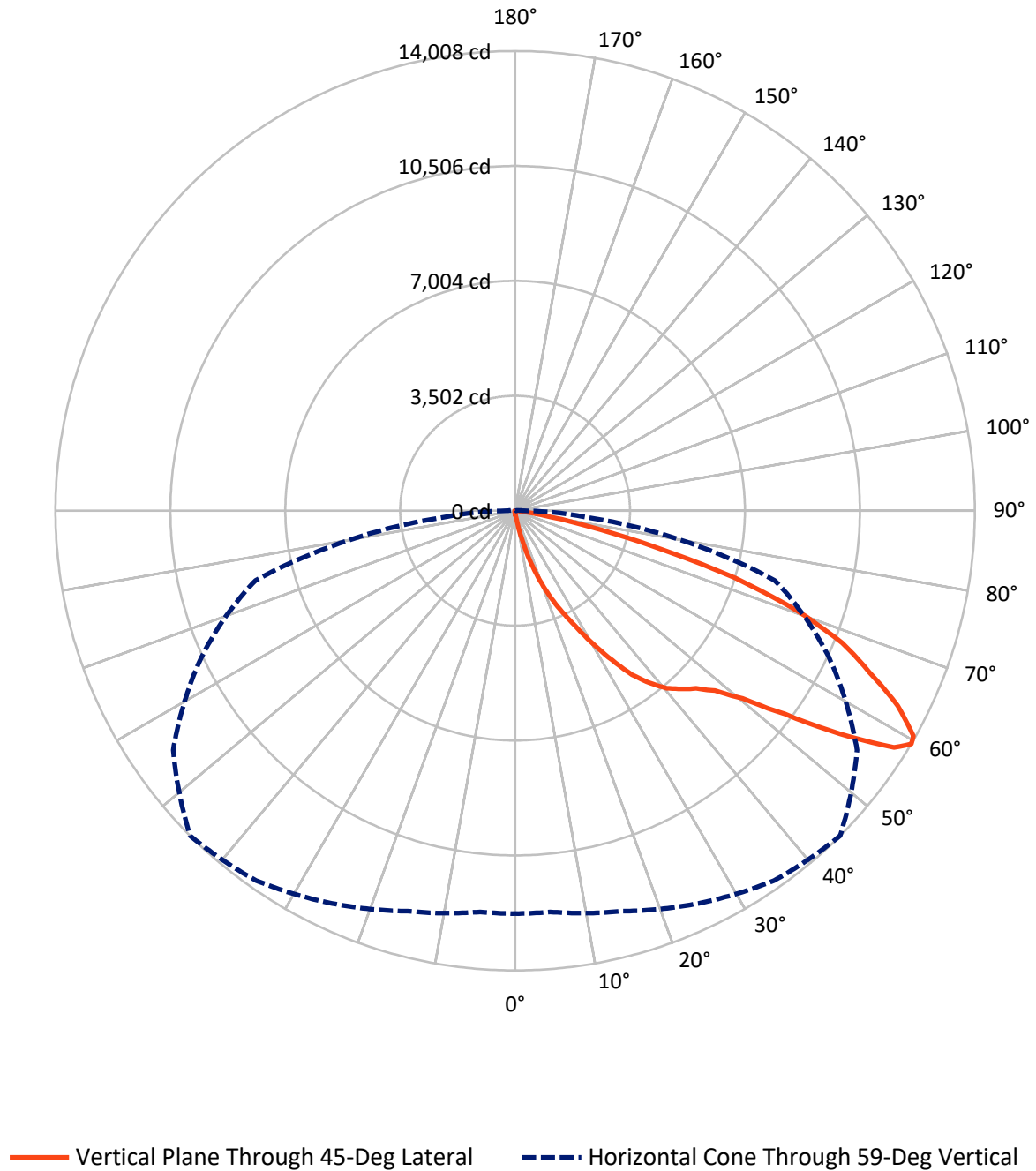


Based on 15 foot mounting height. Maximum calculated value = 18.8 fc  
 Type III - Short - N/A

REPORT NUMBER: P1065821

CATALOG NUMBER: NVN-SA5A-735-U-T3BC

## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 61.2     | 0.0    | 61.2    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 17162.5  | 0.0    | 17162.5 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 17223.6  | 0.0    | 17223.6 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 16.0    | 0.1       |
| 10°-20°   | 190.4   | 1.1       |
| 20°-30°   | 684.0   | 4.0       |
| 30°-40°   | 1589.5  | 9.2       |
| 40°-50°   | 2709.2  | 15.7      |
| 50°-60°   | 4464.0  | 25.9      |
| 60°-70°   | 5161.4  | 30.0      |
| 70°-80°   | 2217.5  | 12.9      |
| 80°-90°   | 191.6   | 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°    | 17223.6 | 100.0     |
| 0°-180°   | 17223.6 | 100.0     |



REPORT NUMBER: P1065821

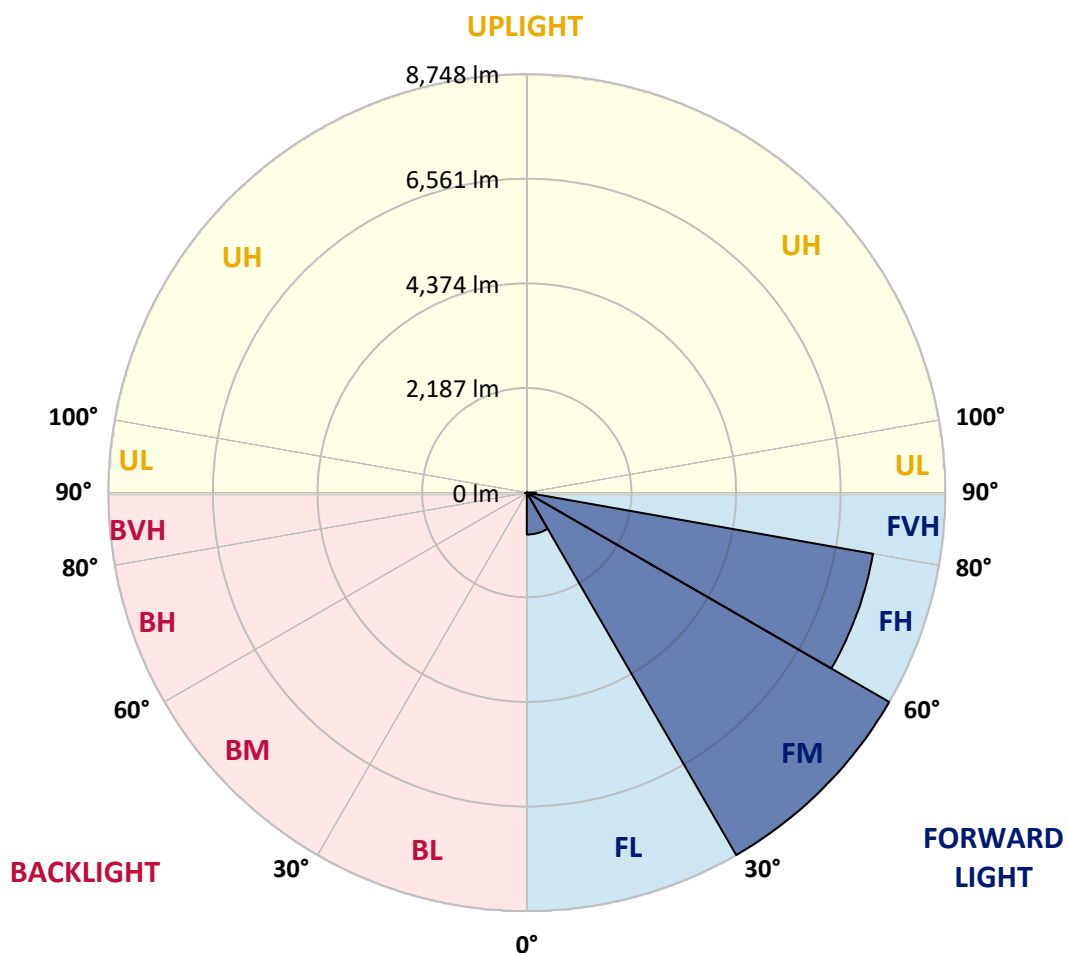
CATALOG NUMBER: NVN-SA5A-735-U-T3BC

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 875.3  | 5.1       |                         |      |         |
| FM   | (30°-60°)   | 8747.9 | 50.8      |                         |      |         |
| FH   | (60°-80°)   | 7350.1 | 42.7      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 189.1  | 1.1       |                         |      | G2/225  |
| BL   | (0°-30°)    | 15.1   | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 14.8   | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 28.8   | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 2.5    | 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-G3**

Type III Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 44°     | 45°     | 55°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 108.9   | 108.9   | 108.9   | 108.9   | 108.9   | 108.9   | 108.9   | 108.9   | 108.9   | 108.9   | 108.9  |
| 2.5°  | 141.3   | 141.3   | 137.8   | 133.2   | 132.0   | 128.6   | 128.6   | 125.1   | 120.4   | 117.0   | 112.3  |
| 5°    | 205.0   | 203.8   | 194.6   | 183.0   | 167.9   | 158.7   | 158.7   | 145.9   | 134.3   | 123.9   | 114.7  |
| 7.5°  | 448.2   | 437.8   | 404.2   | 348.6   | 275.6   | 227.0   | 223.5   | 181.8   | 154.0   | 133.2   | 115.8  |
| 10°   | 1028.4  | 992.5   | 945.0   | 811.8   | 599.9   | 419.2   | 411.1   | 265.2   | 184.1   | 143.6   | 118.1  |
| 12.5° | 1685.1  | 1714.0  | 1619.1  | 1409.4  | 1161.6  | 864.0   | 806.1   | 447.0   | 243.2   | 157.5   | 120.4  |
| 15°   | 2282.7  | 2275.7  | 2222.4  | 2051.0  | 1765.0  | 1368.9  | 1333.0  | 777.1   | 348.6   | 179.5   | 122.8  |
| 17.5° | 2729.7  | 2721.6  | 2670.6  | 2560.6  | 2340.6  | 1944.5  | 1913.2  | 1239.2  | 546.6   | 210.8   | 125.1  |
| 20°   | 3201.1  | 3190.6  | 3118.8  | 3030.8  | 2838.6  | 2501.5  | 2464.5  | 1755.7  | 855.9   | 261.7   | 125.1  |
| 22.5° | 3766.2  | 3746.5  | 3670.1  | 3520.7  | 3318.0  | 3025.0  | 2991.4  | 2283.8  | 1239.2  | 345.1   | 130.9  |
| 25°   | 4449.5  | 4415.9  | 4310.5  | 4176.2  | 3931.8  | 3542.7  | 3506.8  | 2872.1  | 1701.3  | 471.4   | 136.7  |
| 27.5° | 5228.9  | 5234.7  | 5092.3  | 4865.3  | 4537.5  | 4140.3  | 4073.1  | 3399.1  | 2179.6  | 652.0   | 143.6  |
| 30°   | 6154.3  | 6096.4  | 5896.0  | 5632.0  | 5313.5  | 4807.4  | 4742.5  | 3923.7  | 2717.0  | 918.4   | 155.2  |
| 32.5° | 7020.5  | 6958.0  | 6688.2  | 6355.8  | 6014.1  | 5480.2  | 5427.0  | 4513.2  | 3205.7  | 1233.4  | 176.0  |
| 35°   | 7764.1  | 7720.0  | 7342.5  | 6937.2  | 6633.7  | 6156.6  | 6140.4  | 5171.0  | 3780.1  | 1572.7  | 199.2  |
| 37.5° | 8418.4  | 8338.5  | 7853.2  | 7432.8  | 7124.8  | 6697.4  | 6662.7  | 5773.2  | 4333.7  | 1966.5  | 233.9  |
| 40°   | 8976.6  | 8932.6  | 8340.8  | 7788.4  | 7538.2  | 7156.0  | 7112.0  | 6301.3  | 4905.8  | 2424.0  | 276.8  |
| 42.5° | 9574.2  | 9516.3  | 8941.9  | 8322.3  | 7861.3  | 7452.5  | 7423.6  | 6736.8  | 5415.4  | 2926.6  | 340.5  |
| 45°   | 10249.4 | 10141.7 | 9637.9  | 9082.0  | 8381.3  | 7759.4  | 7727.0  | 7124.8  | 5937.7  | 3466.3  | 418.1  |
| 47.5° | 10970.9 | 10877.1 | 10469.4 | 10079.1 | 9273.1  | 8265.5  | 8196.0  | 7454.8  | 6456.5  | 4089.3  | 516.5  |
| 50°   | 11705.1 | 11707.5 | 11401.7 | 11214.1 | 10362.9 | 9087.8  | 8989.3  | 7940.1  | 7002.0  | 4756.4  | 662.4  |
| 52.5° | 12559.8 | 12581.8 | 12577.2 | 12438.2 | 11778.1 | 10432.4 | 10300.3 | 8676.7  | 7635.5  | 5534.7  | 864.0  |
| 55°   | 12917.7 | 12957.1 | 13213.0 | 13521.1 | 13341.6 | 12137.1 | 11995.8 | 9947.1  | 8475.1  | 6402.1  | 1162.8 |
| 57.5° | 12624.7 | 12668.7 | 13021.9 | 13561.6 | 13973.9 | 13629.9 | 13613.7 | 11600.9 | 9581.1  | 7453.7  | 1651.5 |
| 59°   | 12276.1 | 12270.3 | 12632.8 | 13204.9 | 13760.8 | 13984.3 | 14007.5 | 12719.7 | 10544.7 | 8191.4  | 2073.0 |
| 60°   | 12044.5 | 12049.1 | 12290.0 | 12877.2 | 13467.8 | 13855.8 | 13946.1 | 13378.6 | 11107.6 | 8721.8  | 2434.4 |
| 62.5° | 11150.4 | 11203.7 | 11394.8 | 11940.2 | 12500.8 | 12933.9 | 13087.9 | 13965.8 | 12718.5 | 9974.9  | 3690.9 |
| 65°   | 10178.7 | 10182.2 | 10454.4 | 10921.1 | 11458.5 | 11763.1 | 11860.3 | 13052.0 | 13794.4 | 11251.2 | 5338.9 |
| 67.5° | 8445.0  | 8515.7  | 8824.9  | 9581.1  | 10291.1 | 10676.7 | 10750.9 | 11361.2 | 13348.5 | 12082.7 | 6164.7 |
| 70°   | 5909.9  | 6002.5  | 6443.8  | 7424.7  | 8482.1  | 9115.6  | 9111.0  | 9444.5  | 11748.0 | 11712.1 | 5226.6 |
| 72.5° | 2950.9  | 3110.7  | 3470.9  | 4521.3  | 5802.2  | 6797.0  | 7006.6  | 7597.3  | 9437.5  | 9728.2  | 3899.4 |
| 75°   | 1304.0  | 1313.3  | 1518.3  | 2047.6  | 2883.7  | 4147.2  | 4334.9  | 6030.3  | 7240.6  | 6761.1  | 2816.6 |
| 77.5° | 758.6   | 765.5   | 802.6   | 919.5   | 1168.5  | 2032.5  | 2243.3  | 3955.0  | 5116.6  | 3929.5  | 1836.8 |
| 80°   | 275.6   | 282.6   | 281.4   | 348.6   | 511.9   | 800.3   | 891.8   | 1916.7  | 3413.0  | 2069.6  | 962.4  |
| 82.5° | 169.1   | 169.1   | 163.3   | 164.5   | 186.5   | 306.9   | 335.9   | 816.5   | 1661.9  | 1019.1  | 275.6  |
| 85°   | 83.4    | 88.0    | 93.8    | 105.4   | 125.1   | 151.7   | 161.0   | 233.9   | 559.4   | 246.7   | 66.0   |
| 87.5° | 49.8    | 51.0    | 55.6    | 67.2    | 83.4    | 108.9   | 115.8   | 158.7   | 200.4   | 165.6   | 16.2   |
| 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: P1065821

CATALOG NUMBER: NVN-SA5A-735-U-T3BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 108.9  | 108.9 | 108.9 | 108.9 | 108.9 | 108.9 | 108.9 | 108.9 | 108.9 | 108.9 | 108.9 |
| 2.5°  | 110.0  | 108.9 | 103.1 | 98.4  | 93.8  | 89.2  | 85.7  | 82.2  | 82.2  | 83.4  | 82.2  |
| 5°    | 110.0  | 105.4 | 96.1  | 88.0  | 81.1  | 75.3  | 69.5  | 64.9  | 63.7  | 63.7  | 64.9  |
| 7.5°  | 108.9  | 103.1 | 90.3  | 79.9  | 70.6  | 62.5  | 56.7  | 51.0  | 49.8  | 51.0  | 49.8  |
| 10°   | 107.7  | 100.8 | 85.7  | 73.0  | 60.2  | 52.1  | 44.0  | 38.2  | 38.2  | 38.2  | 39.4  |
| 12.5° | 107.7  | 97.3  | 81.1  | 66.0  | 52.1  | 42.9  | 34.7  | 29.0  | 27.8  | 27.8  | 27.8  |
| 15°   | 106.5  | 95.0  | 76.4  | 57.9  | 44.0  | 32.4  | 25.5  | 19.7  | 19.7  | 19.7  | 19.7  |
| 17.5° | 104.2  | 91.5  | 70.6  | 51.0  | 34.7  | 24.3  | 17.4  | 11.6  | 11.6  | 13.9  | 13.9  |
| 20°   | 101.9  | 88.0  | 63.7  | 41.7  | 29.0  | 18.5  | 11.6  | 6.9   | 6.9   | 10.4  | 11.6  |
| 22.5° | 103.1  | 88.0  | 59.1  | 37.1  | 23.2  | 13.9  | 9.3   | 5.8   | 4.6   | 8.1   | 10.4  |
| 25°   | 104.2  | 85.7  | 53.3  | 32.4  | 17.4  | 10.4  | 6.9   | 2.3   | 1.2   | 2.3   | 3.5   |
| 27.5° | 104.2  | 83.4  | 46.3  | 25.5  | 12.7  | 8.1   | 3.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 30°   | 103.1  | 79.9  | 40.5  | 20.8  | 9.3   | 4.6   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   |
| 32.5° | 101.9  | 76.4  | 37.1  | 16.2  | 8.1   | 2.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 35°   | 103.1  | 71.8  | 32.4  | 12.7  | 4.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 2.3   |
| 37.5° | 106.5  | 67.2  | 27.8  | 10.4  | 3.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 111.2  | 63.7  | 23.2  | 8.1   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 120.4  | 63.7  | 20.8  | 5.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 132.0  | 63.7  | 17.4  | 4.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 147.1  | 64.9  | 15.1  | 4.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 165.6  | 67.2  | 13.9  | 3.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 179.5  | 64.9  | 12.7  | 3.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 203.8  | 62.5  | 11.6  | 2.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 236.3  | 59.1  | 11.6  | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 59°   | 268.7  | 54.4  | 11.6  | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 305.7  | 52.1  | 10.4  | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 504.9  | 46.3  | 9.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 975.1  | 44.0  | 8.1   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 1576.2 | 44.0  | 5.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 1657.3 | 44.0  | 4.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1102.5 | 35.9  | 3.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 590.6  | 32.4  | 3.5   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 318.5  | 30.1  | 4.6   | 2.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 140.1  | 22.0  | 5.8   | 3.5   | 2.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 55.6   | 15.1  | 6.9   | 5.8   | 4.6   | 2.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 26.6   | 11.6  | 9.3   | 8.1   | 5.8   | 3.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 12.7   | 11.6  | 10.4  | 9.3   | 8.1   | 5.8   | 1.2   | 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   |



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1121 Highway 74 South  
Peachtree City, GA 30269



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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-5

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-735-U-5WQ

Data in this report applies to families of products including GSS-SB1A-735-U-5WQ

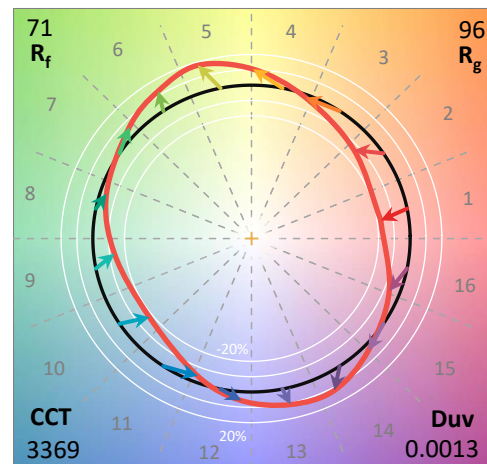
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-5  
 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-735-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI 3500K CCT 26 LEDS

### Spectral Parameters

CCT (K): 3369  
 CIE  $u'$ : 0.2386  
 CIE  $v'$ : 0.5156  
 Duv: 0.0013  
 CIE x: 0.4143  
 CIE y: 0.3980  
 CIE z: 0.1877  
 Peak Wavelength (nm): 590  
 Dominant Wavelength (nm): 580  
 Purity: 43.80166  
 R<sub>f</sub>: 71.4  
 R<sub>g</sub>: 96

CRI (Ra): 70.1  
 R1: 66.6  
 R2: 77.6  
 R3: 88.5  
 R4: 69.5  
 R5: 66.4  
 R6: 69.6  
 R7: 77.5  
 R8: 44.9  
 R9: -40.2  
 R10: 49.1  
 R11: 66.3  
 R12: 45.7  
 R13: 68.0  
 R14: 93.4  
 R15: 57.6



### Test Conditions

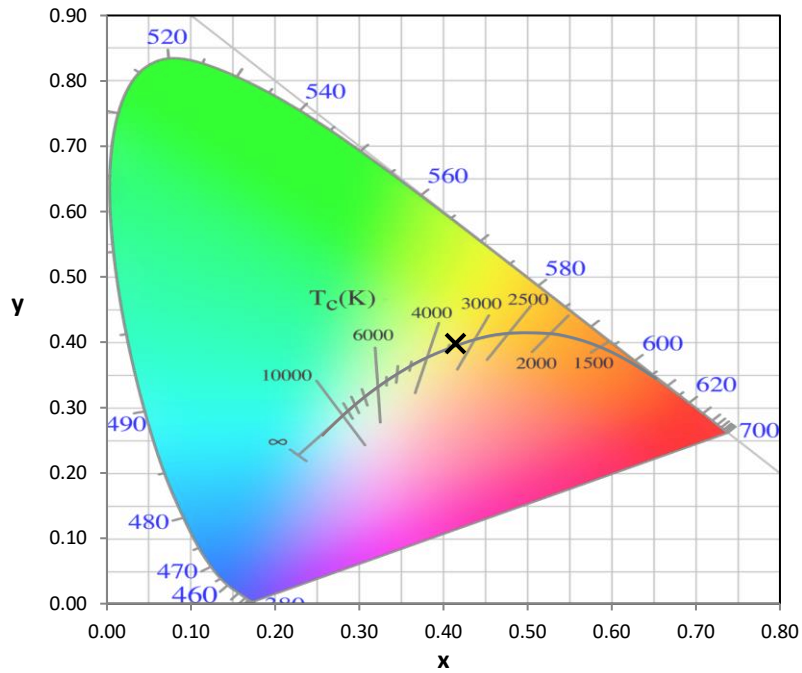
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-5

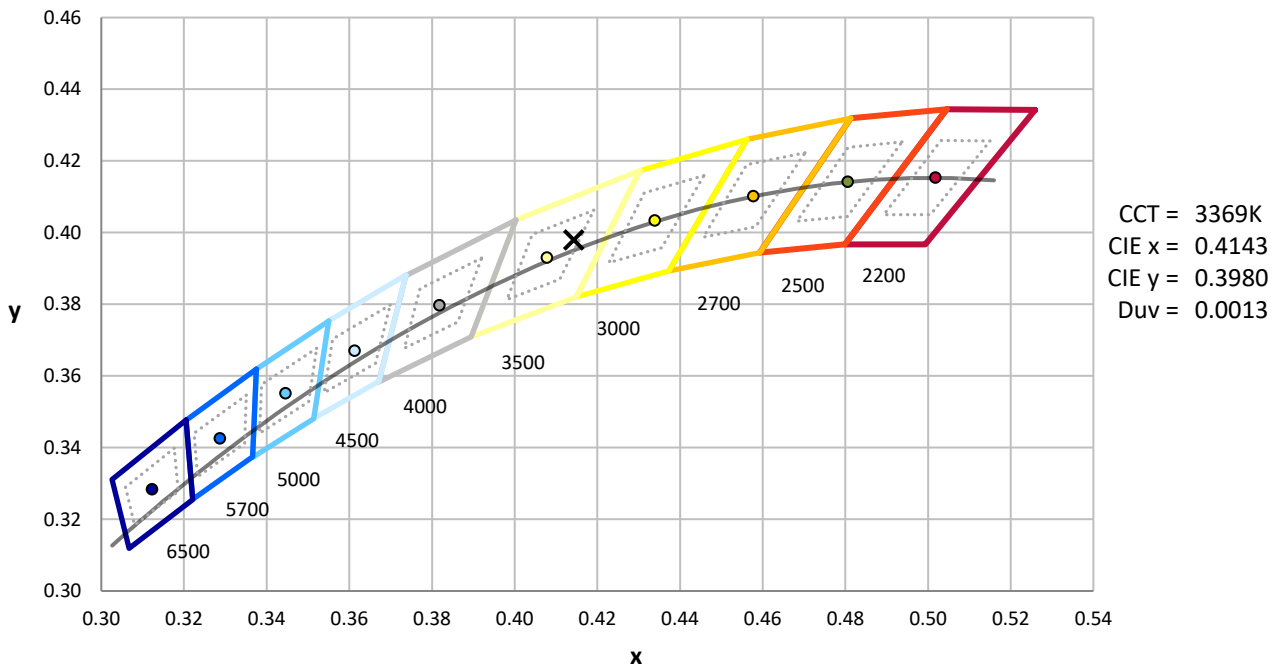
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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: SP1-2407-184-5

**CIE 1931 Chromaticity Diagram**



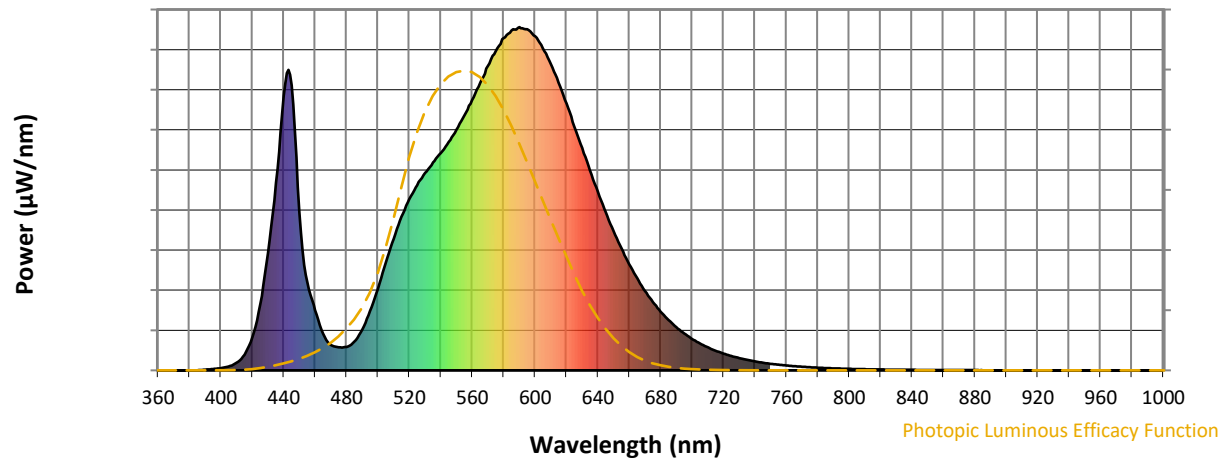
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2407-184-5

### Photopic Flux vs. Wavelength

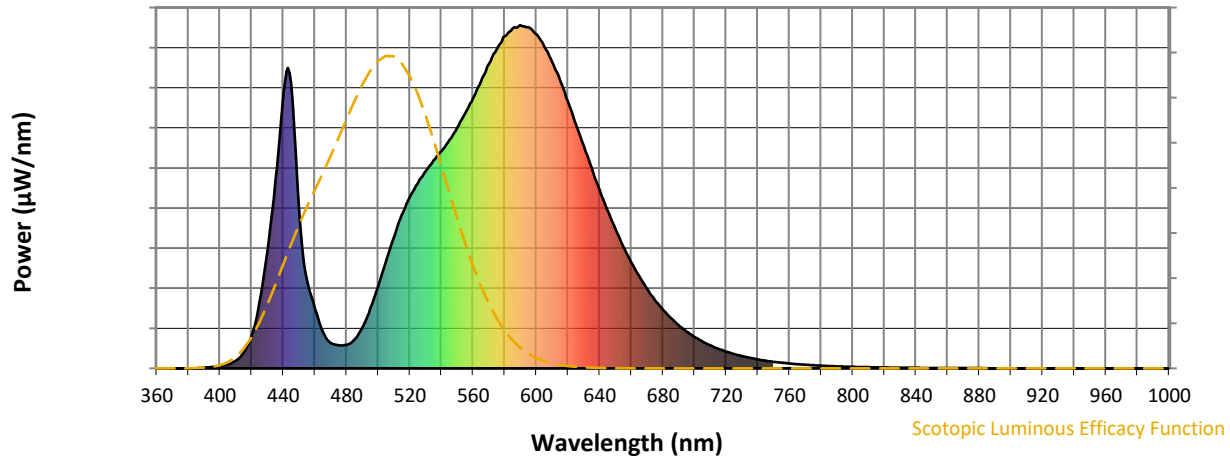


### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 119                                  | NR                             | 620               | 778                                  | NR                             | 750               | 19                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 173                                  | NR                             | 625               | 711                                  | NR                             | 755               | 16                                   | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 239                                  | NR                             | 630               | 648                                  | NR                             | 760               | 14                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 313                                  | NR                             | 635               | 582                                  | NR                             | 765               | 12                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 383                                  | NR                             | 640               | 520                                  | NR                             | 770               | 11                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 448                                  | NR                             | 645               | 460                                  | NR                             | 775               | 9                                    | NR                             | 905               | 0                                    | NR                             |
| 390               | 2                                    | NR                             | 520               | 500                                  | NR                             | 650               | 406                                  | NR                             | 780               | 8                                    | NR                             | 910               | 0                                    | NR                             |
| 395               | 4                                    | NR                             | 525               | 539                                  | NR                             | 655               | 355                                  | NR                             | 785               | 7                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 6                                    | NR                             | 530               | 575                                  | NR                             | 660               | 309                                  | NR                             | 790               | 6                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 11                                   | NR                             | 535               | 606                                  | NR                             | 665               | 269                                  | NR                             | 795               | 5                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 22                                   | NR                             | 540               | 633                                  | NR                             | 670               | 231                                  | NR                             | 800               | 4                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 45                                   | NR                             | 545               | 666                                  | NR                             | 675               | 199                                  | NR                             | 805               | 4                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 96                                   | NR                             | 550               | 701                                  | NR                             | 680               | 171                                  | NR                             | 810               | 3                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 193                                  | NR                             | 555               | 743                                  | NR                             | 685               | 147                                  | NR                             | 815               | 3                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 341                                  | NR                             | 560               | 788                                  | NR                             | 690               | 126                                  | NR                             | 820               | 3                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 547                                  | NR                             | 565               | 837                                  | NR                             | 695               | 107                                  | NR                             | 825               | 2                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 799                                  | NR                             | 570               | 887                                  | NR                             | 700               | 92                                   | NR                             | 830               | 2                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 831                                  | NR                             | 575               | 931                                  | NR                             | 705               | 78                                   | NR                             | 835               | 2                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 461                                  | NR                             | 580               | 967                                  | NR                             | 710               | 67                                   | NR                             | 840               | 2                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 256                                  | NR                             | 585               | 990                                  | NR                             | 715               | 57                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 176                                  | NR                             | 590               | 1000                                 | NR                             | 720               | 49                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 107                                  | NR                             | 595               | 994                                  | NR                             | 725               | 42                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 74                                   | NR                             | 600               | 973                                  | NR                             | 730               | 36                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 67                                   | NR                             | 605               | 938                                  | NR                             | 735               | 31                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 68                                   | NR                             | 610               | 892                                  | NR                             | 740               | 26                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 84                                   | NR                             | 615               | 838                                  | NR                             | 745               | 22                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-2407-184-5

### Scotopic Flux vs. Wavelength



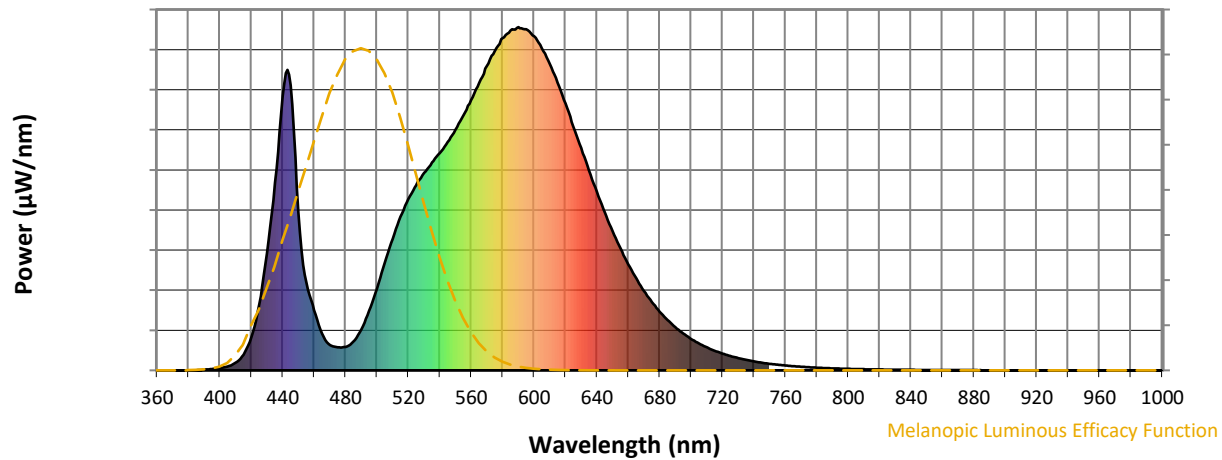
Scotopic Lumens: NR

S/P: 1.29

| 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       | 119                         | NR               | 620       | 778                         | NR               | 750       | 19                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 173                         | NR               | 625       | 711                         | NR               | 755       | 16                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 239                         | NR               | 630       | 648                         | NR               | 760       | 14                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 313                         | NR               | 635       | 582                         | NR               | 765       | 12                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 383                         | NR               | 640       | 520                         | NR               | 770       | 11                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 448                         | NR               | 645       | 460                         | NR               | 775       | 9                           | NR               | 905       | 0                           | NR               |
| 390       | 2                           | NR               | 520       | 500                         | NR               | 650       | 406                         | NR               | 780       | 8                           | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 539                         | NR               | 655       | 355                         | NR               | 785       | 7                           | NR               | 915       | 0                           | NR               |
| 400       | 6                           | NR               | 530       | 575                         | NR               | 660       | 309                         | NR               | 790       | 6                           | NR               | 920       | 0                           | NR               |
| 405       | 11                          | NR               | 535       | 606                         | NR               | 665       | 269                         | NR               | 795       | 5                           | NR               | 925       | 0                           | NR               |
| 410       | 22                          | NR               | 540       | 633                         | NR               | 670       | 231                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 45                          | NR               | 545       | 666                         | NR               | 675       | 199                         | NR               | 805       | 4                           | NR               | 935       | 0                           | NR               |
| 420       | 96                          | NR               | 550       | 701                         | NR               | 680       | 171                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 193                         | NR               | 555       | 743                         | NR               | 685       | 147                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 341                         | NR               | 560       | 788                         | NR               | 690       | 126                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 547                         | NR               | 565       | 837                         | NR               | 695       | 107                         | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 799                         | NR               | 570       | 887                         | NR               | 700       | 92                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 831                         | NR               | 575       | 931                         | NR               | 705       | 78                          | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 461                         | NR               | 580       | 967                         | NR               | 710       | 67                          | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 256                         | NR               | 585       | 990                         | NR               | 715       | 57                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 176                         | NR               | 590       | 1000                        | NR               | 720       | 49                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 107                         | NR               | 595       | 994                         | NR               | 725       | 42                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 74                          | NR               | 600       | 973                         | NR               | 730       | 36                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 67                          | NR               | 605       | 938                         | NR               | 735       | 31                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 68                          | NR               | 610       | 892                         | NR               | 740       | 26                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 84                          | NR               | 615       | 838                         | NR               | 745       | 22                          | NR               | 875       | 1                           | NR               |           |                             |                  |

REPORT NUMBER: SP1-2407-184-5

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.36

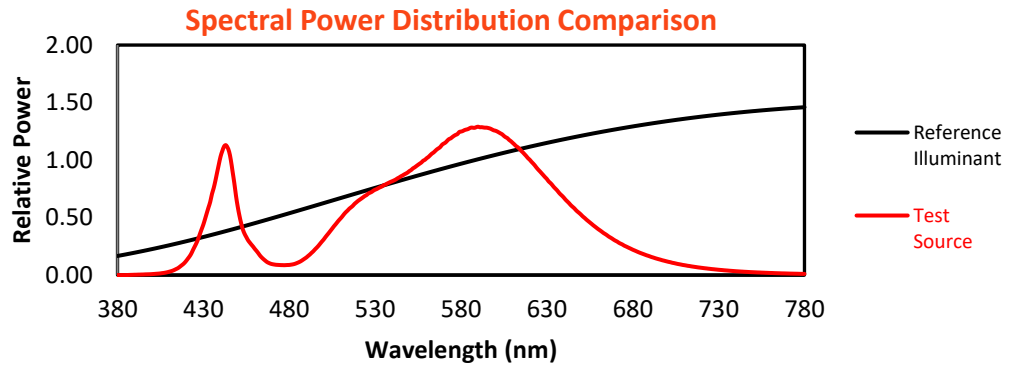
| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 119                         | NR               | 620       | 778                         | NR               | 750       | 19                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 173                         | NR               | 625       | 711                         | NR               | 755       | 16                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 239                         | NR               | 630       | 648                         | NR               | 760       | 14                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 313                         | NR               | 635       | 582                         | NR               | 765       | 12                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 383                         | NR               | 640       | 520                         | NR               | 770       | 11                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 448                         | NR               | 645       | 460                         | NR               | 775       | 9                           | NR               | 905       | 0                           | NR               |
| 390       | 2                           | NR               | 520       | 500                         | NR               | 650       | 406                         | NR               | 780       | 8                           | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 539                         | NR               | 655       | 355                         | NR               | 785       | 7                           | NR               | 915       | 0                           | NR               |
| 400       | 6                           | NR               | 530       | 575                         | NR               | 660       | 309                         | NR               | 790       | 6                           | NR               | 920       | 0                           | NR               |
| 405       | 11                          | NR               | 535       | 606                         | NR               | 665       | 269                         | NR               | 795       | 5                           | NR               | 925       | 0                           | NR               |
| 410       | 22                          | NR               | 540       | 633                         | NR               | 670       | 231                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 45                          | NR               | 545       | 666                         | NR               | 675       | 199                         | NR               | 805       | 4                           | NR               | 935       | 0                           | NR               |
| 420       | 96                          | NR               | 550       | 701                         | NR               | 680       | 171                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 193                         | NR               | 555       | 743                         | NR               | 685       | 147                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 341                         | NR               | 560       | 788                         | NR               | 690       | 126                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 547                         | NR               | 565       | 837                         | NR               | 695       | 107                         | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 799                         | NR               | 570       | 887                         | NR               | 700       | 92                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 831                         | NR               | 575       | 931                         | NR               | 705       | 78                          | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 461                         | NR               | 580       | 967                         | NR               | 710       | 67                          | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 256                         | NR               | 585       | 990                         | NR               | 715       | 57                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 176                         | NR               | 590       | 1000                        | NR               | 720       | 49                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 107                         | NR               | 595       | 994                         | NR               | 725       | 42                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 74                          | NR               | 600       | 973                         | NR               | 730       | 36                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 67                          | NR               | 605       | 938                         | NR               | 735       | 31                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 68                          | NR               | 610       | 892                         | NR               | 740       | 26                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 84                          | NR               | 615       | 838                         | NR               | 745       | 22                          | NR               | 875       | 1                           | NR               |           |                             |                  |

REPORT NUMBER: SP1-2407-184-5

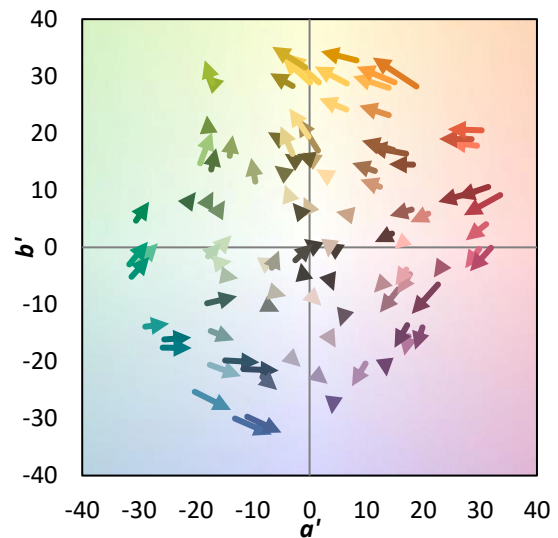
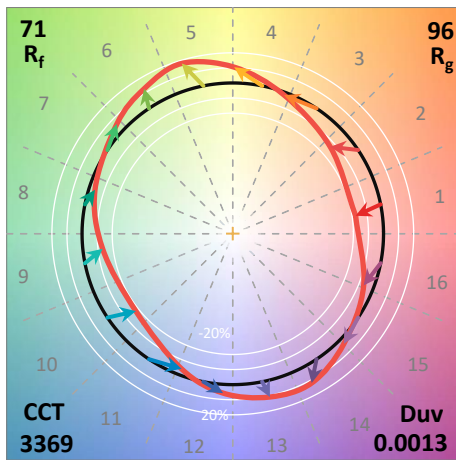
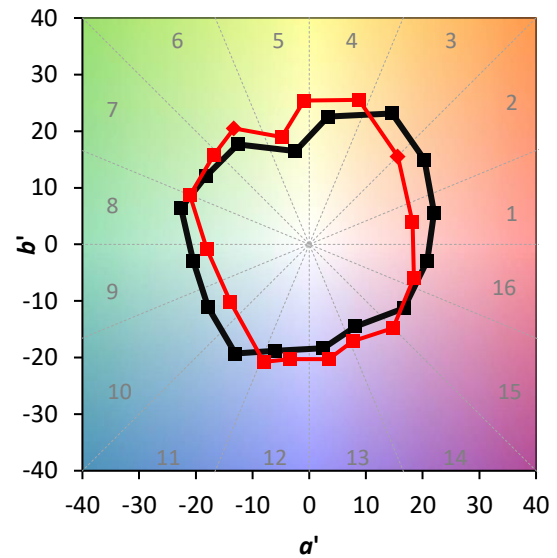
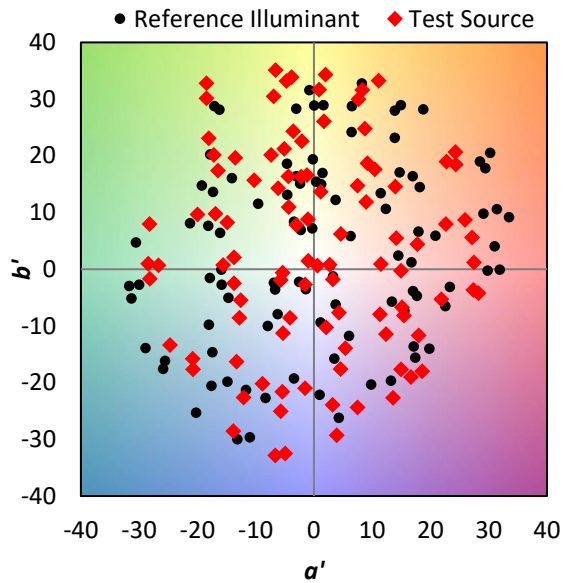
TM-30-18

### Summary

$R_f = 71.4$   
 $R_g = 96$   
 $\text{CIE } R_a = 70.1$   
 $R_g = -40.2$



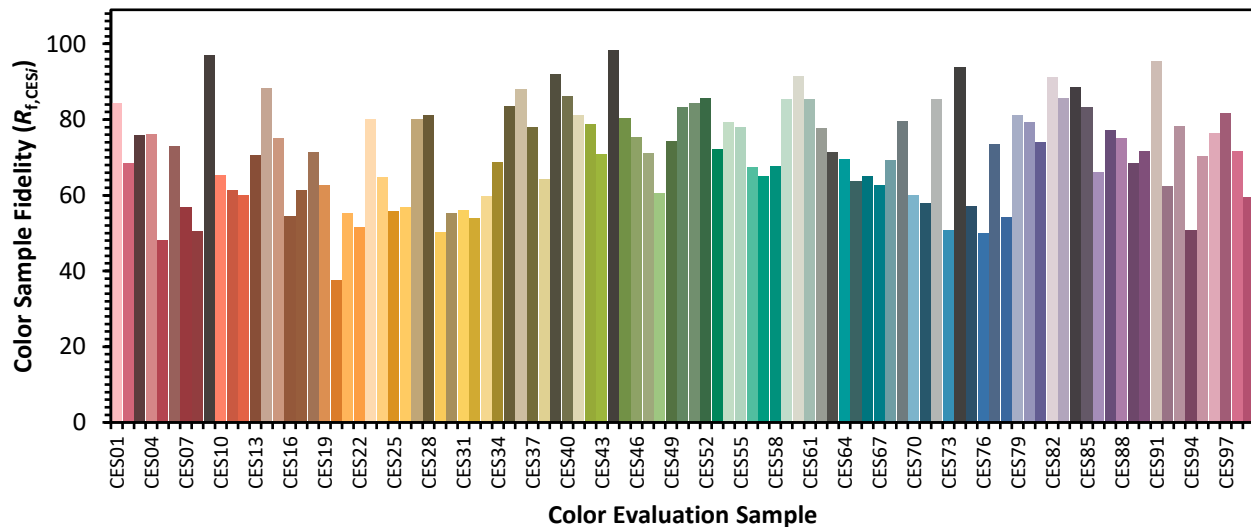
### Color Vector Graphics

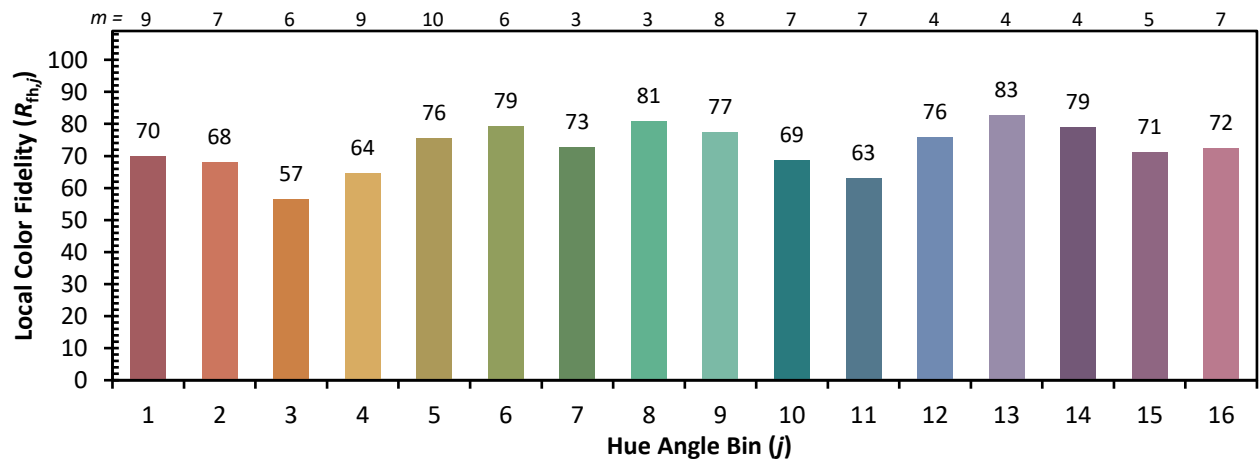
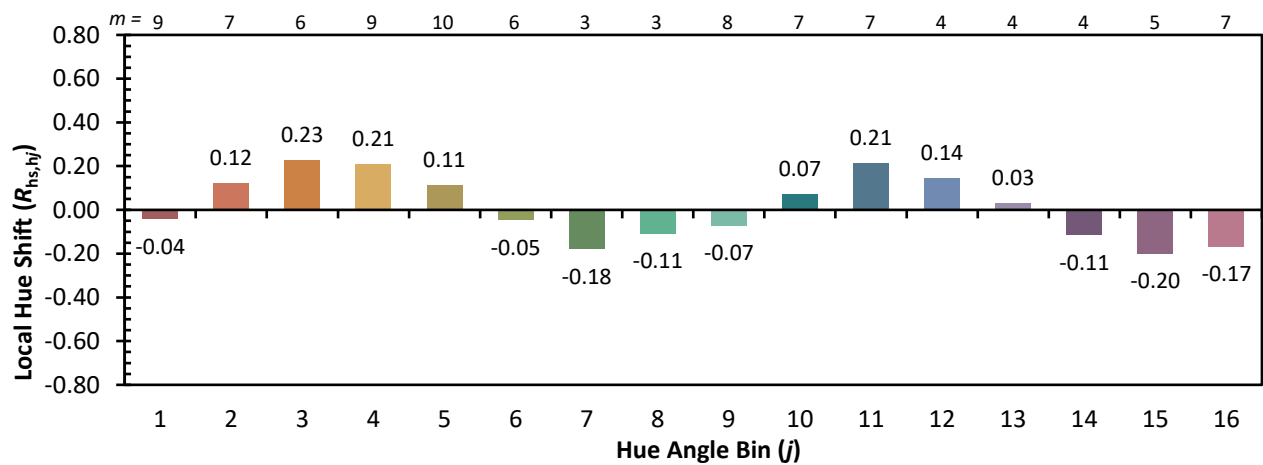
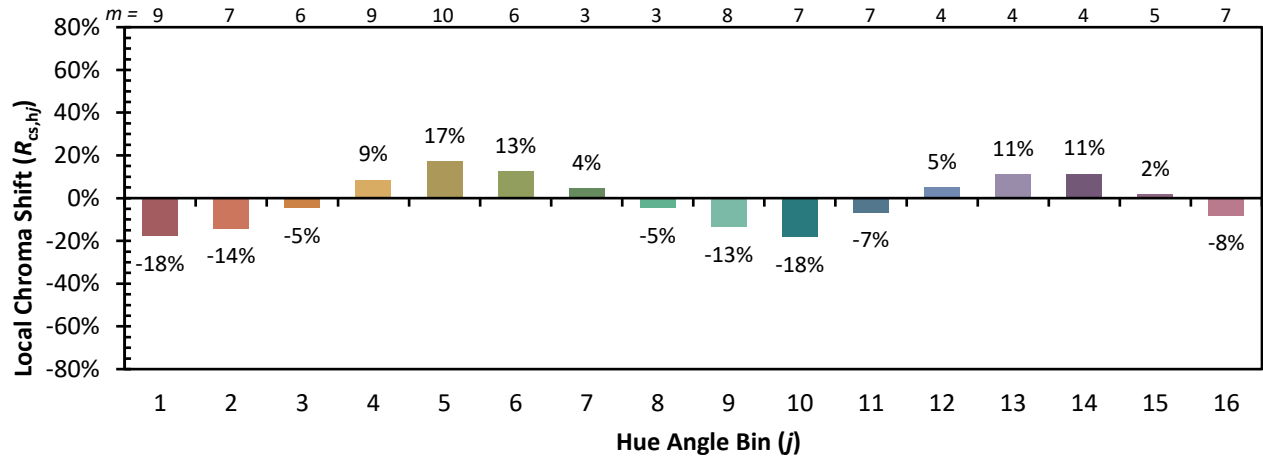




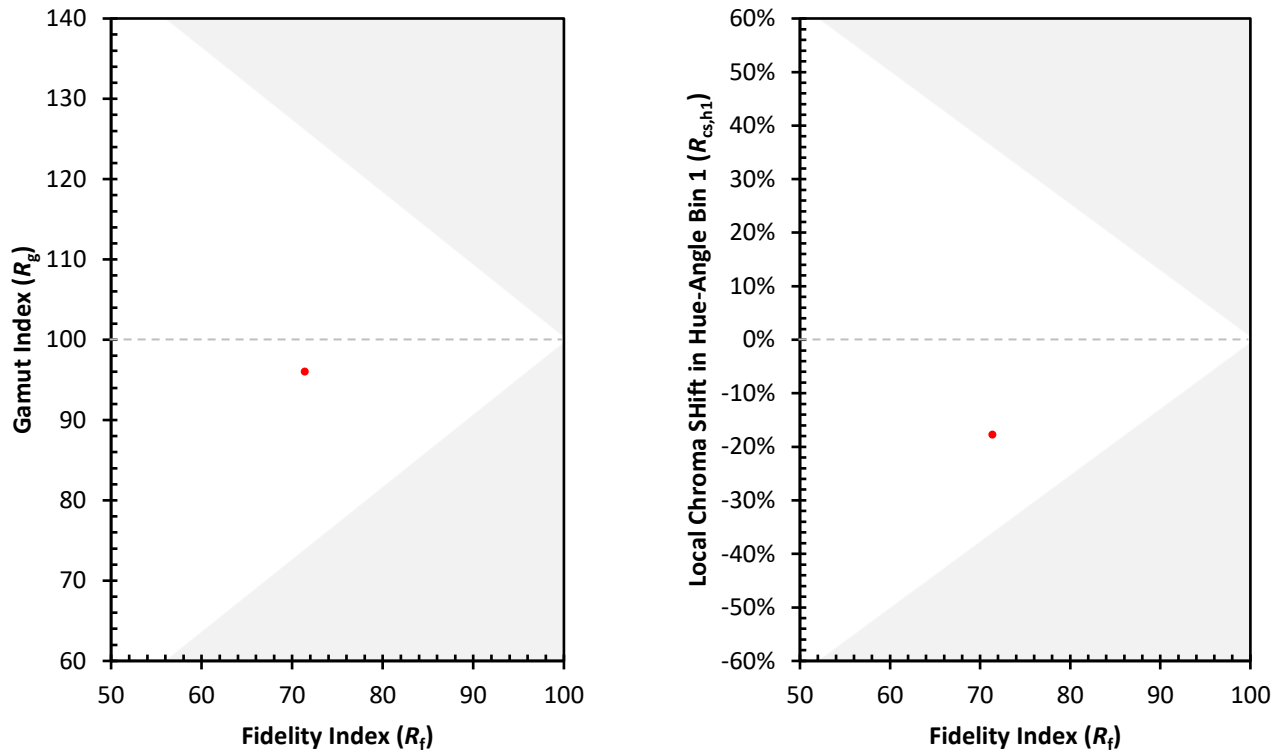
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 57 | CES51 = 84 | CES76 = 50 |
| CES02 = 62 | CES27 = 80 | CES52 = 86 | CES77 = 74 |
| CES03 = 31 | CES28 = 81 | CES53 = 72 | CES78 = 54 |
| CES04 = 70 | CES29 = 50 | CES54 = 79 | CES79 = 81 |
| CES05 = 48 | CES30 = 55 | CES55 = 78 | CES80 = 79 |
| CES06 = 51 | CES31 = 56 | CES56 = 67 | CES81 = 74 |
| CES07 = 40 | CES32 = 54 | CES57 = 65 | CES82 = 91 |
| CES08 = 39 | CES33 = 60 | CES58 = 68 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 85 | CES84 = 89 |
| CES10 = 75 | CES35 = 83 | CES60 = 91 | CES85 = 83 |
| CES11 = 58 | CES36 = 88 | CES61 = 85 | CES86 = 66 |
| CES12 = 64 | CES37 = 78 | CES62 = 78 | CES87 = 77 |
| CES13 = 43 | CES38 = 64 | CES63 = 71 | CES88 = 75 |
| CES14 = 74 | CES39 = 92 | CES64 = 70 | CES89 = 68 |
| CES15 = 71 | CES40 = 86 | CES65 = 64 | CES90 = 72 |
| CES16 = 47 | CES41 = 81 | CES66 = 65 | CES91 = 95 |
| CES17 = 50 | CES42 = 79 | CES67 = 63 | CES92 = 62 |
| CES18 = 56 | CES43 = 71 | CES68 = 69 | CES93 = 78 |
| CES19 = 72 | CES44 = 98 | CES69 = 80 | CES94 = 51 |
| CES20 = 65 | CES45 = 80 | CES70 = 60 | CES95 = 70 |
| CES21 = 87 | CES46 = 75 | CES71 = 58 | CES96 = 76 |
| CES22 = 79 | CES47 = 71 | CES72 = 85 | CES97 = 82 |
| CES23 = 92 | CES48 = 61 | CES73 = 51 | CES98 = 72 |
| CES24 = 91 | CES49 = 74 | CES74 = 94 | CES99 = 60 |
| CES25 = 72 | CES50 = 83 | CES75 = 57 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)