

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: P1066147

Luminaire Tested: **NVN-SA2C-830-U-T2BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1066147  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: NVN-SA2C-830-U-T2BC  
Description: Navion AREA AND ROADWAY LUMINAIRE 1050mA 2xLight Square PACKAGE  
80CRI 3000K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (28) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8750 lumens  
Efficiency: N/A  
Efficacy: 91.0 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B0 - U0 - G2

Input Watts (W): 96.2  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



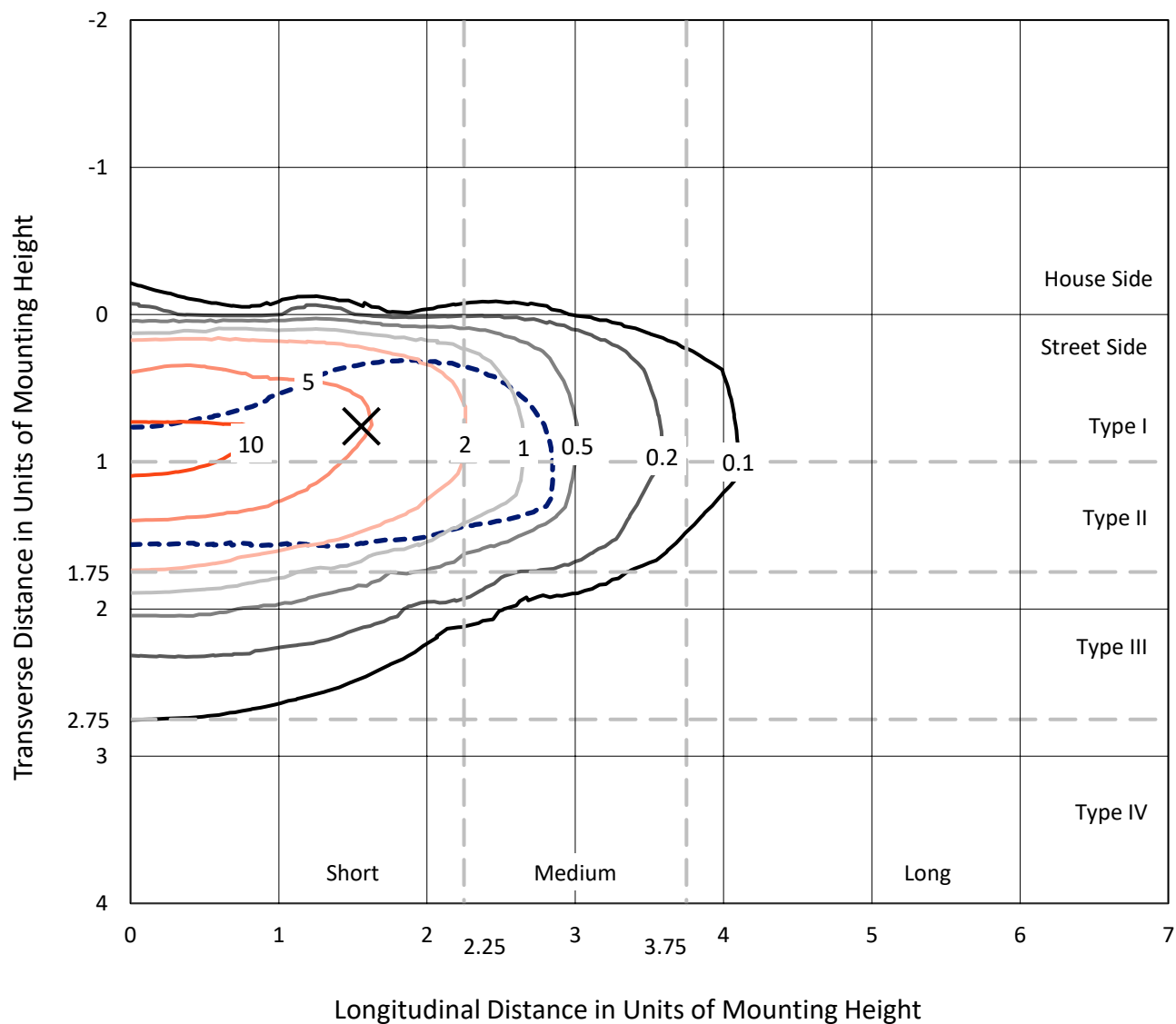
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CATALOG NUMBER: NVN-SA2C-830-U-T2BC

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

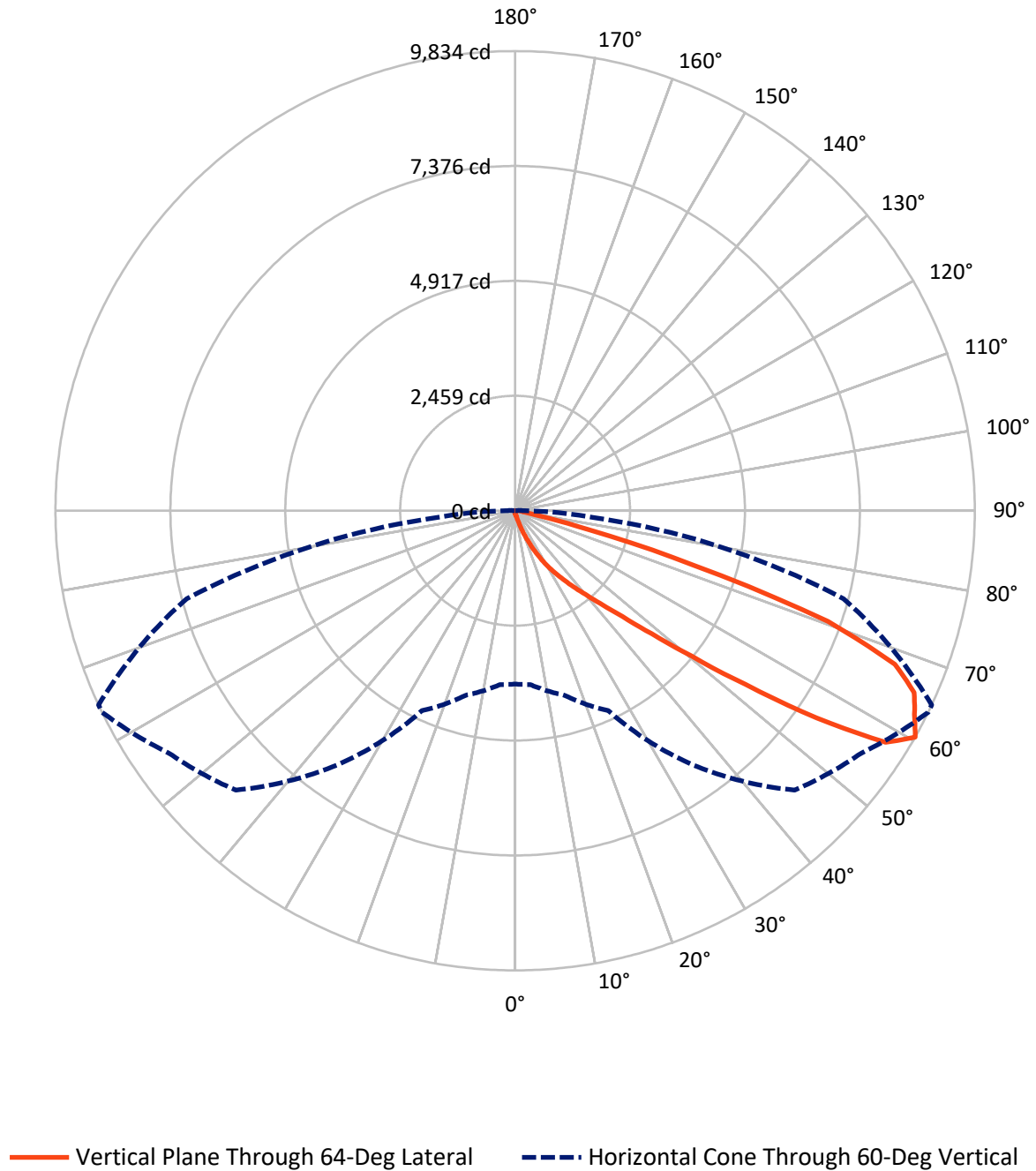


Based on 15 foot mounting height. Maximum calculated value = 12.5 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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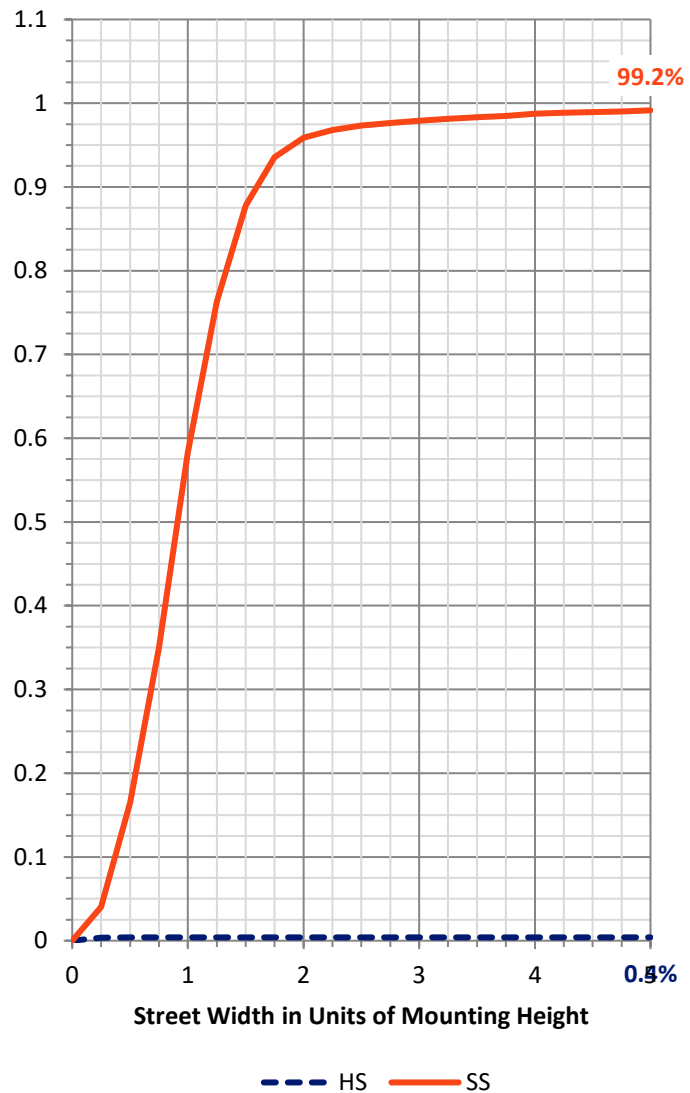
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 35.5     | 0.0    | 35.5   |
|                    | % Fixture | 0.4      | 0.0    | 0.4    |
| <b>Street Side</b> | Lumens    | 8714.6   | 0.0    | 8714.6 |
|                    | % Fixture | 99.6     | 0.0    | 99.6   |
| <b>Total</b>       | Lumens    | 8750.0   | 0.0    | 8750.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 8.7    | 0.1       |
| 10°-20°   | 86.0   | 1.0       |
| 20°-30°   | 285.6  | 3.3       |
| 30°-40°   | 762.0  | 8.7       |
| 40°-50°   | 1936.8 | 22.1      |
| 50°-60°   | 2823.5 | 32.3      |
| 60°-70°   | 2180.9 | 24.9      |
| 70°-80°   | 598.9  | 6.8       |
| 80°-90°   | 67.6   | 0.8       |
| 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°    | 8750.0 | 100.0     |
| 0°-180°   | 8750.0 | 100.0     |



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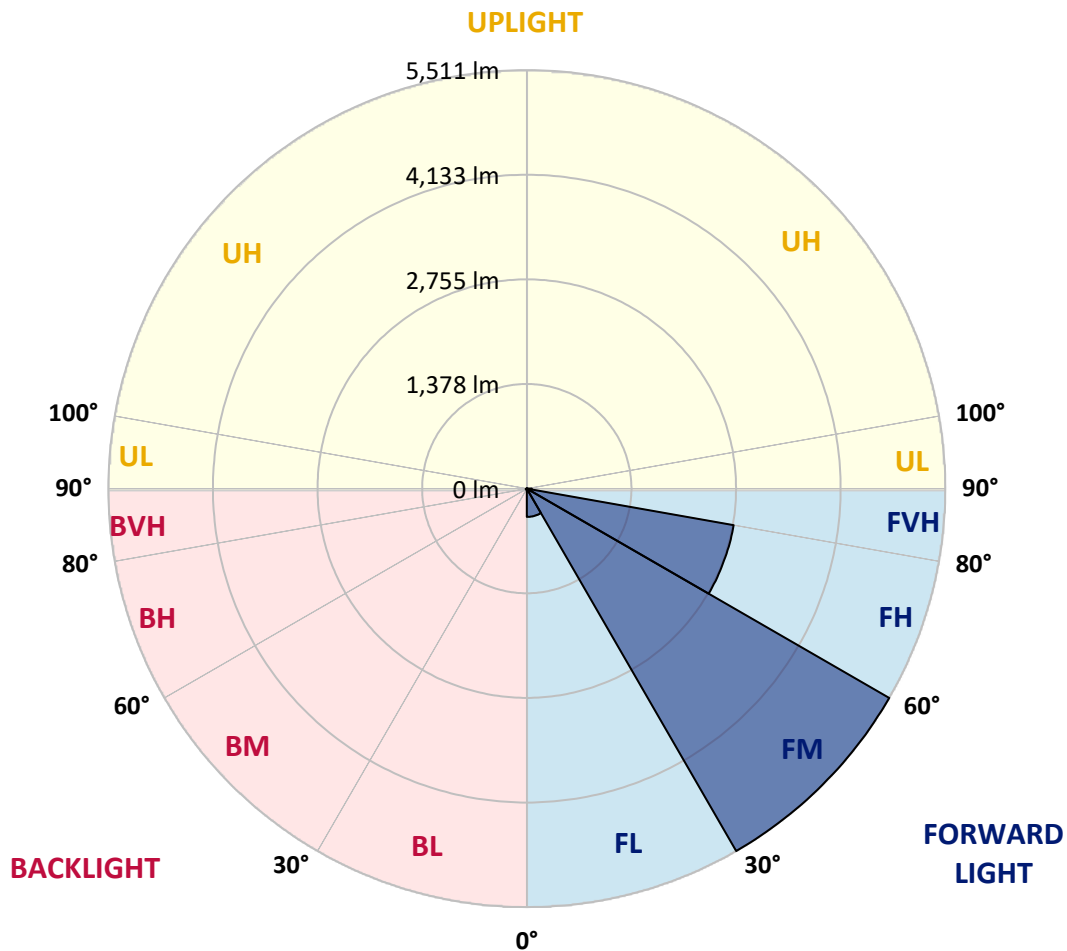
CATALOG NUMBER: NVN-SA2C-830-U-T2BC

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 372.3  | 4.3       |                         |      |         |
| FM   | (30°-60°)   | 5510.6 | 63.0      |                         |      |         |
| FH   | (60°-80°)   | 2765.6 | 31.6      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 66.0   | 0.8       |                         |      | G1/100  |
| BL   | (0°-30°)    | 8.0    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 11.8   | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 14.1   | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 1.6    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

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

Type II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 64°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 57.8   | 57.8   | 57.8   | 57.8   | 57.8   | 57.8   | 57.8   | 57.8   | 57.8   | 57.8   | 57.8   |
| 2.5°  | 77.1   | 77.1   | 77.1   | 74.7   | 72.3   | 72.3   | 69.8   | 67.4   | 67.4   | 62.6   | 60.2   |
| 5°    | 118.0  | 118.0  | 113.2  | 108.4  | 101.2  | 91.5   | 81.9   | 74.7   | 74.7   | 67.4   | 62.6   |
| 7.5°  | 231.2  | 238.4  | 216.8  | 190.3  | 154.1  | 130.1  | 103.6  | 86.7   | 84.3   | 72.3   | 62.6   |
| 10°   | 501.0  | 496.2  | 462.4  | 397.4  | 313.1  | 226.4  | 144.5  | 106.0  | 101.2  | 77.1   | 62.6   |
| 12.5° | 753.9  | 761.1  | 725.0  | 652.7  | 551.6  | 402.2  | 248.1  | 137.3  | 132.5  | 84.3   | 62.6   |
| 15°   | 970.7  | 970.7  | 946.6  | 910.4  | 799.6  | 643.1  | 399.8  | 204.7  | 187.9  | 91.5   | 60.2   |
| 17.5° | 1120.0 | 1117.6 | 1107.9 | 1098.3 | 1033.3 | 871.9  | 611.8  | 327.6  | 289.0  | 108.4  | 60.2   |
| 20°   | 1288.6 | 1281.4 | 1293.4 | 1274.1 | 1223.6 | 1095.9 | 835.8  | 486.5  | 450.4  | 137.3  | 60.2   |
| 22.5° | 1464.4 | 1471.6 | 1481.3 | 1462.0 | 1406.6 | 1295.8 | 1071.8 | 691.3  | 652.7  | 190.3  | 62.6   |
| 25°   | 1688.4 | 1683.6 | 1705.3 | 1688.4 | 1618.6 | 1488.5 | 1293.4 | 915.3  | 859.9  | 264.9  | 67.4   |
| 27.5° | 1963.0 | 1953.3 | 1967.8 | 1924.4 | 1832.9 | 1700.4 | 1490.9 | 1144.1 | 1079.0 | 380.6  | 77.1   |
| 30°   | 2326.7 | 2333.9 | 2268.9 | 2218.3 | 2088.2 | 1912.4 | 1710.1 | 1389.7 | 1322.3 | 517.8  | 86.7   |
| 32.5° | 2899.9 | 2849.3 | 2748.2 | 2543.4 | 2372.4 | 2148.4 | 1929.3 | 1604.1 | 1543.9 | 693.7  | 101.2  |
| 35°   | 3793.5 | 3803.1 | 3581.5 | 3075.7 | 2704.8 | 2444.7 | 2170.1 | 1840.1 | 1796.8 | 893.6  | 120.4  |
| 37.5° | 4882.2 | 4855.7 | 4660.6 | 4022.3 | 3191.4 | 2813.2 | 2444.7 | 2097.9 | 2035.2 | 1110.3 | 144.5  |
| 40°   | 6115.4 | 6004.6 | 5891.4 | 5457.8 | 4205.4 | 3275.7 | 2791.5 | 2396.5 | 2348.4 | 1360.8 | 183.1  |
| 42.5° | 7102.9 | 7074.0 | 7093.2 | 6912.6 | 5896.2 | 4063.3 | 3251.6 | 2762.6 | 2704.8 | 1671.5 | 250.5  |
| 45°   | 7589.4 | 7548.4 | 7664.1 | 7798.9 | 7538.8 | 5739.6 | 3993.4 | 3229.9 | 3152.8 | 2037.6 | 354.1  |
| 47.5° | 7459.3 | 7430.4 | 7678.5 | 7943.5 | 8290.3 | 7683.3 | 5204.9 | 3928.4 | 3795.9 | 2507.3 | 508.2  |
| 50°   | 6818.7 | 6821.1 | 7228.1 | 7721.9 | 8271.0 | 8668.4 | 6999.3 | 4884.6 | 4718.4 | 3131.1 | 749.1  |
| 52.5° | 6194.8 | 6214.1 | 6645.2 | 7365.4 | 7984.4 | 8784.0 | 8574.5 | 6173.2 | 5903.4 | 3865.7 | 1033.3 |
| 55°   | 5554.2 | 5563.8 | 5944.3 | 6958.3 | 7849.5 | 8439.6 | 9383.8 | 7832.7 | 7546.0 | 4781.0 | 1310.3 |
| 57.5° | 4937.6 | 4937.6 | 5079.7 | 5980.5 | 7702.6 | 8408.3 | 9287.4 | 9350.1 | 9116.4 | 5826.3 | 1515.0 |
| 60°   | 3709.2 | 3733.3 | 4087.3 | 4718.4 | 6642.8 | 8454.1 | 9041.8 | 9834.2 | 9834.2 | 7276.3 | 1671.5 |
| 62.5° | 1873.9 | 1910.0 | 2350.8 | 2964.9 | 4557.0 | 7823.0 | 9080.3 | 9590.9 | 9629.5 | 8555.2 | 2028.0 |
| 65°   | 879.1  | 920.1  | 1156.1 | 1589.7 | 2451.9 | 5506.0 | 8680.5 | 9383.8 | 9371.7 | 8312.0 | 2779.5 |
| 67.5° | 631.0  | 643.1  | 722.6  | 927.3  | 1319.9 | 2413.4 | 6626.0 | 8764.8 | 8769.6 | 7061.9 | 3196.2 |
| 70°   | 566.0  | 566.0  | 585.3  | 645.5  | 794.8  | 1079.0 | 3220.3 | 7098.0 | 7442.5 | 5453.0 | 2962.5 |
| 72.5° | 558.8  | 554.0  | 549.2  | 551.6  | 537.1  | 541.9  | 1105.5 | 4007.9 | 4499.2 | 3815.2 | 2362.8 |
| 75°   | 544.3  | 544.3  | 539.5  | 522.7  | 428.7  | 349.2  | 380.6  | 1621.0 | 1873.9 | 2548.3 | 1753.4 |
| 77.5° | 431.1  | 474.5  | 525.1  | 493.8  | 392.6  | 262.5  | 221.6  | 469.7  | 592.5  | 1563.2 | 1271.7 |
| 80°   | 199.9  | 202.3  | 199.9  | 209.5  | 250.5  | 187.9  | 163.8  | 228.8  | 231.2  | 867.1  | 787.6  |
| 82.5° | 144.5  | 146.9  | 139.7  | 125.2  | 110.8  | 101.2  | 134.9  | 168.6  | 180.6  | 397.4  | 293.8  |
| 85°   | 43.4   | 40.9   | 48.2   | 65.0   | 77.1   | 89.1   | 113.2  | 142.1  | 149.3  | 146.9  | 43.4   |
| 87.5° | 19.3   | 19.3   | 24.1   | 33.7   | 45.8   | 67.4   | 98.8   | 130.1  | 132.5  | 151.7  | 12.0   |
| 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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**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 57.8  | 57.8 | 57.8 | 57.8 | 57.8 | 57.8 | 57.8 | 57.8 | 57.8 | 57.8 | 57.8 |
| 2.5°  | 60.2  | 57.8 | 55.4 | 53.0 | 50.6 | 48.2 | 45.8 | 45.8 | 48.2 | 48.2 | 48.2 |
| 5°    | 57.8  | 55.4 | 50.6 | 45.8 | 43.4 | 40.9 | 38.5 | 38.5 | 40.9 | 40.9 | 40.9 |
| 7.5°  | 57.8  | 53.0 | 48.2 | 43.4 | 38.5 | 36.1 | 33.7 | 33.7 | 33.7 | 36.1 | 36.1 |
| 10°   | 57.8  | 53.0 | 45.8 | 38.5 | 33.7 | 31.3 | 28.9 | 26.5 | 28.9 | 28.9 | 28.9 |
| 12.5° | 55.4  | 50.6 | 43.4 | 36.1 | 28.9 | 24.1 | 21.7 | 21.7 | 21.7 | 21.7 | 21.7 |
| 15°   | 53.0  | 48.2 | 40.9 | 31.3 | 24.1 | 19.3 | 14.5 | 14.5 | 14.5 | 16.9 | 16.9 |
| 17.5° | 50.6  | 45.8 | 36.1 | 24.1 | 16.9 | 12.0 | 9.6  | 9.6  | 9.6  | 12.0 | 12.0 |
| 20°   | 50.6  | 43.4 | 31.3 | 19.3 | 12.0 | 7.2  | 4.8  | 4.8  | 4.8  | 7.2  | 9.6  |
| 22.5° | 50.6  | 43.4 | 28.9 | 14.5 | 7.2  | 4.8  | 2.4  | 2.4  | 2.4  | 2.4  | 2.4  |
| 25°   | 50.6  | 40.9 | 26.5 | 12.0 | 4.8  | 2.4  | 0.0  | 0.0  | 2.4  | 4.8  | 7.2  |
| 27.5° | 50.6  | 38.5 | 21.7 | 7.2  | 4.8  | 2.4  | 0.0  | 2.4  | 4.8  | 4.8  | 4.8  |
| 30°   | 50.6  | 38.5 | 19.3 | 7.2  | 2.4  | 0.0  | 0.0  | 2.4  | 4.8  | 4.8  | 7.2  |
| 32.5° | 53.0  | 36.1 | 16.9 | 4.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 35°   | 55.4  | 33.7 | 14.5 | 4.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 37.5° | 60.2  | 33.7 | 9.6  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 67.4  | 36.1 | 9.6  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 84.3  | 38.5 | 7.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 118.0 | 48.2 | 7.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 173.4 | 72.3 | 7.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 252.9 | 98.8 | 4.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 310.7 | 98.8 | 4.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 308.3 | 62.6 | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 236.0 | 43.4 | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 199.9 | 31.3 | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 240.9 | 24.1 | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 428.7 | 21.7 | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 688.9 | 21.7 | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 770.7 | 21.7 | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 602.1 | 19.3 | 2.4  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 330.0 | 16.9 | 2.4  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 166.2 | 12.0 | 4.8  | 2.4  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 69.8  | 9.6  | 4.8  | 2.4  | 2.4  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 24.1  | 9.6  | 4.8  | 4.8  | 2.4  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 12.0  | 7.2  | 7.2  | 4.8  | 4.8  | 2.4  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 7.2   | 7.2  | 7.2  | 4.8  | 4.8  | 2.4  | 2.4  | 0.0  | 0.0  | 0.0  | 2.4  |
| 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

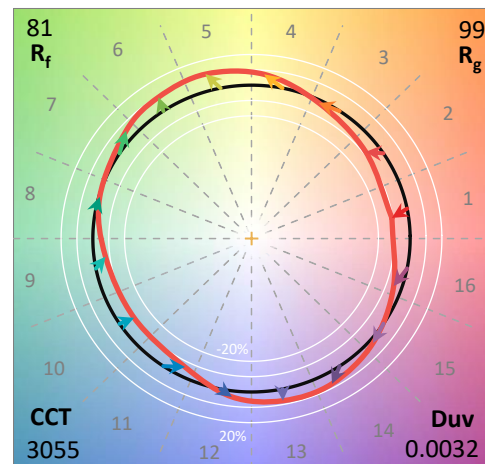
### Test Information

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

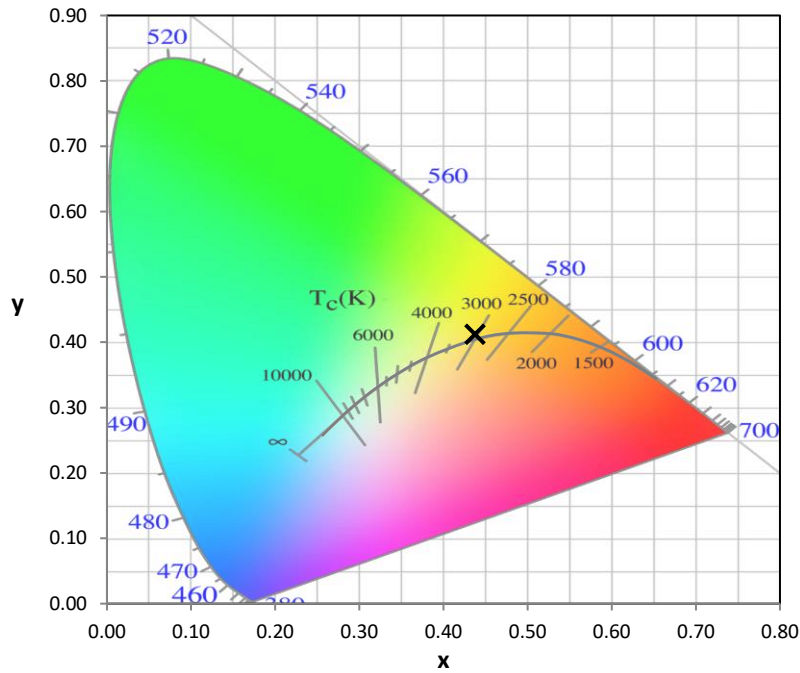
Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-9

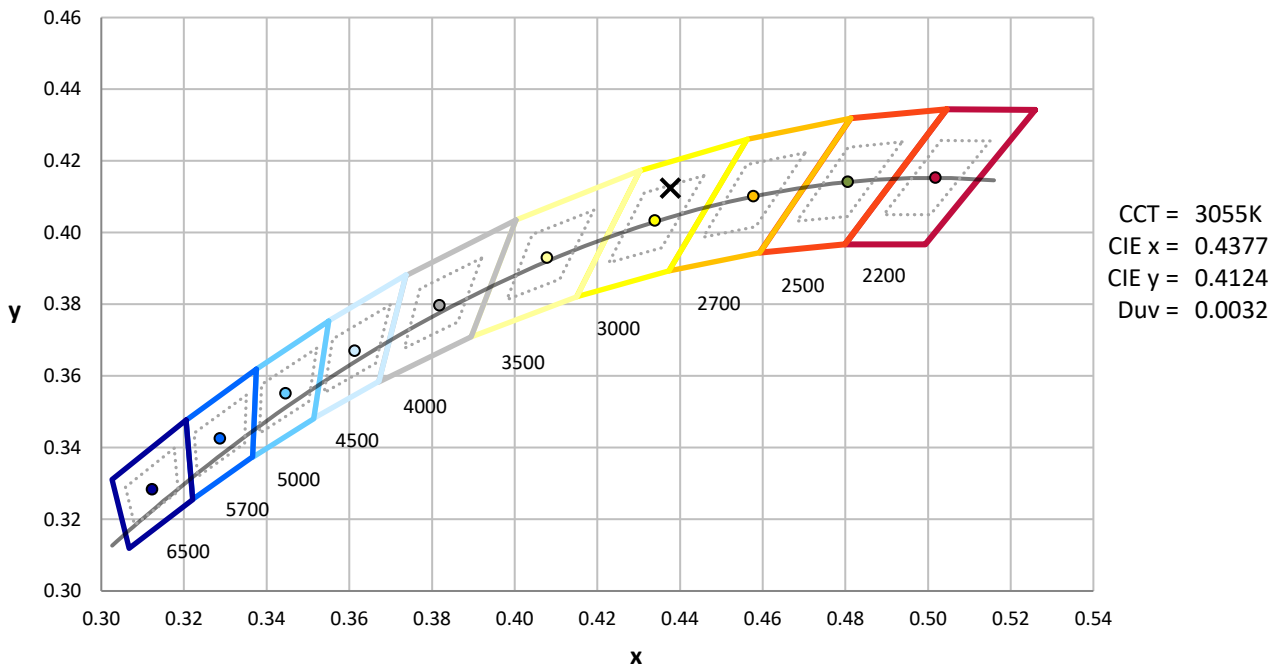
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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**



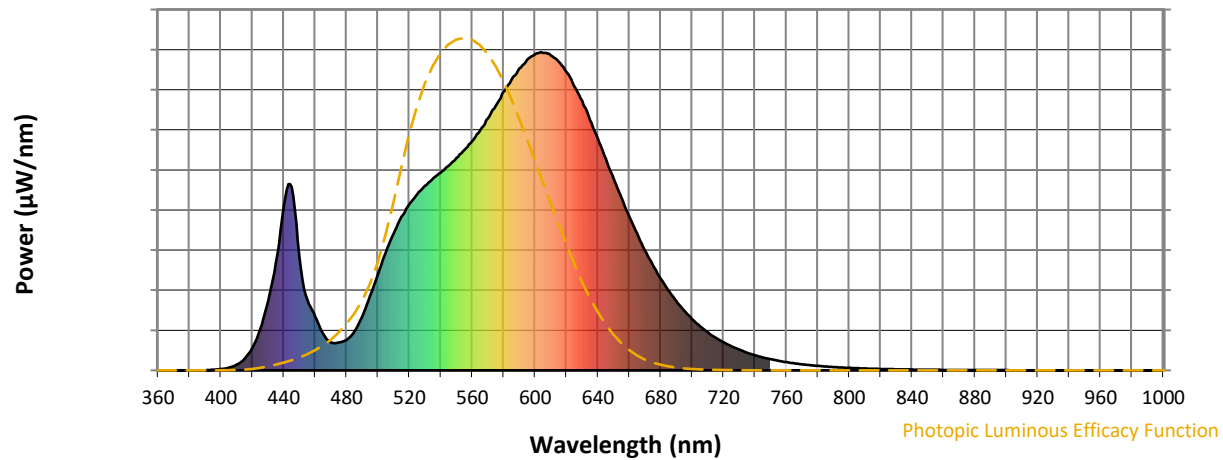
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-184-9

### Photopic Flux vs. Wavelength

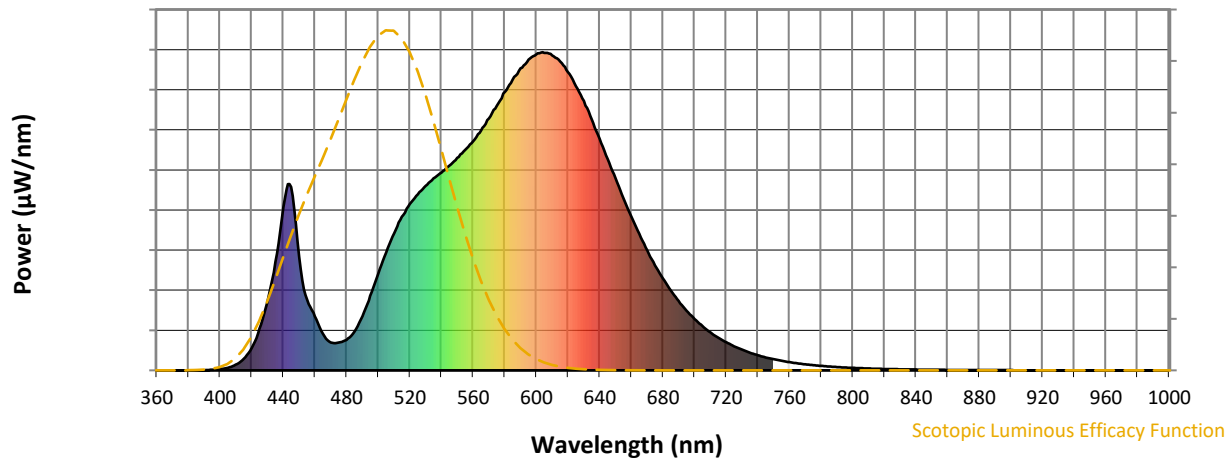


### Photopic Lumens: NR

| 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            |        |                          |               |

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### Scotopic Flux vs. Wavelength



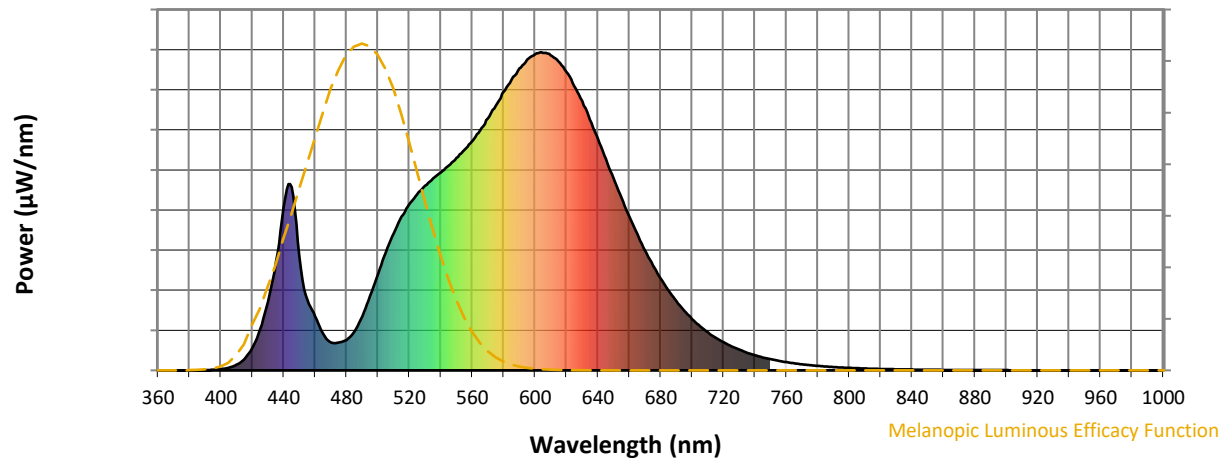
Scotopic Lumens: NR

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               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.33

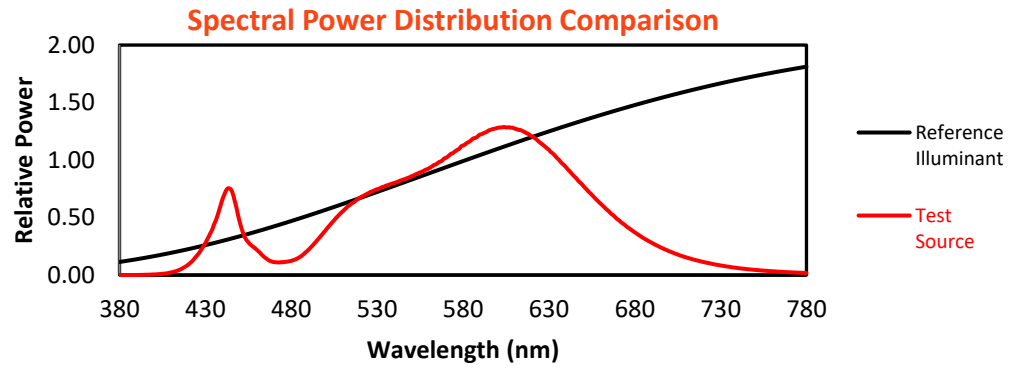
| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 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

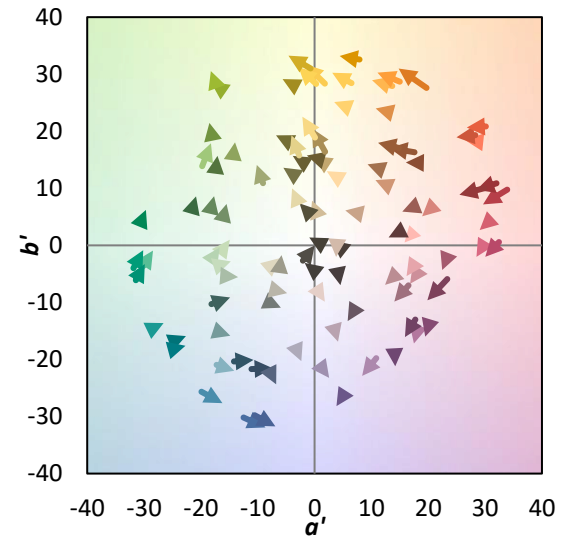
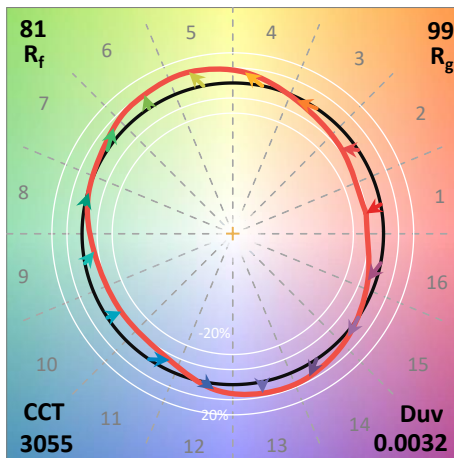
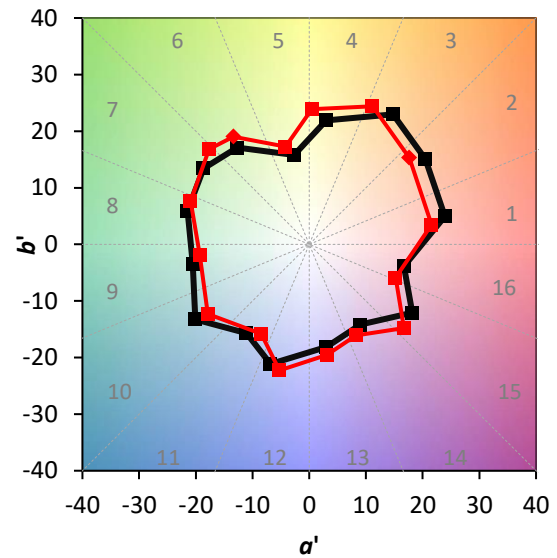
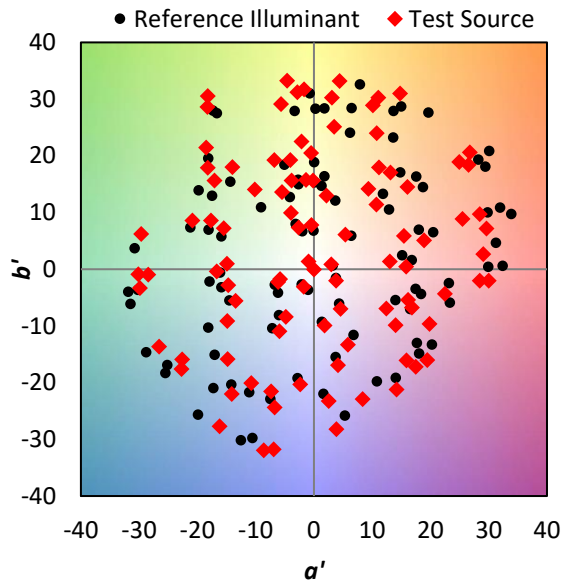
TM-30-18

### Summary

$R_f = 81.5$   
 $R_g = 99.2$   
 $CIE R_a = 80.9$   
 $R_9 = 6.8$



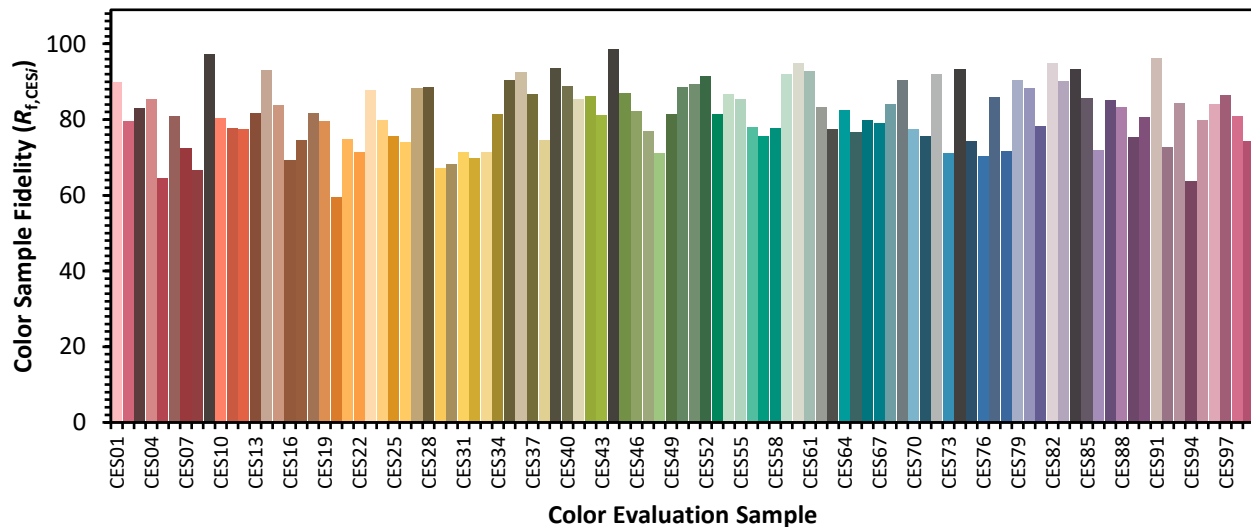
### Color Vector Graphics



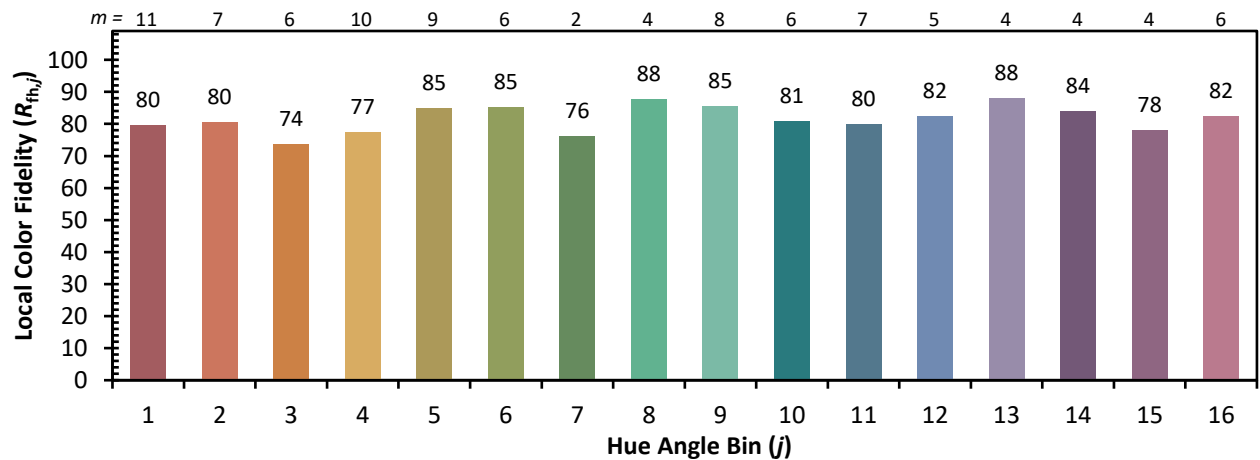
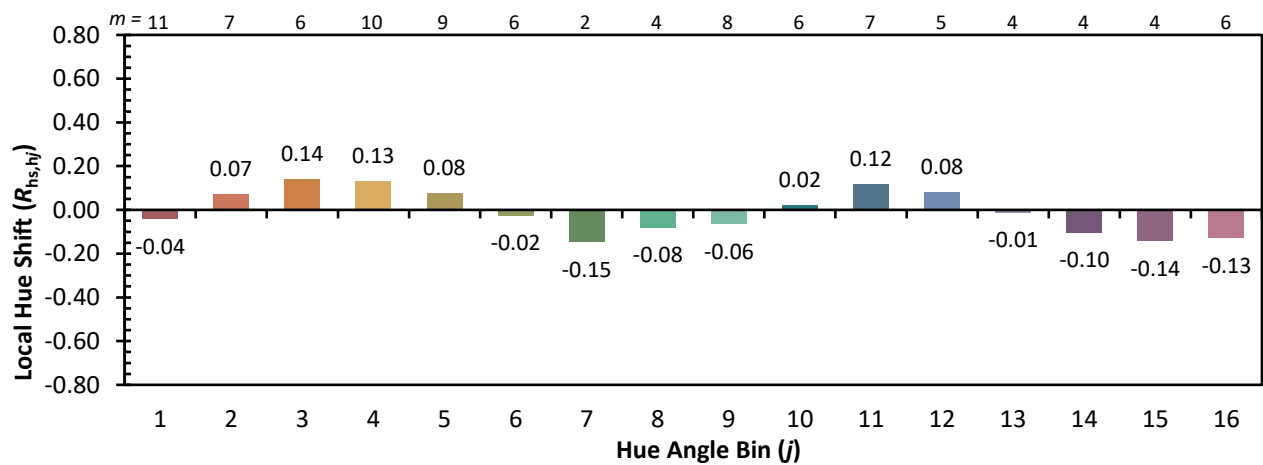
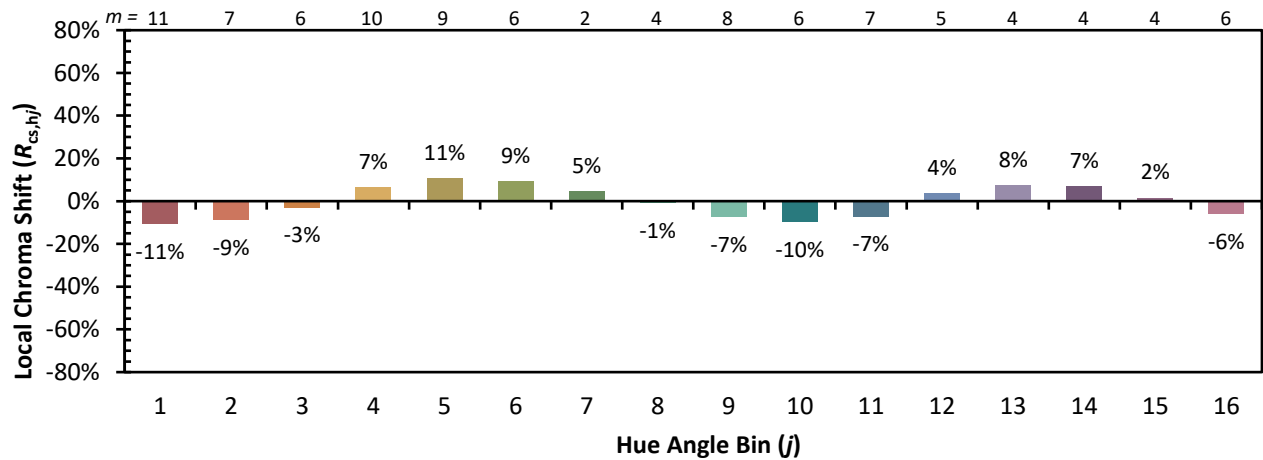


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

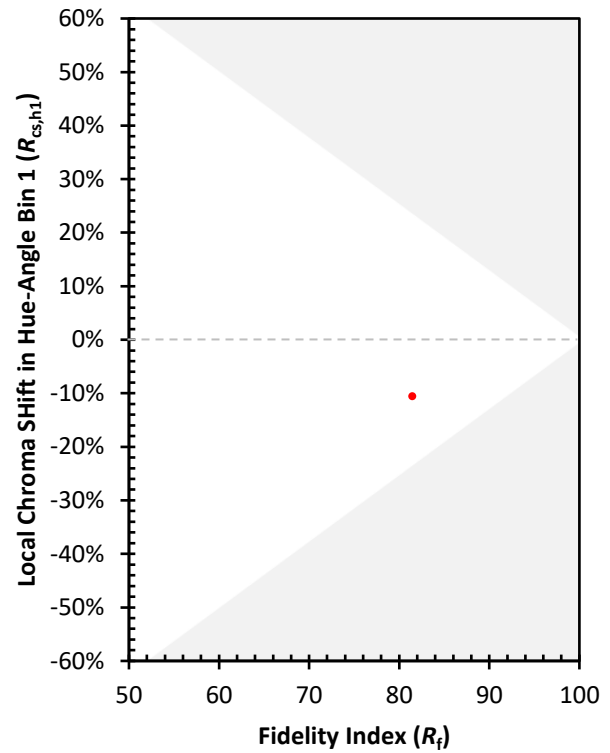
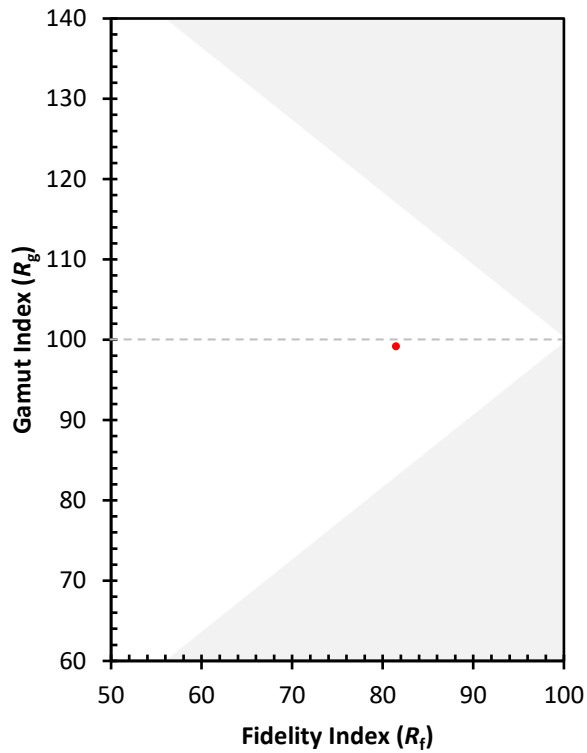
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 91 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 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)