

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: P1065921

Luminaire Tested: **NVN-SA6A-830-U-T3BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1065921  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: NVN-SA6A-830-U-T3BC  
Description: Navion AREA AND ROADWAY LUMINAIRE 615mA 6xLight Square PACKAGE  
80CRI 3000K FIXTURE w/ TYPE III ANGLED BACKLIGHT CONTROL  
Light Source: (84) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17741.3 lumens  
Efficiency: N/A  
Efficacy: 109.8 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B0 - U0 - G4

Input Watts (W): 161.6  
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

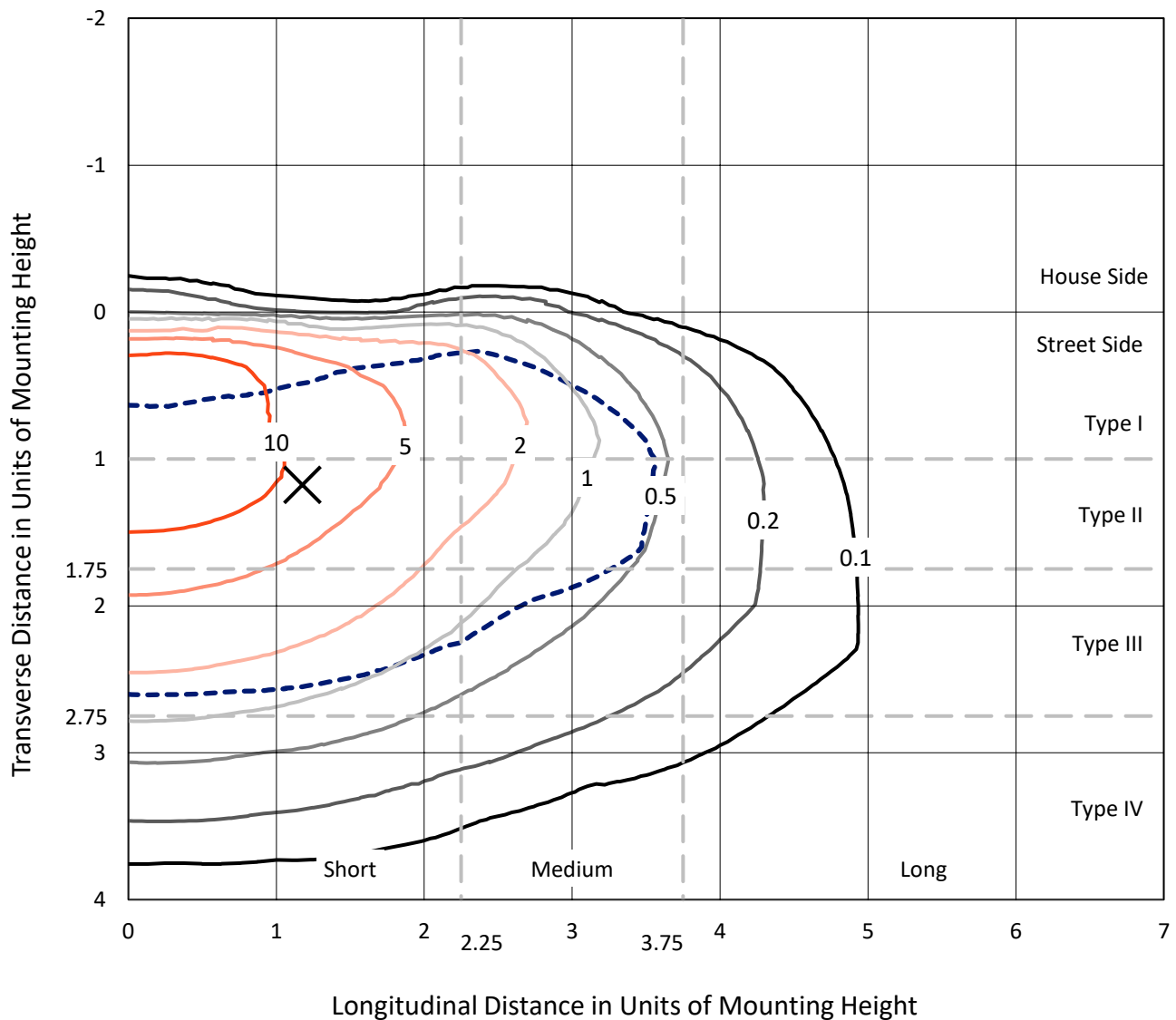


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## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd  
 - - - 1/2 Max cd

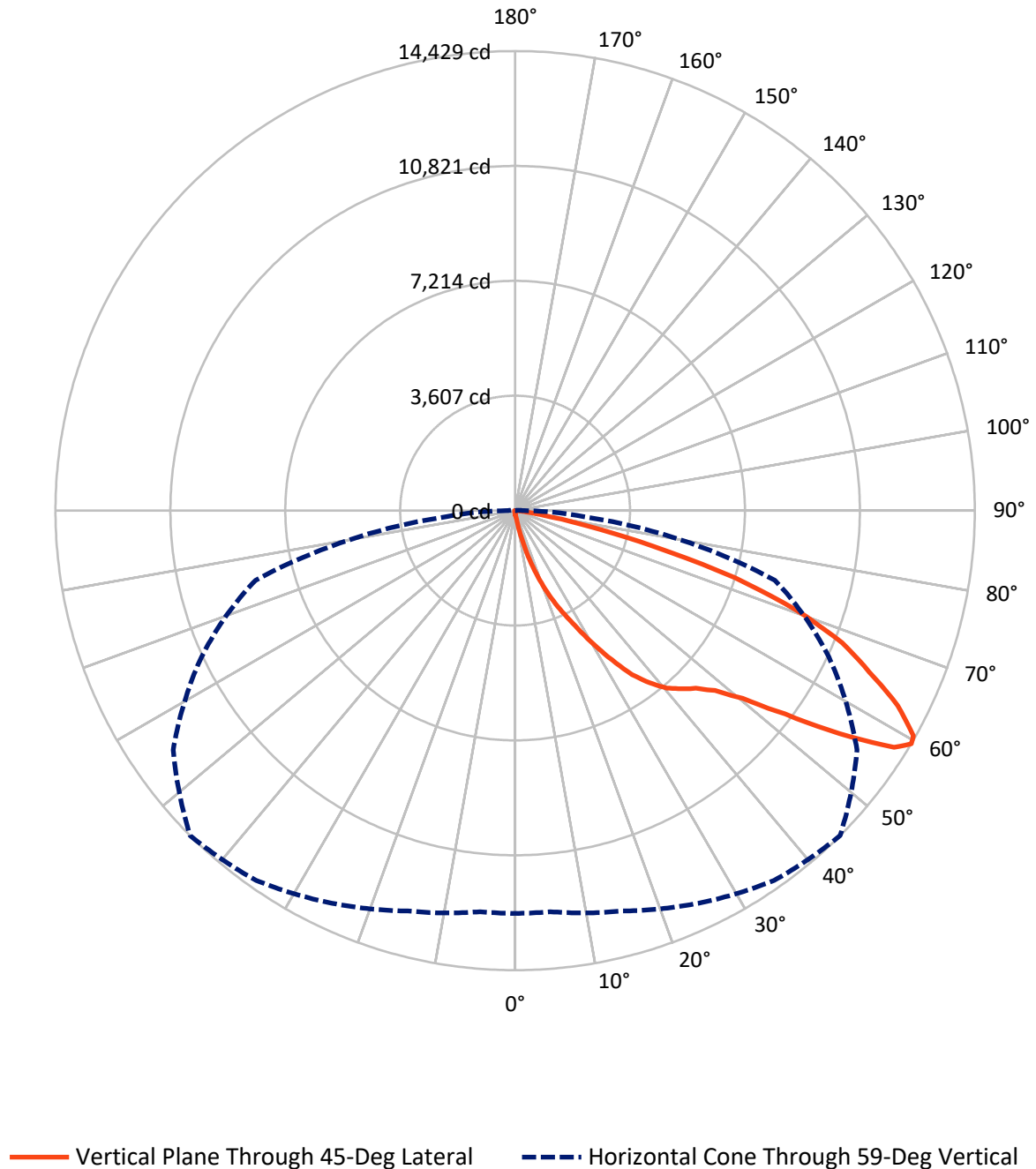


Based on 15 foot mounting height. Maximum calculated value = 19.3 fc  
 Type III - Short - N/A

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## Luminous Intensity Polar Plot



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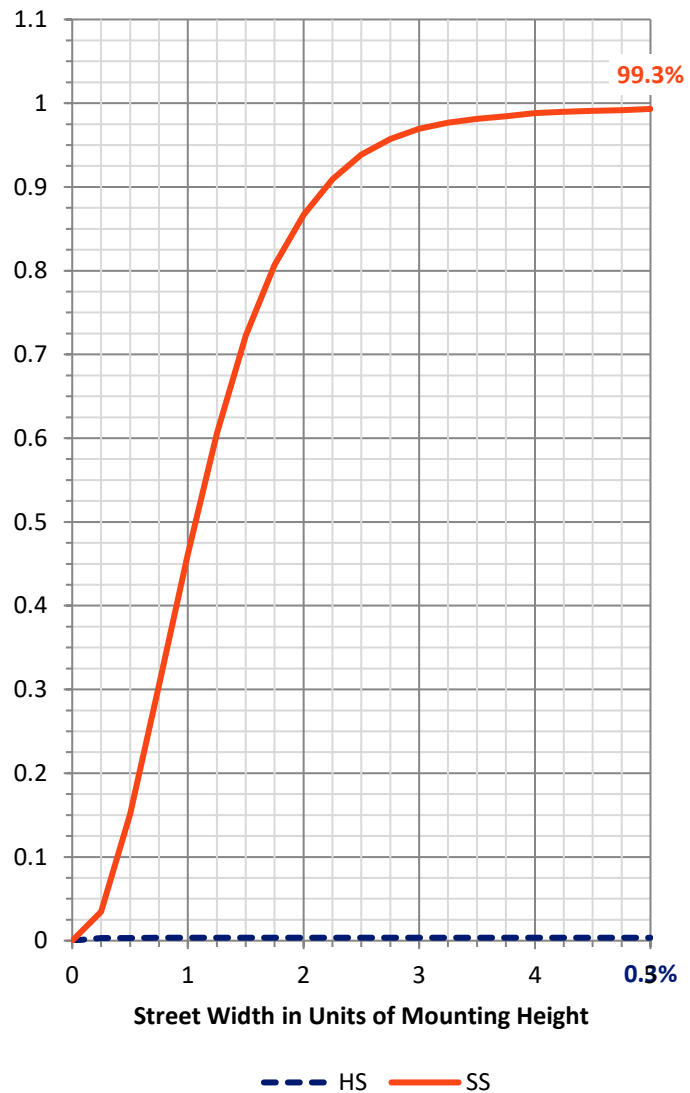
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 63.0     | 0.0    | 63.0    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 17678.3  | 0.0    | 17678.3 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 17741.3  | 0.0    | 17741.3 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 16.5    | 0.1       |
| 10°-20°   | 196.1   | 1.1       |
| 20°-30°   | 704.6   | 4.0       |
| 30°-40°   | 1637.3  | 9.2       |
| 40°-50°   | 2790.6  | 15.7      |
| 50°-60°   | 4598.2  | 25.9      |
| 60°-70°   | 5316.5  | 30.0      |
| 70°-80°   | 2284.2  | 12.9      |
| 80°-90°   | 197.4   | 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°    | 17741.3 | 100.0     |
| 0°-180°   | 17741.3 | 100.0     |



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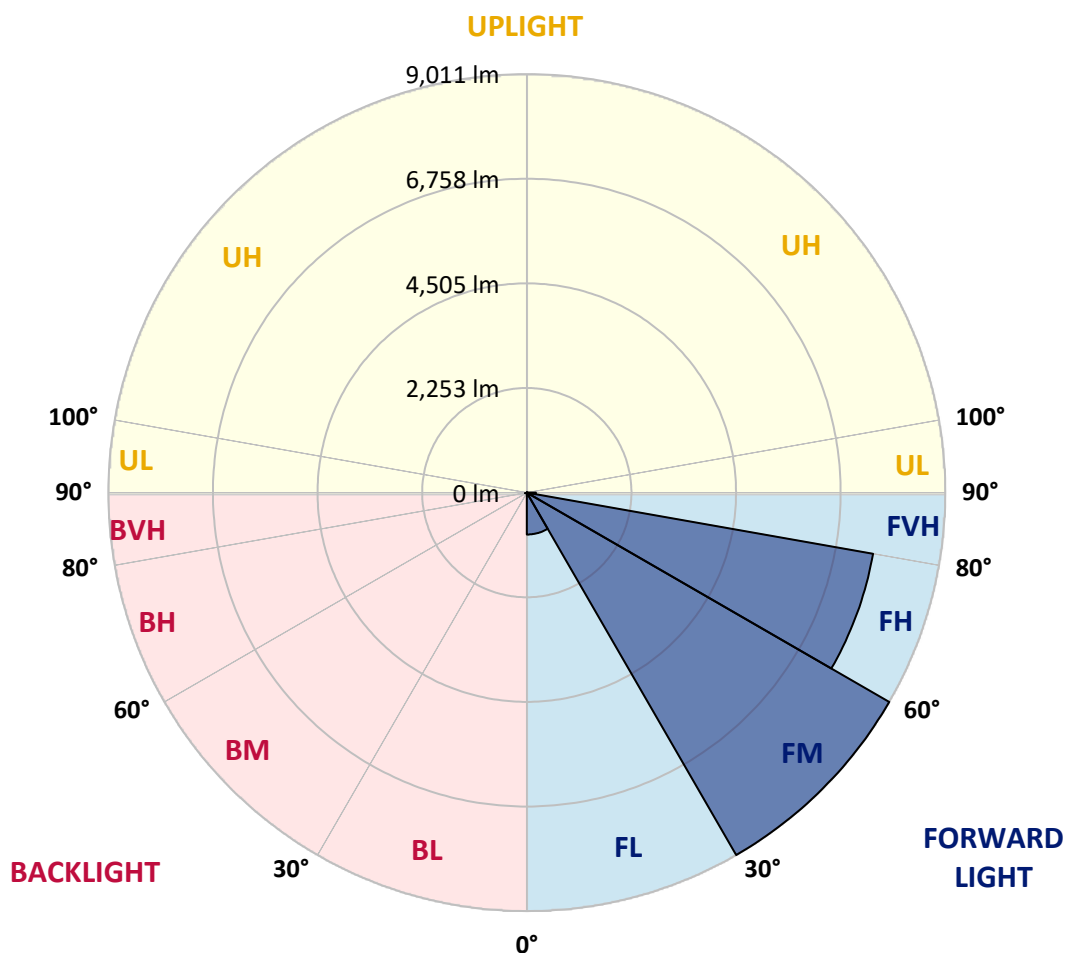
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|--------|-----------|-------------------------|------|----------|
|      |             |        |           | B                       | U    | G        |
| FL   | (0°-30°)    | 901.6  | 5.1       |                         |      |          |
| FM   | (30°-60°)   | 9010.8 | 50.8      |                         |      |          |
| FH   | (60°-80°)   | 7571.0 | 42.7      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 194.8  | 1.1       |                         |      | G2/225   |
| BL   | (0°-30°)    | 15.5   | 0.1       | B0/110                  |      |          |
| BM   | (30°-60°)   | 15.2   | 0.1       | B0/220                  |      |          |
| BH   | (60°-80°)   | 29.6   | 0.2       | B0/110                  |      | G0/110   |
| BVH  | (80°-90°)   | 2.6    | 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-G4**

Type III Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 44°     | 45°     | 55°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 112.1   | 112.1   | 112.1   | 112.1   | 112.1   | 112.1   | 112.1   | 112.1   | 112.1   | 112.1   | 112.1  |
| 2.5°  | 145.5   | 145.5   | 142.0   | 137.2   | 136.0   | 132.4   | 132.4   | 128.8   | 124.1   | 120.5   | 115.7  |
| 5°    | 211.1   | 210.0   | 200.4   | 188.5   | 173.0   | 163.4   | 163.4   | 150.3   | 138.4   | 127.6   | 118.1  |
| 7.5°  | 461.7   | 450.9   | 416.3   | 359.1   | 283.9   | 233.8   | 230.2   | 187.3   | 158.7   | 137.2   | 119.3  |
| 10°   | 1059.3  | 1022.3  | 973.4   | 836.2   | 617.9   | 431.8   | 423.5   | 273.2   | 189.7   | 147.9   | 121.7  |
| 12.5° | 1735.7  | 1765.5  | 1667.7  | 1451.8  | 1196.5  | 889.9   | 830.3   | 460.5   | 250.5   | 162.2   | 124.1  |
| 15°   | 2351.3  | 2344.1  | 2289.2  | 2112.7  | 1818.0  | 1410.0  | 1373.1  | 800.5   | 359.1   | 184.9   | 126.5  |
| 17.5° | 2811.7  | 2803.4  | 2750.9  | 2637.6  | 2410.9  | 2002.9  | 1970.7  | 1276.4  | 563.1   | 217.1   | 128.8  |
| 20°   | 3297.3  | 3286.5  | 3212.6  | 3121.9  | 2923.9  | 2576.7  | 2538.6  | 1808.5  | 881.6   | 269.6   | 128.8  |
| 22.5° | 3879.4  | 3859.1  | 3780.4  | 3626.5  | 3417.7  | 3115.9  | 3081.3  | 2352.5  | 1276.4  | 355.5   | 134.8  |
| 25°   | 4583.2  | 4548.6  | 4440.1  | 4301.7  | 4050.0  | 3649.2  | 3612.2  | 2958.5  | 1752.4  | 485.5   | 140.8  |
| 27.5° | 5386.1  | 5392.0  | 5245.3  | 5011.5  | 4673.9  | 4264.7  | 4195.5  | 3501.2  | 2245.1  | 671.6   | 147.9  |
| 30°   | 6339.2  | 6279.6  | 6073.2  | 5801.2  | 5473.2  | 4951.8  | 4885.0  | 4041.6  | 2798.6  | 946.0   | 159.9  |
| 32.5° | 7231.5  | 7167.1  | 6889.2  | 6546.8  | 6194.9  | 5644.9  | 5590.1  | 4648.8  | 3302.0  | 1270.5  | 181.3  |
| 35°   | 7997.4  | 7952.1  | 7563.2  | 7145.6  | 6833.1  | 6341.6  | 6324.9  | 5326.4  | 3893.7  | 1620.0  | 205.2  |
| 37.5° | 8671.4  | 8589.1  | 8089.2  | 7656.2  | 7338.9  | 6898.7  | 6862.9  | 5946.7  | 4463.9  | 2025.6  | 241.0  |
| 40°   | 9246.4  | 9201.1  | 8591.5  | 8022.4  | 7764.8  | 7371.1  | 7325.8  | 6490.7  | 5053.2  | 2496.8  | 285.1  |
| 42.5° | 9861.9  | 9802.3  | 9210.6  | 8572.4  | 8097.6  | 7676.5  | 7646.7  | 6939.3  | 5578.1  | 3014.5  | 350.7  |
| 45°   | 10557.4 | 10446.5 | 9927.5  | 9354.9  | 8633.2  | 7992.6  | 7959.2  | 7338.9  | 6116.1  | 3570.4  | 430.6  |
| 47.5° | 11300.6 | 11204.0 | 10784.1 | 10382.0 | 9551.8  | 8513.9  | 8442.3  | 7678.9  | 6650.6  | 4212.2  | 532.0  |
| 50°   | 12056.9 | 12059.3 | 11744.4 | 11551.1 | 10674.3 | 9360.9  | 9259.5  | 8178.7  | 7212.4  | 4899.4  | 682.4  |
| 52.5° | 12937.3 | 12960.0 | 12955.2 | 12812.0 | 12132.1 | 10745.9 | 10609.9 | 8937.4  | 7865.0  | 5701.0  | 889.9  |
| 55°   | 13305.9 | 13346.5 | 13610.1 | 13927.4 | 13742.5 | 12501.9 | 12356.3 | 10246.1 | 8729.8  | 6594.5  | 1197.7 |
| 57.5° | 13004.1 | 13049.4 | 13413.3 | 13969.2 | 14393.9 | 14039.6 | 14022.9 | 11949.6 | 9869.1  | 7677.7  | 1701.1 |
| 59°   | 12645.0 | 12639.1 | 13012.5 | 13601.8 | 14174.4 | 14404.6 | 14428.5 | 13101.9 | 10861.6 | 8437.6  | 2135.3 |
| 60°   | 12406.4 | 12411.2 | 12659.3 | 13264.2 | 13872.6 | 14272.2 | 14365.2 | 13780.7 | 11441.4 | 8983.9  | 2507.5 |
| 62.5° | 11485.5 | 11540.4 | 11737.2 | 12299.1 | 12876.5 | 13322.6 | 13481.3 | 14385.5 | 13100.7 | 10274.7 | 3801.9 |
| 65°   | 10484.6 | 10488.2 | 10768.6 | 11249.3 | 11802.8 | 12116.6 | 12216.8 | 13444.3 | 14209.0 | 11589.3 | 5499.4 |
| 67.5° | 8698.8  | 8771.6  | 9090.1  | 9869.1  | 10600.4 | 10997.6 | 11073.9 | 11702.6 | 13749.7 | 12445.8 | 6350.0 |
| 70°   | 6087.5  | 6182.9  | 6637.4  | 7647.9  | 8737.0  | 9389.5  | 9384.8  | 9728.3  | 12101.1 | 12064.1 | 5383.7 |
| 72.5° | 3039.6  | 3204.2  | 3575.2  | 4657.2  | 5976.6  | 7001.3  | 7217.2  | 7825.6  | 9721.2  | 10020.6 | 4016.6 |
| 75°   | 1343.2  | 1352.8  | 1563.9  | 2109.1  | 2970.4  | 4271.9  | 4465.1  | 6211.6  | 7458.2  | 6964.3  | 2901.2 |
| 77.5° | 781.4   | 788.5   | 826.7   | 947.2   | 1203.7  | 2093.6  | 2310.7  | 4073.8  | 5270.4  | 4047.6  | 1892.0 |
| 80°   | 283.9   | 291.1   | 289.9   | 359.1   | 527.3   | 824.3   | 918.6   | 1974.3  | 3515.6  | 2131.8  | 991.3  |
| 82.5° | 174.2   | 174.2   | 168.2   | 169.4   | 192.1   | 316.1   | 345.9   | 841.0   | 1711.9  | 1049.8  | 283.9  |
| 85°   | 85.9    | 90.7    | 96.6    | 108.6   | 128.8   | 156.3   | 165.8   | 241.0   | 576.2   | 254.1   | 68.0   |
| 87.5° | 51.3    | 52.5    | 57.3    | 69.2    | 85.9    | 112.1   | 119.3   | 163.4   | 206.4   | 170.6   | 16.7   |
| 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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CATALOG NUMBER: NVN-SA6A-830-U-T3BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 112.1  | 112.1 | 112.1 | 112.1 | 112.1 | 112.1 | 112.1 | 112.1 | 112.1 | 112.1 | 112.1 |
| 2.5°  | 113.3  | 112.1 | 106.2 | 101.4 | 96.6  | 91.9  | 88.3  | 84.7  | 84.7  | 85.9  | 84.7  |
| 5°    | 113.3  | 108.6 | 99.0  | 90.7  | 83.5  | 77.5  | 71.6  | 66.8  | 65.6  | 65.6  | 66.8  |
| 7.5°  | 112.1  | 106.2 | 93.0  | 82.3  | 72.8  | 64.4  | 58.5  | 52.5  | 51.3  | 52.5  | 51.3  |
| 10°   | 110.9  | 103.8 | 88.3  | 75.2  | 62.0  | 53.7  | 45.3  | 39.4  | 39.4  | 39.4  | 40.6  |
| 12.5° | 110.9  | 100.2 | 83.5  | 68.0  | 53.7  | 44.1  | 35.8  | 29.8  | 28.6  | 28.6  | 28.6  |
| 15°   | 109.7  | 97.8  | 78.7  | 59.6  | 45.3  | 33.4  | 26.2  | 20.3  | 20.3  | 20.3  | 20.3  |
| 17.5° | 107.4  | 94.2  | 72.8  | 52.5  | 35.8  | 25.1  | 17.9  | 11.9  | 11.9  | 14.3  | 14.3  |
| 20°   | 105.0  | 90.7  | 65.6  | 42.9  | 29.8  | 19.1  | 11.9  | 7.2   | 7.2   | 10.7  | 11.9  |
| 22.5° | 106.2  | 90.7  | 60.8  | 38.2  | 23.9  | 14.3  | 9.5   | 6.0   | 4.8   | 8.4   | 10.7  |
| 25°   | 107.4  | 88.3  | 54.9  | 33.4  | 17.9  | 10.7  | 7.2   | 2.4   | 1.2   | 2.4   | 3.6   |
| 27.5° | 107.4  | 85.9  | 47.7  | 26.2  | 13.1  | 8.4   | 3.6   | 0.0   | 0.0   | 0.0   | 0.0   |
| 30°   | 106.2  | 82.3  | 41.8  | 21.5  | 9.5   | 4.8   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   |
| 32.5° | 105.0  | 78.7  | 38.2  | 16.7  | 8.4   | 2.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 35°   | 106.2  | 74.0  | 33.4  | 13.1  | 4.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 2.4   |
| 37.5° | 109.7  | 69.2  | 28.6  | 10.7  | 3.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 114.5  | 65.6  | 23.9  | 8.4   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 124.1  | 65.6  | 21.5  | 6.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 136.0  | 65.6  | 17.9  | 4.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 151.5  | 66.8  | 15.5  | 4.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 170.6  | 69.2  | 14.3  | 3.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 184.9  | 66.8  | 13.1  | 3.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 210.0  | 64.4  | 11.9  | 2.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 243.4  | 60.8  | 11.9  | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 59°   | 276.8  | 56.1  | 11.9  | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 314.9  | 53.7  | 10.7  | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 520.1  | 47.7  | 9.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 1004.4 | 45.3  | 8.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 1623.6 | 45.3  | 6.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 1707.1 | 45.3  | 4.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1135.7 | 37.0  | 3.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 608.4  | 33.4  | 3.6   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 328.1  | 31.0  | 4.8   | 2.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 144.3  | 22.7  | 6.0   | 3.6   | 2.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 57.3   | 15.5  | 7.2   | 6.0   | 4.8   | 2.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 27.4   | 11.9  | 9.5   | 8.4   | 6.0   | 3.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 13.1   | 11.9  | 10.7  | 9.5   | 8.4   | 6.0   | 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   |



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

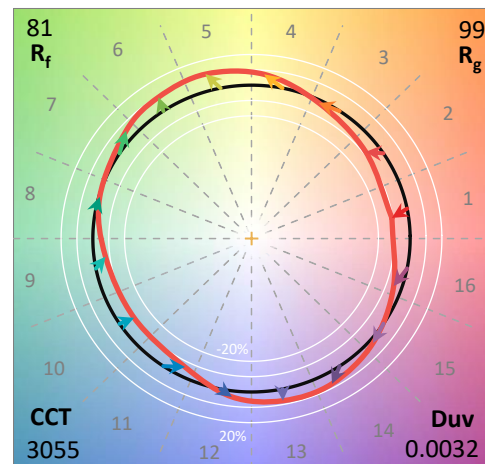
### Test Information

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

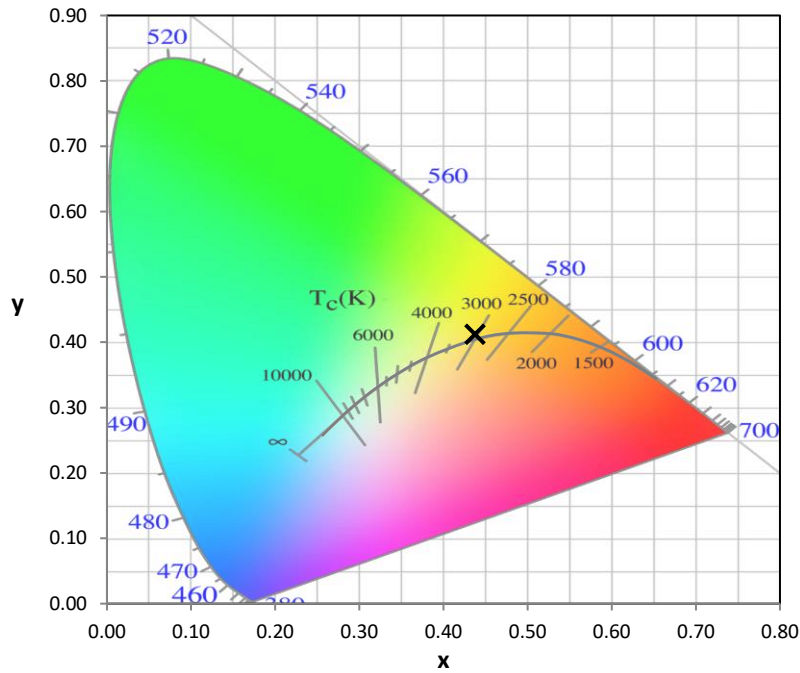
Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-9

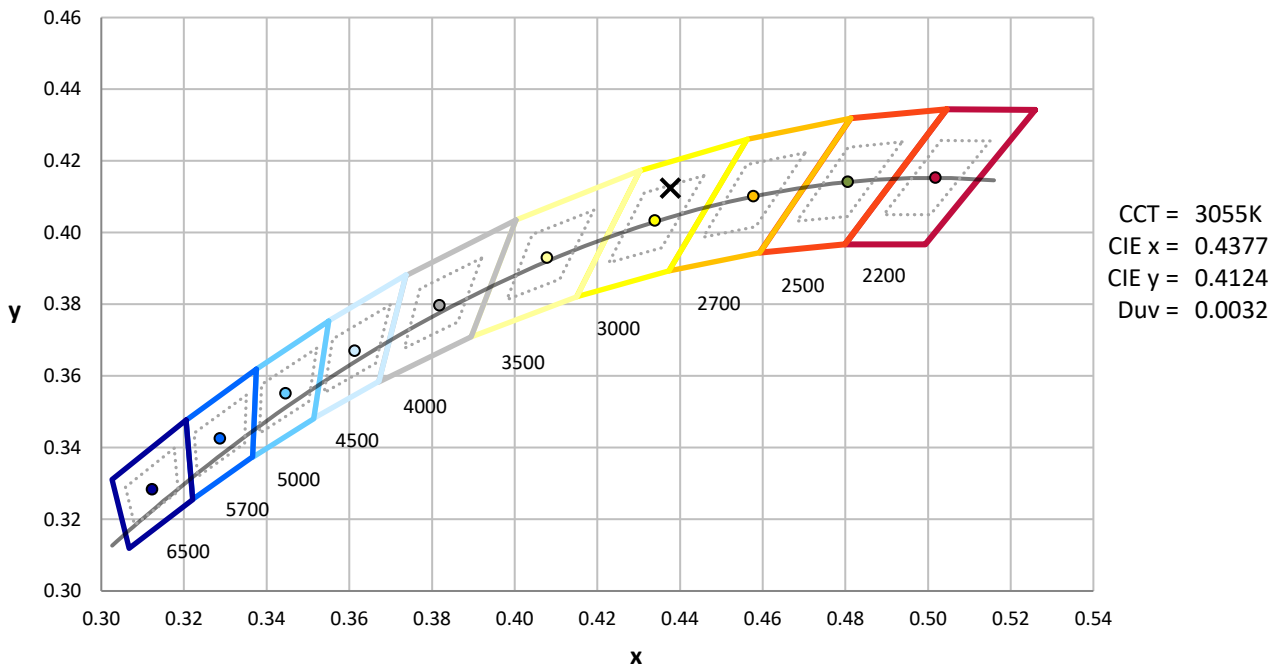
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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

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**CIE 1931 Chromaticity Diagram**



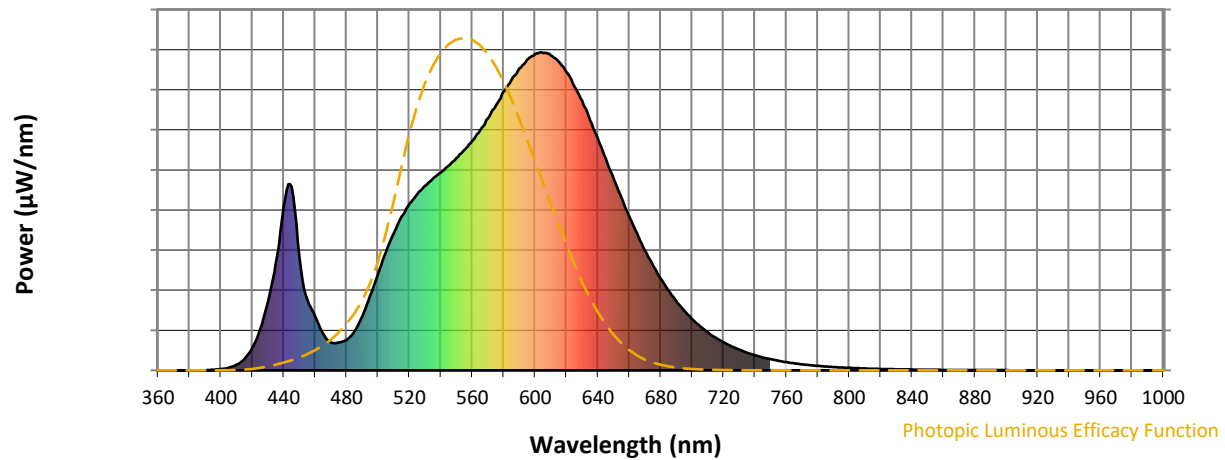
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

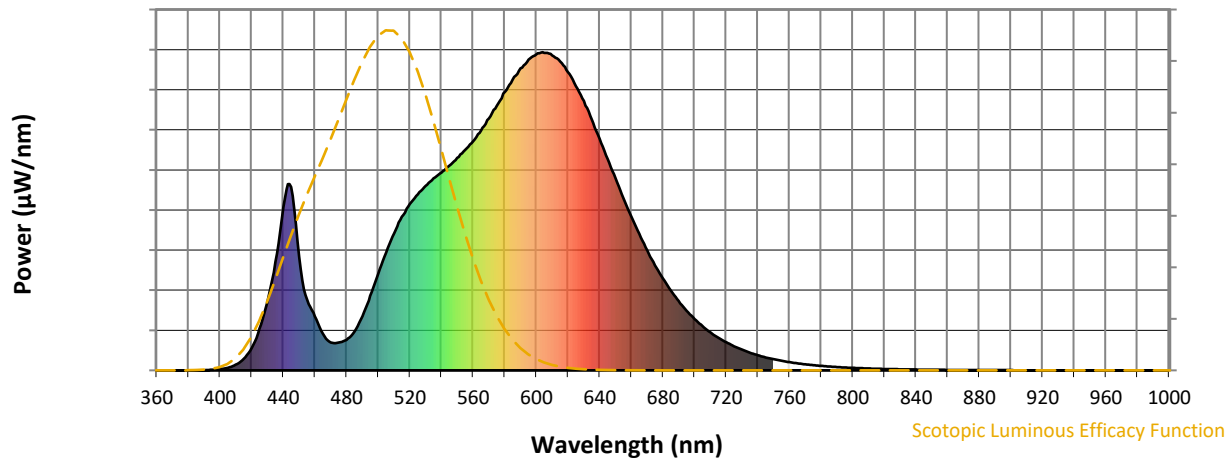


### Photopic Lumens: NR

| 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



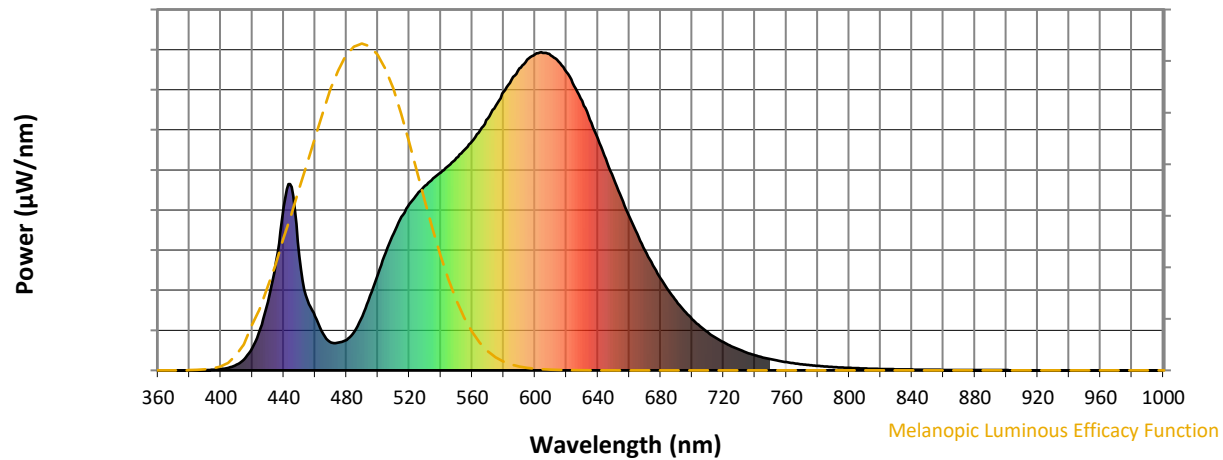
Scotopic Lumens: NR

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

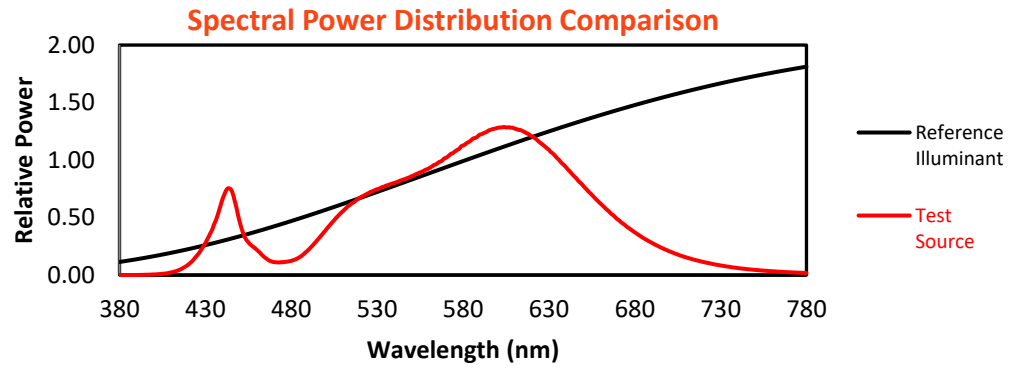
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | 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               | 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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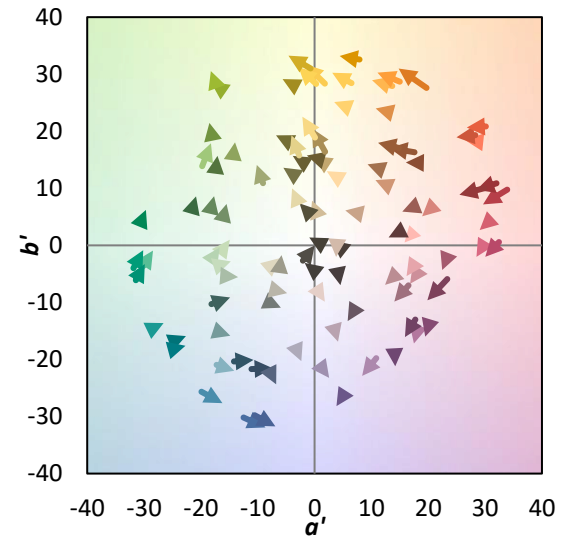
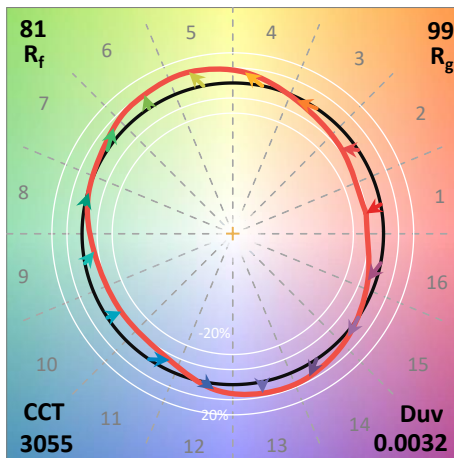
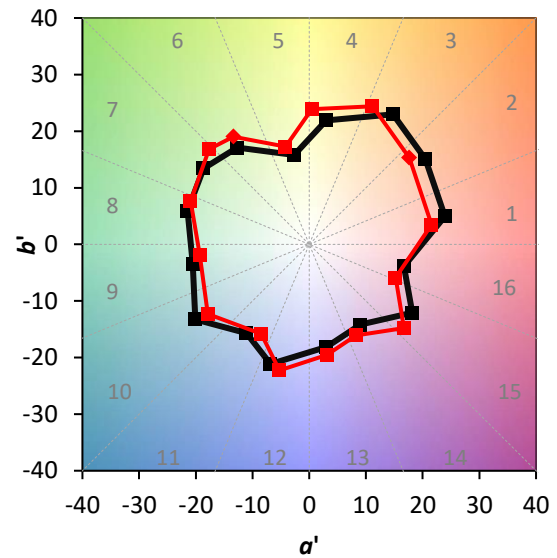
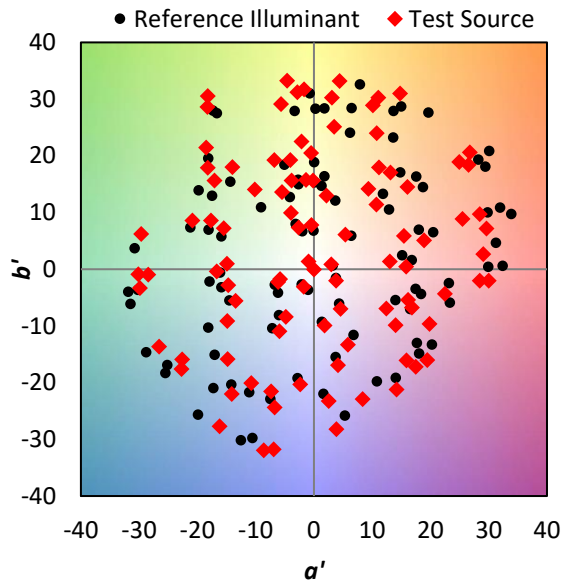
TM-30-18

### Summary

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



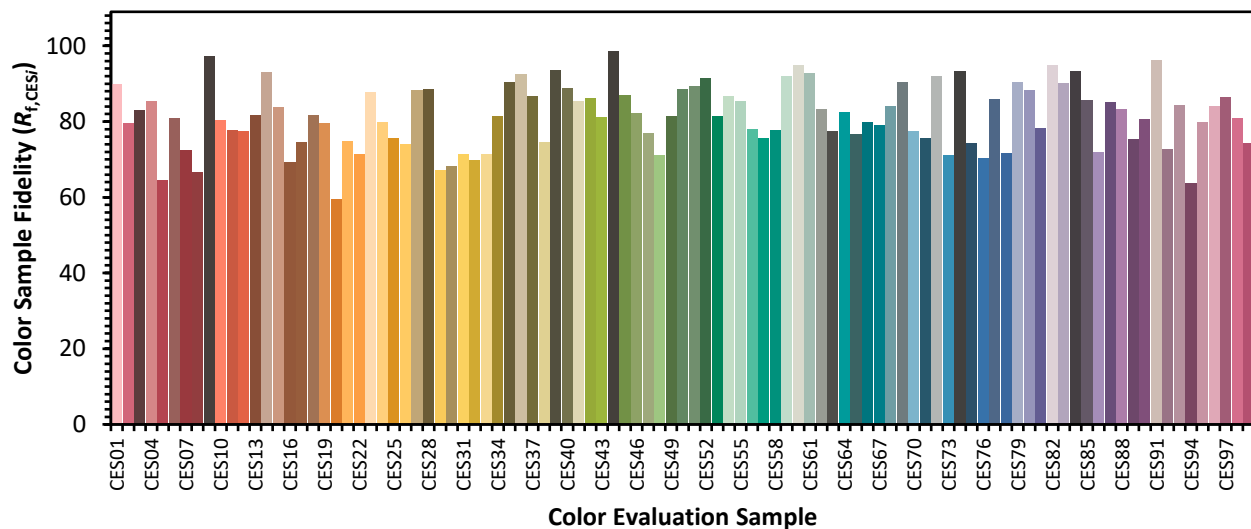
### Color Vector Graphics



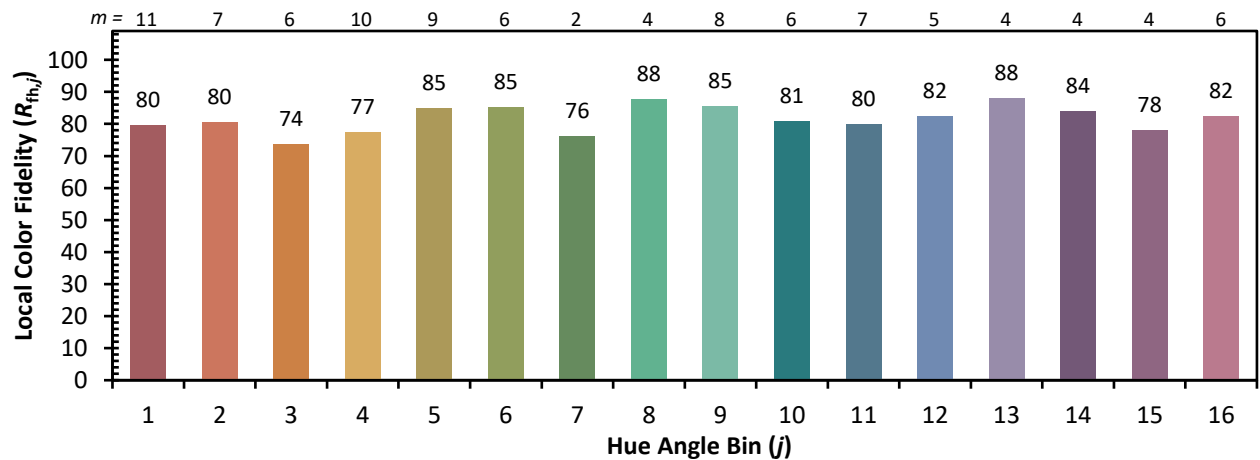
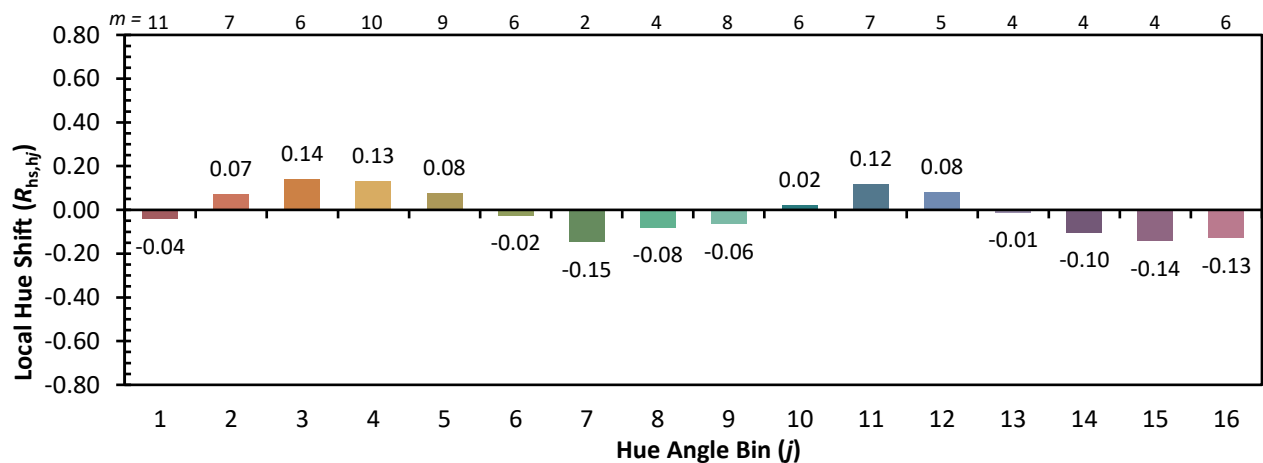
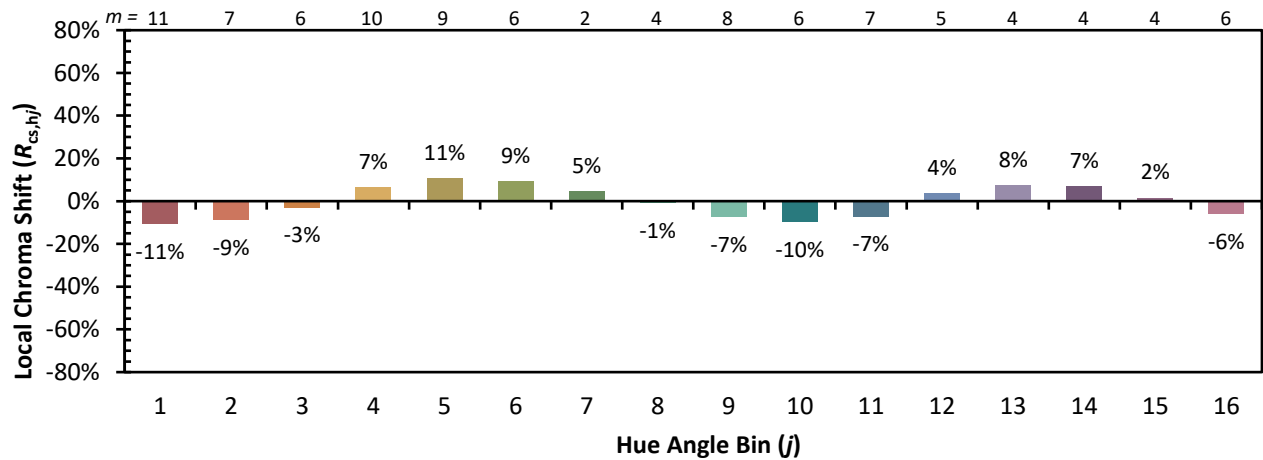


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

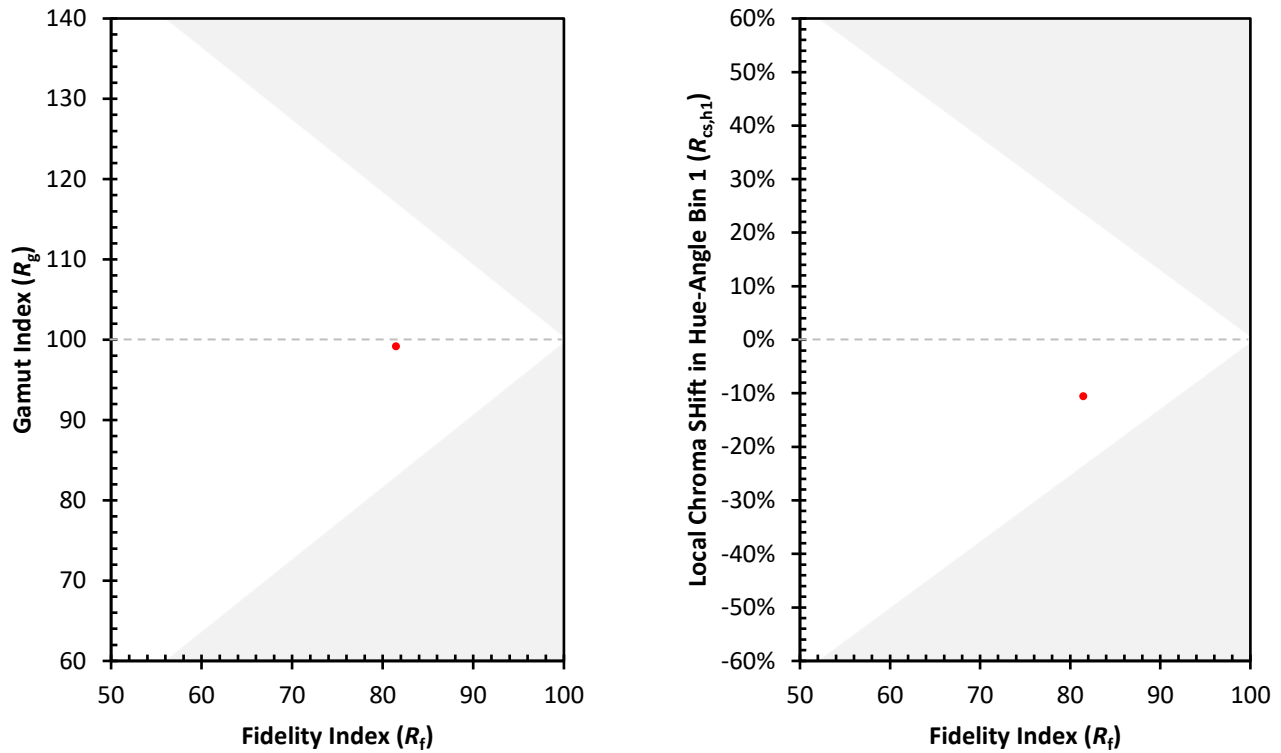
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 91 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54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



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)