

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: P1064033

Luminaire Tested: **GLAN-SA5A-735-U-T4BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1064033  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: GLAN-SA5A-735-U-T4BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 615mA 5xLight Square PACKAGE  
70CRI 3500K FIXTURE w/ TYPE IV ANGLED BACKLIGHT CONTROL  
Light Source: (70) 3500K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17741.5 lumens  
Efficiency: N/A  
Efficacy: 129.9 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B0 - U0 - G4

Input Watts (W): 136.6  
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

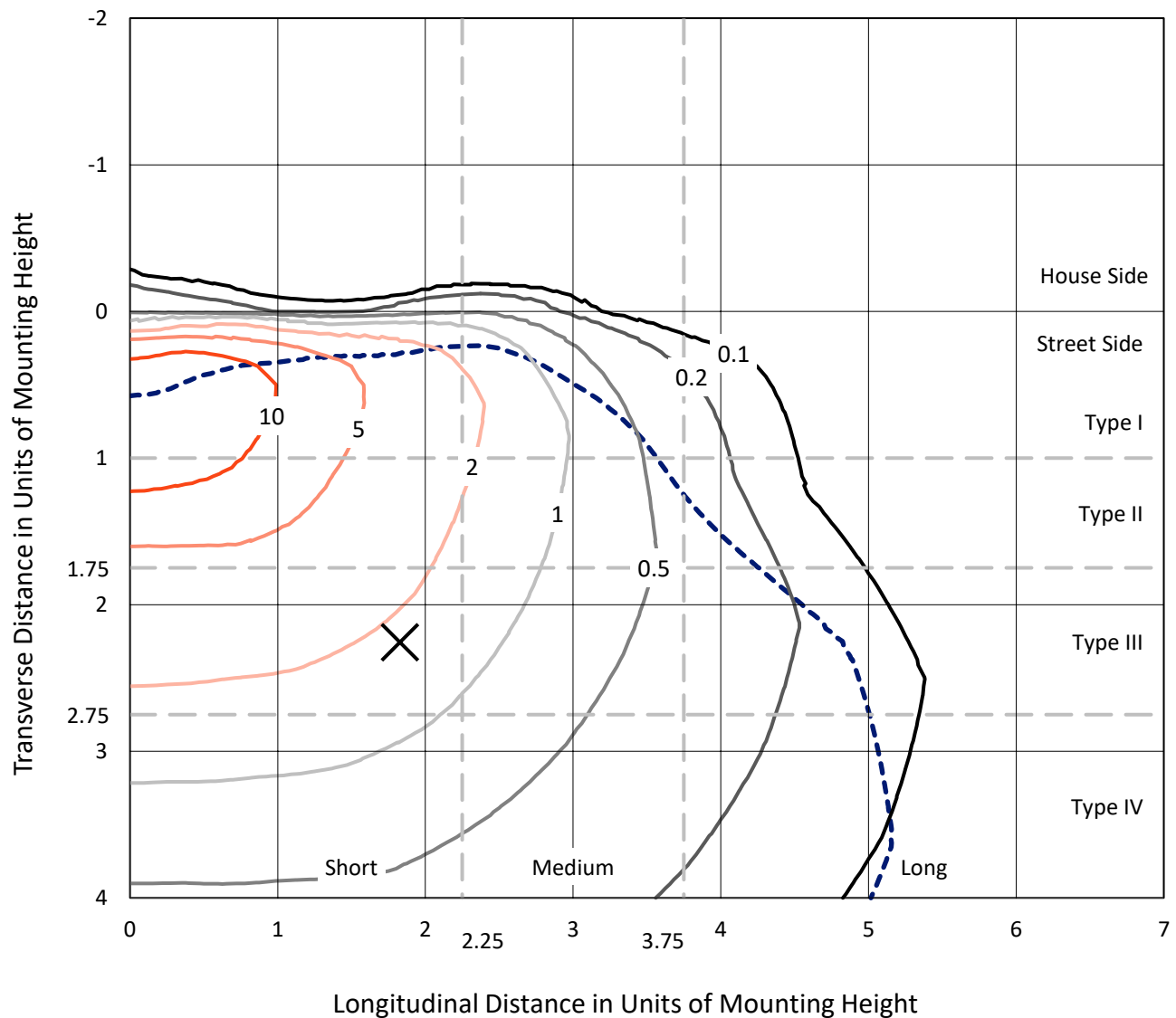


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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

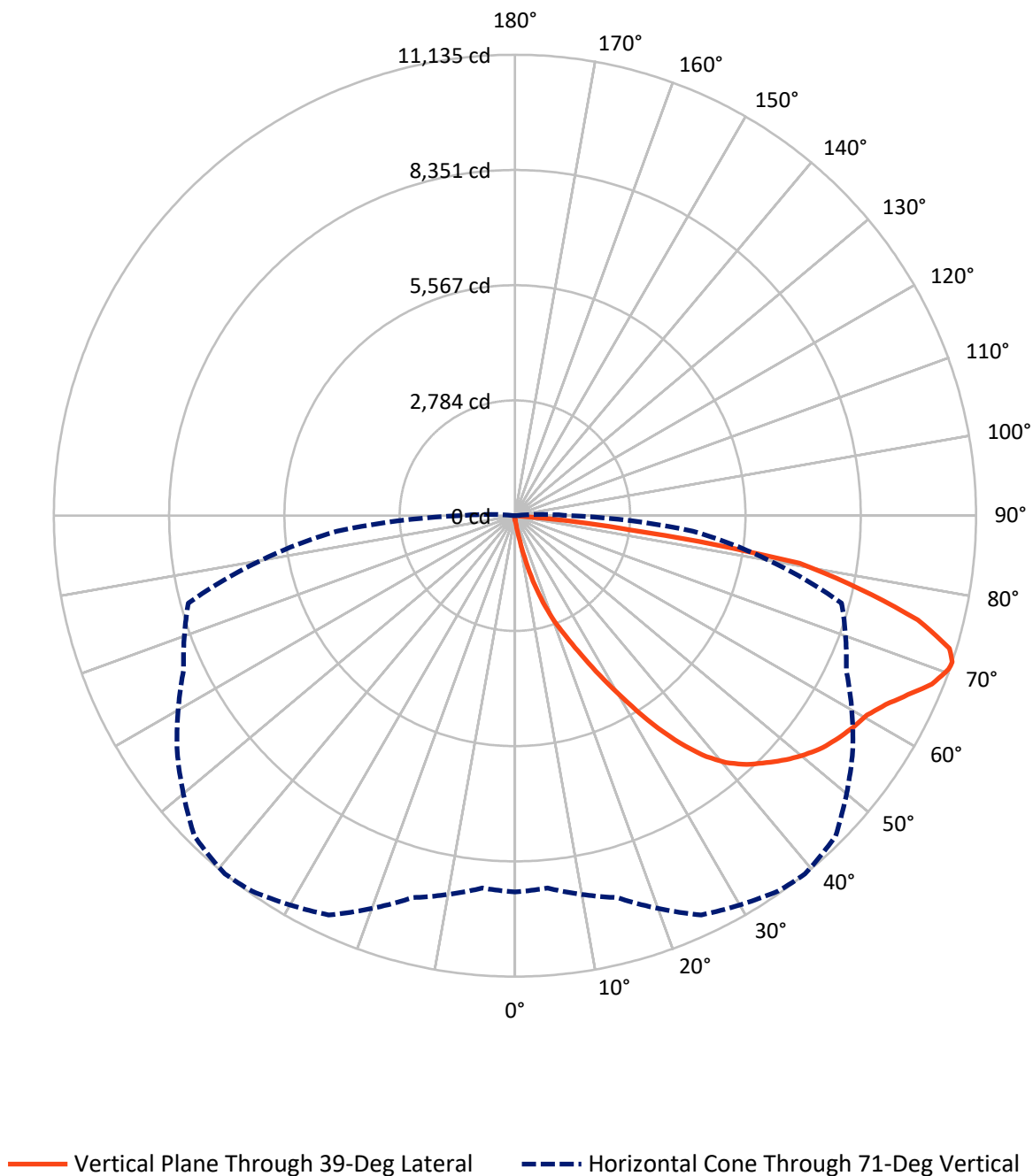


Based on 15 foot mounting height. Maximum calculated value = 18.2 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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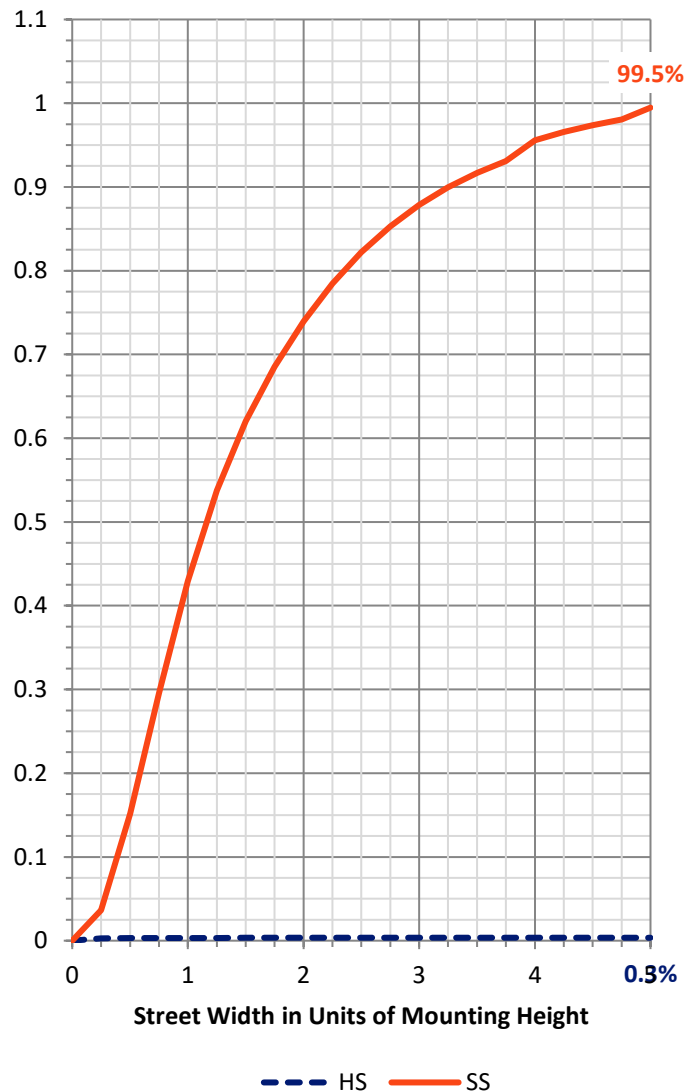
**FLUX DISTRIBUTION:**

|                    |           | 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    | 17678.4  | 0.0    | 17678.4 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 17741.5  | 0.0    | 17741.5 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 14.8    | 0.1       |
| 10°-20°   | 189.6   | 1.1       |
| 20°-30°   | 675.3   | 3.8       |
| 30°-40°   | 1627.5  | 9.2       |
| 40°-50°   | 2723.7  | 15.4      |
| 50°-60°   | 3498.3  | 19.7      |
| 60°-70°   | 4427.2  | 25.0      |
| 70°-80°   | 3947.0  | 22.2      |
| 80°-90°   | 638.0   | 3.6       |
| 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°    | 17741.5 | 100.0     |
| 0°-180°   | 17741.5 | 100.0     |



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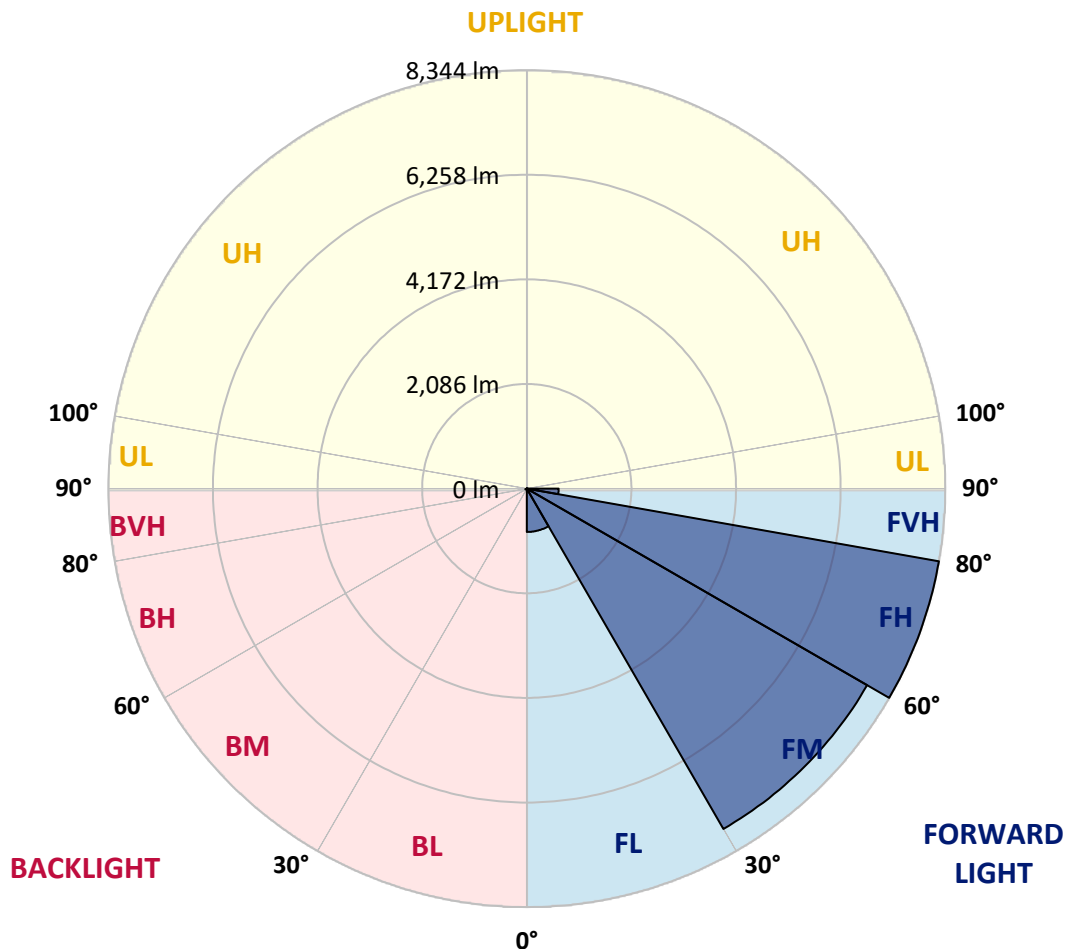
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|--------|-----------|-------------------------|------|----------|
|      |             |        |           | B                       | U    | G        |
| FL   | (0°-30°)    | 864.5  | 4.9       |                         |      |          |
| FM   | (30°-60°)   | 7835.0 | 44.2      |                         |      |          |
| FH   | (60°-80°)   | 8343.8 | 47.0      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 635.1  | 3.6       |                         |      | G4/750   |
| BL   | (0°-30°)    | 15.2   | 0.1       | B0/110                  |      |          |
| BM   | (30°-60°)   | 14.6   | 0.1       | B0/220                  |      |          |
| BH   | (60°-80°)   | 30.3   | 0.2       | B0/110                  |      | G0/110   |
| BVH  | (80°-90°)   | 2.9    | 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 IV Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°     | 35°     | 39°     | 45°     | 55°     | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|---------|---------|---------|---------|---------|--------|--------|--------|
| 0°    | 97.3   | 97.3   | 97.3   | 97.3    | 97.3    | 97.3    | 97.3    | 97.3    | 97.3   | 97.3   | 97.3   |
| 2.5°  | 111.7  | 111.7  | 111.7  | 108.1   | 108.1   | 106.9   | 105.7   | 105.7   | 103.3  | 102.1  | 99.7   |
| 5°    | 169.3  | 165.7  | 157.3  | 152.5   | 142.9   | 136.9   | 130.9   | 122.5   | 114.1  | 108.1  | 100.9  |
| 7.5°  | 383.1  | 391.5  | 363.9  | 312.3   | 259.4   | 236.6   | 198.2   | 159.7   | 132.1  | 114.1  | 102.1  |
| 10°   | 976.4  | 971.6  | 877.9  | 774.6   | 598.1   | 527.2   | 413.1   | 260.6   | 170.5  | 124.9  | 103.3  |
| 12.5° | 1661.0 | 1656.2 | 1545.7 | 1405.2  | 1172.2  | 1024.5  | 808.3   | 486.4   | 245.0  | 141.7  | 103.3  |
| 15°   | 2236.3 | 2217.1 | 2182.2 | 2042.9  | 1770.3  | 1646.6  | 1360.7  | 859.9   | 396.3  | 170.5  | 105.7  |
| 17.5° | 2617.0 | 2600.2 | 2567.7 | 2517.3  | 2344.4  | 2197.8  | 1968.4  | 1351.1  | 641.3  | 221.0  | 110.5  |
| 20°   | 2966.5 | 2954.5 | 2928.0 | 2918.4  | 2806.7  | 2728.7  | 2538.9  | 1915.6  | 999.2  | 300.3  | 117.7  |
| 22.5° | 3446.9 | 3421.7 | 3432.5 | 3374.8  | 3265.5  | 3171.9  | 3055.4  | 2506.5  | 1436.4 | 432.4  | 130.9  |
| 25°   | 4035.4 | 4023.4 | 3993.3 | 3952.5  | 3801.2  | 3719.5  | 3540.6  | 3063.8  | 1925.2 | 605.3  | 145.3  |
| 27.5° | 4746.4 | 4733.2 | 4726.0 | 4632.3  | 4458.1  | 4369.3  | 4119.4  | 3589.8  | 2475.3 | 847.9  | 164.5  |
| 30°   | 5565.5 | 5571.5 | 5524.6 | 5404.5  | 5201.6  | 5076.6  | 4819.6  | 4141.1  | 3038.5 | 1132.5 | 185.0  |
| 32.5° | 6413.4 | 6401.4 | 6329.3 | 6187.6  | 6006.2  | 5889.7  | 5563.1  | 4745.2  | 3629.4 | 1508.5 | 209.0  |
| 35°   | 7327.3 | 7304.5 | 7114.8 | 6952.6  | 6797.7  | 6651.2  | 6353.3  | 5446.6  | 4220.3 | 1930.0 | 241.4  |
| 37.5° | 8249.7 | 8142.8 | 7762.1 | 7556.7  | 7449.8  | 7329.7  | 7052.3  | 6194.8  | 4807.6 | 2400.8 | 281.0  |
| 40°   | 8946.3 | 8863.4 | 8411.8 | 8033.5  | 7948.2  | 7846.2  | 7639.6  | 6840.9  | 5432.1 | 2906.4 | 329.1  |
| 42.5° | 9331.8 | 9286.2 | 8880.2 | 8506.7  | 8306.1  | 8216.1  | 8039.5  | 7405.4  | 6049.5 | 3464.9 | 398.7  |
| 45°   | 9496.3 | 9425.5 | 9154.1 | 8979.9  | 8660.4  | 8511.5  | 8301.3  | 7831.8  | 6694.4 | 4099.0 | 496.0  |
| 47.5° | 9445.9 | 9405.1 | 9210.5 | 9274.2  | 9042.4  | 8810.6  | 8501.9  | 8158.4  | 7245.7 | 4826.8 | 629.3  |
| 50°   | 9128.8 | 9094.0 | 9034.0 | 9378.6  | 9349.8  | 9076.0  | 8761.3  | 8416.6  | 7696.0 | 5577.5 | 835.9  |
| 52.5° | 8525.9 | 8511.5 | 8665.2 | 9297.0  | 9524.0  | 9310.2  | 9011.1  | 8644.8  | 8116.4 | 6361.7 | 1131.3 |
| 55°   | 7748.9 | 7807.7 | 8247.3 | 9169.7  | 9612.8  | 9483.1  | 9232.1  | 8858.6  | 8453.9 | 7063.1 | 1567.3 |
| 57.5° | 7429.4 | 7445.0 | 7993.9 | 9079.6  | 9652.5  | 9635.7  | 9447.1  | 9062.8  | 8763.7 | 7624.0 | 2232.7 |
| 60°   | 7802.9 | 7778.9 | 8068.3 | 9148.1  | 9731.7  | 9772.6  | 9638.1  | 9252.5  | 9032.8 | 8105.6 | 3119.0 |
| 62.5° | 8477.9 | 8464.7 | 8557.2 | 9439.9  | 9963.5  | 10046.4 | 9903.5  | 9389.5  | 9270.6 | 8422.6 | 4130.3 |
| 65°   | 9080.8 | 9053.2 | 9224.9 | 9957.5  | 10370.7 | 10429.5 | 10304.6 | 9623.6  | 9375.0 | 8653.2 | 5080.2 |
| 67.5° | 9341.4 | 9335.4 | 9611.6 | 10449.9 | 10798.2 | 10861.9 | 10752.6 | 9946.7  | 9351.0 | 8726.5 | 5499.4 |
| 70°   | 9222.5 | 9199.7 | 9641.7 | 10658.9 | 11039.6 | 11111.7 | 11006.0 | 10066.8 | 9090.4 | 8494.7 | 4878.5 |
| 71°   | 9091.6 | 9030.4 | 9551.6 | 10644.5 | 11073.3 | 11134.5 | 10949.6 | 9957.5  | 8828.6 | 8165.6 | 4315.2 |
| 72.5° | 8685.7 | 8696.5 | 9304.2 | 10494.4 | 10992.8 | 10974.8 | 10630.1 | 9566.0  | 8512.7 | 7418.6 | 3466.1 |
| 75°   | 7686.4 | 7750.1 | 8503.1 | 9863.9  | 10274.6 | 10045.2 | 9518.0  | 8817.8  | 7878.6 | 5319.2 | 2406.8 |
| 77.5° | 6281.3 | 6376.1 | 7203.6 | 8650.8  | 8534.3  | 8511.5  | 8489.9  | 7769.3  | 6728.0 | 2857.2 | 1674.2 |
| 80°   | 2998.9 | 3204.3 | 4345.2 | 6175.6  | 6708.8  | 6967.0  | 6804.9  | 6260.8  | 5202.8 | 1360.7 | 1000.4 |
| 82.5° | 195.8  | 193.4  | 273.8  | 518.8   | 2187.0  | 2827.2  | 4491.8  | 4474.9  | 3627.0 | 663.0  | 408.3  |
| 85°   | 92.5   | 94.9   | 104.5  | 118.9   | 138.1   | 151.3   | 209.0   | 1225.0  | 1735.5 | 315.9  | 88.9   |
| 87.5° | 54.0   | 55.2   | 64.9   | 82.9    | 108.1   | 120.1   | 142.9   | 183.8   | 225.8  | 174.1  | 19.2   |
| 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: GLAN-SA5A-735-U-T4BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 97.3   | 97.3 | 97.3 | 97.3 | 97.3 | 97.3 | 97.3 | 97.3 | 97.3 | 97.3 | 97.3 |
| 2.5°  | 98.5   | 97.3 | 93.7 | 90.1 | 86.5 | 84.1 | 82.9 | 84.1 | 84.1 | 85.3 | 85.3 |
| 5°    | 98.5   | 94.9 | 88.9 | 81.7 | 76.9 | 72.1 | 69.7 | 68.5 | 69.7 | 69.7 | 69.7 |
| 7.5°  | 97.3   | 91.3 | 82.9 | 74.5 | 68.5 | 62.5 | 60.1 | 58.8 | 58.8 | 60.1 | 60.1 |
| 10°   | 94.9   | 88.9 | 78.1 | 68.5 | 61.3 | 54.0 | 50.4 | 46.8 | 46.8 | 46.8 | 48.0 |
| 12.5° | 93.7   | 85.3 | 72.1 | 62.5 | 52.8 | 44.4 | 37.2 | 33.6 | 34.8 | 34.8 | 34.8 |
| 15°   | 91.3   | 81.7 | 68.5 | 56.4 | 44.4 | 33.6 | 27.6 | 24.0 | 25.2 | 26.4 | 25.2 |
| 17.5° | 91.3   | 80.5 | 63.7 | 49.2 | 34.8 | 25.2 | 20.4 | 18.0 | 18.0 | 19.2 | 19.2 |
| 20°   | 91.3   | 78.1 | 60.1 | 42.0 | 26.4 | 19.2 | 14.4 | 13.2 | 13.2 | 15.6 | 16.8 |
| 22.5° | 93.7   | 78.1 | 55.2 | 34.8 | 21.6 | 14.4 | 10.8 | 9.6  | 10.8 | 13.2 | 14.4 |
| 25°   | 97.3   | 76.9 | 50.4 | 31.2 | 18.0 | 10.8 | 8.4  | 6.0  | 7.2  | 9.6  | 10.8 |
| 27.5° | 100.9  | 75.7 | 45.6 | 27.6 | 14.4 | 8.4  | 6.0  | 4.8  | 3.6  | 4.8  | 4.8  |
| 30°   | 104.5  | 75.7 | 40.8 | 22.8 | 12.0 | 6.0  | 3.6  | 2.4  | 1.2  | 0.0  | 0.0  |
| 32.5° | 106.9  | 73.3 | 37.2 | 18.0 | 9.6  | 4.8  | 2.4  | 1.2  | 0.0  | 0.0  | 0.0  |
| 35°   | 109.3  | 70.9 | 32.4 | 14.4 | 7.2  | 3.6  | 1.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 37.5° | 111.7  | 67.3 | 27.6 | 12.0 | 6.0  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 114.1  | 62.5 | 22.8 | 10.8 | 3.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 116.5  | 58.8 | 19.2 | 8.4  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 122.5  | 56.4 | 15.6 | 7.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 133.3  | 54.0 | 14.4 | 4.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 148.9  | 51.6 | 13.2 | 3.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 170.5  | 50.4 | 12.0 | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 209.0  | 49.2 | 10.8 | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 275.0  | 48.0 | 10.8 | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 421.6  | 45.6 | 10.8 | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 753.0  | 44.4 | 9.6  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 1312.7 | 45.6 | 9.6  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 1882.0 | 48.0 | 8.4  | 3.6  | 1.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 1610.5 | 42.0 | 8.4  | 4.8  | 2.4  | 1.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 71°   | 1312.7 | 37.2 | 8.4  | 4.8  | 2.4  | 1.2  | 1.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 844.3  | 28.8 | 7.2  | 4.8  | 2.4  | 2.4  | 1.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 356.7  | 24.0 | 7.2  | 4.8  | 3.6  | 2.4  | 2.4  | 1.2  | 0.0  | 0.0  | 0.0  |
| 77.5° | 152.5  | 18.0 | 7.2  | 6.0  | 4.8  | 3.6  | 3.6  | 2.4  | 1.2  | 0.0  | 0.0  |
| 80°   | 57.6   | 14.4 | 8.4  | 7.2  | 6.0  | 6.0  | 4.8  | 2.4  | 1.2  | 0.0  | 0.0  |
| 82.5° | 26.4   | 12.0 | 8.4  | 7.2  | 7.2  | 6.0  | 4.8  | 3.6  | 2.4  | 0.0  | 0.0  |
| 85°   | 16.8   | 10.8 | 8.4  | 7.2  | 7.2  | 6.0  | 6.0  | 3.6  | 2.4  | 0.0  | 0.0  |
| 87.5° | 13.2   | 10.8 | 8.4  | 8.4  | 7.2  | 7.2  | 4.8  | 3.6  | 1.2  | 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: SP1-2407-184-5

Test Date: 10/10/2024

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

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

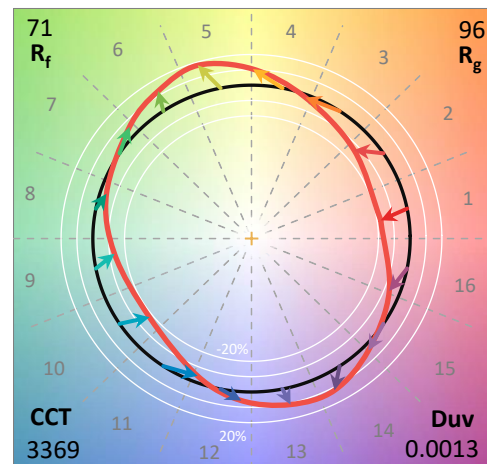
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-5  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-735-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 3500K CCT 26 LEDS

### Spectral Parameters

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

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



### Test Conditions

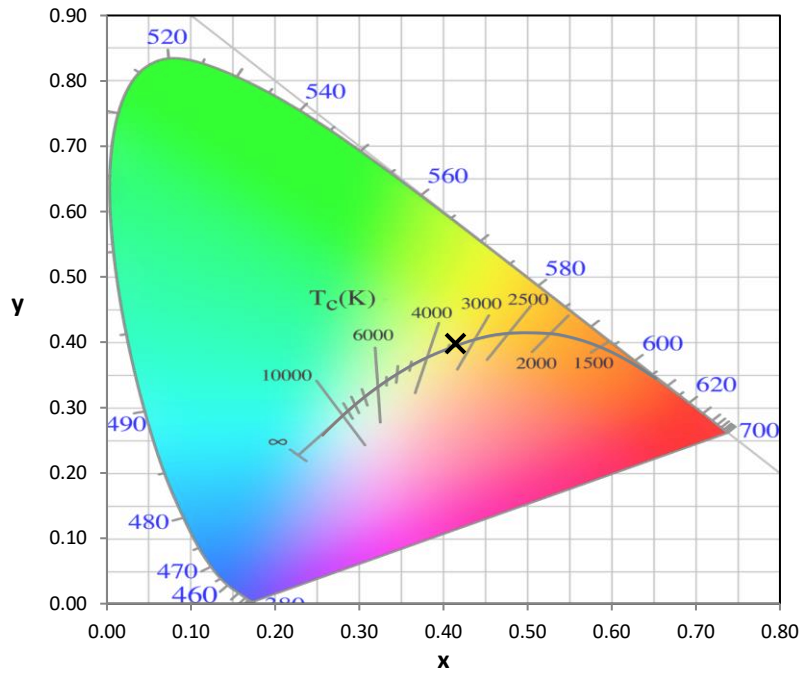
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-5

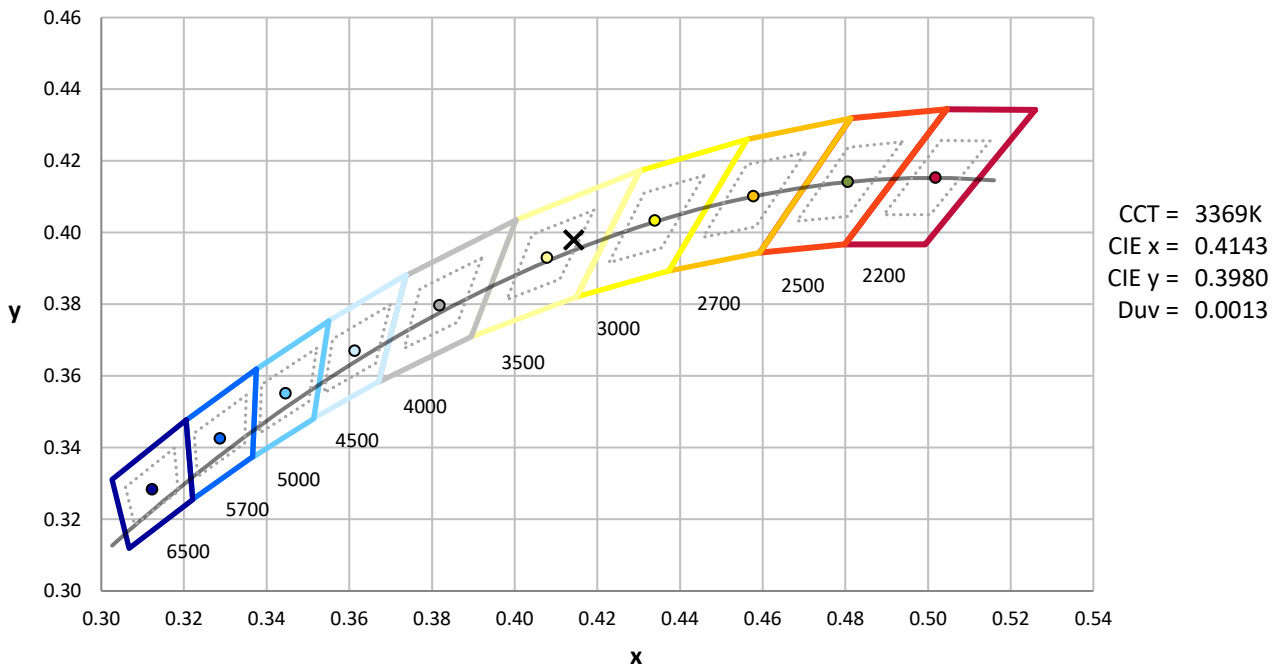
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/18/2024        | 12/18/2024           |
| Power Meter                    | INXT2011004           | 2/8/2024         | 2/8/2025             |
| AC Power Source                | IN0063                | 10/24/2023       | 10/24/2024           |
| DC Power Source                | IN0208                | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | IN0085                | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | IN0046                | 10/24/2023       | 10/24/2024           |

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**CIE 1931 Chromaticity Diagram**



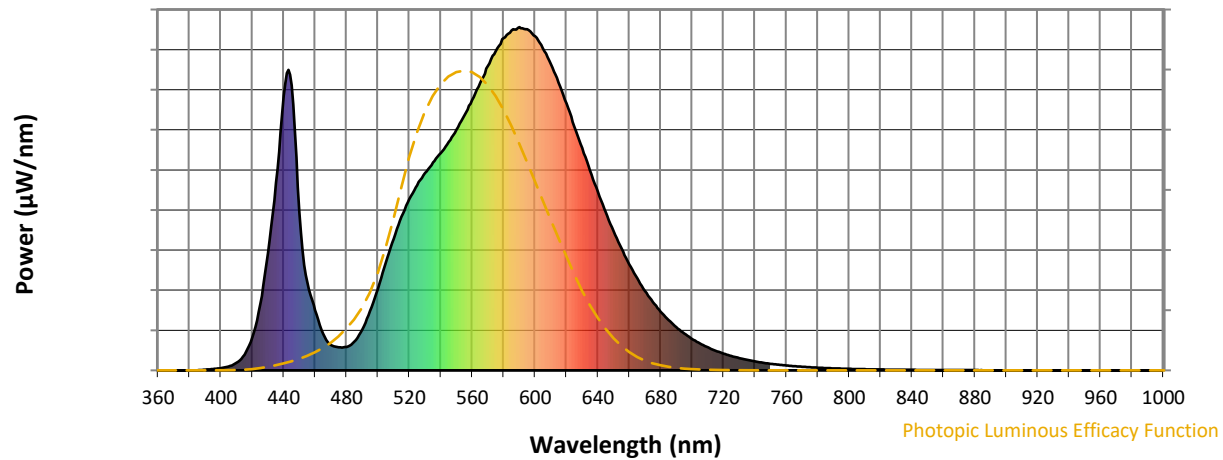
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3500K 4-step quadrangle

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### Photopic Flux vs. Wavelength

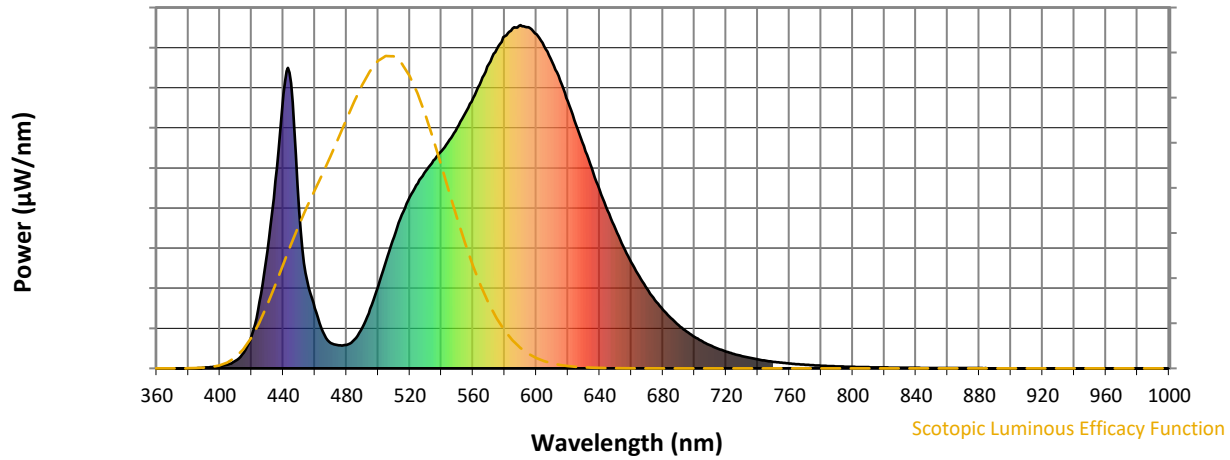


### Photopic Lumens: NR

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

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### Scotopic Flux vs. Wavelength



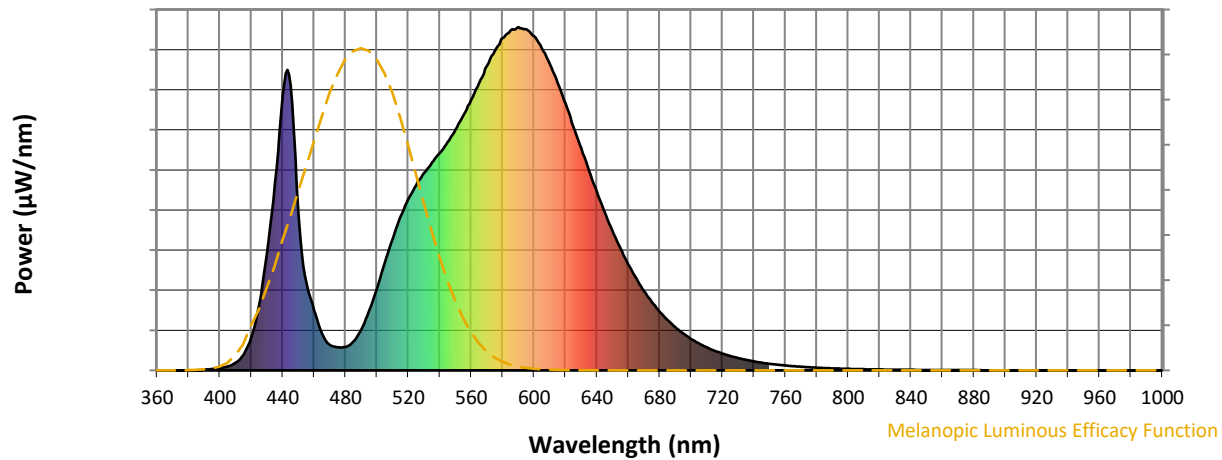
Scotopic Lumens: NR

S/P: 1.29

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

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.36

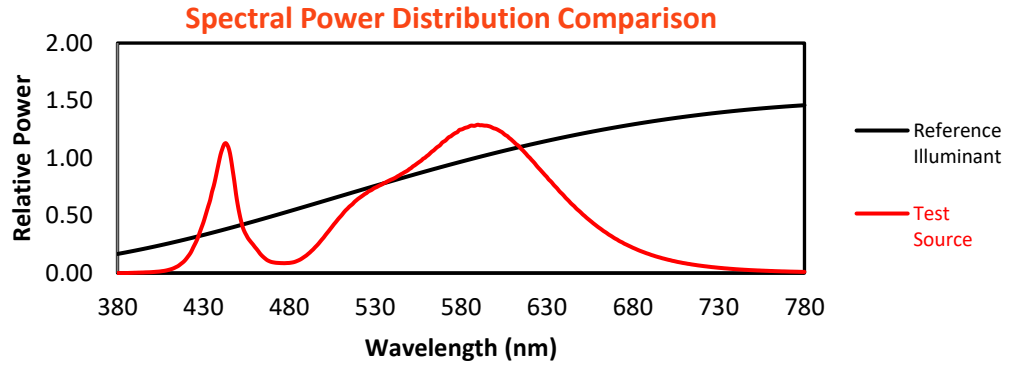
| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm)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

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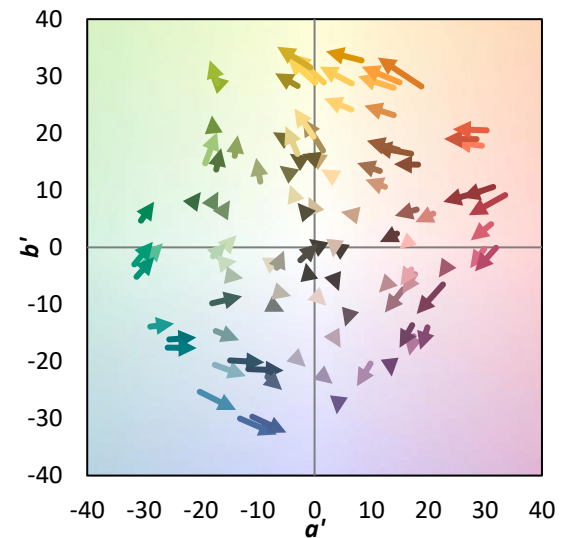
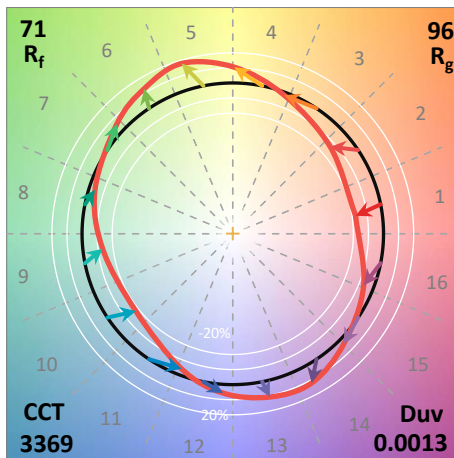
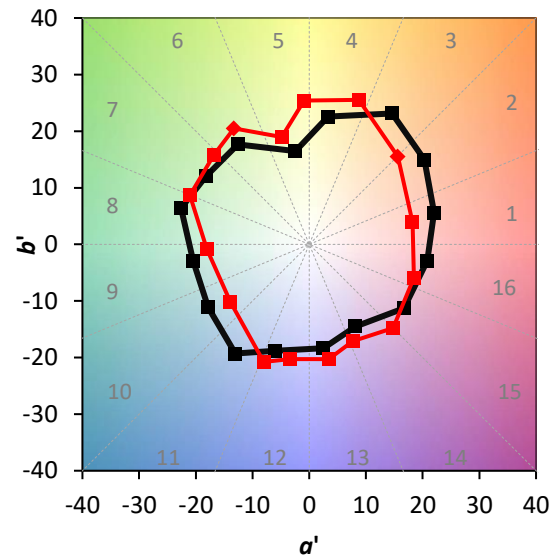
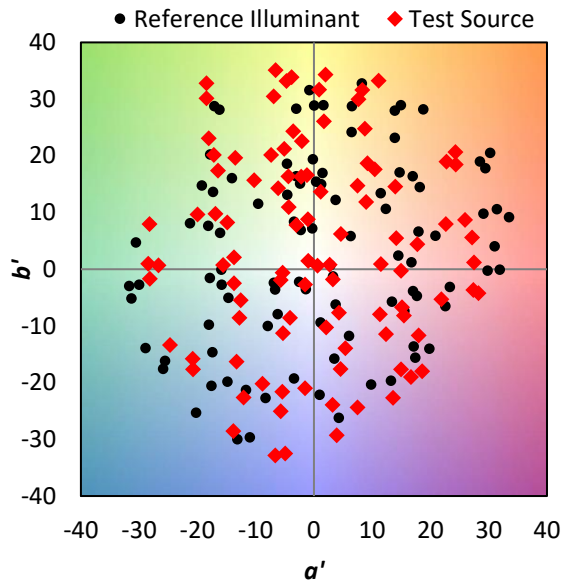
TM-30-18

### Summary

$R_f = 71.4$   
 $R_g = 96$   
 $CIE R_a = 70.1$   
 $R_g = -40.2$



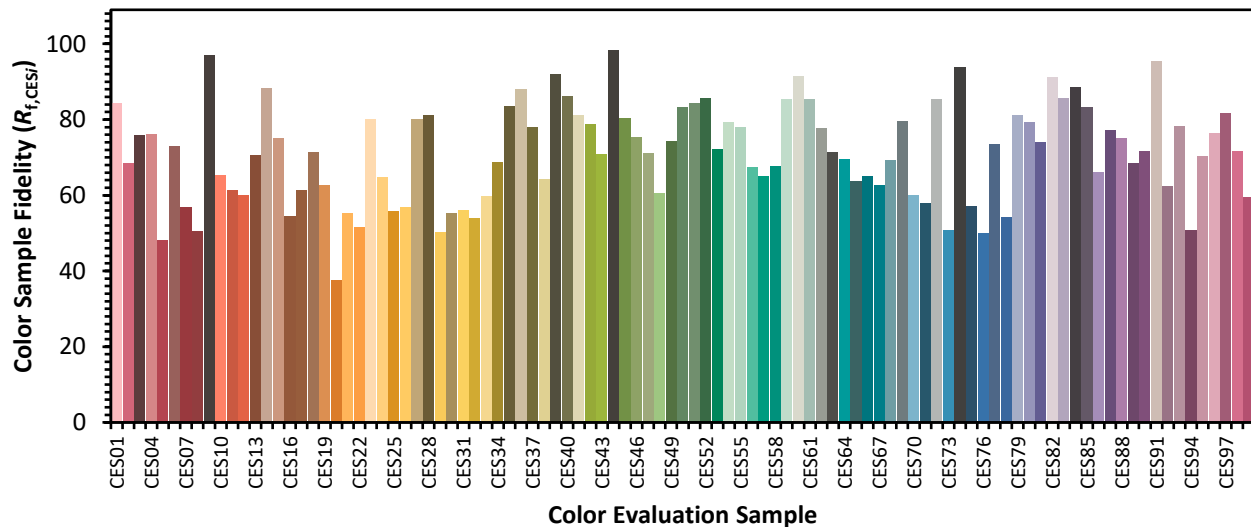
### Color Vector Graphics

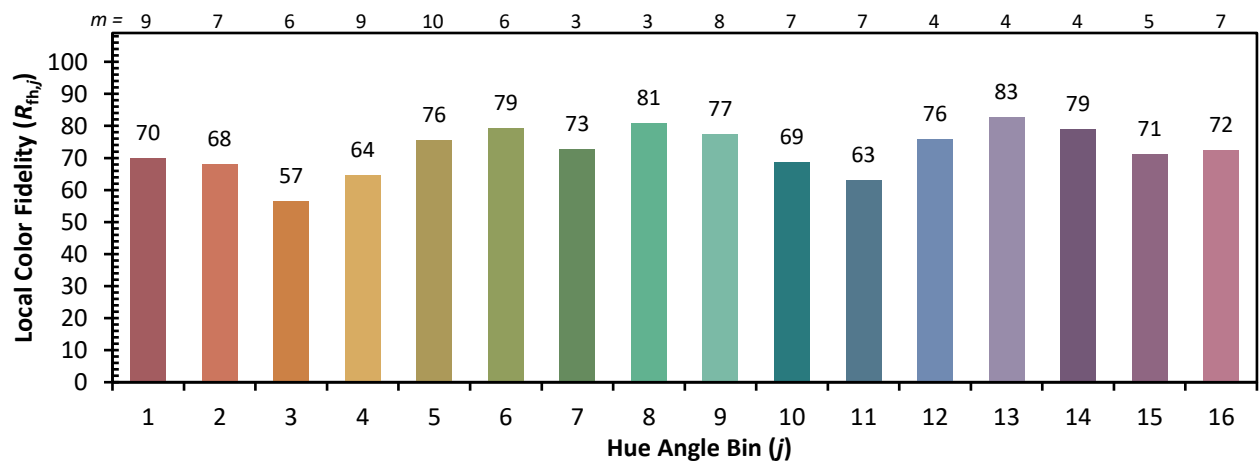
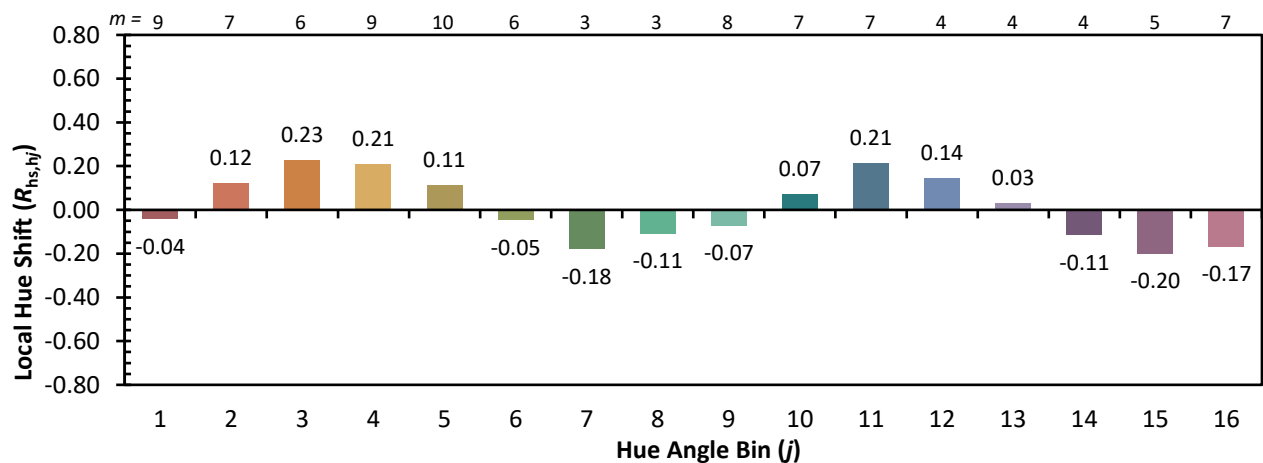
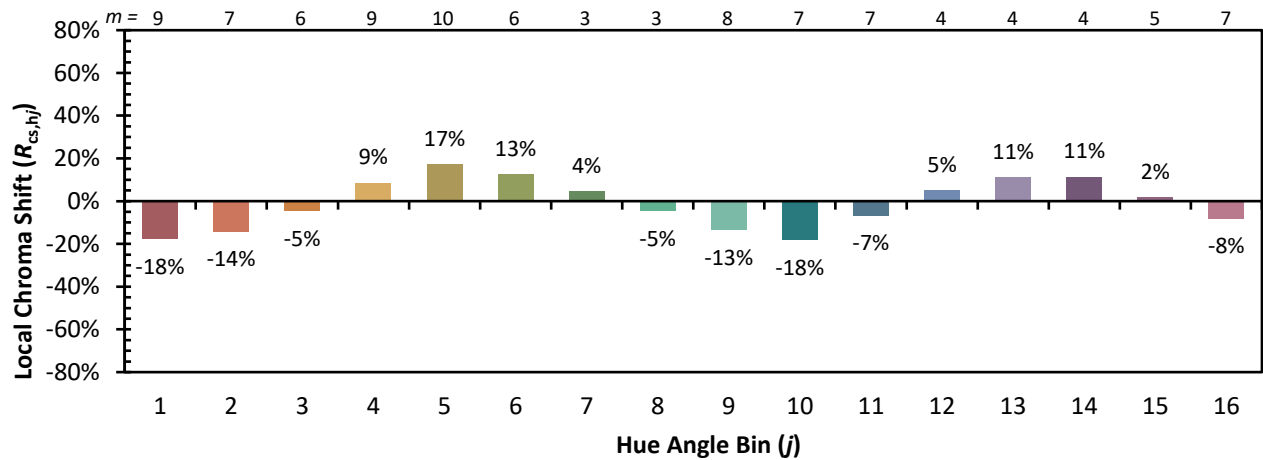




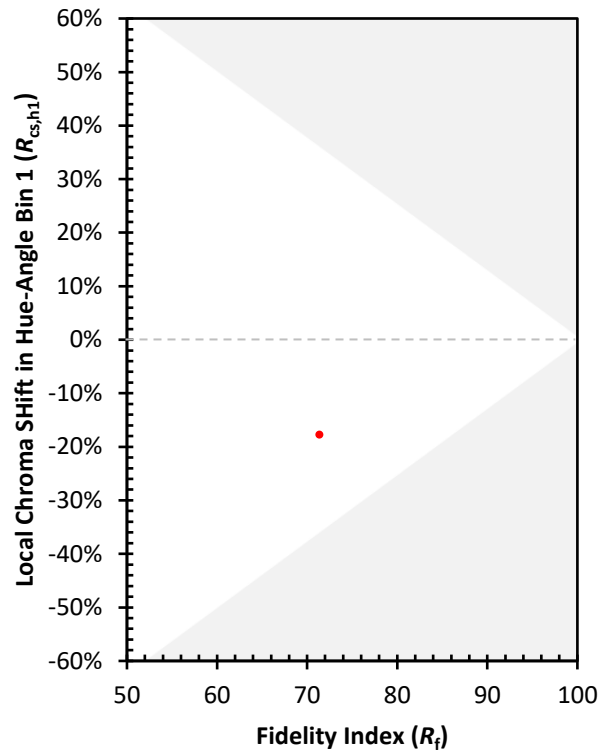
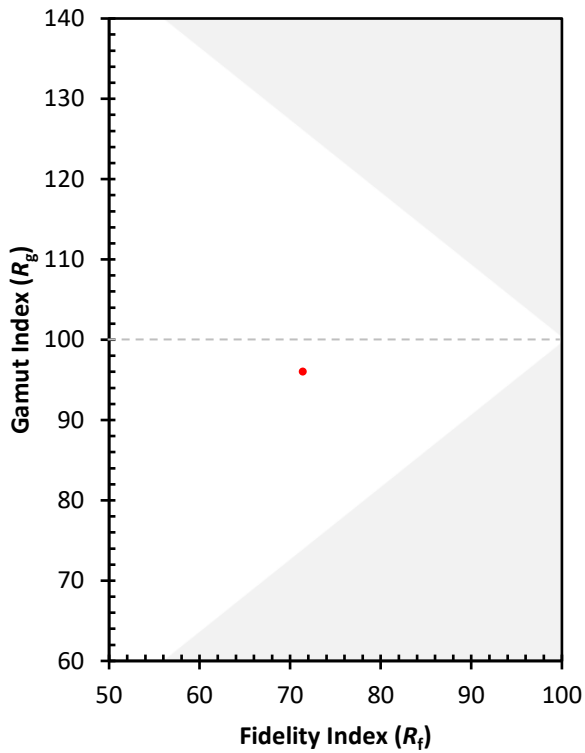
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

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



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)