

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: INVUE

Report Number: P1459776

Luminaire Tested: LXB-CX-740-X-U-S-GM-CBP

Issue Date: 5/26/2026

**Test Information**

Test Method: LM-79-2024  
Report Number: P1459776  
TEST IS SCALED FROM IESNA LM-79-24 TEST DATA (G2-2509-539-25)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 5/27/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: INVUE  
Catalog Number: LXB-CX-740-X-U-S-GM-CBP  
Description: LuxeScape OUTDOOR ARCHITECTURAL BOLLARD LUMINAIRE  
SYMMETRIC OPTIC, GRAPHITE METALLIC PAINTED FINISH  
Light Source: 2200K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

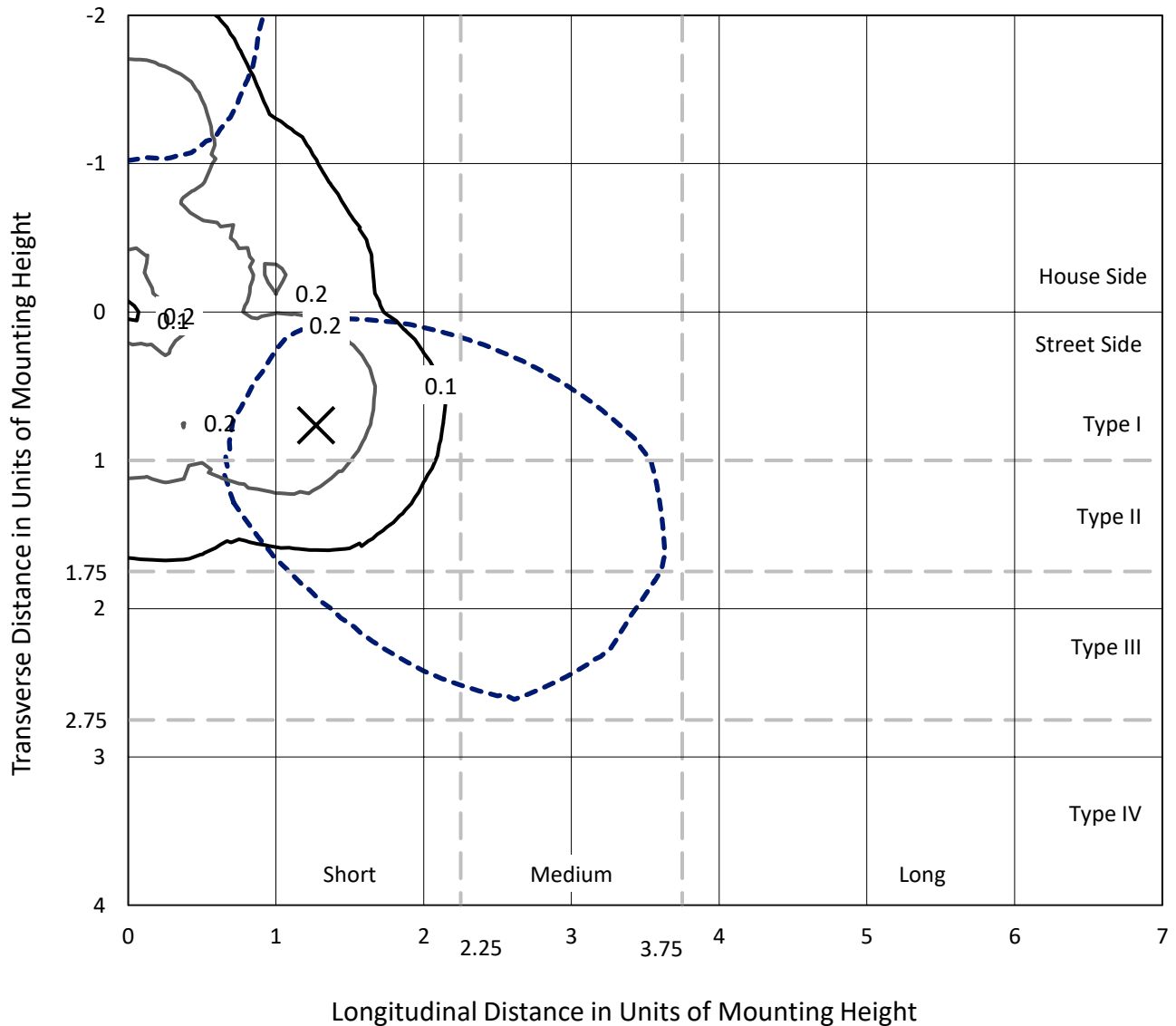
Lumens per Lamp: N/A  
Luminaire Lumens: 353.9 lumens  
Efficiency: N/A  
Efficacy: 61.0 lumens/watt  
Luminous Opening: Circular (Dia: 0.4' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B0 - U0 - G0  
  
Input Watts (W): 5.8  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: N/R  
Total Harmonic Distortion (THDi): N/R  
Frequency (hertz): 60  
Stabilization Time: HR  
Operation Time: 3 HR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

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CATALOG NUMBER: LXB-CX-740-X-U-S-GM-CBP

### Iso-Footcandle Lines of Horizontal Illumination

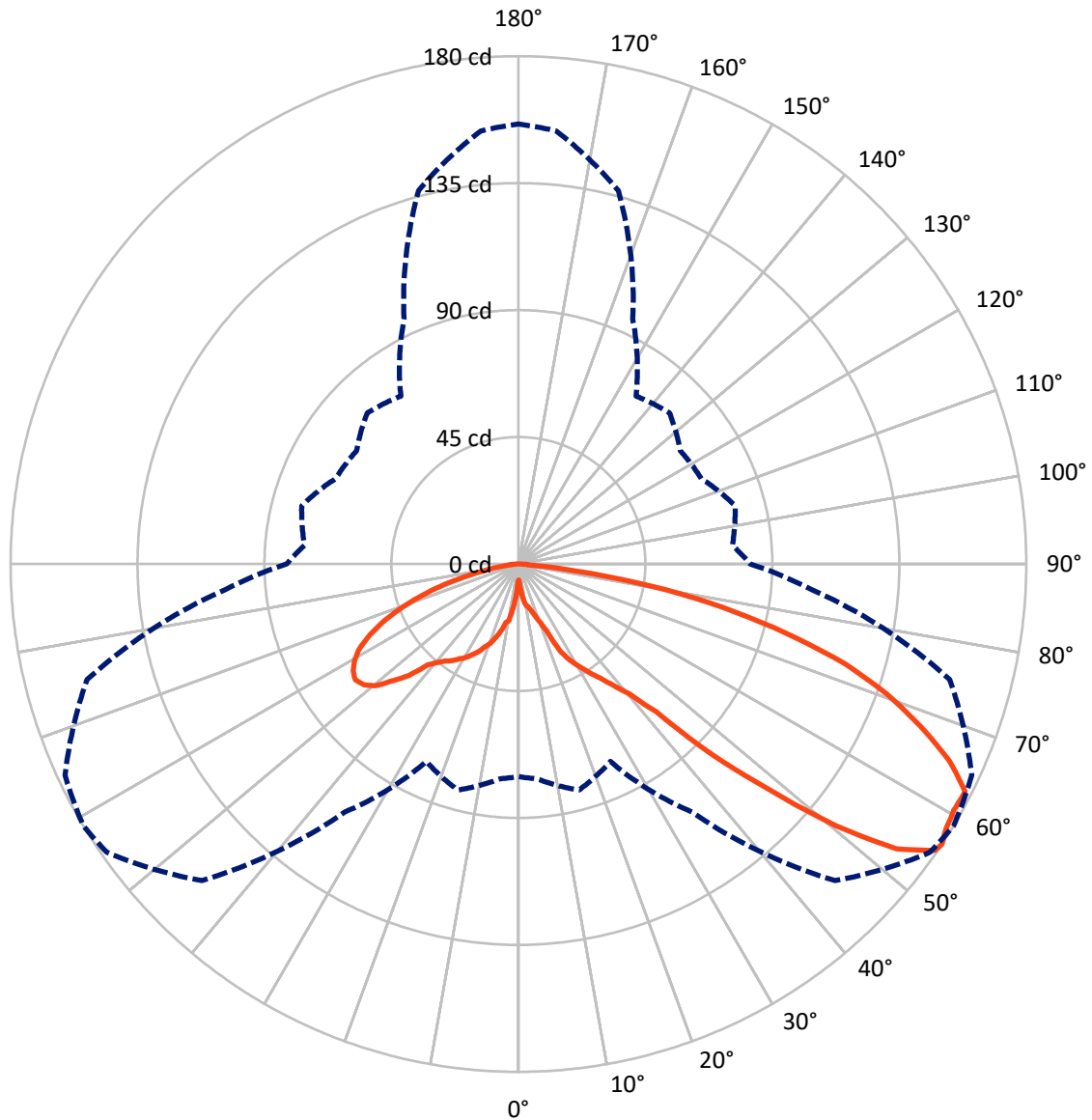
× Max cd  
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 0.4 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 59-Deg Lateral      - - - Horizontal Cone Through 56-Deg Vertical

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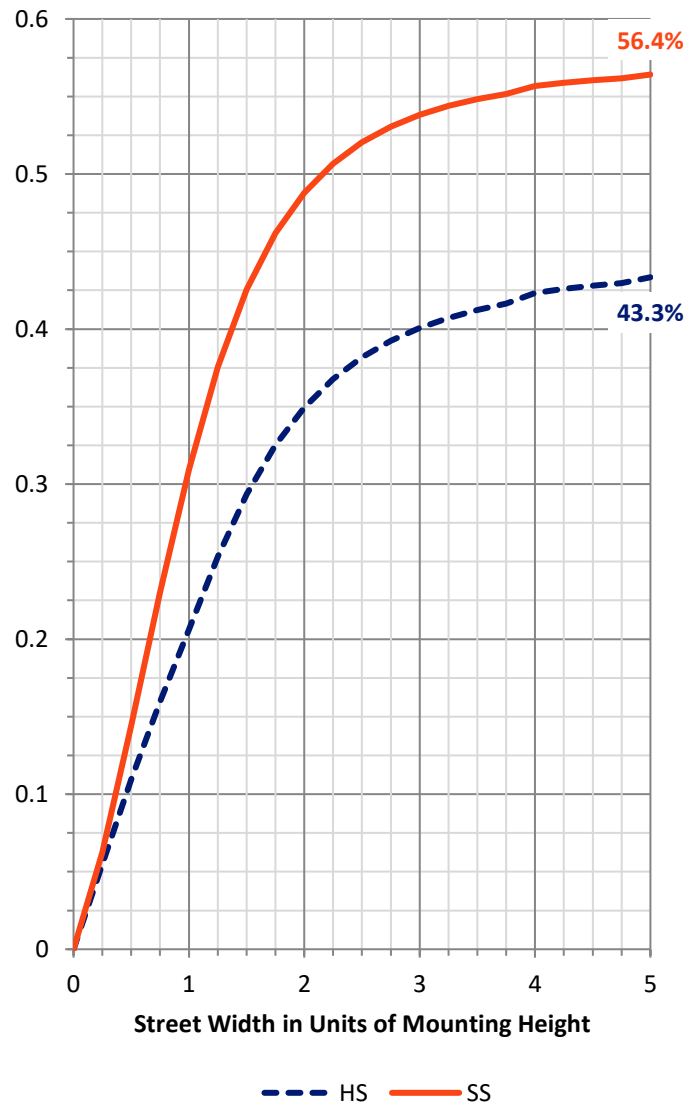
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total |
|--------------------|-----------|----------|--------|-------|
| <b>House Side</b>  | Lumens    | 153.6    | 0.0    | 153.6 |
|                    | % Fixture | 43.4     | 0.0    | 43.4  |
| <b>Street Side</b> | Lumens    | 200.3    | 0.0    | 200.3 |
|                    | % Fixture | 56.6     | 0.0    | 56.6  |
| <b>Total</b>       | Lumens    | 353.9    | 0.0    | 353.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0 |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 1.3    | 0.4       |
| 10°-20°   | 6.3    | 1.8       |
| 20°-30°   | 14.8   | 4.2       |
| 30°-40°   | 26.8   | 7.6       |
| 40°-50°   | 53.2   | 15.0      |
| 50°-60°   | 93.9   | 26.5      |
| 60°-70°   | 94.5   | 26.7      |
| 70°-80°   | 55.6   | 15.7      |
| 80°-90°   | 7.5    | 2.1       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 353.9  | 100.0     |
| 0°-180°   | 353.9  | 100.0     |



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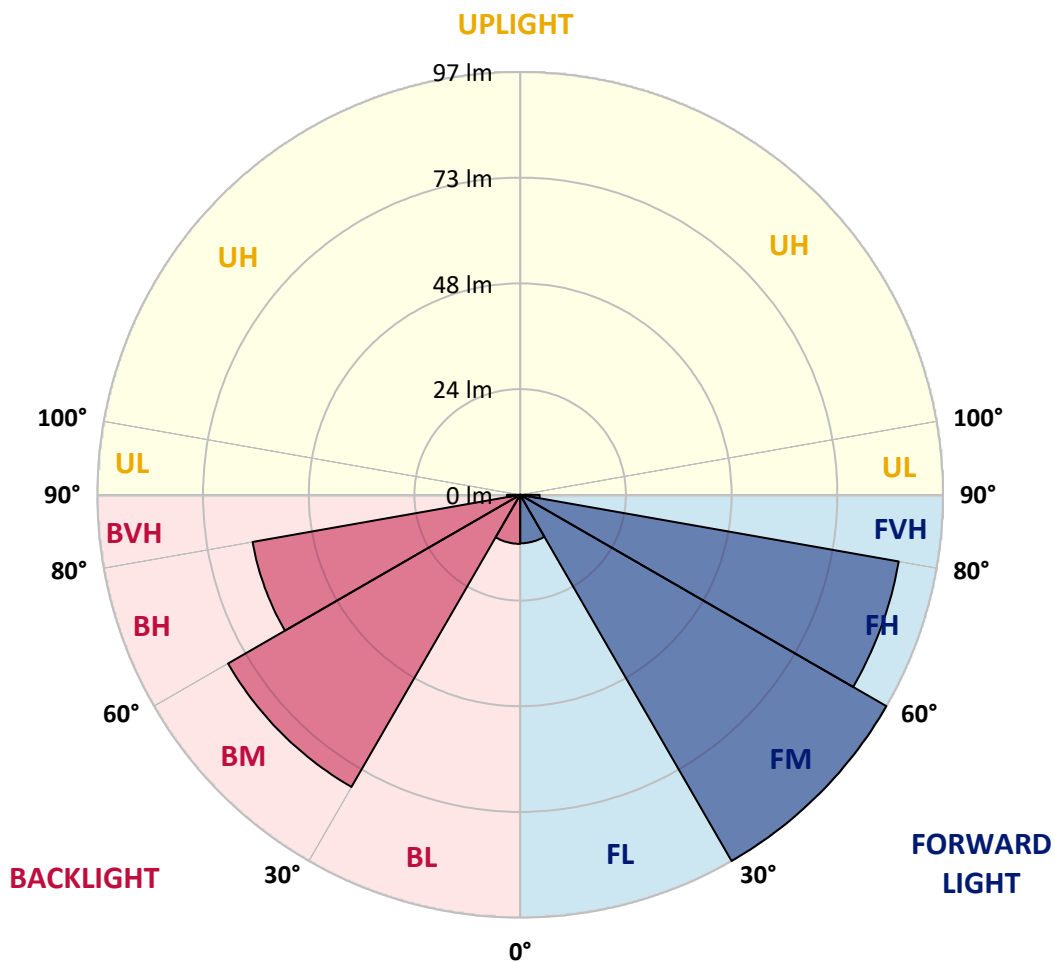
CATALOG NUMBER: LXB-CX-740-X-U-S-GM-CBP

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|--------|-----------|-------------------------|------|--------|
|      |             |        |           | B                       | U    | G      |
| FL   | (0°-30°)    | 11.1   | 3.1       |                         |      |        |
| FM   | (30°-60°)   | 96.8   | 27.3      |                         |      |        |
| FH   | (60°-80°)   | 88.0   | 24.9      |                         |      | G0/660 |
| FVH  | (80°-90°)   | 4.5    | 1.3       |                         |      | G0/10  |
| BL   | (0°-30°)    | 11.2   | 3.2       | B0/110                  |      |        |
| BM   | (30°-60°)   | 77.2   | 21.8      | B0/220                  |      |        |
| BH   | (60°-80°)   | 62.2   | 17.6      | B0/110                  |      | G0/110 |
| BVH  | (80°-90°)   | 3.0    | 0.9       |                         |      | G0/10  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |        |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |        |

**BUG Rating: B0-U0-G0**

Type III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°   | 5°   | 15°  | 25°  | 35°   | 45°   | 55°   | 59°   | 65°   | 75°   | 85°   |
|-------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 5.7  | 5.7  | 5.7  | 5.7  | 5.7   | 5.7   | 5.7   | 5.7   | 5.7   | 5.7   | 5.7   |
| 2.5°  | 8.0  | 7.6  | 7.2  | 7.2  | 6.8   | 6.8   | 6.5   | 6.5   | 6.5   | 6.8   | 7.6   |
| 5°    | 12.9 | 12.9 | 11.0 | 9.9  | 9.9   | 9.9   | 9.9   | 9.5   | 9.9   | 9.9   | 11.0  |
| 7.5°  | 17.9 | 16.3 | 16.7 | 15.2 | 14.4  | 14.1  | 13.3  | 12.9  | 12.5  | 13.7  | 15.2  |
| 10°   | 19.4 | 19.4 | 19.8 | 19.8 | 17.5  | 15.6  | 15.2  | 14.8  | 14.8  | 15.2  | 16.3  |
| 12.5° | 20.9 | 22.0 | 22.4 | 22.0 | 19.8  | 17.1  | 16.0  | 15.6  | 15.6  | 17.1  | 19.0  |
| 15°   | 25.4 | 24.3 | 25.1 | 23.9 | 22.4  | 19.0  | 17.5  | 17.1  | 17.5  | 19.0  | 20.9  |
| 17.5° | 28.5 | 28.9 | 27.3 | 25.1 | 23.5  | 21.3  | 19.8  | 19.4  | 19.0  | 20.1  | 23.5  |
| 20°   | 31.1 | 31.1 | 30.0 | 27.3 | 25.4  | 22.8  | 22.0  | 22.0  | 22.0  | 22.4  | 24.3  |
| 22.5° | 33.8 | 33.8 | 32.7 | 29.6 | 27.3  | 24.7  | 25.1  | 25.8  | 24.7  | 24.7  | 26.6  |
| 25°   | 36.1 | 36.1 | 34.6 | 31.5 | 30.0  | 29.2  | 32.3  | 33.8  | 31.9  | 28.9  | 29.6  |
| 27.5° | 38.7 | 38.4 | 37.2 | 33.8 | 32.7  | 34.2  | 37.6  | 38.4  | 38.0  | 33.4  | 32.7  |
| 30°   | 40.3 | 40.3 | 39.5 | 36.5 | 35.3  | 38.0  | 41.4  | 41.8  | 41.4  | 38.0  | 34.6  |
| 32.5° | 42.2 | 41.8 | 41.4 | 38.0 | 37.6  | 41.4  | 45.2  | 45.6  | 45.2  | 41.8  | 37.2  |
| 35°   | 44.1 | 43.3 | 43.3 | 39.9 | 39.5  | 45.6  | 48.6  | 49.4  | 49.0  | 45.2  | 39.5  |
| 37.5° | 46.3 | 45.2 | 45.2 | 41.8 | 42.9  | 50.1  | 53.6  | 54.3  | 53.6  | 49.4  | 42.5  |
| 40°   | 49.0 | 47.5 | 47.1 | 44.1 | 46.0  | 55.8  | 59.6  | 60.4  | 59.3  | 55.1  | 45.6  |
| 42.5° | 52.8 | 50.9 | 51.7 | 47.9 | 52.0  | 65.3  | 71.0  | 71.4  | 69.5  | 64.6  | 51.7  |
| 45°   | 60.8 | 59.3 | 62.3 | 57.7 | 64.2  | 86.2  | 95.0  | 96.5  | 93.8  | 83.9  | 63.8  |
| 47.5° | 66.1 | 65.0 | 68.4 | 63.8 | 75.2  | 106.4 | 116.6 | 118.9 | 114.7 | 104.8 | 75.2  |
| 50°   | 71.8 | 71.8 | 76.7 | 72.2 | 90.8  | 130.7 | 143.2 | 145.5 | 142.4 | 131.8 | 89.6  |
| 52.5° | 74.1 | 74.8 | 81.7 | 76.7 | 101.0 | 147.0 | 164.8 | 167.5 | 164.8 | 147.8 | 98.8  |
| 55°   | 75.2 | 76.3 | 83.2 | 77.5 | 106.0 | 156.5 | 176.6 | 178.9 | 175.9 | 156.5 | 102.9 |
| 56°   | 75.2 | 76.3 | 82.8 | 77.1 | 107.1 | 158.4 | 177.8 | 179.7 | 177.0 | 158.0 | 104.1 |
| 57.5° | 74.1 | 76.0 | 81.7 | 76.0 | 107.5 | 159.5 | 178.1 | 178.1 | 177.4 | 159.5 | 105.2 |
| 60°   | 71.0 | 73.3 | 78.2 | 72.5 | 106.7 | 158.8 | 176.6 | 177.0 | 176.6 | 159.9 | 105.2 |
| 62.5° | 66.9 | 69.1 | 74.4 | 68.8 | 104.5 | 155.4 | 176.2 | 177.4 | 176.2 | 156.5 | 102.2 |
| 65°   | 60.8 | 63.4 | 68.0 | 62.7 | 98.8  | 148.9 | 167.1 | 167.5 | 166.7 | 148.5 | 96.1  |
| 67.5° | 53.9 | 56.2 | 60.8 | 55.8 | 91.9  | 139.0 | 154.2 | 153.5 | 153.5 | 137.1 | 88.5  |
| 70°   | 46.0 | 48.2 | 52.4 | 47.9 | 83.2  | 125.3 | 138.6 | 138.6 | 138.6 | 123.4 | 78.6  |
| 72.5° | 36.8 | 39.1 | 43.3 | 39.5 | 72.2  | 108.3 | 120.0 | 120.8 | 120.8 | 106.4 | 66.9  |
| 75°   | 27.7 | 29.6 | 33.0 | 30.8 | 58.5  | 88.5  | 98.0  | 98.0  | 99.1  | 87.0  | 53.2  |
| 77.5° | 18.6 | 20.1 | 22.8 | 21.7 | 43.3  | 68.0  | 74.4  | 73.7  | 75.6  | 65.7  | 38.4  |
| 80°   | 10.6 | 11.8 | 13.3 | 12.9 | 26.6  | 44.1  | 48.2  | 48.6  | 49.8  | 41.8  | 22.4  |
| 82.5° | 5.3  | 5.7  | 6.5  | 6.1  | 11.0  | 19.4  | 21.7  | 20.5  | 23.2  | 17.1  | 8.4   |
| 85°   | 2.3  | 2.3  | 2.7  | 1.5  | 2.7   | 3.4   | 3.8   | 3.4   | 3.8   | 3.4   | 2.3   |
| 87.5° | 1.5  | 1.9  | 1.9  | 0.8  | 1.9   | 2.3   | 2.7   | 2.7   | 2.7   | 2.3   | 1.5   |
| 90°   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



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**CANDELA DISTRIBUTION (continued):**

|       | 90°  | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165°  | 175°  | 180°  |
|-------|------|------|------|------|------|------|------|------|-------|-------|-------|
| 0°    | 5.7  | 5.7  | 5.7  | 5.7  | 5.7  | 5.7  | 5.7  | 5.7  | 5.7   | 5.7   | 5.7   |
| 2.5°  | 7.2  | 7.6  | 8.0  | 6.8  | 7.2  | 7.6  | 7.6  | 7.2  | 7.2   | 6.8   | 6.8   |
| 5°    | 11.0 | 11.0 | 11.4 | 12.2 | 11.4 | 11.0 | 11.0 | 10.3 | 11.0  | 9.5   | 9.5   |
| 7.5°  | 14.1 | 14.4 | 15.6 | 16.0 | 15.6 | 17.1 | 15.6 | 14.8 | 14.8  | 14.1  | 14.1  |
| 10°   | 16.7 | 17.5 | 19.0 | 19.4 | 20.9 | 19.4 | 19.0 | 17.1 | 16.7  | 16.0  | 16.0  |
| 12.5° | 19.8 | 20.1 | 20.5 | 21.3 | 20.9 | 21.3 | 20.9 | 19.0 | 17.1  | 16.0  | 16.0  |
| 15°   | 22.0 | 22.4 | 23.5 | 25.1 | 23.9 | 23.5 | 23.5 | 22.0 | 19.8  | 17.5  | 17.1  |
| 17.5° | 23.5 | 25.1 | 26.2 | 27.3 | 27.0 | 26.2 | 25.1 | 23.9 | 20.5  | 19.4  | 19.0  |
| 20°   | 25.4 | 26.6 | 29.6 | 30.0 | 29.6 | 28.5 | 27.3 | 25.1 | 22.4  | 21.3  | 21.3  |
| 22.5° | 27.3 | 29.2 | 31.9 | 32.3 | 31.1 | 30.4 | 30.0 | 27.0 | 24.7  | 23.5  | 24.3  |
| 25°   | 30.0 | 31.1 | 33.4 | 33.8 | 34.2 | 32.3 | 32.3 | 29.6 | 28.1  | 29.2  | 30.0  |
| 27.5° | 32.3 | 33.4 | 35.7 | 36.1 | 36.1 | 34.2 | 33.8 | 32.3 | 32.3  | 33.4  | 34.6  |
| 30°   | 34.9 | 35.3 | 38.0 | 38.0 | 38.0 | 36.1 | 35.3 | 34.2 | 34.9  | 36.8  | 38.0  |
| 32.5° | 36.5 | 37.6 | 39.5 | 40.3 | 39.1 | 38.0 | 37.2 | 36.5 | 38.0  | 40.6  | 41.4  |
| 35°   | 38.0 | 39.1 | 41.0 | 42.2 | 41.0 | 40.3 | 38.7 | 38.4 | 41.4  | 44.1  | 44.8  |
| 37.5° | 40.3 | 41.0 | 42.9 | 43.7 | 42.5 | 42.2 | 40.3 | 41.0 | 46.0  | 48.2  | 49.8  |
| 40°   | 42.2 | 42.9 | 44.8 | 45.6 | 44.8 | 44.4 | 42.2 | 44.1 | 50.9  | 53.9  | 55.1  |
| 42.5° | 46.0 | 46.7 | 49.0 | 48.2 | 47.9 | 47.9 | 45.2 | 49.0 | 58.9  | 61.5  | 63.8  |
| 45°   | 55.8 | 56.2 | 58.9 | 55.5 | 55.1 | 57.0 | 53.9 | 60.4 | 76.7  | 80.9  | 85.1  |
| 47.5° | 62.7 | 61.5 | 65.3 | 60.8 | 60.0 | 61.9 | 58.9 | 68.8 | 93.8  | 97.6  | 103.3 |
| 50°   | 72.5 | 70.3 | 73.3 | 67.2 | 65.7 | 69.9 | 67.2 | 83.2 | 114.7 | 121.5 | 125.7 |
| 52.5° | 78.6 | 75.6 | 78.6 | 70.3 | 68.8 | 74.4 | 71.4 | 90.8 | 126.1 | 137.5 | 142.4 |
| 55°   | 81.7 | 76.3 | 80.1 | 71.4 | 70.3 | 76.3 | 72.5 | 95.0 | 134.8 | 151.6 | 155.0 |
| 56°   | 82.0 | 76.0 | 79.4 | 71.4 | 69.9 | 75.6 | 72.5 | 95.7 | 136.7 | 153.8 | 155.7 |
| 57.5° | 81.3 | 74.4 | 78.2 | 70.6 | 69.1 | 74.4 | 71.4 | 96.5 | 137.9 | 154.2 | 155.4 |
| 60°   | 79.4 | 72.2 | 75.6 | 68.4 | 66.5 | 71.8 | 68.8 | 96.1 | 137.5 | 153.1 | 153.8 |
| 62.5° | 76.3 | 68.4 | 72.2 | 64.6 | 63.1 | 68.4 | 65.0 | 94.2 | 135.2 | 152.3 | 153.8 |
| 65°   | 71.0 | 63.1 | 66.1 | 59.3 | 57.4 | 62.3 | 59.6 | 88.5 | 128.8 | 146.2 | 147.0 |
| 67.5° | 64.2 | 56.2 | 58.9 | 52.8 | 50.9 | 55.8 | 53.2 | 81.3 | 119.3 | 134.8 | 133.7 |
| 70°   | 57.0 | 48.6 | 50.9 | 45.2 | 43.3 | 48.2 | 45.6 | 72.5 | 107.1 | 120.8 | 118.9 |
| 72.5° | 48.2 | 40.3 | 42.2 | 36.8 | 34.9 | 39.5 | 38.0 | 62.3 | 93.1  | 104.8 | 103.3 |
| 75°   | 38.7 | 31.5 | 32.3 | 27.7 | 26.6 | 30.4 | 29.6 | 49.8 | 75.2  | 84.7  | 83.6  |
| 77.5° | 28.1 | 22.4 | 22.4 | 19.0 | 17.9 | 21.3 | 20.9 | 36.1 | 55.5  | 62.7  | 60.8  |
| 80°   | 17.1 | 13.7 | 13.3 | 11.4 | 10.6 | 12.9 | 12.5 | 21.7 | 34.2  | 39.1  | 36.8  |
| 82.5° | 7.6  | 6.8  | 6.5  | 5.7  | 5.3  | 6.1  | 5.7  | 8.7  | 13.7  | 16.7  | 14.1  |
| 85°   | 1.9  | 2.3  | 2.7  | 2.7  | 2.7  | 2.7  | 1.9  | 2.7  | 3.4   | 3.8   | 3.8   |
| 87.5° | 1.1  | 1.1  | 1.9  | 1.9  | 1.9  | 1.9  | 1.1  | 1.9  | 2.7   | 3.0   | 3.0   |
| 90°   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   |

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



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

Report Prepared for

Cooper Lighting Solutions

Invue

Report Number: SP1-2509-539-9

Test Date: 04/14/2026

Luminaire Tested: Luxscape Bollard

Data in this report applies to families of products including ;Luxscape

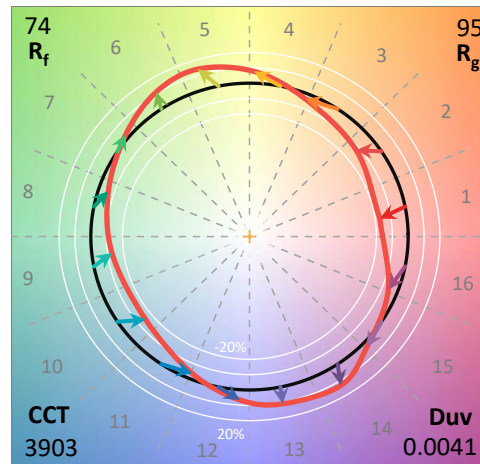
**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2509-539-9  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 04/15/2026  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Invue  
 Catalog Number: **Luxscape Bollard**  
 Description: ARB-C1-740-LED-XX-Dx-S-GM-SPECULAR REFLECTOR

**Spectral Parameters**

CCT (K): 3903  
 CIE u': 0.2247  
 CIE v': 0.5085  
 Duv: 0.0041  
 CIE x: 0.3880  
 CIE y: 0.3902  
 CIE z: 0.2218  
 Peak Wavelength (nm): 442  
 Dominant Wavelength (nm): 577  
 Purity: 33.55395  
 Rf: 74.1  
 Rg: 95.4

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 71.4 |      |       |
| R1:       | 67.8 | R9:  | -38.3 |
| R2:       | 77.2 | R10: | 48.5  |
| R3:       | 87.2 | R11: | 70.3  |
| R4:       | 72.2 | R12: | 48.8  |
| R5:       | 68.6 | R13: | 68.9  |
| R6:       | 70.0 | R14: | 92.8  |
| R7:       | 79.2 | R15: | 58.3  |
| R8:       | 49.3 |      |       |



**Test Conditions**

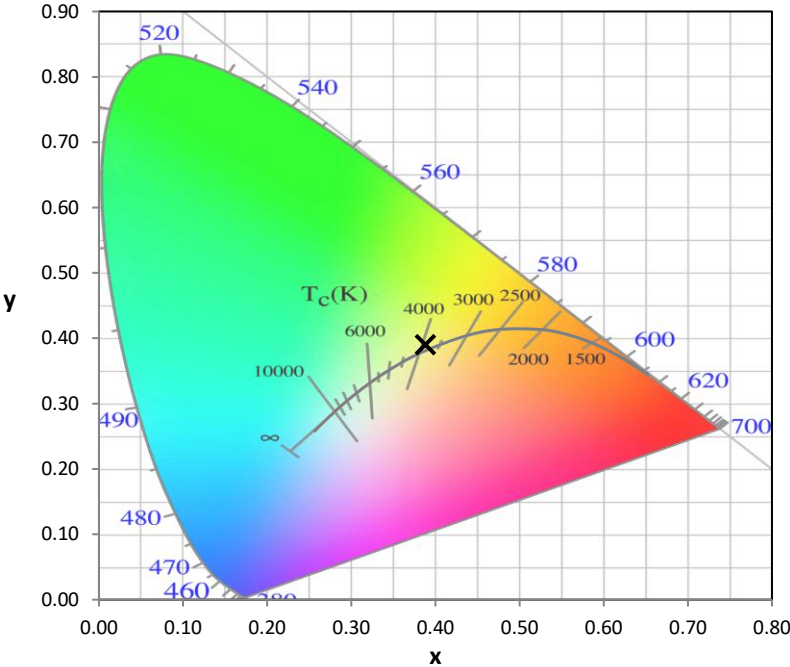
Stabilization Time: 24M  
 Operation Time: 1H 24M  
 Sphere Temperature (°C): 25.1

REPORT NUMBER: SP1-2509-539-9

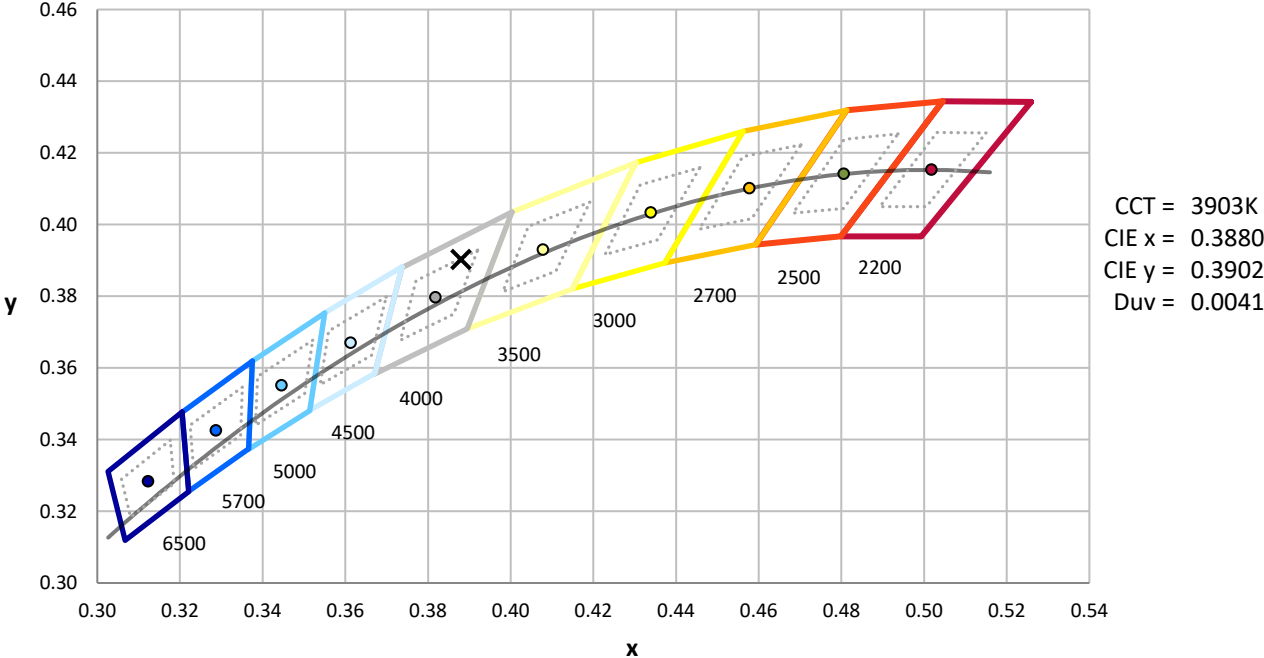
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 12/16/2025       | 6/16/2026            |
| Power Meter                    | XITRON INXT2011004    | 10/21/2025       | 10/21/2026           |
| AC Power Source                | CHROMA 61603 IN0063   | 10/21/2025       | 10/21/2026           |
| DC Power Source                | AGILENT E3634A IN0208 | 10/21/2025       | 10/21/2026           |
| Sphere Thermometer             | ONSET IN0085          | 10/21/2025       | 10/21/2026           |
| Room Thermometer               | ONSET IN0046          | 10/21/2025       | 10/21/2026           |

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CIE 1931 Chromaticity Diagram



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

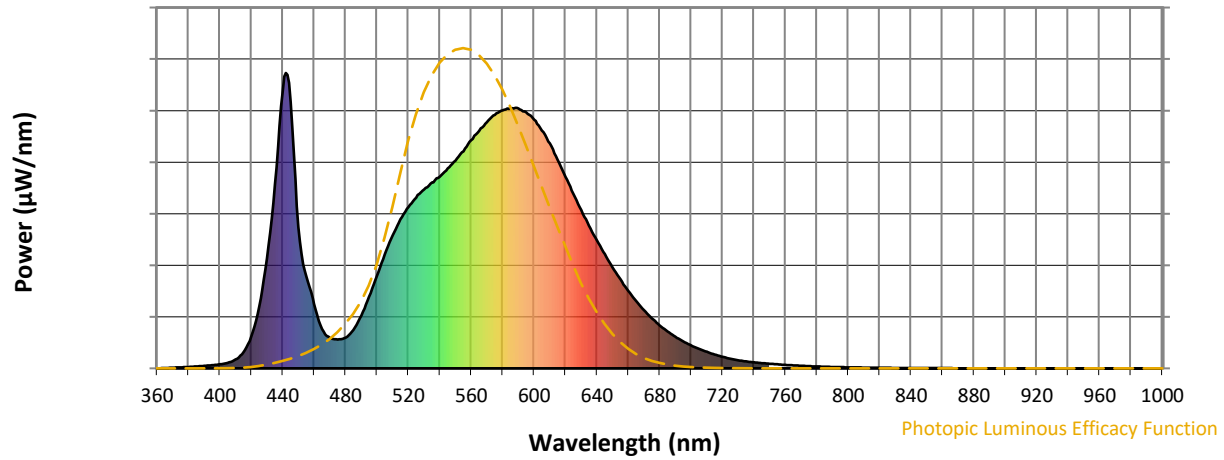


CCT = 3903K  
 CIE x = 0.3880  
 CIE y = 0.3902  
 Duv = 0.0041

Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP1-2509-539-9

**Photopic Flux vs. Wavelength**

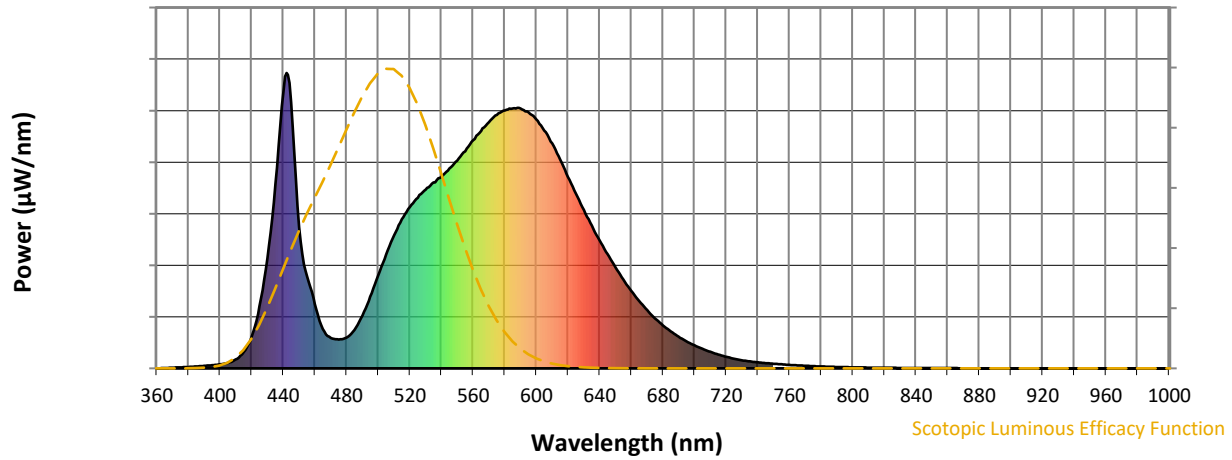


**Photopic Lumens: NR**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 179                      | NR            | 620    | 648                      | NR            | 750    | 16                       | NR            | 880    | 0                        | NR            |
| 365    | 1                        | NR            | 495    | 243                      | NR            | 625    | 592                      | NR            | 755    | 14                       | NR            | 885    | 0                        | NR            |
| 370    | 2                        | NR            | 500    | 314                      | NR            | 630    | 536                      | NR            | 760    | 12                       | NR            | 890    | 0                        | NR            |
| 375    | 3                        | NR            | 505    | 386                      | NR            | 635    | 483                      | NR            | 765    | 10                       | NR            | 895    | 0                        | NR            |
| 380    | 5                        | NR            | 510    | 450                      | NR            | 640    | 433                      | NR            | 770    | 9                        | NR            | 900    | 0                        | NR            |
| 385    | 7                        | NR            | 515    | 505                      | NR            | 645    | 387                      | NR            | 775    | 8                        | NR            | 905    | 0                        | NR            |
| 390    | 8                        | NR            | 520    | 546                      | NR            | 650    | 341                      | NR            | 780    | 6                        | NR            | 910    | 0                        | NR            |
| 395    | 11                       | NR            | 525    | 577                      | NR            | 655    | 301                      | NR            | 785    | 5                        | NR            | 915    | 0                        | NR            |
| 400    | 14                       | NR            | 530    | 605                      | NR            | 660    | 262                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 19                       | NR            | 535    | 630                      | NR            | 665    | 227                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 30                       | NR            | 540    | 649                      | NR            | 670    | 197                      | NR            | 800    | 3                        | NR            | 930    | 0                        | NR            |
| 415    | 55                       | NR            | 545    | 677                      | NR            | 675    | 169                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 109                      | NR            | 550    | 703                      | NR            | 680    | 146                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 210                      | NR            | 555    | 735                      | NR            | 685    | 125                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 373                      | NR            | 560    | 772                      | NR            | 690    | 107                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 624                      | NR            | 565    | 804                      | NR            | 695    | 91                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 936                      | NR            | 570    | 833                      | NR            | 700    | 78                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 901                      | NR            | 575    | 858                      | NR            | 705    | 66                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 478                      | NR            | 580    | 873                      | NR            | 710    | 56                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 311                      | NR            | 585    | 879                      | NR            | 715    | 47                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 218                      | NR            | 590    | 880                      | NR            | 720    | 39                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 134                      | NR            | 595    | 867                      | NR            | 725    | 33                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 103                      | NR            | 600    | 842                      | NR            | 730    | 27                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 98                       | NR            | 605    | 806                      | NR            | 735    | 24                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 104                      | NR            | 610    | 762                      | NR            | 740    | 20                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 130                      | NR            | 615    | 707                      | NR            | 745    | 18                       | NR            | 875    | 0                        | NR            |        |                          |               |

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**Scotopic Flux vs. Wavelength**



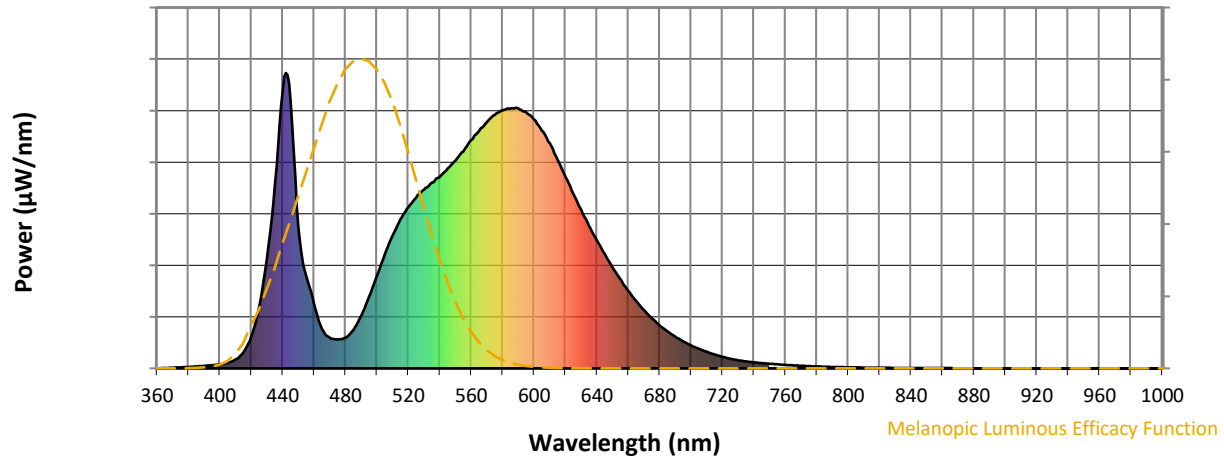
**Scotopic Lumens: NR**

**S/P: 1.48**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 179                      | NR            | 620    | 648                      | NR            | 750    | 16                       | NR            | 880    | 0                        | NR            |
| 365    | 1                        | NR            | 495    | 243                      | NR            | 625    | 592                      | NR            | 755    | 14                       | NR            | 885    | 0                        | NR            |
| 370    | 2                        | NR            | 500    | 314                      | NR            | 630    | 536                      | NR            | 760    | 12                       | NR            | 890    | 0                        | NR            |
| 375    | 3                        | NR            | 505    | 386                      | NR            | 635    | 483                      | NR            | 765    | 10                       | NR            | 895    | 0                        | NR            |
| 380    | 5                        | NR            | 510    | 450                      | NR            | 640    | 433                      | NR            | 770    | 9                        | NR            | 900    | 0                        | NR            |
| 385    | 7                        | NR            | 515    | 505                      | NR            | 645    | 387                      | NR            | 775    | 8                        | NR            | 905    | 0                        | NR            |
| 390    | 8                        | NR            | 520    | 546                      | NR            | 650    | 341                      | NR            | 780    | 6                        | NR            | 910    | 0                        | NR            |
| 395    | 11                       | NR            | 525    | 577                      | NR            | 655    | 301                      | NR            | 785    | 5                        | NR            | 915    | 0                        | NR            |
| 400    | 14                       | NR            | 530    | 605                      | NR            | 660    | 262                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 19                       | NR            | 535    | 630                      | NR            | 665    | 227                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 30                       | NR            | 540    | 649                      | NR            | 670    | 197                      | NR            | 800    | 3                        | NR            | 930    | 0                        | NR            |
| 415    | 55                       | NR            | 545    | 677                      | NR            | 675    | 169                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 109                      | NR            | 550    | 703                      | NR            | 680    | 146                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 210                      | NR            | 555    | 735                      | NR            | 685    | 125                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 373                      | NR            | 560    | 772                      | NR            | 690    | 107                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 624                      | NR            | 565    | 804                      | NR            | 695    | 91                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 936                      | NR            | 570    | 833                      | NR            | 700    | 78                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 901                      | NR            | 575    | 858                      | NR            | 705    | 66                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 478                      | NR            | 580    | 873                      | NR            | 710    | 56                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 311                      | NR            | 585    | 879                      | NR            | 715    | 47                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 218                      | NR            | 590    | 880                      | NR            | 720    | 39                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 134                      | NR            | 595    | 867                      | NR            | 725    | 33                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 103                      | NR            | 600    | 842                      | NR            | 730    | 27                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 98                       | NR            | 605    | 806                      | NR            | 735    | 24                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 104                      | NR            | 610    | 762                      | NR            | 740    | 20                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 130                      | NR            | 615    | 707                      | NR            | 745    | 18                       | NR            | 875    | 0                        | NR            |        |                          |               |

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Melanopic Flux vs. Wavelength



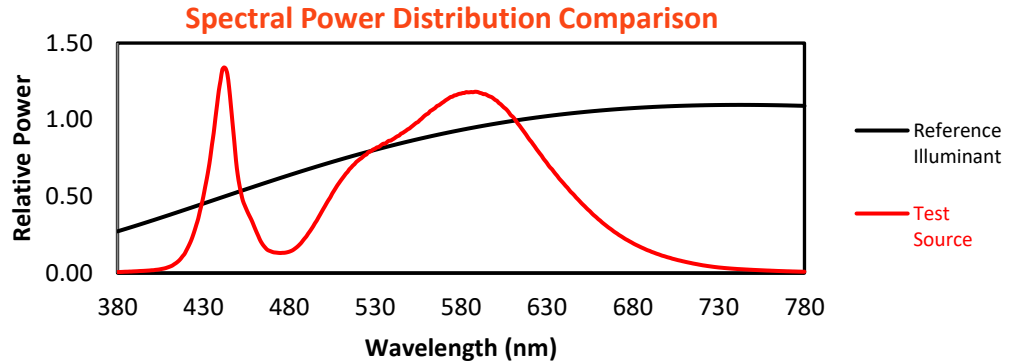
Melanopic Lumens: NR

M/P: 2.81

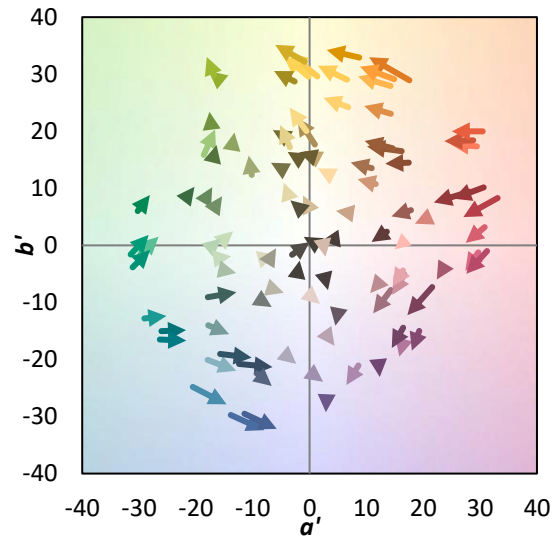
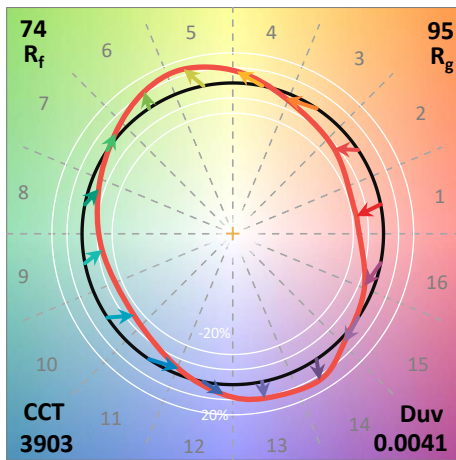
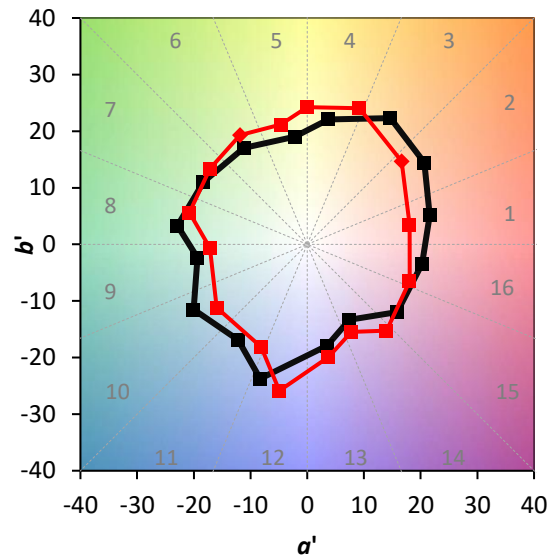
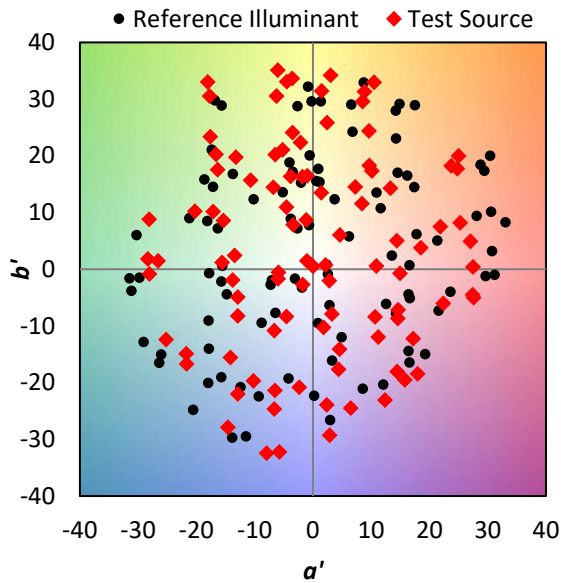
| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 179                      | NR            | 620    | 648                      | NR            | 750    | 16                       | NR            | 880    | 0                        | NR            |
| 365    | 1                        | NR            | 495    | 243                      | NR            | 625    | 592                      | NR            | 755    | 14                       | NR            | 885    | 0                        | NR            |
| 370    | 2                        | NR            | 500    | 314                      | NR            | 630    | 536                      | NR            | 760    | 12                       | NR            | 890    | 0                        | NR            |
| 375    | 3                        | NR            | 505    | 386                      | NR            | 635    | 483                      | NR            | 765    | 10                       | NR            | 895    | 0                        | NR            |
| 380    | 5                        | NR            | 510    | 450                      | NR            | 640    | 433                      | NR            | 770    | 9                        | NR            | 900    | 0                        | NR            |
| 385    | 7                        | NR            | 515    | 505                      | NR            | 645    | 387                      | NR            | 775    | 8                        | NR            | 905    | 0                        | NR            |
| 390    | 8                        | NR            | 520    | 546                      | NR            | 650    | 341                      | NR            | 780    | 6                        | NR            | 910    | 0                        | NR            |
| 395    | 11                       | NR            | 525    | 577                      | NR            | 655    | 301                      | NR            | 785    | 5                        | NR            | 915    | 0                        | NR            |
| 400    | 14                       | NR            | 530    | 605                      | NR            | 660    | 262                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 19                       | NR            | 535    | 630                      | NR            | 665    | 227                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 30                       | NR            | 540    | 649                      | NR            | 670    | 197                      | NR            | 800    | 3                        | NR            | 930    | 0                        | NR            |
| 415    | 55                       | NR            | 545    | 677                      | NR            | 675    | 169                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 109                      | NR            | 550    | 703                      | NR            | 680    | 146                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 210                      | NR            | 555    | 735                      | NR            | 685    | 125                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 373                      | NR            | 560    | 772                      | NR            | 690    | 107                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 624                      | NR            | 565    | 804                      | NR            | 695    | 91                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 936                      | NR            | 570    | 833                      | NR            | 700    | 78                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 901                      | NR            | 575    | 858                      | NR            | 705    | 66                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 478                      | NR            | 580    | 873                      | NR            | 710    | 56                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 311                      | NR            | 585    | 879                      | NR            | 715    | 47                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 218                      | NR            | 590    | 880                      | NR            | 720    | 39                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 134                      | NR            | 595    | 867                      | NR            | 725    | 33                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 103                      | NR            | 600    | 842                      | NR            | 730    | 27                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 98                       | NR            | 605    | 806                      | NR            | 735    | 24                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 104                      | NR            | 610    | 762                      | NR            | 740    | 20                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 130                      | NR            | 615    | 707                      | NR            | 745    | 18                       | NR            | 875    | 0                        | NR            |        |                          |               |

**Summary**

$R_f = 74.1$   
 $R_g = 95.4$   
 CIE  $R_a = 71.4$   
 $R_g = -38.3$

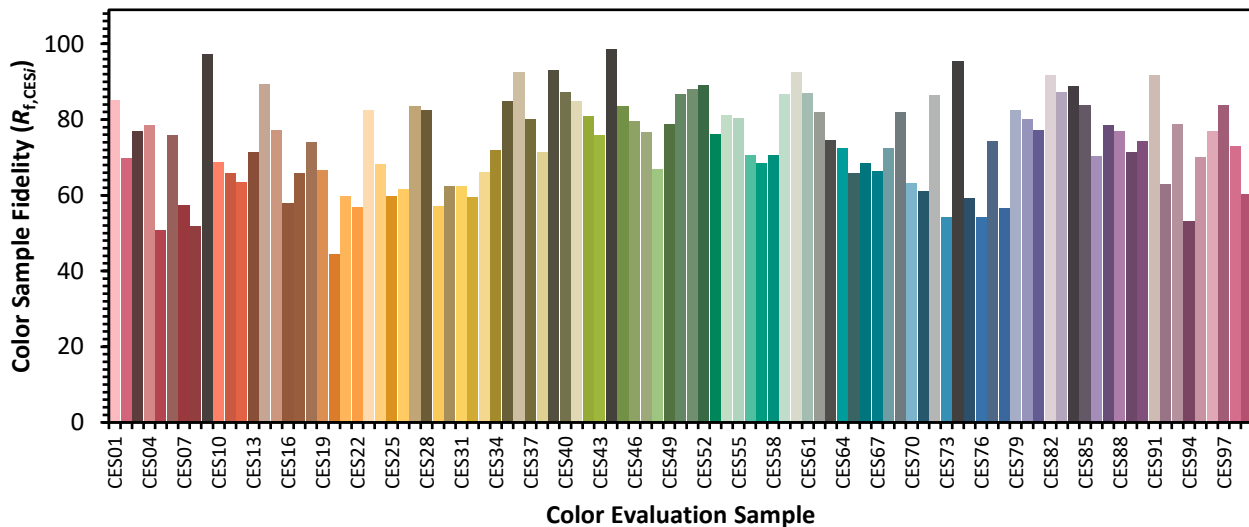


**Color Vector Graphics**

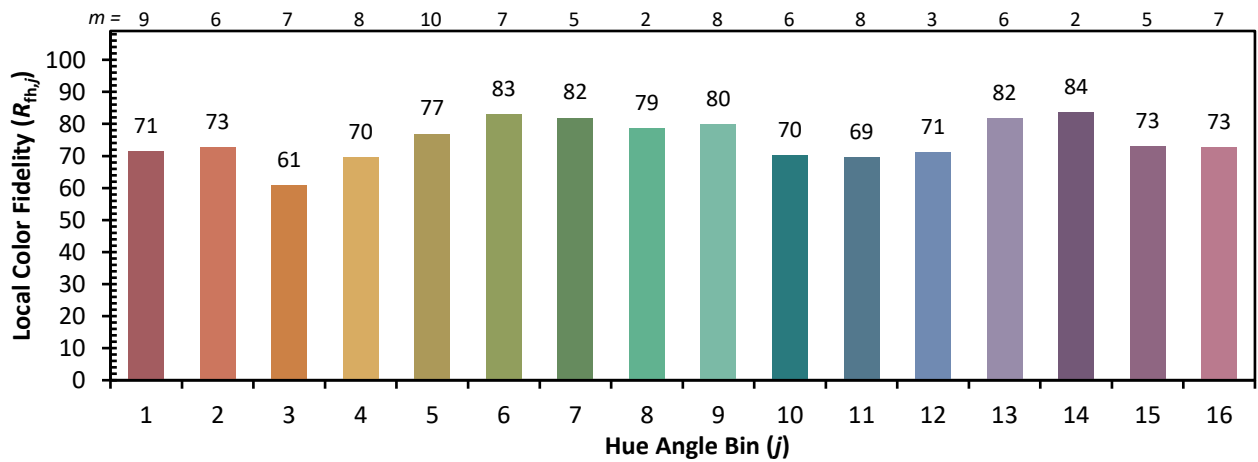
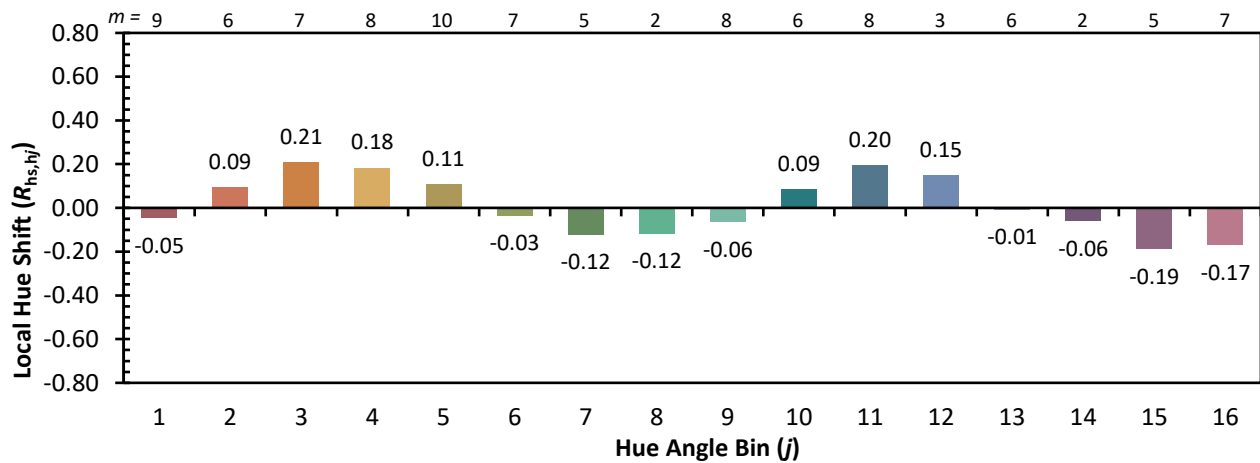
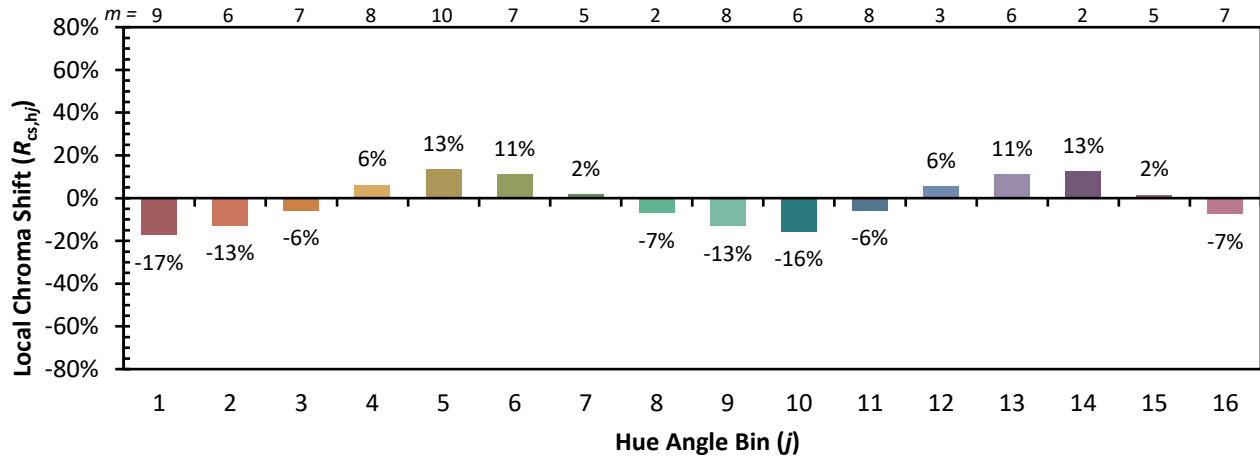


Individual Sample Fidelity Index ( $R_{f,i}$ )

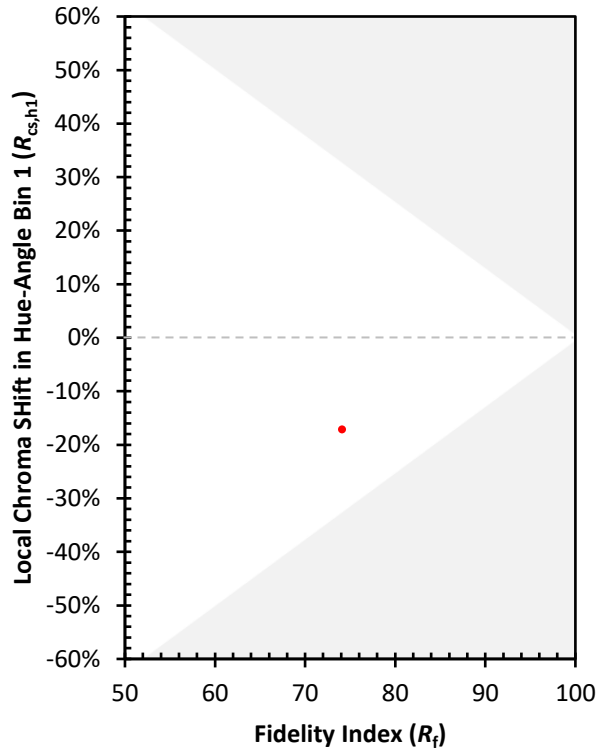
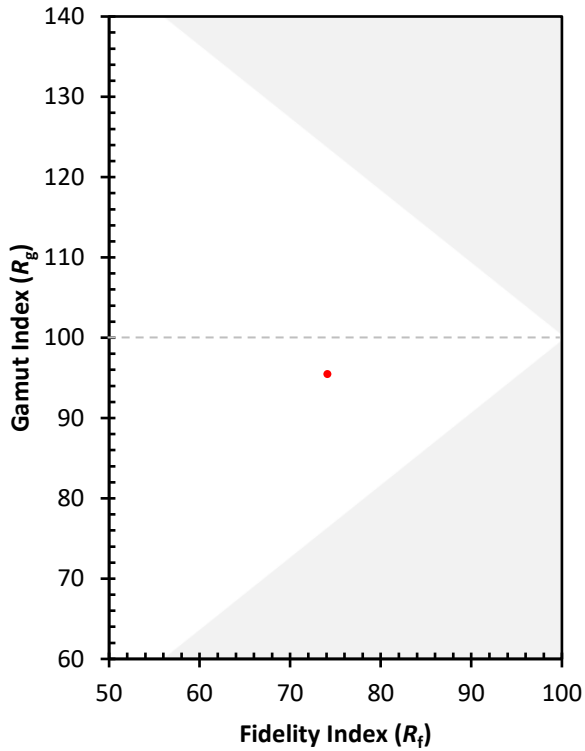
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 62 | CES51 = 88 | CES76 = 54 |
| CES02 = 61 | CES27 = 84 | CES52 = 89 | CES77 = 74 |
| CES03 = 30 | CES28 = 83 | CES53 = 76 | CES78 = 57 |
| CES04 = 70 | CES29 = 57 | CES54 = 81 | CES79 = 82 |
| CES05 = 47 | CES30 = 62 | CES55 = 80 | CES80 = 80 |
| CES06 = 50 | CES31 = 62 | CES56 = 70 | CES81 = 77 |
| CES07 = 40 | CES32 = 60 | CES57 = 69 | CES82 = 92 |
| CES08 = 39 | CES33 = 66 | CES58 = 71 | CES83 = 87 |
| CES09 = 29 | CES34 = 72 | CES59 = 87 | CES84 = 89 |
| CES10 = 74 | CES35 = 85 | CES60 = 92 | CES85 = 84 |
| CES11 = 57 | CES36 = 93 | CES61 = 87 | CES86 = 70 |
| CES12 = 63 | CES37 = 80 | CES62 = 82 | CES87 = 78 |
| CES13 = 42 | CES38 = 72 | CES63 = 74 | CES88 = 77 |
| CES14 = 74 | CES39 = 93 | CES64 = 72 | CES89 = 71 |
| CES15 = 71 | CES40 = 87 | CES65 = 66 | CES90 = 74 |
| CES16 = 46 | CES41 = 85 | CES66 = 69 | CES91 = 92 |
| CES17 = 49 | CES42 = 81 | CES67 = 66 | CES92 = 63 |
| CES18 = 56 | CES43 = 76 | CES68 = 73 | CES93 = 79 |
| CES19 = 72 | CES44 = 99 | CES69 = 82 | CES94 = 53 |
| CES20 = 65 | CES45 = 84 | CES70 = 63 | CES95 = 70 |
| CES21 = 86 | CES46 = 80 | CES71 = 61 | CES96 = 77 |
| CES22 = 78 | CES47 = 77 | CES72 = 86 | CES97 = 84 |
| CES23 = 92 | CES48 = 67 | CES73 = 54 | CES98 = 73 |
| CES24 = 91 | CES49 = 79 | CES74 = 96 | CES99 = 60 |
| CES25 = 72 | CES50 = 87 | CES75 = 59 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)