

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: McGRAW-EDISON

Report Number: P972448

Luminaire Tested: **GKO-PB1A-AMB-U-T2U**

Issue Date: 02/27/2025



**Test Information**

Test Method: LM-79-08  
Report Number: P972448  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 02/27/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GKO-PB1A-AMB-U-T2U  
Description: GEKKO WALL PACK OCRI 1550K FIXTURE w/ TYPE II URBAN DISTRIBUTION OPTIC  
Light Source: (10) 1550K CCT, 0 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

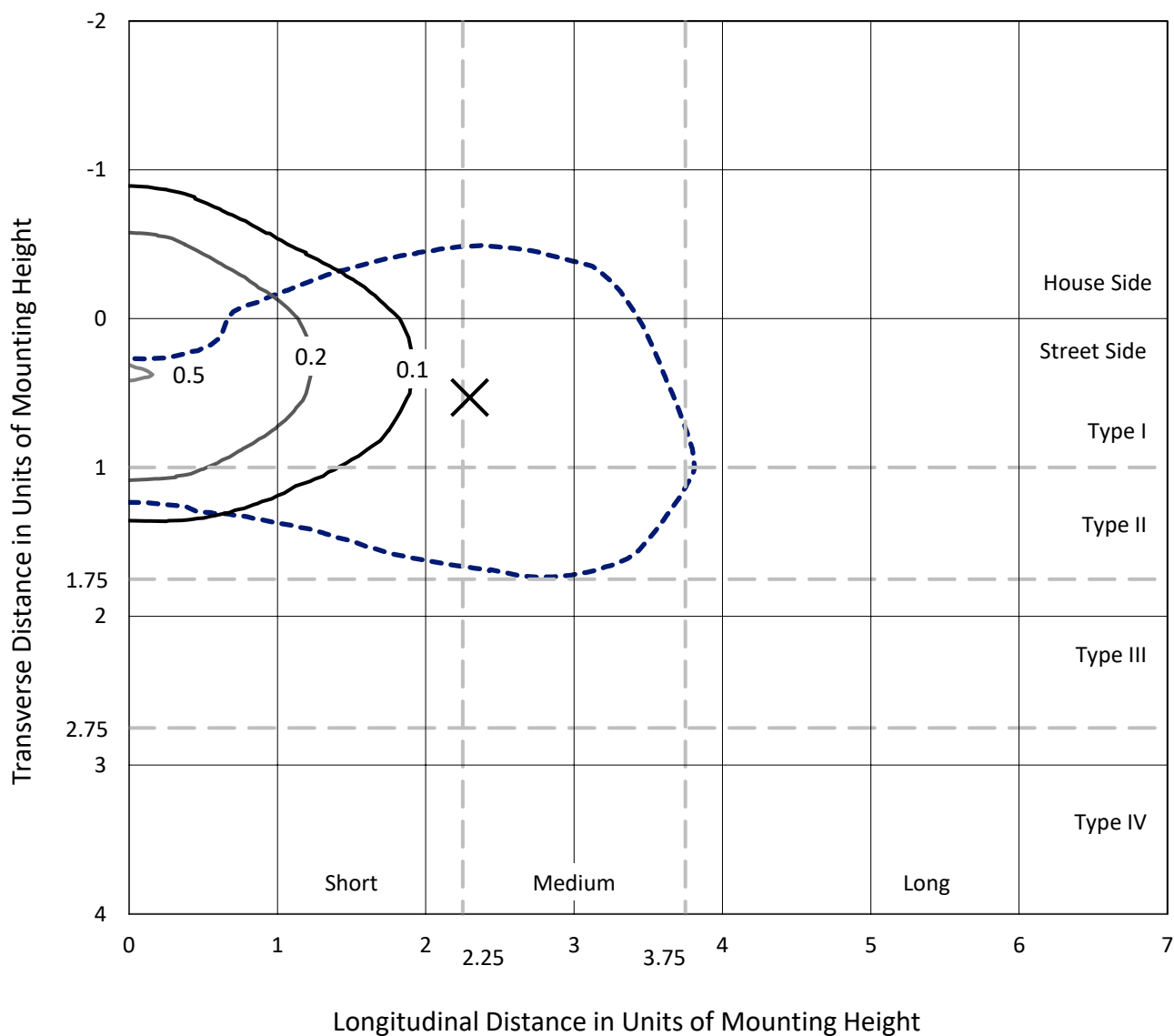
Lumens per Lamp: N/A  
Luminaire Lumens: 503.9 lumens  
Efficiency: N/A  
Efficacy: 33.8 lumens/watt  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B0 - U0 - G0

Input Watts (W): 14.9  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.98  
Total Harmonic Distortion (THDi): 11%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

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## Iso-Footcandle Lines of Horizontal Illumination

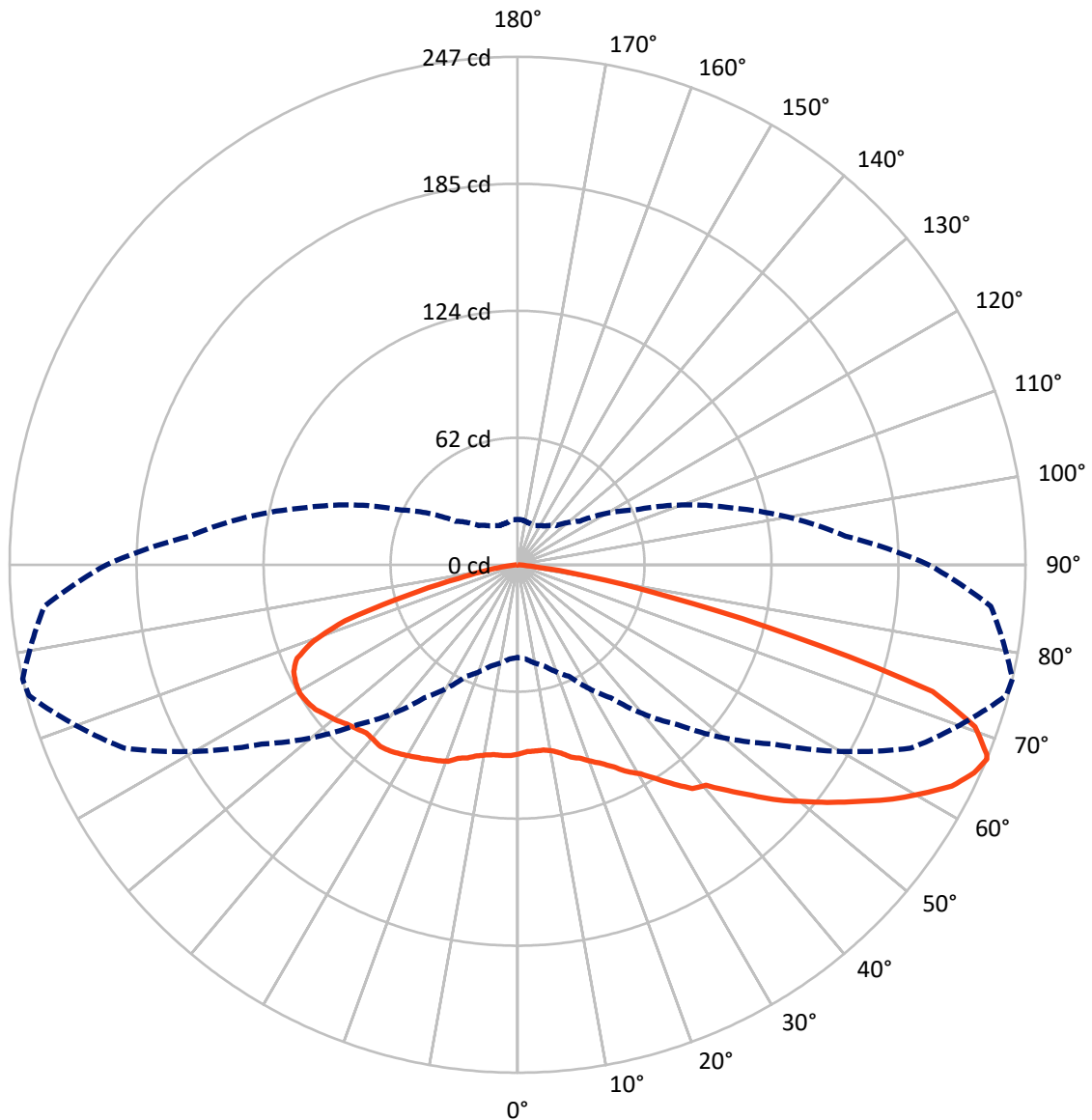
× Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 0.5 fc  
 Type II - Medium - N/A

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## Luminous Intensity Polar Plot



— Vertical Plane Through 77-Deg Lateral      - - - Horizontal Cone Through 67-Deg Vertical

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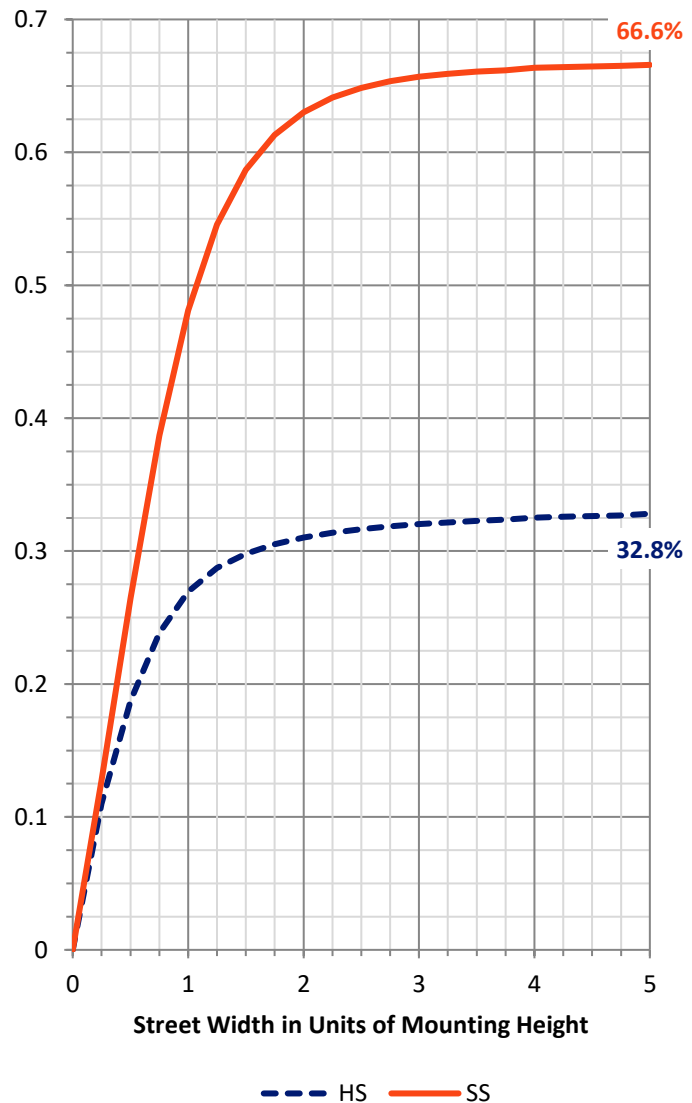
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total |
|--------------------|-----------|----------|--------|-------|
| <b>House Side</b>  | Lumens    | 168.6    | 0.0    | 168.6 |
|                    | % Fixture | 33.5     | 0.0    | 33.5  |
| <b>Street Side</b> | Lumens    | 335.2    | 0.0    | 335.2 |
|                    | % Fixture | 66.5     | 0.0    | 66.5  |
| <b>Total</b>       | Lumens    | 503.9    | 0.0    | 503.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0 |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 8.9    | 1.8       |
| 10°-20°   | 28.2   | 5.6       |
| 20°-30°   | 50.7   | 10.1      |
| 30°-40°   | 72.5   | 14.4      |
| 40°-50°   | 91.0   | 18.1      |
| 50°-60°   | 99.7   | 19.8      |
| 60°-70°   | 95.6   | 19.0      |
| 70°-80°   | 51.2   | 10.2      |
| 80°-90°   | 6.1    | 1.2       |
| 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°    | 503.9  | 100.0     |
| 0°-180°   | 503.9  | 100.0     |

**Coefficient of Utilization**



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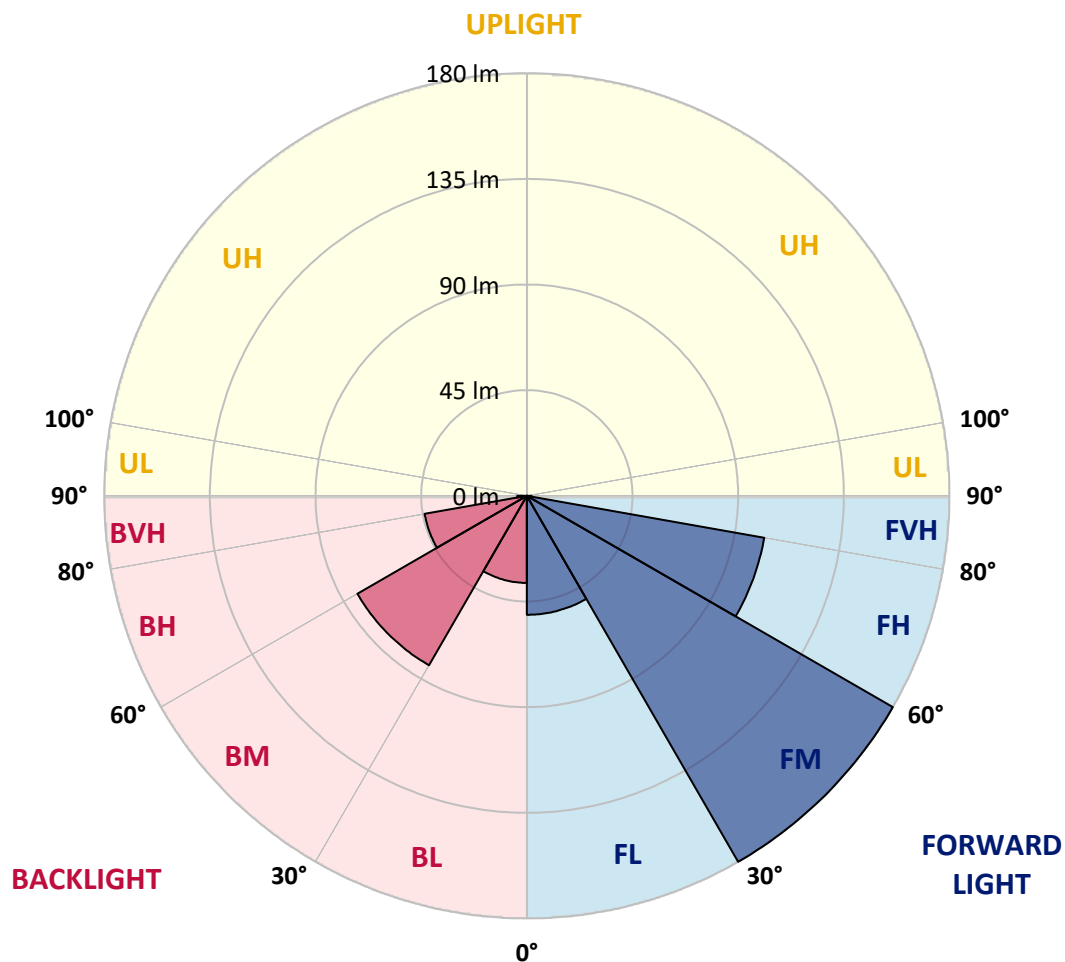
CATALOG NUMBER: GKO-PB1A-AMB-U-T2U

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|--------|-----------|-------------------------|------|--------|
|      |             |        |           | B                       | U    | G      |
| FL   | (0°-30°)    | 50.7   | 10.1      |                         |      |        |
| FM   | (30°-60°)   | 179.9  | 35.7      |                         |      |        |
| FH   | (60°-80°)   | 102.6  | 20.4      |                         |      | G0/660 |
| FVH  | (80°-90°)   | 2.0    | 0.4       |                         |      | G0/10  |
| BL   | (0°-30°)    | 37.1   | 7.4       | B0/110                  |      |        |
| BM   | (30°-60°)   | 83.3   | 16.5      | B0/220                  |      |        |
| BH   | (60°-80°)   | 44.2   | 8.8       | B0/110                  |      | G0/110 |
| BVH  | (80°-90°)   | 4.1    | 0.8       |                         |      | 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 II Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 5°    | 15°   | 25°   | 35°   | 45°   | 55°   | 65°   | 75°   | 77°   | 85°   |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 92.1  | 92.1  | 92.1  | 92.1  | 92.1  | 92.1  | 92.1  | 92.1  | 92.1  | 92.1  | 92.1  |
| 2.5°  | 91.1  | 91.1  | 91.1  | 91.1  | 91.1  | 91.1  | 91.1  | 92.1  | 91.1  | 91.1  | 92.1  |
| 5°    | 92.1  | 92.1  | 91.1  | 92.1  | 92.1  | 91.1  | 91.1  | 91.1  | 91.1  | 91.1  | 92.1  |
| 7.5°  | 96.1  | 96.1  | 95.1  | 95.1  | 94.1  | 93.1  | 92.1  | 92.1  | 91.1  | 91.1  | 92.1  |
| 10°   | 102.1 | 103.1 | 102.1 | 100.1 | 98.1  | 96.1  | 94.1  | 93.1  | 92.1  | 92.1  | 93.1  |
| 12.5° | 113.1 | 112.1 | 111.1 | 108.1 | 105.1 | 101.1 | 97.1  | 95.1  | 94.1  | 94.1  | 94.1  |
| 15°   | 124.2 | 123.1 | 121.1 | 118.1 | 113.1 | 107.1 | 102.1 | 98.1  | 97.1  | 97.1  | 97.1  |
| 17.5° | 133.2 | 133.2 | 131.2 | 127.2 | 121.1 | 114.1 | 107.1 | 102.1 | 99.1  | 99.1  | 99.1  |
| 20°   | 140.2 | 139.2 | 138.2 | 136.2 | 130.2 | 122.1 | 114.1 | 106.1 | 102.1 | 102.1 | 102.1 |
| 22.5° | 144.2 | 144.2 | 144.2 | 143.2 | 138.2 | 131.2 | 121.1 | 111.1 | 106.1 | 105.1 | 105.1 |
| 25°   | 147.2 | 146.2 | 147.2 | 147.2 | 145.2 | 139.2 | 129.2 | 117.1 | 110.1 | 109.1 | 108.1 |
| 27.5° | 148.2 | 148.2 | 149.2 | 150.2 | 149.2 | 146.2 | 137.2 | 123.1 | 115.1 | 114.1 | 112.1 |
| 30°   | 150.2 | 150.2 | 152.2 | 154.2 | 153.2 | 151.2 | 143.2 | 129.2 | 119.1 | 118.1 | 116.1 |
| 32.5° | 151.2 | 151.2 | 154.2 | 156.2 | 157.2 | 155.2 | 148.2 | 135.2 | 125.2 | 124.2 | 121.1 |
| 35°   | 153.2 | 153.2 | 155.2 | 158.2 | 159.2 | 159.2 | 153.2 | 141.2 | 132.2 | 131.2 | 127.2 |
| 37.5° | 155.2 | 155.2 | 158.2 | 161.2 | 163.2 | 163.2 | 160.2 | 149.2 | 139.2 | 138.2 | 134.2 |
| 40°   | 155.2 | 155.2 | 160.2 | 163.2 | 164.2 | 165.2 | 165.2 | 155.2 | 143.2 | 141.2 | 137.2 |
| 42.5° | 158.2 | 160.2 | 166.2 | 165.2 | 164.2 | 166.2 | 169.2 | 162.2 | 151.2 | 150.2 | 143.2 |
| 45°   | 151.2 | 151.2 | 158.2 | 163.2 | 163.2 | 167.2 | 173.2 | 170.2 | 162.2 | 160.2 | 152.2 |
| 47.5° | 145.2 | 145.2 | 149.2 | 156.2 | 159.2 | 167.2 | 178.2 | 180.2 | 172.2 | 171.2 | 161.2 |
| 50°   | 130.2 | 129.2 | 140.2 | 148.2 | 154.2 | 166.2 | 181.2 | 189.2 | 183.2 | 181.2 | 170.2 |
| 52.5° | 112.1 | 114.1 | 121.1 | 139.2 | 149.2 | 164.2 | 184.2 | 198.2 | 194.2 | 192.2 | 180.2 |
| 55°   | 100.1 | 102.1 | 112.1 | 124.2 | 141.2 | 158.2 | 186.2 | 207.3 | 205.2 | 203.2 | 190.2 |
| 57.5° | 87.1  | 90.1  | 98.1  | 109.1 | 130.2 | 150.2 | 185.2 | 214.3 | 216.3 | 215.3 | 202.2 |
| 60°   | 76.1  | 78.1  | 84.1  | 95.1  | 118.1 | 141.2 | 180.2 | 219.3 | 227.3 | 226.3 | 215.3 |
| 62.5° | 65.1  | 65.1  | 71.1  | 83.1  | 103.1 | 132.2 | 172.2 | 221.3 | 237.3 | 237.3 | 226.3 |
| 65°   | 55.1  | 55.1  | 60.1  | 70.1  | 91.1  | 121.1 | 161.2 | 218.3 | 244.3 | 244.3 | 234.3 |
| 67°   | 45.1  | 46.1  | 51.1  | 60.1  | 79.1  | 110.1 | 152.2 | 211.3 | 246.3 | 247.3 | 231.3 |
| 67.5° | 42.1  | 43.1  | 49.1  | 58.1  | 75.1  | 107.1 | 149.2 | 208.3 | 246.3 | 246.3 | 229.3 |
| 70°   | 28.0  | 29.0  | 37.0  | 47.1  | 61.1  | 88.1  | 132.2 | 193.2 | 237.3 | 236.3 | 205.2 |
| 72.5° | 18.0  | 19.0  | 26.0  | 34.0  | 48.1  | 70.1  | 111.1 | 173.2 | 215.3 | 211.3 | 174.2 |
| 75°   | 13.0  | 13.0  | 17.0  | 24.0  | 33.0  | 54.1  | 85.1  | 125.2 | 143.2 | 138.2 | 108.1 |
| 77.5° | 9.0   | 9.0   | 11.0  | 17.0  | 23.0  | 32.0  | 44.1  | 69.1  | 79.1  | 75.1  | 57.1  |
| 80°   | 5.0   | 5.0   | 6.0   | 10.0  | 12.0  | 12.0  | 18.0  | 34.0  | 36.0  | 36.0  | 28.0  |
| 82.5° | 1.0   | 1.0   | 2.0   | 3.0   | 4.0   | 4.0   | 5.0   | 10.0  | 10.0  | 10.0  | 8.0   |
| 85°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| 87.5° | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

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**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°   | 105°  | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|-------|-------|------|------|------|------|------|------|------|------|
| 0°    | 92.1  | 92.1  | 92.1  | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 |
| 2.5°  | 92.1  | 92.1  | 93.1  | 93.1 | 93.1 | 93.1 | 93.1 | 92.1 | 93.1 | 93.1 | 93.1 |
| 5°    | 92.1  | 93.1  | 93.1  | 93.1 | 93.1 | 93.1 | 93.1 | 92.1 | 93.1 | 93.1 | 93.1 |
| 7.5°  | 92.1  | 93.1  | 93.1  | 93.1 | 93.1 | 93.1 | 91.1 | 91.1 | 90.1 | 91.1 | 91.1 |
| 10°   | 93.1  | 93.1  | 94.1  | 93.1 | 92.1 | 91.1 | 89.1 | 88.1 | 87.1 | 87.1 | 87.1 |
| 12.5° | 95.1  | 95.1  | 95.1  | 93.1 | 91.1 | 89.1 | 87.1 | 85.1 | 84.1 | 84.1 | 84.1 |
| 15°   | 97.1  | 97.1  | 97.1  | 94.1 | 90.1 | 87.1 | 84.1 | 83.1 | 82.1 | 82.1 | 82.1 |
| 17.5° | 100.1 | 100.1 | 98.1  | 94.1 | 90.1 | 86.1 | 83.1 | 81.1 | 80.1 | 80.1 | 80.1 |
| 20°   | 102.1 | 103.1 | 101.1 | 95.1 | 89.1 | 85.1 | 82.1 | 80.1 | 79.1 | 79.1 | 79.1 |
| 22.5° | 105.1 | 106.1 | 102.1 | 95.1 | 88.1 | 84.1 | 81.1 | 79.1 | 78.1 | 77.1 | 77.1 |
| 25°   | 109.1 | 108.1 | 103.1 | 94.1 | 87.1 | 83.1 | 80.1 | 78.1 | 76.1 | 75.1 | 75.1 |
| 27.5° | 112.1 | 111.1 | 104.1 | 94.1 | 86.1 | 81.1 | 78.1 | 75.1 | 73.1 | 72.1 | 72.1 |
| 30°   | 116.1 | 114.1 | 105.1 | 93.1 | 84.1 | 79.1 | 76.1 | 73.1 | 70.1 | 69.1 | 69.1 |
| 32.5° | 120.1 | 118.1 | 106.1 | 92.1 | 82.1 | 77.1 | 72.1 | 70.1 | 67.1 | 66.1 | 66.1 |
| 35°   | 125.2 | 121.1 | 107.1 | 91.1 | 80.1 | 73.1 | 70.1 | 67.1 | 64.1 | 62.1 | 62.1 |
| 37.5° | 132.2 | 126.2 | 107.1 | 89.1 | 78.1 | 70.1 | 67.1 | 64.1 | 61.1 | 59.1 | 59.1 |
| 40°   | 133.2 | 127.2 | 106.1 | 87.1 | 75.1 | 67.1 | 63.1 | 60.1 | 57.1 | 56.1 | 56.1 |
| 42.5° | 139.2 | 130.2 | 105.1 | 86.1 | 73.1 | 64.1 | 58.1 | 56.1 | 54.1 | 53.1 | 53.1 |
| 45°   | 145.2 | 135.2 | 106.1 | 85.1 | 71.1 | 61.1 | 54.1 | 52.1 | 50.1 | 49.1 | 49.1 |
| 47.5° | 153.2 | 140.2 | 107.1 | 84.1 | 68.1 | 57.1 | 50.1 | 47.1 | 45.1 | 43.1 | 43.1 |
| 50°   | 160.2 | 145.2 | 109.1 | 82.1 | 65.1 | 53.1 | 45.1 | 41.0 | 39.0 | 38.0 | 37.0 |
| 52.5° | 169.2 | 152.2 | 110.1 | 81.1 | 62.1 | 49.1 | 40.0 | 36.0 | 34.0 | 33.0 | 33.0 |
| 55°   | 178.2 | 157.2 | 112.1 | 79.1 | 58.1 | 44.1 | 36.0 | 32.0 | 30.0 | 29.0 | 29.0 |
| 57.5° | 188.2 | 163.2 | 112.1 | 78.1 | 54.1 | 40.0 | 32.0 | 29.0 | 28.0 | 27.0 | 27.0 |
| 60°   | 198.2 | 167.2 | 112.1 | 75.1 | 49.1 | 35.0 | 29.0 | 27.0 | 26.0 | 26.0 | 26.0 |
| 62.5° | 205.2 | 167.2 | 111.1 | 73.1 | 45.1 | 33.0 | 27.0 | 25.0 | 25.0 | 26.0 | 26.0 |
| 65°   | 205.2 | 163.2 | 110.1 | 69.1 | 41.0 | 29.0 | 25.0 | 23.0 | 23.0 | 24.0 | 24.0 |
| 67°   | 200.2 | 160.2 | 107.1 | 63.1 | 37.0 | 27.0 | 23.0 | 21.0 | 21.0 | 22.0 | 22.0 |
| 67.5° | 197.2 | 158.2 | 106.1 | 61.1 | 35.0 | 26.0 | 23.0 | 21.0 | 21.0 | 22.0 | 22.0 |
| 70°   | 177.2 | 146.2 | 96.1  | 51.1 | 30.0 | 24.0 | 21.0 | 20.0 | 20.0 | 20.0 | 20.0 |
| 72.5° | 152.2 | 129.2 | 78.1  | 41.0 | 26.0 | 21.0 | 19.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| 75°   | 94.1  | 80.1  | 49.1  | 31.0 | 21.0 | 18.0 | 17.0 | 16.0 | 16.0 | 17.0 | 16.0 |
| 77.5° | 53.1  | 43.1  | 26.0  | 17.0 | 15.0 | 15.0 | 15.0 | 15.0 | 14.0 | 16.0 | 15.0 |
| 80°   | 26.0  | 21.0  | 14.0  | 10.0 | 9.0  | 11.0 | 12.0 | 12.0 | 15.0 | 19.0 | 19.0 |
| 82.5° | 8.0   | 7.0   | 6.0   | 6.0  | 6.0  | 8.0  | 10.0 | 11.0 | 18.0 | 20.0 | 20.0 |
| 85°   | 1.0   | 1.0   | 1.0   | 2.0  | 4.0  | 6.0  | 8.0  | 14.0 | 17.0 | 14.0 | 14.0 |
| 87.5° | 0.0   | 0.0   | 0.0   | 1.0  | 3.0  | 5.0  | 7.0  | 14.0 | 10.0 | 9.0  | 8.0  |
| 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: SP2-2501-321-6

Test Date: 04/10/2025

Luminaire Tested: GKO-PB1A-AMB-U-T4W

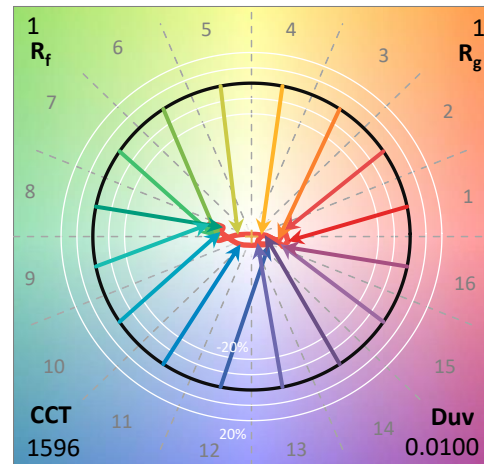
Data in this report applies to families of products including GKO-PB1A-AMB-U-T4W

### Test Information

Test Method: LM-79-2019  
 Report Number: SP2-2501-321-6  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP2 - 165CM SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 04/10/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GKO-PB1A-AMB-U-T4W**  
 Description: Gekko Wedge Wall Pack Fixture 1 SQ w/ T4W distribution

### Spectral Parameters

|                           |          |           |        |      |        |
|---------------------------|----------|-----------|--------|------|--------|
| CCT (K):                  | 1596     | CRI (Ra): | -22.1  |      |        |
| CIE u':                   | 0.3456   | R1:       | -35.6  | R9:  | -391.5 |
| CIE v':                   | 0.5480   | R2:       | 50.9   | R10: | 26.0   |
| Duv:                      | 0.0100   | R3:       | 18.9   | R11: | -96.5  |
| CIE x:                    | 0.5862   | R4:       | -68.2  | R12: | -14.6  |
| CIE y:                    | 0.4131   | R5:       | -41.3  | R13: | -17.1  |
| CIE z:                    | 0.0008   | R6:       | 38.5   | R14: | 46.8   |
| Peak Wavelength (nm):     | 596      | R7:       | -6.0   | R15: | -68.2  |
| Dominant Wavelength (nm): | 591      | R8:       | -134.0 |      |        |
| Purity:                   | 99.95322 |           |        |      |        |
| Rf:                       | 1.2      |           |        |      |        |
| Rg:                       | 0.7      |           |        |      |        |



### Test Conditions

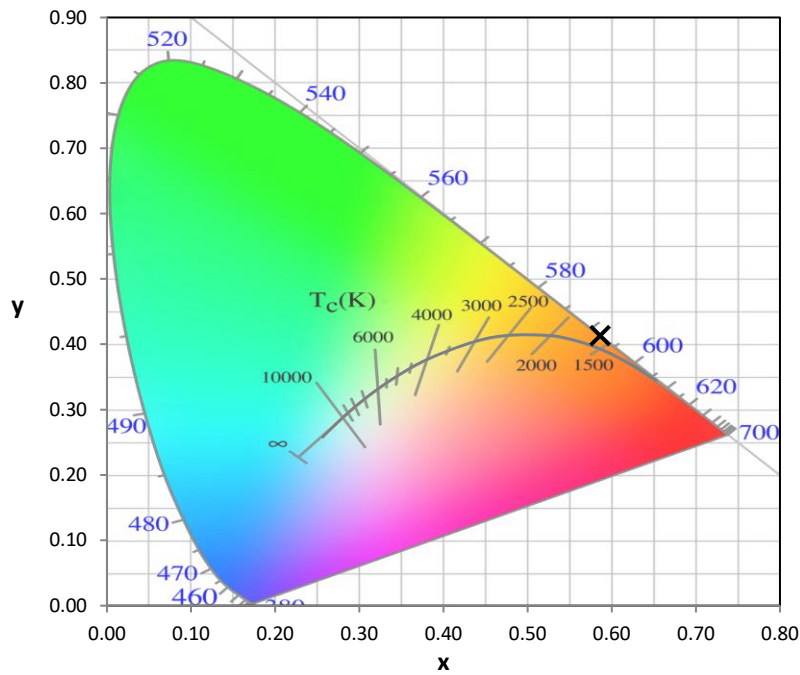
Stabilization Time: 30M  
 Operation Time: 1H 30M  
 Sphere Temperature (°C): 25.0

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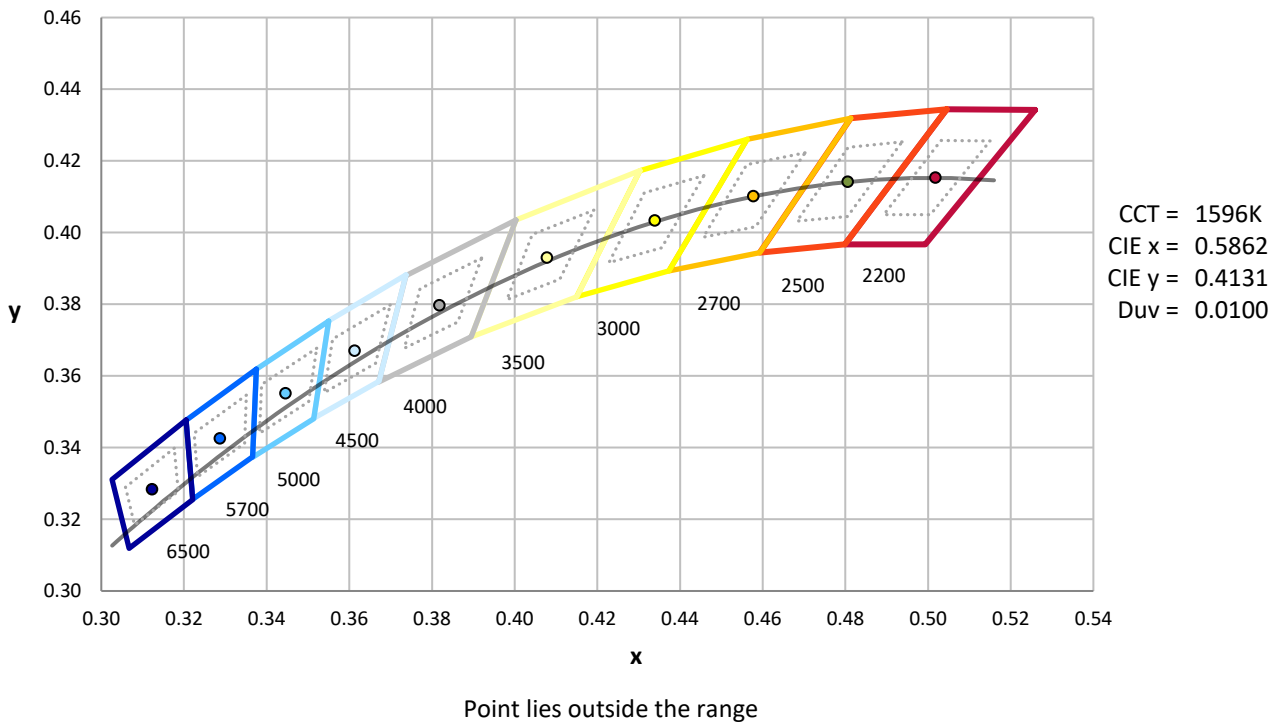
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN2187                | 1/6/2025         | 7/6/2025             |
| Power Meter                    | INXT2011002           | 1/21/2025        | 1/21/2026            |
| AC Power Source                | IN0458                | 10/22/2024       | 10/22/2025           |
| DC Power Source                | IN0212                | 10/22/2024       | 10/22/2025           |
| Sphere Thermometer             | IN4036B               | 10/22/2024       | 10/22/2025           |
| Room Thermometer               | IN0046                | 10/22/2024       | 10/22/2025           |

REPORT NUMBER: SP2-2501-321-6

**CIE 1931 Chromaticity Diagram**

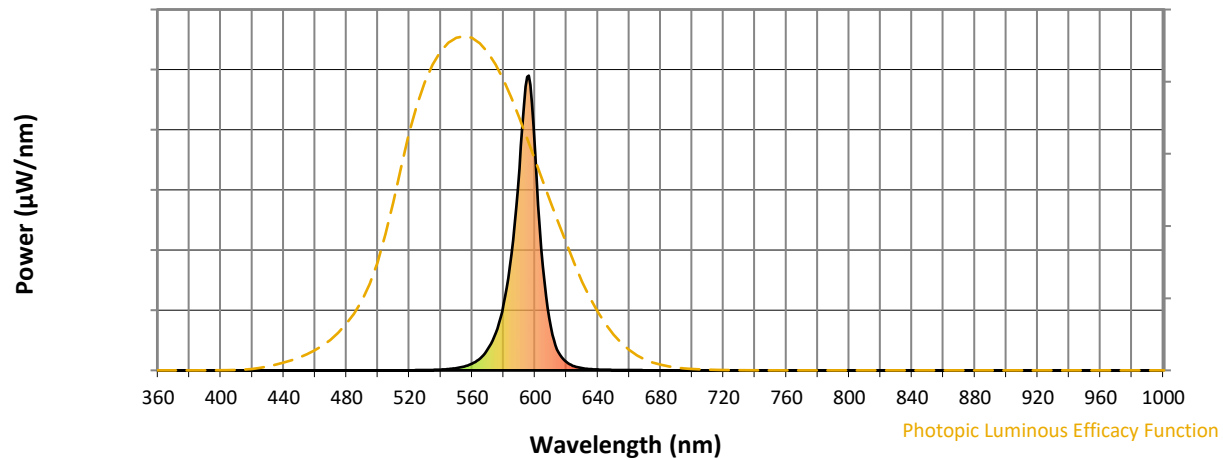


**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



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### Photopic Flux vs. Wavelength

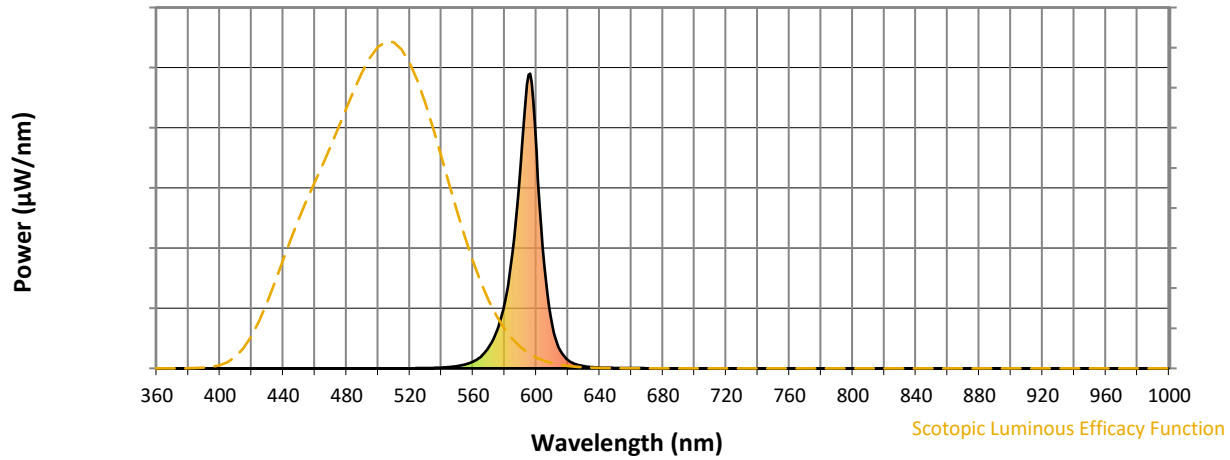


### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 0                                    | NR                             | 620               | 28                                   | NR                             | 750               | 0                                    | NR                             | 880               | 0                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 0                                    | NR                             | 625               | 14                                   | NR                             | 755               | 0                                    | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 0                                    | NR                             | 630               | 7                                    | NR                             | 760               | 0                                    | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 0                                    | NR                             | 635               | 4                                    | NR                             | 765               | 0                                    | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 0                                    | NR                             | 640               | 3                                    | NR                             | 770               | 0                                    | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 0                                    | NR                             | 645               | 2                                    | NR                             | 775               | 0                                    | NR                             | 905               | 0                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 0                                    | NR                             | 650               | 1                                    | NR                             | 780               | 0                                    | NR                             | 910               | 0                                    | NR                             |
| 395               | 0                                    | NR                             | 525               | 1                                    | NR                             | 655               | 1                                    | NR                             | 785               | 0                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 0                                    | NR                             | 530               | 1                                    | NR                             | 660               | 1                                    | NR                             | 790               | 0                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 0                                    | NR                             | 535               | 2                                    | NR                             | 665               | 1                                    | NR                             | 795               | 0                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 0                                    | NR                             | 540               | 3                                    | NR                             | 670               | 1                                    | NR                             | 800               | 0                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 0                                    | NR                             | 545               | 4                                    | NR                             | 675               | 0                                    | NR                             | 805               | 0                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 0                                    | NR                             | 550               | 8                                    | NR                             | 680               | 0                                    | NR                             | 810               | 0                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 0                                    | NR                             | 555               | 13                                   | NR                             | 685               | 0                                    | NR                             | 815               | 0                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 0                                    | NR                             | 560               | 23                                   | NR                             | 690               | 0                                    | NR                             | 820               | 0                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 0                                    | NR                             | 565               | 40                                   | NR                             | 695               | 0                                    | NR                             | 825               | 0                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 0                                    | NR                             | 570               | 72                                   | NR                             | 700               | 0                                    | NR                             | 830               | 0                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 0                                    | NR                             | 575               | 127                                  | NR                             | 705               | 0                                    | NR                             | 835               | 0                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 0                                    | NR                             | 580               | 224                                  | NR                             | 710               | 0                                    | NR                             | 840               | 0                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 0                                    | NR                             | 585               | 394                                  | NR                             | 715               | 0                                    | NR                             | 845               | 0                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 0                                    | NR                             | 590               | 686                                  | NR                             | 720               | 0                                    | NR                             | 850               | 0                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 0                                    | NR                             | 595               | 996                                  | NR                             | 725               | 0                                    | NR                             | 855               | 0                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 0                                    | NR                             | 600               | 738                                  | NR                             | 730               | 0                                    | NR                             | 860               | 0                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 0                                    | NR                             | 605               | 352                                  | NR                             | 735               | 0                                    | NR                             | 865               | 0                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 0                                    | NR                             | 610               | 148                                  | NR                             | 740               | 0                                    | NR                             | 870               | 0                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 0                                    | NR                             | 615               | 60                                   | NR                             | 745               | 0                                    | NR                             | 875               | 0                                    | NR                             |                   |                                      |                                |

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### Scotopic Flux vs. Wavelength



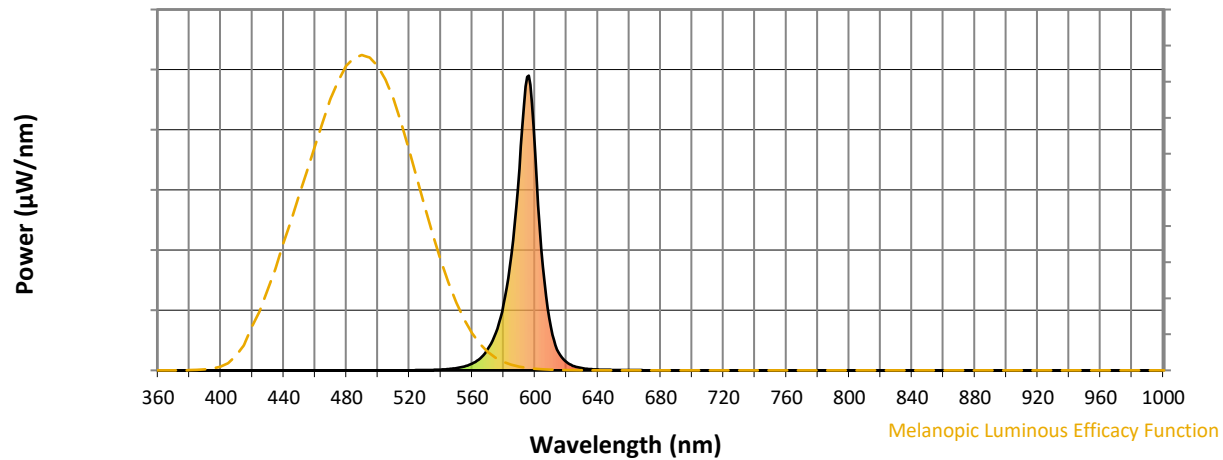
Scotopic Lumens: NR

S/P: 0.23

| 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    | 0                        | NR            | 620    | 28                       | NR            | 750    | 0                        | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 0                        | NR            | 625    | 14                       | NR            | 755    | 0                        | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 0                        | NR            | 630    | 7                        | NR            | 760    | 0                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 0                        | NR            | 635    | 4                        | NR            | 765    | 0                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 0                        | NR            | 640    | 3                        | NR            | 770    | 0                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 0                        | NR            | 645    | 2                        | NR            | 775    | 0                        | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 0                        | NR            | 650    | 1                        | NR            | 780    | 0                        | NR            | 910    | 0                        | NR            |
| 395    | 0                        | NR            | 525    | 1                        | NR            | 655    | 1                        | NR            | 785    | 0                        | NR            | 915    | 0                        | NR            |
| 400    | 0                        | NR            | 530    | 1                        | NR            | 660    | 1                        | NR            | 790    | 0                        | NR            | 920    | 0                        | NR            |
| 405    | 0                        | NR            | 535    | 2                        | NR            | 665    | 1                        | NR            | 795    | 0                        | NR            | 925    | 0                        | NR            |
| 410    | 0                        | NR            | 540    | 3                        | NR            | 670    | 1                        | NR            | 800    | 0                        | NR            | 930    | 0                        | NR            |
| 415    | 0                        | NR            | 545    | 4                        | NR            | 675    | 0                        | NR            | 805    | 0                        | NR            | 935    | 0                        | NR            |
| 420    | 0                        | NR            | 550    | 8                        | NR            | 680    | 0                        | NR            | 810    | 0                        | NR            | 940    | 0                        | NR            |
| 425    | 0                        | NR            | 555    | 13                       | NR            | 685    | 0                        | NR            | 815    | 0                        | NR            | 945    | 0                        | NR            |
| 430    | 0                        | NR            | 560    | 23                       | NR            | 690    | 0                        | NR            | 820    | 0                        | NR            | 950    | 0                        | NR            |
| 435    | 0                        | NR            | 565    | 40                       | NR            | 695    | 0                        | NR            | 825    | 0                        | NR            | 955    | 0                        | NR            |
| 440    | 0                        | NR            | 570    | 72                       | NR            | 700    | 0                        | NR            | 830    | 0                        | NR            | 960    | 0                        | NR            |
| 445    | 0                        | NR            | 575    | 127                      | NR            | 705    | 0                        | NR            | 835    | 0                        | NR            | 965    | 0                        | NR            |
| 450    | 0                        | NR            | 580    | 224                      | NR            | 710    | 0                        | NR            | 840    | 0                        | NR            | 970    | 0                        | NR            |
| 455    | 0                        | NR            | 585    | 394                      | NR            | 715    | 0                        | NR            | 845    | 0                        | NR            | 975    | 0                        | NR            |
| 460    | 0                        | NR            | 590    | 686                      | NR            | 720    | 0                        | NR            | 850    | 0                        | NR            | 980    | 0                        | NR            |
| 465    | 0                        | NR            | 595    | 996                      | NR            | 725    | 0                        | NR            | 855    | 0                        | NR            | 985    | 0                        | NR            |
| 470    | 0                        | NR            | 600    | 738                      | NR            | 730    | 0                        | NR            | 860    | 0                        | NR            | 990    | 0                        | NR            |
| 475    | 0                        | NR            | 605    | 352                      | NR            | 735    | 0                        | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 0                        | NR            | 610    | 148                      | NR            | 740    | 0                        | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 0                        | NR            | 615    | 60                       | NR            | 745    | 0                        | NR            | 875    | 0                        | NR            |        |                          |               |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 0.13

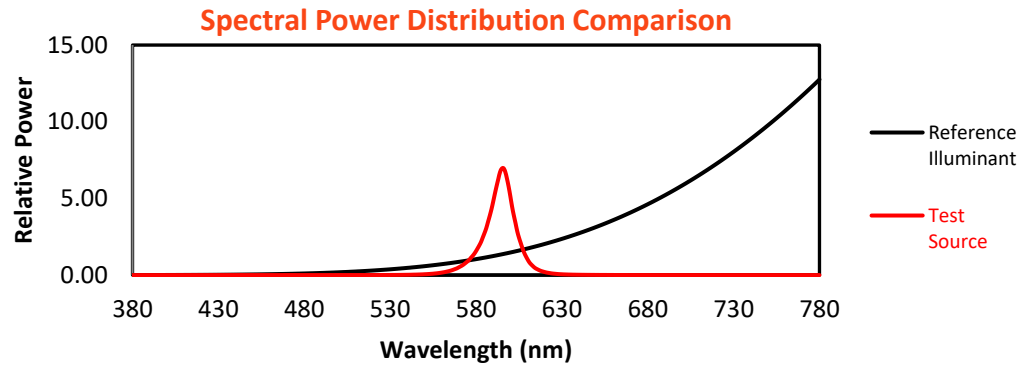
| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<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               | 0                                    | NR                             | 620               | 28                                   | NR                             | 750               | 0                                    | NR                             | 880               | 0                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 0                                    | NR                             | 625               | 14                                   | NR                             | 755               | 0                                    | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 0                                    | NR                             | 630               | 7                                    | NR                             | 760               | 0                                    | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 0                                    | NR                             | 635               | 4                                    | NR                             | 765               | 0                                    | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 0                                    | NR                             | 640               | 3                                    | NR                             | 770               | 0                                    | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 0                                    | NR                             | 645               | 2                                    | NR                             | 775               | 0                                    | NR                             | 905               | 0                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 0                                    | NR                             | 650               | 1                                    | NR                             | 780               | 0                                    | NR                             | 910               | 0                                    | NR                             |
| 395               | 0                                    | NR                             | 525               | 1                                    | NR                             | 655               | 1                                    | NR                             | 785               | 0                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 0                                    | NR                             | 530               | 1                                    | NR                             | 660               | 1                                    | NR                             | 790               | 0                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 0                                    | NR                             | 535               | 2                                    | NR                             | 665               | 1                                    | NR                             | 795               | 0                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 0                                    | NR                             | 540               | 3                                    | NR                             | 670               | 1                                    | NR                             | 800               | 0                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 0                                    | NR                             | 545               | 4                                    | NR                             | 675               | 0                                    | NR                             | 805               | 0                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 0                                    | NR                             | 550               | 8                                    | NR                             | 680               | 0                                    | NR                             | 810               | 0                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 0                                    | NR                             | 555               | 13                                   | NR                             | 685               | 0                                    | NR                             | 815               | 0                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 0                                    | NR                             | 560               | 23                                   | NR                             | 690               | 0                                    | NR                             | 820               | 0                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 0                                    | NR                             | 565               | 40                                   | NR                             | 695               | 0                                    | NR                             | 825               | 0                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 0                                    | NR                             | 570               | 72                                   | NR                             | 700               | 0                                    | NR                             | 830               | 0                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 0                                    | NR                             | 575               | 127                                  | NR                             | 705               | 0                                    | NR                             | 835               | 0                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 0                                    | NR                             | 580               | 224                                  | NR                             | 710               | 0                                    | NR                             | 840               | 0                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 0                                    | NR                             | 585               | 394                                  | NR                             | 715               | 0                                    | NR                             | 845               | 0                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 0                                    | NR                             | 590               | 686                                  | NR                             | 720               | 0                                    | NR                             | 850               | 0                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 0                                    | NR                             | 595               | 996                                  | NR                             | 725               | 0                                    | NR                             | 855               | 0                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 0                                    | NR                             | 600               | 738                                  | NR                             | 730               | 0                                    | NR                             | 860               | 0                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 0                                    | NR                             | 605               | 352                                  | NR                             | 735               | 0                                    | NR                             | 865               | 0                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 0                                    | NR                             | 610               | 148                                  | NR                             | 740               | 0                                    | NR                             | 870               | 0                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 0                                    | NR                             | 615               | 60                                   | NR                             | 745               | 0                                    | NR                             | 875               | 0                                    | NR                             |                   |                                      |                                |

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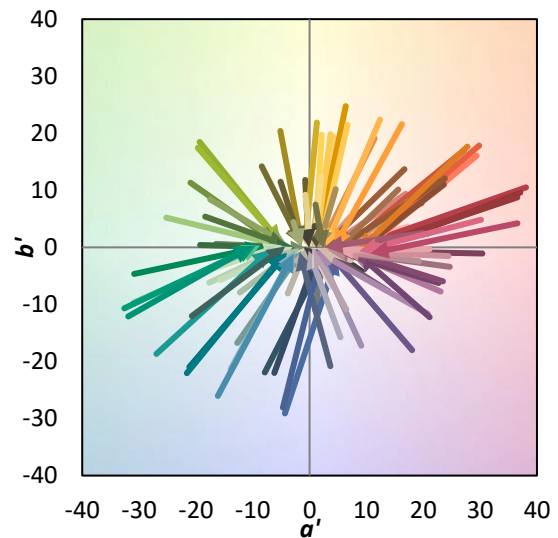
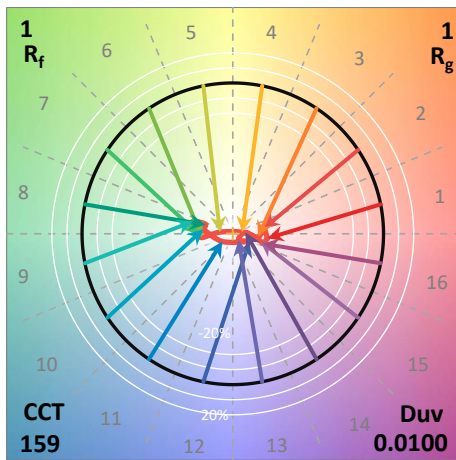
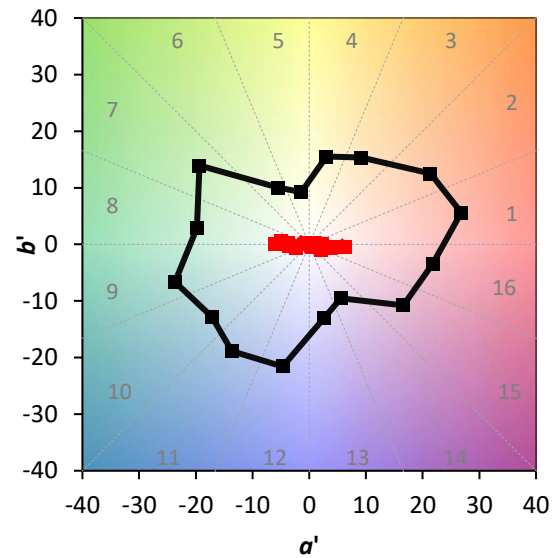
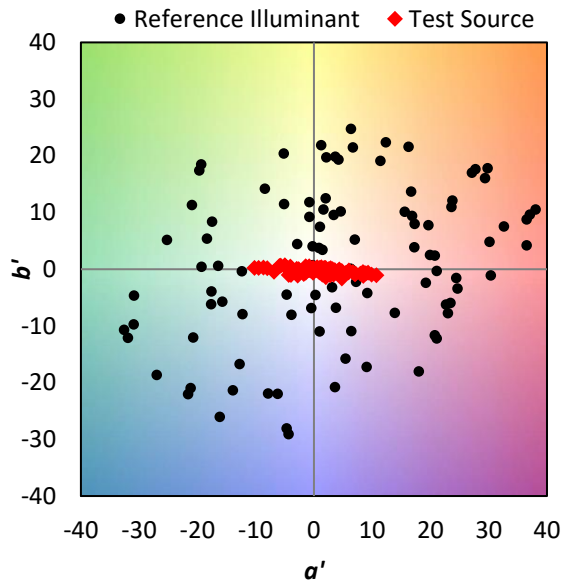
TM-30-18

### Summary

$R_f = 1.2$   
 $R_g = 0.7$   
 $CIE R_a = -22.1$   
 $R_g = -391.5$



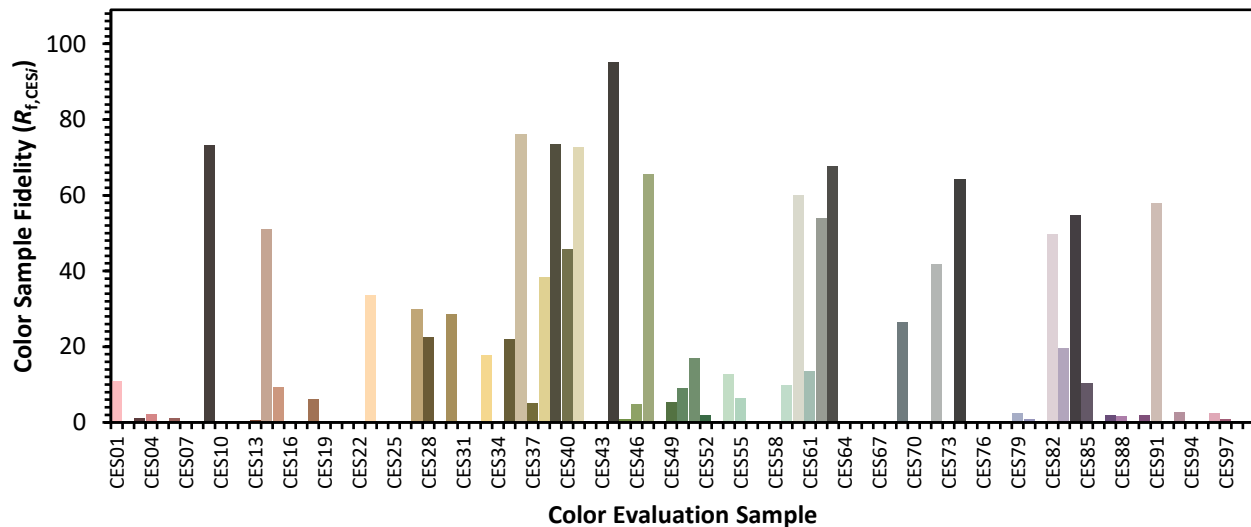
### Color Vector Graphics



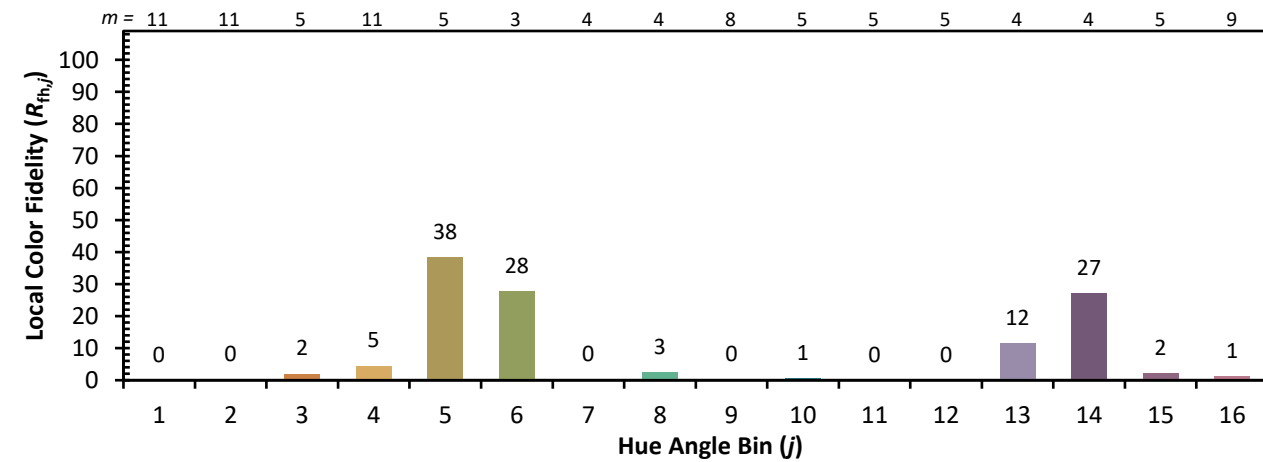
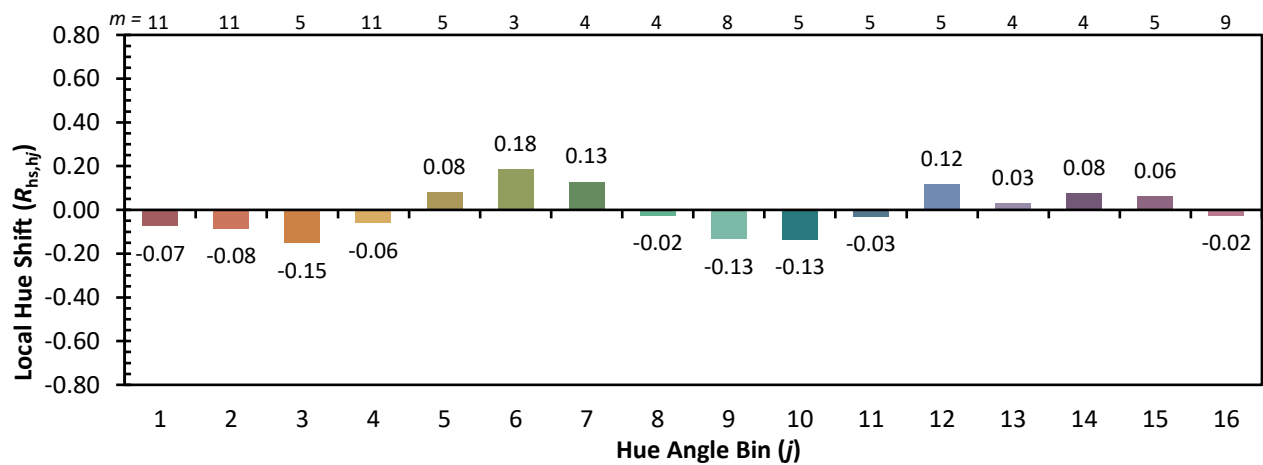
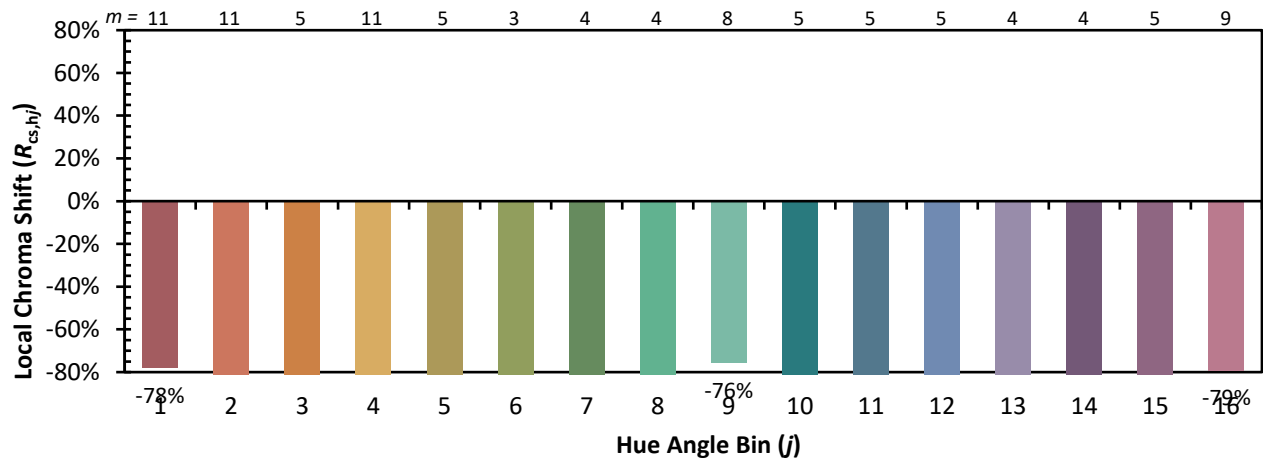


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

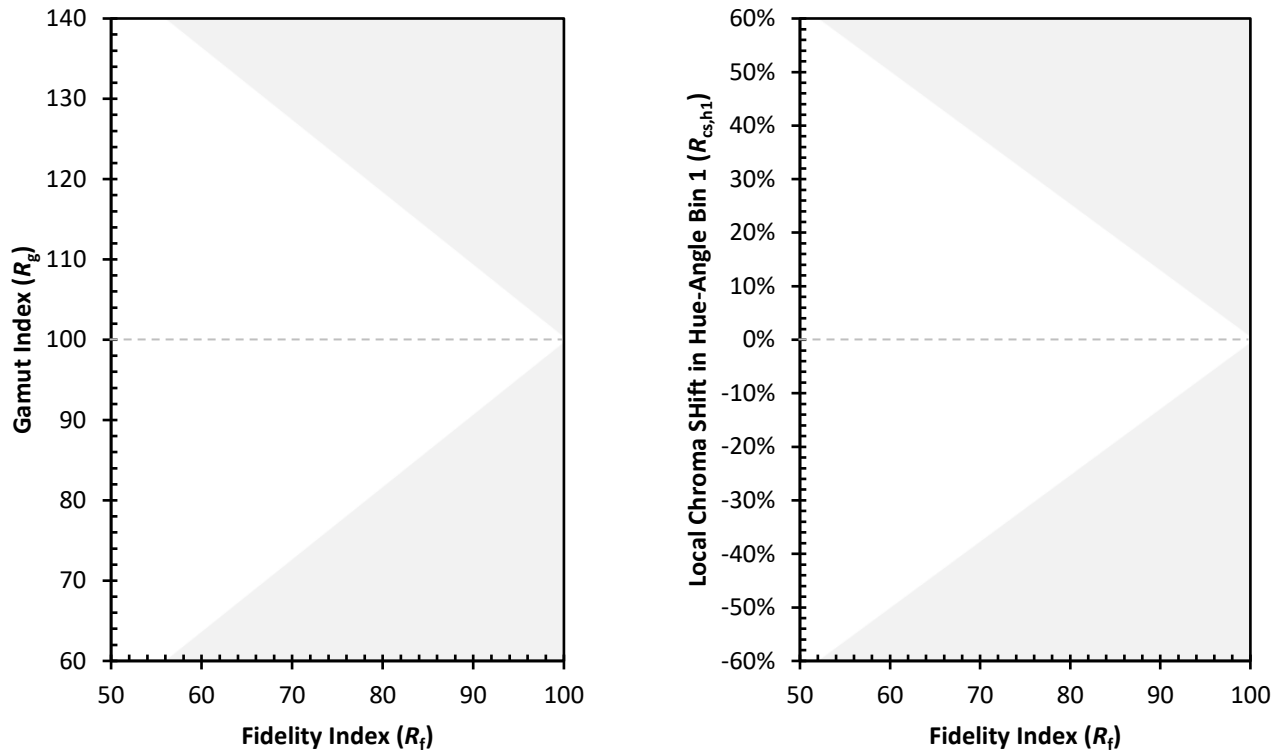
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 90 | CES26 = 0  | CES51 = 17 | CES76 = 0  |
| CES02 = 69 | CES27 = 30 | CES52 = 2  | CES77 = 0  |
| CES03 = 30 | CES28 = 23 | CES53 = 0  | CES78 = 0  |
| CES04 = 77 | CES29 = 0  | CES54 = 13 | CES79 = 2  |
| CES05 = 51 | CES30 = 29 | CES55 = 7  | CES80 = 1  |
| CES06 = 56 | CES31 = 0  | CES56 = 0  | CES81 = 0  |
| CES07 = 40 | CES32 = 0  | CES57 = 0  | CES82 = 50 |
| CES08 = 38 | CES33 = 18 | CES58 = 0  | CES83 = 20 |
| CES09 = 29 | CES34 = 0  | CES59 = 10 | CES84 = 55 |
| CES10 = 87 | CES35 = 22 | CES60 = 60 | CES85 = 10 |
| CES11 = 70 | CES36 = 76 | CES61 = 14 | CES86 = 0  |
| CES12 = 75 | CES37 = 5  | CES62 = 54 | CES87 = 2  |
| CES13 = 46 | CES38 = 38 | CES63 = 68 | CES88 = 2  |
| CES14 = 76 | CES39 = 73 | CES64 = 0  | CES89 = 0  |
| CES15 = 74 | CES40 = 46 | CES65 = 0  | CES90 = 2  |
| CES16 = 49 | CES41 = 73 | CES66 = 0  | CES91 = 58 |
| CES17 = 56 | CES42 = 0  | CES67 = 0  | CES92 = 0  |
| CES18 = 59 | CES43 = 0  | CES68 = 0  | CES93 = 3  |
| CES19 = 80 | CES44 = 95 | CES69 = 26 | CES94 = 0  |
| CES20 = 71 | CES45 = 1  | CES70 = 0  | CES95 = 0  |
| CES21 = 94 | CES46 = 5  | CES71 = 0  | CES96 = 2  |
| CES22 = 86 | CES47 = 65 | CES72 = 42 | CES97 = 1  |
| CES23 = 94 | CES48 = 0  | CES73 = 0  | CES98 = 0  |
| CES24 = 95 | CES49 = 5  | CES74 = 64 | CES99 = 0  |
| CES25 = 79 | CES50 = 9  | CES75 = 0  |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)