

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: P1047681

Luminaire Tested: **GALN-SA6A-722-U-T2BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1047681  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA6A-722-U-T2BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 615mA 6xLight Square PACKAGE  
70CRI 2200K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (84) 2200K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15555.8 lumens  
Efficiency: N/A  
Efficacy: 95.5 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B0 - U0 - G3

Input Watts (W): 162.9  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



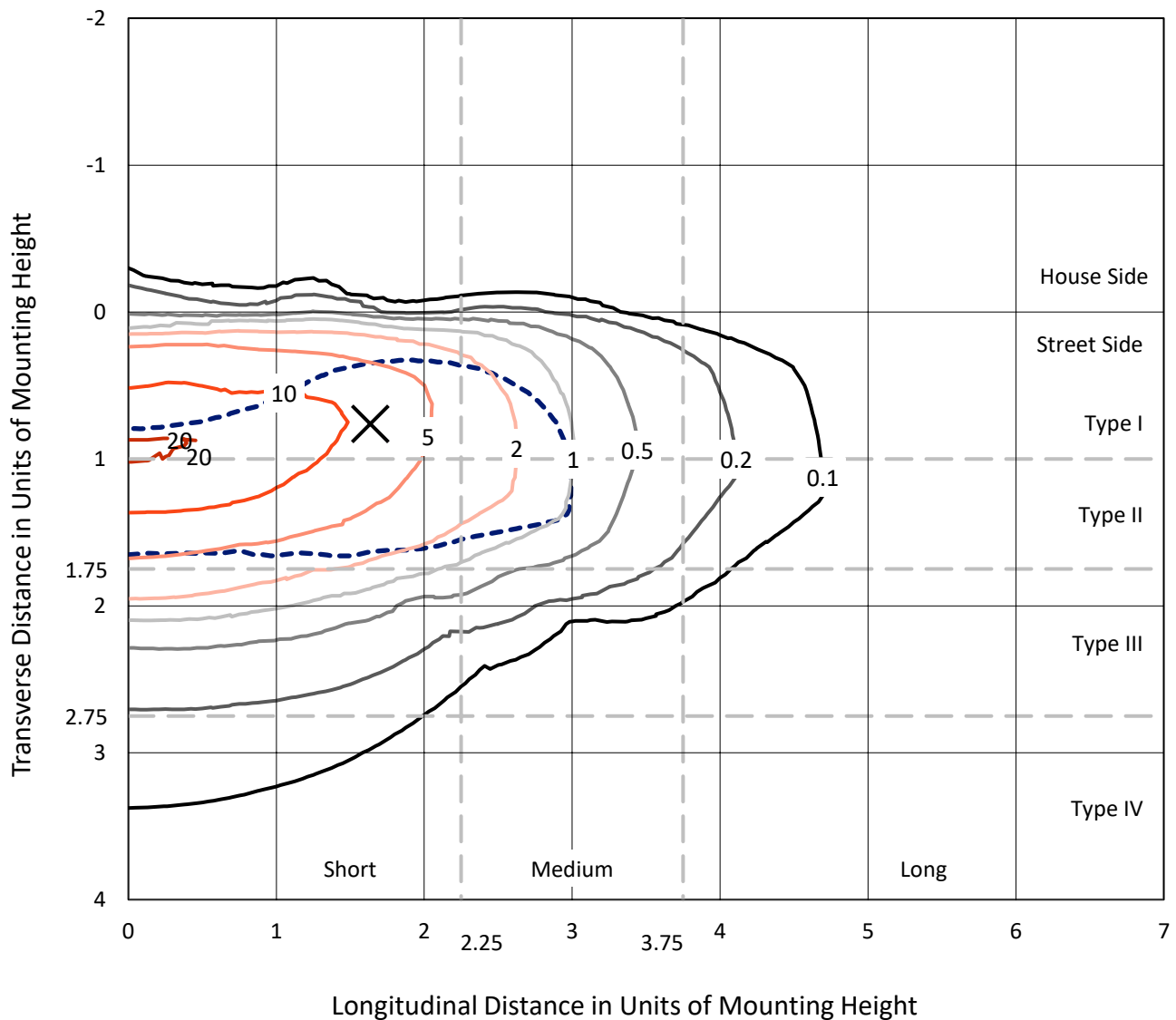
REPORT NUMBER: P1047681

CATALOG NUMBER: GALN-SA6A-722-U-T2BC

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

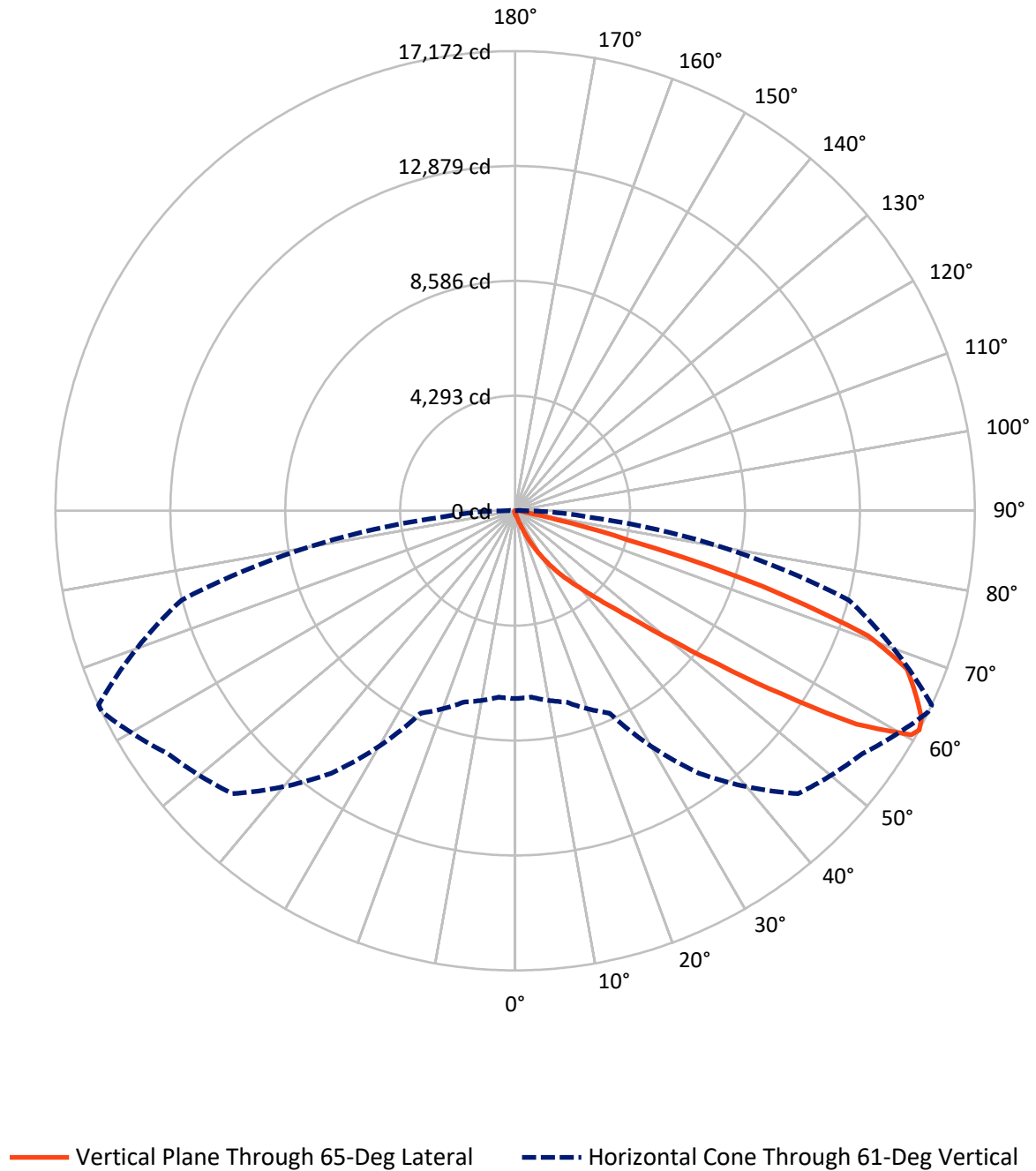


Based on 15 foot mounting height. Maximum calculated value = 20.6 fc  
 Type II - Short - N/A

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CATALOG NUMBER: GALN-SA6A-722-U-T2BC

## Luminous Intensity Polar Plot



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CATALOG NUMBER: GALN-SA6A-722-U-T2BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 66.4     | 0.0    | 66.4    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 15489.4  | 0.0    | 15489.4 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 15555.8  | 0.0    | 15555.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 12.1    | 0.1       |
| 10°-20°   | 127.9   | 0.8       |
| 20°-30°   | 459.1   | 3.0       |
| 30°-40°   | 1222.2  | 7.9       |
| 40°-50°   | 3210.8  | 20.6      |
| 50°-60°   | 4974.2  | 32.0      |
| 60°-70°   | 4170.8  | 26.8      |
| 70°-80°   | 1227.4  | 7.9       |
| 80°-90°   | 151.4   | 1.0       |
| 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°    | 15555.8 | 100.0     |
| 0°-180°   | 15555.8 | 100.0     |



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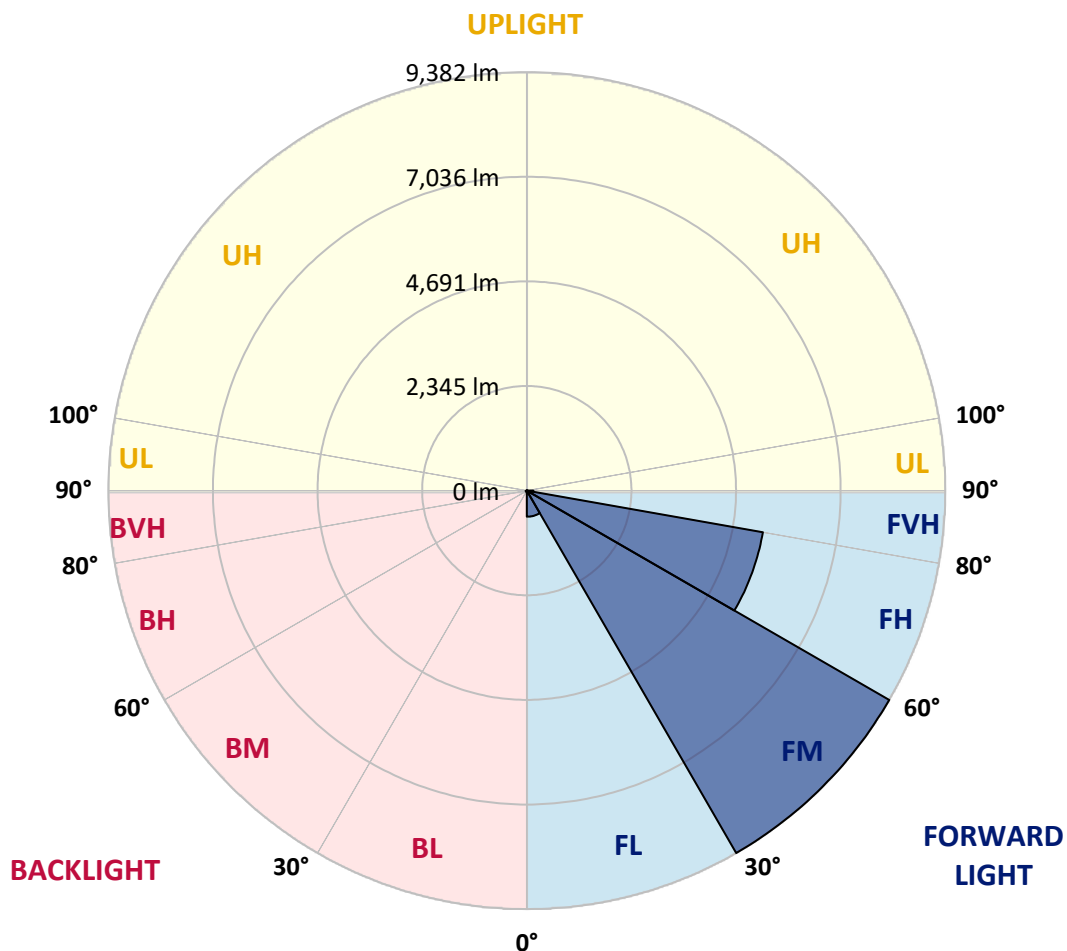
CATALOG NUMBER: GALN-SA6A-722-U-T2BC

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 584.2  | 3.8       |                         |      |         |
| FM   | (30°-60°)   | 9381.9 | 60.3      |                         |      |         |
| FH   | (60°-80°)   | 5374.7 | 34.6      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 148.6  | 1.0       |                         |      | G2/225  |
| BL   | (0°-30°)    | 14.9   | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 25.3   | 0.2       | B0/220                  |      |         |
| BH   | (60°-80°)   | 23.4   | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 2.8    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G3**

Type II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 64°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 95.2    | 95.2    | 95.2    | 95.2    | 95.2    | 95.2    | 95.2    | 95.2    | 95.2    | 95.2    | 95.2   |
| 2.5°  | 115.6   | 116.6   | 114.5   | 110.2   | 107.0   | 107.0   | 105.9   | 102.7   | 102.7   | 99.5    | 97.4   |
| 5°    | 161.6   | 159.4   | 155.2   | 146.6   | 139.1   | 131.6   | 124.1   | 116.6   | 115.6   | 105.9   | 99.5   |
| 7.5°  | 264.3   | 266.4   | 252.5   | 225.8   | 203.3   | 174.4   | 147.7   | 131.6   | 129.5   | 113.4   | 100.6  |
| 10°   | 580.0   | 563.9   | 531.8   | 428.0   | 352.1   | 265.4   | 196.9   | 153.0   | 150.9   | 122.0   | 102.7  |
| 12.5° | 1057.2  | 1044.4  | 985.5   | 878.5   | 682.7   | 475.1   | 287.9   | 189.4   | 183.0   | 129.5   | 103.8  |
| 15°   | 1523.8  | 1503.5  | 1471.4  | 1363.3  | 1134.3  | 851.8   | 470.8   | 259.0   | 241.8   | 140.2   | 102.7  |
| 17.5° | 1821.3  | 1824.5  | 1795.6  | 1749.6  | 1601.9  | 1260.5  | 813.3   | 386.3   | 353.1   | 159.4   | 100.6  |
| 20°   | 2081.3  | 2073.8  | 2089.9  | 2065.2  | 1961.4  | 1713.2  | 1183.5  | 612.1   | 555.4   | 190.5   | 101.7  |
| 22.5° | 2380.9  | 2399.1  | 2410.9  | 2405.5  | 2291.0  | 2079.2  | 1604.0  | 916.0   | 844.3   | 247.2   | 104.9  |
| 25°   | 2782.2  | 2780.1  | 2781.1  | 2767.2  | 2655.9  | 2420.5  | 2025.7  | 1293.7  | 1221.0  | 339.2   | 112.4  |
| 27.5° | 3202.7  | 3215.6  | 3220.9  | 3170.6  | 3025.1  | 2794.0  | 2416.2  | 1706.8  | 1621.2  | 486.9   | 122.0  |
| 30°   | 3777.4  | 3766.7  | 3742.1  | 3639.3  | 3462.8  | 3176.0  | 2801.5  | 2140.2  | 2050.3  | 693.4   | 137.0  |
| 32.5° | 4552.1  | 4540.3  | 4416.2  | 4189.3  | 3925.0  | 3574.1  | 3188.8  | 2574.6  | 2465.5  | 951.3   | 157.3  |
| 35°   | 5828.7  | 5846.9  | 5541.9  | 4954.4  | 4480.4  | 4052.4  | 3617.9  | 3006.9  | 2910.6  | 1269.1  | 185.1  |
| 37.5° | 7783.7  | 7684.2  | 7270.1  | 6232.1  | 5211.3  | 4649.5  | 4027.8  | 3443.5  | 3360.0  | 1660.8  | 221.5  |
| 40°   | 9683.1  | 9584.7  | 9464.8  | 8481.4  | 6481.4  | 5307.6  | 4601.3  | 3956.1  | 3848.0  | 2102.7  | 275.0  |
| 42.5° | 11679.9 | 11625.3 | 11619.9 | 10878.4 | 8799.2  | 6342.3  | 5291.5  | 4556.4  | 4464.4  | 2587.4  | 362.8  |
| 45°   | 13094.5 | 13039.9 | 13154.4 | 13283.9 | 11955.9 | 8559.5  | 6493.2  | 5336.5  | 5202.7  | 3176.0  | 502.9  |
| 47.5° | 13285.0 | 13287.1 | 13593.2 | 13998.7 | 14301.6 | 11989.1 | 8094.0  | 6370.2  | 6207.5  | 4018.1  | 738.4  |
| 50°   | 12651.5 | 12676.1 | 13163.0 | 13888.5 | 14703.9 | 14866.6 | 10916.9 | 7870.4  | 7629.6  | 5016.5  | 1072.2 |
| 52.5° | 11445.5 | 11473.3 | 12151.8 | 13344.9 | 14333.7 | 15557.8 | 14240.6 | 9832.9  | 9555.8  | 6262.1  | 1543.0 |
| 55°   | 10359.4 | 10376.5 | 11154.5 | 12662.2 | 13887.4 | 15182.2 | 16213.8 | 12453.5 | 12089.7 | 7794.4  | 2007.5 |
| 57.5° | 9284.0  | 9244.4  | 9750.5  | 11476.6 | 13811.5 | 14721.0 | 16504.8 | 15440.1 | 15038.8 | 9469.1  | 2369.1 |
| 60°   | 7845.8  | 7779.4  | 8186.1  | 9284.0  | 12812.0 | 15023.9 | 15960.2 | 17092.3 | 17001.4 | 11800.8 | 2648.4 |
| 61°   | 7018.6  | 6990.8  | 7399.6  | 8341.2  | 11970.9 | 14946.8 | 15829.6 | 17161.9 | 17171.5 | 12904.0 | 2773.6 |
| 62.5° | 5012.2  | 5091.4  | 5716.3  | 6940.5  | 10026.6 | 14447.1 | 15846.7 | 16946.8 | 17042.0 | 14370.0 | 3097.9 |
| 65°   | 2227.9  | 2355.2  | 2841.0  | 3837.3  | 5830.8  | 12018.0 | 15694.8 | 16474.9 | 16427.8 | 14772.4 | 4215.0 |
| 67.5° | 1321.5  | 1340.8  | 1582.6  | 2174.4  | 3088.2  | 6464.3  | 13850.0 | 15851.0 | 15787.9 | 12860.2 | 5244.4 |
| 70°   | 1041.2  | 1050.8  | 1127.9  | 1364.3  | 1792.4  | 2476.2  | 7904.6  | 13714.1 | 13989.1 | 10427.9 | 5134.2 |
| 72.5° | 987.7   | 985.5   | 996.2   | 1038.0  | 1128.9  | 1228.4  | 3060.4  | 9116.0  | 9675.6  | 7509.8  | 4304.9 |
| 75°   | 974.8   | 970.6   | 959.9   | 943.8   | 817.5   | 723.4   | 948.1   | 4032.0  | 4356.3  | 5131.0  | 3241.3 |
| 77.5° | 945.9   | 947.0   | 949.2   | 905.3   | 700.9   | 511.5   | 459.1   | 1293.7  | 1591.2  | 3256.2  | 2303.9 |
| 80°   | 639.9   | 649.5   | 665.6   | 648.5   | 630.3   | 370.2   | 324.2   | 460.1   | 466.6   | 1827.7  | 1521.6 |
| 82.5° | 324.2   | 324.2   | 316.7   | 282.5   | 244.0   | 240.8   | 257.9   | 333.9   | 338.1   | 924.5   | 715.9  |
| 85°   | 195.8   | 206.5   | 210.8   | 191.5   | 175.5   | 161.6   | 196.9   | 265.4   | 275.0   | 358.5   | 166.9  |
| 87.5° | 43.9    | 44.9    | 49.2    | 65.3    | 95.2    | 129.5   | 183.0   | 242.9   | 247.2   | 230.1   | 20.3   |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0    |

REPORT NUMBER: P1047681

CATALOG NUMBER: GALN-SA6A-722-U-T2BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|-------|------|------|------|------|------|------|------|------|------|
| 0°    | 95.2   | 95.2  | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 |
| 2.5°  | 96.3   | 94.2  | 93.1 | 89.9 | 86.7 | 83.5 | 81.3 | 80.3 | 81.3 | 82.4 | 82.4 |
| 5°    | 95.2   | 92.0  | 86.7 | 81.3 | 77.0 | 72.8 | 68.5 | 67.4 | 67.4 | 68.5 | 68.5 |
| 7.5°  | 95.2   | 89.9  | 82.4 | 76.0 | 69.6 | 63.1 | 59.9 | 57.8 | 58.9 | 58.9 | 58.9 |
| 10°   | 95.2   | 88.8  | 79.2 | 69.6 | 62.1 | 54.6 | 49.2 | 47.1 | 47.1 | 47.1 | 47.1 |
| 12.5° | 94.2   | 87.7  | 76.0 | 64.2 | 53.5 | 44.9 | 38.5 | 35.3 | 36.4 | 36.4 | 36.4 |
| 15°   | 92.0   | 84.5  | 71.7 | 54.6 | 42.8 | 34.2 | 27.8 | 24.6 | 25.7 | 27.8 | 28.9 |
| 17.5° | 88.8   | 81.3  | 64.2 | 46.0 | 34.2 | 25.7 | 19.3 | 17.1 | 18.2 | 21.4 | 21.4 |
| 20°   | 87.7   | 78.1  | 56.7 | 37.5 | 25.7 | 18.2 | 12.8 | 10.7 | 11.8 | 16.1 | 17.1 |
| 22.5° | 87.7   | 76.0  | 51.4 | 31.0 | 19.3 | 11.8 | 7.5  | 4.3  | 4.3  | 7.5  | 7.5  |
| 25°   | 88.8   | 74.9  | 47.1 | 25.7 | 13.9 | 8.6  | 4.3  | 2.1  | 4.3  | 11.8 | 13.9 |
| 27.5° | 91.0   | 73.8  | 44.9 | 21.4 | 10.7 | 7.5  | 3.2  | 7.5  | 12.8 | 12.8 | 12.8 |
| 30°   | 93.1   | 71.7  | 41.7 | 18.2 | 9.6  | 5.4  | 5.4  | 10.7 | 10.7 | 12.8 | 13.9 |
| 32.5° | 96.3   | 70.6  | 39.6 | 16.1 | 7.5  | 4.3  | 7.5  | 6.4  | 6.4  | 7.5  | 8.6  |
| 35°   | 102.7  | 71.7  | 37.5 | 16.1 | 7.5  | 5.4  | 6.4  | 3.2  | 2.1  | 2.1  | 2.1  |
| 37.5° | 111.3  | 72.8  | 34.2 | 13.9 | 6.4  | 6.4  | 3.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 125.2  | 76.0  | 32.1 | 12.8 | 5.4  | 5.4  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 148.7  | 82.4  | 31.0 | 11.8 | 5.4  | 4.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 195.8  | 97.4  | 28.9 | 10.7 | 5.4  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 281.4  | 132.7 | 27.8 | 8.6  | 3.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 410.9  | 179.8 | 26.8 | 7.5  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 524.3  | 189.4 | 18.2 | 6.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 537.2  | 130.5 | 13.9 | 4.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 428.0  | 84.5  | 11.8 | 3.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 324.2  | 64.2  | 10.7 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 61°   | 311.4  | 57.8  | 10.7 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 343.5  | 50.3  | 9.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 558.6  | 41.7  | 8.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 970.6  | 36.4  | 7.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 1226.3 | 34.2  | 6.4  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 1069.0 | 31.0  | 6.4  | 2.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 643.1  | 26.8  | 6.4  | 4.3  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 337.1  | 20.3  | 6.4  | 5.4  | 3.2  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 163.7  | 18.2  | 7.5  | 5.4  | 4.3  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 64.2   | 15.0  | 8.6  | 7.5  | 5.4  | 3.2  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 28.9   | 12.8  | 9.6  | 8.6  | 7.5  | 4.3  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 15.0   | 11.8  | 10.7 | 9.6  | 7.5  | 5.4  | 2.1  | 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  |



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

McGraw-Edison

Report Number: SP1-2407-184-2

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-722-U-5WQ

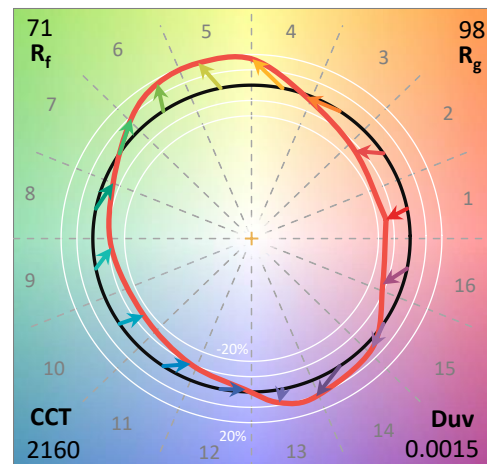
Data in this report applies to families of products including GSS-SB1A-722-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-722-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 2200K CCT 26 LEDS

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 2160     | CRI (Ra): | 71.9 |      |       |
| CIE u':                   | 0.2927   | R1:       | 68.7 | R9:  | -17.8 |
| CIE v':                   | 0.5388   | R2:       | 82.6 | R10: | 60.5  |
| Duv:                      | 0.0015   | R3:       | 95.5 | R11: | 60.2  |
| CIE x:                    | 0.5130   | R4:       | 66.4 | R12: | 48.2  |
| CIE y:                    | 0.4197   | R5:       | 65.4 | R13: | 70.7  |
| CIE z:                    | 0.0674   | R6:       | 75.9 | R14: | 96.8  |
| Peak Wavelength (nm):     | 609      | R7:       | 77.2 | R15: | 61.8  |
| Dominant Wavelength (nm): | 587      | R8:       | 43.5 |      |       |
| Purity:                   | 79.96089 |           |      |      |       |
| Rf:                       | 70.6     |           |      |      |       |
| Rg:                       | 97.6     |           |      |      |       |



### Test Conditions

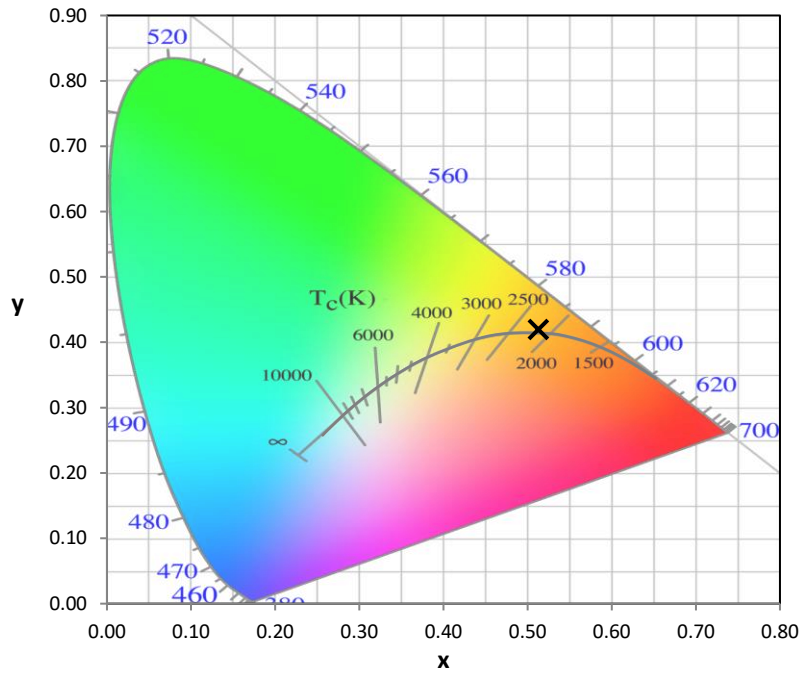
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-2

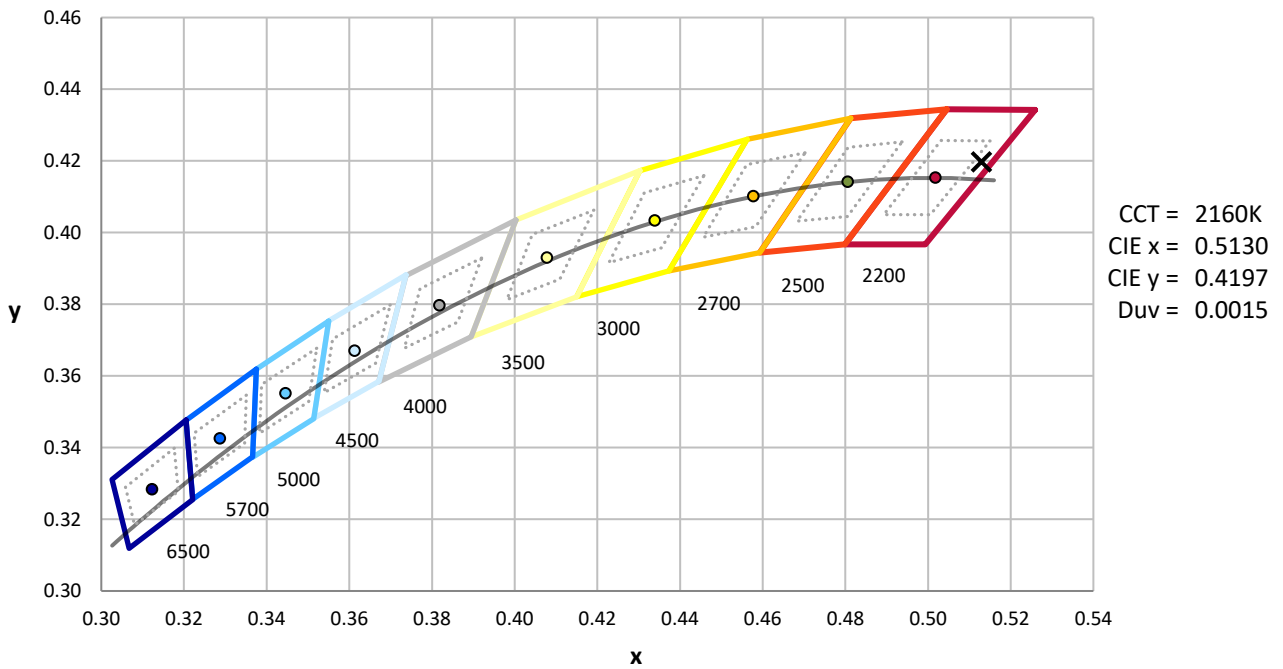
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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

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**CIE 1931 Chromaticity Diagram**



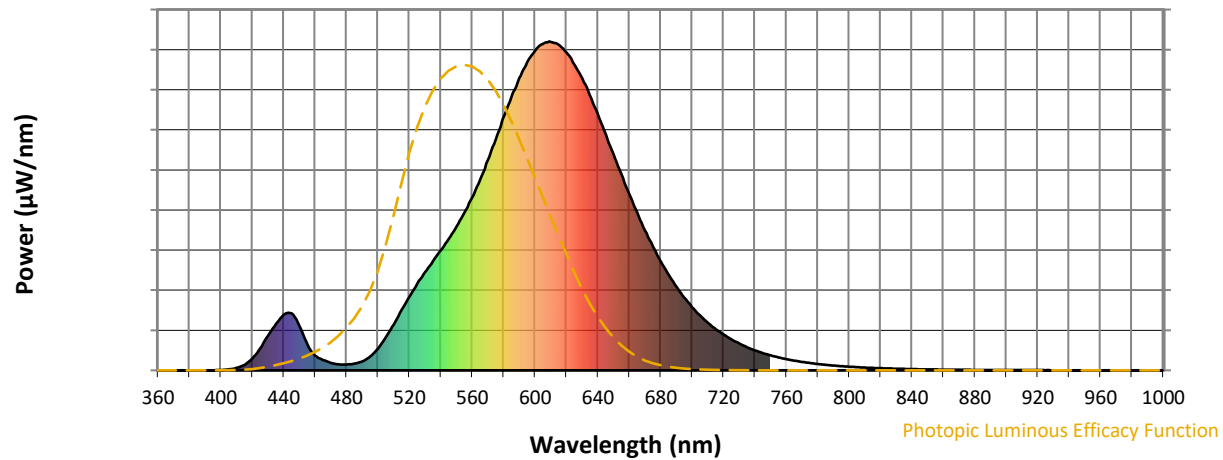
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 2200K 7-step quadrangle

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### Photopic Flux vs. Wavelength

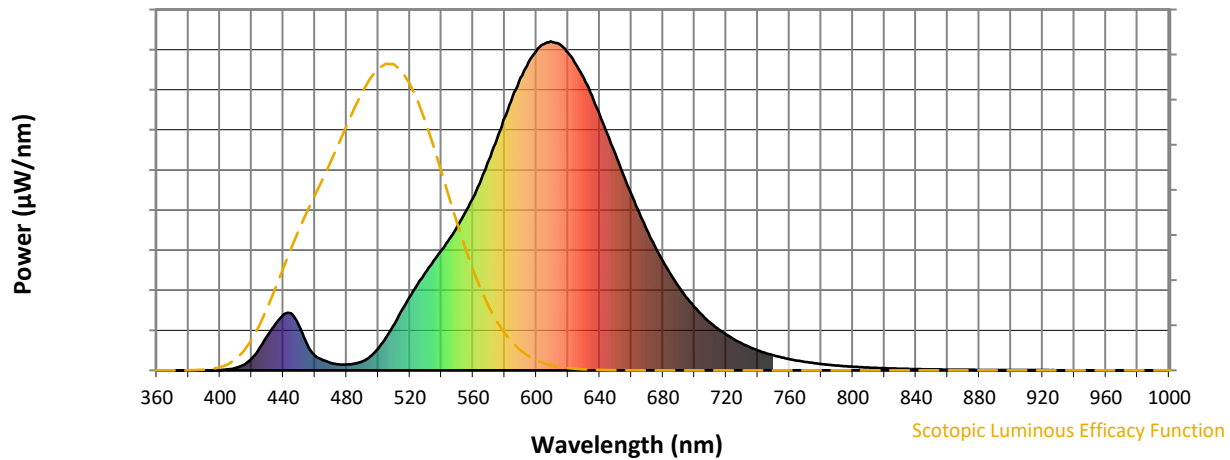


### Photopic Lumens: NR

| $\lambda$<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               | 27                                     | NR                             | 620               | 966                                    | NR                             | 750               | 46                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 42                                     | NR                             | 625               | 930                                    | NR                             | 755               | 39                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 67                                     | NR                             | 630               | 888                                    | NR                             | 760               | 34                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 101                                    | NR                             | 635               | 835                                    | NR                             | 765               | 30                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 139                                    | NR                             | 640               | 778                                    | NR                             | 770               | 26                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 183                                    | NR                             | 645               | 717                                    | NR                             | 775               | 22                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 224                                    | NR                             | 650               | 656                                    | NR                             | 780               | 19                                     | NR                             | 910               | 1                                      | NR                             |
| 395               | 0                                      | NR                             | 525               | 262                                    | NR                             | 655               | 595                                    | NR                             | 785               | 17                                     | NR                             | 915               | 1                                      | NR                             |
| 400               | 1                                      | NR                             | 530               | 299                                    | NR                             | 660               | 536                                    | NR                             | 790               | 15                                     | NR                             | 920               | 1                                      | NR                             |
| 405               | 3                                      | NR                             | 535               | 332                                    | NR                             | 665               | 480                                    | NR                             | 795               | 13                                     | NR                             | 925               | 1                                      | NR                             |
| 410               | 7                                      | NR                             | 540               | 365                                    | NR                             | 670               | 425                                    | NR                             | 800               | 11                                     | NR                             | 930               | 1                                      | NR                             |
| 415               | 17                                     | NR                             | 545               | 400                                    | NR                             | 675               | 376                                    | NR                             | 805               | 10                                     | NR                             | 935               | 0                                      | NR                             |
| 420               | 36                                     | NR                             | 550               | 437                                    | NR                             | 680               | 332                                    | NR                             | 810               | 8                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 67                                     | NR                             | 555               | 479                                    | NR                             | 685               | 291                                    | NR                             | 815               | 8                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 105                                    | NR                             | 560               | 525                                    | NR                             | 690               | 255                                    | NR                             | 820               | 7                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 141                                    | NR                             | 565               | 579                                    | NR                             | 695               | 221                                    | NR                             | 825               | 6                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 169                                    | NR                             | 570               | 639                                    | NR                             | 700               | 192                                    | NR                             | 830               | 5                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 173                                    | NR                             | 575               | 703                                    | NR                             | 705               | 167                                    | NR                             | 835               | 4                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 136                                    | NR                             | 580               | 769                                    | NR                             | 710               | 144                                    | NR                             | 840               | 4                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 80                                     | NR                             | 585               | 832                                    | NR                             | 715               | 125                                    | NR                             | 845               | 3                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 45                                     | NR                             | 590               | 890                                    | NR                             | 720               | 109                                    | NR                             | 850               | 3                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 32                                     | NR                             | 595               | 937                                    | NR                             | 725               | 94                                     | NR                             | 855               | 3                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 23                                     | NR                             | 600               | 972                                    | NR                             | 730               | 81                                     | NR                             | 860               | 2                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 18                                     | NR                             | 605               | 992                                    | NR                             | 735               | 70                                     | NR                             | 865               | 2                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 18                                     | NR                             | 610               | 998                                    | NR                             | 740               | 61                                     | NR                             | 870               | 2                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 20                                     | NR                             | 615               | 990                                    | NR                             | 745               | 53                                     | NR                             | 875               | 2                                      | NR                             |                   |                                        |                                |

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### Scotopic Flux vs. Wavelength



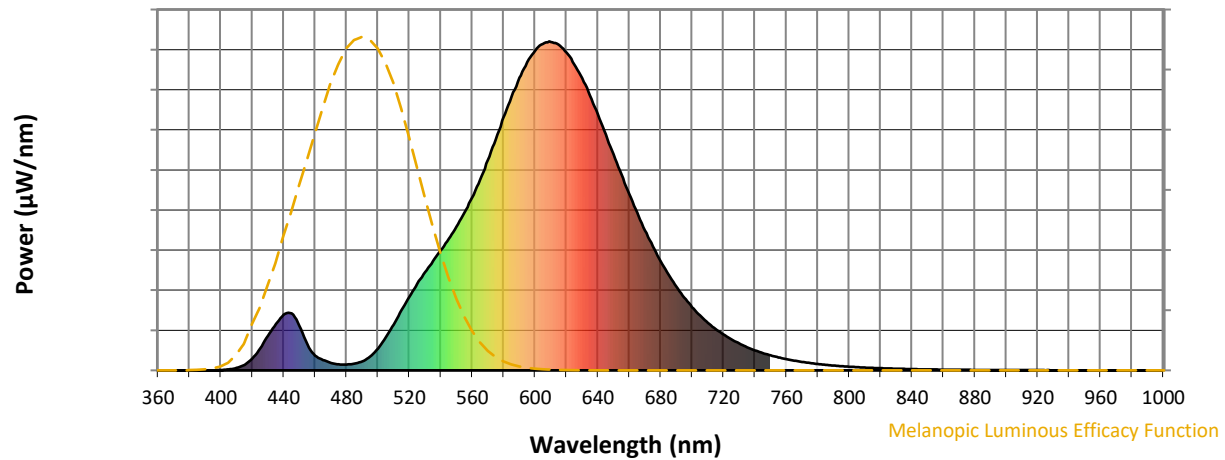
Scotopic Lumens: NR

S/P: 0.8

| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 27                          | NR               | 620       | 966                         | NR               | 750       | 46                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 42                          | NR               | 625       | 930                         | NR               | 755       | 39                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 67                          | NR               | 630       | 888                         | NR               | 760       | 34                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 101                         | NR               | 635       | 835                         | NR               | 765       | 30                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 139                         | NR               | 640       | 778                         | NR               | 770       | 26                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 183                         | NR               | 645       | 717                         | NR               | 775       | 22                          | NR               | 905       | 1                           | NR               |
| 390       | 0                           | NR               | 520       | 224                         | NR               | 650       | 656                         | NR               | 780       | 19                          | NR               | 910       | 1                           | NR               |
| 395       | 0                           | NR               | 525       | 262                         | NR               | 655       | 595                         | NR               | 785       | 17                          | NR               | 915       | 1                           | NR               |
| 400       | 1                           | NR               | 530       | 299                         | NR               | 660       | 536                         | NR               | 790       | 15                          | NR               | 920       | 1                           | NR               |
| 405       | 3                           | NR               | 535       | 332                         | NR               | 665       | 480                         | NR               | 795       | 13                          | NR               | 925       | 1                           | NR               |
| 410       | 7                           | NR               | 540       | 365                         | NR               | 670       | 425                         | NR               | 800       | 11                          | NR               | 930       | 1                           | NR               |
| 415       | 17                          | NR               | 545       | 400                         | NR               | 675       | 376                         | NR               | 805       | 10                          | NR               | 935       | 0                           | NR               |
| 420       | 36                          | NR               | 550       | 437                         | NR               | 680       | 332                         | NR               | 810       | 8                           | NR               | 940       | 0                           | NR               |
| 425       | 67                          | NR               | 555       | 479                         | NR               | 685       | 291                         | NR               | 815       | 8                           | NR               | 945       | 0                           | NR               |
| 430       | 105                         | NR               | 560       | 525                         | NR               | 690       | 255                         | NR               | 820       | 7                           | NR               | 950       | 0                           | NR               |
| 435       | 141                         | NR               | 565       | 579                         | NR               | 695       | 221                         | NR               | 825       | 6                           | NR               | 955       | 0                           | NR               |
| 440       | 169                         | NR               | 570       | 639                         | NR               | 700       | 192                         | NR               | 830       | 5                           | NR               | 960       | 0                           | NR               |
| 445       | 173                         | NR               | 575       | 703                         | NR               | 705       | 167                         | NR               | 835       | 4                           | NR               | 965       | 0                           | NR               |
| 450       | 136                         | NR               | 580       | 769                         | NR               | 710       | 144                         | NR               | 840       | 4                           | NR               | 970       | 0                           | NR               |
| 455       | 80                          | NR               | 585       | 832                         | NR               | 715       | 125                         | NR               | 845       | 3                           | NR               | 975       | 0                           | NR               |
| 460       | 45                          | NR               | 590       | 890                         | NR               | 720       | 109                         | NR               | 850       | 3                           | NR               | 980       | 0                           | NR               |
| 465       | 32                          | NR               | 595       | 937                         | NR               | 725       | 94                          | NR               | 855       | 3                           | NR               | 985       | 0                           | NR               |
| 470       | 23                          | NR               | 600       | 972                         | NR               | 730       | 81                          | NR               | 860       | 2                           | NR               | 990       | 0                           | NR               |
| 475       | 18                          | NR               | 605       | 992                         | NR               | 735       | 70                          | NR               | 865       | 2                           | NR               | 995       | 0                           | NR               |
| 480       | 18                          | NR               | 610       | 998                         | NR               | 740       | 61                          | NR               | 870       | 2                           | NR               | 1000      | 0                           | NR               |
| 485       | 20                          | NR               | 615       | 990                         | NR               | 745       | 53                          | NR               | 875       | 2                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.21

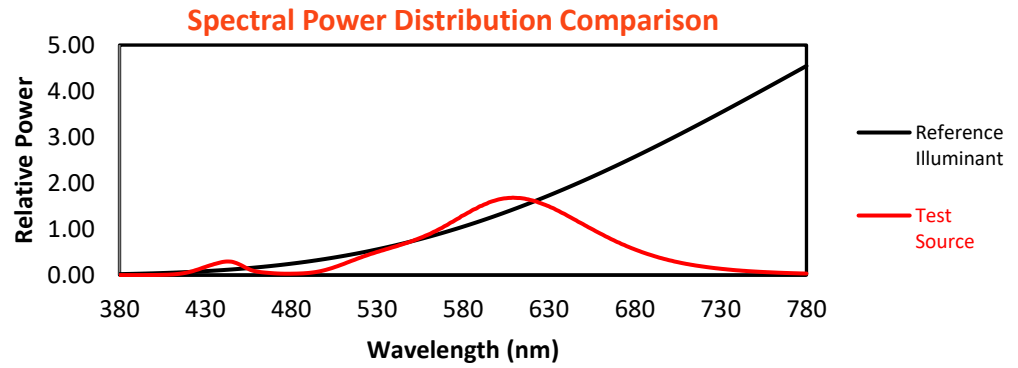
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | 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               | 27                                     | NR                             | 620               | 966                                    | NR                             | 750               | 46                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 42                                     | NR                             | 625               | 930                                    | NR                             | 755               | 39                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 67                                     | NR                             | 630               | 888                                    | NR                             | 760               | 34                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 101                                    | NR                             | 635               | 835                                    | NR                             | 765               | 30                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 139                                    | NR                             | 640               | 778                                    | NR                             | 770               | 26                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 183                                    | NR                             | 645               | 717                                    | NR                             | 775               | 22                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 224                                    | NR                             | 650               | 656                                    | NR                             | 780               | 19                                     | NR                             | 910               | 1                                      | NR                             |
| 395               | 0                                      | NR                             | 525               | 262                                    | NR                             | 655               | 595                                    | NR                             | 785               | 17                                     | NR                             | 915               | 1                                      | NR                             |
| 400               | 1                                      | NR                             | 530               | 299                                    | NR                             | 660               | 536                                    | NR                             | 790               | 15                                     | NR                             | 920               | 1                                      | NR                             |
| 405               | 3                                      | NR                             | 535               | 332                                    | NR                             | 665               | 480                                    | NR                             | 795               | 13                                     | NR                             | 925               | 1                                      | NR                             |
| 410               | 7                                      | NR                             | 540               | 365                                    | NR                             | 670               | 425                                    | NR                             | 800               | 11                                     | NR                             | 930               | 1                                      | NR                             |
| 415               | 17                                     | NR                             | 545               | 400                                    | NR                             | 675               | 376                                    | NR                             | 805               | 10                                     | NR                             | 935               | 0                                      | NR                             |
| 420               | 36                                     | NR                             | 550               | 437                                    | NR                             | 680               | 332                                    | NR                             | 810               | 8                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 67                                     | NR                             | 555               | 479                                    | NR                             | 685               | 291                                    | NR                             | 815               | 8                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 105                                    | NR                             | 560               | 525                                    | NR                             | 690               | 255                                    | NR                             | 820               | 7                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 141                                    | NR                             | 565               | 579                                    | NR                             | 695               | 221                                    | NR                             | 825               | 6                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 169                                    | NR                             | 570               | 639                                    | NR                             | 700               | 192                                    | NR                             | 830               | 5                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 173                                    | NR                             | 575               | 703                                    | NR                             | 705               | 167                                    | NR                             | 835               | 4                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 136                                    | NR                             | 580               | 769                                    | NR                             | 710               | 144                                    | NR                             | 840               | 4                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 80                                     | NR                             | 585               | 832                                    | NR                             | 715               | 125                                    | NR                             | 845               | 3                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 45                                     | NR                             | 590               | 890                                    | NR                             | 720               | 109                                    | NR                             | 850               | 3                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 32                                     | NR                             | 595               | 937                                    | NR                             | 725               | 94                                     | NR                             | 855               | 3                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 23                                     | NR                             | 600               | 972                                    | NR                             | 730               | 81                                     | NR                             | 860               | 2                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 18                                     | NR                             | 605               | 992                                    | NR                             | 735               | 70                                     | NR                             | 865               | 2                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 18                                     | NR                             | 610               | 998                                    | NR                             | 740               | 61                                     | NR                             | 870               | 2                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 20                                     | NR                             | 615               | 990                                    | NR                             | 745               | 53                                     | NR                             | 875               | 2                                      | NR                             |                   |                                        |                                |

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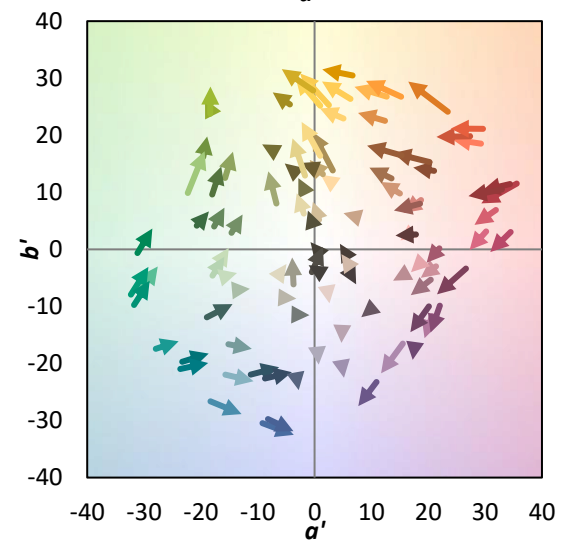
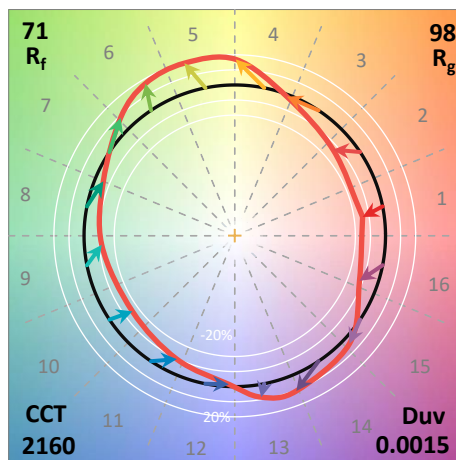
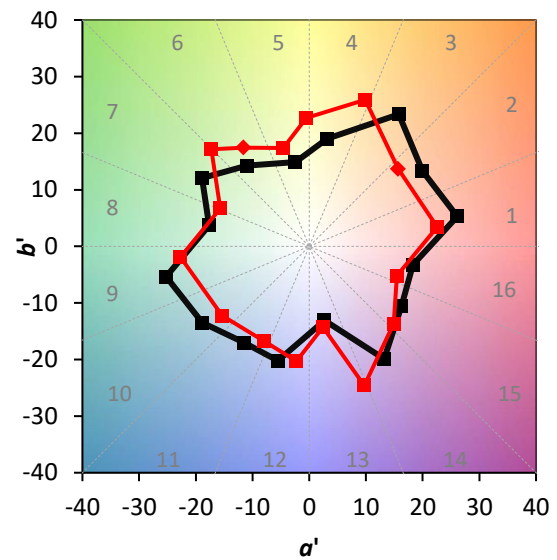
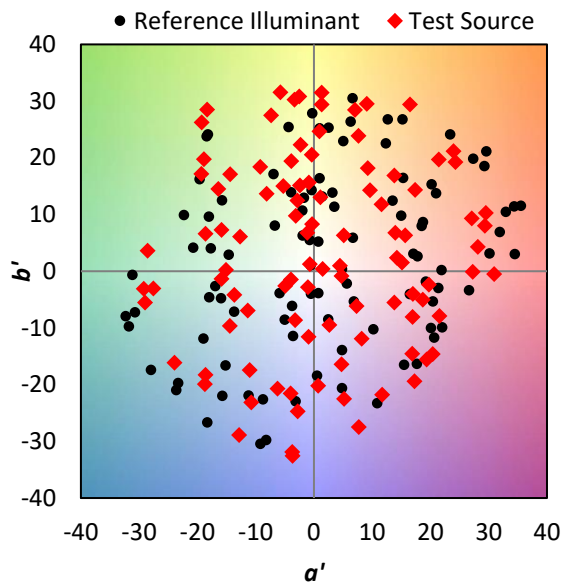
TM-30-18

### Summary

$R_f = 70.6$   
 $R_g = 97.6$   
 $CIE\ R_a = 71.9$   
 $R_g = -17.8$



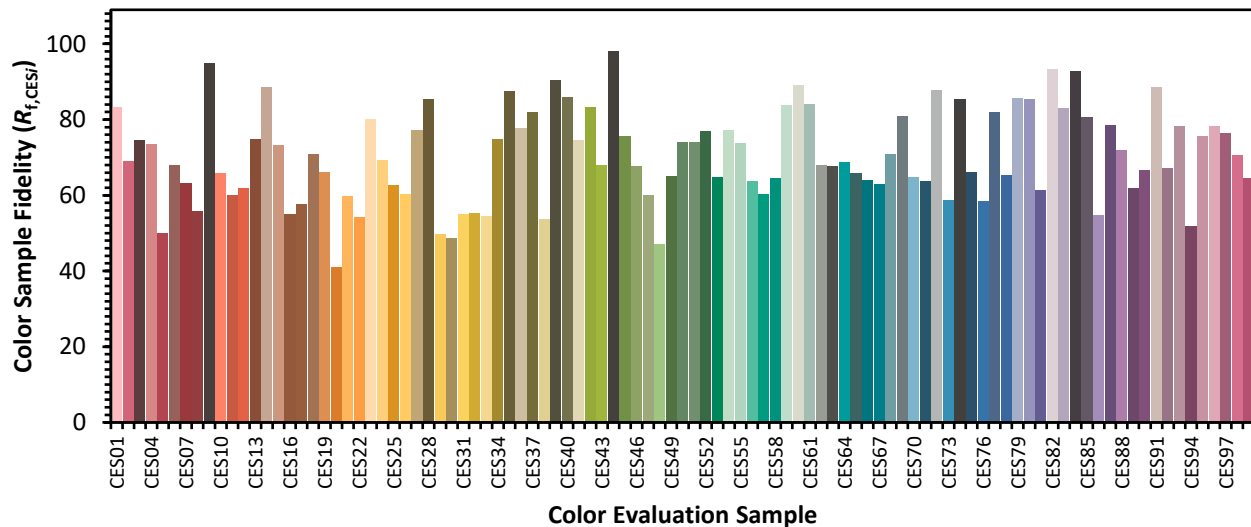
### Color Vector Graphics



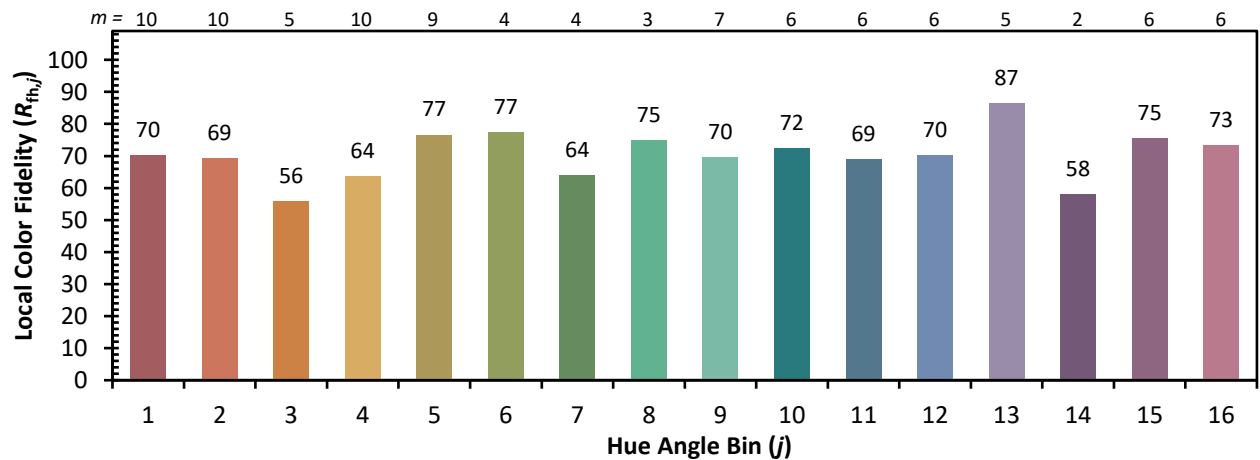
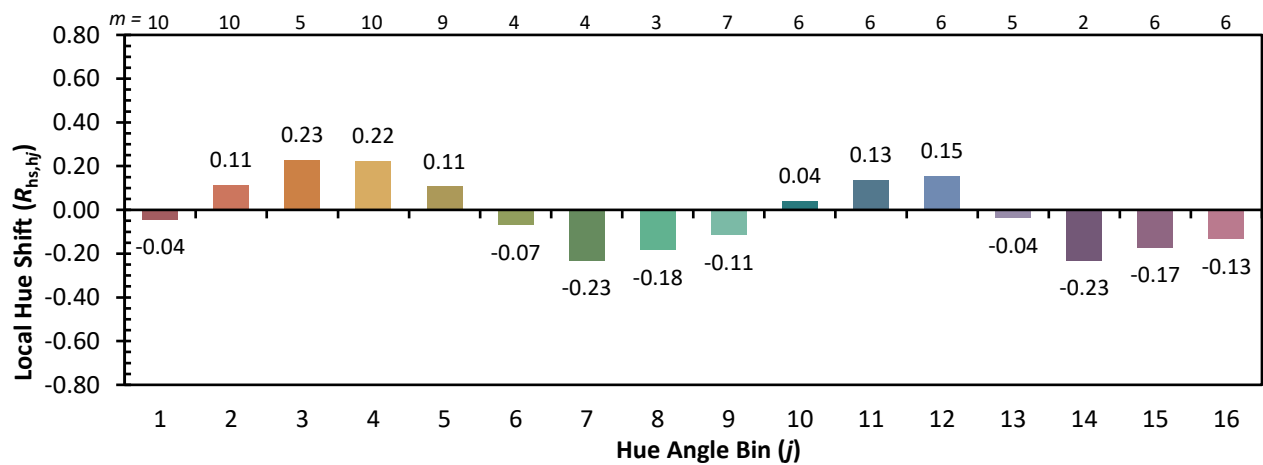
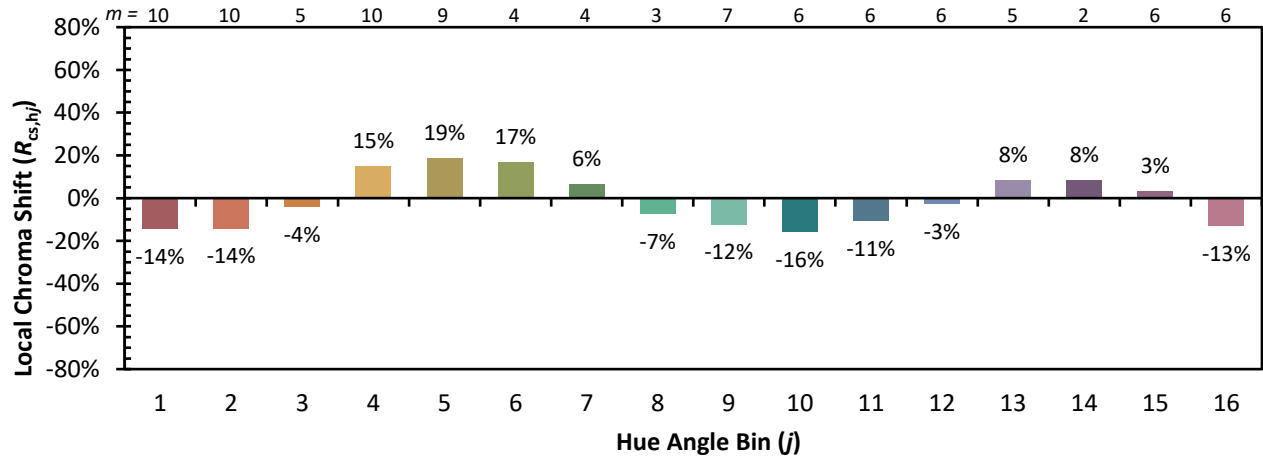


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

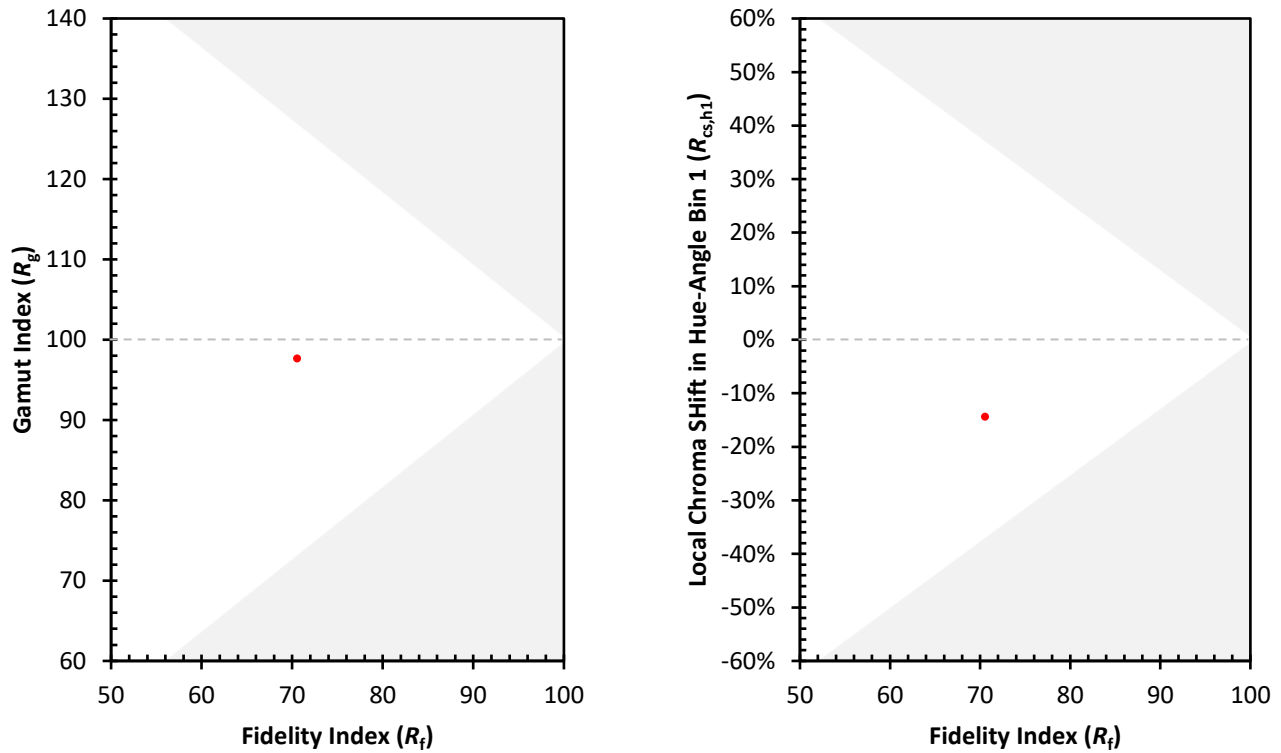
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 60 | CES51 = 74 | CES76 = 58 |
| CES02 = 65 | CES27 = 77 | CES52 = 77 | CES77 = 82 |
| CES03 = 32 | CES28 = 85 | CES53 = 65 | CES78 = 65 |
| CES04 = 72 | CES29 = 50 | CES54 = 77 | CES79 = 86 |
| CES05 = 52 | CES30 = 49 | CES55 = 74 | CES80 = 85 |
| CES06 = 53 | CES31 = 55 | CES56 = 64 | CES81 = 61 |
| CES07 = 44 | CES32 = 55 | CES57 = 60 | CES82 = 93 |
| CES08 = 43 | CES33 = 55 | CES58 = 64 | CES83 = 83 |
| CES09 = 29 | CES34 = 75 | CES59 = 84 | CES84 = 93 |
| CES10 = 79 | CES35 = 88 | CES60 = 89 | CES85 = 81 |
| CES11 = 62 | CES36 = 78 | CES61 = 84 | CES86 = 55 |
| CES12 = 68 | CES37 = 82 | CES62 = 68 | CES87 = 79 |
| CES13 = 45 | CES38 = 54 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 86 | CES65 = 66 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 89 |
| CES17 = 51 | CES42 = 83 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 68 | CES68 = 71 | CES93 = 78 |
| CES19 = 74 | CES44 = 98 | CES69 = 81 | CES94 = 52 |
| CES20 = 68 | CES45 = 76 | CES70 = 65 | CES95 = 76 |
| CES21 = 89 | CES46 = 68 | CES71 = 64 | CES96 = 78 |
| CES22 = 81 | CES47 = 60 | CES72 = 88 | CES97 = 76 |
| CES23 = 92 | CES48 = 47 | CES73 = 59 | CES98 = 71 |
| CES24 = 92 | CES49 = 65 | CES74 = 85 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)