

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: P1047465

Luminaire Tested: **GALN-SA6A-927-U-T3BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1047465  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA6A-927-U-T3BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 615mA 6xLight Square PACKAGE  
90CRI 2700K FIXTURE w/ TYPE III ANGLED BACKLIGHT CONTROL  
Light Source: (84) 2700K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13967.2 lumens  
Efficiency: N/A  
Efficacy: 85.7 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - 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



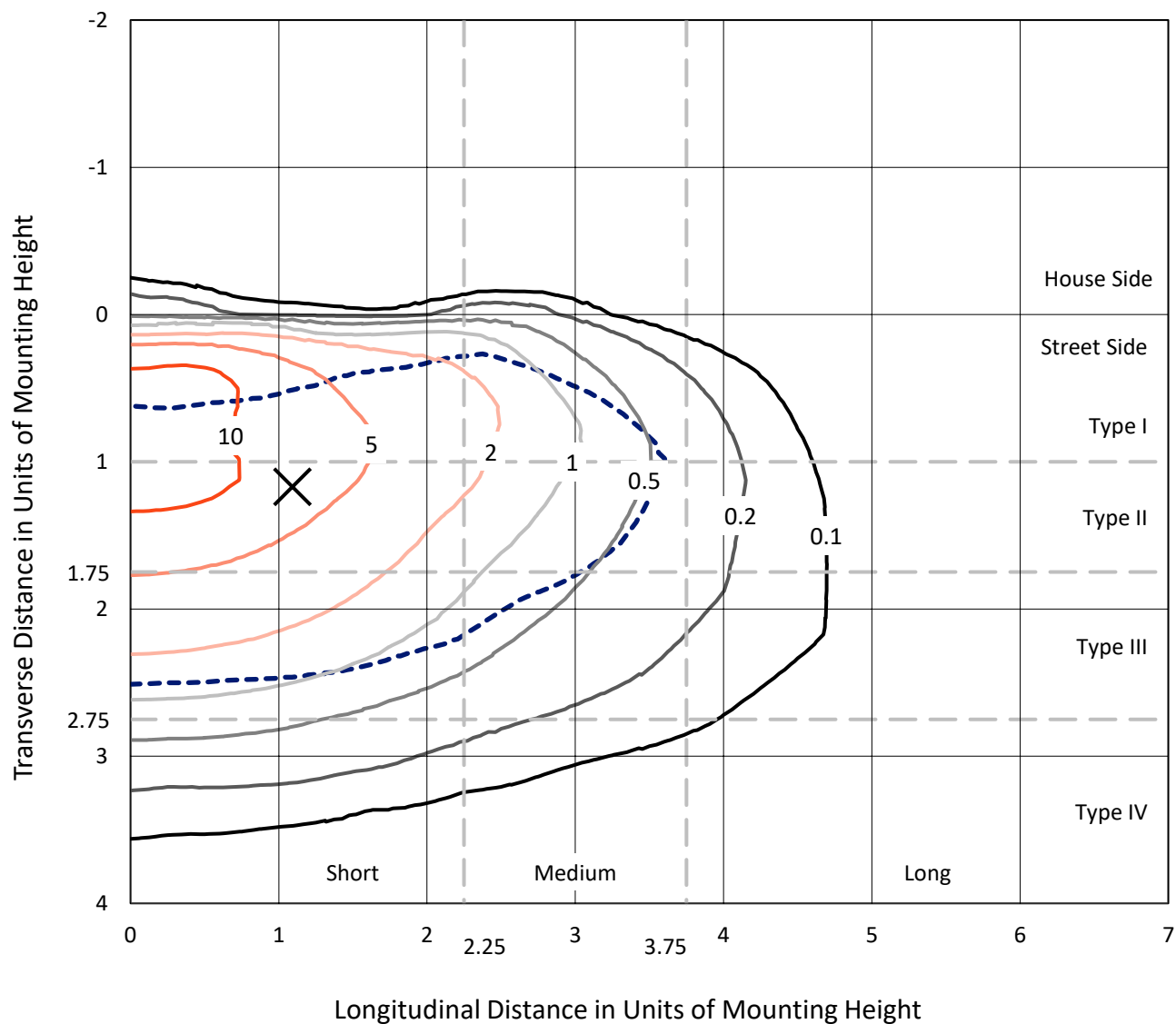
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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

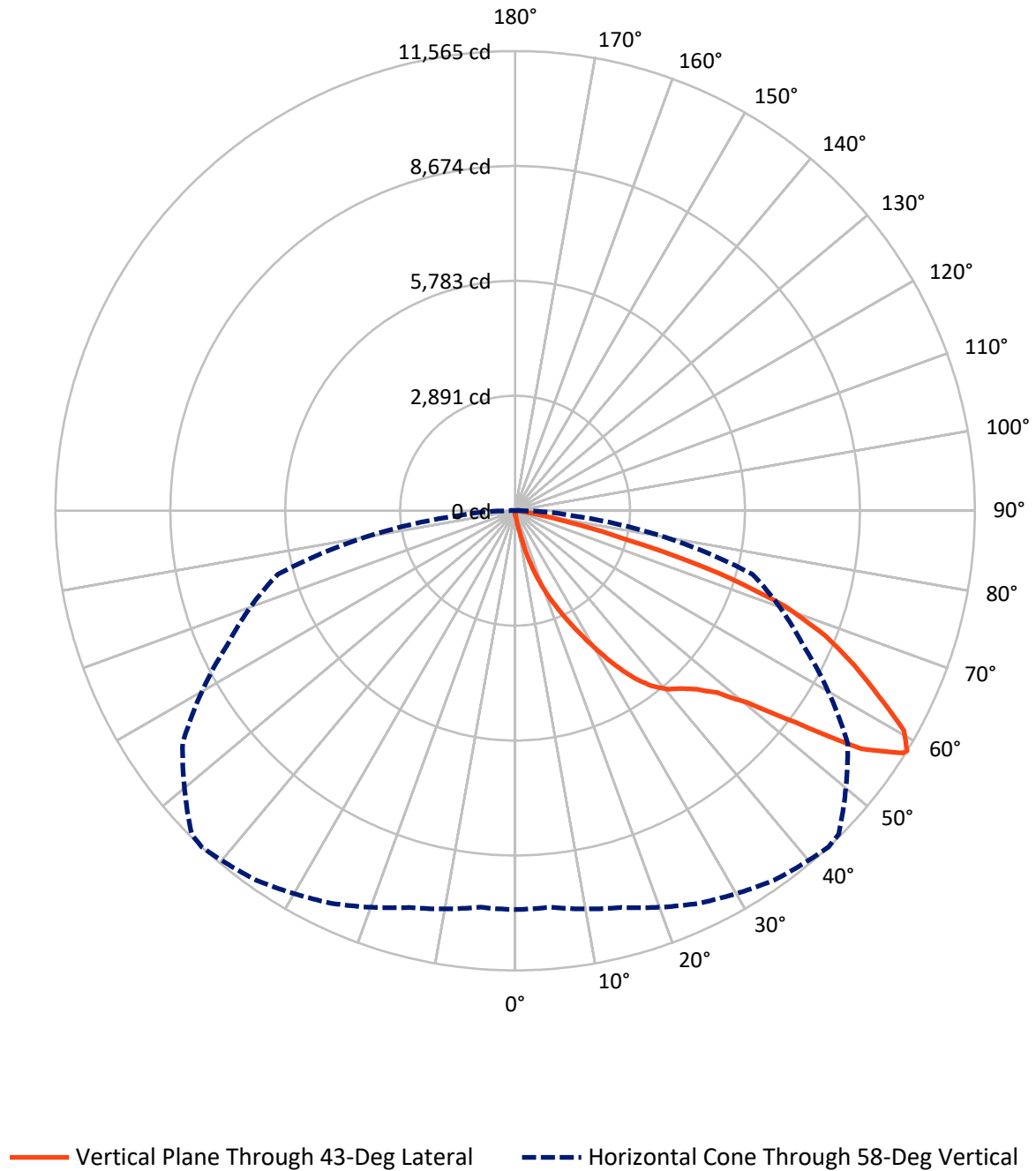


Based on 15 foot mounting height. Maximum calculated value = 15.7 fc  
 Type III - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GALN-SA6A-927-U-T3BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 51.0     | 0.0    | 51.0    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 13916.2  | 0.0    | 13916.2 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 13967.2  | 0.0    | 13967.2 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 13.4    | 0.1       |
| 10°-20°   | 160.5   | 1.1       |
| 20°-30°   | 578.7   | 4.1       |
| 30°-40°   | 1324.0  | 9.5       |
| 40°-50°   | 2233.1  | 16.0      |
| 50°-60°   | 3685.1  | 26.4      |
| 60°-70°   | 4118.6  | 29.5      |
| 70°-80°   | 1700.5  | 12.2      |
| 80°-90°   | 153.3   | 1.1       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 13967.2 | 100.0     |
| 0°-180°   | 13967.2 | 100.0     |



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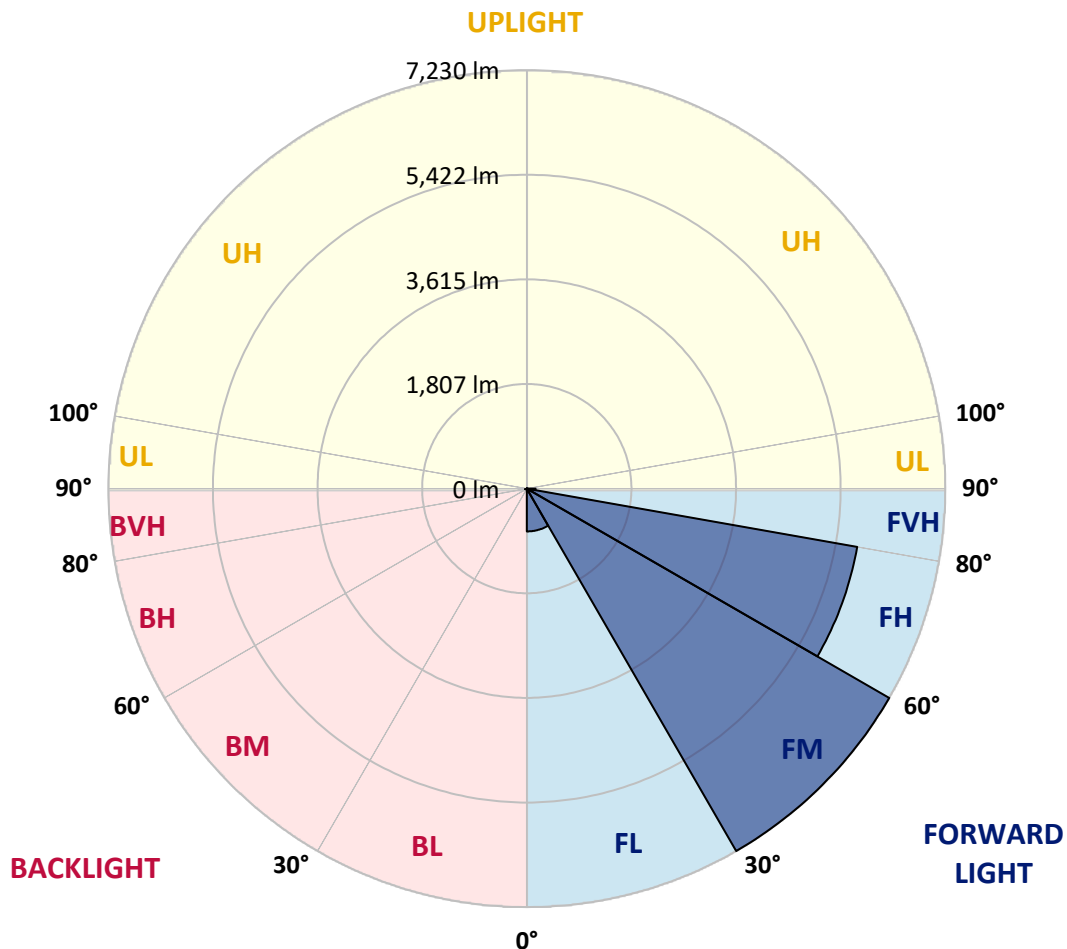
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 739.3  | 5.3       |                         |      |         |
| FM   | (30°-60°)   | 7230.0 | 51.8      |                         |      |         |
| FH   | (60°-80°)   | 5795.7 | 41.5      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 151.2  | 1.1       |                         |      | G2/225  |
| BL   | (0°-30°)    | 13.3   | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 12.2   | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 23.4   | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 2.1    | 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 III Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 43°     | 45°     | 55°     | 65°     | 75°    | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|
| 0°    | 91.3    | 91.3    | 91.3    | 91.3    | 91.3    | 91.3    | 91.3    | 91.3    | 91.3    | 91.3   | 91.3   |
| 2.5°  | 109.6   | 113.2   | 109.6   | 109.6   | 109.6   | 105.9   | 105.9   | 102.3   | 102.3   | 98.6   | 95.0   |
| 5°    | 160.7   | 160.7   | 149.8   | 142.5   | 135.2   | 131.5   | 127.9   | 120.5   | 113.2   | 105.9  | 98.6   |
| 7.5°  | 358.0   | 358.0   | 325.1   | 281.3   | 222.8   | 190.0   | 182.6   | 149.8   | 127.9   | 113.2  | 98.6   |
| 10°   | 854.8   | 854.8   | 781.7   | 661.2   | 511.4   | 379.9   | 339.7   | 215.5   | 153.4   | 120.5  | 102.3  |
| 12.5° | 1421.0  | 1439.3  | 1348.0  | 1194.5  | 971.7   | 741.6   | 661.2   | 394.5   | 204.6   | 131.5  | 102.3  |
| 15°   | 1928.8  | 1884.9  | 1859.4  | 1713.3  | 1501.4  | 1227.4  | 1125.1  | 664.8   | 295.9   | 149.8  | 102.3  |
| 17.5° | 2272.2  | 2272.2  | 2235.6  | 2137.0  | 1943.4  | 1702.3  | 1618.3  | 1074.0  | 478.5   | 171.7  | 105.9  |
| 20°   | 2674.0  | 2674.0  | 2608.2  | 2538.8  | 2367.1  | 2162.6  | 2082.2  | 1527.0  | 741.6   | 219.2  | 105.9  |
| 22.5° | 3159.8  | 3167.1  | 3094.1  | 2969.9  | 2805.5  | 2579.0  | 2509.6  | 1947.0  | 1074.0  | 292.2  | 109.6  |
| 25°   | 3751.6  | 3758.9  | 3653.0  | 3536.1  | 3284.0  | 3039.3  | 2933.4  | 2429.2  | 1479.5  | 409.1  | 109.6  |
| 27.5° | 4405.5  | 4456.7  | 4299.6  | 4098.7  | 3832.0  | 3525.1  | 3444.8  | 2863.9  | 1881.3  | 577.2  | 116.9  |
| 30°   | 5220.1  | 5220.1  | 5011.9  | 4730.6  | 4442.0  | 4062.1  | 3959.8  | 3320.6  | 2308.7  | 800.0  | 124.2  |
| 32.5° | 5921.5  | 5866.7  | 5600.0  | 5304.2  | 4997.3  | 4643.0  | 4533.4  | 3799.1  | 2747.1  | 1077.6 | 138.8  |
| 35°   | 6458.5  | 6411.0  | 6082.2  | 5764.4  | 5497.8  | 5172.6  | 5041.1  | 4317.8  | 3211.0  | 1391.8 | 160.7  |
| 37.5° | 6918.8  | 6900.5  | 6454.8  | 6056.7  | 5881.3  | 5596.4  | 5479.5  | 4807.3  | 3667.6  | 1731.5 | 186.3  |
| 40°   | 7422.9  | 7364.4  | 6889.6  | 6396.4  | 6133.4  | 5903.2  | 5797.3  | 5201.9  | 4106.0  | 2129.7 | 222.8  |
| 42.5° | 7853.9  | 7784.5  | 7357.1  | 6874.9  | 6425.6  | 6115.1  | 6012.8  | 5534.3  | 4533.4  | 2527.9 | 270.3  |
| 45°   | 8332.5  | 8296.0  | 7864.9  | 7499.6  | 6900.5  | 6403.7  | 6268.5  | 5801.0  | 4924.2  | 3002.8 | 332.4  |
| 47.5° | 9052.1  | 8986.4  | 8584.5  | 8285.0  | 7590.9  | 6842.1  | 6648.5  | 6074.9  | 5300.5  | 3470.3 | 427.4  |
| 50°   | 9888.7  | 9844.8  | 9607.4  | 9369.9  | 8679.5  | 7590.9  | 7360.8  | 6469.5  | 5720.6  | 4025.6 | 551.6  |
| 52.5° | 10571.8 | 10564.5 | 10593.7 | 10597.3 | 10075.0 | 8851.2  | 8507.8  | 7105.1  | 6202.8  | 4573.6 | 726.9  |
| 55°   | 10557.2 | 10590.0 | 10911.5 | 11280.5 | 11320.6 | 10571.8 | 10239.4 | 8175.4  | 6831.1  | 5249.4 | 971.7  |
| 57.5° | 10162.6 | 10137.1 | 10476.8 | 11032.1 | 11422.9 | 11503.3 | 11448.5 | 9837.5  | 7777.2  | 6064.0 | 1348.0 |
| 58°   | 10034.8 | 10012.9 | 10334.3 | 10900.5 | 11349.9 | 11565.4 | 11510.6 | 10213.8 | 7989.1  | 6180.9 | 1450.2 |
| 60°   | 9570.9  | 9574.5  | 9764.5  | 10279.5 | 10728.9 | 11240.3 | 11291.4 | 11287.8 | 9044.8  | 6962.6 | 1965.3 |
| 62.5° | 8957.1  | 8927.9  | 9103.3  | 9523.4  | 9917.9  | 10261.3 | 10348.9 | 11360.8 | 10590.0 | 7956.2 | 2948.0 |
| 65°   | 8109.7  | 8065.8  | 8252.1  | 8727.0  | 9150.8  | 9373.6  | 9377.2  | 10381.8 | 11317.0 | 9022.9 | 4350.7 |
| 67.5° | 6535.2  | 6498.7  | 6871.3  | 7481.3  | 8135.2  | 8427.5  | 8559.0  | 9008.3  | 10703.3 | 9746.2 | 5154.4 |
| 70°   | 4003.7  | 4080.4  | 4599.1  | 5556.2  | 6674.0  | 7211.0  | 7408.3  | 7547.1  | 9114.2  | 9636.6 | 4310.5 |
| 72.5° | 1848.4  | 1757.1  | 2199.1  | 2867.6  | 4142.5  | 5337.0  | 5541.6  | 6085.9  | 7225.6  | 8365.4 | 3214.6 |
| 75°   | 862.1   | 829.2   | 931.5   | 1253.0  | 1877.6  | 2882.2  | 3254.8  | 4858.5  | 5541.6  | 5819.2 | 2319.7 |
| 77.5° | 442.0   | 445.7   | 529.7   | 569.9   | 774.4   | 1333.3  | 1530.6  | 3196.4  | 4062.1  | 3247.5 | 1556.2 |
| 80°   | 193.6   | 200.9   | 204.6   | 222.8   | 314.2   | 515.1   | 580.8   | 1483.1  | 2776.3  | 1654.8 | 851.1  |
| 82.5° | 124.2   | 127.9   | 127.9   | 127.9   | 149.8   | 204.6   | 233.8   | 595.4   | 1384.5  | 821.9  | 263.0  |
| 85°   | 65.8    | 65.8    | 73.1    | 91.3    | 105.9   | 124.2   | 131.5   | 190.0   | 456.6   | 244.8  | 62.1   |
| 87.5° | 36.5    | 40.2    | 43.8    | 54.8    | 69.4    | 84.0    | 91.3    | 131.5   | 175.3   | 168.0  | 14.6   |
| 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: P1047465

CATALOG NUMBER: GALN-SA6A-927-U-T3BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 91.3   | 91.3 | 91.3 | 91.3 | 91.3 | 91.3 | 91.3 | 91.3 | 91.3 | 91.3 | 91.3 |
| 2.5°  | 95.0   | 91.3 | 87.7 | 84.0 | 80.4 | 76.7 | 76.7 | 76.7 | 76.7 | 76.7 | 76.7 |
| 5°    | 91.3   | 87.7 | 84.0 | 76.7 | 69.4 | 65.8 | 62.1 | 58.4 | 58.4 | 58.4 | 58.4 |
| 7.5°  | 91.3   | 87.7 | 76.7 | 69.4 | 62.1 | 54.8 | 47.5 | 47.5 | 47.5 | 47.5 | 47.5 |
| 10°   | 91.3   | 84.0 | 73.1 | 62.1 | 51.1 | 43.8 | 40.2 | 36.5 | 36.5 | 36.5 | 36.5 |
| 12.5° | 91.3   | 80.4 | 69.4 | 54.8 | 43.8 | 36.5 | 32.9 | 29.2 | 29.2 | 29.2 | 29.2 |
| 15°   | 91.3   | 80.4 | 65.8 | 51.1 | 40.2 | 29.2 | 25.6 | 21.9 | 21.9 | 21.9 | 21.9 |
| 17.5° | 87.7   | 76.7 | 62.1 | 43.8 | 32.9 | 21.9 | 18.3 | 14.6 | 14.6 | 18.3 | 18.3 |
| 20°   | 84.0   | 73.1 | 54.8 | 36.5 | 25.6 | 18.3 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 |
| 22.5° | 84.0   | 73.1 | 51.1 | 32.9 | 21.9 | 11.0 | 7.3  | 7.3  | 7.3  | 7.3  | 11.0 |
| 25°   | 84.0   | 69.4 | 43.8 | 25.6 | 14.6 | 7.3  | 3.7  | 3.7  | 3.7  | 3.7  | 3.7  |
| 27.5° | 84.0   | 69.4 | 40.2 | 21.9 | 11.0 | 7.3  | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| 30°   | 80.4   | 65.8 | 36.5 | 18.3 | 7.3  | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 32.5° | 80.4   | 62.1 | 29.2 | 14.6 | 7.3  | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 35°   | 84.0   | 58.4 | 25.6 | 11.0 | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 3.7  |
| 37.5° | 87.7   | 54.8 | 21.9 | 7.3  | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 91.3   | 51.1 | 21.9 | 7.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 98.6   | 51.1 | 18.3 | 7.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 105.9  | 51.1 | 14.6 | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 120.5  | 54.8 | 14.6 | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 131.5  | 58.4 | 11.0 | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 146.1  | 54.8 | 11.0 | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 164.4  | 54.8 | 11.0 | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 179.0  | 51.1 | 11.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 58°   | 186.3  | 47.5 | 7.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 222.8  | 43.8 | 7.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 347.0  | 36.5 | 7.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 705.0  | 32.9 | 7.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 1315.1 | 29.2 | 7.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 1472.2 | 32.9 | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 927.9  | 25.6 | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 489.5  | 25.6 | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 244.8  | 25.6 | 3.7  | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 113.2  | 18.3 | 3.7  | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 47.5   | 11.0 | 7.3  | 3.7  | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 21.9   | 11.0 | 7.3  | 7.3  | 3.7  | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 11.0   | 11.0 | 11.0 | 7.3  | 7.3  | 3.7  | 3.7  | 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: SP1-2407-184-13

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-927-U-5WQ

Data in this report applies to families of products including GSS-SB1A-927-U-5WQ

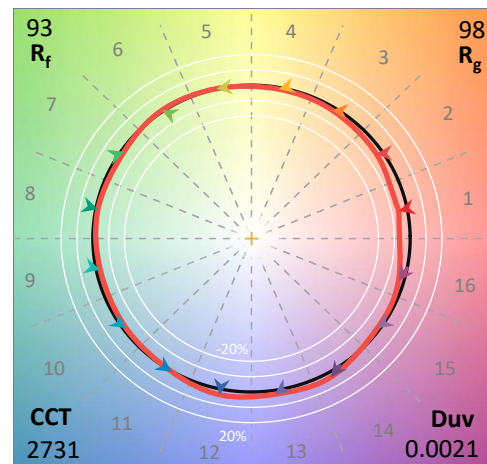
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-13  
 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-927-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI  
 2700K CCT 26 LEDS

### Spectral Parameters

CCT (K): 2731  
 CIE  $u'$ : 0.2605  
 CIE  $v'$ : 0.5298  
 Duv: 0.0021  
 CIE x: 0.4610  
 CIE y: 0.4166  
 CIE z: 0.1224  
 Peak Wavelength (nm): 622  
 Dominant Wavelength (nm): 583  
 Purity: 63.43685  
 R<sub>f</sub>: 92.6  
 R<sub>g</sub>: 98

CRI (Ra): 91.8  
 R1: 91.4  
 R2: 95.1  
 R3: 97.6  
 R4: 92.3  
 R5: 91.1  
 R6: 94.7  
 R7: 92.3  
 R8: 80.0  
 R9: 54.7  
 R10: 87.7  
 R11: 92.9  
 R12: 84.0  
 R13: 92.2  
 R14: 97.8  
 R15: 86.8



### Test Conditions

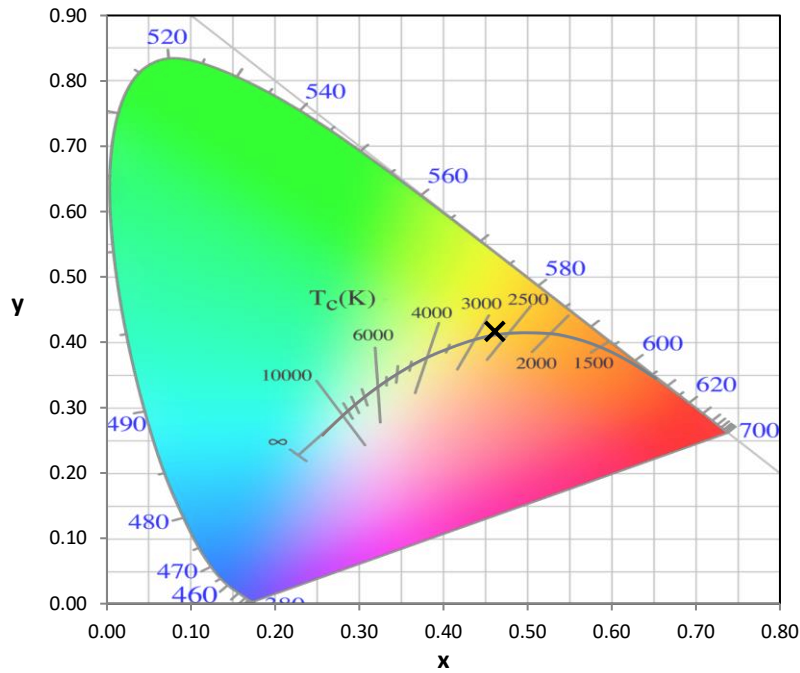
Stabilization Time: M  
 Operation Time: 1H 0M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-13

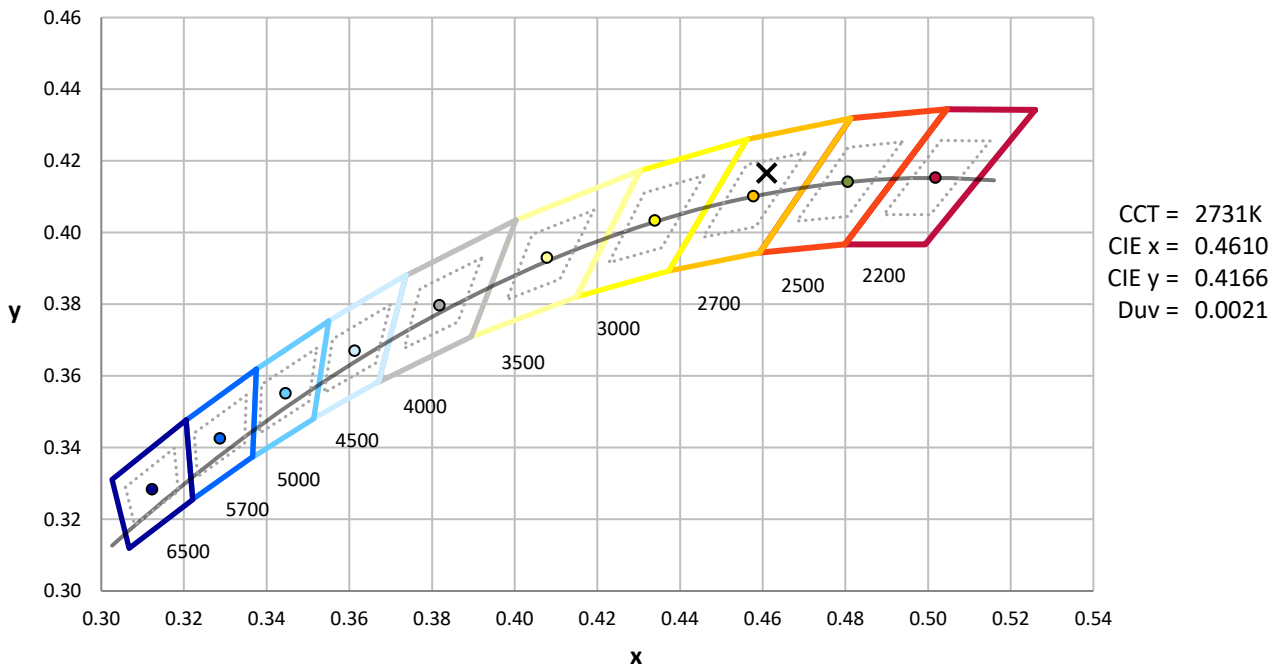
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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

REPORT NUMBER: SP1-2407-184-13

**CIE 1931 Chromaticity Diagram**

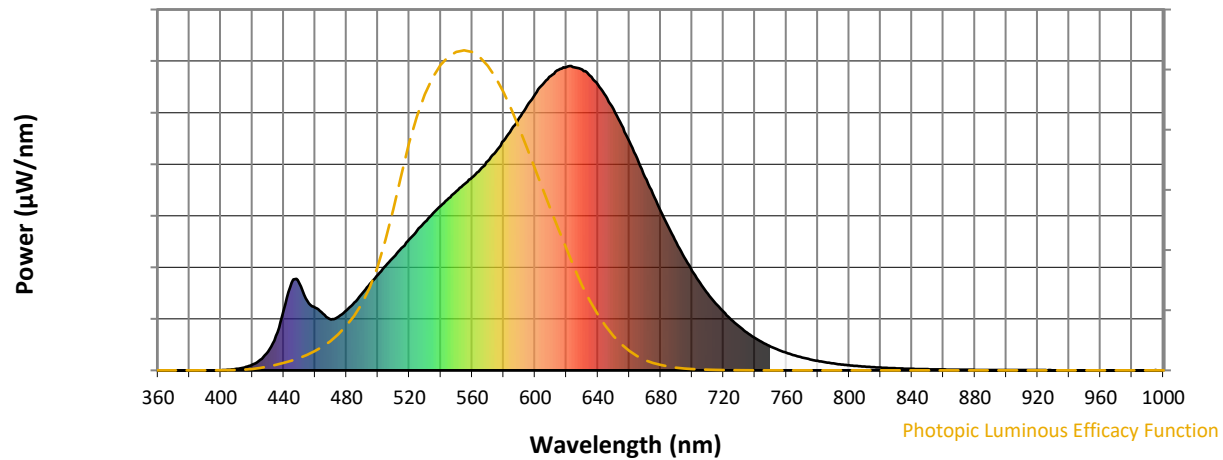


**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



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### Photopic Flux vs. Wavelength

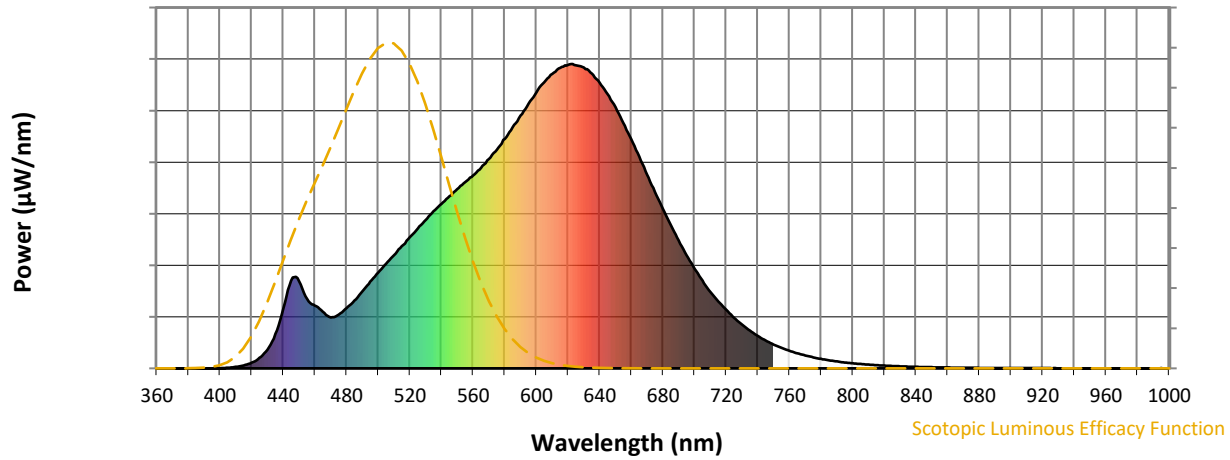


### Photopic Lumens: NR

| $\lambda$<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               | 253                                    | NR                             | 620               | 997                                    | NR                             | 750               | 78                                     | NR                             | 880               | 2                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 285                                    | NR                             | 625               | 996                                    | NR                             | 755               | 67                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 314                                    | NR                             | 630               | 989                                    | NR                             | 760               | 58                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 343                                    | NR                             | 635               | 969                                    | NR                             | 765               | 50                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 372                                    | NR                             | 640               | 939                                    | NR                             | 770               | 42                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 401                                    | NR                             | 645               | 901                                    | NR                             | 775               | 36                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 431                                    | NR                             | 650               | 858                                    | NR                             | 780               | 31                                     | NR                             | 910               | 1                                      | NR                             |
| 395               | 0                                      | NR                             | 525               | 459                                    | NR                             | 655               | 806                                    | NR                             | 785               | 26                                     | NR                             | 915               | 1                                      | NR                             |
| 400               | 0                                      | NR                             | 530               | 488                                    | NR                             | 660               | 752                                    | NR                             | 790               | 23                                     | NR                             | 920               | 1                                      | NR                             |
| 405               | 2                                      | NR                             | 535               | 516                                    | NR                             | 665               | 696                                    | NR                             | 795               | 19                                     | NR                             | 925               | 1                                      | NR                             |
| 410               | 5                                      | NR                             | 540               | 540                                    | NR                             | 670               | 636                                    | NR                             | 800               | 17                                     | NR                             | 930               | 0                                      | NR                             |
| 415               | 10                                     | NR                             | 545               | 566                                    | NR                             | 675               | 579                                    | NR                             | 805               | 14                                     | NR                             | 935               | 0                                      | NR                             |
| 420               | 19                                     | NR                             | 550               | 589                                    | NR                             | 680               | 524                                    | NR                             | 810               | 12                                     | NR                             | 940               | 0                                      | NR                             |
| 425               | 34                                     | NR                             | 555               | 612                                    | NR                             | 685               | 470                                    | NR                             | 815               | 11                                     | NR                             | 945               | 0                                      | NR                             |
| 430               | 61                                     | NR                             | 560               | 634                                    | NR                             | 690               | 421                                    | NR                             | 820               | 9                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 113                                    | NR                             | 565               | 660                                    | NR                             | 695               | 371                                    | NR                             | 825               | 8                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 198                                    | NR                             | 570               | 688                                    | NR                             | 700               | 327                                    | NR                             | 830               | 7                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 288                                    | NR                             | 575               | 719                                    | NR                             | 705               | 288                                    | NR                             | 835               | 6                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 286                                    | NR                             | 580               | 754                                    | NR                             | 710               | 251                                    | NR                             | 840               | 5                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 228                                    | NR                             | 585               | 791                                    | NR                             | 715               | 220                                    | NR                             | 845               | 4                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 207                                    | NR                             | 590               | 831                                    | NR                             | 720               | 192                                    | NR                             | 850               | 4                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 186                                    | NR                             | 595               | 870                                    | NR                             | 725               | 166                                    | NR                             | 855               | 3                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 168                                    | NR                             | 600               | 907                                    | NR                             | 730               | 144                                    | NR                             | 860               | 3                                      | NR                             | 990               | 1                                      | NR                             |
| 475               | 177                                    | NR                             | 605               | 940                                    | NR                             | 735               | 124                                    | NR                             | 865               | 2                                      | NR                             | 995               | 1                                      | NR                             |
| 480               | 198                                    | NR                             | 610               | 967                                    | NR                             | 740               | 106                                    | NR                             | 870               | 2                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 223                                    | NR                             | 615               | 988                                    | NR                             | 745               | 91                                     | NR                             | 875               | 2                                      | NR                             |                   |                                        |                                |

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### Scotopic Flux vs. Wavelength



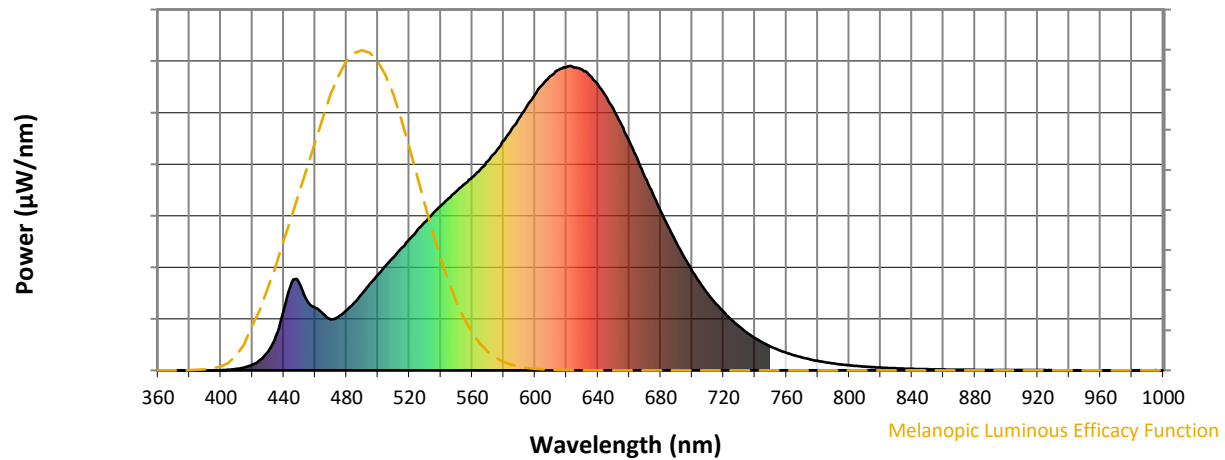
Scotopic Lumens: NR

S/P: 1.27

| 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       | 253                         | NR               | 620       | 997                         | NR               | 750       | 78                          | NR               | 880       | 2                           | NR               |
| 365       | 0                           | NR               | 495       | 285                         | NR               | 625       | 996                         | NR               | 755       | 67                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 314                         | NR               | 630       | 989                         | NR               | 760       | 58                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 343                         | NR               | 635       | 969                         | NR               | 765       | 50                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 372                         | NR               | 640       | 939                         | NR               | 770       | 42                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 401                         | NR               | 645       | 901                         | NR               | 775       | 36                          | NR               | 905       | 1                           | NR               |
| 390       | 0                           | NR               | 520       | 431                         | NR               | 650       | 858                         | NR               | 780       | 31                          | NR               | 910       | 1                           | NR               |
| 395       | 0                           | NR               | 525       | 459                         | NR               | 655       | 806                         | NR               | 785       | 26                          | NR               | 915       | 1                           | NR               |
| 400       | 0                           | NR               | 530       | 488                         | NR               | 660       | 752                         | NR               | 790       | 23                          | NR               | 920       | 1                           | NR               |
| 405       | 2                           | NR               | 535       | 516                         | NR               | 665       | 696                         | NR               | 795       | 19                          | NR               | 925       | 1                           | NR               |
| 410       | 5                           | NR               | 540       | 540                         | NR               | 670       | 636                         | NR               | 800       | 17                          | NR               | 930       | 0                           | NR               |
| 415       | 10                          | NR               | 545       | 566                         | NR               | 675       | 579                         | NR               | 805       | 14                          | NR               | 935       | 0                           | NR               |
| 420       | 19                          | NR               | 550       | 589                         | NR               | 680       | 524                         | NR               | 810       | 12                          | NR               | 940       | 0                           | NR               |
| 425       | 34                          | NR               | 555       | 612                         | NR               | 685       | 470                         | NR               | 815       | 11                          | NR               | 945       | 0                           | NR               |
| 430       | 61                          | NR               | 560       | 634                         | NR               | 690       | 421                         | NR               | 820       | 9                           | NR               | 950       | 0                           | NR               |
| 435       | 113                         | NR               | 565       | 660                         | NR               | 695       | 371                         | NR               | 825       | 8                           | NR               | 955       | 0                           | NR               |
| 440       | 198                         | NR               | 570       | 688                         | NR               | 700       | 327                         | NR               | 830       | 7                           | NR               | 960       | 0                           | NR               |
| 445       | 288                         | NR               | 575       | 719                         | NR               | 705       | 288                         | NR               | 835       | 6                           | NR               | 965       | 0                           | NR               |
| 450       | 286                         | NR               | 580       | 754                         | NR               | 710       | 251                         | NR               | 840       | 5                           | NR               | 970       | 0                           | NR               |
| 455       | 228                         | NR               | 585       | 791                         | NR               | 715       | 220                         | NR               | 845       | 4                           | NR               | 975       | 0                           | NR               |
| 460       | 207                         | NR               | 590       | 831                         | NR               | 720       | 192                         | NR               | 850       | 4                           | NR               | 980       | 0                           | NR               |
| 465       | 186                         | NR               | 595       | 870                         | NR               | 725       | 166                         | NR               | 855       | 3                           | NR               | 985       | 0                           | NR               |
| 470       | 168                         | NR               | 600       | 907                         | NR               | 730       | 144                         | NR               | 860       | 3                           | NR               | 990       | 1                           | NR               |
| 475       | 177                         | NR               | 605       | 940                         | NR               | 735       | 124                         | NR               | 865       | 2                           | NR               | 995       | 1                           | NR               |
| 480       | 198                         | NR               | 610       | 967                         | NR               | 740       | 106                         | NR               | 870       | 2                           | NR               | 1000      | 0                           | NR               |
| 485       | 223                         | NR               | 615       | 988                         | NR               | 745       | 91                          | NR               | 875       | 2                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.38

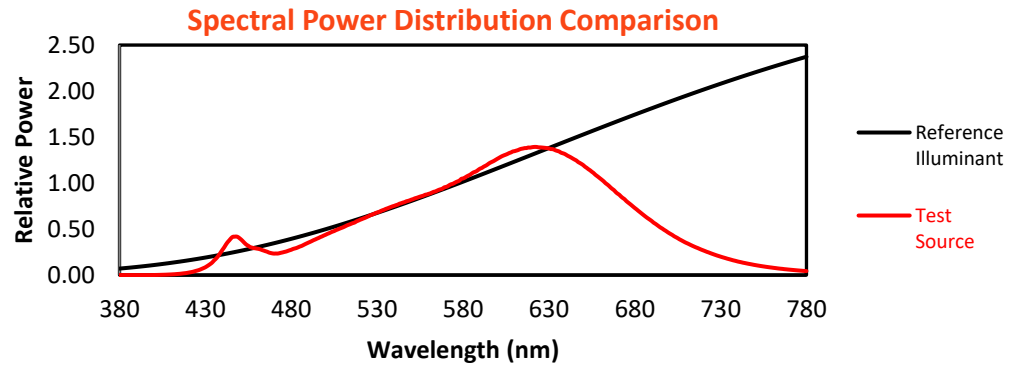
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | 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               | 253                                    | NR                             | 620               | 997                                    | NR                             | 750               | 78                                     | NR                             | 880               | 2                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 285                                    | NR                             | 625               | 996                                    | NR                             | 755               | 67                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 314                                    | NR                             | 630               | 989                                    | NR                             | 760               | 58                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 343                                    | NR                             | 635               | 969                                    | NR                             | 765               | 50                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 372                                    | NR                             | 640               | 939                                    | NR                             | 770               | 42                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 401                                    | NR                             | 645               | 901                                    | NR                             | 775               | 36                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 431                                    | NR                             | 650               | 858                                    | NR                             | 780               | 31                                     | NR                             | 910               | 1                                      | NR                             |
| 395               | 0                                      | NR                             | 525               | 459                                    | NR                             | 655               | 806                                    | NR                             | 785               | 26                                     | NR                             | 915               | 1                                      | NR                             |
| 400               | 0                                      | NR                             | 530               | 488                                    | NR                             | 660               | 752                                    | NR                             | 790               | 23                                     | NR                             | 920               | 1                                      | NR                             |
| 405               | 2                                      | NR                             | 535               | 516                                    | NR                             | 665               | 696                                    | NR                             | 795               | 19                                     | NR                             | 925               | 1                                      | NR                             |
| 410               | 5                                      | NR                             | 540               | 540                                    | NR                             | 670               | 636                                    | NR                             | 800               | 17                                     | NR                             | 930               | 0                                      | NR                             |
| 415               | 10                                     | NR                             | 545               | 566                                    | NR                             | 675               | 579                                    | NR                             | 805               | 14                                     | NR                             | 935               | 0                                      | NR                             |
| 420               | 19                                     | NR                             | 550               | 589                                    | NR                             | 680               | 524                                    | NR                             | 810               | 12                                     | NR                             | 940               | 0                                      | NR                             |
| 425               | 34                                     | NR                             | 555               | 612                                    | NR                             | 685               | 470                                    | NR                             | 815               | 11                                     | NR                             | 945               | 0                                      | NR                             |
| 430               | 61                                     | NR                             | 560               | 634                                    | NR                             | 690               | 421                                    | NR                             | 820               | 9                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 113                                    | NR                             | 565               | 660                                    | NR                             | 695               | 371                                    | NR                             | 825               | 8                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 198                                    | NR                             | 570               | 688                                    | NR                             | 700               | 327                                    | NR                             | 830               | 7                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 288                                    | NR                             | 575               | 719                                    | NR                             | 705               | 288                                    | NR                             | 835               | 6                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 286                                    | NR                             | 580               | 754                                    | NR                             | 710               | 251                                    | NR                             | 840               | 5                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 228                                    | NR                             | 585               | 791                                    | NR                             | 715               | 220                                    | NR                             | 845               | 4                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 207                                    | NR                             | 590               | 831                                    | NR                             | 720               | 192                                    | NR                             | 850               | 4                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 186                                    | NR                             | 595               | 870                                    | NR                             | 725               | 166                                    | NR                             | 855               | 3                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 168                                    | NR                             | 600               | 907                                    | NR                             | 730               | 144                                    | NR                             | 860               | 3                                      | NR                             | 990               | 1                                      | NR                             |
| 475               | 177                                    | NR                             | 605               | 940                                    | NR                             | 735               | 124                                    | NR                             | 865               | 2                                      | NR                             | 995               | 1                                      | NR                             |
| 480               | 198                                    | NR                             | 610               | 967                                    | NR                             | 740               | 106                                    | NR                             | 870               | 2                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 223                                    | NR                             | 615               | 988                                    | NR                             | 745               | 91                                     | NR                             | 875               | 2                                      | NR                             |                   |                                        |                                |

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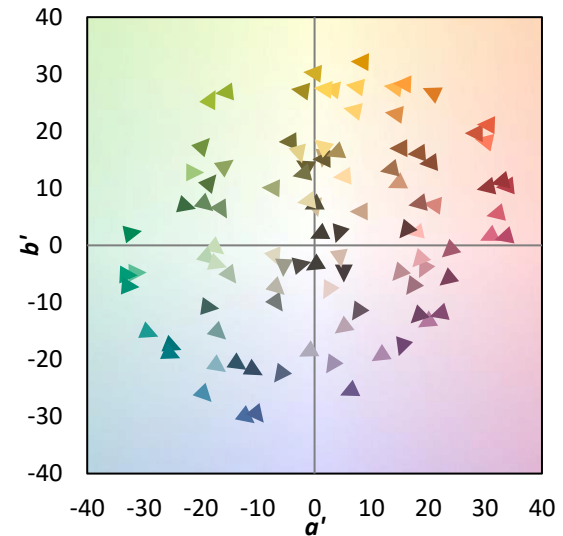
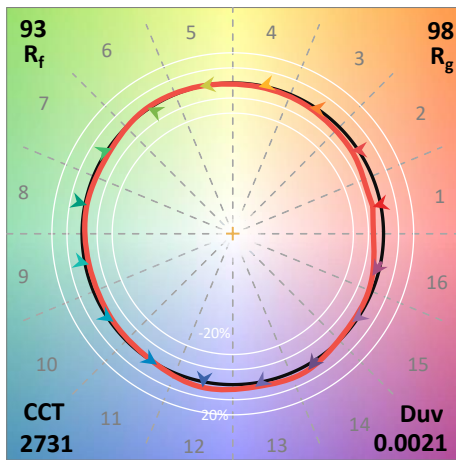
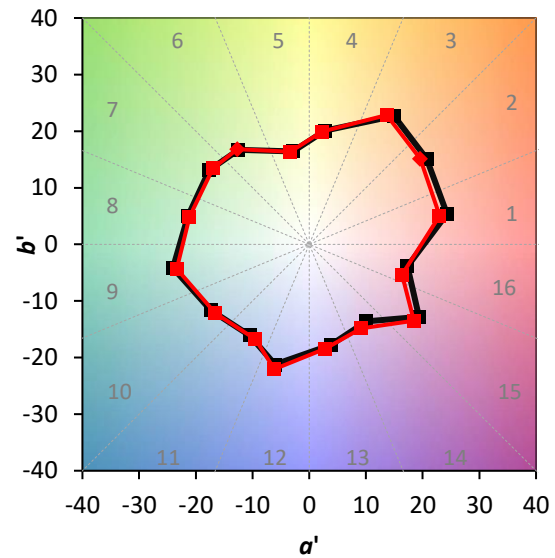
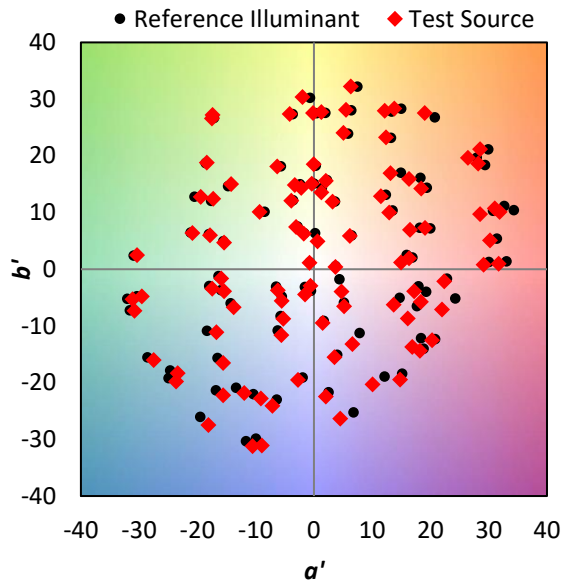
TM-30-18

### Summary

$R_f = 92.6$   
 $R_g = 98$   
 $CIE R_a = 91.8$   
 $R_9 = 54.7$

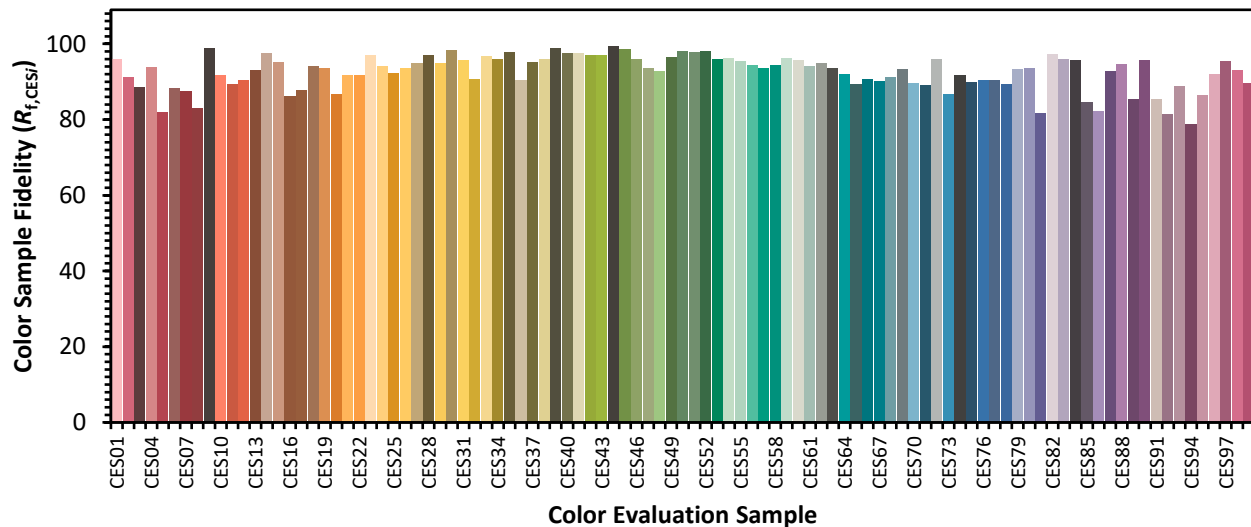


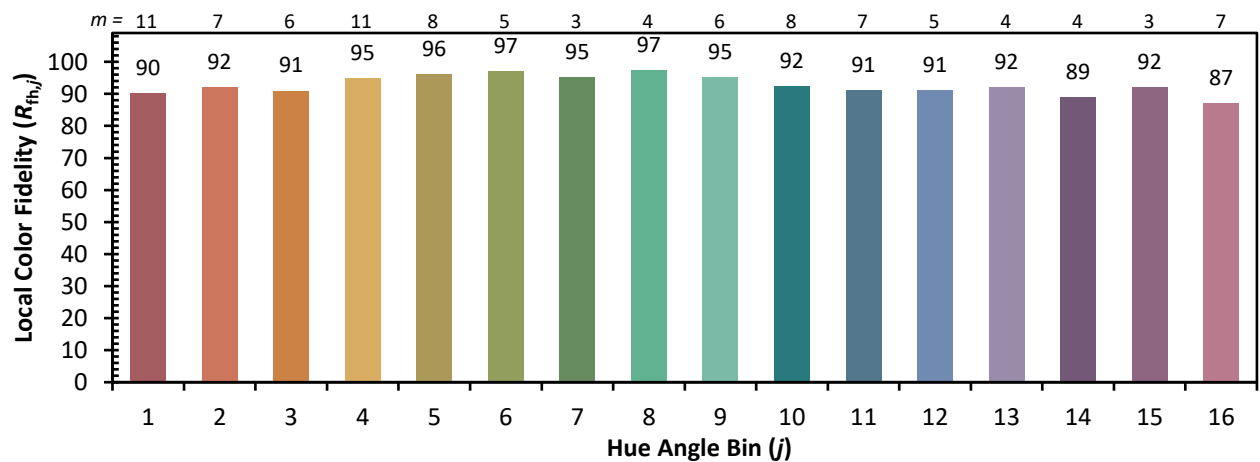
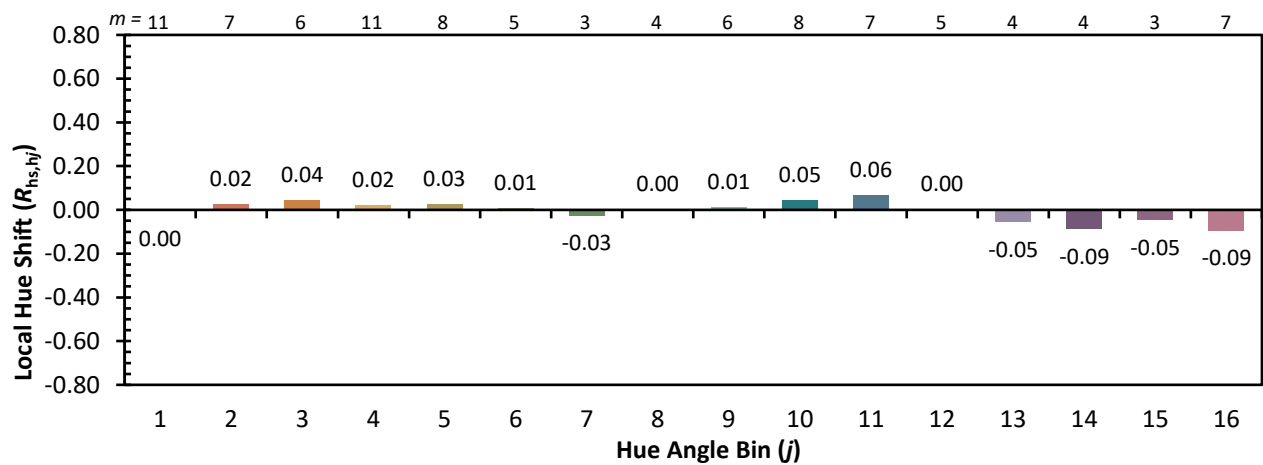
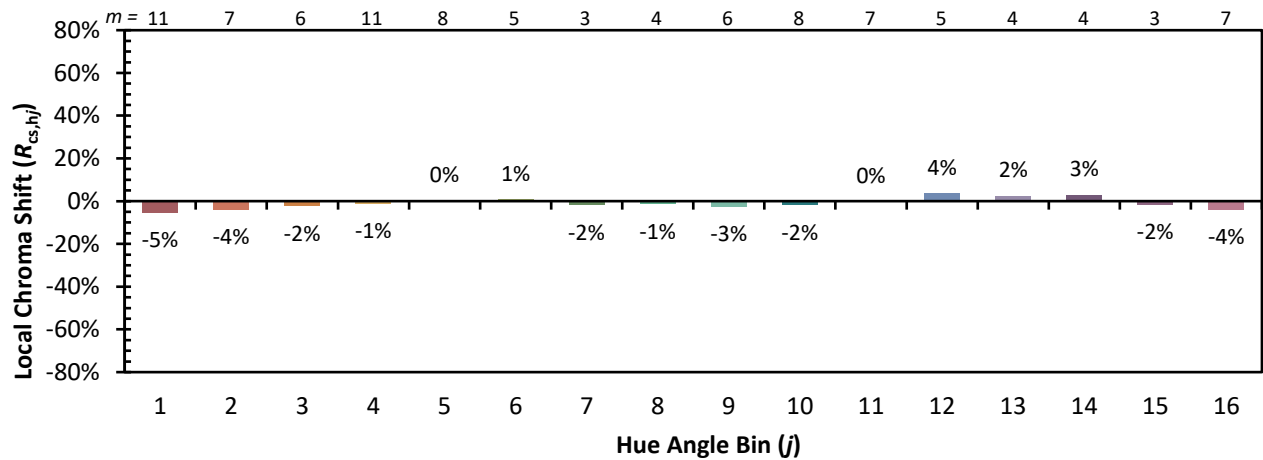
### Color Vector Graphics



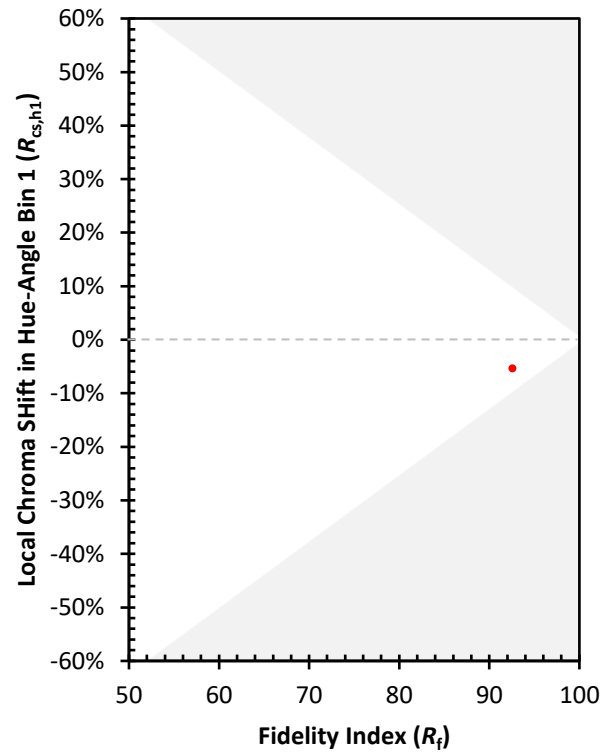
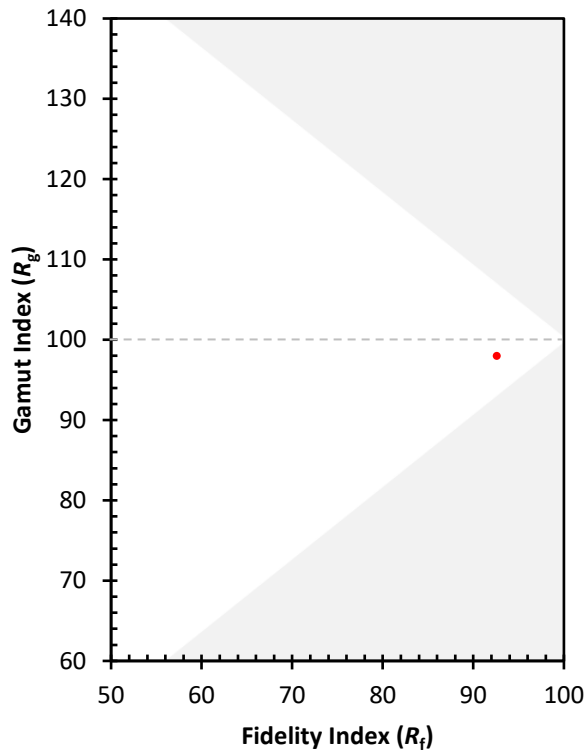
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 94 | CES51 = 98 | CES76 = 90 |
| CES02 = 64 | CES27 = 95 | CES52 = 98 | CES77 = 90 |
| CES03 = 32 | CES28 = 97 | CES53 = 96 | CES78 = 89 |
| CES04 = 71 | CES29 = 95 | CES54 = 96 | CES79 = 93 |
| CES05 = 51 | CES30 = 98 | CES55 = 95 | CES80 = 94 |
| CES06 = 52 | CES31 = 96 | CES56 = 94 | CES81 = 82 |
| CES07 = 44 | CES32 = 91 | CES57 = 94 | CES82 = 97 |
| CES08 = 43 | CES33 = 97 | CES58 = 94 | CES83 = 96 |
| CES09 = 29 | CES34 = 96 | CES59 = 96 | CES84 = 96 |
| CES10 = 77 | CES35 = 98 | CES60 = 96 | CES85 = 85 |
| CES11 = 59 | CES36 = 90 | CES61 = 94 | CES86 = 82 |
| CES12 = 66 | CES37 = 95 | CES62 = 95 | CES87 = 93 |
| CES13 = 44 | CES38 = 96 | CES63 = 94 | CES88 = 95 |
| CES14 = 74 | CES39 = 99 | CES64 = 92 | CES89 = 85 |
| CES15 = 72 | CES40 = 98 | CES65 = 89 | CES90 = 96 |
| CES16 = 48 | CES41 = 98 | CES66 = 91 | CES91 = 85 |
| CES17 = 50 | CES42 = 97 | CES67 = 90 | CES92 = 82 |
| CES18 = 57 | CES43 = 97 | CES68 = 91 | CES93 = 89 |
| CES19 = 72 | CES44 = 99 | CES69 = 93 | CES94 = 79 |
| CES20 = 68 | CES45 = 99 | CES70 = 90 | CES95 = 87 |
| CES21 = 87 | CES46 = 96 | CES71 = 89 | CES96 = 92 |
| CES22 = 79 | CES47 = 94 | CES72 = 96 | CES97 = 96 |
| CES23 = 92 | CES48 = 93 | CES73 = 87 | CES98 = 93 |
| CES24 = 91 | CES49 = 96 | CES74 = 92 | CES99 = 90 |
| CES25 = 72 | CES50 = 98 | CES75 = 90 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)