

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: P1048551

Luminaire Tested: **GALN-SA7C-830-U-T4BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1048551  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA7C-830-U-T4BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 1050mA 7xLight Square PACKAGE  
80CRI 3000K FIXTURE w/ TYPE IV ANGLED BACKLIGHT CONTROL  
Light Source: (98) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 35221.5 lumens  
Efficiency: N/A  
Efficacy: 106.7 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B0 - U0 - G5

Input Watts (W): 330  
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

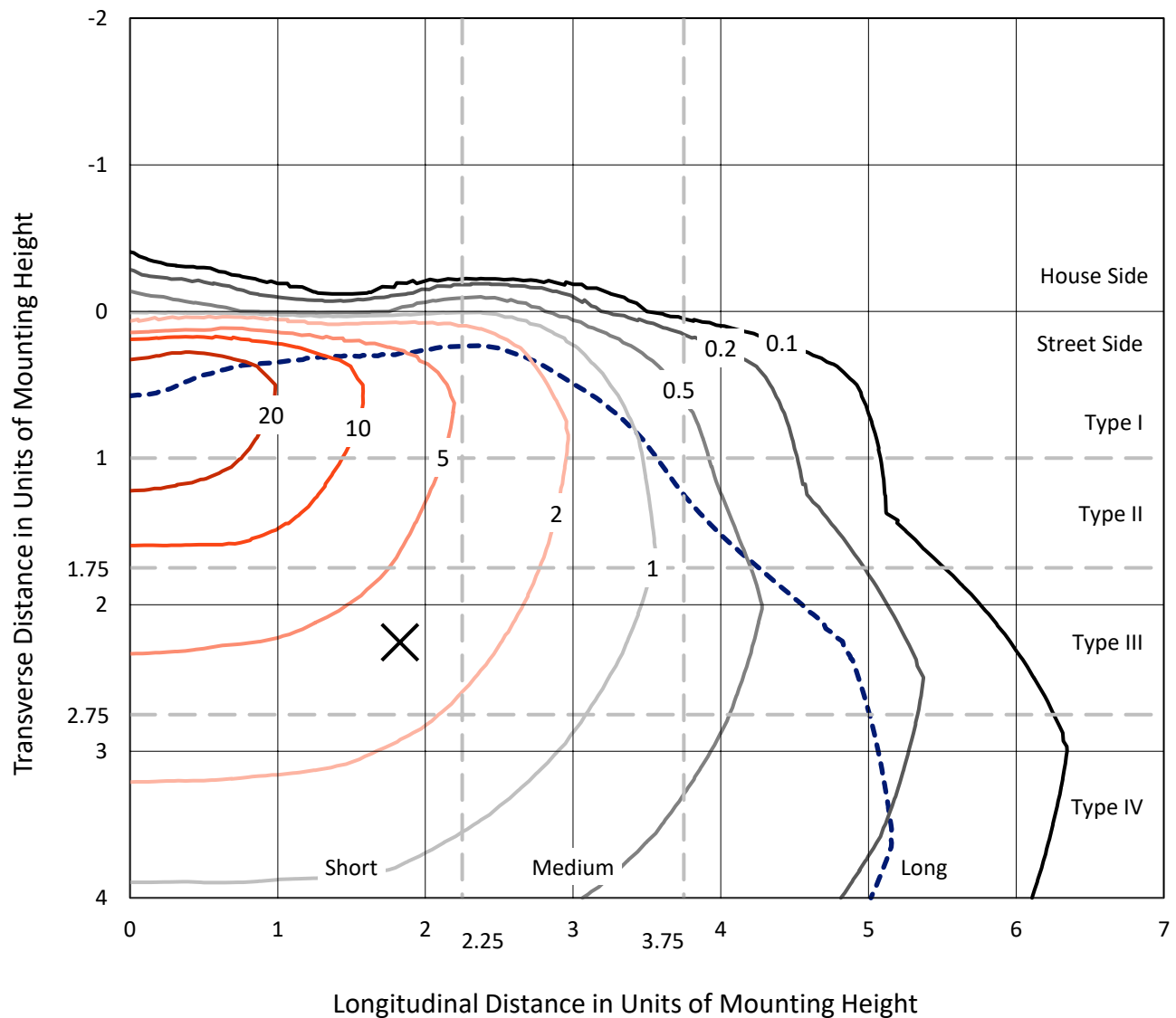


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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
- - - 1/2 Max cd

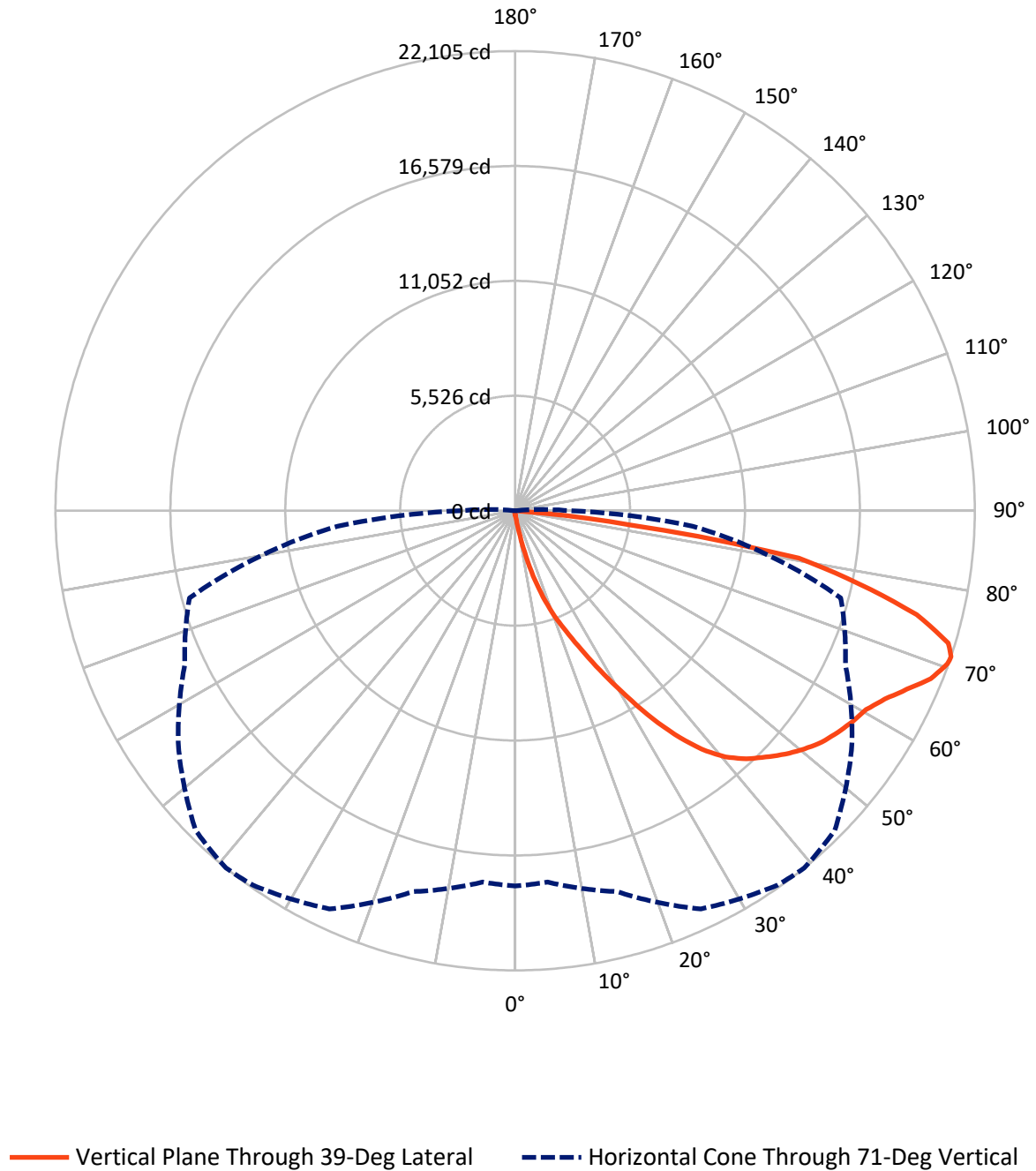


Based on 15 foot mounting height. Maximum calculated value = 36.2 fc  
Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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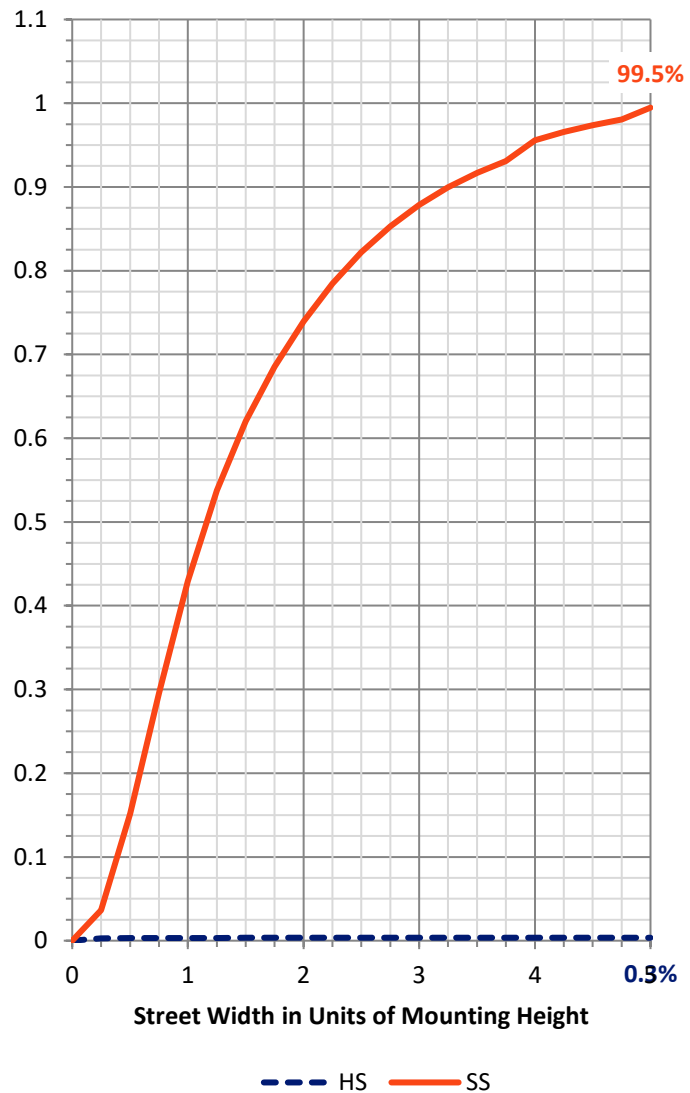
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 125.2    | 0.0    | 125.2   |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 35096.4  | 0.0    | 35096.4 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 35221.5  | 0.0    | 35221.5 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 29.4    | 0.1       |
| 10°-20°   | 376.4   | 1.1       |
| 20°-30°   | 1340.6  | 3.8       |
| 30°-40°   | 3231.0  | 9.2       |
| 40°-50°   | 5407.4  | 15.4      |
| 50°-60°   | 6945.1  | 19.7      |
| 60°-70°   | 8789.1  | 25.0      |
| 70°-80°   | 7835.8  | 22.2      |
| 80°-90°   | 1266.6  | 3.6       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 35221.5 | 100.0     |
| 0°-180°   | 35221.5 | 100.0     |



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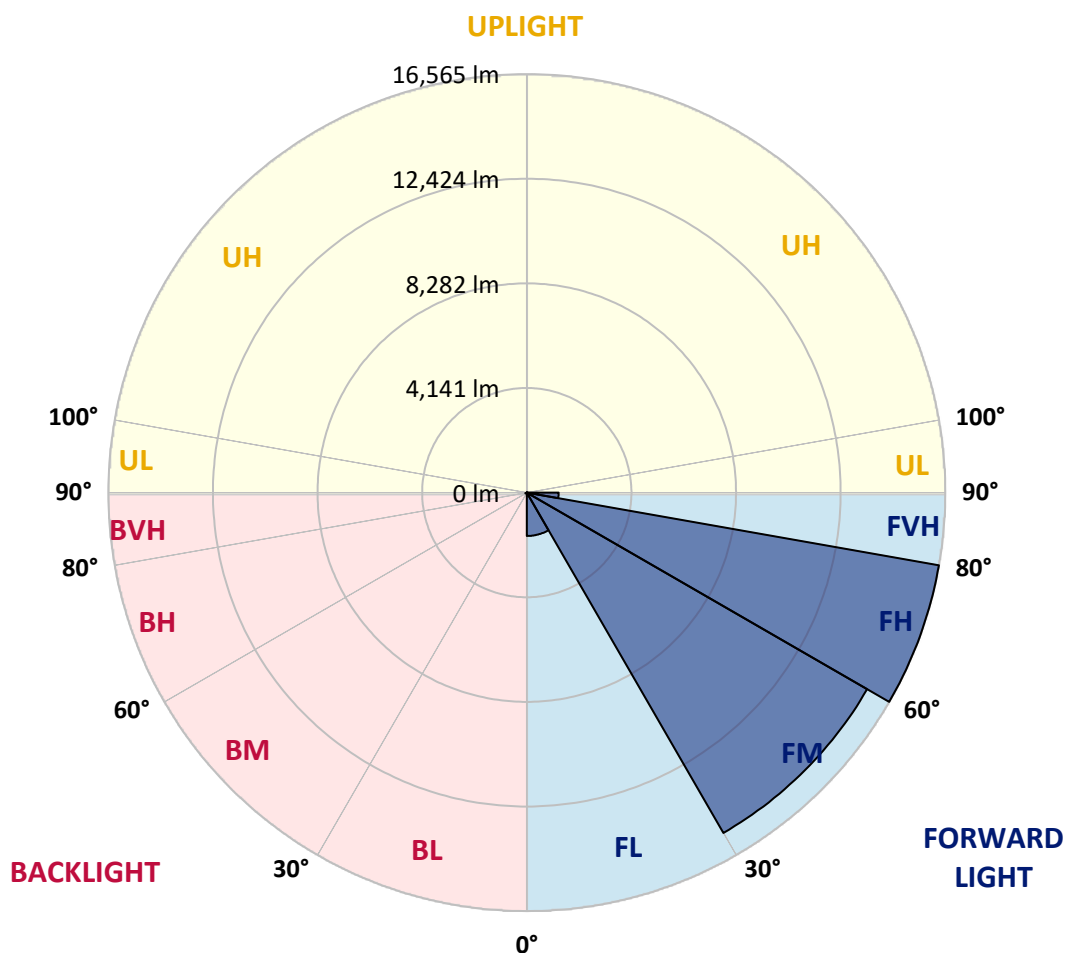
CATALOG NUMBER: GALN-SA7C-830-U-T4BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|---------|-----------|-------------------------|------|--------|
|      |             |         |           | B                       | U    | G      |
| FL   | (0°-30°)    | 1716.2  | 4.9       |                         |      |        |
| FM   | (30°-60°)   | 15554.5 | 44.2      |                         |      |        |
| FH   | (60°-80°)   | 16564.7 | 47.0      |                         |      | G5     |
| FVH  | (80°-90°)   | 1260.9  | 3.6       |                         |      | G5     |
| BL   | (0°-30°)    | 30.3    | 0.1       | B0/110                  |      |        |
| BM   | (30°-60°)   | 29.0    | 0.1       | B0/220                  |      |        |
| BH   | (60°-80°)   | 60.2    | 0.2       | B0/110                  |      | G0/110 |
| BVH  | (80°-90°)   | 5.8     | 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-G5**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 39°     | 45°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 193.1   | 193.1   | 193.1   | 193.1   | 193.1   | 193.1   | 193.1   | 193.1   | 193.1   | 193.1   | 193.1   |
| 2.5°  | 221.7   | 221.7   | 221.7   | 214.6   | 214.6   | 212.2   | 209.8   | 209.8   | 205.1   | 202.7   | 197.9   |
| 5°    | 336.2   | 329.0   | 312.3   | 302.8   | 283.7   | 271.8   | 259.9   | 243.2   | 226.5   | 214.6   | 200.3   |
| 7.5°  | 760.6   | 777.3   | 722.4   | 619.9   | 515.0   | 469.7   | 393.4   | 317.1   | 262.3   | 226.5   | 202.7   |
| 10°   | 1938.4  | 1928.9  | 1742.9  | 1537.9  | 1187.4  | 1046.7  | 820.2   | 517.4   | 338.6   | 248.0   | 205.1   |
| 12.5° | 3297.5  | 3288.0  | 3068.6  | 2789.6  | 2327.1  | 2033.8  | 1604.6  | 965.6   | 486.4   | 281.3   | 205.1   |
| 15°   | 4439.6  | 4401.4  | 4332.3  | 4055.7  | 3514.5  | 3268.9  | 2701.4  | 1707.2  | 786.8   | 338.6   | 209.8   |
| 17.5° | 5195.4  | 5162.0  | 5097.7  | 4997.5  | 4654.2  | 4363.3  | 3907.9  | 2682.3  | 1273.2  | 438.7   | 219.4   |
| 20°   | 5889.2  | 5865.4  | 5812.9  | 5793.9  | 5572.1  | 5417.2  | 5040.4  | 3803.0  | 1983.7  | 596.1   | 233.7   |
| 22.5° | 6843.0  | 6792.9  | 6814.4  | 6699.9  | 6482.9  | 6297.0  | 6065.7  | 4976.1  | 2851.6  | 858.4   | 259.9   |
| 25°   | 8011.3  | 7987.4  | 7927.8  | 7846.8  | 7546.3  | 7384.2  | 7028.9  | 6082.4  | 3822.0  | 1201.7  | 288.5   |
| 27.5° | 9422.8  | 9396.6  | 9382.3  | 9196.3  | 8850.6  | 8674.1  | 8178.2  | 7126.7  | 4914.1  | 1683.3  | 326.7   |
| 30°   | 11048.9 | 11060.8 | 10967.8 | 10729.4 | 10326.4 | 10078.5 | 9568.2  | 8221.1  | 6032.3  | 2248.4  | 367.2   |
| 32.5° | 12732.2 | 12708.4 | 12565.3 | 12284.0 | 11923.9 | 11692.7 | 11044.1 | 9420.4  | 7205.4  | 2994.7  | 414.9   |
| 35°   | 14546.7 | 14501.4 | 14124.6 | 13802.8 | 13495.2 | 13204.3 | 12613.0 | 10812.8 | 8378.5  | 3831.6  | 479.2   |
| 37.5° | 16377.8 | 16165.6 | 15409.8 | 15002.1 | 14789.9 | 14551.4 | 14000.7 | 12298.3 | 9544.4  | 4766.2  | 557.9   |
| 40°   | 17760.7 | 17596.2 | 16699.7 | 15948.6 | 15779.4 | 15576.7 | 15166.6 | 13581.0 | 10784.2 | 5770.0  | 653.3   |
| 42.5° | 18526.1 | 18435.5 | 17629.6 | 16888.1 | 16489.9 | 16311.1 | 15960.6 | 14701.6 | 12009.8 | 6878.7  | 791.6   |
| 45°   | 18852.7 | 18712.1 | 18173.2 | 17827.5 | 17193.3 | 16897.6 | 16480.3 | 15548.1 | 13290.1 | 8137.6  | 984.7   |
| 47.5° | 18752.6 | 18671.5 | 18285.3 | 18411.6 | 17951.5 | 17491.3 | 16878.5 | 16196.6 | 14384.5 | 9582.5  | 1249.4  |
| 50°   | 18123.1 | 18054.0 | 17934.8 | 18619.1 | 18561.8 | 18018.2 | 17393.5 | 16709.2 | 15278.7 | 11072.7 | 1659.5  |
| 52.5° | 16926.2 | 16897.6 | 17202.8 | 18456.9 | 18907.6 | 18483.2 | 17889.5 | 17162.3 | 16113.2 | 12629.7 | 2246.0  |
| 55°   | 15383.6 | 15500.4 | 16373.1 | 18204.2 | 19084.0 | 18826.5 | 18328.2 | 17586.7 | 16783.2 | 14022.1 | 3111.5  |
| 57.5° | 14749.3 | 14780.3 | 15870.0 | 18025.4 | 19162.7 | 19129.3 | 18755.0 | 17992.0 | 17398.3 | 15135.6 | 4432.4  |
| 60°   | 15490.9 | 15443.2 | 16017.8 | 18161.3 | 19320.1 | 19401.1 | 19134.1 | 18368.7 | 17932.4 | 16091.7 | 6192.1  |
| 62.5° | 16830.8 | 16804.6 | 16988.2 | 18740.7 | 19780.2 | 19944.7 | 19661.0 | 18640.5 | 18404.5 | 16721.2 | 8199.6  |
| 65°   | 18027.8 | 17972.9 | 18313.9 | 19768.3 | 20588.5 | 20705.3 | 20457.4 | 19105.5 | 18611.9 | 17178.9 | 10085.6 |
| 67.5° | 18545.2 | 18533.2 | 19081.6 | 20745.9 | 21437.3 | 21563.7 | 21346.7 | 19746.8 | 18564.2 | 17324.4 | 10917.8 |
| 70°   | 18309.1 | 18263.8 | 19141.2 | 21160.7 | 21916.6 | 22059.6 | 21849.8 | 19985.3 | 18046.8 | 16864.2 | 9685.1  |
| 71°   | 18049.2 | 17927.6 | 18962.4 | 21132.1 | 21983.3 | 22104.9 | 21737.7 | 19768.3 | 17527.1 | 16210.9 | 8566.8  |
| 72.5° | 17243.3 | 17264.8 | 18471.2 | 20834.1 | 21823.6 | 21787.8 | 21103.5 | 18991.0 | 16900.0 | 14727.9 | 6881.1  |
| 75°   | 15259.6 | 15385.9 | 16880.9 | 19582.3 | 20397.8 | 19942.4 | 18895.6 | 17505.6 | 15641.1 | 10560.1 | 4778.2  |
| 77.5° | 12469.9 | 12658.3 | 14301.1 | 17174.2 | 16942.9 | 16897.6 | 16854.7 | 15424.1 | 13356.9 | 5672.3  | 3323.7  |
| 80°   | 5953.6  | 6361.3  | 8626.4  | 12260.1 | 13318.8 | 13831.4 | 13509.5 | 12429.4 | 10328.8 | 2701.4  | 1986.1  |
| 82.5° | 388.6   | 383.9   | 543.6   | 1030.0  | 4341.8  | 5612.7  | 8917.3  | 8883.9  | 7200.6  | 1316.1  | 810.7   |
| 85°   | 183.6   | 188.4   | 207.4   | 236.0   | 274.2   | 300.4   | 414.9   | 2432.0  | 3445.3  | 627.1   | 176.4   |
| 87.5° | 107.3   | 109.7   | 128.8   | 164.5   | 214.6   | 238.4   | 283.7   | 364.8   | 448.3   | 345.7   | 38.1    |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |

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CATALOG NUMBER: GALN-SA7C-830-U-T4BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 193.1  | 193.1 | 193.1 | 193.1 | 193.1 | 193.1 | 193.1 | 193.1 | 193.1 | 193.1 | 193.1 |
| 2.5°  | 195.5  | 193.1 | 186.0 | 178.8 | 171.7 | 166.9 | 164.5 | 166.9 | 166.9 | 169.3 | 169.3 |
| 5°    | 195.5  | 188.4 | 176.4 | 162.1 | 152.6 | 143.1 | 138.3 | 135.9 | 138.3 | 138.3 | 138.3 |
| 7.5°  | 193.1  | 181.2 | 164.5 | 147.8 | 135.9 | 124.0 | 119.2 | 116.8 | 116.8 | 119.2 | 119.2 |
| 10°   | 188.4  | 176.4 | 155.0 | 135.9 | 121.6 | 107.3 | 100.1 | 93.0  | 93.0  | 93.0  | 95.4  |
| 12.5° | 186.0  | 169.3 | 143.1 | 124.0 | 104.9 | 88.2  | 73.9  | 66.8  | 69.1  | 69.1  | 69.1  |
| 15°   | 181.2  | 162.1 | 135.9 | 112.1 | 88.2  | 66.8  | 54.8  | 47.7  | 50.1  | 52.5  | 50.1  |
| 17.5° | 181.2  | 159.7 | 126.4 | 97.8  | 69.1  | 50.1  | 40.5  | 35.8  | 35.8  | 38.1  | 38.1  |
| 20°   | 181.2  | 155.0 | 119.2 | 83.5  | 52.5  | 38.1  | 28.6  | 26.2  | 26.2  | 31.0  | 33.4  |
| 22.5° | 186.0  | 155.0 | 109.7 | 69.1  | 42.9  | 28.6  | 21.5  | 19.1  | 21.5  | 26.2  | 28.6  |
| 25°   | 193.1  | 152.6 | 100.1 | 62.0  | 35.8  | 21.5  | 16.7  | 11.9  | 14.3  | 19.1  | 21.5  |
| 27.5° | 200.3  | 150.2 | 90.6  | 54.8  | 28.6  | 16.7  | 11.9  | 9.5   | 7.2   | 9.5   | 9.5   |
| 30°   | 207.4  | 150.2 | 81.1  | 45.3  | 23.8  | 11.9  | 7.2   | 4.8   | 2.4   | 0.0   | 0.0   |
| 32.5° | 212.2  | 145.4 | 73.9  | 35.8  | 19.1  | 9.5   | 4.8   | 2.4   | 0.0   | 0.0   | 0.0   |
| 35°   | 217.0  | 140.7 | 64.4  | 28.6  | 14.3  | 7.2   | 2.4   | 0.0   | 0.0   | 0.0   | 0.0   |
| 37.5° | 221.7  | 133.5 | 54.8  | 23.8  | 11.9  | 4.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 226.5  | 124.0 | 45.3  | 21.5  | 7.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 231.3  | 116.8 | 38.1  | 16.7  | 4.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 243.2  | 112.1 | 31.0  | 14.3  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 264.7  | 107.3 | 28.6  | 9.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 295.7  | 102.5 | 26.2  | 7.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 338.6  | 100.1 | 23.8  | 4.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 414.9  | 97.8  | 21.5  | 4.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 546.0  | 95.4  | 21.5  | 4.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 836.9  | 90.6  | 21.5  | 4.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 1495.0 | 88.2  | 19.1  | 4.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 2606.0 | 90.6  | 19.1  | 4.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 3736.2 | 95.4  | 16.7  | 7.2   | 2.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 3197.4 | 83.5  | 16.7  | 9.5   | 4.8   | 2.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 71°   | 2606.0 | 73.9  | 16.7  | 9.5   | 4.8   | 2.4   | 2.4   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1676.2 | 57.2  | 14.3  | 9.5   | 4.8   | 4.8   | 2.4   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 708.1  | 47.7  | 14.3  | 9.5   | 7.2   | 4.8   | 4.8   | 2.4   | 0.0   | 0.0   | 0.0   |
| 77.5° | 302.8  | 35.8  | 14.3  | 11.9  | 9.5   | 7.2   | 7.2   | 4.8   | 2.4   | 0.0   | 0.0   |
| 80°   | 114.4  | 28.6  | 16.7  | 14.3  | 11.9  | 11.9  | 9.5   | 4.8   | 2.4   | 0.0   | 0.0   |
| 82.5° | 52.5   | 23.8  | 16.7  | 14.3  | 14.3  | 11.9  | 9.5   | 7.2   | 4.8   | 0.0   | 0.0   |
| 85°   | 33.4   | 21.5  | 16.7  | 14.3  | 14.3  | 11.9  | 11.9  | 7.2   | 4.8   | 0.0   | 0.0   |
| 87.5° | 26.2   | 21.5  | 16.7  | 16.7  | 14.3  | 14.3  | 9.5   | 7.2   | 2.4   | 0.0   | 0.0   |
| 90°   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-9

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-830-U-5WQ

Data in this report applies to families of products including GSS-SB1A-830-U-5WQ

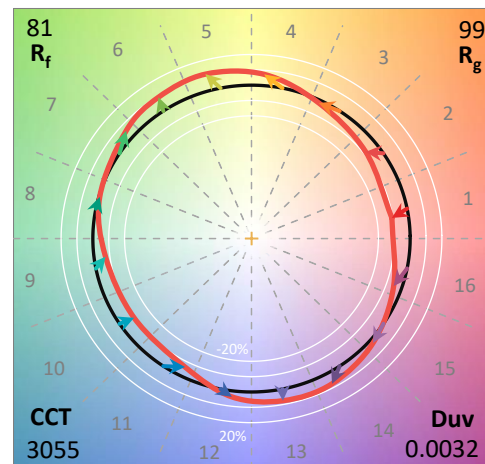
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-9  
 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-830-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 80 CRI  
 3000K CCT 26 LEDS

### Spectral Parameters

CCT (K): 3055  
 CIE  $u'$ : 0.2475  
 CIE  $v'$ : 0.5247  
 Duv: 0.0032  
 CIE x: 0.4377  
 CIE y: 0.4124  
 CIE z: 0.1499  
 Peak Wavelength (nm): 604  
 Dominant Wavelength (nm): 581  
 Purity: 55.16339  
 R<sub>f</sub>: 81.5  
 R<sub>g</sub>: 99.2

CRI (Ra): 80.9  
 R1: 79.5  
 R2: 85.6  
 R3: 92.1  
 R4: 82.4  
 R5: 78.9  
 R6: 81.7  
 R7: 85.1  
 R8: 61.9  
 R9: 6.8  
 R10: 67.1  
 R11: 82.5  
 R12: 63.4  
 R13: 80.2  
 R14: 95.1  
 R15: 71.7



### Test Conditions

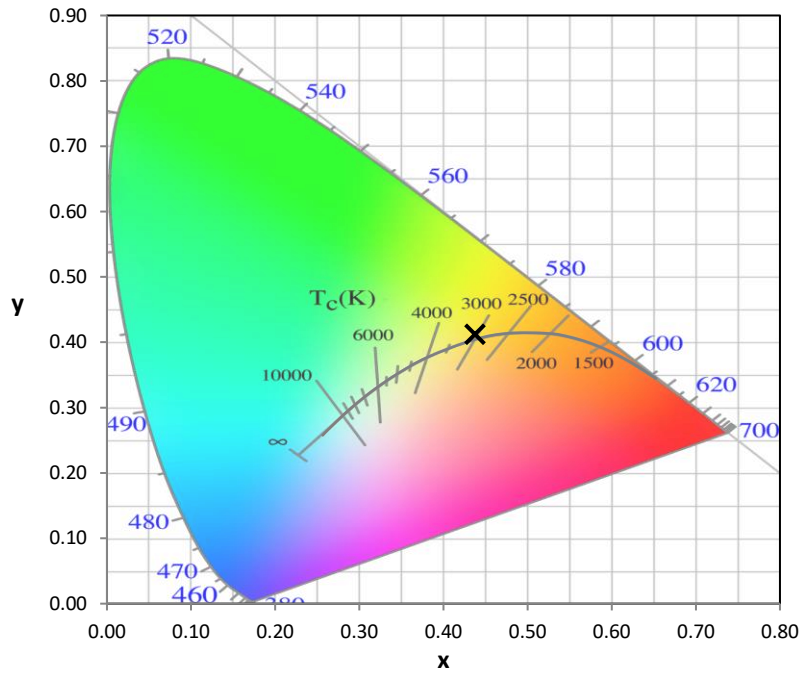
Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-9

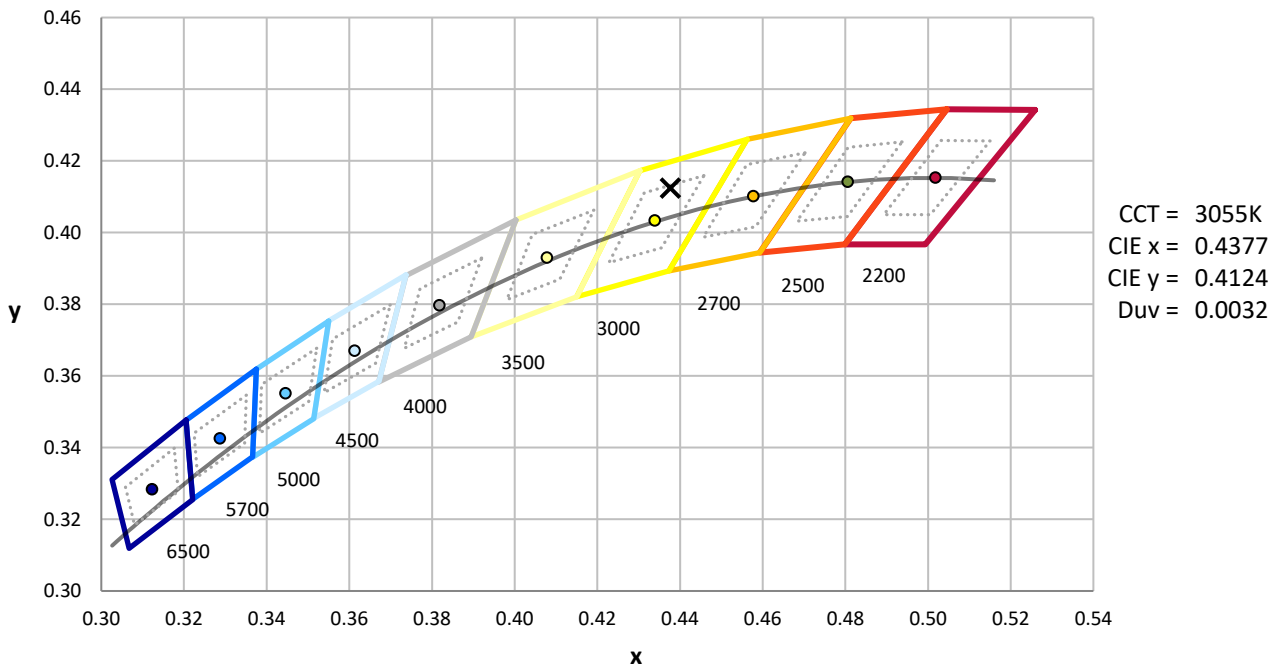
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



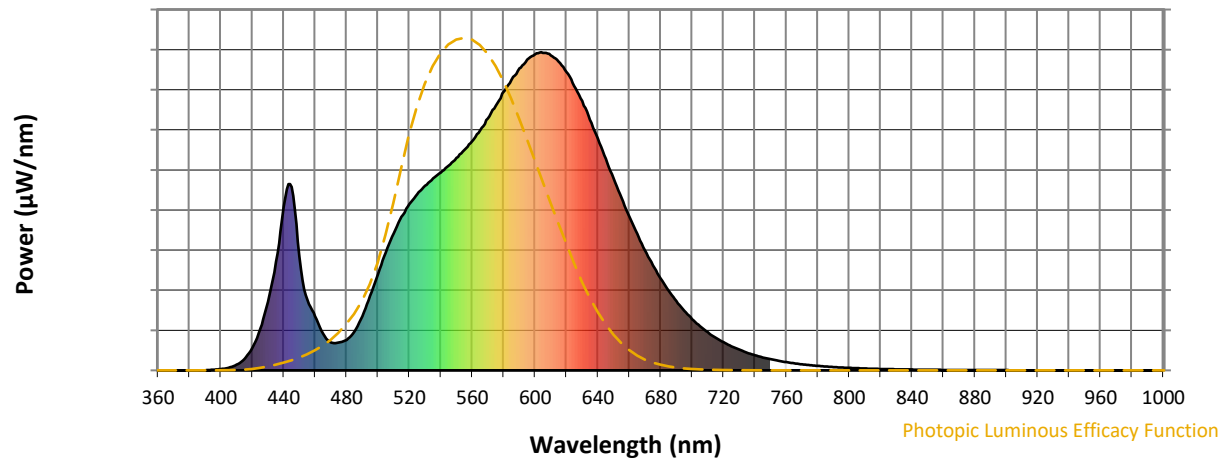
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

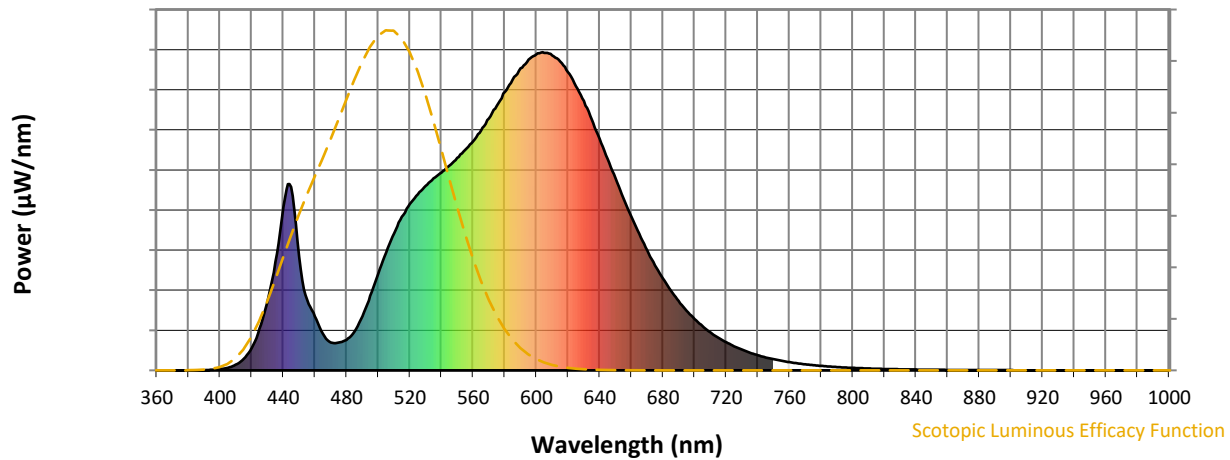


### Photopic Lumens: NR

| λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 170                      | NR            | 620    | 938                      | NR            | 750    | 35                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 234                      | NR            | 625    | 894                      | NR            | 755    | 30                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 302                      | NR            | 630    | 847                      | NR            | 760    | 26                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 371                      | NR            | 635    | 788                      | NR            | 765    | 22                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 431                      | NR            | 640    | 728                      | NR            | 770    | 19                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 482                      | NR            | 645    | 665                      | NR            | 775    | 16                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 523                      | NR            | 650    | 603                      | NR            | 780    | 14                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 553                      | NR            | 655    | 542                      | NR            | 785    | 12                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 580                      | NR            | 660    | 484                      | NR            | 790    | 11                       | NR            | 920    | 0                        | NR            |
| 405    | 8                        | NR            | 535    | 603                      | NR            | 665    | 430                      | NR            | 795    | 9                        | NR            | 925    | 0                        | NR            |
| 410    | 18                       | NR            | 540    | 622                      | NR            | 670    | 377                      | NR            | 800    | 8                        | NR            | 930    | 0                        | NR            |
| 415    | 36                       | NR            | 545    | 644                      | NR            | 675    | 330                      | NR            | 805    | 7                        | NR            | 935    | 0                        | NR            |
| 420    | 71                       | NR            | 550    | 668                      | NR            | 680    | 289                      | NR            | 810    | 6                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 693                      | NR            | 685    | 250                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 215                      | NR            | 560    | 720                      | NR            | 690    | 218                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 341                      | NR            | 565    | 754                      | NR            | 695    | 188                      | NR            | 825    | 4                        | NR            | 955    | 0                        | NR            |
| 440    | 514                      | NR            | 570    | 792                      | NR            | 700    | 161                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 576                      | NR            | 575    | 832                      | NR            | 705    | 139                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 358                      | NR            | 580    | 875                      | NR            | 710    | 119                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 222                      | NR            | 585    | 913                      | NR            | 715    | 102                      | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 170                      | NR            | 590    | 950                      | NR            | 720    | 88                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 115                      | NR            | 595    | 977                      | NR            | 725    | 76                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 88                       | NR            | 600    | 994                      | NR            | 730    | 65                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 87                       | NR            | 605    | 997                      | NR            | 735    | 56                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 96                       | NR            | 610    | 990                      | NR            | 740    | 47                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 122                      | NR            | 615    | 971                      | NR            | 745    | 41                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Scotopic Flux vs. Wavelength



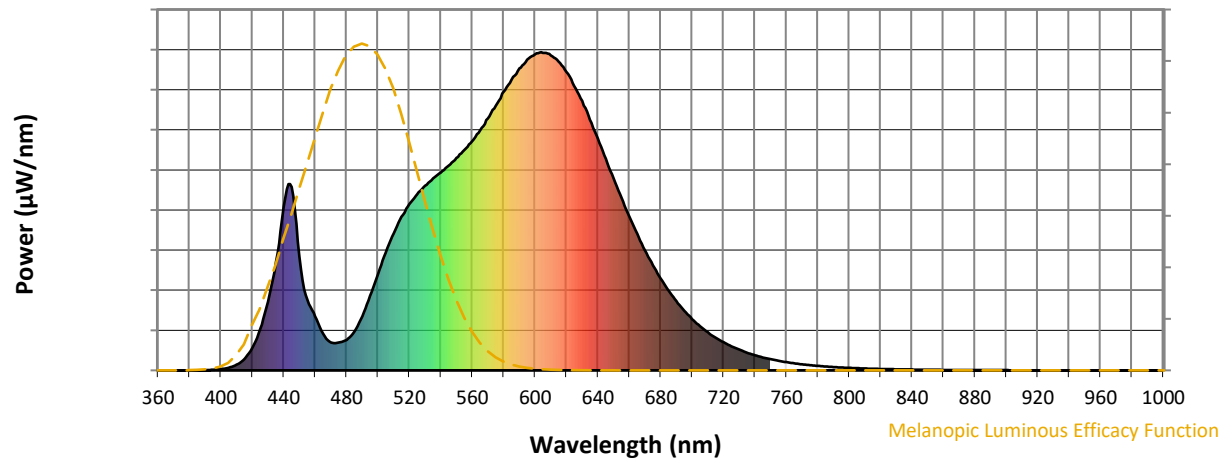
Scotopic Lumens: NR

S/P: 1.28

| 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       | 170                         | NR               | 620       | 938                         | NR               | 750       | 35                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 234                         | NR               | 625       | 894                         | NR               | 755       | 30                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 302                         | NR               | 630       | 847                         | NR               | 760       | 26                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 371                         | NR               | 635       | 788                         | NR               | 765       | 22                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 431                         | NR               | 640       | 728                         | NR               | 770       | 19                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 482                         | NR               | 645       | 665                         | NR               | 775       | 16                          | NR               | 905       | 1                           | NR               |
| 390       | 0                           | NR               | 520       | 523                         | NR               | 650       | 603                         | NR               | 780       | 14                          | NR               | 910       | 0                           | NR               |
| 395       | 2                           | NR               | 525       | 553                         | NR               | 655       | 542                         | NR               | 785       | 12                          | NR               | 915       | 0                           | NR               |
| 400       | 4                           | NR               | 530       | 580                         | NR               | 660       | 484                         | NR               | 790       | 11                          | NR               | 920       | 0                           | NR               |
| 405       | 8                           | NR               | 535       | 603                         | NR               | 665       | 430                         | NR               | 795       | 9                           | NR               | 925       | 0                           | NR               |
| 410       | 18                          | NR               | 540       | 622                         | NR               | 670       | 377                         | NR               | 800       | 8                           | NR               | 930       | 0                           | NR               |
| 415       | 36                          | NR               | 545       | 644                         | NR               | 675       | 330                         | NR               | 805       | 7                           | NR               | 935       | 0                           | NR               |
| 420       | 71                          | NR               | 550       | 668                         | NR               | 680       | 289                         | NR               | 810       | 6                           | NR               | 940       | 0                           | NR               |
| 425       | 131                         | NR               | 555       | 693                         | NR               | 685       | 250                         | NR               | 815       | 5                           | NR               | 945       | 0                           | NR               |
| 430       | 215                         | NR               | 560       | 720                         | NR               | 690       | 218                         | NR               | 820       | 4                           | NR               | 950       | 0                           | NR               |
| 435       | 341                         | NR               | 565       | 754                         | NR               | 695       | 188                         | NR               | 825       | 4                           | NR               | 955       | 0                           | NR               |
| 440       | 514                         | NR               | 570       | 792                         | NR               | 700       | 161                         | NR               | 830       | 3                           | NR               | 960       | 0                           | NR               |
| 445       | 576                         | NR               | 575       | 832                         | NR               | 705       | 139                         | NR               | 835       | 3                           | NR               | 965       | 0                           | NR               |
| 450       | 358                         | NR               | 580       | 875                         | NR               | 710       | 119                         | NR               | 840       | 3                           | NR               | 970       | 0                           | NR               |
| 455       | 222                         | NR               | 585       | 913                         | NR               | 715       | 102                         | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 170                         | NR               | 590       | 950                         | NR               | 720       | 88                          | NR               | 850       | 2                           | NR               | 980       | 0                           | NR               |
| 465       | 115                         | NR               | 595       | 977                         | NR               | 725       | 76                          | NR               | 855       | 2                           | NR               | 985       | 0                           | NR               |
| 470       | 88                          | NR               | 600       | 994                         | NR               | 730       | 65                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 87                          | NR               | 605       | 997                         | NR               | 735       | 56                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 96                          | NR               | 610       | 990                         | NR               | 740       | 47                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 122                         | NR               | 615       | 971                         | NR               | 745       | 41                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.33

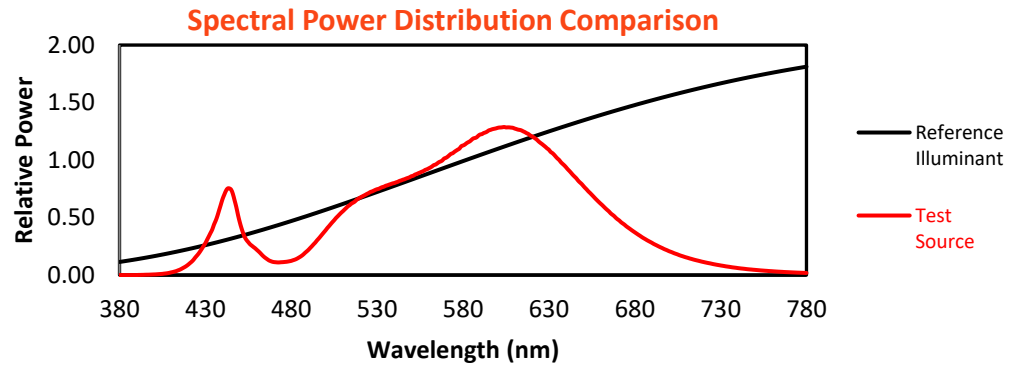
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | 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               | 170                                    | NR                             | 620               | 938                                    | NR                             | 750               | 35                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 234                                    | NR                             | 625               | 894                                    | NR                             | 755               | 30                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 302                                    | NR                             | 630               | 847                                    | NR                             | 760               | 26                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 371                                    | NR                             | 635               | 788                                    | NR                             | 765               | 22                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 431                                    | NR                             | 640               | 728                                    | NR                             | 770               | 19                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 482                                    | NR                             | 645               | 665                                    | NR                             | 775               | 16                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 523                                    | NR                             | 650               | 603                                    | NR                             | 780               | 14                                     | NR                             | 910               | 0                                      | NR                             |
| 395               | 2                                      | NR                             | 525               | 553                                    | NR                             | 655               | 542                                    | NR                             | 785               | 12                                     | NR                             | 915               | 0                                      | NR                             |
| 400               | 4                                      | NR                             | 530               | 580                                    | NR                             | 660               | 484                                    | NR                             | 790               | 11                                     | NR                             | 920               | 0                                      | NR                             |
| 405               | 8                                      | NR                             | 535               | 603                                    | NR                             | 665               | 430                                    | NR                             | 795               | 9                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 18                                     | NR                             | 540               | 622                                    | NR                             | 670               | 377                                    | NR                             | 800               | 8                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 36                                     | NR                             | 545               | 644                                    | NR                             | 675               | 330                                    | NR                             | 805               | 7                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 71                                     | NR                             | 550               | 668                                    | NR                             | 680               | 289                                    | NR                             | 810               | 6                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 131                                    | NR                             | 555               | 693                                    | NR                             | 685               | 250                                    | NR                             | 815               | 5                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 215                                    | NR                             | 560               | 720                                    | NR                             | 690               | 218                                    | NR                             | 820               | 4                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 341                                    | NR                             | 565               | 754                                    | NR                             | 695               | 188                                    | NR                             | 825               | 4                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 514                                    | NR                             | 570               | 792                                    | NR                             | 700               | 161                                    | NR                             | 830               | 3                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 576                                    | NR                             | 575               | 832                                    | NR                             | 705               | 139                                    | NR                             | 835               | 3                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 358                                    | NR                             | 580               | 875                                    | NR                             | 710               | 119                                    | NR                             | 840               | 3                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 222                                    | NR                             | 585               | 913                                    | NR                             | 715               | 102                                    | NR                             | 845               | 2                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 170                                    | NR                             | 590               | 950                                    | NR                             | 720               | 88                                     | NR                             | 850               | 2                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 115                                    | NR                             | 595               | 977                                    | NR                             | 725               | 76                                     | NR                             | 855               | 2                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 88                                     | NR                             | 600               | 994                                    | NR                             | 730               | 65                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 87                                     | NR                             | 605               | 997                                    | NR                             | 735               | 56                                     | NR                             | 865               | 1                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 96                                     | NR                             | 610               | 990                                    | NR                             | 740               | 47                                     | NR                             | 870               | 1                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 122                                    | NR                             | 615               | 971                                    | NR                             | 745               | 41                                     | NR                             | 875               | 1                                      | NR                             |                   |                                        |                                |

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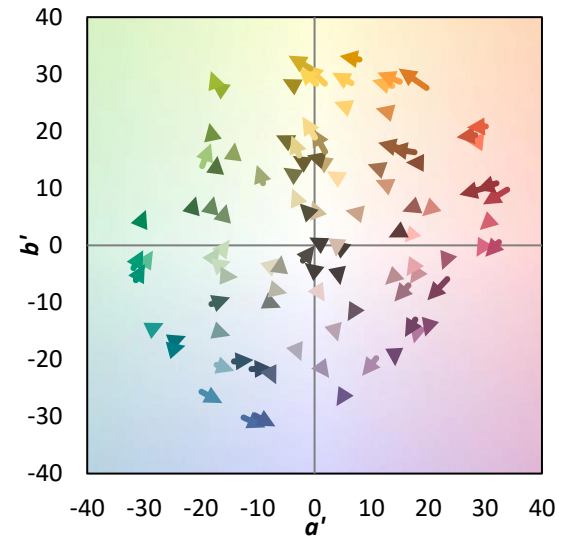
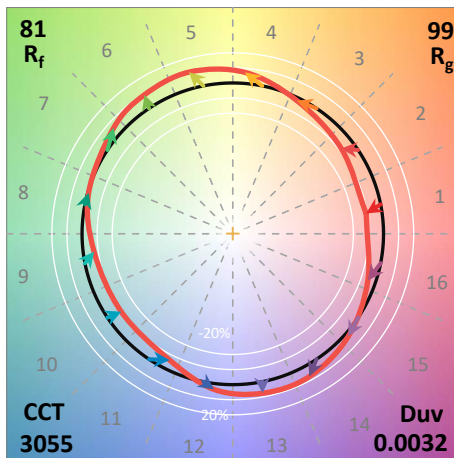
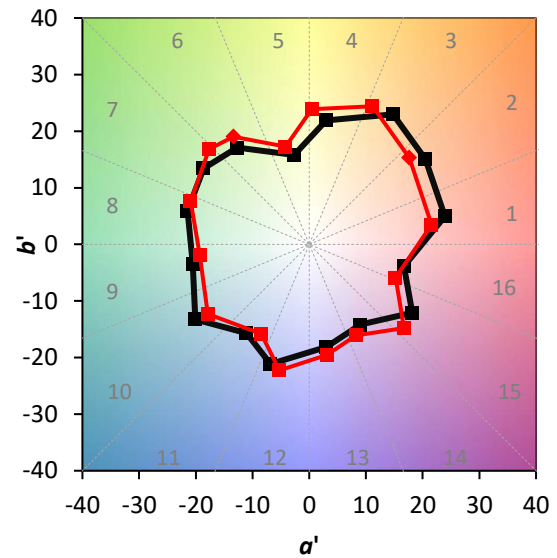
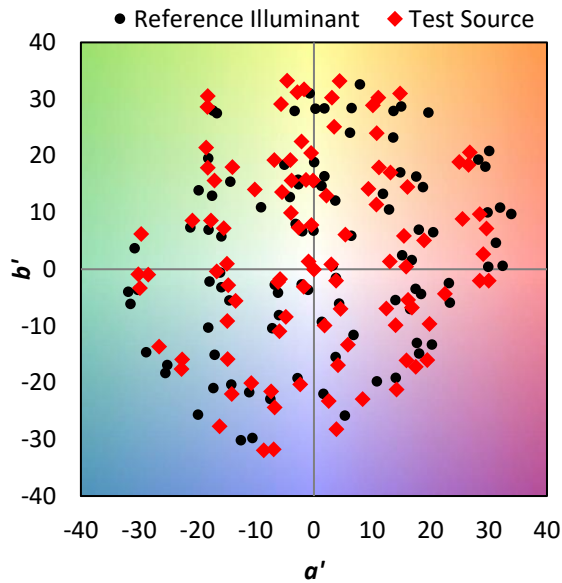
TM-30-18

### Summary

$R_f = 81.5$   
 $R_g = 99.2$   
 $CIE R_a = 80.9$   
 $R_g = 6.8$



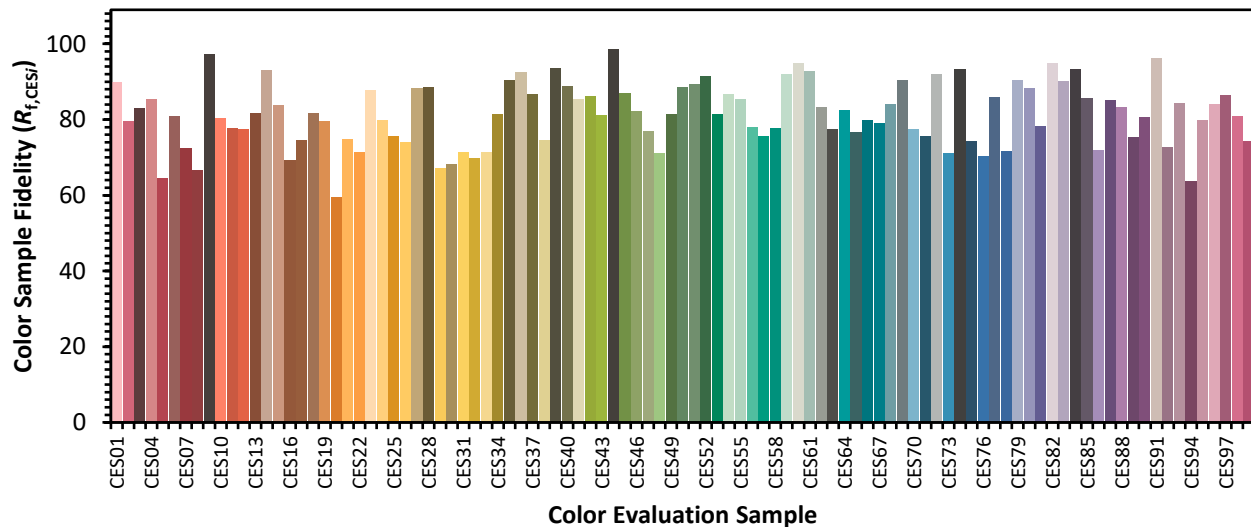
### Color Vector Graphics

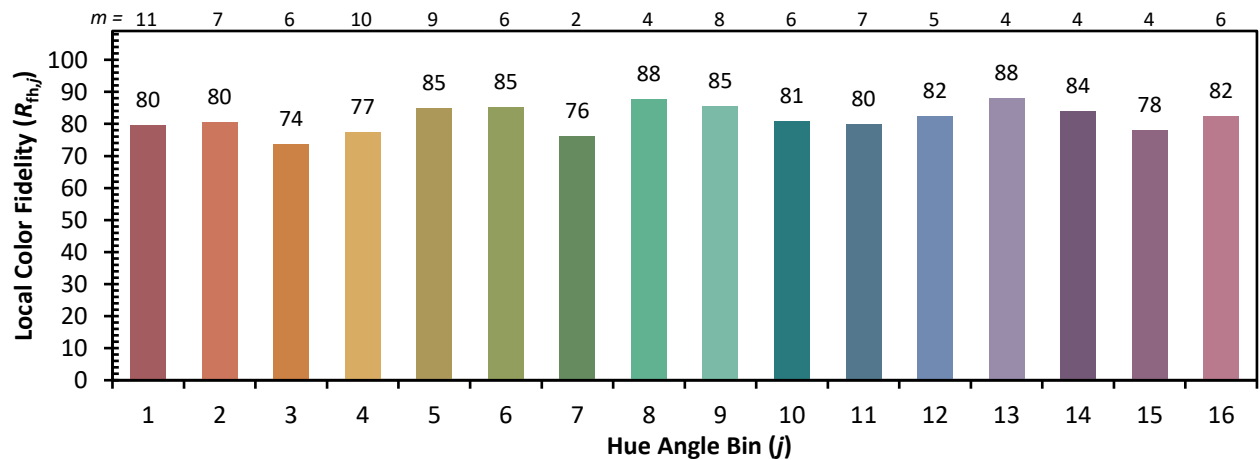
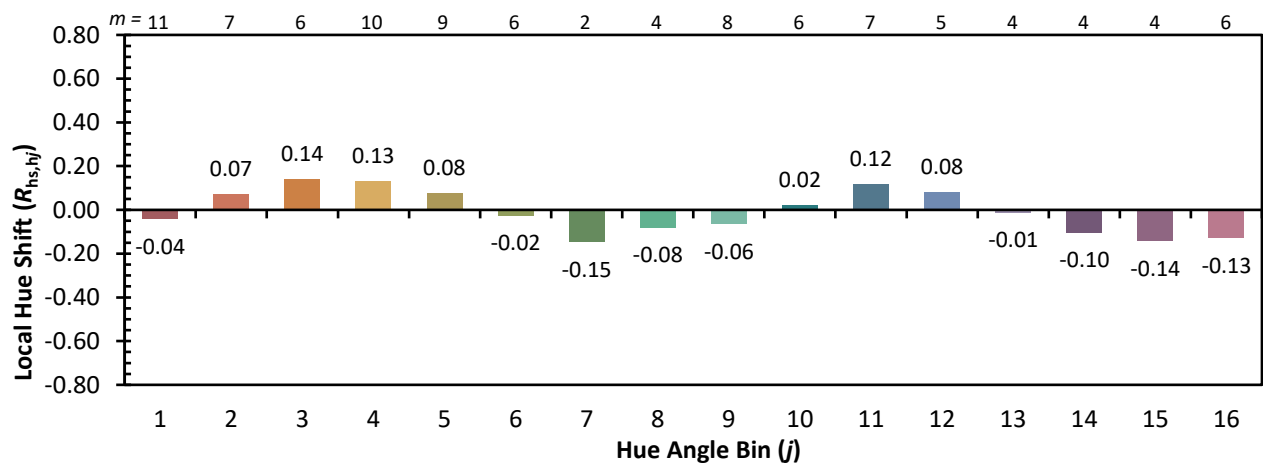
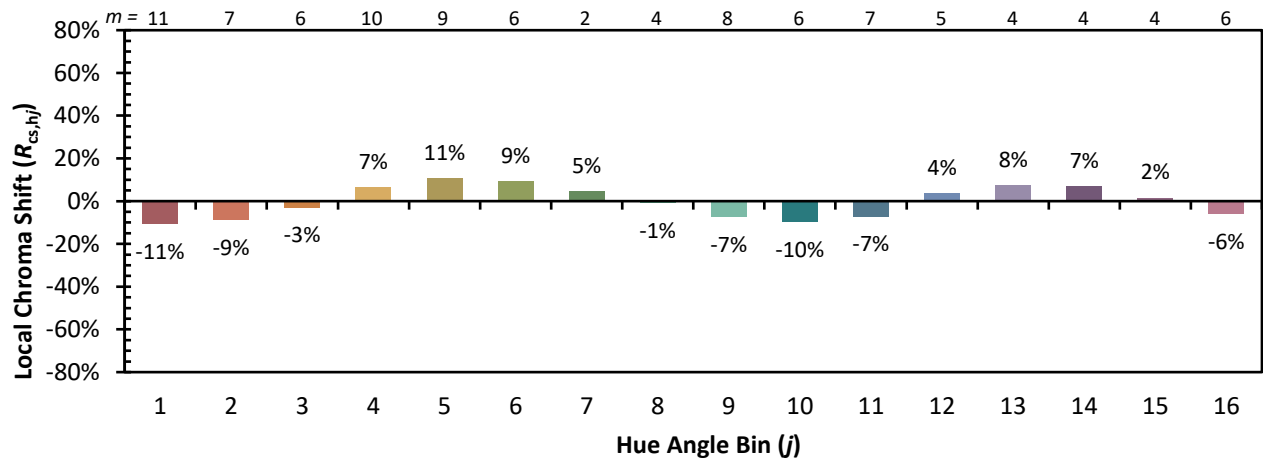




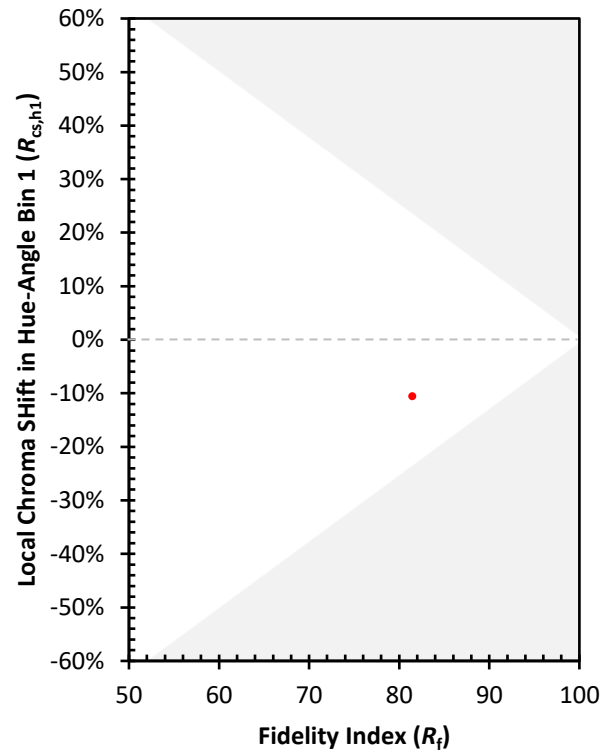
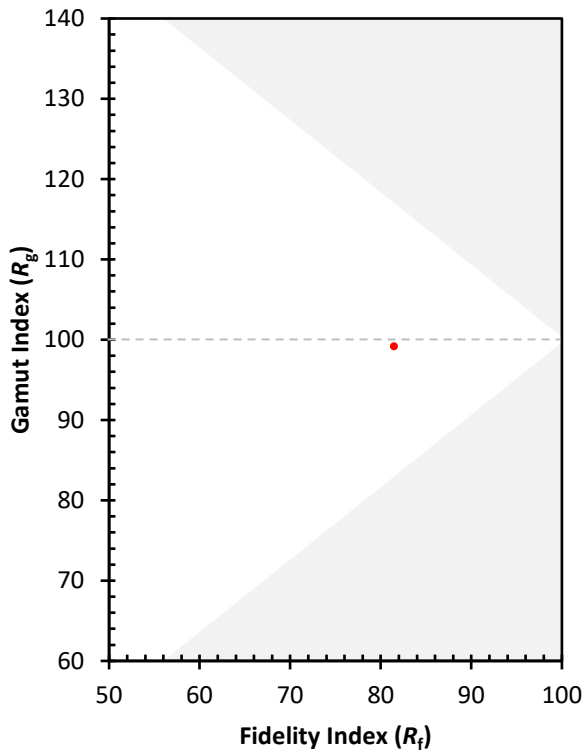
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 91 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 93 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 90 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 77 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)