

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: P1047857

Luminaire Tested: **GALN-SA5A-760-U-T2BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1047857  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA5A-760-U-T2BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 615mA 5xLight Square PACKAGE  
70CRI 5700K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (70) 5700K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17826.2 lumens  
Efficiency: N/A  
Efficacy: 130.5 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B0 - U0 - G3

Input Watts (W): 136.6  
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

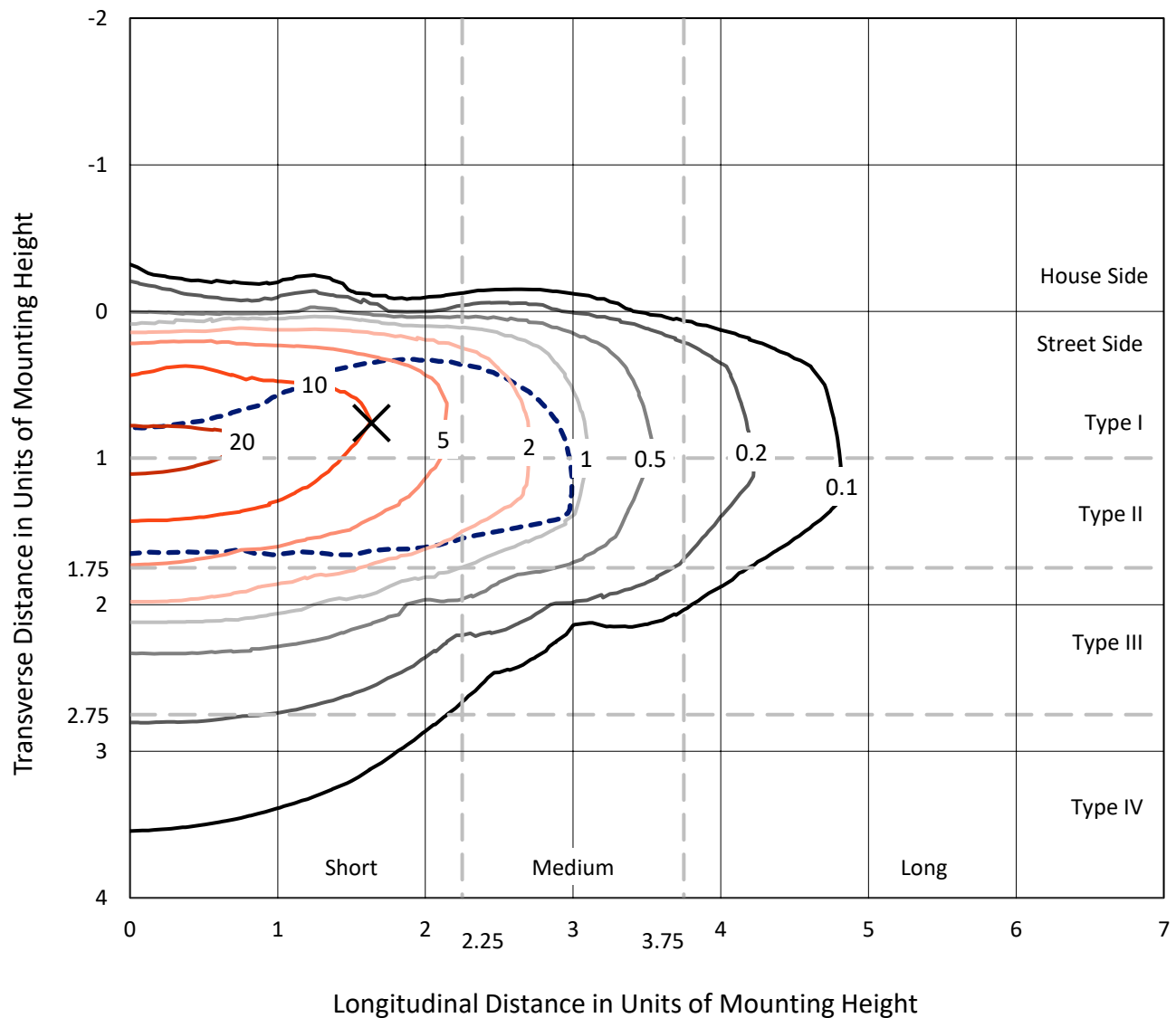


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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

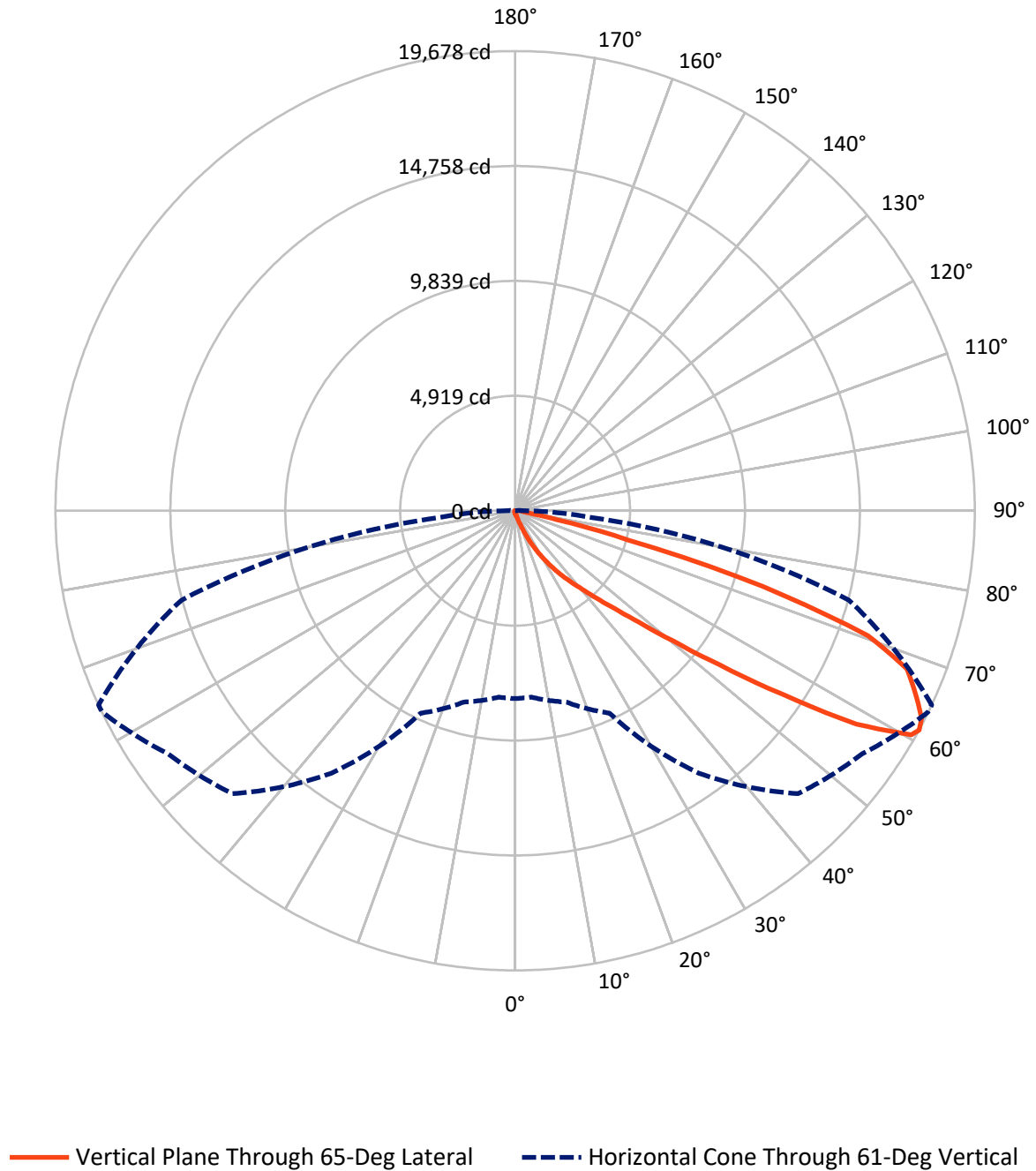


Based on 15 foot mounting height. Maximum calculated value = 23.6 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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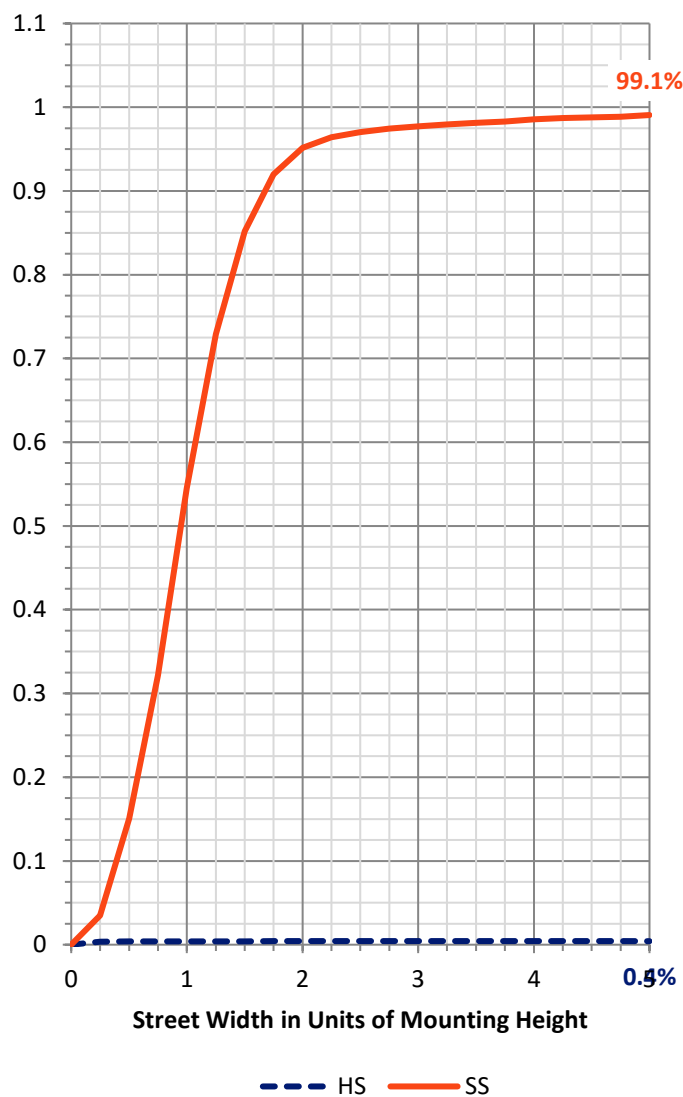
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 76.1     | 0.0    | 76.1    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 17750.1  | 0.0    | 17750.1 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 17826.2  | 0.0    | 17826.2 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 13.9    | 0.1       |
| 10°-20°   | 146.6   | 0.8       |
| 20°-30°   | 526.1   | 3.0       |
| 30°-40°   | 1400.6  | 7.9       |
| 40°-50°   | 3679.4  | 20.6      |
| 50°-60°   | 5700.1  | 32.0      |
| 60°-70°   | 4779.5  | 26.8      |
| 70°-80°   | 1406.5  | 7.9       |
| 80°-90°   | 173.5   | 1.0       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 17826.2 | 100.0     |
| 0°-180°   | 17826.2 | 100.0     |



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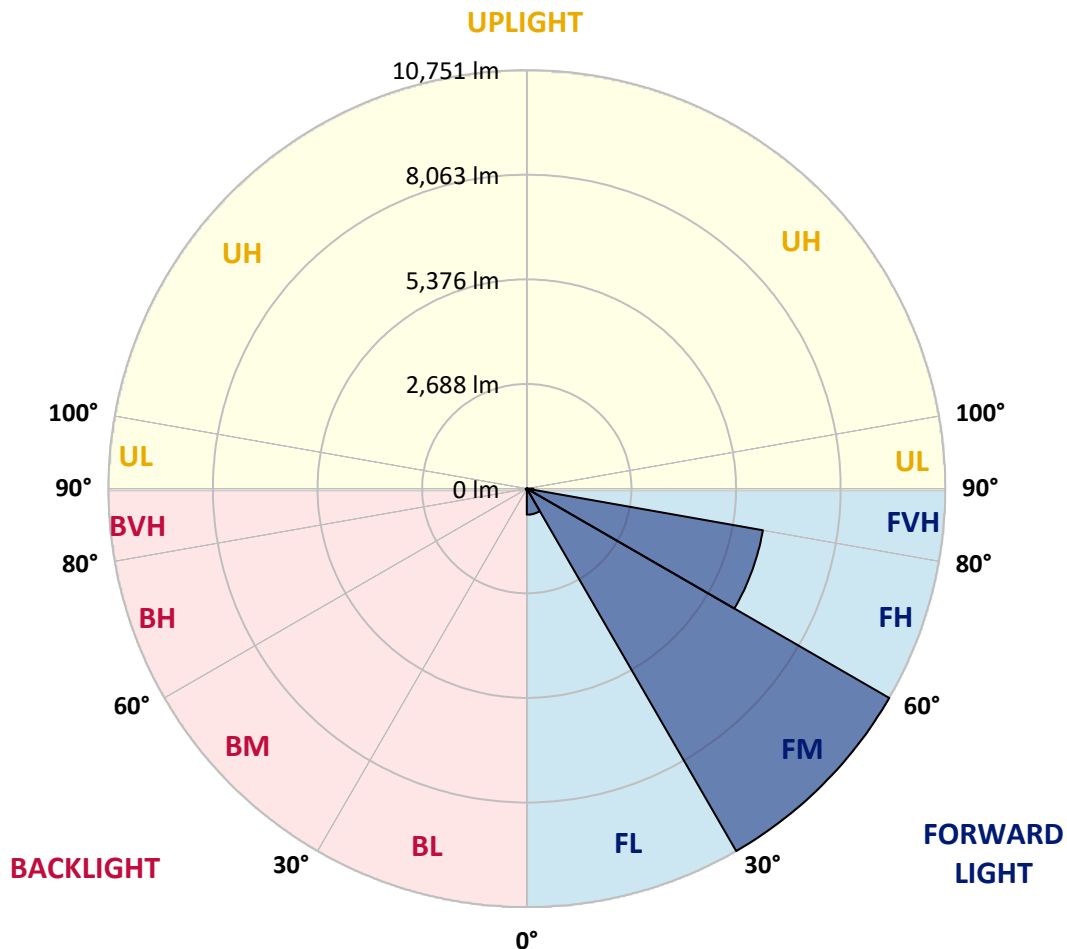
CATALOG NUMBER: GALN-SA5A-760-U-T2BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 669.5   | 3.8       |                         |      |         |
| FM   | (30°-60°)   | 10751.2 | 60.3      |                         |      |         |
| FH   | (60°-80°)   | 6159.1  | 34.6      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 170.3   | 1.0       |                         |      | G2/225  |
| BL   | (0°-30°)    | 17.1    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 29.0    | 0.2       | B0/220                  |      |         |
| BH   | (60°-80°)   | 26.8    | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 3.2     | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

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

Type II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 64°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 109.1   | 109.1   | 109.1   | 109.1   | 109.1   | 109.1   | 109.1   | 109.1   | 109.1   | 109.1   | 109.1  |
| 2.5°  | 132.4   | 133.7   | 131.2   | 126.3   | 122.6   | 122.6   | 121.4   | 117.7   | 117.7   | 114.0   | 111.6  |
| 5°    | 185.2   | 182.7   | 177.8   | 168.0   | 159.4   | 150.8   | 142.2   | 133.7   | 132.4   | 121.4   | 114.0  |
| 7.5°  | 302.9   | 305.3   | 289.4   | 258.7   | 233.0   | 199.9   | 169.2   | 150.8   | 148.4   | 130.0   | 115.3  |
| 10°   | 664.6   | 646.2   | 609.4   | 490.5   | 403.4   | 304.1   | 225.6   | 175.4   | 172.9   | 139.8   | 117.7  |
| 12.5° | 1211.5  | 1196.8  | 1129.4  | 1006.7  | 782.3   | 544.5   | 329.9   | 217.0   | 209.7   | 148.4   | 118.9  |
| 15°   | 1746.2  | 1722.9  | 1686.1  | 1562.2  | 1299.8  | 976.1   | 539.5   | 296.8   | 277.1   | 160.6   | 117.7  |
| 17.5° | 2087.1  | 2090.8  | 2057.6  | 2004.9  | 1835.7  | 1444.5  | 931.9   | 442.7   | 404.7   | 182.7   | 115.3  |
| 20°   | 2385.1  | 2376.5  | 2394.9  | 2366.7  | 2247.7  | 1963.2  | 1356.2  | 701.4   | 636.4   | 218.3   | 116.5  |
| 22.5° | 2728.4  | 2749.2  | 2762.7  | 2756.6  | 2625.4  | 2382.6  | 1838.1  | 1049.7  | 967.5   | 283.3   | 120.2  |
| 25°   | 3188.2  | 3185.8  | 3187.0  | 3171.1  | 3043.5  | 2773.8  | 2321.3  | 1482.5  | 1399.1  | 388.7   | 128.8  |
| 27.5° | 3670.2  | 3684.9  | 3691.0  | 3633.4  | 3466.6  | 3201.7  | 2768.9  | 1955.9  | 1857.8  | 557.9   | 139.8  |
| 30°   | 4328.7  | 4316.4  | 4288.2  | 4170.5  | 3968.1  | 3639.5  | 3210.3  | 2452.5  | 2349.5  | 794.6   | 157.0  |
| 32.5° | 5216.5  | 5203.0  | 5060.7  | 4800.8  | 4497.9  | 4095.7  | 3654.2  | 2950.4  | 2825.3  | 1090.1  | 180.3  |
| 35°   | 6679.4  | 6700.2  | 6350.7  | 5677.5  | 5134.3  | 4643.8  | 4145.9  | 3445.8  | 3335.4  | 1454.3  | 212.1  |
| 37.5° | 8919.7  | 8805.7  | 8331.1  | 7141.7  | 5971.8  | 5328.0  | 4615.6  | 3946.1  | 3850.4  | 1903.1  | 253.8  |
| 40°   | 11096.3 | 10983.5 | 10846.2 | 9719.2  | 7427.4  | 6082.2  | 5272.9  | 4533.4  | 4409.6  | 2409.6  | 315.1  |
| 42.5° | 13384.5 | 13322.0 | 13315.8 | 12466.0 | 10083.4 | 7268.0  | 6063.8  | 5221.4  | 5115.9  | 2965.1  | 415.7  |
| 45°   | 15005.6 | 14943.1 | 15074.3 | 15222.6 | 13700.9 | 9808.8  | 7440.9  | 6115.3  | 5962.0  | 3639.5  | 576.3  |
| 47.5° | 15223.9 | 15226.3 | 15577.0 | 16041.8 | 16388.8 | 13738.9 | 9275.3  | 7299.9  | 7113.5  | 4604.6  | 846.1  |
| 50°   | 14497.9 | 14526.1 | 15084.1 | 15915.5 | 16849.9 | 17036.3 | 12510.2 | 9019.1  | 8743.2  | 5748.7  | 1228.7 |
| 52.5° | 13116.0 | 13147.8 | 13925.3 | 15292.5 | 16425.6 | 17828.4 | 16318.9 | 11268.0 | 10950.4 | 7176.0  | 1768.3 |
| 55°   | 11871.3 | 11890.9 | 12782.4 | 14510.2 | 15914.3 | 17398.0 | 18580.1 | 14271.1 | 13854.2 | 8932.0  | 2300.4 |
| 57.5° | 10638.9 | 10593.6 | 11173.6 | 13151.5 | 15827.2 | 16869.5 | 18913.7 | 17693.5 | 17233.7 | 10851.1 | 2714.9 |
| 60°   | 8990.9  | 8914.8  | 9380.8  | 10638.9 | 14681.9 | 17216.5 | 18289.5 | 19586.9 | 19482.6 | 13523.1 | 3035.0 |
| 61°   | 8043.0  | 8011.1  | 8479.5  | 9558.6  | 13718.0 | 17128.2 | 18139.9 | 19666.6 | 19677.6 | 14787.3 | 3178.4 |
| 62.5° | 5743.7  | 5834.5  | 6550.6  | 7953.4  | 11489.9 | 16555.6 | 18159.5 | 19420.1 | 19529.2 | 16467.3 | 3550.0 |
| 65°   | 2553.0  | 2699.0  | 3255.7  | 4397.3  | 6681.8  | 13772.0 | 17985.4 | 18879.3 | 18825.4 | 16928.4 | 4830.2 |
| 67.5° | 1514.4  | 1536.5  | 1813.6  | 2491.7  | 3539.0  | 7407.8  | 15871.3 | 18164.4 | 18092.1 | 14737.1 | 6009.8 |
| 70°   | 1193.1  | 1204.2  | 1292.5  | 1563.5  | 2054.0  | 2837.5  | 9058.3  | 15715.6 | 16030.7 | 11949.8 | 5883.5 |
| 72.5° | 1131.8  | 1129.4  | 1141.6  | 1189.5  | 1293.7  | 1407.7  | 3507.1  | 10446.4 | 11087.7 | 8605.8  | 4933.2 |
| 75°   | 1117.1  | 1112.2  | 1099.9  | 1081.6  | 936.9   | 828.9   | 1086.5  | 4620.5  | 4992.1  | 5879.9  | 3714.3 |
| 77.5° | 1084.0  | 1085.2  | 1087.7  | 1037.4  | 803.2   | 586.1   | 526.1   | 1482.5  | 1823.4  | 3731.5  | 2640.1 |
| 80°   | 733.3   | 744.3   | 762.7   | 743.1   | 722.3   | 424.3   | 371.6   | 527.3   | 534.6   | 2094.4  | 1743.7 |
| 82.5° | 371.6   | 371.6   | 363.0   | 323.7   | 279.6   | 275.9   | 295.5   | 382.6   | 387.5   | 1059.5  | 820.4  |
| 85°   | 224.4   | 236.7   | 241.6   | 219.5   | 201.1   | 185.2   | 225.6   | 304.1   | 315.1   | 410.8   | 191.3  |
| 87.5° | 50.3    | 51.5    | 56.4    | 74.8    | 109.1   | 148.4   | 209.7   | 278.4   | 283.3   | 263.6   | 23.3   |
| 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-SA5A-760-U-T2BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 109.1  | 109.1 | 109.1 | 109.1 | 109.1 | 109.1 | 109.1 | 109.1 | 109.1 | 109.1 | 109.1 |
| 2.5°  | 110.4  | 107.9 | 106.7 | 103.0 | 99.3  | 95.6  | 93.2  | 92.0  | 93.2  | 94.4  | 94.4  |
| 5°    | 109.1  | 105.5 | 99.3  | 93.2  | 88.3  | 83.4  | 78.5  | 77.3  | 77.3  | 78.5  | 78.5  |
| 7.5°  | 109.1  | 103.0 | 94.4  | 87.1  | 79.7  | 72.3  | 68.7  | 66.2  | 67.4  | 67.4  | 67.4  |
| 10°   | 109.1  | 101.8 | 90.7  | 79.7  | 71.1  | 62.5  | 56.4  | 54.0  | 54.0  | 54.0  | 54.0  |
| 12.5° | 107.9  | 100.6 | 87.1  | 73.6  | 61.3  | 51.5  | 44.1  | 40.5  | 41.7  | 41.7  | 41.7  |
| 15°   | 105.5  | 96.9  | 82.2  | 62.5  | 49.0  | 39.2  | 31.9  | 28.2  | 29.4  | 31.9  | 33.1  |
| 17.5° | 101.8  | 93.2  | 73.6  | 52.7  | 39.2  | 29.4  | 22.1  | 19.6  | 20.8  | 24.5  | 24.5  |
| 20°   | 100.6  | 89.5  | 65.0  | 42.9  | 29.4  | 20.8  | 14.7  | 12.3  | 13.5  | 18.4  | 19.6  |
| 22.5° | 100.6  | 87.1  | 58.9  | 35.6  | 22.1  | 13.5  | 8.6   | 4.9   | 4.9   | 8.6   | 8.6   |
| 25°   | 101.8  | 85.8  | 54.0  | 29.4  | 15.9  | 9.8   | 4.9   | 2.5   | 4.9   | 13.5  | 15.9  |
| 27.5° | 104.2  | 84.6  | 51.5  | 24.5  | 12.3  | 8.6   | 3.7   | 8.6   | 14.7  | 14.7  | 14.7  |
| 30°   | 106.7  | 82.2  | 47.8  | 20.8  | 11.0  | 6.1   | 6.1   | 12.3  | 12.3  | 14.7  | 15.9  |
| 32.5° | 110.4  | 80.9  | 45.4  | 18.4  | 8.6   | 4.9   | 8.6   | 7.4   | 7.4   | 8.6   | 9.8   |
| 35°   | 117.7  | 82.2  | 42.9  | 18.4  | 8.6   | 6.1   | 7.4   | 3.7   | 2.5   | 2.5   | 2.5   |
| 37.5° | 127.5  | 83.4  | 39.2  | 15.9  | 7.4   | 7.4   | 3.7   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 143.5  | 87.1  | 36.8  | 14.7  | 6.1   | 6.1   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 170.4  | 94.4  | 35.6  | 13.5  | 6.1   | 4.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 224.4  | 111.6 | 33.1  | 12.3  | 6.1   | 2.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 322.5  | 152.1 | 31.9  | 9.8   | 3.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 470.9  | 206.0 | 30.7  | 8.6   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 600.9  | 217.0 | 20.8  | 7.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 615.6  | 149.6 | 15.9  | 4.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 490.5  | 96.9  | 13.5  | 3.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 371.6  | 73.6  | 12.3  | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 61°   | 356.8  | 66.2  | 12.3  | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 393.6  | 57.6  | 11.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 640.1  | 47.8  | 9.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 1112.2 | 41.7  | 8.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 1405.3 | 39.2  | 7.4   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1225.0 | 35.6  | 7.4   | 2.5   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 737.0  | 30.7  | 7.4   | 4.9   | 2.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 386.3  | 23.3  | 7.4   | 6.1   | 3.7   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 187.6  | 20.8  | 8.6   | 6.1   | 4.9   | 2.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 73.6   | 17.2  | 9.8   | 8.6   | 6.1   | 3.7   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 33.1   | 14.7  | 11.0  | 9.8   | 8.6   | 4.9   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 17.2   | 13.5  | 12.3  | 11.0  | 8.6   | 6.1   | 2.5   | 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: SP1-2407-184-7

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-760-U-5WQ

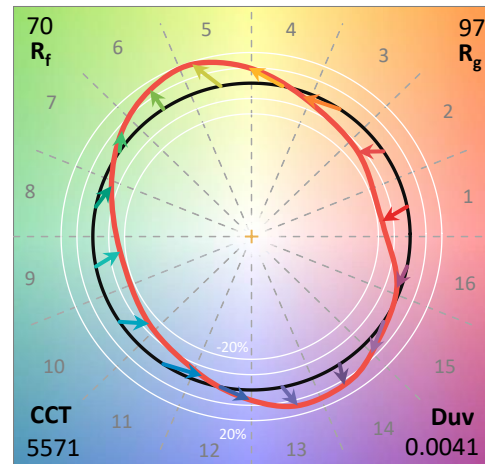
Data in this report applies to families of products including GSS-SB1A-760-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-7  
 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-70-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 5700K CCT 26 LEDS

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 5571     | CRI (Ra): | 69.9 |      |       |
| CIE u':                   | 0.2033   | R1:       | 68.8 | R9:  | -35.4 |
| CIE v':                   | 0.4806   | R2:       | 72.5 | R10: | 36.7  |
| Duv:                      | 0.0041   | R3:       | 76.8 | R11: | 73.9  |
| CIE x:                    | 0.3308   | R4:       | 72.0 | R12: | 47.8  |
| CIE y:                    | 0.3476   | R5:       | 70.9 | R13: | 68.0  |
| CIE z:                    | 0.3216   | R6:       | 65.6 | R14: | 87.0  |
| Peak Wavelength (nm):     | 442      | R7:       | 75.5 | R15: | 59.8  |
| Dominant Wavelength (nm): | 544      | R8:       | 56.8 |      |       |
| Purity:                   | 3.635698 |           |      |      |       |
| Rf:                       | 70.4     |           |      |      |       |
| Rg:                       | 97.1     |           |      |      |       |



### Test Conditions

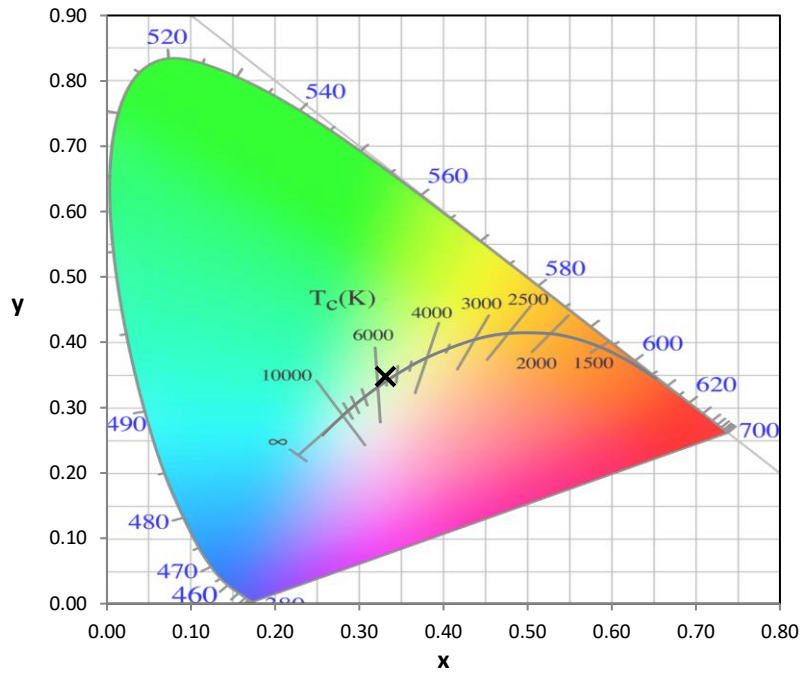
Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

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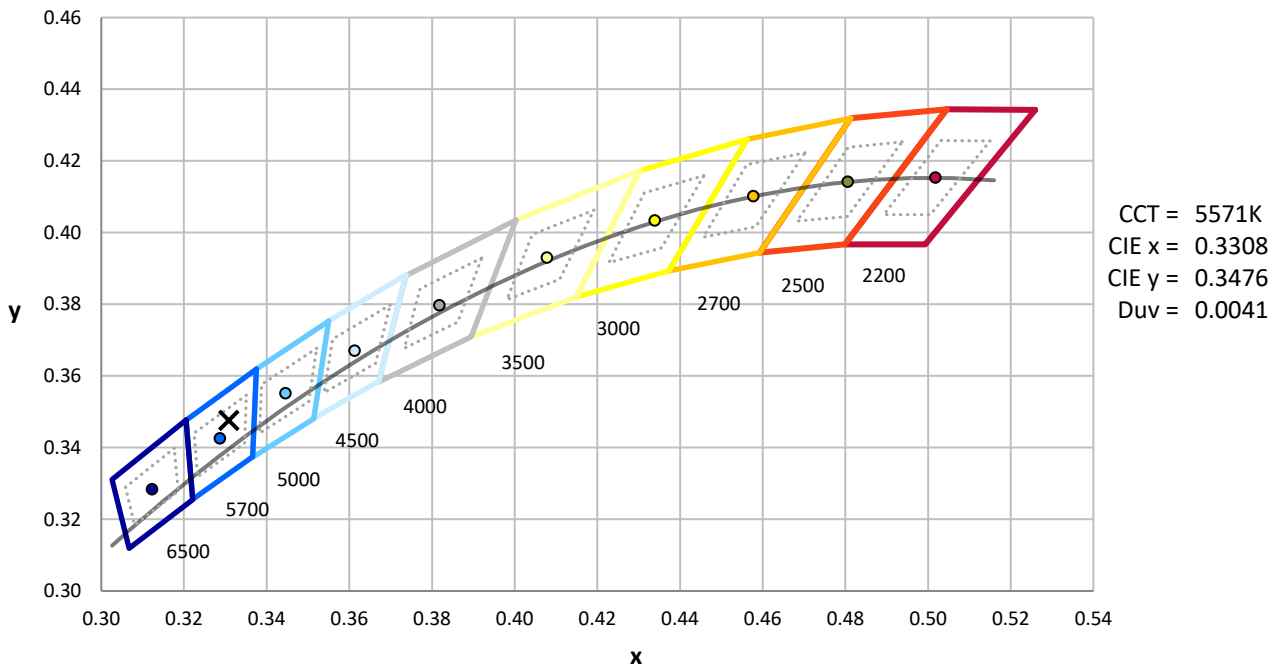
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



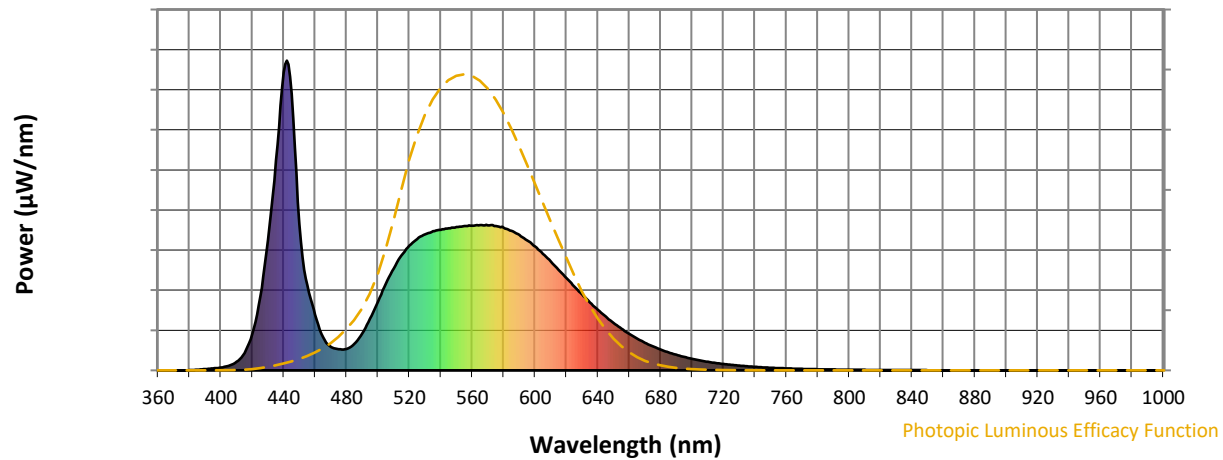
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5700K 4-step quadrangle

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### Photopic Flux vs. Wavelength

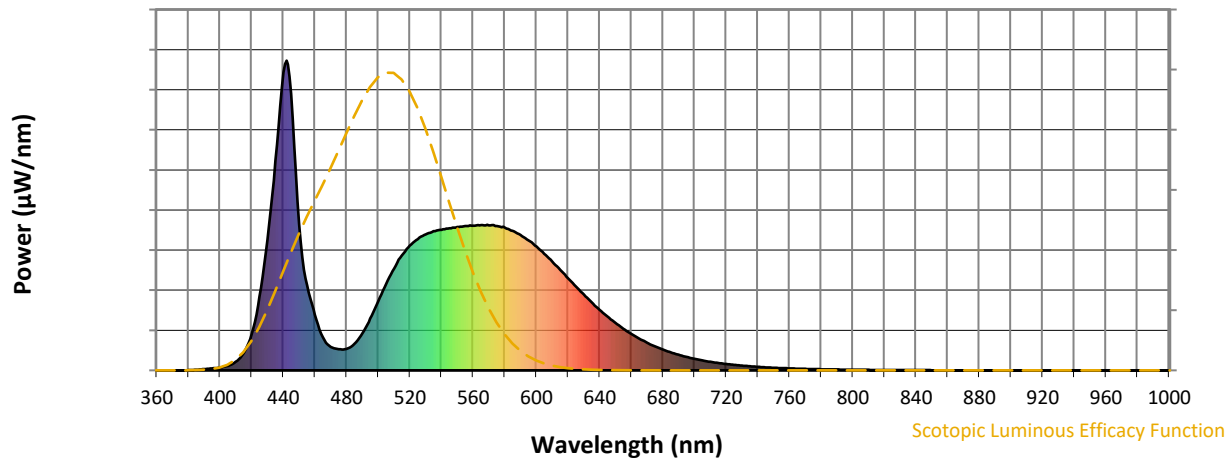


### Photopic Lumens: NR

| 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       | 120                         | NR               | 620       | 298                         | NR               | 750       | 9                           | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 167                         | NR               | 625       | 270                         | NR               | 755       | 7                           | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 222                         | NR               | 630       | 245                         | NR               | 760       | 6                           | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 279                         | NR               | 635       | 219                         | NR               | 765       | 6                           | NR               | 895       | 0                           | NR               |
| 380       | 1                           | NR               | 510       | 329                         | NR               | 640       | 196                         | NR               | 770       | 5                           | NR               | 900       | 0                           | NR               |
| 385       | 2                           | NR               | 515       | 371                         | NR               | 645       | 173                         | NR               | 775       | 4                           | NR               | 905       | 0                           | NR               |
| 390       | 4                           | NR               | 520       | 403                         | NR               | 650       | 153                         | NR               | 780       | 4                           | NR               | 910       | 0                           | NR               |
| 395       | 6                           | NR               | 525       | 424                         | NR               | 655       | 135                         | NR               | 785       | 3                           | NR               | 915       | 0                           | NR               |
| 400       | 9                           | NR               | 530       | 439                         | NR               | 660       | 117                         | NR               | 790       | 3                           | NR               | 920       | 0                           | NR               |
| 405       | 14                          | NR               | 535       | 449                         | NR               | 665       | 103                         | NR               | 795       | 2                           | NR               | 925       | 0                           | NR               |
| 410       | 28                          | NR               | 540       | 454                         | NR               | 670       | 89                          | NR               | 800       | 2                           | NR               | 930       | 0                           | NR               |
| 415       | 55                          | NR               | 545       | 459                         | NR               | 675       | 77                          | NR               | 805       | 2                           | NR               | 935       | 0                           | NR               |
| 420       | 118                         | NR               | 550       | 463                         | NR               | 680       | 67                          | NR               | 810       | 2                           | NR               | 940       | 0                           | NR               |
| 425       | 237                         | NR               | 555       | 466                         | NR               | 685       | 58                          | NR               | 815       | 1                           | NR               | 945       | 0                           | NR               |
| 430       | 420                         | NR               | 560       | 467                         | NR               | 690       | 50                          | NR               | 820       | 1                           | NR               | 950       | 0                           | NR               |
| 435       | 677                         | NR               | 565       | 469                         | NR               | 695       | 43                          | NR               | 825       | 1                           | NR               | 955       | 0                           | NR               |
| 440       | 962                         | NR               | 570       | 469                         | NR               | 700       | 37                          | NR               | 830       | 1                           | NR               | 960       | 0                           | NR               |
| 445       | 894                         | NR               | 575       | 466                         | NR               | 705       | 32                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 472                         | NR               | 580       | 461                         | NR               | 710       | 28                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 275                         | NR               | 585       | 450                         | NR               | 715       | 24                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 180                         | NR               | 590       | 437                         | NR               | 720       | 21                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 107                         | NR               | 595       | 420                         | NR               | 725       | 18                          | NR               | 855       | 0                           | NR               | 985       | 0                           | NR               |
| 470       | 76                          | NR               | 600       | 400                         | NR               | 730       | 15                          | NR               | 860       | 0                           | NR               | 990       | 0                           | NR               |
| 475       | 68                          | NR               | 605       | 376                         | NR               | 735       | 13                          | NR               | 865       | 0                           | NR               | 995       | 0                           | NR               |
| 480       | 69                          | NR               | 610       | 352                         | NR               | 740       | 11                          | NR               | 870       | 0                           | NR               | 1000      | 0                           | NR               |
| 485       | 86                          | NR               | 615       | 325                         | NR               | 745       | 10                          | NR               | 875       | 0                           | NR               |           |                             |                  |

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### Scotopic Flux vs. Wavelength



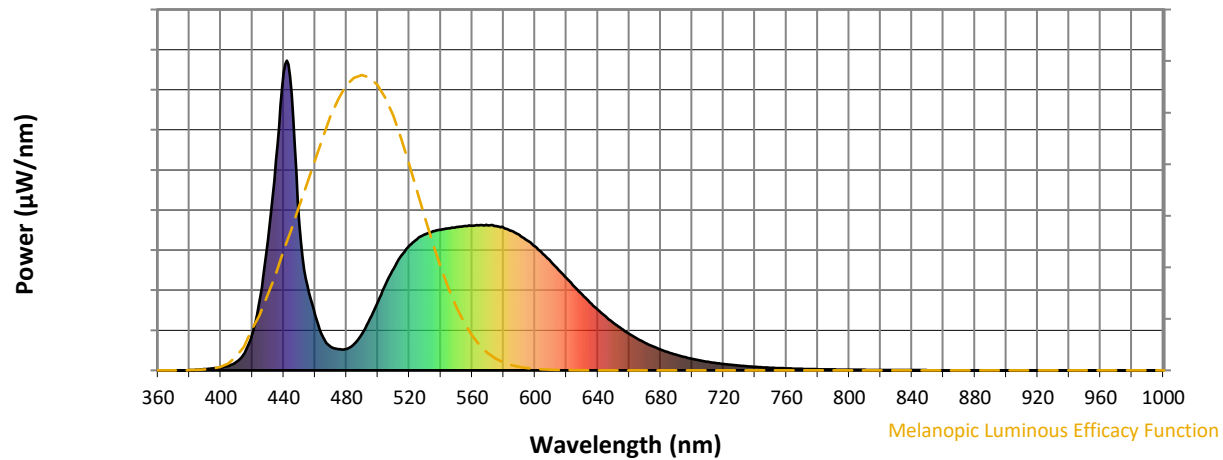
Scotopic Lumens: NR

S/P: 1.84

| 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       | 120                         | NR               | 620       | 298                         | NR               | 750       | 9                           | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 167                         | NR               | 625       | 270                         | NR               | 755       | 7                           | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 222                         | NR               | 630       | 245                         | NR               | 760       | 6                           | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 279                         | NR               | 635       | 219                         | NR               | 765       | 6                           | NR               | 895       | 0                           | NR               |
| 380       | 1                           | NR               | 510       | 329                         | NR               | 640       | 196                         | NR               | 770       | 5                           | NR               | 900       | 0                           | NR               |
| 385       | 2                           | NR               | 515       | 371                         | NR               | 645       | 173                         | NR               | 775       | 4                           | NR               | 905       | 0                           | NR               |
| 390       | 4                           | NR               | 520       | 403                         | NR               | 650       | 153                         | NR               | 780       | 4                           | NR               | 910       | 0                           | NR               |
| 395       | 6                           | NR               | 525       | 424                         | NR               | 655       | 135                         | NR               | 785       | 3                           | NR               | 915       | 0                           | NR               |
| 400       | 9                           | NR               | 530       | 439                         | NR               | 660       | 117                         | NR               | 790       | 3                           | NR               | 920       | 0                           | NR               |
| 405       | 14                          | NR               | 535       | 449                         | NR               | 665       | 103                         | NR               | 795       | 2                           | NR               | 925       | 0                           | NR               |
| 410       | 28                          | NR               | 540       | 454                         | NR               | 670       | 89                          | NR               | 800       | 2                           | NR               | 930       | 0                           | NR               |
| 415       | 55                          | NR               | 545       | 459                         | NR               | 675       | 77                          | NR               | 805       | 2                           | NR               | 935       | 0                           | NR               |
| 420       | 118                         | NR               | 550       | 463                         | NR               | 680       | 67                          | NR               | 810       | 2                           | NR               | 940       | 0                           | NR               |
| 425       | 237                         | NR               | 555       | 466                         | NR               | 685       | 58                          | NR               | 815       | 1                           | NR               | 945       | 0                           | NR               |
| 430       | 420                         | NR               | 560       | 467                         | NR               | 690       | 50                          | NR               | 820       | 1                           | NR               | 950       | 0                           | NR               |
| 435       | 677                         | NR               | 565       | 469                         | NR               | 695       | 43                          | NR               | 825       | 1                           | NR               | 955       | 0                           | NR               |
| 440       | 962                         | NR               | 570       | 469                         | NR               | 700       | 37                          | NR               | 830       | 1                           | NR               | 960       | 0                           | NR               |
| 445       | 894                         | NR               | 575       | 466                         | NR               | 705       | 32                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 472                         | NR               | 580       | 461                         | NR               | 710       | 28                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 275                         | NR               | 585       | 450                         | NR               | 715       | 24                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 180                         | NR               | 590       | 437                         | NR               | 720       | 21                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 107                         | NR               | 595       | 420                         | NR               | 725       | 18                          | NR               | 855       | 0                           | NR               | 985       | 0                           | NR               |
| 470       | 76                          | NR               | 600       | 400                         | NR               | 730       | 15                          | NR               | 860       | 0                           | NR               | 990       | 0                           | NR               |
| 475       | 68                          | NR               | 605       | 376                         | NR               | 735       | 13                          | NR               | 865       | 0                           | NR               | 995       | 0                           | NR               |
| 480       | 69                          | NR               | 610       | 352                         | NR               | 740       | 11                          | NR               | 870       | 0                           | NR               | 1000      | 0                           | NR               |
| 485       | 86                          | NR               | 615       | 325                         | NR               | 745       | 10                          | NR               | 875       | 0                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.71

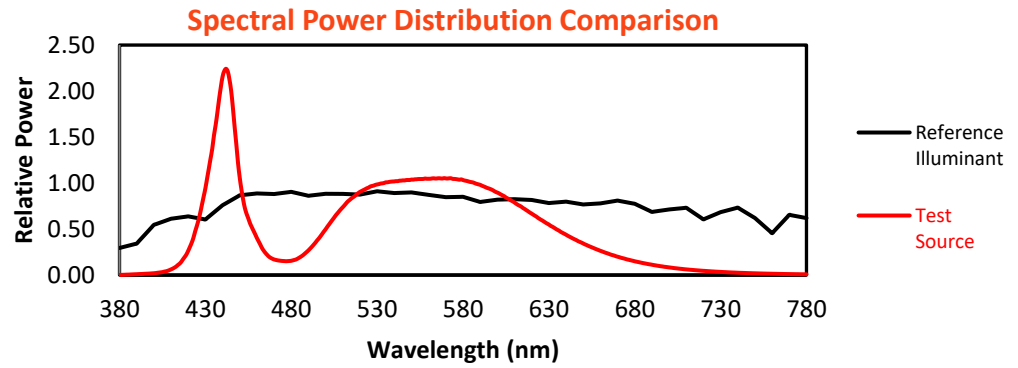
| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<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               | 120                                  | NR                             | 620               | 298                                  | NR                             | 750               | 9                                    | NR                             | 880               | 0                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 167                                  | NR                             | 625               | 270                                  | NR                             | 755               | 7                                    | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 222                                  | NR                             | 630               | 245                                  | NR                             | 760               | 6                                    | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 279                                  | NR                             | 635               | 219                                  | NR                             | 765               | 6                                    | NR                             | 895               | 0                                    | NR                             |
| 380               | 1                                    | NR                             | 510               | 329                                  | NR                             | 640               | 196                                  | NR                             | 770               | 5                                    | NR                             | 900               | 0                                    | NR                             |
| 385               | 2                                    | NR                             | 515               | 371                                  | NR                             | 645               | 173                                  | NR                             | 775               | 4                                    | NR                             | 905               | 0                                    | NR                             |
| 390               | 4                                    | NR                             | 520               | 403                                  | NR                             | 650               | 153                                  | NR                             | 780               | 4                                    | NR                             | 910               | 0                                    | NR                             |
| 395               | 6                                    | NR                             | 525               | 424                                  | NR                             | 655               | 135                                  | NR                             | 785               | 3                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 9                                    | NR                             | 530               | 439                                  | NR                             | 660               | 117                                  | NR                             | 790               | 3                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 14                                   | NR                             | 535               | 449                                  | NR                             | 665               | 103                                  | NR                             | 795               | 2                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 28                                   | NR                             | 540               | 454                                  | NR                             | 670               | 89                                   | NR                             | 800               | 2                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 55                                   | NR                             | 545               | 459                                  | NR                             | 675               | 77                                   | NR                             | 805               | 2                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 118                                  | NR                             | 550               | 463                                  | NR                             | 680               | 67                                   | NR                             | 810               | 2                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 237                                  | NR                             | 555               | 466                                  | NR                             | 685               | 58                                   | NR                             | 815               | 1                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 420                                  | NR                             | 560               | 467                                  | NR                             | 690               | 50                                   | NR                             | 820               | 1                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 677                                  | NR                             | 565               | 469                                  | NR                             | 695               | 43                                   | NR                             | 825               | 1                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 962                                  | NR                             | 570               | 469                                  | NR                             | 700               | 37                                   | NR                             | 830               | 1                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 894                                  | NR                             | 575               | 466                                  | NR                             | 705               | 32                                   | NR                             | 835               | 1                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 472                                  | NR                             | 580               | 461                                  | NR                             | 710               | 28                                   | NR                             | 840               | 1                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 275                                  | NR                             | 585               | 450                                  | NR                             | 715               | 24                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 180                                  | NR                             | 590               | 437                                  | NR                             | 720               | 21                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 107                                  | NR                             | 595               | 420                                  | NR                             | 725               | 18                                   | NR                             | 855               | 0                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 76                                   | NR                             | 600               | 400                                  | NR                             | 730               | 15                                   | NR                             | 860               | 0                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 68                                   | NR                             | 605               | 376                                  | NR                             | 735               | 13                                   | NR                             | 865               | 0                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 69                                   | NR                             | 610               | 352                                  | NR                             | 740               | 11                                   | NR                             | 870               | 0                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 86                                   | NR                             | 615               | 325                                  | NR                             | 745               | 10                                   | NR                             | 875               | 0                                    | NR                             |                   |                                      |                                |

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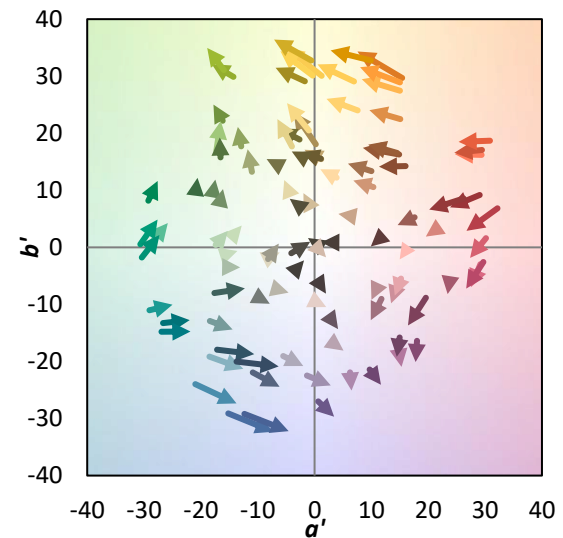
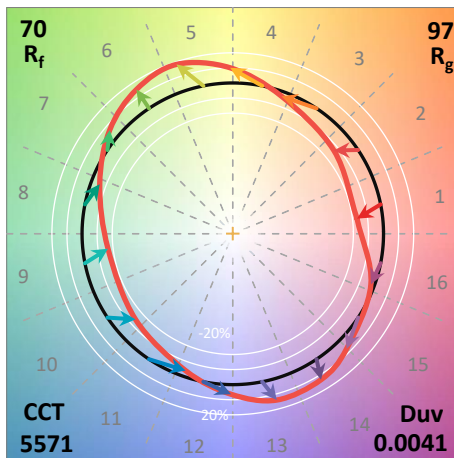
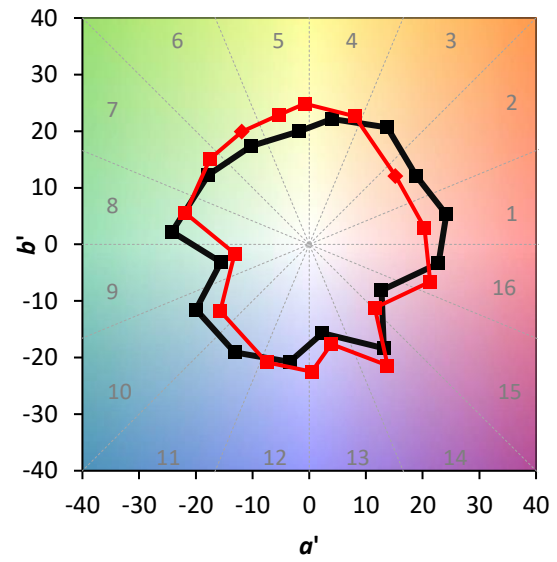
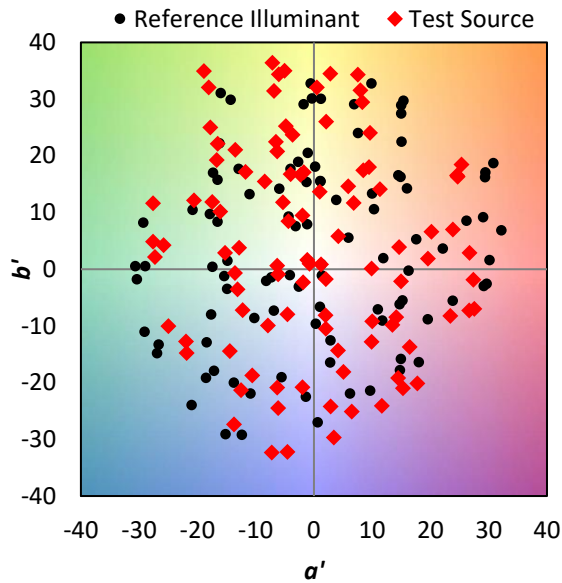
TM-30-18

### Summary

$R_f = 70.4$   
 $R_g = 97.1$   
 $CIE R_a = 69.9$   
 $R_g = -35.4$



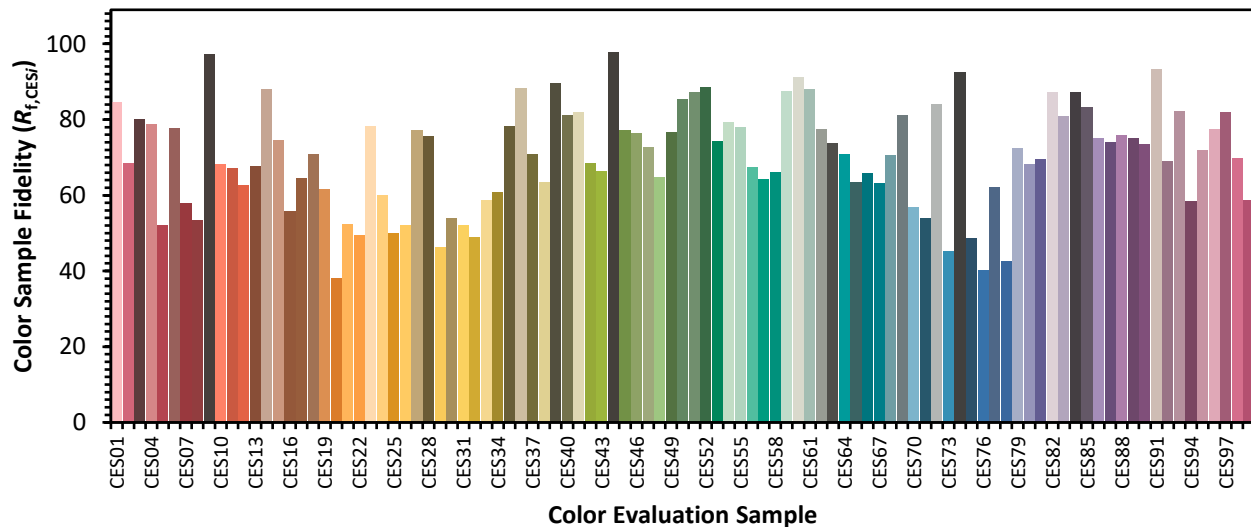
### Color Vector Graphics



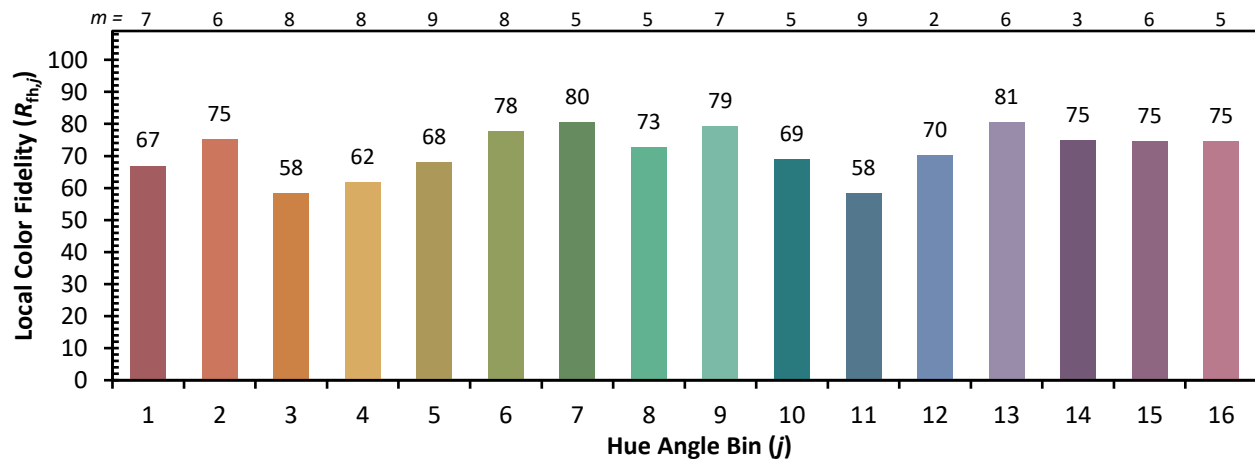
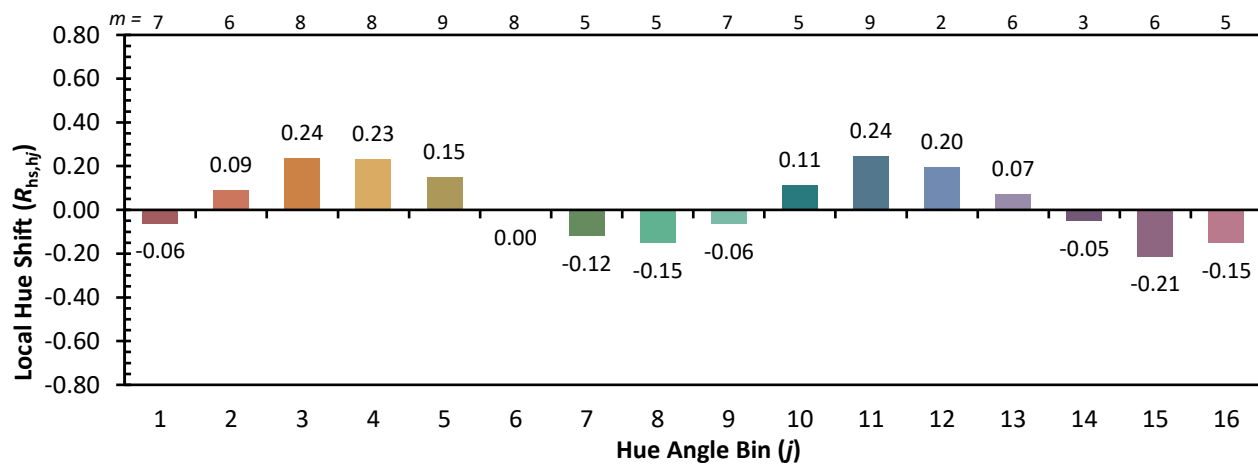
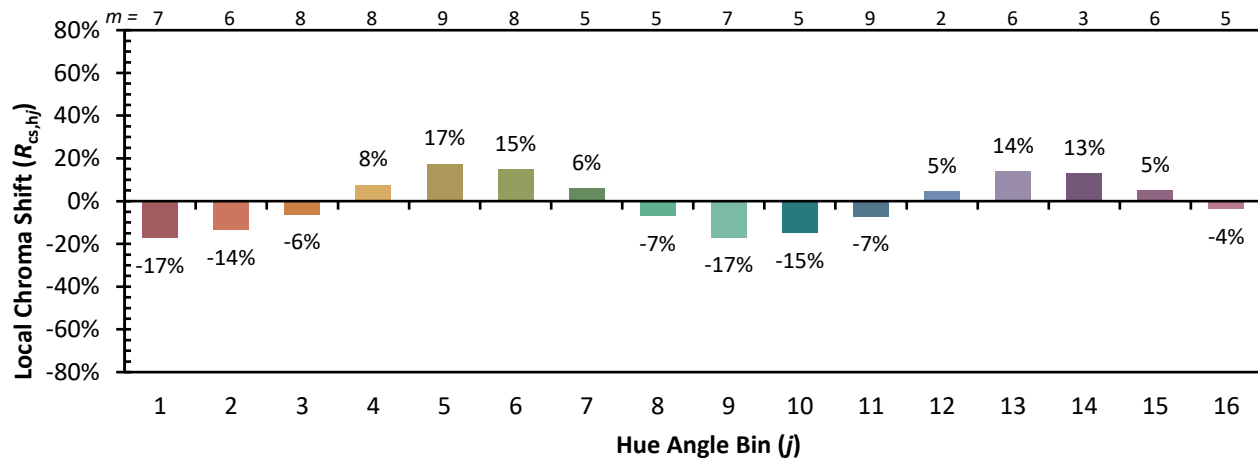


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

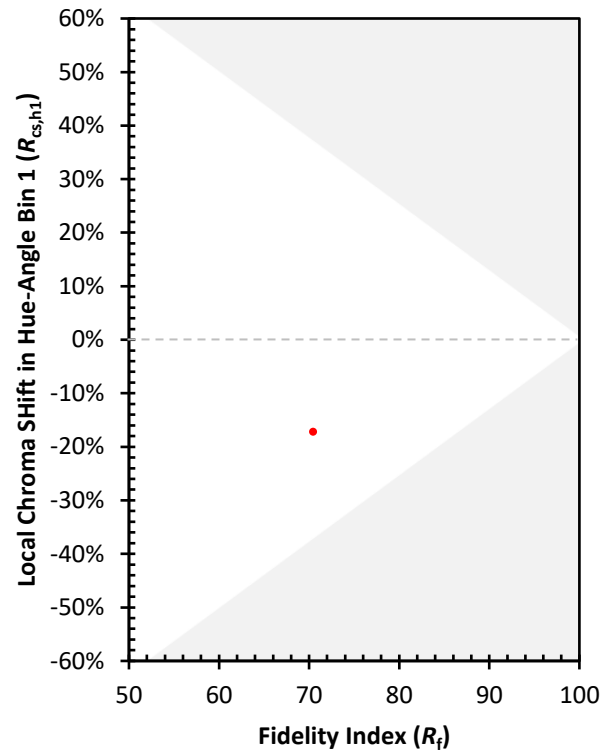
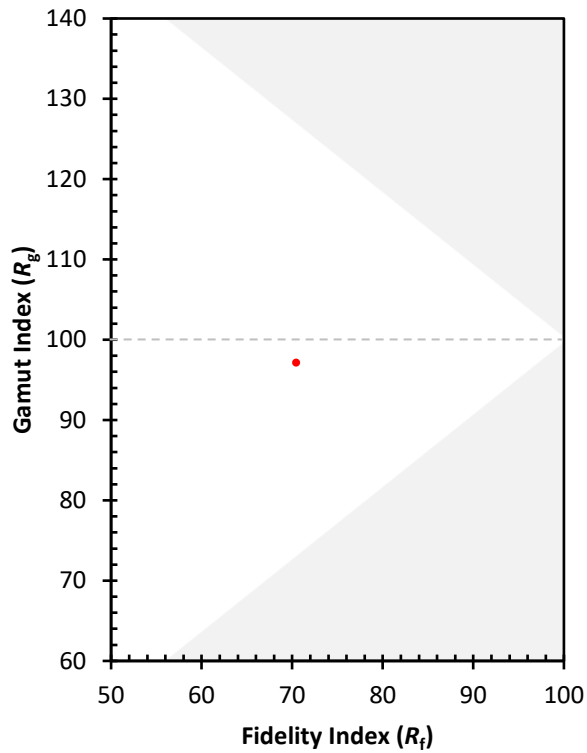
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 52 | CES51 = 87 | CES76 = 40 |
| CES02 = 59 | CES27 = 77 | CES52 = 88 | CES77 = 62 |
| CES03 = 30 | CES28 = 76 | CES53 = 74 | CES78 = 43 |
| CES04 = 68 | CES29 = 46 | CES54 = 79 | CES79 = 72 |
| CES05 = 45 | CES30 = 54 | CES55 = 78 | CES80 = 68 |
| CES06 = 49 | CES31 = 52 | CES56 = 67 | CES81 = 70 |
| CES07 = 38 | CES32 = 49 | CES57 = 64 | CES82 = 87 |
| CES08 = 37 | CES33 = 59 | CES58 = 66 | CES83 = 81 |
| CES09 = 29 | CES34 = 61 | CES59 = 87 | CES84 = 87 |
| CES10 = 72 | CES35 = 78 | CES60 = 91 | CES85 = 83 |
| CES11 = 55 | CES36 = 88 | CES61 = 88 | CES86 = 75 |
| CES12 = 61 | CES37 = 71 | CES62 = 77 | CES87 = 74 |
| CES13 = 41 | CES38 = 64 | CES63 = 74 | CES88 = 76 |
| CES14 = 74 | CES39 = 90 | CES64 = 71 | CES89 = 75 |
| CES15 = 70 | CES40 = 81 | CES65 = 63 | CES90 = 73 |
| CES16 = 46 | CES41 = 82 | CES66 = 66 | CES91 = 93 |
| CES17 = 48 | CES42 = 69 | CES67 = 63 | CES92 = 69 |
| CES18 = 55 | CES43 = 67 | CES68 = 71 | CES93 = 82 |
| CES19 = 70 | CES44 = 98 | CES69 = 81 | CES94 = 58 |
| CES20 = 63 | CES45 = 77 | CES70 = 57 | CES95 = 72 |
| CES21 = 85 | CES46 = 76 | CES71 = 54 | CES96 = 78 |
| CES22 = 77 | CES47 = 73 | CES72 = 84 | CES97 = 82 |
| CES23 = 91 | CES48 = 65 | CES73 = 45 | CES98 = 70 |
| CES24 = 90 | CES49 = 77 | CES74 = 92 | CES99 = 59 |
| CES25 = 71 | CES50 = 85 | CES75 = 49 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)