

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: P1048486

Luminaire Tested: **GALN-SA9B-760-U-T4BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1048486  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA9B-760-U-T4BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 800mA 9xLight Square PACKAGE  
70CRI 5700K FIXTURE w/ TYPE IV ANGLED BACKLIGHT CONTROL  
Light Source: (126) 5700K CCT, 70 CRI LEDs  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 40360.5 lumens  
Efficiency: N/A  
Efficacy: 129.1 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): 312.7  
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

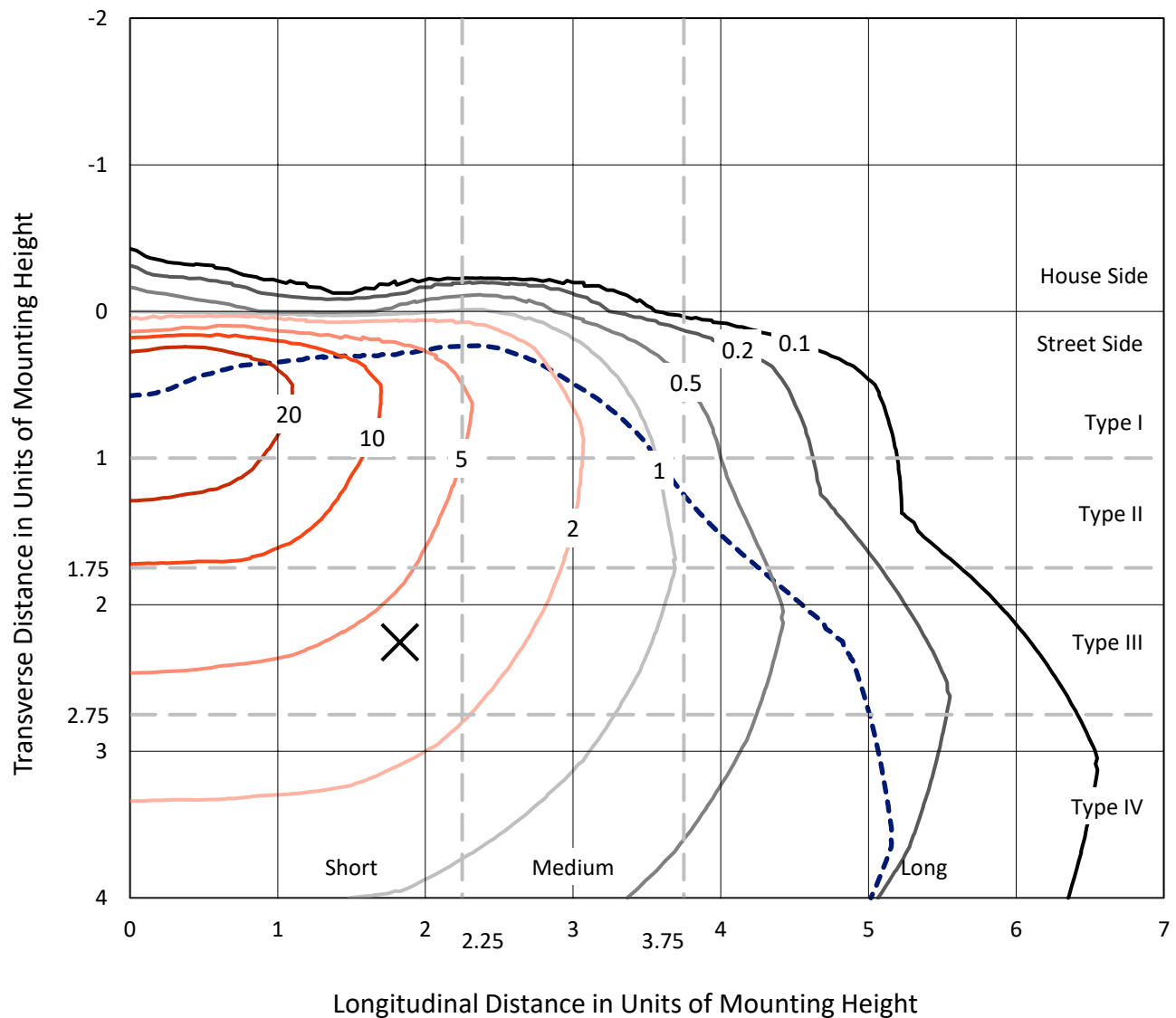


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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

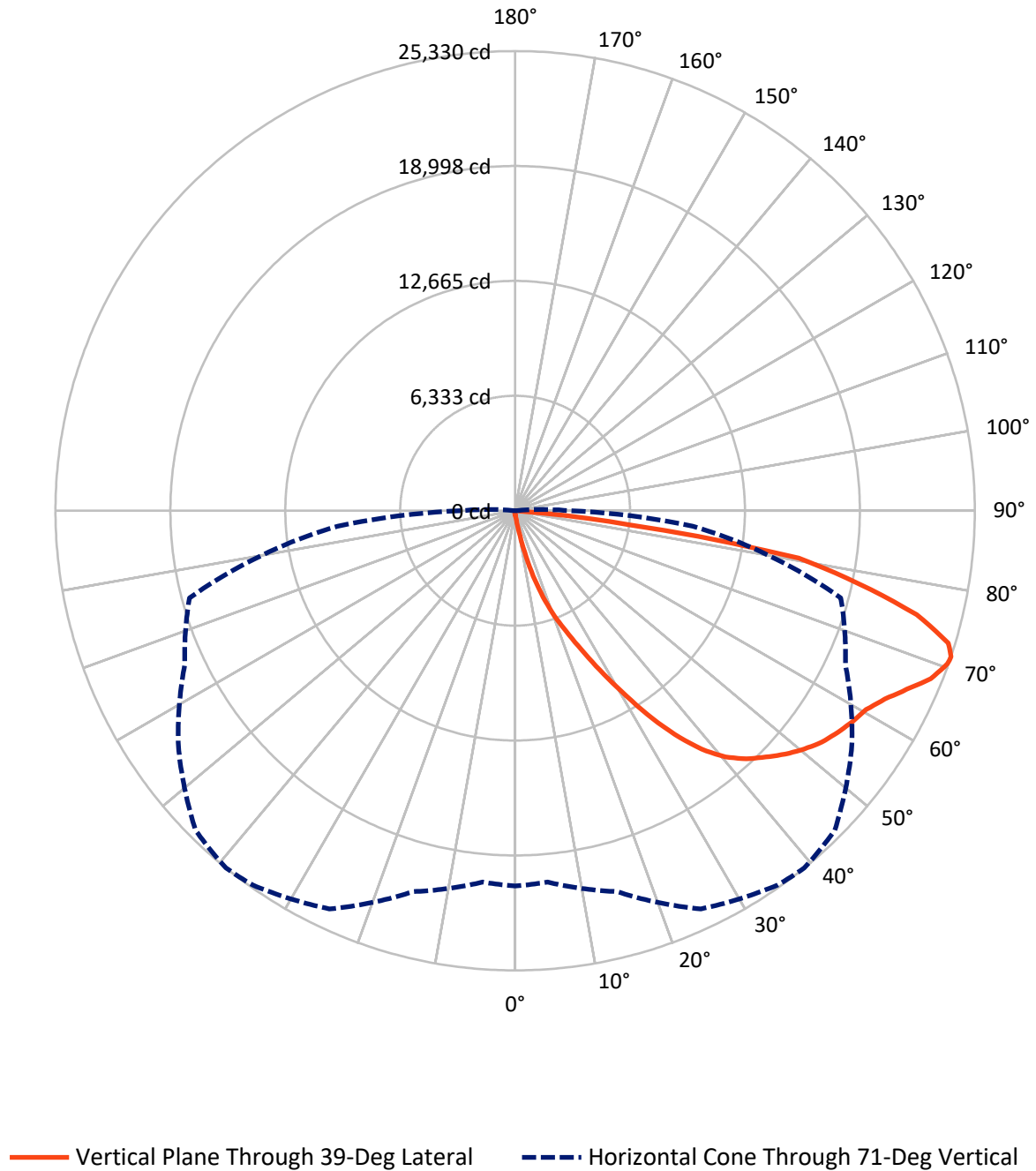


Based on 15 foot mounting height. Maximum calculated value = 41.5 fc  
 Type IV - Short - N/A

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CATALOG NUMBER: GALN-SA9B-760-U-T4BC

## Luminous Intensity Polar Plot



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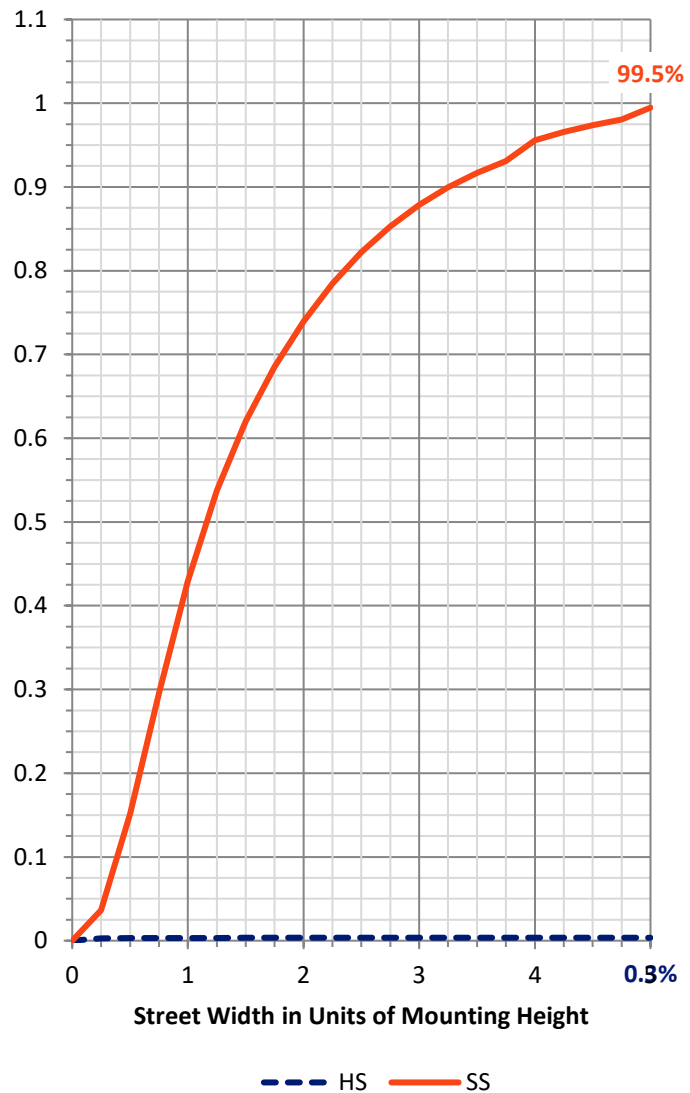
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 143.4    | 0.0    | 143.4   |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 40217.1  | 0.0    | 40217.1 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 40360.5  | 0.0    | 40360.5 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 33.7    | 0.1       |
| 10°-20°   | 431.4   | 1.1       |
| 20°-30°   | 1536.2  | 3.8       |
| 30°-40°   | 3702.4  | 9.2       |
| 40°-50°   | 6196.3  | 15.4      |
| 50°-60°   | 7958.4  | 19.7      |
| 60°-70°   | 10071.5 | 25.0      |
| 70°-80°   | 8979.1  | 22.2      |
| 80°-90°   | 1451.4  | 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°    | 40360.5 | 100.0     |
| 0°-180°   | 40360.5 | 100.0     |



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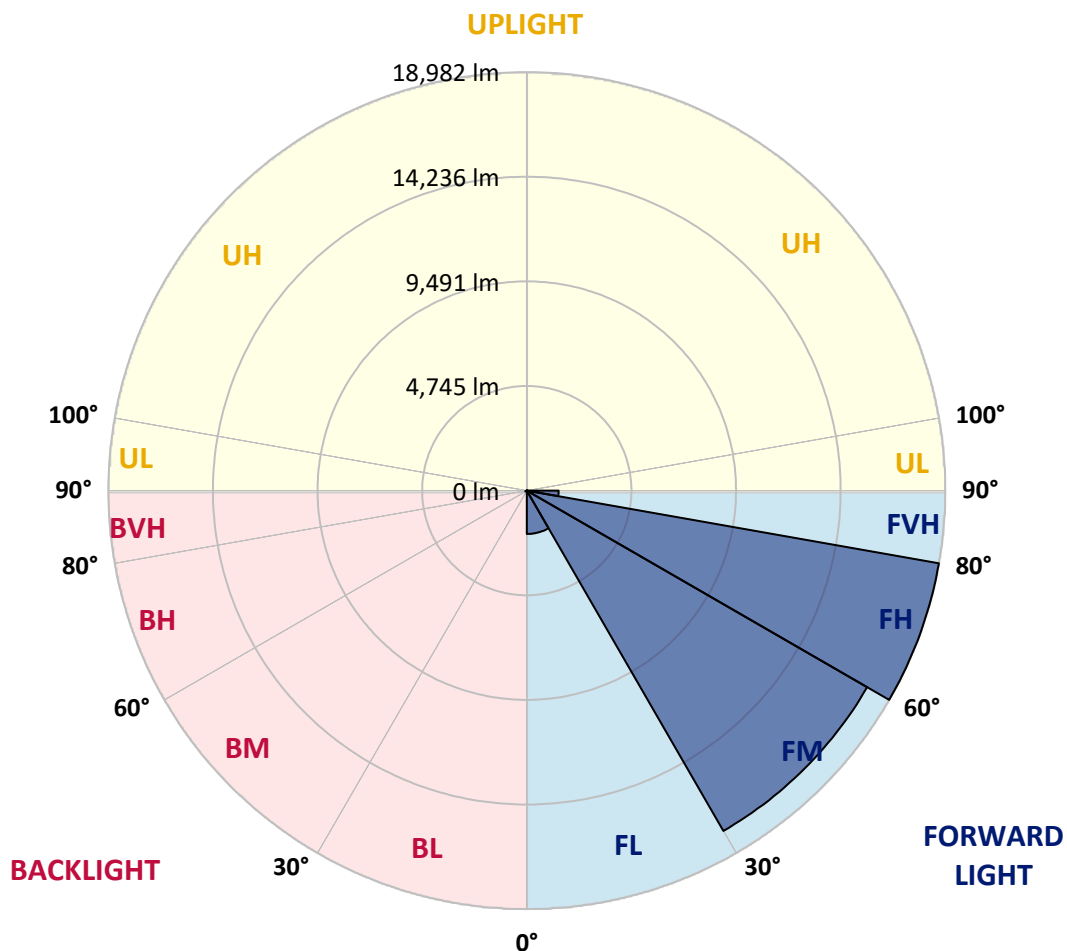
CATALOG NUMBER: GALN-SA9B-760-U-T4BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|---------|-----------|-------------------------|------|--------|
|      |             |         |           | B                       | U    | G      |
| FL   | (0°-30°)    | 1966.6  | 4.9       |                         |      |        |
| FM   | (30°-60°)   | 17824.0 | 44.2      |                         |      |        |
| FH   | (60°-80°)   | 18981.6 | 47.0      |                         |      | G5     |
| FVH  | (80°-90°)   | 1444.8  | 3.6       |                         |      | G5     |
| BL   | (0°-30°)    | 34.7    | 0.1       | B0/110                  |      |        |
| BM   | (30°-60°)   | 33.2    | 0.1       | B0/220                  |      |        |
| BH   | (60°-80°)   | 69.0    | 0.2       | B0/110                  |      | G0/110 |
| BVH  | (80°-90°)   | 6.6     | 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°    | 221.3   | 221.3   | 221.3   | 221.3   | 221.3   | 221.3   | 221.3   | 221.3   | 221.3   | 221.3   | 221.3   |
| 2.5°  | 254.1   | 254.1   | 254.1   | 245.9   | 245.9   | 243.2   | 240.4   | 240.4   | 235.0   | 232.2   | 226.8   |
| 5°    | 385.2   | 377.0   | 357.9   | 347.0   | 325.1   | 311.5   | 297.8   | 278.7   | 259.6   | 245.9   | 229.5   |
| 7.5°  | 871.6   | 890.7   | 827.9   | 710.4   | 590.2   | 538.2   | 450.8   | 363.4   | 300.5   | 259.6   | 232.2   |
| 10°   | 2221.3  | 2210.3  | 1997.2  | 1762.3  | 1360.6  | 1199.4  | 939.9   | 592.9   | 388.0   | 284.1   | 235.0   |
| 12.5° | 3778.6  | 3767.7  | 3516.3  | 3196.7  | 2666.6  | 2330.6  | 1838.8  | 1106.5  | 557.4   | 322.4   | 235.0   |
| 15°   | 5087.3  | 5043.6  | 4964.4  | 4647.5  | 4027.2  | 3745.8  | 3095.6  | 1956.2  | 901.6   | 388.0   | 240.4   |
| 17.5° | 5953.4  | 5915.2  | 5841.4  | 5726.7  | 5333.2  | 4999.9  | 4478.1  | 3073.7  | 1459.0  | 502.7   | 251.4   |
| 20°   | 6748.5  | 6721.2  | 6661.1  | 6639.2  | 6385.1  | 6207.5  | 5775.9  | 4357.8  | 2273.2  | 683.0   | 267.8   |
| 22.5° | 7841.4  | 7784.0  | 7808.6  | 7677.5  | 7428.8  | 7215.7  | 6950.7  | 5702.1  | 3267.7  | 983.6   | 297.8   |
| 25°   | 9180.2  | 9152.8  | 9084.5  | 8991.6  | 8647.4  | 8461.6  | 8054.5  | 6969.8  | 4379.7  | 1377.0  | 330.6   |
| 27.5° | 10797.6 | 10767.6 | 10751.2 | 10538.1 | 10141.9 | 9939.7  | 9371.4  | 8166.5  | 5631.0  | 1928.9  | 374.3   |
| 30°   | 12661.0 | 12674.6 | 12568.1 | 12294.9 | 11833.1 | 11549.0 | 10964.3 | 9420.6  | 6912.4  | 2576.5  | 420.8   |
| 32.5° | 14589.9 | 14562.6 | 14398.6 | 14076.2 | 13663.7 | 13398.7 | 12655.5 | 10794.9 | 8256.7  | 3431.6  | 475.4   |
| 35°   | 16669.1 | 16617.2 | 16185.5 | 15816.7 | 15464.2 | 15130.9 | 14453.3 | 12390.5 | 9600.9  | 4390.6  | 549.2   |
| 37.5° | 18767.4 | 18524.3 | 17658.1 | 17190.9 | 16947.8 | 16674.6 | 16043.4 | 14092.6 | 10937.0 | 5461.6  | 639.3   |
| 40°   | 20352.1 | 20163.6 | 19136.3 | 18275.6 | 18081.6 | 17849.4 | 17379.5 | 15562.6 | 12357.7 | 6611.9  | 748.6   |
| 42.5° | 21229.1 | 21125.3 | 20201.8 | 19352.1 | 18895.8 | 18690.9 | 18289.3 | 16846.7 | 13762.0 | 7882.4  | 907.1   |
| 45°   | 21603.4 | 21442.2 | 20824.8 | 20428.6 | 19701.8 | 19363.0 | 18884.9 | 17816.6 | 15229.2 | 9325.0  | 1128.4  |
| 47.5° | 21488.7 | 21395.8 | 20953.2 | 21098.0 | 20570.7 | 20043.3 | 19341.2 | 18559.8 | 16483.3 | 10980.7 | 1431.7  |
| 50°   | 20767.4 | 20688.1 | 20551.5 | 21335.7 | 21270.1 | 20647.2 | 19931.3 | 19147.2 | 17507.9 | 12688.3 | 1901.6  |
| 52.5° | 19395.8 | 19363.0 | 19712.8 | 21149.9 | 21666.3 | 21179.9 | 20499.6 | 19666.3 | 18464.1 | 14472.4 | 2573.7  |
| 55°   | 17628.1 | 17762.0 | 18762.0 | 20860.3 | 21868.5 | 21573.4 | 21002.3 | 20152.6 | 19231.9 | 16068.0 | 3565.5  |
| 57.5° | 16901.3 | 16936.8 | 18185.5 | 20655.4 | 21958.6 | 21920.4 | 21491.4 | 20617.1 | 19936.8 | 17343.9 | 5079.1  |
| 60°   | 17751.0 | 17696.4 | 18354.9 | 20811.1 | 22138.9 | 22231.8 | 21925.8 | 21048.8 | 20548.8 | 18439.6 | 7095.5  |
| 62.5° | 19286.5 | 19256.5 | 19466.9 | 21475.0 | 22666.3 | 22854.8 | 22529.6 | 21360.3 | 21089.8 | 19160.9 | 9396.0  |
| 65°   | 20658.1 | 20595.3 | 20986.0 | 22652.6 | 23592.5 | 23726.3 | 23442.2 | 21893.0 | 21327.5 | 19685.4 | 11557.2 |
| 67.5° | 21251.0 | 21237.3 | 21865.7 | 23772.8 | 24565.1 | 24709.9 | 24461.3 | 22628.0 | 21272.8 | 19852.1 | 12510.7 |
| 70°   | 20980.5 | 20928.6 | 21934.0 | 24248.2 | 25114.3 | 25278.2 | 25037.8 | 22901.2 | 20679.9 | 19324.8 | 11098.2 |
| 71°   | 20682.7 | 20543.3 | 21729.1 | 24215.4 | 25190.8 | 25330.1 | 24909.4 | 22652.6 | 20084.3 | 18576.2 | 9816.8  |
| 72.5° | 19759.2 | 19783.8 | 21166.3 | 23873.9 | 25007.7 | 24966.8 | 24182.6 | 21761.9 | 19365.8 | 16876.7 | 7885.1  |
| 75°   | 17486.0 | 17630.8 | 19343.9 | 22439.5 | 23373.9 | 22852.0 | 21652.6 | 20059.7 | 17923.2 | 12100.9 | 5475.3  |
| 77.5° | 14289.4 | 14505.2 | 16387.7 | 19680.0 | 19414.9 | 19363.0 | 19313.9 | 17674.5 | 15305.7 | 6499.9  | 3808.7  |
| 80°   | 6822.3  | 7289.5  | 9885.1  | 14048.9 | 15262.0 | 15849.4 | 15480.6 | 14242.9 | 11835.8 | 3095.6  | 2275.9  |
| 82.5° | 445.3   | 439.9   | 622.9   | 1180.3  | 4975.3  | 6431.6  | 10218.4 | 10180.1 | 8251.2  | 1508.2  | 928.9   |
| 85°   | 210.4   | 215.8   | 237.7   | 270.5   | 314.2   | 344.3   | 475.4   | 2786.8  | 3948.0  | 718.6   | 202.2   |
| 87.5° | 122.9   | 125.7   | 147.5   | 188.5   | 245.9   | 273.2   | 325.1   | 418.0   | 513.7   | 396.2   | 43.7    |
| 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-SA9B-760-U-T4BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 221.3  | 221.3 | 221.3 | 221.3 | 221.3 | 221.3 | 221.3 | 221.3 | 221.3 | 221.3 | 221.3 |
| 2.5°  | 224.0  | 221.3 | 213.1 | 204.9 | 196.7 | 191.3 | 188.5 | 191.3 | 191.3 | 194.0 | 194.0 |
| 5°    | 224.0  | 215.8 | 202.2 | 185.8 | 174.9 | 163.9 | 158.5 | 155.7 | 158.5 | 158.5 | 158.5 |
| 7.5°  | 221.3  | 207.6 | 188.5 | 169.4 | 155.7 | 142.1 | 136.6 | 133.9 | 133.9 | 136.6 | 136.6 |
| 10°   | 215.8  | 202.2 | 177.6 | 155.7 | 139.3 | 122.9 | 114.8 | 106.6 | 106.6 | 106.6 | 109.3 |
| 12.5° | 213.1  | 194.0 | 163.9 | 142.1 | 120.2 | 101.1 | 84.7  | 76.5  | 79.2  | 79.2  | 79.2  |
| 15°   | 207.6  | 185.8 | 155.7 | 128.4 | 101.1 | 76.5  | 62.8  | 54.6  | 57.4  | 60.1  | 57.4  |
| 17.5° | 207.6  | 183.1 | 144.8 | 112.0 | 79.2  | 57.4  | 46.4  | 41.0  | 41.0  | 43.7  | 43.7  |
| 20°   | 207.6  | 177.6 | 136.6 | 95.6  | 60.1  | 43.7  | 32.8  | 30.1  | 30.1  | 35.5  | 38.3  |
| 22.5° | 213.1  | 177.6 | 125.7 | 79.2  | 49.2  | 32.8  | 24.6  | 21.9  | 24.6  | 30.1  | 32.8  |
| 25°   | 221.3  | 174.9 | 114.8 | 71.0  | 41.0  | 24.6  | 19.1  | 13.7  | 16.4  | 21.9  | 24.6  |
| 27.5° | 229.5  | 172.1 | 103.8 | 62.8  | 32.8  | 19.1  | 13.7  | 10.9  | 8.2   | 10.9  | 10.9  |
| 30°   | 237.7  | 172.1 | 92.9  | 51.9  | 27.3  | 13.7  | 8.2   | 5.5   | 2.7   | 0.0   | 0.0   |
| 32.5° | 243.2  | 166.7 | 84.7  | 41.0  | 21.9  | 10.9  | 5.5   | 2.7   | 0.0   | 0.0   | 0.0   |
| 35°   | 248.6  | 161.2 | 73.8  | 32.8  | 16.4  | 8.2   | 2.7   | 0.0   | 0.0   | 0.0   | 0.0   |
| 37.5° | 254.1  | 153.0 | 62.8  | 27.3  | 13.7  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 259.6  | 142.1 | 51.9  | 24.6  | 8.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 265.0  | 133.9 | 43.7  | 19.1  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 278.7  | 128.4 | 35.5  | 16.4  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 303.3  | 122.9 | 32.8  | 10.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 338.8  | 117.5 | 30.1  | 8.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 388.0  | 114.8 | 27.3  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 475.4  | 112.0 | 24.6  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 625.7  | 109.3 | 24.6  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 959.0  | 103.8 | 24.6  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 1713.1 | 101.1 | 21.9  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 2986.3 | 103.8 | 21.9  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 4281.3 | 109.3 | 19.1  | 8.2   | 2.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 3663.9 | 95.6  | 19.1  | 10.9  | 5.5   | 2.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 71°   | 2986.3 | 84.7  | 19.1  | 10.9  | 5.5   | 2.7   | 2.7   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1920.7 | 65.6  | 16.4  | 10.9  | 5.5   | 5.5   | 2.7   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 811.5  | 54.6  | 16.4  | 10.9  | 8.2   | 5.5   | 5.5   | 2.7   | 0.0   | 0.0   | 0.0   |
| 77.5° | 347.0  | 41.0  | 16.4  | 13.7  | 10.9  | 8.2   | 8.2   | 5.5   | 2.7   | 0.0   | 0.0   |
| 80°   | 131.1  | 32.8  | 19.1  | 16.4  | 13.7  | 13.7  | 10.9  | 5.5   | 2.7   | 0.0   | 0.0   |
| 82.5° | 60.1   | 27.3  | 19.1  | 16.4  | 16.4  | 13.7  | 10.9  | 8.2   | 5.5   | 0.0   | 0.0   |
| 85°   | 38.3   | 24.6  | 19.1  | 16.4  | 16.4  | 13.7  | 13.7  | 8.2   | 5.5   | 0.0   | 0.0   |
| 87.5° | 30.1   | 24.6  | 19.1  | 19.1  | 16.4  | 16.4  | 10.9  | 8.2   | 2.7   | 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: SP1-2407-184-7

Test Date: 10/10/2024

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

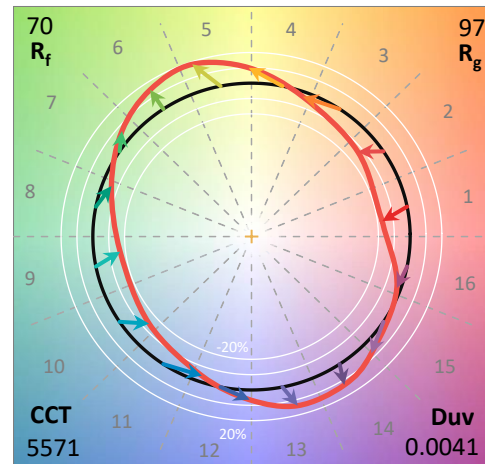
Data in this report applies to families of products including GSS-SB1A-760-U-5WQ

### 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

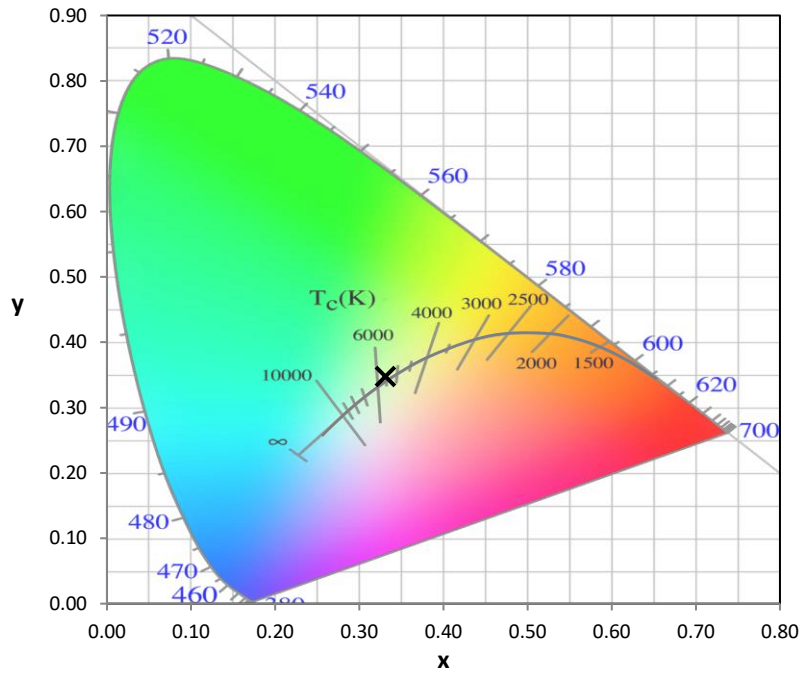
Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-7

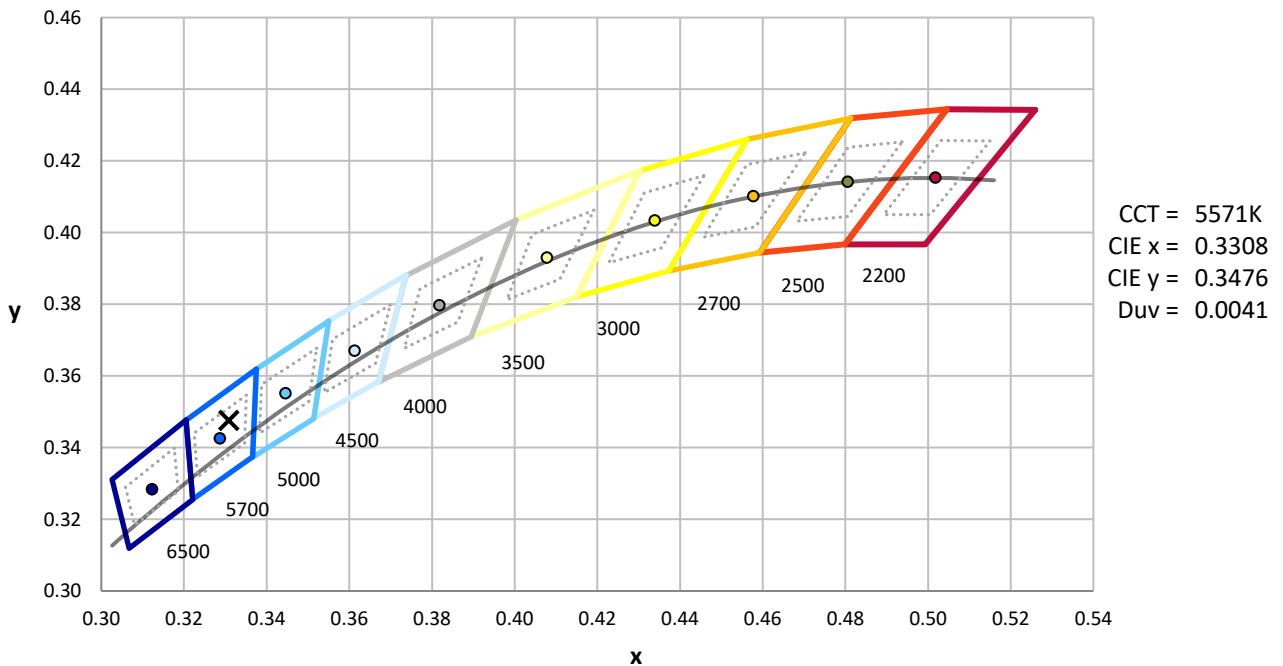
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



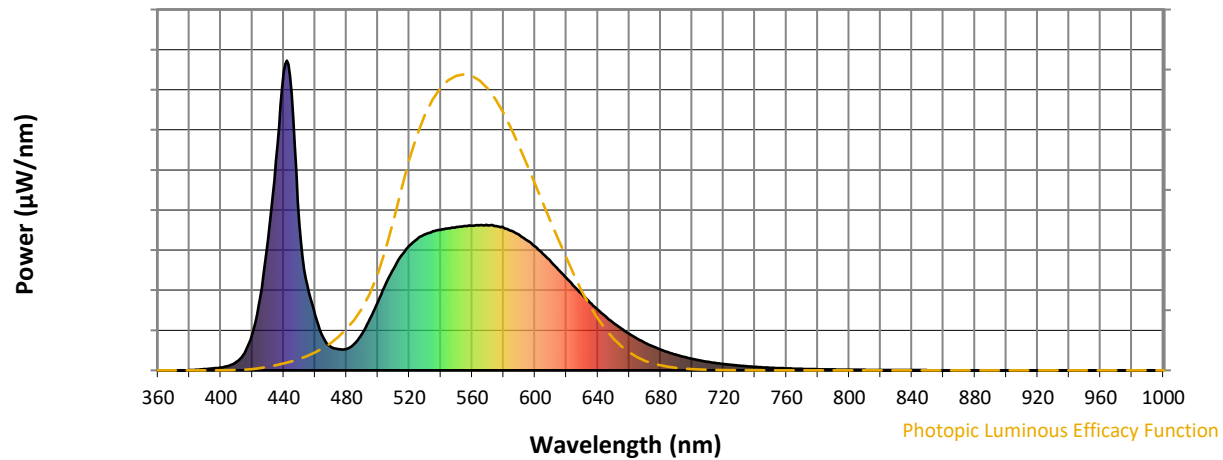
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5700K 4-step quadrangle

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### Photopic Flux vs. Wavelength

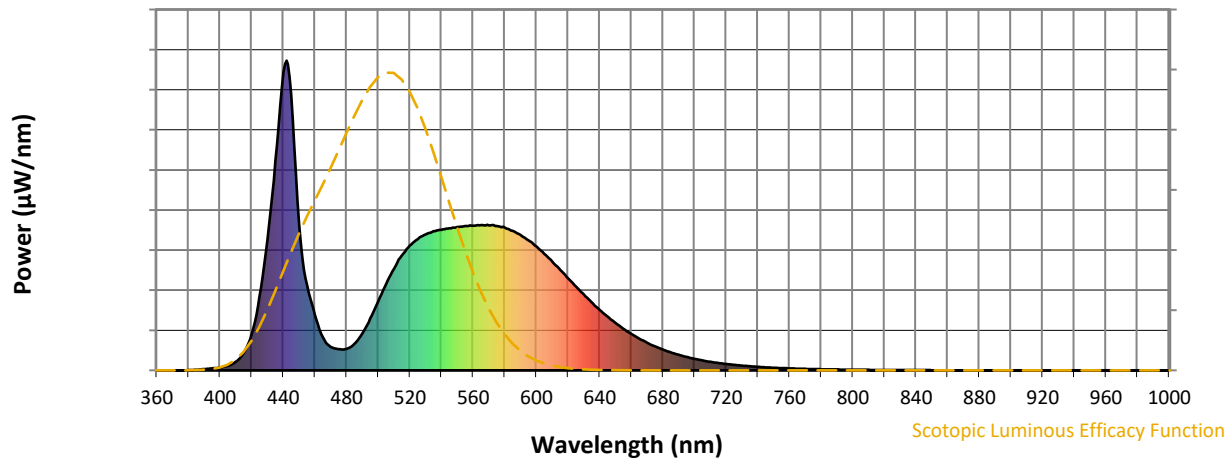


### Photopic Lumens: NR

| 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



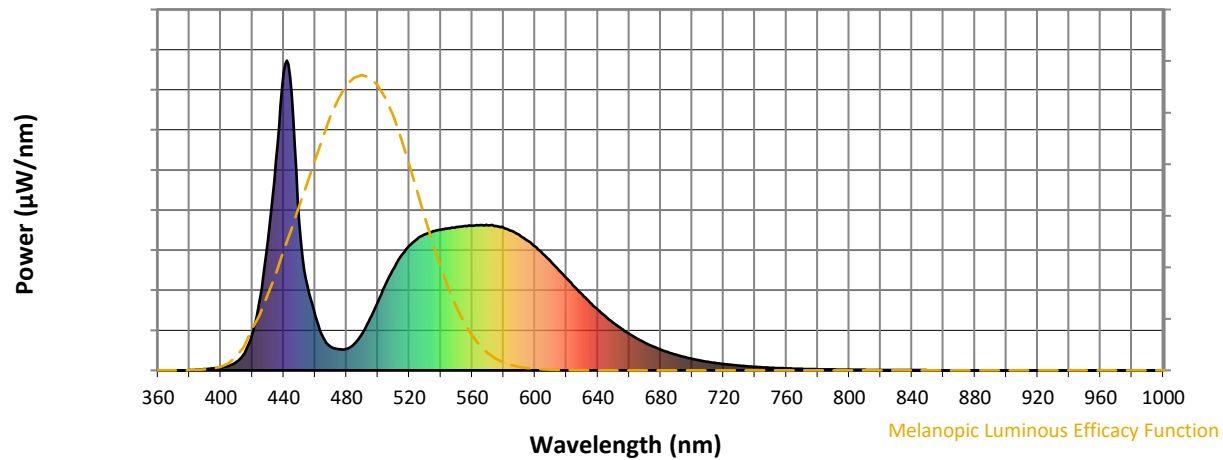
Scotopic Lumens: NR

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**

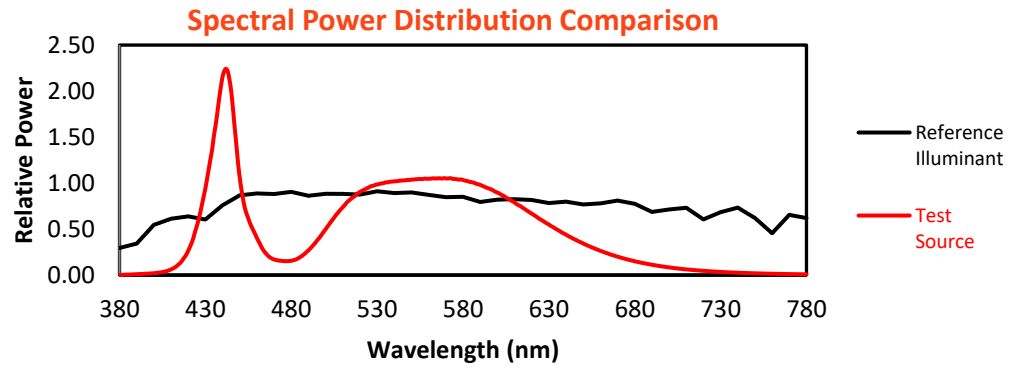
| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<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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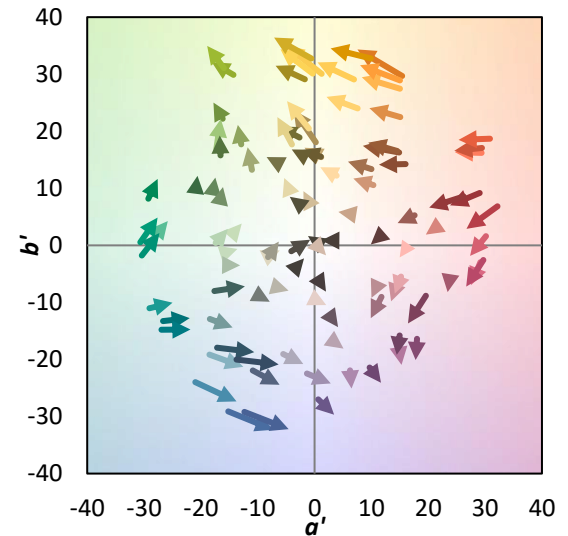
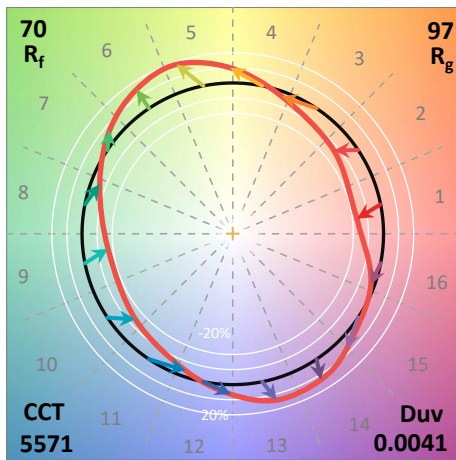
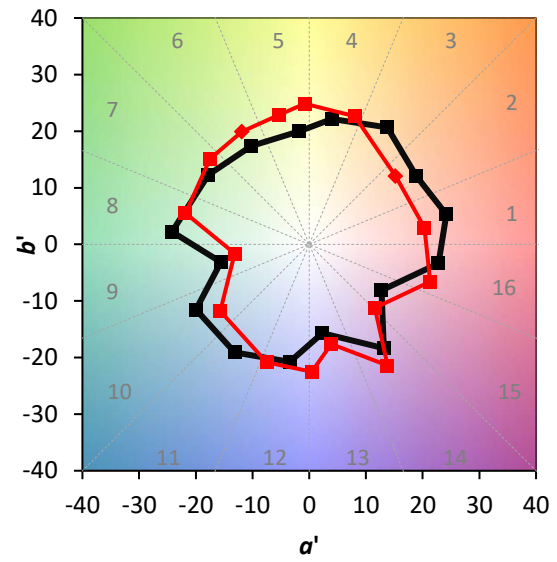
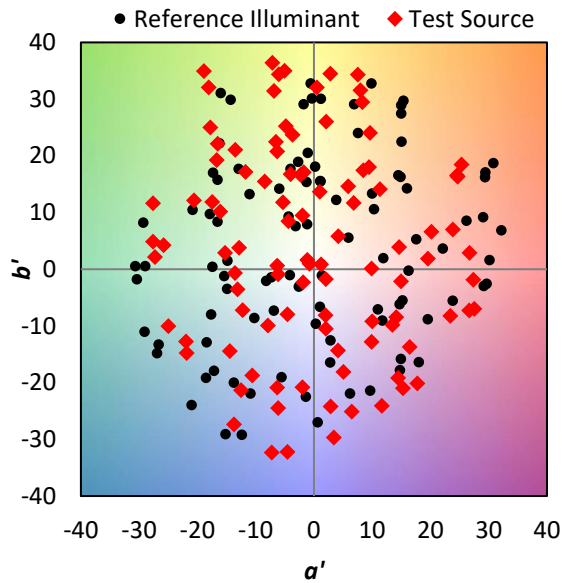
TM-30-18

### Summary

$R_f = 70.4$   
 $R_g = 97.1$   
 $\text{CIE } R_a = 69.9$   
 $R_g = -35.4$



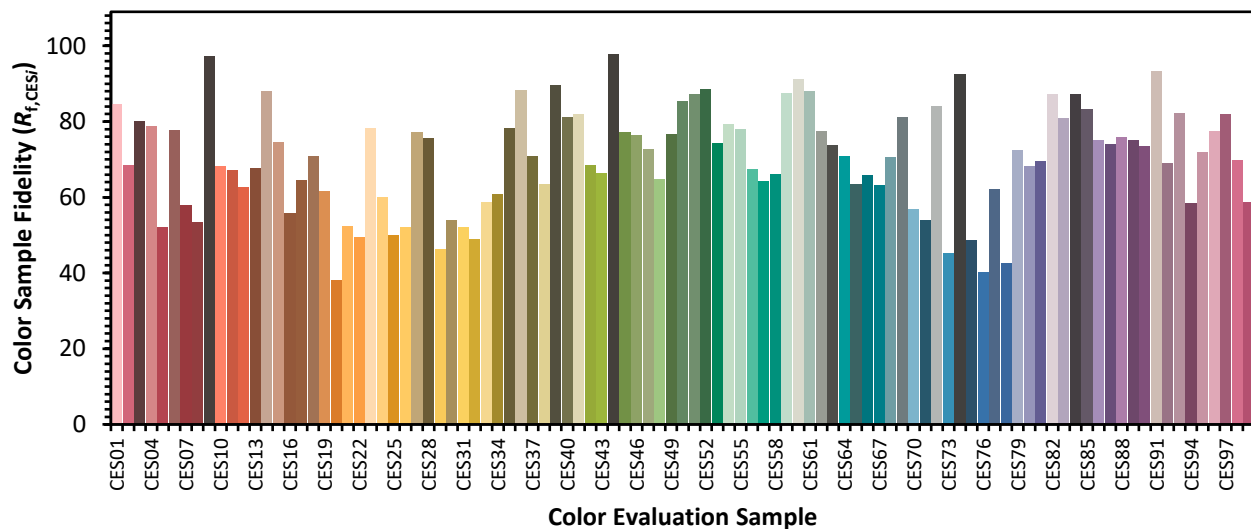
### Color Vector Graphics



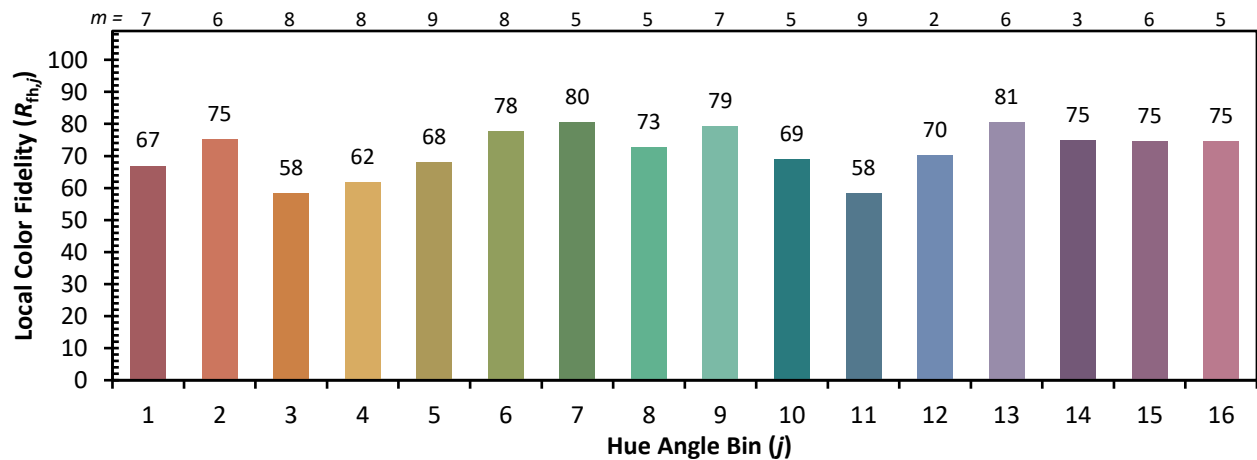
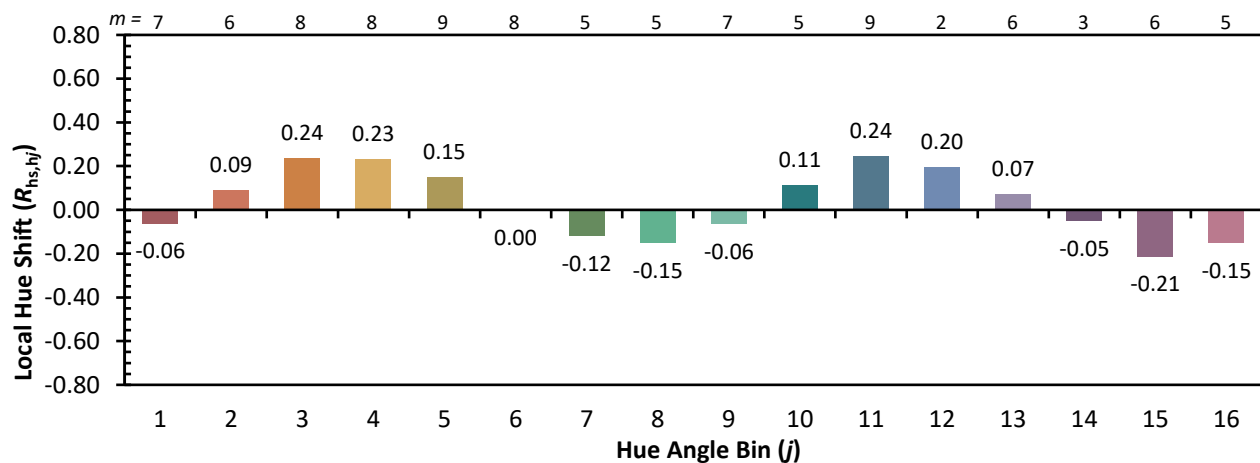
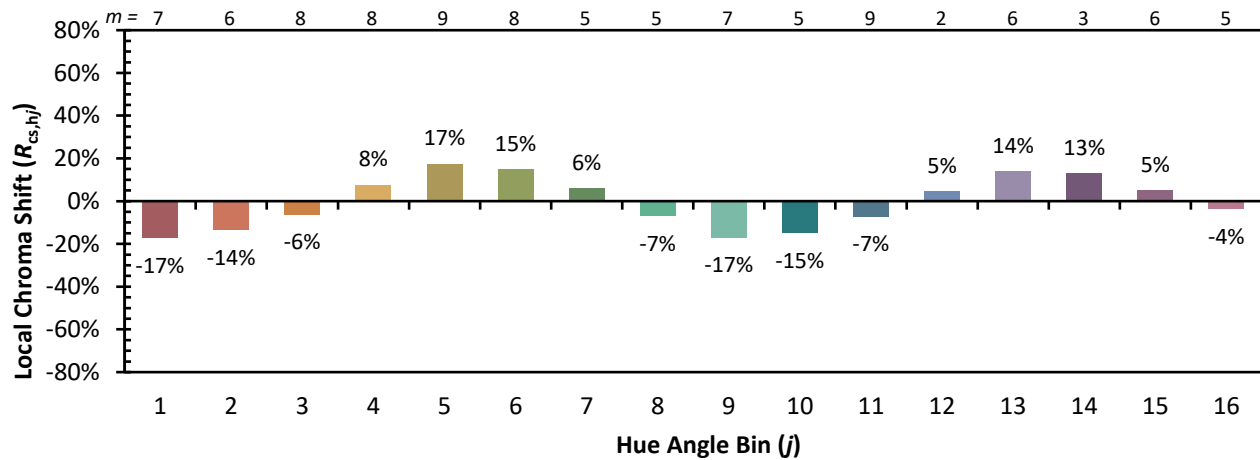


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

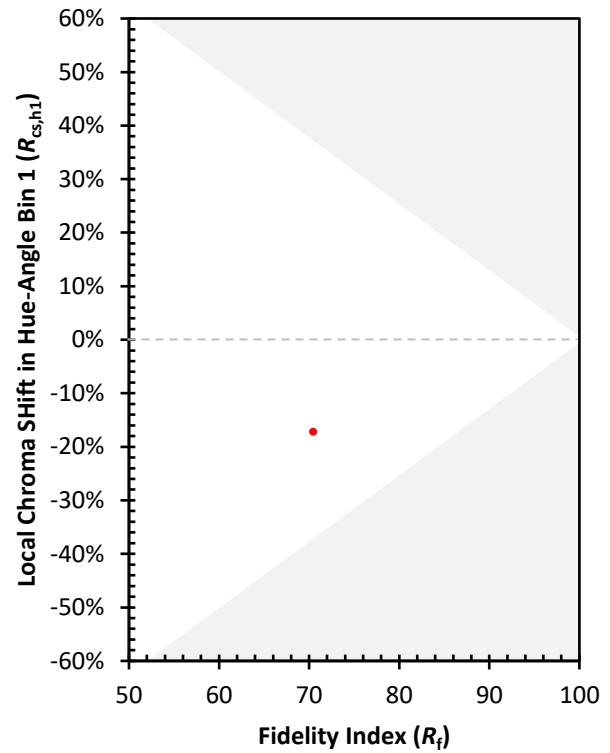
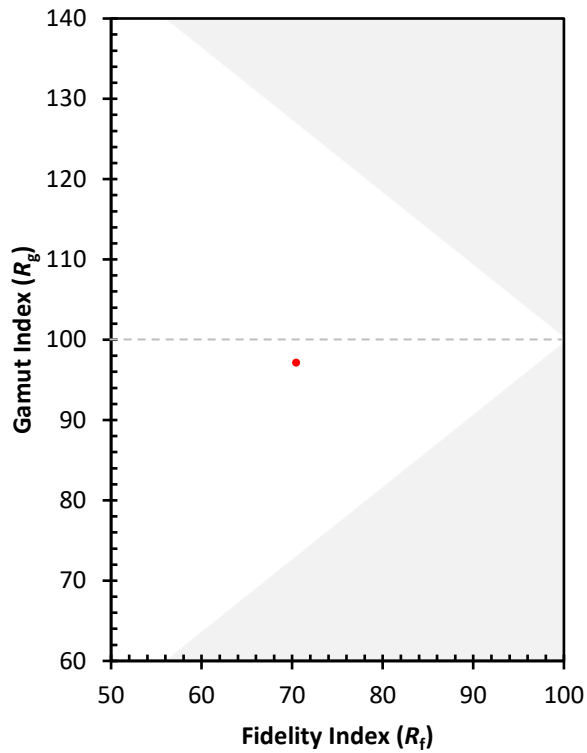
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 52 | CES51 = 87 | CES76 = 40 |
| CES02 = 59 | CES27 = 77 | CES52 = 88 | CES77 = 62 |
| CES03 = 30 | CES28 = 76 | CES53 = 74 | CES78 = 43 |
| CES04 = 68 | CES29 = 46 | CES54 = 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)