

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: STREETWORKS

Report Number: P1063674

Luminaire Tested: **GLAN-SA5B-850-U-T2BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1063674  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: GLAN-SA5B-850-U-T2BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 800mA 5xLight Square PACKAGE  
80CRI 5000K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (70) 5000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 20246.2 lumens  
Efficiency: N/A  
Efficacy: 113.2 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): 178.8  
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

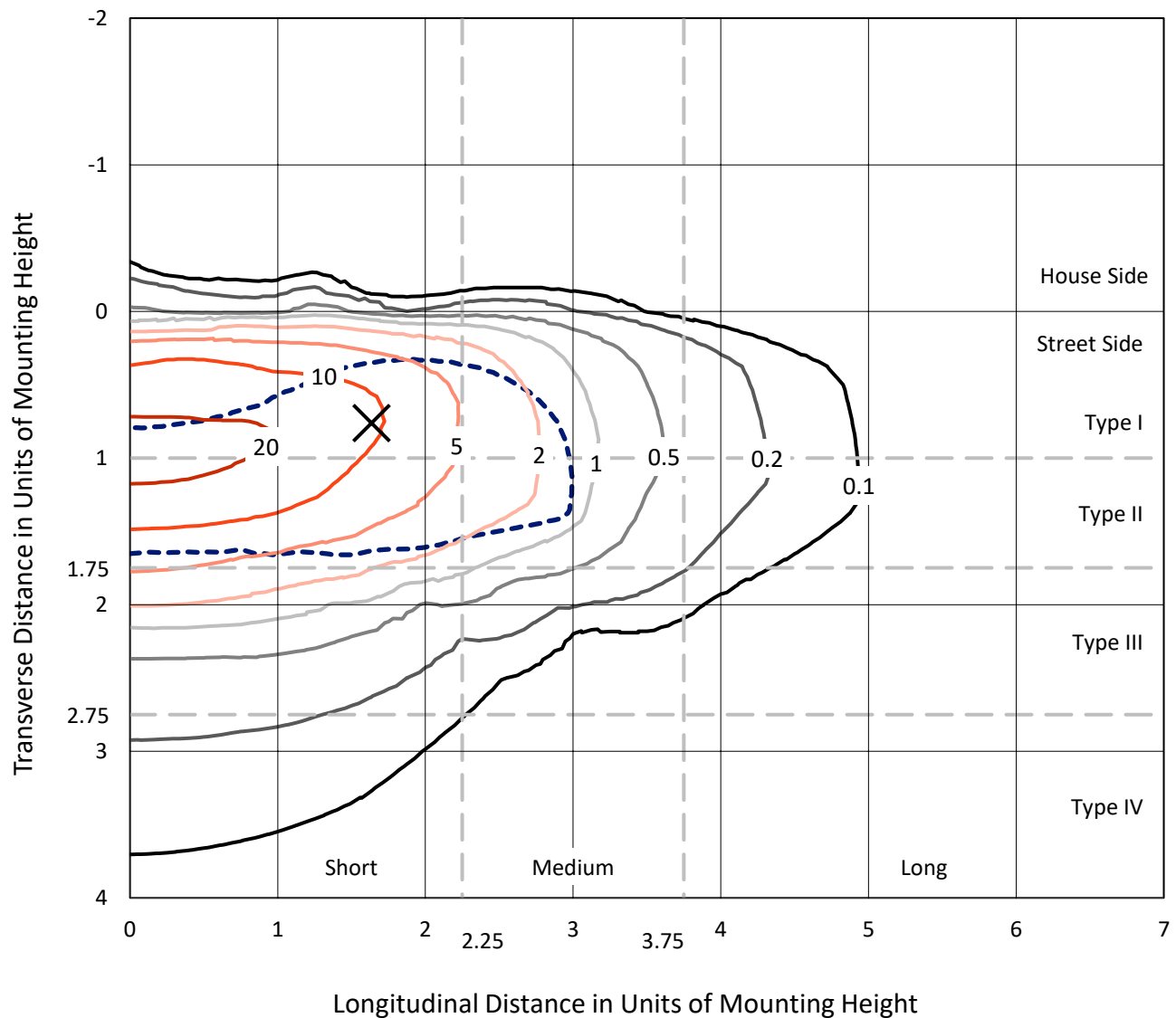


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## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd  
 - - - 1/2 Max cd

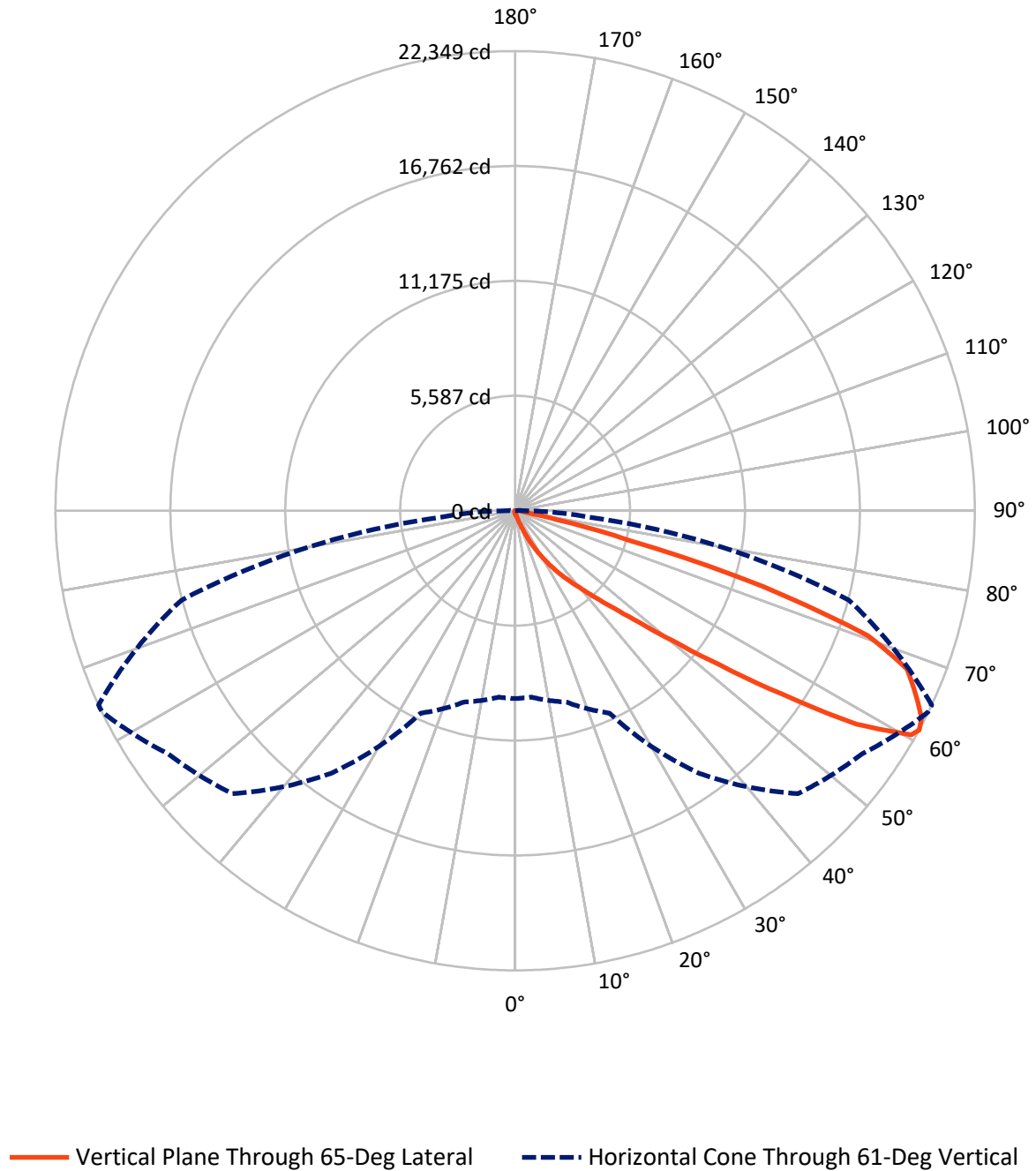


Based on 15 foot mounting height. Maximum calculated value = 26.8 fc  
 Type II - Short - N/A

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CATALOG NUMBER: GLAN-SA5B-850-U-T2BC

## Luminous Intensity Polar Plot



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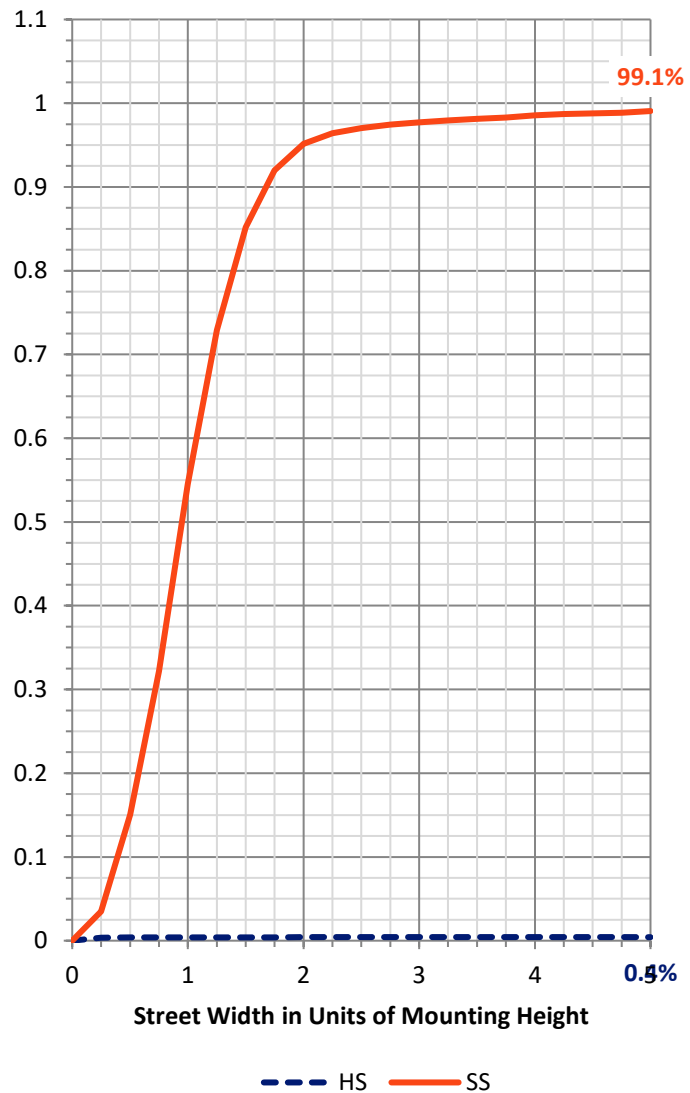
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 86.4     | 0.0    | 86.4    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 20159.8  | 0.0    | 20159.8 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 20246.2  | 0.0    | 20246.2 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 15.8    | 0.1       |
| 10°-20°   | 166.5   | 0.8       |
| 20°-30°   | 597.5   | 3.0       |
| 30°-40°   | 1590.8  | 7.9       |
| 40°-50°   | 4178.9  | 20.6      |
| 50°-60°   | 6473.9  | 32.0      |
| 60°-70°   | 5428.3  | 26.8      |
| 70°-80°   | 1597.5  | 7.9       |
| 80°-90°   | 197.1   | 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°    | 20246.2 | 100.0     |
| 0°-180°   | 20246.2 | 100.0     |



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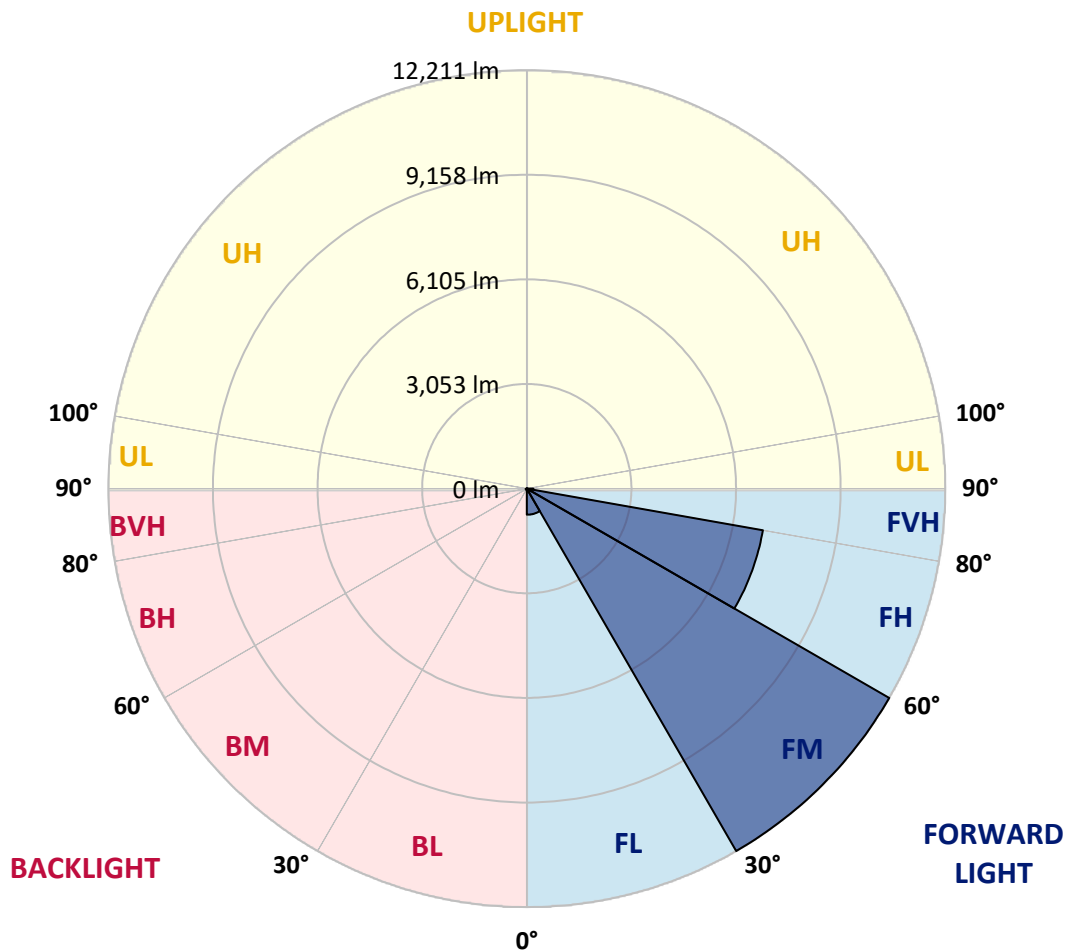
CATALOG NUMBER: GLAN-SA5B-850-U-T2BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 760.4   | 3.8       |                         |      |         |
| FM   | (30°-60°)   | 12210.7 | 60.3      |                         |      |         |
| FH   | (60°-80°)   | 6995.3  | 34.6      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 193.4   | 1.0       |                         |      | G2/225  |
| BL   | (0°-30°)    | 19.4    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 32.9    | 0.2       | B0/220                  |      |         |
| BH   | (60°-80°)   | 30.5    | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 3.7     | 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°    | 124.0   | 124.0   | 124.0   | 124.0   | 124.0   | 124.0   | 124.0   | 124.0   | 124.0   | 124.0   | 124.0  |
| 2.5°  | 150.4   | 151.8   | 149.0   | 143.5   | 139.3   | 139.3   | 137.9   | 133.7   | 133.7   | 129.5   | 126.7  |
| 5°    | 210.3   | 207.5   | 201.9   | 190.8   | 181.1   | 171.3   | 161.6   | 151.8   | 150.4   | 137.9   | 129.5  |
| 7.5°  | 344.0   | 346.8   | 328.7   | 293.9   | 264.6   | 227.0   | 192.2   | 171.3   | 168.5   | 147.6   | 130.9  |
| 10°   | 754.9   | 734.0   | 692.2   | 557.1   | 458.2   | 345.4   | 256.3   | 199.2   | 196.4   | 158.8   | 133.7  |
| 12.5° | 1376.0  | 1359.3  | 1282.7  | 1143.4  | 888.6   | 618.4   | 374.6   | 246.5   | 238.2   | 168.5   | 135.1  |
| 15°   | 1983.2  | 1956.8  | 1915.0  | 1774.3  | 1476.3  | 1108.6  | 612.8   | 337.0   | 314.8   | 182.4   | 133.7  |
| 17.5° | 2370.4  | 2374.6  | 2337.0  | 2277.1  | 2084.9  | 1640.6  | 1058.5  | 502.8   | 459.6   | 207.5   | 130.9  |
| 20°   | 2708.8  | 2699.1  | 2720.0  | 2688.0  | 2552.9  | 2229.7  | 1540.3  | 796.6   | 722.8   | 247.9   | 132.3  |
| 22.5° | 3098.8  | 3122.5  | 3137.8  | 3130.8  | 2981.8  | 2706.1  | 2087.7  | 1192.2  | 1098.9  | 321.7   | 136.5  |
| 25°   | 3621.1  | 3618.3  | 3619.7  | 3601.6  | 3456.7  | 3150.3  | 2636.4  | 1683.8  | 1589.1  | 441.5   | 146.2  |
| 27.5° | 4168.4  | 4185.1  | 4192.1  | 4126.6  | 3937.2  | 3636.4  | 3144.8  | 2221.4  | 2110.0  | 633.7   | 158.8  |
| 30°   | 4916.3  | 4902.4  | 4870.3  | 4736.6  | 4506.8  | 4133.6  | 3646.1  | 2785.4  | 2668.5  | 902.5   | 178.3  |
| 32.5° | 5924.6  | 5909.3  | 5747.8  | 5452.5  | 5108.5  | 4651.7  | 4150.3  | 3350.9  | 3208.8  | 1238.1  | 204.7  |
| 35°   | 7586.1  | 7609.8  | 7212.9  | 6448.3  | 5831.3  | 5274.2  | 4708.8  | 3913.5  | 3788.2  | 1651.8  | 240.9  |
| 37.5° | 10130.6 | 10001.1 | 9462.1  | 8111.2  | 6782.5  | 6051.4  | 5242.2  | 4481.8  | 4373.1  | 2161.5  | 288.3  |
| 40°   | 12602.7 | 12474.6 | 12318.6 | 11038.7 | 8435.7  | 6907.9  | 5988.7  | 5148.9  | 5008.2  | 2736.7  | 357.9  |
| 42.5° | 15201.5 | 15130.5 | 15123.6 | 14158.4 | 11452.3 | 8254.7  | 6887.0  | 5930.2  | 5810.4  | 3367.6  | 472.1  |
| 45°   | 17042.7 | 16971.7 | 17120.7 | 17289.2 | 15560.9 | 11140.4 | 8451.0  | 6945.5  | 6771.4  | 4133.6  | 654.6  |
| 47.5° | 17290.6 | 17293.4 | 17691.7 | 18219.6 | 18613.7 | 15604.0 | 10534.5 | 8290.9  | 8079.2  | 5229.7  | 961.0  |
| 50°   | 16466.1 | 16498.2 | 17131.9 | 18076.1 | 19137.4 | 19349.1 | 14208.5 | 10243.5 | 9930.1  | 6529.1  | 1395.5 |
| 52.5° | 14896.5 | 14932.7 | 15815.7 | 17368.6 | 18655.5 | 20248.8 | 18534.3 | 12797.7 | 12437.0 | 8150.2  | 2008.3 |
| 55°   | 13482.9 | 13505.2 | 14517.7 | 16480.1 | 18074.7 | 19759.9 | 21102.5 | 16208.5 | 15735.0 | 10144.6 | 2612.7 |
| 57.5° | 12083.2 | 12031.7 | 12690.5 | 14936.9 | 17975.8 | 19159.7 | 21481.3 | 20095.6 | 19573.3 | 12324.2 | 3083.5 |
| 60°   | 10211.4 | 10125.1 | 10654.3 | 12083.2 | 16675.0 | 19553.8 | 20772.4 | 22245.9 | 22127.5 | 15358.9 | 3447.0 |
| 61°   | 9134.9  | 9098.6  | 9630.7  | 10856.3 | 15580.4 | 19453.5 | 20602.5 | 22336.5 | 22349.0 | 16794.8 | 3609.9 |
| 62.5° | 6523.5  | 6626.6  | 7439.9  | 9033.2  | 13049.8 | 18803.1 | 20624.8 | 22056.5 | 22180.5 | 18702.8 | 4031.9 |
| 65°   | 2899.6  | 3065.4  | 3697.7  | 4994.3  | 7588.9  | 15641.6 | 20427.0 | 21442.3 | 21381.0 | 19226.5 | 5485.9 |
| 67.5° | 1720.0  | 1745.1  | 2059.8  | 2830.0  | 4019.4  | 8413.4  | 18026.0 | 20630.4 | 20548.2 | 16737.7 | 6825.7 |
| 70°   | 1355.1  | 1367.7  | 1467.9  | 1775.7  | 2332.8  | 3222.8  | 10288.0 | 17849.1 | 18207.0 | 13572.1 | 6682.3 |
| 72.5° | 1285.5  | 1282.7  | 1296.6  | 1350.9  | 1469.3  | 1598.8  | 3983.2  | 11864.6 | 12593.0 | 9774.1  | 5602.9 |
| 75°   | 1268.8  | 1263.2  | 1249.3  | 1228.4  | 1064.0  | 941.5   | 1234.0  | 5247.8  | 5669.8  | 6678.1  | 4218.6 |
| 77.5° | 1231.2  | 1232.6  | 1235.3  | 1178.2  | 912.2   | 665.7   | 597.5   | 1683.8  | 2071.0  | 4238.0  | 2998.5 |
| 80°   | 832.8   | 845.4   | 866.3   | 844.0   | 820.3   | 481.9   | 422.0   | 598.9   | 607.2   | 2378.8  | 1980.4 |
| 82.5° | 422.0   | 422.0   | 412.2   | 367.7   | 317.5   | 313.4   | 335.6   | 434.5   | 440.1   | 1203.3  | 931.7  |
| 85°   | 254.9   | 268.8   | 274.4   | 249.3   | 228.4   | 210.3   | 256.3   | 345.4   | 357.9   | 466.6   | 217.3  |
| 87.5° | 57.1    | 58.5    | 64.1    | 85.0    | 124.0   | 168.5   | 238.2   | 316.1   | 321.7   | 299.4   | 26.5   |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0    |



REPORT NUMBER: P1063674

CATALOG NUMBER: GLAN-SA5B-850-U-T2BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 124.0  | 124.0 | 124.0 | 124.0 | 124.0 | 124.0 | 124.0 | 124.0 | 124.0 | 124.0 | 124.0 |
| 2.5°  | 125.3  | 122.6 | 121.2 | 117.0 | 112.8 | 108.6 | 105.8 | 104.5 | 105.8 | 107.2 | 107.2 |
| 5°    | 124.0  | 119.8 | 112.8 | 105.8 | 100.3 | 94.7  | 89.1  | 87.7  | 87.7  | 89.1  | 89.1  |
| 7.5°  | 124.0  | 117.0 | 107.2 | 98.9  | 90.5  | 82.2  | 78.0  | 75.2  | 76.6  | 76.6  | 76.6  |
| 10°   | 124.0  | 115.6 | 103.1 | 90.5  | 80.8  | 71.0  | 64.1  | 61.3  | 61.3  | 61.3  | 61.3  |
| 12.5° | 122.6  | 114.2 | 98.9  | 83.6  | 69.6  | 58.5  | 50.1  | 46.0  | 47.4  | 47.4  | 47.4  |
| 15°   | 119.8  | 110.0 | 93.3  | 71.0  | 55.7  | 44.6  | 36.2  | 32.0  | 33.4  | 36.2  | 37.6  |
| 17.5° | 115.6  | 105.8 | 83.6  | 59.9  | 44.6  | 33.4  | 25.1  | 22.3  | 23.7  | 27.9  | 27.9  |
| 20°   | 114.2  | 101.7 | 73.8  | 48.7  | 33.4  | 23.7  | 16.7  | 13.9  | 15.3  | 20.9  | 22.3  |
| 22.5° | 114.2  | 98.9  | 66.9  | 40.4  | 25.1  | 15.3  | 9.7   | 5.6   | 5.6   | 9.7   | 9.7   |
| 25°   | 115.6  | 97.5  | 61.3  | 33.4  | 18.1  | 11.1  | 5.6   | 2.8   | 5.6   | 15.3  | 18.1  |
| 27.5° | 118.4  | 96.1  | 58.5  | 27.9  | 13.9  | 9.7   | 4.2   | 9.7   | 16.7  | 16.7  | 16.7  |
| 30°   | 121.2  | 93.3  | 54.3  | 23.7  | 12.5  | 7.0   | 7.0   | 13.9  | 13.9  | 16.7  | 18.1  |
| 32.5° | 125.3  | 91.9  | 51.5  | 20.9  | 9.7   | 5.6   | 9.7   | 8.4   | 8.4   | 9.7   | 11.1  |
| 35°   | 133.7  | 93.3  | 48.7  | 20.9  | 9.7   | 7.0   | 8.4   | 4.2   | 2.8   | 2.8   | 2.8   |
| 37.5° | 144.8  | 94.7  | 44.6  | 18.1  | 8.4   | 8.4   | 4.2   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 162.9  | 98.9  | 41.8  | 16.7  | 7.0   | 7.0   | 1.4   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 193.6  | 107.2 | 40.4  | 15.3  | 7.0   | 5.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 254.9  | 126.7 | 37.6  | 13.9  | 7.0   | 2.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 366.3  | 172.7 | 36.2  | 11.1  | 4.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 534.8  | 234.0 | 34.8  | 9.7   | 1.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 682.4  | 246.5 | 23.7  | 8.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 699.1  | 169.9 | 18.1  | 5.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 557.1  | 110.0 | 15.3  | 4.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 422.0  | 83.6  | 13.9  | 1.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 61°   | 405.3  | 75.2  | 13.9  | 1.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 447.1  | 65.5  | 12.5  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 727.0  | 54.3  | 11.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 1263.2 | 47.4  | 9.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 1596.1 | 44.6  | 8.4   | 1.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1391.3 | 40.4  | 8.4   | 2.8   | 1.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 837.0  | 34.8  | 8.4   | 5.6   | 2.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 438.7  | 26.5  | 8.4   | 7.0   | 4.2   | 1.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 213.1  | 23.7  | 9.7   | 7.0   | 5.6   | 2.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 83.6   | 19.5  | 11.1  | 9.7   | 7.0   | 4.2   | 1.4   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 37.6   | 16.7  | 12.5  | 11.1  | 9.7   | 5.6   | 1.4   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 19.5   | 15.3  | 13.9  | 12.5  | 9.7   | 7.0   | 2.8   | 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   |

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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-12

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-850-U-5WQ

Data in this report applies to families of products including GSS-SB1A-850-U-5WQ

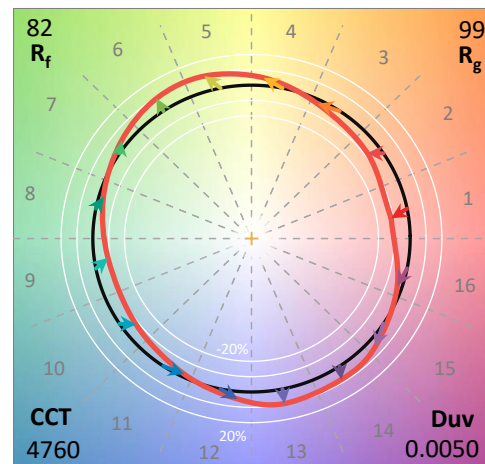
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-12  
 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-850-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 80 CRI  
 5000K CCT 26 LEDS

### Spectral Parameters

CCT (K): 4760  
 CIE  $u'$ : 0.2107  
 CIE  $v'$ : 0.4939  
 Duv: 0.0050  
 CIE x: 0.3537  
 CIE y: 0.3685  
 CIE z: 0.2779  
 Peak Wavelength (nm): 443  
 Dominant Wavelength (nm): 571  
 Purity: 16.69598  
 R<sub>f</sub>: 82  
 R<sub>g</sub>: 99.4

CRI (Ra): 81.1  
 R1: 79.8  
 R2: 83.5  
 R3: 87.9  
 R4: 83.1  
 R5: 80.5  
 R6: 79.1  
 R7: 86.1  
 R8: 69.0  
 R9: 8.7  
 R10: 62.4  
 R11: 83.8  
 R12: 63.0  
 R13: 79.9  
 R14: 93.3  
 R15: 72.7



### Test Conditions

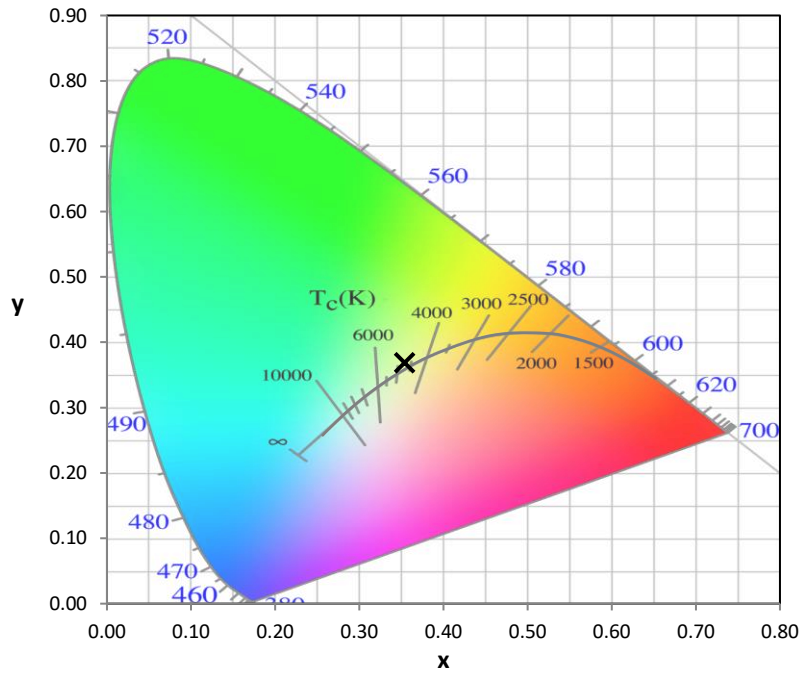
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-12

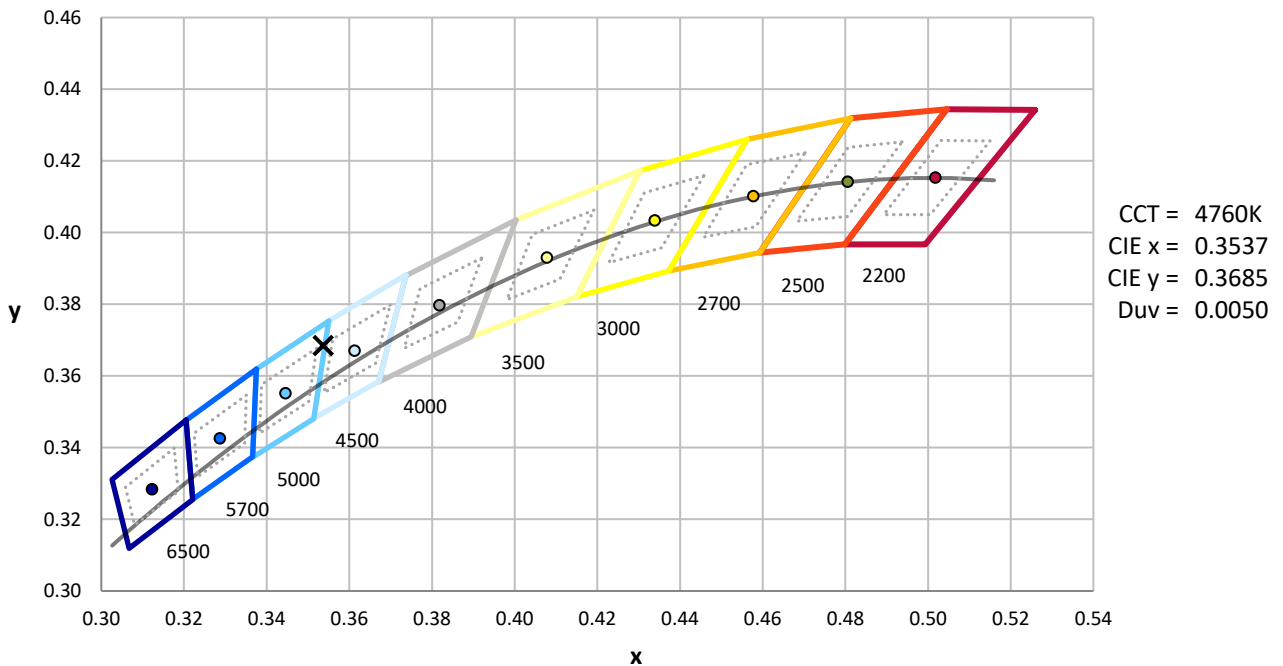
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



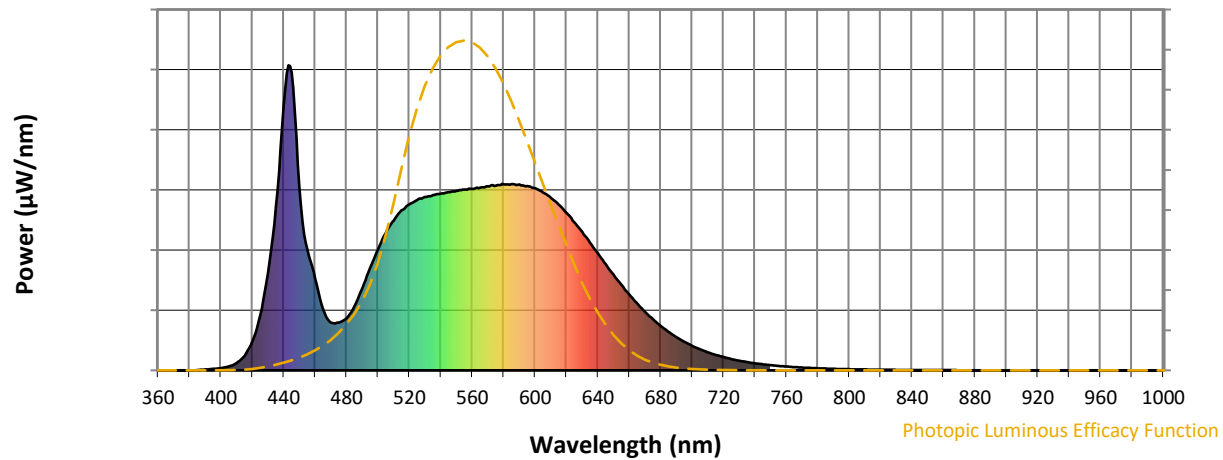
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 7-step quadrangle

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### Photopic Flux vs. Wavelength

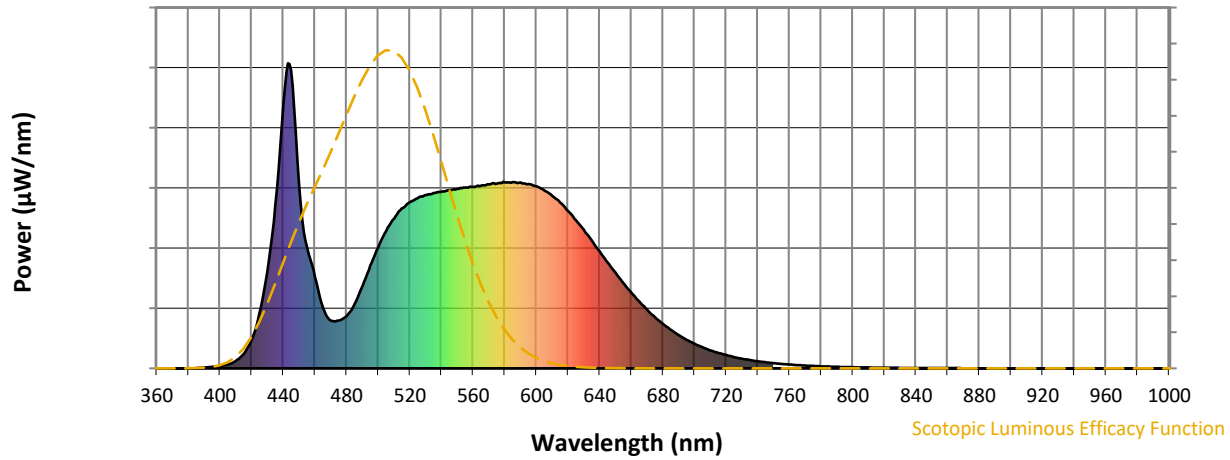


### Photopic Lumens: NR

| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 270                         | NR               | 620       | 517                         | NR               | 750       | 17                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 335                         | NR               | 625       | 486                         | NR               | 755       | 15                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 397                         | NR               | 630       | 454                         | NR               | 760       | 12                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 451                         | NR               | 635       | 419                         | NR               | 765       | 11                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 492                         | NR               | 640       | 384                         | NR               | 770       | 9                           | NR               | 900       | 0                           | NR               |
| 385       | 1                           | NR               | 515       | 524                         | NR               | 645       | 347                         | NR               | 775       | 8                           | NR               | 905       | 0                           | NR               |
| 390       | 3                           | NR               | 520       | 545                         | NR               | 650       | 313                         | NR               | 780       | 7                           | NR               | 910       | 0                           | NR               |
| 395       | 5                           | NR               | 525       | 558                         | NR               | 655       | 280                         | NR               | 785       | 6                           | NR               | 915       | 0                           | NR               |
| 400       | 7                           | NR               | 530       | 568                         | NR               | 660       | 248                         | NR               | 790       | 5                           | NR               | 920       | 0                           | NR               |
| 405       | 13                          | NR               | 535       | 575                         | NR               | 665       | 219                         | NR               | 795       | 4                           | NR               | 925       | 0                           | NR               |
| 410       | 24                          | NR               | 540       | 579                         | NR               | 670       | 192                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 47                          | NR               | 545       | 585                         | NR               | 675       | 167                         | NR               | 805       | 3                           | NR               | 935       | 0                           | NR               |
| 420       | 95                          | NR               | 550       | 588                         | NR               | 680       | 146                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 181                         | NR               | 555       | 593                         | NR               | 685       | 126                         | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 319                         | NR               | 560       | 595                         | NR               | 690       | 109                         | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 539                         | NR               | 565       | 600                         | NR               | 695       | 94                          | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 868                         | NR               | 570       | 603                         | NR               | 700       | 80                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 977                         | NR               | 575       | 606                         | NR               | 705       | 69                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 601                         | NR               | 580       | 609                         | NR               | 710       | 59                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 397                         | NR               | 585       | 611                         | NR               | 715       | 51                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 302                         | NR               | 590       | 610                         | NR               | 720       | 44                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 201                         | NR               | 595       | 604                         | NR               | 725       | 37                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 157                         | NR               | 600       | 596                         | NR               | 730       | 32                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 157                         | NR               | 605       | 583                         | NR               | 735       | 27                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 171                         | NR               | 610       | 566                         | NR               | 740       | 23                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 210                         | NR               | 615       | 543                         | NR               | 745       | 20                          | NR               | 875       | 0                           | NR               |           |                             |                  |

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### Scotopic Flux vs. Wavelength



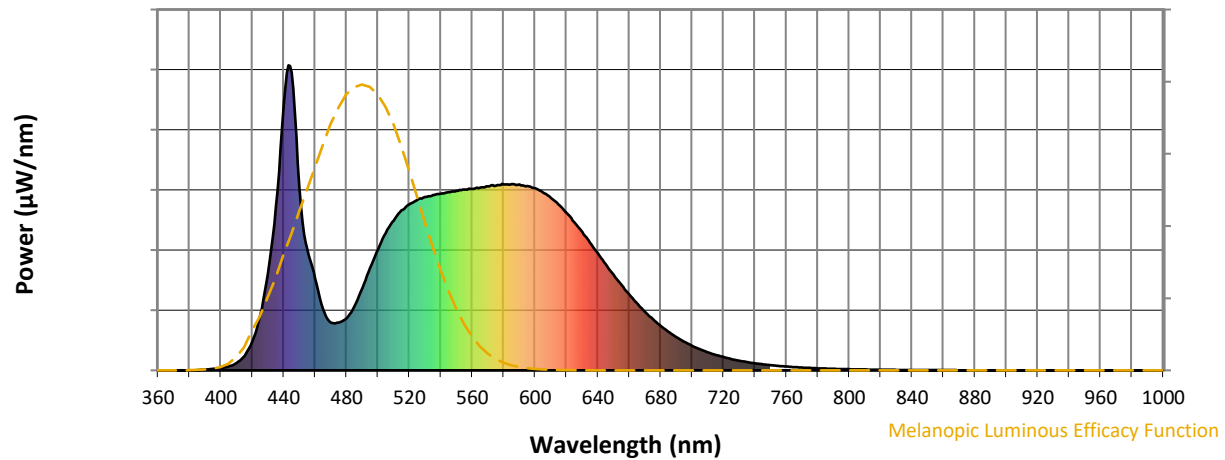
Scotopic Lumens: NR

S/P: 1.83

| 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       | 270                         | NR               | 620       | 517                         | NR               | 750       | 17                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 335                         | NR               | 625       | 486                         | NR               | 755       | 15                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 397                         | NR               | 630       | 454                         | NR               | 760       | 12                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 451                         | NR               | 635       | 419                         | NR               | 765       | 11                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 492                         | NR               | 640       | 384                         | NR               | 770       | 9                           | NR               | 900       | 0                           | NR               |
| 385       | 1                           | NR               | 515       | 524                         | NR               | 645       | 347                         | NR               | 775       | 8                           | NR               | 905       | 0                           | NR               |
| 390       | 3                           | NR               | 520       | 545                         | NR               | 650       | 313                         | NR               | 780       | 7                           | NR               | 910       | 0                           | NR               |
| 395       | 5                           | NR               | 525       | 558                         | NR               | 655       | 280                         | NR               | 785       | 6                           | NR               | 915       | 0                           | NR               |
| 400       | 7                           | NR               | 530       | 568                         | NR               | 660       | 248                         | NR               | 790       | 5                           | NR               | 920       | 0                           | NR               |
| 405       | 13                          | NR               | 535       | 575                         | NR               | 665       | 219                         | NR               | 795       | 4                           | NR               | 925       | 0                           | NR               |
| 410       | 24                          | NR               | 540       | 579                         | NR               | 670       | 192                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 47                          | NR               | 545       | 585                         | NR               | 675       | 167                         | NR               | 805       | 3                           | NR               | 935       | 0                           | NR               |
| 420       | 95                          | NR               | 550       | 588                         | NR               | 680       | 146                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 181                         | NR               | 555       | 593                         | NR               | 685       | 126                         | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 319                         | NR               | 560       | 595                         | NR               | 690       | 109                         | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 539                         | NR               | 565       | 600                         | NR               | 695       | 94                          | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 868                         | NR               | 570       | 603                         | NR               | 700       | 80                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 977                         | NR               | 575       | 606                         | NR               | 705       | 69                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 601                         | NR               | 580       | 609                         | NR               | 710       | 59                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 397                         | NR               | 585       | 611                         | NR               | 715       | 51                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 302                         | NR               | 590       | 610                         | NR               | 720       | 44                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 201                         | NR               | 595       | 604                         | NR               | 725       | 37                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 157                         | NR               | 600       | 596                         | NR               | 730       | 32                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 157                         | NR               | 605       | 583                         | NR               | 735       | 27                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 171                         | NR               | 610       | 566                         | NR               | 740       | 23                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 210                         | NR               | 615       | 543                         | NR               | 745       | 20                          | NR               | 875       | 0                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.74

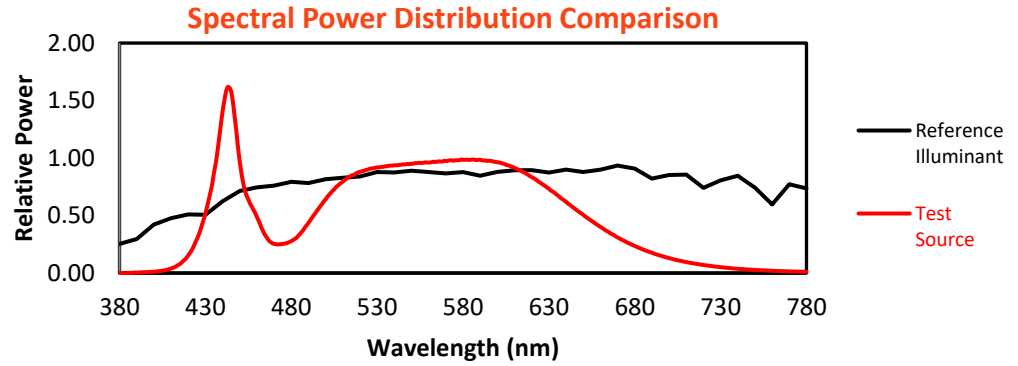
| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 270                         | NR               | 620       | 517                         | NR               | 750       | 17                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 335                         | NR               | 625       | 486                         | NR               | 755       | 15                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 397                         | NR               | 630       | 454                         | NR               | 760       | 12                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 451                         | NR               | 635       | 419                         | NR               | 765       | 11                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 492                         | NR               | 640       | 384                         | NR               | 770       | 9                           | NR               | 900       | 0                           | NR               |
| 385       | 1                           | NR               | 515       | 524                         | NR               | 645       | 347                         | NR               | 775       | 8                           | NR               | 905       | 0                           | NR               |
| 390       | 3                           | NR               | 520       | 545                         | NR               | 650       | 313                         | NR               | 780       | 7                           | NR               | 910       | 0                           | NR               |
| 395       | 5                           | NR               | 525       | 558                         | NR               | 655       | 280                         | NR               | 785       | 6                           | NR               | 915       | 0                           | NR               |
| 400       | 7                           | NR               | 530       | 568                         | NR               | 660       | 248                         | NR               | 790       | 5                           | NR               | 920       | 0                           | NR               |
| 405       | 13                          | NR               | 535       | 575                         | NR               | 665       | 219                         | NR               | 795       | 4                           | NR               | 925       | 0                           | NR               |
| 410       | 24                          | NR               | 540       | 579                         | NR               | 670       | 192                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 47                          | NR               | 545       | 585                         | NR               | 675       | 167                         | NR               | 805       | 3                           | NR               | 935       | 0                           | NR               |
| 420       | 95                          | NR               | 550       | 588                         | NR               | 680       | 146                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 181                         | NR               | 555       | 593                         | NR               | 685       | 126                         | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 319                         | NR               | 560       | 595                         | NR               | 690       | 109                         | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 539                         | NR               | 565       | 600                         | NR               | 695       | 94                          | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 868                         | NR               | 570       | 603                         | NR               | 700       | 80                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 977                         | NR               | 575       | 606                         | NR               | 705       | 69                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 601                         | NR               | 580       | 609                         | NR               | 710       | 59                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 397                         | NR               | 585       | 611                         | NR               | 715       | 51                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 302                         | NR               | 590       | 610                         | NR               | 720       | 44                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 201                         | NR               | 595       | 604                         | NR               | 725       | 37                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 157                         | NR               | 600       | 596                         | NR               | 730       | 32                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 157                         | NR               | 605       | 583                         | NR               | 735       | 27                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 171                         | NR               | 610       | 566                         | NR               | 740       | 23                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 210                         | NR               | 615       | 543                         | NR               | 745       | 20                          | NR               | 875       | 0                           | NR               |           |                             |                  |

REPORT NUMBER: SP1-2407-184-12

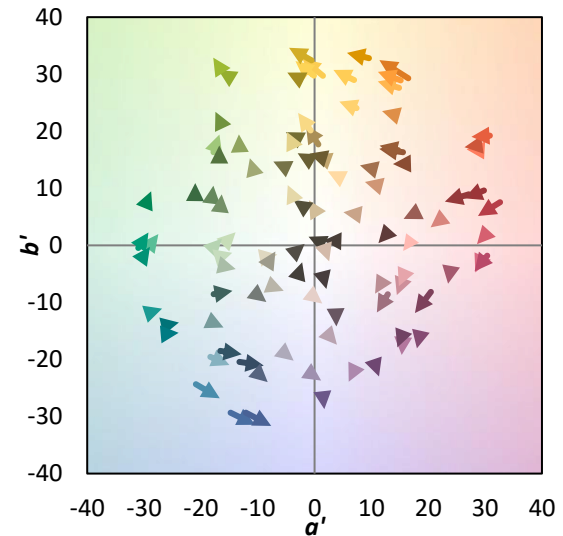
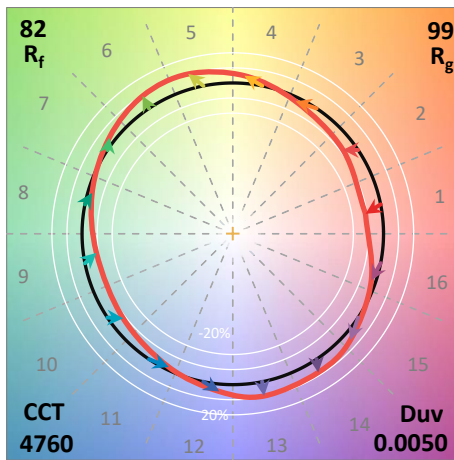
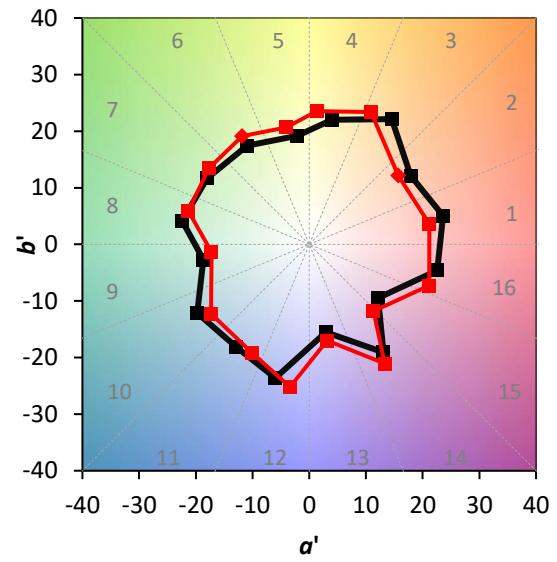
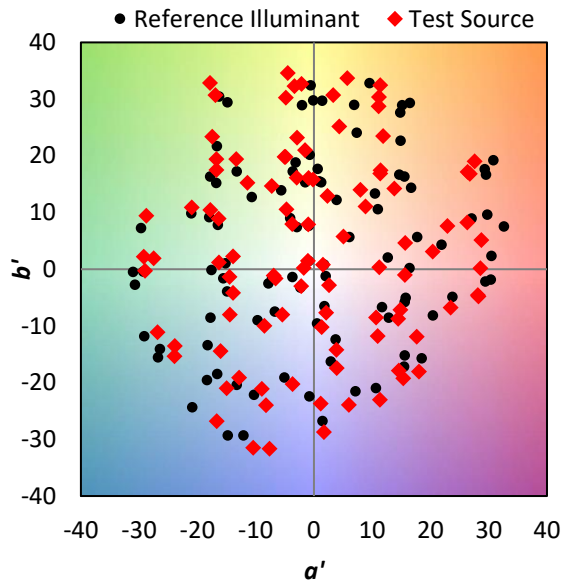
TM-30-18

### Summary

$R_f = 82$   
 $R_g = 99.4$   
 $CIE R_a = 81.1$   
 $R_9 = 8.7$

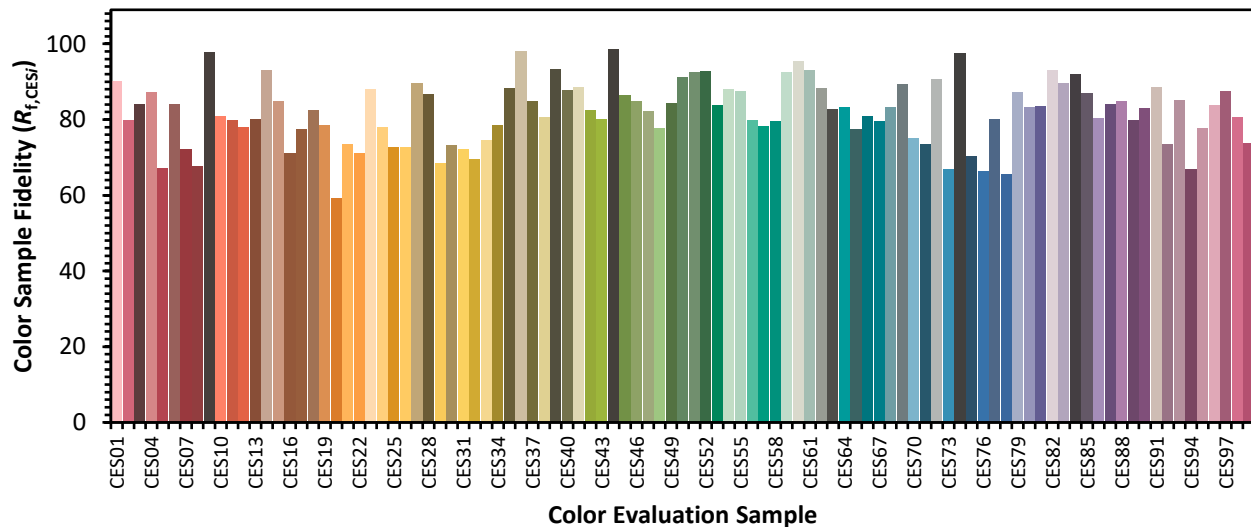


### Color Vector Graphics

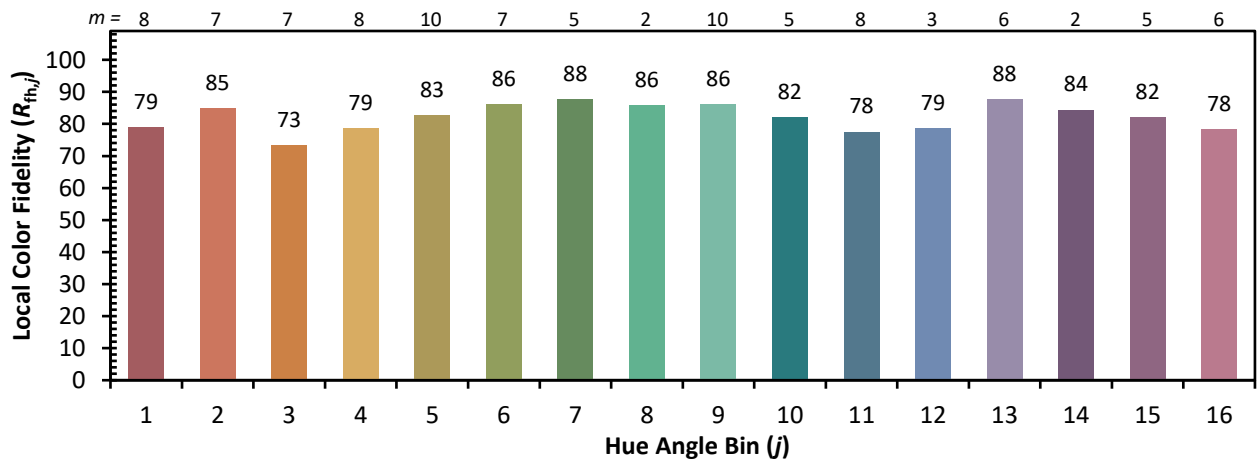
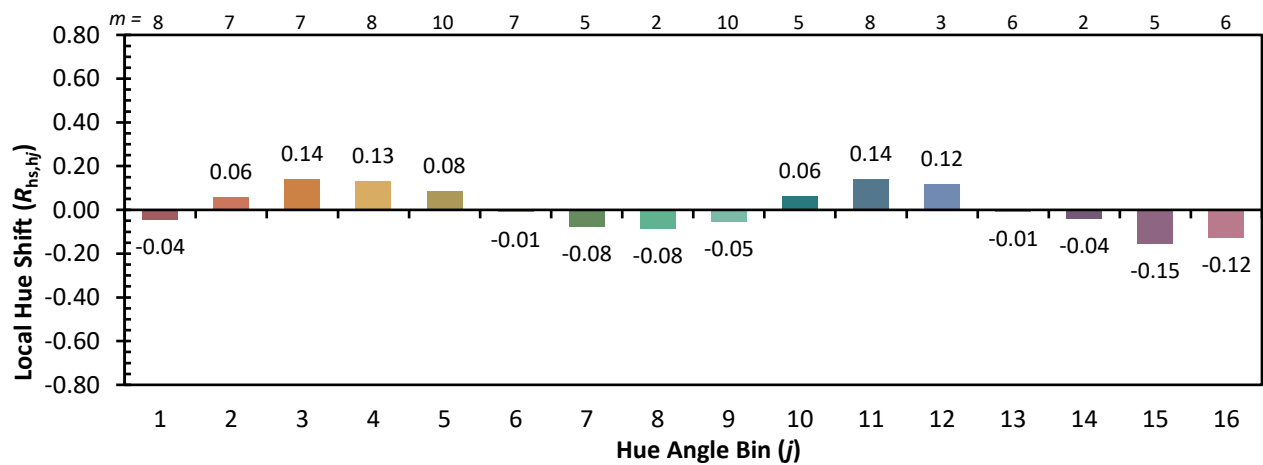
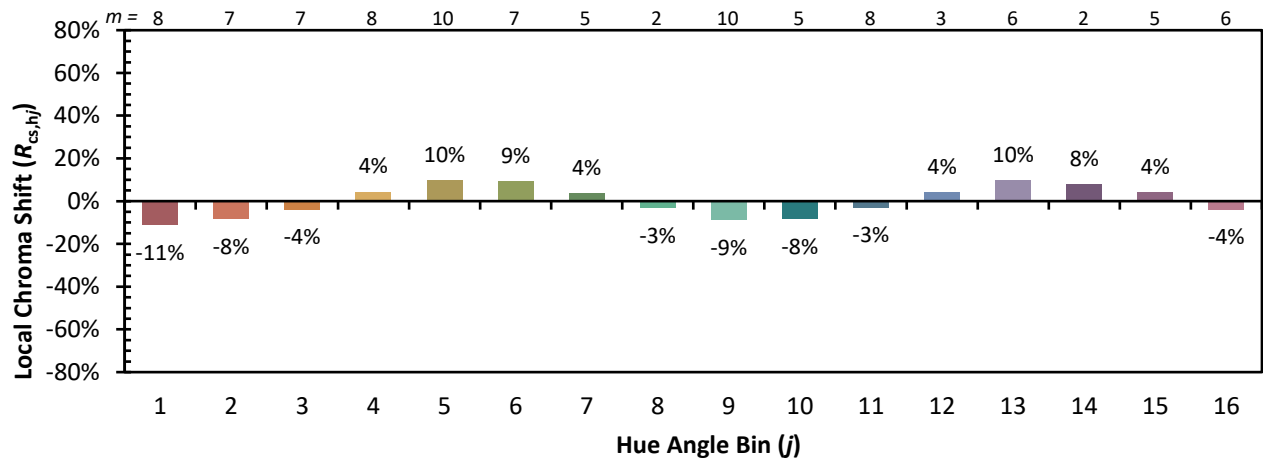


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

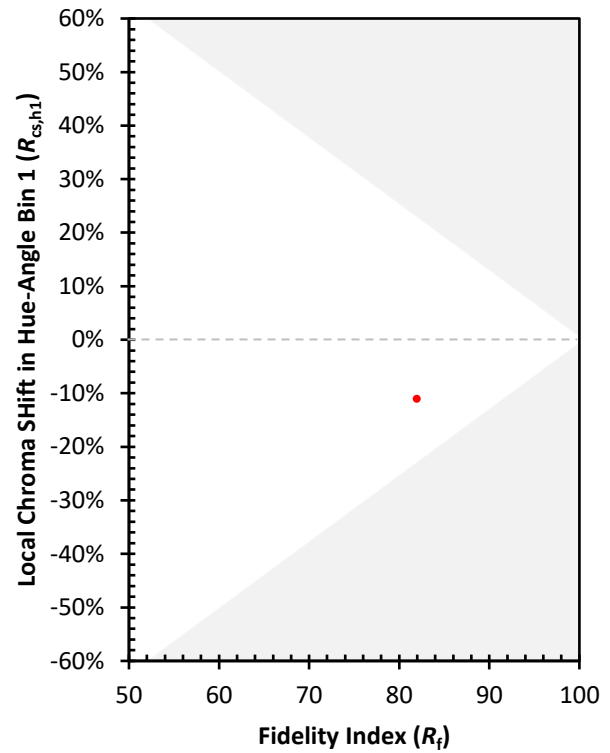
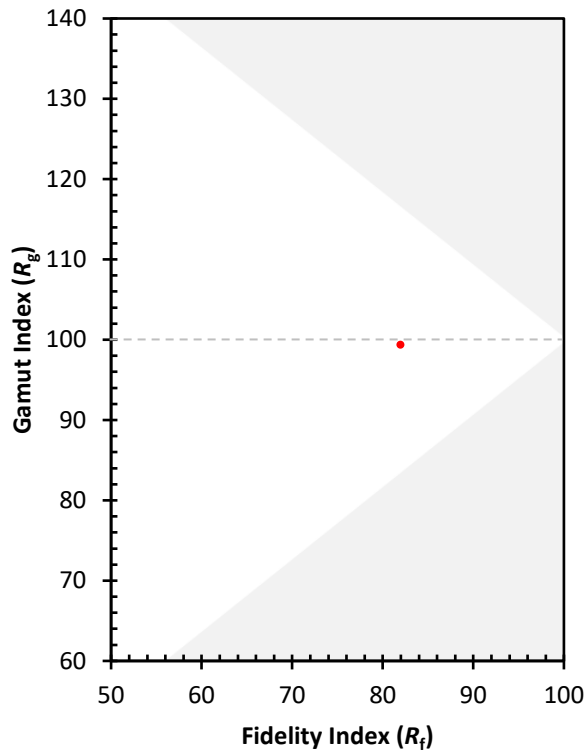
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 73 | CES51 = 92 | CES76 = 66 |
| CES02 = 60 | CES27 = 90 | CES52 = 93 | CES77 = 80 |
| CES03 = 30 | CES28 = 87 | CES53 = 84 | CES78 = 65 |
| CES04 = 69 | CES29 = 69 | CES54 = 88 | CES79 = 87 |
| CES05 = 47 | CES30 = 73 | CES55 = 88 | CES80 = 83 |
| CES06 = 50 | CES31 = 72 | CES56 = 80 | CES81 = 84 |
| CES07 = 40 | CES32 = 69 | CES57 = 78 | CES82 = 93 |
| CES08 = 39 | CES33 = 75 | CES58 = 80 | CES83 = 90 |
| CES09 = 29 | CES34 = 78 | CES59 = 93 | CES84 = 92 |
| CES10 = 73 | CES35 = 88 | CES60 = 95 | CES85 = 87 |
| CES11 = 56 | CES36 = 98 | CES61 = 93 | CES86 = 80 |
| CES12 = 62 | CES37 = 85 | CES62 = 88 | CES87 = 84 |
| CES13 = 42 | CES38 = 81 | CES63 = 83 | CES88 = 85 |
| CES14 = 74 | CES39 = 93 | CES64 = 83 | CES89 = 80 |
| CES15 = 71 | CES40 = 88 | CES65 = 77 | CES90 = 83 |
| CES16 = 46 | CES41 = 89 | CES66 = 81 | CES91 = 89 |
| CES17 = 48 | CES42 = 82 | CES67 = 80 | CES92 = 73 |
| CES18 = 55 | CES43 = 80 | CES68 = 83 | CES93 = 85 |
| CES19 = 70 | CES44 = 99 | CES69 = 89 | CES94 = 67 |
| CES20 = 64 | CES45 = 87 | CES70 = 75 | CES95 = 78 |
| CES21 = 85 | CES46 = 85 | CES71 = 73 | CES96 = 84 |
| CES22 = 77 | CES47 = 82 | CES72 = 91 | CES97 = 87 |
| CES23 = 91 | CES48 = 78 | CES73 = 67 | CES98 = 81 |
| CES24 = 90 | CES49 = 84 | CES74 = 98 | CES99 = 74 |
| CES25 = 71 | CES50 = 91 | CES75 = 70 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)