

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: P1063862

Luminaire Tested: **GLAN-SA7B-950-U-T2BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1063862  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: GLAN-SA7B-950-U-T2BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 800mA 7xLight Square PACKAGE  
90CRI 5000K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (98) 5000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 24633.5 lumens  
Efficiency: N/A  
Efficacy: 98.7 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B0 - U0 - G4

Input Watts (W): 249.5  
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



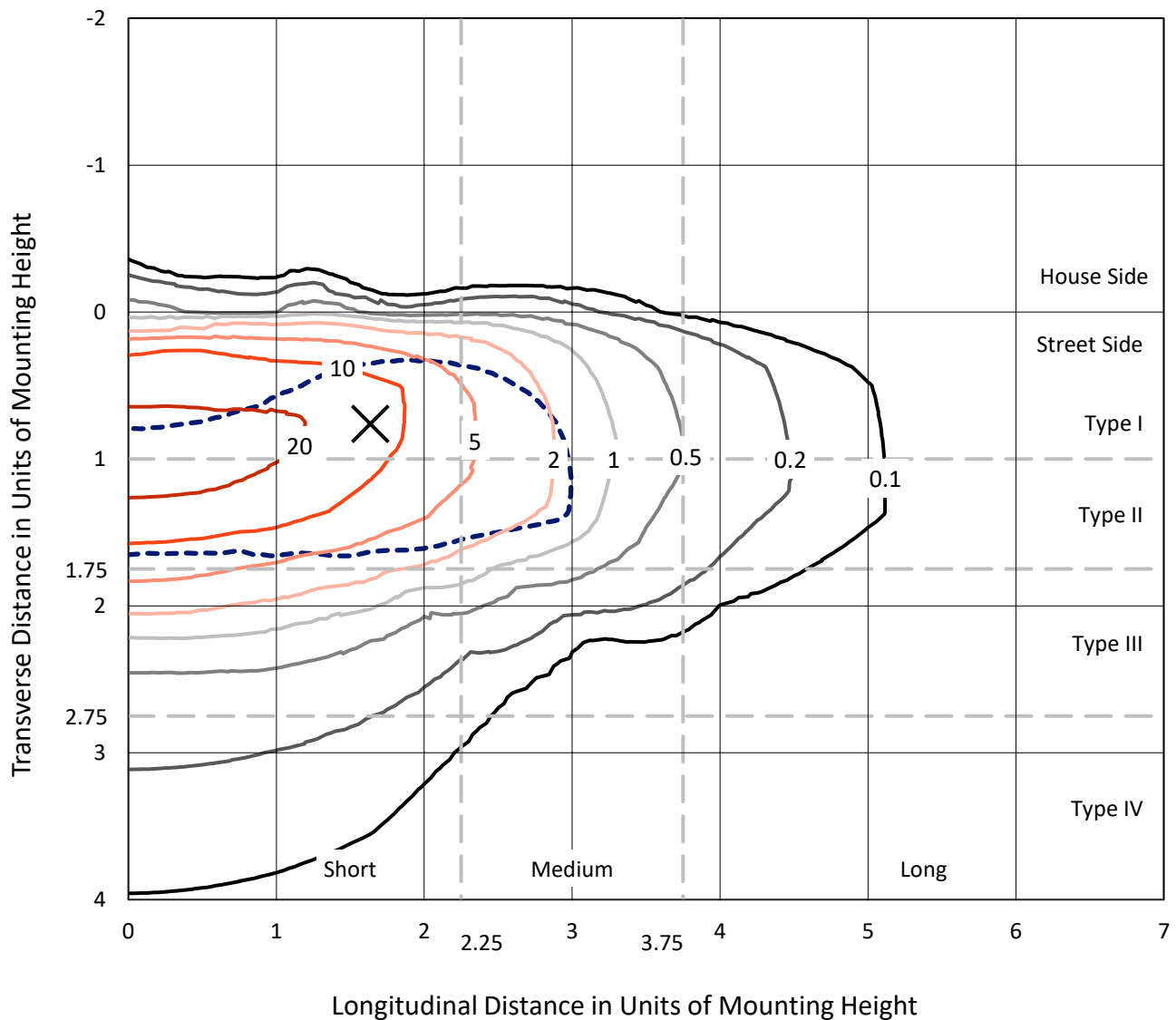
REPORT NUMBER: P1063862

CATALOG NUMBER: GLAN-SA7B-950-U-T2BC

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

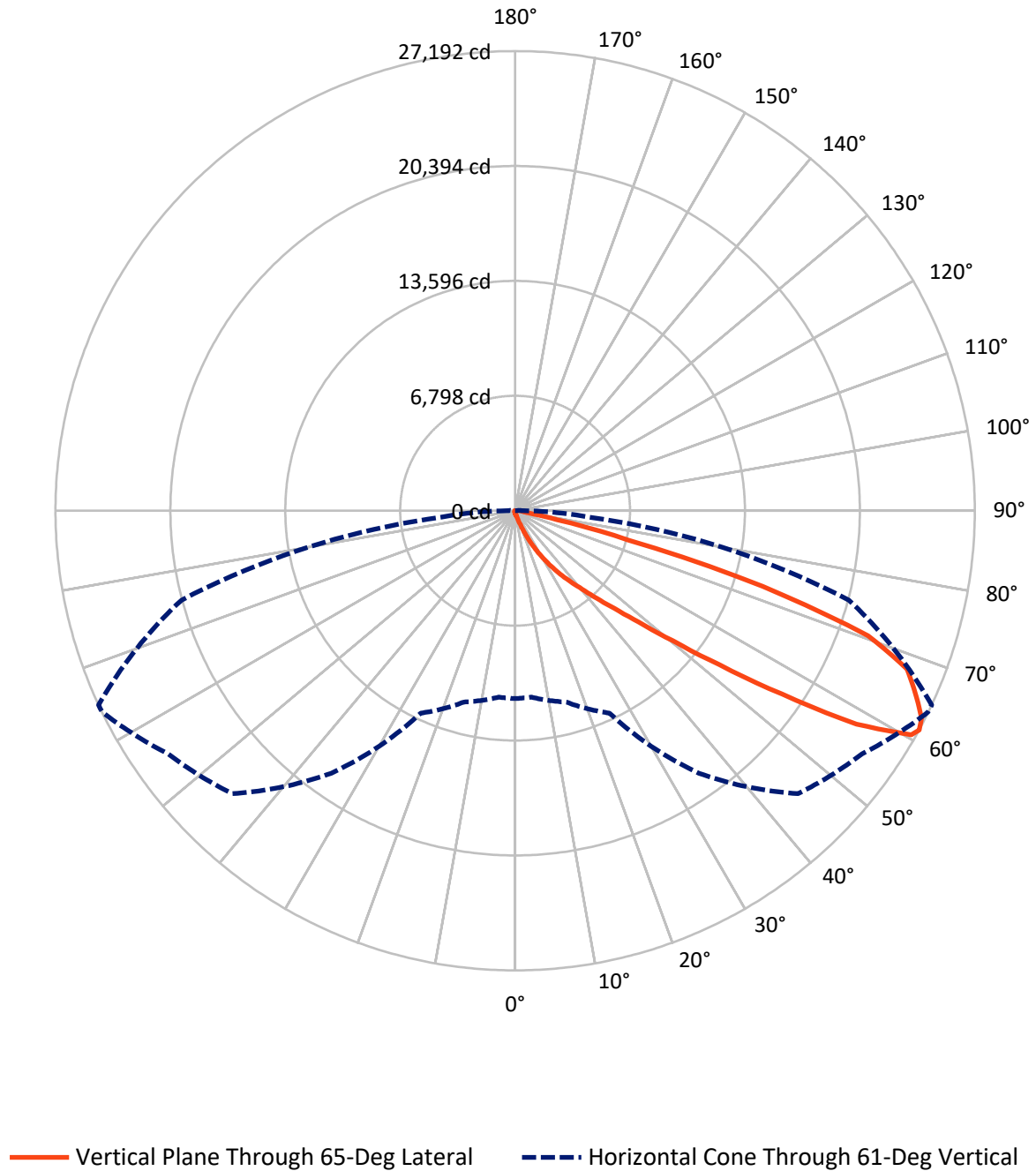


Based on 15 foot mounting height. Maximum calculated value = 32.6 fc  
 Type II - Short - N/A

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CATALOG NUMBER: GLAN-SA7B-950-U-T2BC

## Luminous Intensity Polar Plot



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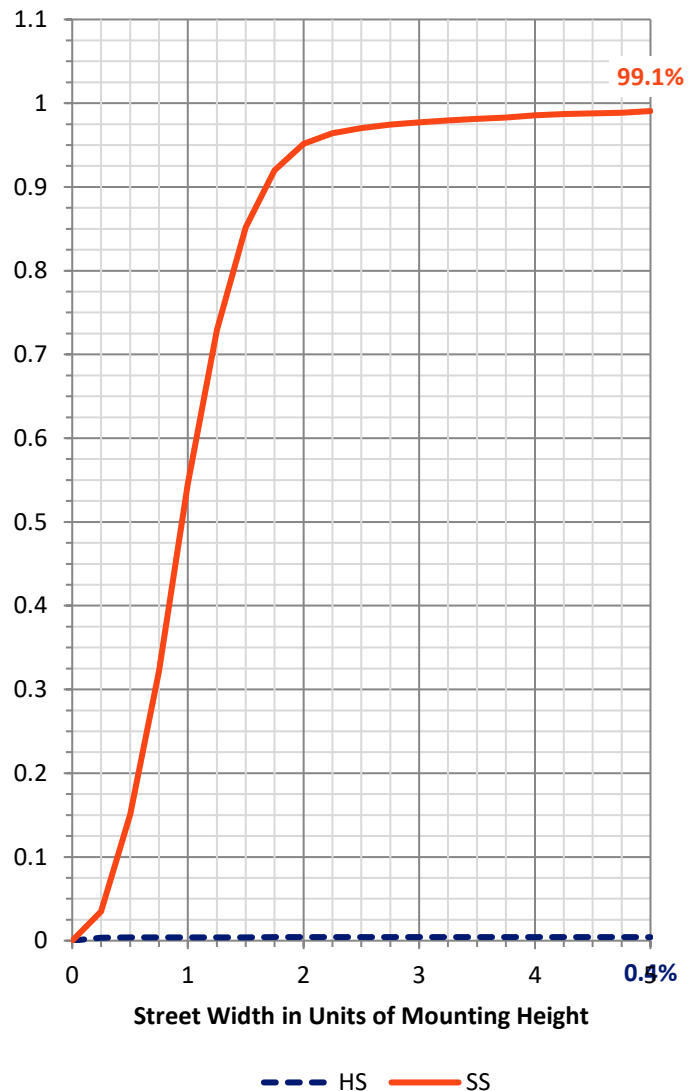
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 105.2    | 0.0    | 105.2   |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 24528.4  | 0.0    | 24528.4 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 24633.5  | 0.0    | 24633.5 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 19.2    | 0.1       |
| 10°-20°   | 202.6   | 0.8       |
| 20°-30°   | 727.0   | 3.0       |
| 30°-40°   | 1935.5  | 7.9       |
| 40°-50°   | 5084.5  | 20.6      |
| 50°-60°   | 7876.9  | 32.0      |
| 60°-70°   | 6604.6  | 26.8      |
| 70°-80°   | 1943.6  | 7.9       |
| 80°-90°   | 239.8   | 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°    | 24633.5 | 100.0     |
| 0°-180°   | 24633.5 | 100.0     |



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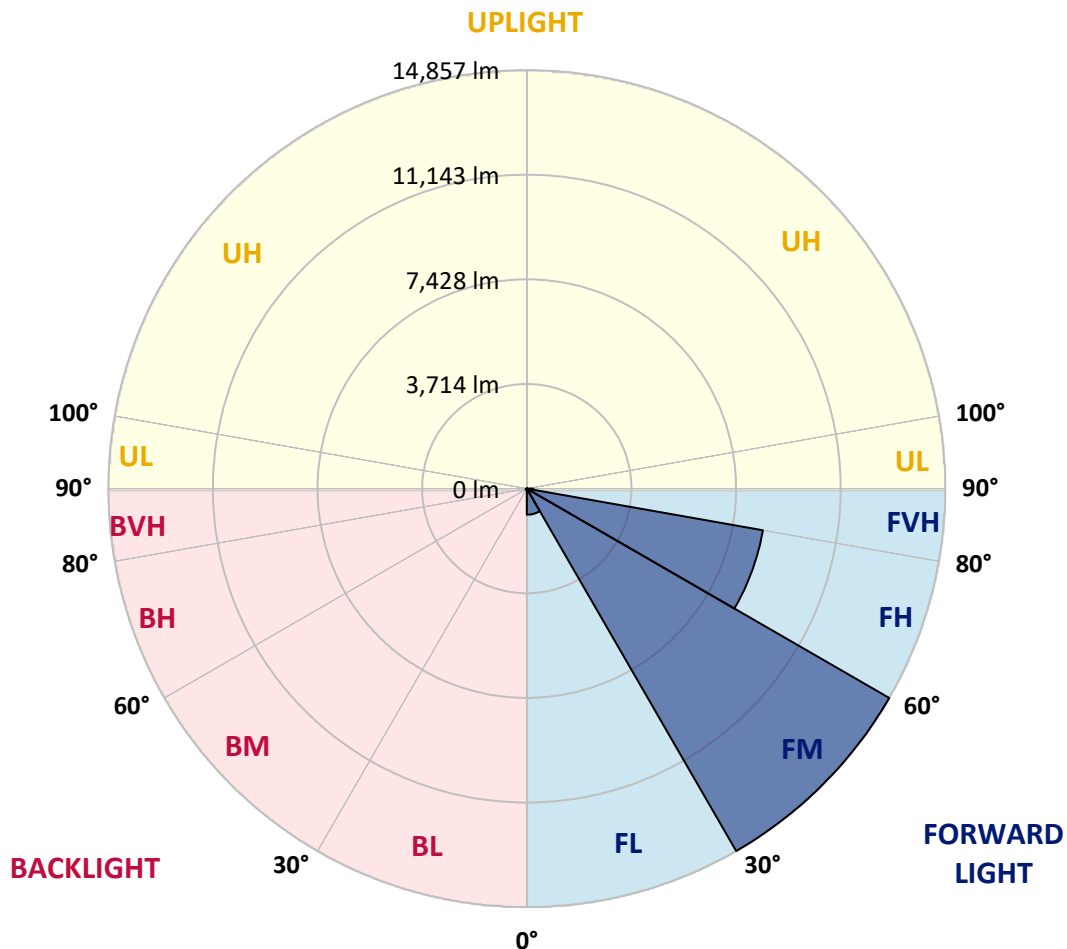
CATALOG NUMBER: GLAN-SA7B-950-U-T2BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|---------|-----------|-------------------------|------|----------|
|      |             |         |           | B                       | U    | G        |
| FL   | (0°-30°)    | 925.1   | 3.8       |                         |      |          |
| FM   | (30°-60°)   | 14856.8 | 60.3      |                         |      |          |
| FH   | (60°-80°)   | 8511.1  | 34.6      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 235.3   | 1.0       |                         |      | G3/500   |
| BL   | (0°-30°)    | 23.6    | 0.1       | B0/110                  |      |          |
| BM   | (30°-60°)   | 40.0    | 0.2       | B0/220                  |      |          |
| BH   | (60°-80°)   | 37.1    | 0.2       | B0/110                  |      | G0/110   |
| BVH  | (80°-90°)   | 4.5     | 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-G4**

Type II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 64°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 150.8   | 150.8   | 150.8   | 150.8   | 150.8   | 150.8   | 150.8   | 150.8   | 150.8   | 150.8   | 150.8  |
| 2.5°  | 183.0   | 184.7   | 181.3   | 174.5   | 169.5   | 169.5   | 167.8   | 162.7   | 162.7   | 157.6   | 154.2  |
| 5°    | 255.9   | 252.5   | 245.7   | 232.1   | 220.3   | 208.4   | 196.6   | 184.7   | 183.0   | 167.8   | 157.6  |
| 7.5°  | 418.5   | 421.9   | 399.9   | 357.5   | 322.0   | 276.2   | 233.8   | 208.4   | 205.0   | 179.6   | 159.3  |
| 10°   | 918.4   | 893.0   | 842.2   | 677.8   | 557.5   | 420.2   | 311.8   | 242.3   | 238.9   | 193.2   | 162.7  |
| 12.5° | 1674.2  | 1653.9  | 1560.7  | 1391.2  | 1081.1  | 752.4   | 455.8   | 299.9   | 289.8   | 205.0   | 164.4  |
| 15°   | 2413.0  | 2380.8  | 2330.0  | 2158.8  | 1796.2  | 1348.8  | 745.6   | 410.1   | 383.0   | 222.0   | 162.7  |
| 17.5° | 2884.1  | 2889.2  | 2843.4  | 2770.5  | 2536.7  | 1996.1  | 1287.8  | 611.7   | 559.2   | 252.5   | 159.3  |
| 20°   | 3295.8  | 3284.0  | 3309.4  | 3270.4  | 3106.1  | 2712.9  | 1874.1  | 969.3   | 879.5   | 301.6   | 161.0  |
| 22.5° | 3770.3  | 3799.1  | 3817.8  | 3809.3  | 3628.0  | 3292.5  | 2540.1  | 1450.5  | 1337.0  | 391.4   | 166.1  |
| 25°   | 4405.8  | 4402.4  | 4404.1  | 4382.0  | 4205.8  | 3833.0  | 3207.7  | 2048.7  | 1933.4  | 537.2   | 177.9  |
| 27.5° | 5071.7  | 5092.0  | 5100.5  | 5020.9  | 4790.4  | 4424.4  | 3826.2  | 2702.8  | 2567.2  | 771.0   | 193.2  |
| 30°   | 5981.7  | 5964.7  | 5925.7  | 5763.1  | 5483.5  | 5029.3  | 4436.3  | 3389.0  | 3246.7  | 1098.1  | 216.9  |
| 32.5° | 7208.5  | 7189.9  | 6993.3  | 6634.1  | 6215.5  | 5659.7  | 5049.7  | 4077.0  | 3904.2  | 1506.4  | 249.1  |
| 35°   | 9230.1  | 9258.9  | 8775.9  | 7845.6  | 7095.0  | 6417.2  | 5729.2  | 4761.6  | 4609.1  | 2009.7  | 293.2  |
| 37.5° | 12326.0 | 12168.4 | 11512.6 | 9868.9  | 8252.3  | 7362.7  | 6378.2  | 5453.0  | 5320.8  | 2629.9  | 350.8  |
| 40°   | 15333.7 | 15177.8 | 14988.0 | 13430.8 | 10263.7 | 8404.8  | 7286.4  | 6264.6  | 6093.5  | 3329.7  | 435.5  |
| 42.5° | 18495.7 | 18409.3 | 18400.8 | 17226.5 | 13934.1 | 10043.4 | 8379.4  | 7215.3  | 7069.5  | 4097.4  | 574.4  |
| 45°   | 20735.9 | 20649.4 | 20830.8 | 21035.8 | 18932.9 | 13554.5 | 10282.4 | 8450.6  | 8238.8  | 5029.3  | 796.4  |
| 47.5° | 21037.5 | 21040.9 | 21525.5 | 22167.7 | 22647.3 | 18985.4 | 12817.4 | 10087.5 | 9829.9  | 6362.9  | 1169.2 |
| 50°   | 20034.3 | 20073.3 | 20844.3 | 21993.2 | 23284.4 | 23542.0 | 17287.5 | 12463.2 | 12081.9 | 7943.9  | 1697.9 |
| 52.5° | 18124.6 | 18168.7 | 19243.0 | 21132.4 | 22698.1 | 24636.7 | 22550.7 | 15571.0 | 15132.1 | 9916.3  | 2443.5 |
| 55°   | 16404.7 | 16431.8 | 17663.7 | 20051.3 | 21991.5 | 24041.9 | 25675.4 | 19720.8 | 19144.7 | 12342.9 | 3178.9 |
| 57.5° | 14701.7 | 14639.0 | 15440.5 | 18173.7 | 21871.2 | 23311.5 | 26136.3 | 24450.3 | 23814.8 | 14994.8 | 3751.7 |
| 60°   | 12424.2 | 12319.2 | 12963.1 | 14701.7 | 20288.5 | 23791.1 | 25273.8 | 27066.6 | 26922.6 | 18687.2 | 4193.9 |
| 61°   | 11114.4 | 11070.3 | 11717.6 | 13208.8 | 18956.6 | 23669.1 | 25067.1 | 27176.7 | 27192.0 | 20434.2 | 4392.2 |
| 62.5° | 7937.1  | 8062.5  | 9052.1  | 10990.7 | 15877.7 | 22877.7 | 25094.2 | 26836.1 | 26987.0 | 22755.7 | 4905.6 |
| 65°   | 3528.0  | 3729.6  | 4499.0  | 6076.6  | 9233.5  | 19031.2 | 24853.6 | 26088.9 | 26014.3 | 23392.9 | 6674.7 |
| 67.5° | 2092.7  | 2123.2  | 2506.2  | 3443.3  | 4890.4  | 10236.6 | 21932.2 | 25101.0 | 25001.0 | 20364.8 | 8304.9 |
| 70°   | 1648.8  | 1664.0  | 1786.0  | 2160.5  | 2838.3  | 3921.1  | 12517.4 | 21717.0 | 22152.5 | 16513.1 | 8130.3 |
| 72.5° | 1564.0  | 1560.7  | 1577.6  | 1643.7  | 1787.7  | 1945.3  | 4846.3  | 14435.6 | 15321.9 | 11892.2 | 6817.1 |
| 75°   | 1543.7  | 1536.9  | 1520.0  | 1494.6  | 1294.6  | 1145.5  | 1501.3  | 6385.0  | 6898.4  | 8125.2  | 5132.7 |
| 77.5° | 1498.0  | 1499.7  | 1503.0  | 1433.6  | 1109.9  | 810.0   | 726.9   | 2048.7  | 2519.8  | 5156.4  | 3648.3 |
| 80°   | 1013.3  | 1028.6  | 1054.0  | 1026.9  | 998.1   | 586.3   | 513.4   | 728.6   | 738.8   | 2894.2  | 2409.6 |
| 82.5° | 513.4   | 513.4   | 501.6   | 447.4   | 386.4   | 381.3   | 408.4   | 528.7   | 535.5   | 1464.1  | 1133.6 |
| 85°   | 310.1   | 327.0   | 333.8   | 303.3   | 277.9   | 255.9   | 311.8   | 420.2   | 435.5   | 567.7   | 264.3  |
| 87.5° | 69.5    | 71.2    | 77.9    | 103.4   | 150.8   | 205.0   | 289.8   | 384.7   | 391.4   | 364.3   | 32.2   |
| 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: P1063862

CATALOG NUMBER: GLAN-SA7B-950-U-T2BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 150.8  | 150.8 | 150.8 | 150.8 | 150.8 | 150.8 | 150.8 | 150.8 | 150.8 | 150.8 | 150.8 |
| 2.5°  | 152.5  | 149.1 | 147.4 | 142.3 | 137.3 | 132.2 | 128.8 | 127.1 | 128.8 | 130.5 | 130.5 |
| 5°    | 150.8  | 145.7 | 137.3 | 128.8 | 122.0 | 115.2 | 108.4 | 106.8 | 106.8 | 108.4 | 108.4 |
| 7.5°  | 150.8  | 142.3 | 130.5 | 120.3 | 110.1 | 100.0 | 94.9  | 91.5  | 93.2  | 93.2  | 93.2  |
| 10°   | 150.8  | 140.6 | 125.4 | 110.1 | 98.3  | 86.4  | 77.9  | 74.6  | 74.6  | 74.6  | 74.6  |
| 12.5° | 149.1  | 139.0 | 120.3 | 101.7 | 84.7  | 71.2  | 61.0  | 55.9  | 57.6  | 57.6  | 57.6  |
| 15°   | 145.7  | 133.9 | 113.5 | 86.4  | 67.8  | 54.2  | 44.1  | 39.0  | 40.7  | 44.1  | 45.8  |
| 17.5° | 140.6  | 128.8 | 101.7 | 72.9  | 54.2  | 40.7  | 30.5  | 27.1  | 28.8  | 33.9  | 33.9  |
| 20°   | 139.0  | 123.7 | 89.8  | 59.3  | 40.7  | 28.8  | 20.3  | 16.9  | 18.6  | 25.4  | 27.1  |
| 22.5° | 139.0  | 120.3 | 81.3  | 49.1  | 30.5  | 18.6  | 11.9  | 6.8   | 6.8   | 11.9  | 11.9  |
| 25°   | 140.6  | 118.6 | 74.6  | 40.7  | 22.0  | 13.6  | 6.8   | 3.4   | 6.8   | 18.6  | 22.0  |
| 27.5° | 144.0  | 116.9 | 71.2  | 33.9  | 16.9  | 11.9  | 5.1   | 11.9  | 20.3  | 20.3  | 20.3  |
| 30°   | 147.4  | 113.5 | 66.1  | 28.8  | 15.3  | 8.5   | 8.5   | 16.9  | 16.9  | 20.3  | 22.0  |
| 32.5° | 152.5  | 111.8 | 62.7  | 25.4  | 11.9  | 6.8   | 11.9  | 10.2  | 10.2  | 11.9  | 13.6  |
| 35°   | 162.7  | 113.5 | 59.3  | 25.4  | 11.9  | 8.5   | 10.2  | 5.1   | 3.4   | 3.4   | 3.4   |
| 37.5° | 176.2  | 115.2 | 54.2  | 22.0  | 10.2  | 10.2  | 5.1   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 198.3  | 120.3 | 50.8  | 20.3  | 8.5   | 8.5   | 1.7   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 235.5  | 130.5 | 49.1  | 18.6  | 8.5   | 6.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 310.1  | 154.2 | 45.8  | 16.9  | 8.5   | 3.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 445.7  | 210.1 | 44.1  | 13.6  | 5.1   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 650.7  | 284.7 | 42.4  | 11.9  | 1.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 830.3  | 299.9 | 28.8  | 10.2  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 850.7  | 206.7 | 22.0  | 6.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 677.8  | 133.9 | 18.6  | 5.1   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 513.4  | 101.7 | 16.9  | 1.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 61°   | 493.1  | 91.5  | 16.9  | 1.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 543.9  | 79.6  | 15.3  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 884.5  | 66.1  | 13.6  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 1536.9 | 57.6  | 11.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 1941.9 | 54.2  | 10.2  | 1.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1692.8 | 49.1  | 10.2  | 3.4   | 1.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 1018.4 | 42.4  | 10.2  | 6.8   | 3.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 533.8  | 32.2  | 10.2  | 8.5   | 5.1   | 1.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 259.3  | 28.8  | 11.9  | 8.5   | 6.8   | 3.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 101.7  | 23.7  | 13.6  | 11.9  | 8.5   | 5.1   | 1.7   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 45.8   | 20.3  | 15.3  | 13.6  | 11.9  | 6.8   | 1.7   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 23.7   | 18.6  | 16.9  | 15.3  | 11.9  | 8.5   | 3.4   | 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: SP1-2407-184-17

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-950-U-5WQ

Data in this report applies to families of products including GSS-SB1A-950-U-5WQ

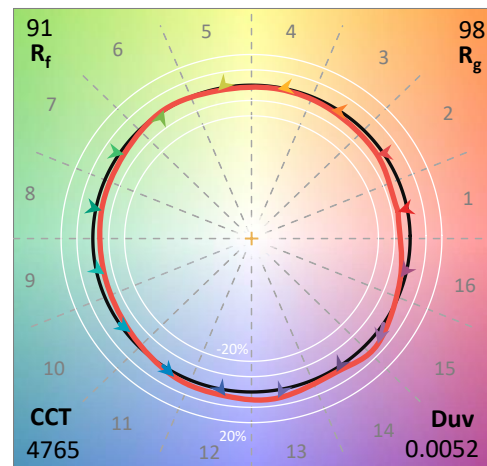
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-17  
 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-950-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI  
 5000K CCT 26 LEDS

### Spectral Parameters

CCT (K): 4765  
 CIE  $u'$ : 0.2105  
 CIE  $v'$ : 0.4941  
 Duv: 0.0052  
 CIE x: 0.3536  
 CIE y: 0.3689  
 CIE z: 0.2775  
 Peak Wavelength (nm): 449  
 Dominant Wavelength (nm): 571  
 Purity: 16.80041  
 R<sub>f</sub>: 90.7  
 R<sub>g</sub>: 98

CRI (Ra): 90.8  
 R1: 89.8  
 R2: 93.1  
 R3: 95.3  
 R4: 90.3  
 R5: 89.0  
 R6: 89.7  
 R7: 94.9  
 R8: 84.0  
 R9: 54.9  
 R10: 83.0  
 R11: 89.6  
 R12: 68.0  
 R13: 90.6  
 R14: 97.3  
 R15: 86.2



### Test Conditions

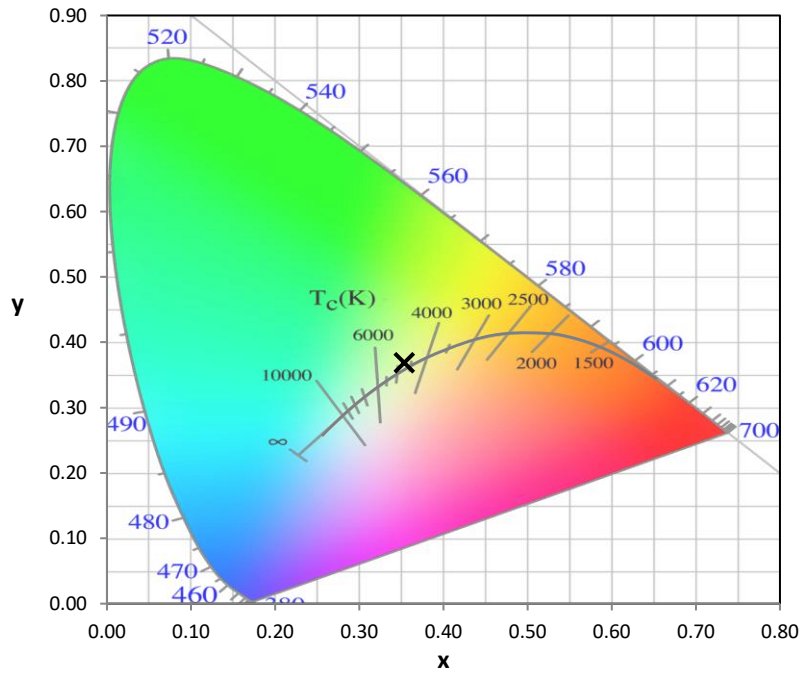
Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-17

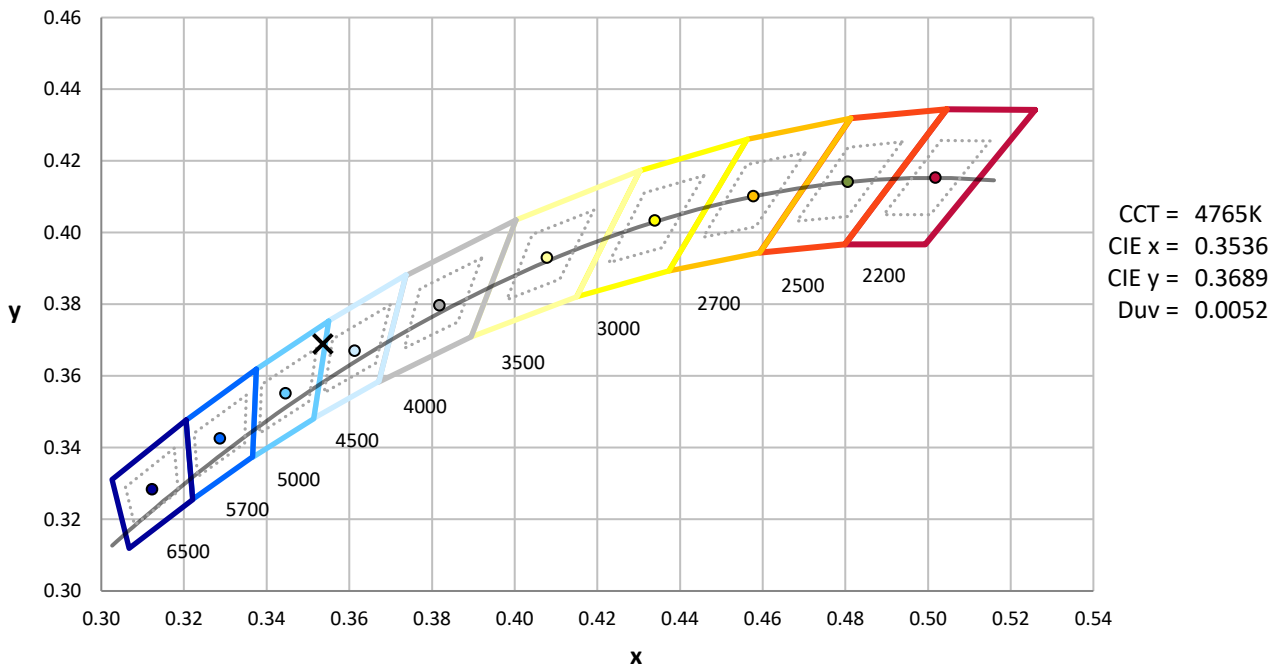
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



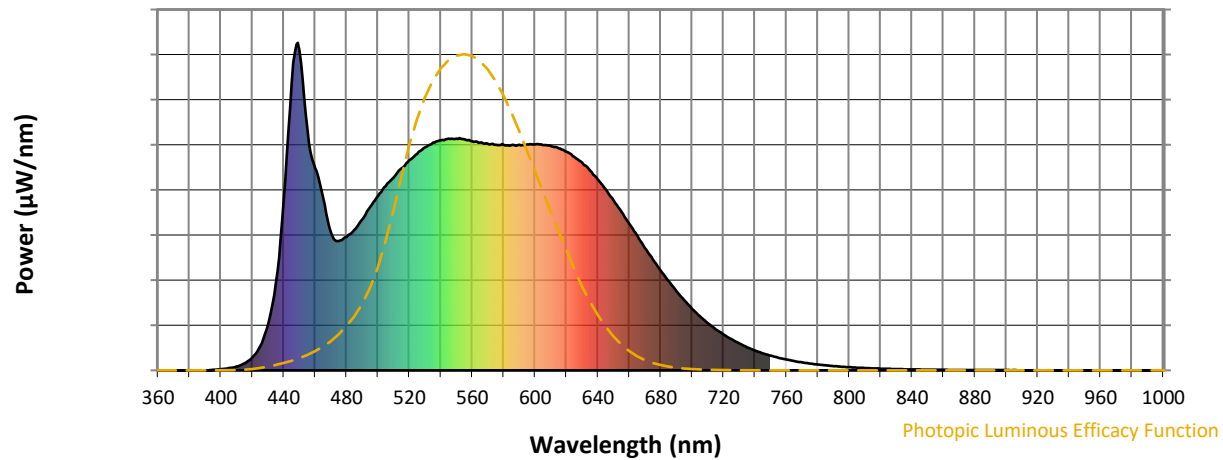
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 7-step quadrangle

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### Photopic Flux vs. Wavelength

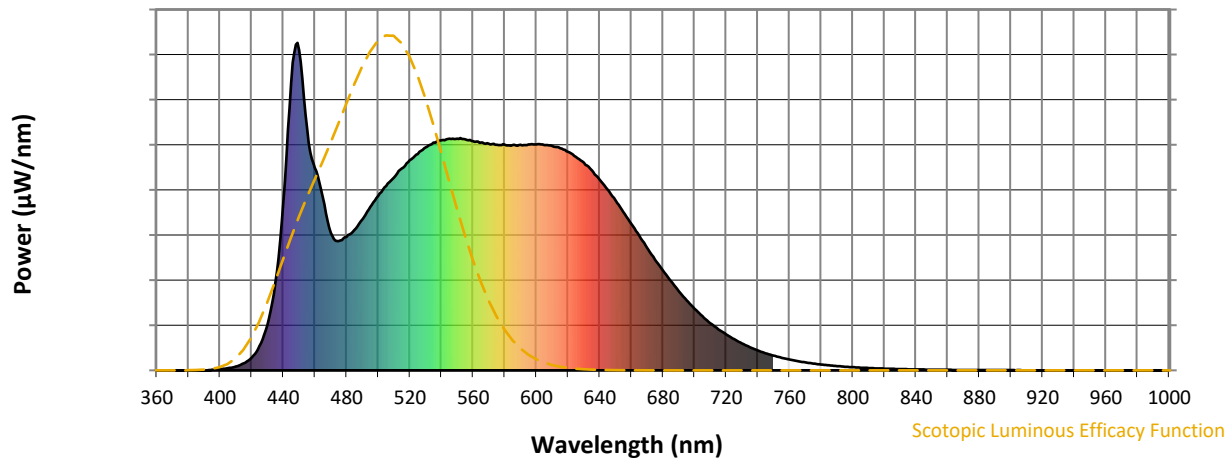


### Photopic Lumens: NR

| $\lambda$<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               | 462                                  | NR                             | 620               | 668                                  | NR                             | 750               | 45                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 498                                  | NR                             | 625               | 652                                  | NR                             | 755               | 39                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 533                                  | NR                             | 630               | 634                                  | NR                             | 760               | 33                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 562                                  | NR                             | 635               | 610                                  | NR                             | 765               | 28                                   | NR                             | 895               | 1                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 590                                  | NR                             | 640               | 583                                  | NR                             | 770               | 24                                   | NR                             | 900               | 1                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 617                                  | NR                             | 645               | 552                                  | NR                             | 775               | 21                                   | NR                             | 905               | 1                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 642                                  | NR                             | 650               | 519                                  | NR                             | 780               | 18                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 2                                    | NR                             | 525               | 661                                  | NR                             | 655               | 484                                  | NR                             | 785               | 15                                   | NR                             | 915               | 0                                    | NR                             |
| 400               | 4                                    | NR                             | 530               | 681                                  | NR                             | 660               | 448                                  | NR                             | 790               | 13                                   | NR                             | 920               | 0                                    | NR                             |
| 405               | 7                                    | NR                             | 535               | 695                                  | NR                             | 665               | 411                                  | NR                             | 795               | 11                                   | NR                             | 925               | 0                                    | NR                             |
| 410               | 12                                   | NR                             | 540               | 702                                  | NR                             | 670               | 373                                  | NR                             | 800               | 10                                   | NR                             | 930               | 0                                    | NR                             |
| 415               | 21                                   | NR                             | 545               | 708                                  | NR                             | 675               | 338                                  | NR                             | 805               | 8                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 39                                   | NR                             | 550               | 707                                  | NR                             | 680               | 305                                  | NR                             | 810               | 7                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 74                                   | NR                             | 555               | 706                                  | NR                             | 685               | 272                                  | NR                             | 815               | 6                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 139                                  | NR                             | 560               | 700                                  | NR                             | 690               | 243                                  | NR                             | 820               | 5                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 270                                  | NR                             | 565               | 696                                  | NR                             | 695               | 214                                  | NR                             | 825               | 5                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 517                                  | NR                             | 570               | 692                                  | NR                             | 700               | 188                                  | NR                             | 830               | 4                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 877                                  | NR                             | 575               | 689                                  | NR                             | 705               | 165                                  | NR                             | 835               | 3                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 978                                  | NR                             | 580               | 688                                  | NR                             | 710               | 144                                  | NR                             | 840               | 3                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 738                                  | NR                             | 585               | 688                                  | NR                             | 715               | 125                                  | NR                             | 845               | 3                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 618                                  | NR                             | 590               | 689                                  | NR                             | 720               | 110                                  | NR                             | 850               | 2                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 529                                  | NR                             | 595               | 690                                  | NR                             | 725               | 95                                   | NR                             | 855               | 2                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 420                                  | NR                             | 600               | 690                                  | NR                             | 730               | 82                                   | NR                             | 860               | 2                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 395                                  | NR                             | 605               | 688                                  | NR                             | 735               | 71                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 408                                  | NR                             | 610               | 685                                  | NR                             | 740               | 61                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 429                                  | NR                             | 615               | 678                                  | NR                             | 745               | 52                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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### Scotopic Flux vs. Wavelength



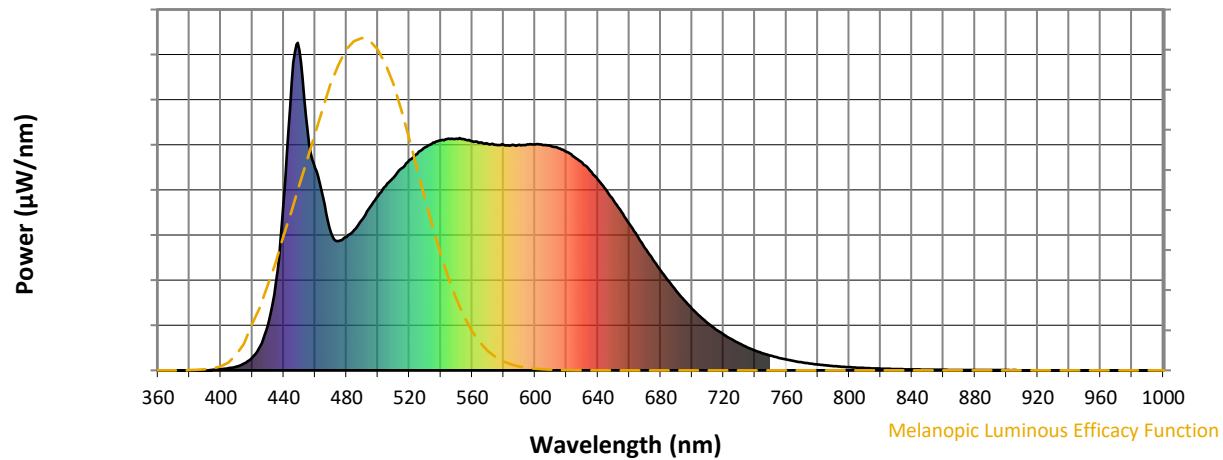
Scotopic Lumens: NR

S/P: 1.99

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 462                      | NR            | 620    | 668                      | NR            | 750    | 45                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 498                      | NR            | 625    | 652                      | NR            | 755    | 39                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 533                      | NR            | 630    | 634                      | NR            | 760    | 33                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 562                      | NR            | 635    | 610                      | NR            | 765    | 28                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 590                      | NR            | 640    | 583                      | NR            | 770    | 24                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 617                      | NR            | 645    | 552                      | NR            | 775    | 21                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 642                      | NR            | 650    | 519                      | NR            | 780    | 18                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 661                      | NR            | 655    | 484                      | NR            | 785    | 15                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 681                      | NR            | 660    | 448                      | NR            | 790    | 13                       | NR            | 920    | 0                        | NR            |
| 405    | 7                        | NR            | 535    | 695                      | NR            | 665    | 411                      | NR            | 795    | 11                       | NR            | 925    | 0                        | NR            |
| 410    | 12                       | NR            | 540    | 702                      | NR            | 670    | 373                      | NR            | 800    | 10                       | NR            | 930    | 0                        | NR            |
| 415    | 21                       | NR            | 545    | 708                      | NR            | 675    | 338                      | NR            | 805    | 8                        | NR            | 935    | 0                        | NR            |
| 420    | 39                       | NR            | 550    | 707                      | NR            | 680    | 305                      | NR            | 810    | 7                        | NR            | 940    | 0                        | NR            |
| 425    | 74                       | NR            | 555    | 706                      | NR            | 685    | 272                      | NR            | 815    | 6                        | NR            | 945    | 0                        | NR            |
| 430    | 139                      | NR            | 560    | 700                      | NR            | 690    | 243                      | NR            | 820    | 5                        | NR            | 950    | 0                        | NR            |
| 435    | 270                      | NR            | 565    | 696                      | NR            | 695    | 214                      | NR            | 825    | 5                        | NR            | 955    | 0                        | NR            |
| 440    | 517                      | NR            | 570    | 692                      | NR            | 700    | 188                      | NR            | 830    | 4                        | NR            | 960    | 0                        | NR            |
| 445    | 877                      | NR            | 575    | 689                      | NR            | 705    | 165                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 978                      | NR            | 580    | 688                      | NR            | 710    | 144                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 738                      | NR            | 585    | 688                      | NR            | 715    | 125                      | NR            | 845    | 3                        | NR            | 975    | 0                        | NR            |
| 460    | 618                      | NR            | 590    | 689                      | NR            | 720    | 110                      | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 529                      | NR            | 595    | 690                      | NR            | 725    | 95                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 420                      | NR            | 600    | 690                      | NR            | 730    | 82                       | NR            | 860    | 2                        | NR            | 990    | 0                        | NR            |
| 475    | 395                      | NR            | 605    | 688                      | NR            | 735    | 71                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 408                      | NR            | 610    | 685                      | NR            | 740    | 61                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 429                      | NR            | 615    | 678                      | NR            | 745    | 52                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 4.22

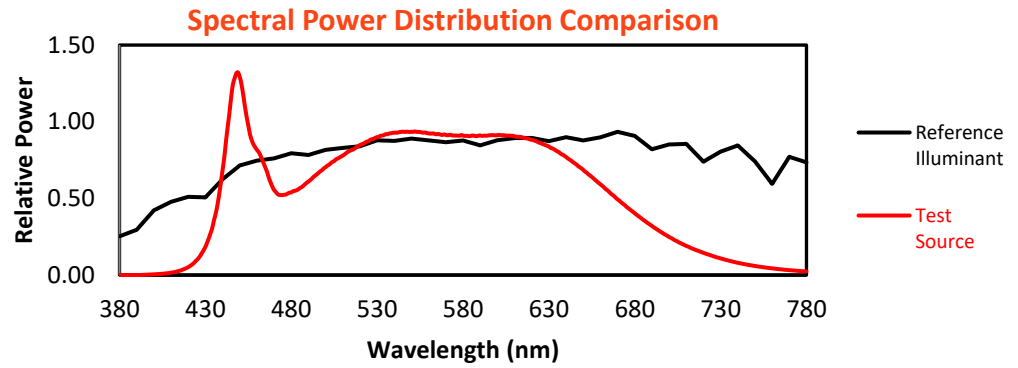
| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 462                         | NR               | 620       | 668                         | NR               | 750       | 45                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 498                         | NR               | 625       | 652                         | NR               | 755       | 39                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 533                         | NR               | 630       | 634                         | NR               | 760       | 33                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 562                         | NR               | 635       | 610                         | NR               | 765       | 28                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 590                         | NR               | 640       | 583                         | NR               | 770       | 24                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 617                         | NR               | 645       | 552                         | NR               | 775       | 21                          | NR               | 905       | 1                           | NR               |
| 390       | 0                           | NR               | 520       | 642                         | NR               | 650       | 519                         | NR               | 780       | 18                          | NR               | 910       | 0                           | NR               |
| 395       | 2                           | NR               | 525       | 661                         | NR               | 655       | 484                         | NR               | 785       | 15                          | NR               | 915       | 0                           | NR               |
| 400       | 4                           | NR               | 530       | 681                         | NR               | 660       | 448                         | NR               | 790       | 13                          | NR               | 920       | 0                           | NR               |
| 405       | 7                           | NR               | 535       | 695                         | NR               | 665       | 411                         | NR               | 795       | 11                          | NR               | 925       | 0                           | NR               |
| 410       | 12                          | NR               | 540       | 702                         | NR               | 670       | 373                         | NR               | 800       | 10                          | NR               | 930       | 0                           | NR               |
| 415       | 21                          | NR               | 545       | 708                         | NR               | 675       | 338                         | NR               | 805       | 8                           | NR               | 935       | 0                           | NR               |
| 420       | 39                          | NR               | 550       | 707                         | NR               | 680       | 305                         | NR               | 810       | 7                           | NR               | 940       | 0                           | NR               |
| 425       | 74                          | NR               | 555       | 706                         | NR               | 685       | 272                         | NR               | 815       | 6                           | NR               | 945       | 0                           | NR               |
| 430       | 139                         | NR               | 560       | 700                         | NR               | 690       | 243                         | NR               | 820       | 5                           | NR               | 950       | 0                           | NR               |
| 435       | 270                         | NR               | 565       | 696                         | NR               | 695       | 214                         | NR               | 825       | 5                           | NR               | 955       | 0                           | NR               |
| 440       | 517                         | NR               | 570       | 692                         | NR               | 700       | 188                         | NR               | 830       | 4                           | NR               | 960       | 0                           | NR               |
| 445       | 877                         | NR               | 575       | 689                         | NR               | 705       | 165                         | NR               | 835       | 3                           | NR               | 965       | 0                           | NR               |
| 450       | 978                         | NR               | 580       | 688                         | NR               | 710       | 144                         | NR               | 840       | 3                           | NR               | 970       | 0                           | NR               |
| 455       | 738                         | NR               | 585       | 688                         | NR               | 715       | 125                         | NR               | 845       | 3                           | NR               | 975       | 0                           | NR               |
| 460       | 618                         | NR               | 590       | 689                         | NR               | 720       | 110                         | NR               | 850       | 2                           | NR               | 980       | 0                           | NR               |
| 465       | 529                         | NR               | 595       | 690                         | NR               | 725       | 95                          | NR               | 855       | 2                           | NR               | 985       | 0                           | NR               |
| 470       | 420                         | NR               | 600       | 690                         | NR               | 730       | 82                          | NR               | 860       | 2                           | NR               | 990       | 0                           | NR               |
| 475       | 395                         | NR               | 605       | 688                         | NR               | 735       | 71                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 408                         | NR               | 610       | 685                         | NR               | 740       | 61                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 429                         | NR               | 615       | 678                         | NR               | 745       | 52                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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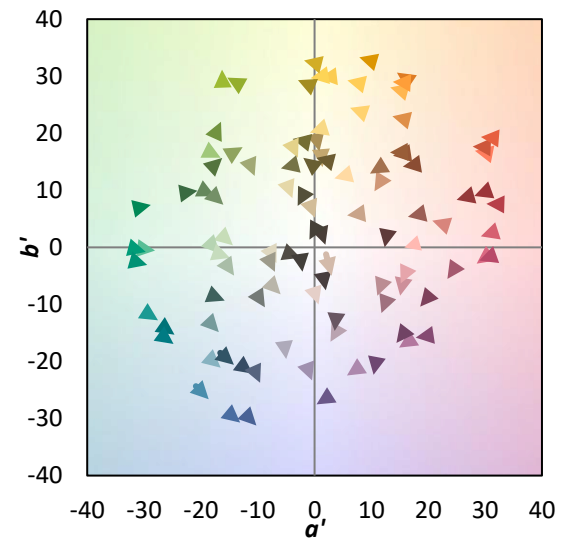
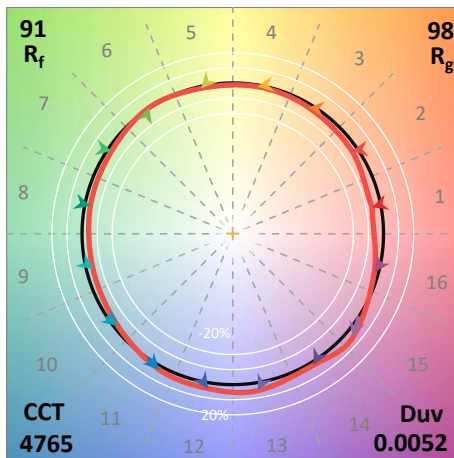
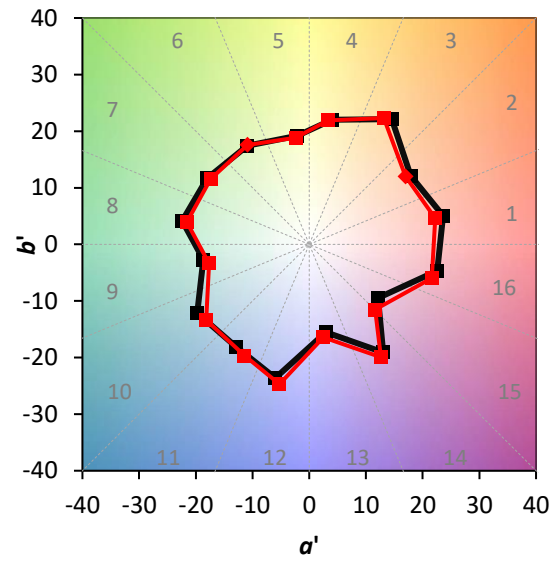
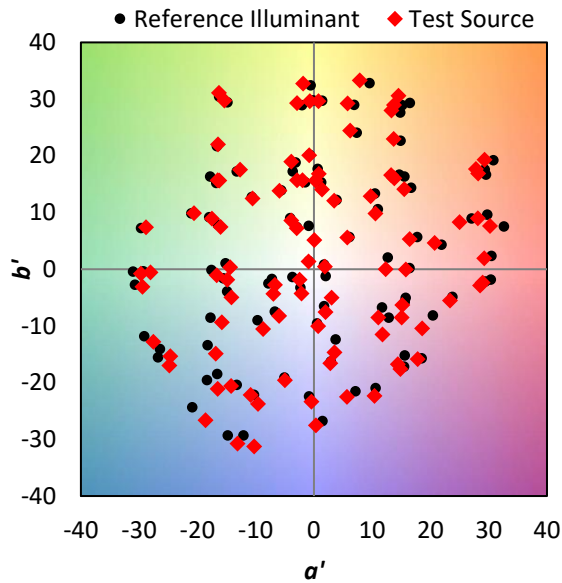
TM-30-18

### Summary

$R_f = 90.7$   
 $R_g = 98$   
 $CIE R_a = 90.8$   
 $R_9 = 54.9$



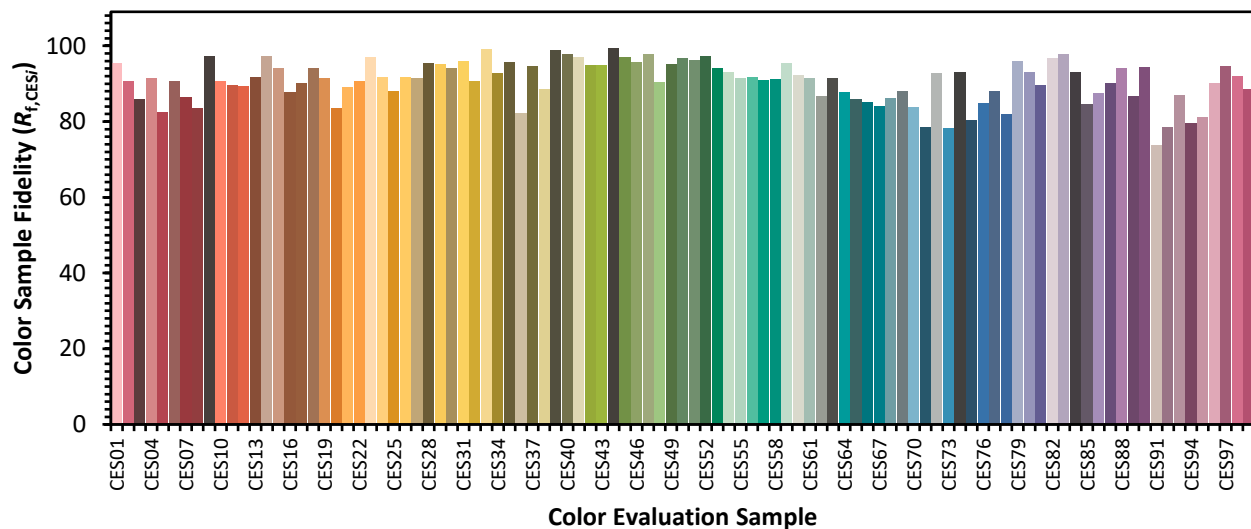
### Color Vector Graphics



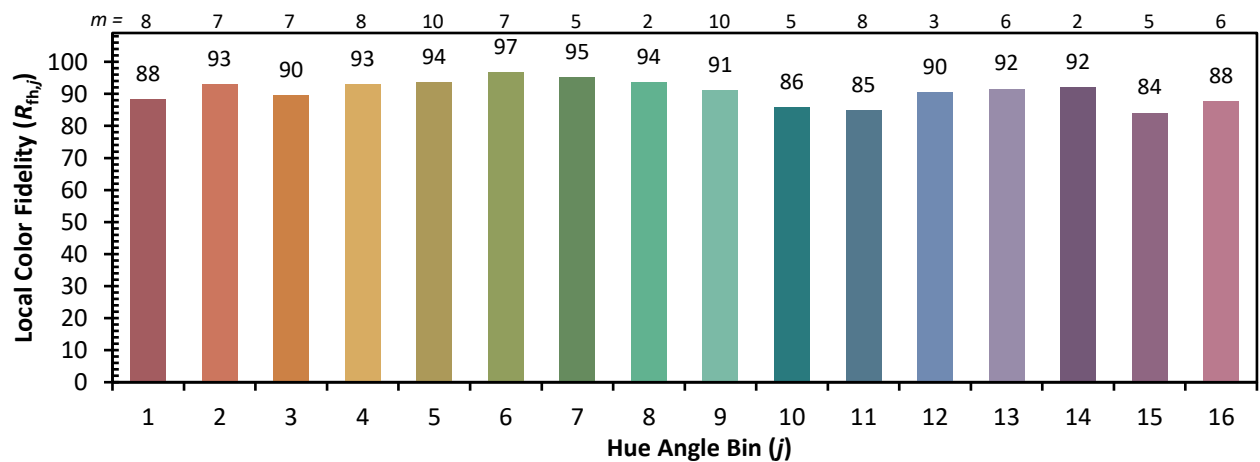
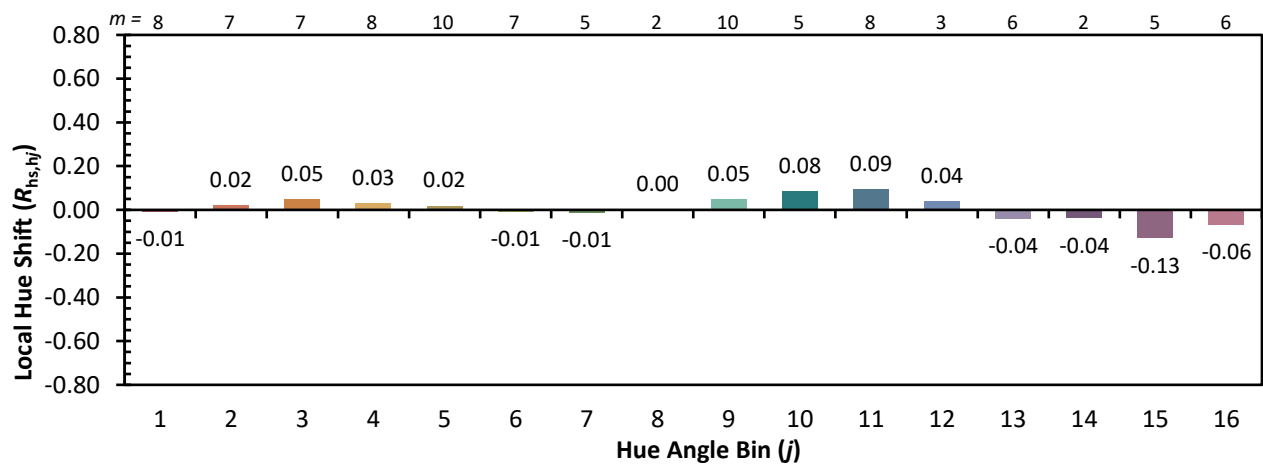
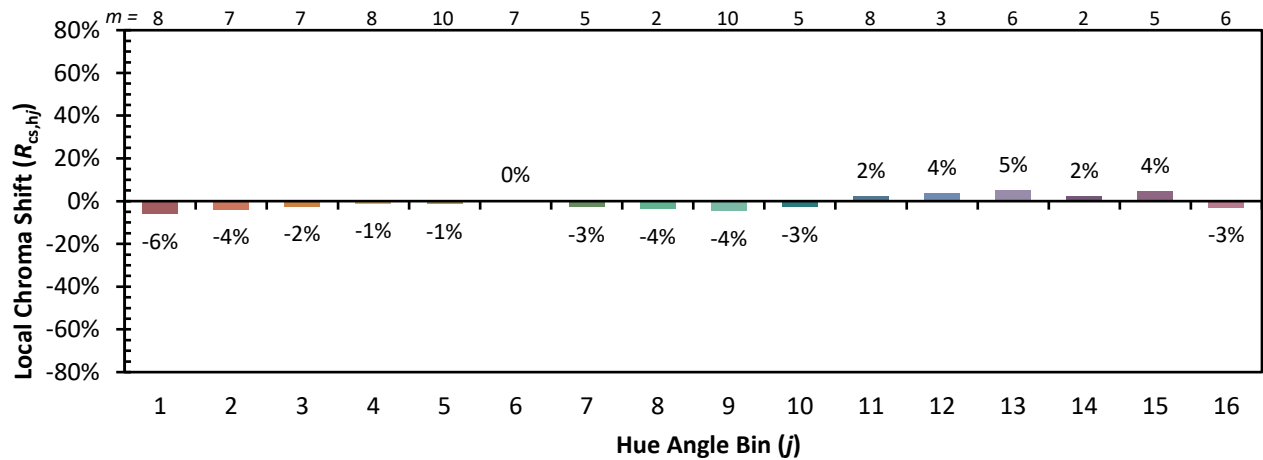


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

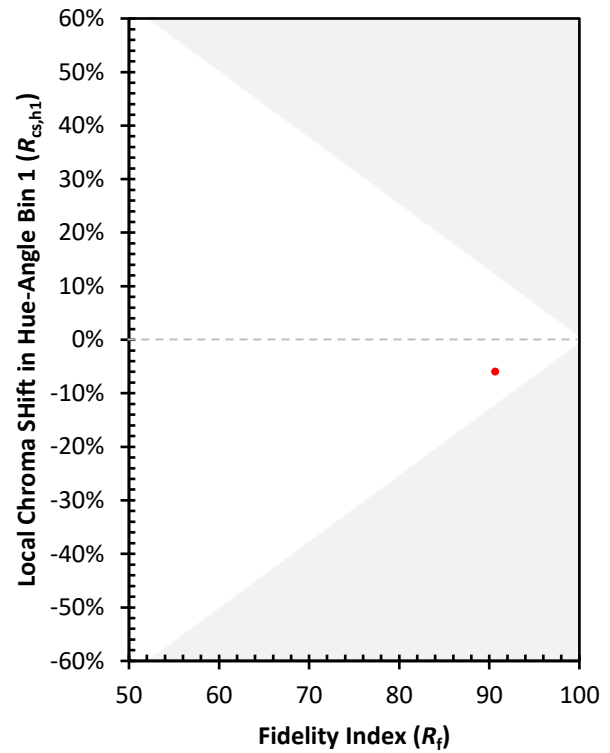
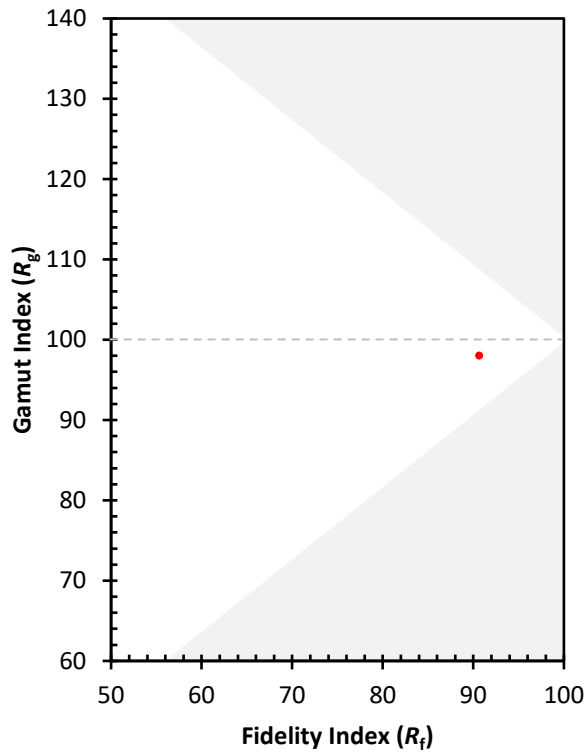
|            |             |            |            |
|------------|-------------|------------|------------|
| CES01 = 85 | CES26 = 92  | CES51 = 96 | CES76 = 85 |
| CES02 = 60 | CES27 = 92  | CES52 = 97 | CES77 = 88 |
| CES03 = 31 | CES28 = 95  | CES53 = 94 | CES78 = 82 |
| CES04 = 69 | CES29 = 95  | CES54 = 93 | CES79 = 96 |
| CES05 = 48 | CES30 = 94  | CES55 = 92 | CES80 = 93 |
| CES06 = 50 | CES31 = 96  | CES56 = 92 | CES81 = 89 |
| CES07 = 41 | CES32 = 91  | CES57 = 91 | CES82 = 97 |
| CES08 = 40 | CES33 = 99  | CES58 = 91 | CES83 = 98 |
| CES09 = 29 | CES34 = 93  | CES59 = 95 | CES84 = 93 |
| CES10 = 73 | CES35 = 96  | CES60 = 92 | CES85 = 85 |
| CES11 = 56 | CES36 = 82  | CES61 = 92 | CES86 = 88 |
| CES12 = 62 | CES37 = 95  | CES62 = 87 | CES87 = 90 |
| CES13 = 42 | CES38 = 89  | CES63 = 91 | CES88 = 94 |
| CES14 = 74 | CES39 = 99  | CES64 = 88 | CES89 = 87 |
| CES15 = 71 | CES40 = 98  | CES65 = 86 | CES90 = 94 |
| CES16 = 46 | CES41 = 97  | CES66 = 85 | CES91 = 74 |
| CES17 = 48 | CES42 = 95  | CES67 = 84 | CES92 = 78 |
| CES18 = 56 | CES43 = 95  | CES68 = 86 | CES93 = 87 |
| CES19 = 70 | CES44 = 100 | CES69 = 88 | CES94 = 80 |
| CES20 = 65 | CES45 = 97  | CES70 = 84 | CES95 = 81 |
| CES21 = 85 | CES46 = 96  | CES71 = 79 | CES96 = 90 |
| CES22 = 77 | CES47 = 98  | CES72 = 93 | CES97 = 95 |
| CES23 = 91 | CES48 = 90  | CES73 = 78 | CES98 = 92 |
| CES24 = 90 | CES49 = 95  | CES74 = 93 | CES99 = 88 |
| CES25 = 70 | CES50 = 97  | CES75 = 80 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)