

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: P1063113

Luminaire Tested: **GLAN-SA9A-927-U-T3BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1063113  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: GLAN-SA9A-927-U-T3BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 615mA 9xLight Square PACKAGE  
90CRI 2700K FIXTURE w/ TYPE III ANGLED BACKLIGHT CONTROL  
Light Source: (126) 2700K CCT, 90 CRI LEDs  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 21090.2 lumens  
Efficiency: N/A  
Efficacy: 86.2 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B0 - U0 - G4

Input Watts (W): 244.6  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

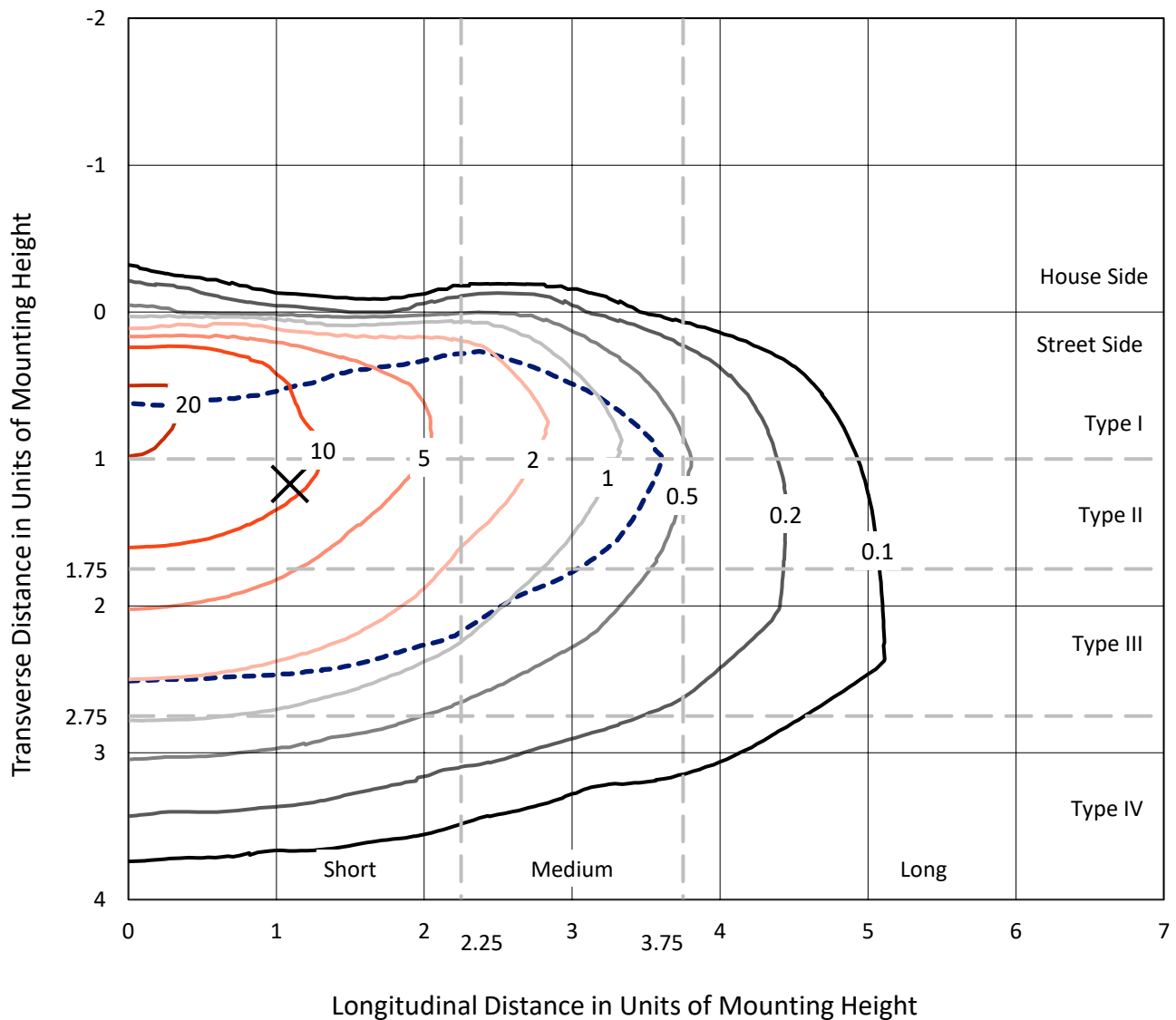


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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

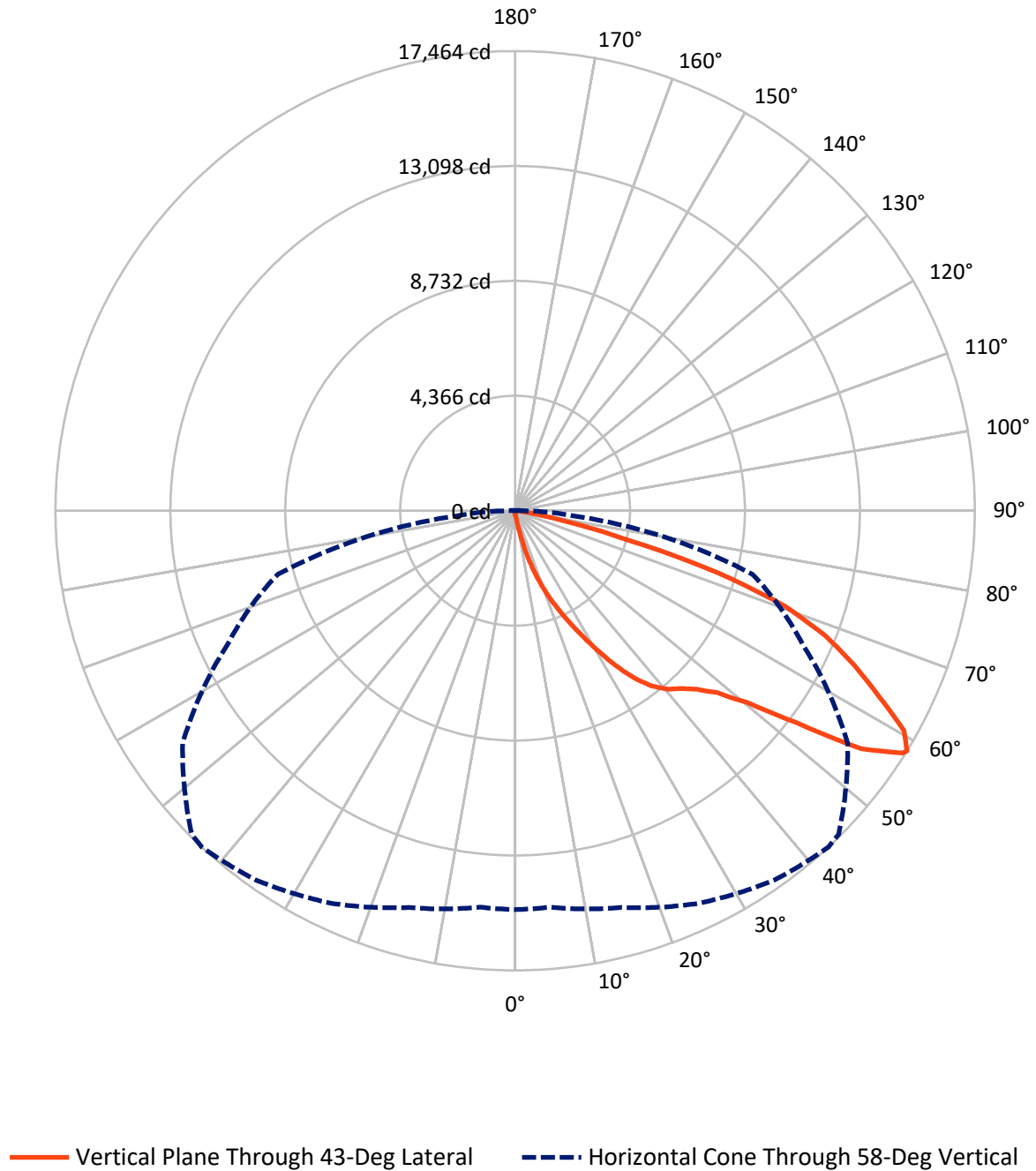


Based on 15 foot mounting height. Maximum calculated value = 23.7 fc  
 Type III - Short - N/A

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CATALOG NUMBER: GLAN-SA9A-927-U-T3BC

## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 77.0     | 0.0    | 77.0    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 21013.2  | 0.0    | 21013.2 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 21090.2  | 0.0    | 21090.2 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 20.2    | 0.1       |
| 10°-20°   | 242.4   | 1.1       |
| 20°-30°   | 873.8   | 4.1       |
| 30°-40°   | 1999.2  | 9.5       |
| 40°-50°   | 3371.9  | 16.0      |
| 50°-60°   | 5564.4  | 26.4      |
| 60°-70°   | 6219.0  | 29.5      |
| 70°-80°   | 2567.7  | 12.2      |
| 80°-90°   | 231.5   | 1.1       |
| 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°    | 21090.2 | 100.0     |
| 0°-180°   | 21090.2 | 100.0     |



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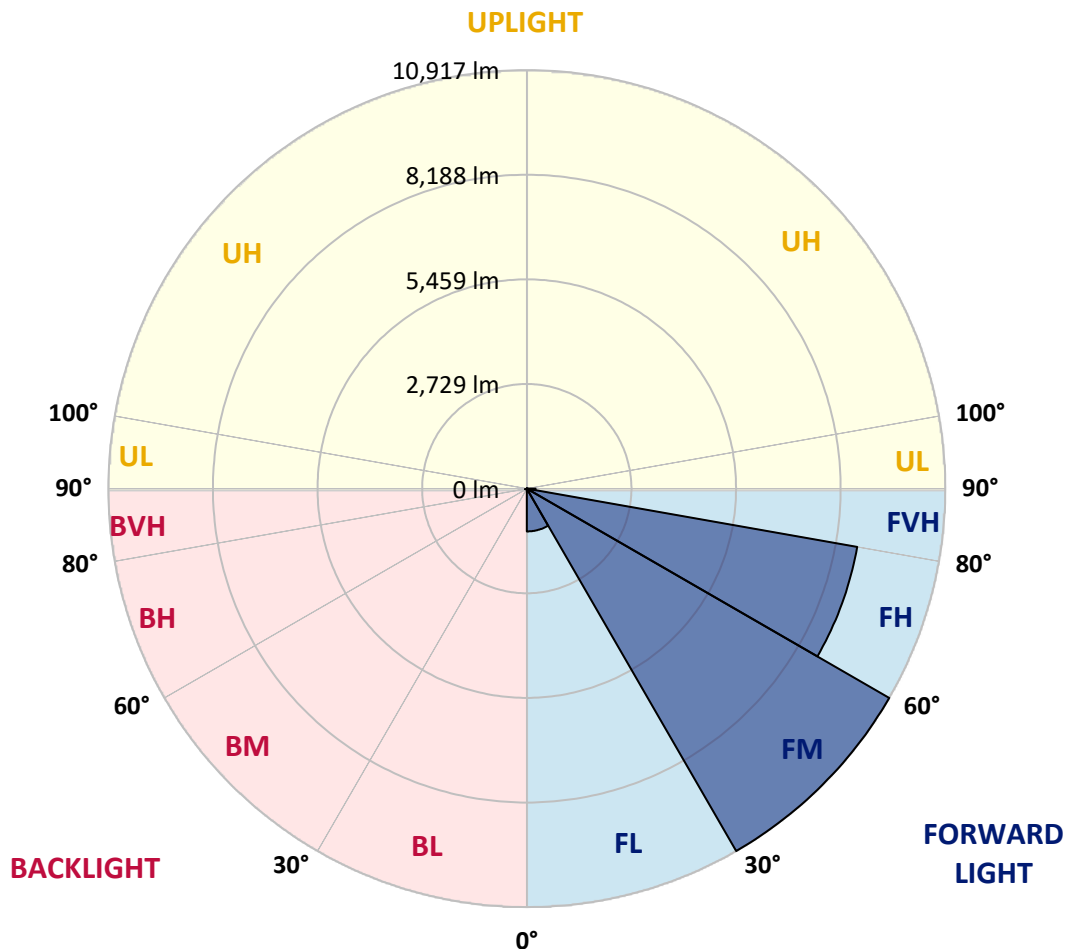
CATALOG NUMBER: GLAN-SA9A-927-U-T3BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|---------|-----------|-------------------------|------|----------|
|      |             |         |           | B                       | U    | G        |
| FL   | (0°-30°)    | 1116.3  | 5.3       |                         |      |          |
| FM   | (30°-60°)   | 10917.1 | 51.8      |                         |      |          |
| FH   | (60°-80°)   | 8751.4  | 41.5      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 228.3   | 1.1       |                         |      | G3/500   |
| BL   | (0°-30°)    | 20.1    | 0.1       | B0/110                  |      |          |
| BM   | (30°-60°)   | 18.5    | 0.1       | B0/220                  |      |          |
| BH   | (60°-80°)   | 35.3    | 0.2       | B0/110                  |      | G0/110   |
| BVH  | (80°-90°)   | 3.2     | 0.0       |                         |      | G0/10    |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |          |

**BUG Rating: B0-U0-G4**

Type III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 43°     | 45°     | 55°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 137.9   | 137.9   | 137.9   | 137.9   | 137.9   | 137.9   | 137.9   | 137.9   | 137.9   | 137.9   | 137.9  |
| 2.5°  | 165.5   | 171.0   | 165.5   | 165.5   | 165.5   | 160.0   | 160.0   | 154.4   | 154.4   | 148.9   | 143.4  |
| 5°    | 242.7   | 242.7   | 226.2   | 215.1   | 204.1   | 198.6   | 193.1   | 182.0   | 171.0   | 160.0   | 148.9  |
| 7.5°  | 540.6   | 540.6   | 490.9   | 424.7   | 336.5   | 286.8   | 275.8   | 226.2   | 193.1   | 171.0   | 148.9  |
| 10°   | 1290.7  | 1290.7  | 1180.4  | 998.4   | 772.2   | 573.7   | 513.0   | 325.4   | 231.7   | 182.0   | 154.4  |
| 12.5° | 2145.7  | 2173.3  | 2035.4  | 1803.7  | 1467.2  | 1119.7  | 998.4   | 595.7   | 308.9   | 198.6   | 154.4  |
| 15°   | 2912.4  | 2846.2  | 2807.6  | 2587.0  | 2267.1  | 1853.4  | 1698.9  | 1003.9  | 446.8   | 226.2   | 154.4  |
| 17.5° | 3430.9  | 3430.9  | 3375.8  | 3226.8  | 2934.5  | 2570.4  | 2443.6  | 1621.7  | 722.6   | 259.2   | 160.0  |
| 20°   | 4037.7  | 4037.7  | 3938.4  | 3833.6  | 3574.3  | 3265.4  | 3144.1  | 2305.7  | 1119.7  | 331.0   | 160.0  |
| 22.5° | 4771.3  | 4782.3  | 4672.0  | 4484.5  | 4236.3  | 3894.3  | 3789.5  | 2940.0  | 1621.7  | 441.3   | 165.5  |
| 25°   | 5664.9  | 5675.9  | 5516.0  | 5339.4  | 4958.8  | 4589.3  | 4429.3  | 3668.1  | 2234.0  | 617.8   | 165.5  |
| 27.5° | 6652.2  | 6729.5  | 6492.3  | 6188.9  | 5786.2  | 5322.9  | 5201.5  | 4324.5  | 2840.7  | 871.5   | 176.5  |
| 30°   | 7882.3  | 7882.3  | 7567.9  | 7143.2  | 6707.4  | 6133.7  | 5979.3  | 5014.0  | 3486.1  | 1208.0  | 187.5  |
| 32.5° | 8941.4  | 8858.6  | 8456.0  | 8009.2  | 7545.8  | 7010.8  | 6845.3  | 5736.6  | 4148.0  | 1627.2  | 209.6  |
| 35°   | 9752.2  | 9680.5  | 9184.1  | 8704.2  | 8301.5  | 7810.6  | 7612.0  | 6519.9  | 4848.5  | 2101.6  | 242.7  |
| 37.5° | 10447.2 | 10419.6 | 9746.7  | 9145.5  | 8880.7  | 8450.4  | 8273.9  | 7259.0  | 5538.0  | 2614.6  | 281.3  |
| 40°   | 11208.4 | 11120.2 | 10403.1 | 9658.4  | 9261.3  | 8913.8  | 8753.8  | 7854.7  | 6199.9  | 3215.8  | 336.5  |
| 42.5° | 11859.3 | 11754.5 | 11109.1 | 10381.0 | 9702.6  | 9233.7  | 9079.3  | 8356.7  | 6845.3  | 3817.0  | 408.2  |
| 45°   | 12581.9 | 12526.7 | 11875.8 | 11324.3 | 10419.6 | 9669.5  | 9465.4  | 8759.3  | 7435.5  | 4534.1  | 502.0  |
| 47.5° | 13668.5 | 13569.2 | 12962.5 | 12510.2 | 11462.2 | 10331.4 | 10039.0 | 9173.0  | 8003.6  | 5240.2  | 645.4  |
| 50°   | 14931.7 | 14865.5 | 14507.0 | 14148.4 | 13105.9 | 11462.2 | 11114.6 | 9768.8  | 8638.0  | 6078.6  | 832.9  |
| 52.5° | 15963.2 | 15952.1 | 15996.3 | 16001.8 | 15213.0 | 13365.2 | 12846.7 | 10728.5 | 9366.1  | 6906.0  | 1097.7 |
| 55°   | 15941.1 | 15990.7 | 16476.2 | 17033.3 | 17093.9 | 15963.2 | 15461.2 | 12344.7 | 10314.8 | 7926.4  | 1467.2 |
| 57.5° | 15345.4 | 15306.8 | 15819.8 | 16658.2 | 17248.4 | 17369.7 | 17287.0 | 14854.5 | 11743.5 | 9156.5  | 2035.4 |
| 58°   | 15152.3 | 15119.2 | 15604.6 | 16459.6 | 17138.1 | 17463.5 | 17380.8 | 15422.6 | 12063.4 | 9333.0  | 2189.8 |
| 60°   | 14451.8 | 14457.3 | 14744.1 | 15521.9 | 16200.4 | 16972.6 | 17049.8 | 17044.3 | 13657.5 | 10513.4 | 2967.6 |
| 62.5° | 13525.1 | 13481.0 | 13745.8 | 14380.1 | 14975.8 | 15494.3 | 15626.7 | 17154.6 | 15990.7 | 12013.7 | 4451.4 |
| 65°   | 12245.4 | 12179.2 | 12460.5 | 13177.6 | 13817.5 | 14153.9 | 14159.5 | 15676.3 | 17088.4 | 13624.4 | 6569.5 |
| 67.5° | 9868.0  | 9812.9  | 10375.5 | 11296.7 | 12284.0 | 12725.3 | 12923.9 | 13602.3 | 16161.7 | 14716.6 | 7783.0 |
| 70°   | 6045.5  | 6161.3  | 6944.6  | 8389.8  | 10077.6 | 10888.5 | 11186.4 | 11396.0 | 13762.3 | 14551.1 | 6508.8 |
| 72.5° | 2791.1  | 2653.2  | 3320.6  | 4330.0  | 6255.1  | 8058.8  | 8367.7  | 9189.6  | 10910.6 | 12631.5 | 4854.0 |
| 75°   | 1301.8  | 1252.1  | 1406.6  | 1892.0  | 2835.2  | 4352.1  | 4914.7  | 7336.2  | 8367.7  | 8786.9  | 3502.6 |
| 77.5° | 667.4   | 672.9   | 799.8   | 860.5   | 1169.4  | 2013.3  | 2311.2  | 4826.5  | 6133.7  | 4903.7  | 2349.8 |
| 80°   | 292.3   | 303.4   | 308.9   | 336.5   | 474.4   | 777.7   | 877.0   | 2239.5  | 4192.1  | 2498.7  | 1285.2 |
| 82.5° | 187.5   | 193.1   | 193.1   | 193.1   | 226.2   | 308.9   | 353.0   | 899.1   | 2090.5  | 1241.1  | 397.1  |
| 85°   | 99.3    | 99.3    | 110.3   | 137.9   | 160.0   | 187.5   | 198.6   | 286.8   | 689.5   | 369.6   | 93.8   |
| 87.5° | 55.2    | 60.7    | 66.2    | 82.7    | 104.8   | 126.9   | 137.9   | 198.6   | 264.8   | 253.7   | 22.1   |
| 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: P1063113

CATALOG NUMBER: GLAN-SA9A-927-U-T3BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 137.9  | 137.9 | 137.9 | 137.9 | 137.9 | 137.9 | 137.9 | 137.9 | 137.9 | 137.9 | 137.9 |
| 2.5°  | 143.4  | 137.9 | 132.4 | 126.9 | 121.4 | 115.8 | 115.8 | 115.8 | 115.8 | 115.8 | 115.8 |
| 5°    | 137.9  | 132.4 | 126.9 | 115.8 | 104.8 | 99.3  | 93.8  | 88.3  | 88.3  | 88.3  | 88.3  |
| 7.5°  | 137.9  | 132.4 | 115.8 | 104.8 | 93.8  | 82.7  | 71.7  | 71.7  | 71.7  | 71.7  | 71.7  |
| 10°   | 137.9  | 126.9 | 110.3 | 93.8  | 77.2  | 66.2  | 60.7  | 55.2  | 55.2  | 55.2  | 55.2  |
| 12.5° | 137.9  | 121.4 | 104.8 | 82.7  | 66.2  | 55.2  | 49.6  | 44.1  | 44.1  | 44.1  | 44.1  |
| 15°   | 137.9  | 121.4 | 99.3  | 77.2  | 60.7  | 44.1  | 38.6  | 33.1  | 33.1  | 33.1  | 33.1  |
| 17.5° | 132.4  | 115.8 | 93.8  | 66.2  | 49.6  | 33.1  | 27.6  | 22.1  | 22.1  | 27.6  | 27.6  |
| 20°   | 126.9  | 110.3 | 82.7  | 55.2  | 38.6  | 27.6  | 16.5  | 16.5  | 16.5  | 16.5  | 16.5  |
| 22.5° | 126.9  | 110.3 | 77.2  | 49.6  | 33.1  | 16.5  | 11.0  | 11.0  | 11.0  | 11.0  | 16.5  |
| 25°   | 126.9  | 104.8 | 66.2  | 38.6  | 22.1  | 11.0  | 5.5   | 5.5   | 5.5   | 5.5   | 5.5   |
| 27.5° | 126.9  | 104.8 | 60.7  | 33.1  | 16.5  | 11.0  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 30°   | 121.4  | 99.3  | 55.2  | 27.6  | 11.0  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 32.5° | 121.4  | 93.8  | 44.1  | 22.1  | 11.0  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 35°   | 126.9  | 88.3  | 38.6  | 16.5  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 5.5   |
| 37.5° | 132.4  | 82.7  | 33.1  | 11.0  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 137.9  | 77.2  | 33.1  | 11.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 148.9  | 77.2  | 27.6  | 11.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 160.0  | 77.2  | 22.1  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 182.0  | 82.7  | 22.1  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 198.6  | 88.3  | 16.5  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 220.6  | 82.7  | 16.5  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 248.2  | 82.7  | 16.5  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 270.3  | 77.2  | 16.5  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 58°   | 281.3  | 71.7  | 11.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 336.5  | 66.2  | 11.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 524.0  | 55.2  | 11.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 1064.6 | 49.6  | 11.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 1985.7 | 44.1  | 11.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 2222.9 | 49.6  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1401.1 | 38.6  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 739.1  | 38.6  | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 369.6  | 38.6  | 5.5   | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 171.0  | 27.6  | 5.5   | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 71.7   | 16.5  | 11.0  | 5.5   | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 33.1   | 16.5  | 11.0  | 11.0  | 5.5   | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 16.5   | 16.5  | 16.5  | 11.0  | 11.0  | 5.5   | 5.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 90°   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-13

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-927-U-5WQ

Data in this report applies to families of products including GSS-SB1A-927-U-5WQ

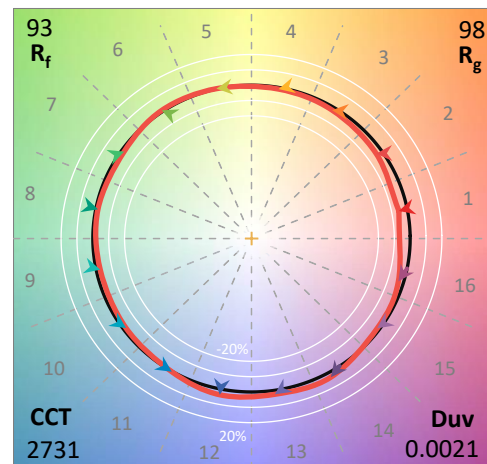
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-13  
 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-927-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI  
 2700K CCT 26 LEDS

### Spectral Parameters

CCT (K): 2731  
 CIE  $u'$ : 0.2605  
 CIE  $v'$ : 0.5298  
 Duv: 0.0021  
 CIE x: 0.4610  
 CIE y: 0.4166  
 CIE z: 0.1224  
 Peak Wavelength (nm): 622  
 Dominant Wavelength (nm): 583  
 Purity: 63.43685  
 R<sub>f</sub>: 92.6  
 R<sub>g</sub>: 98

CRI (Ra): 91.8  
 R1: 91.4  
 R2: 95.1  
 R3: 97.6  
 R4: 92.3  
 R5: 91.1  
 R6: 94.7  
 R7: 92.3  
 R8: 80.0  
 R9: 54.7  
 R10: 87.7  
 R11: 92.9  
 R12: 84.0  
 R13: 92.2  
 R14: 97.8  
 R15: 86.8



### Test Conditions

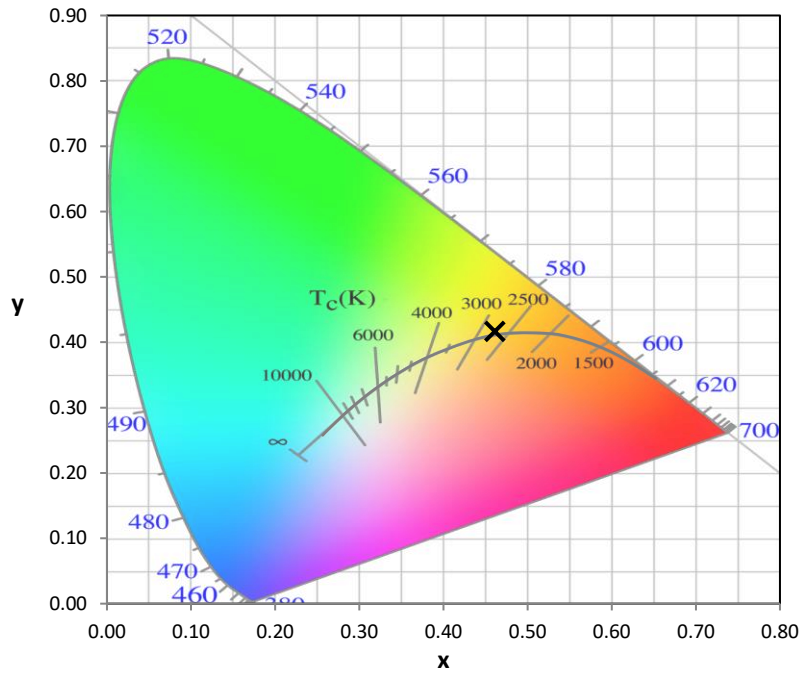
Stabilization Time: M  
 Operation Time: 1H 0M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-13

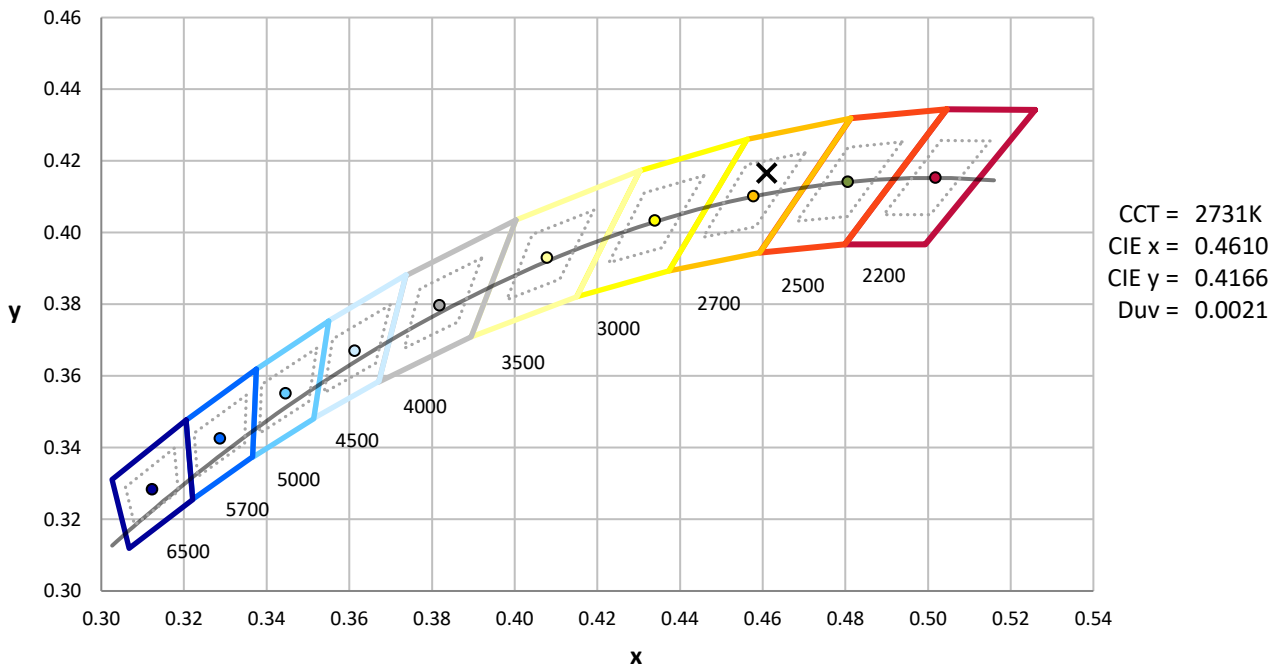
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



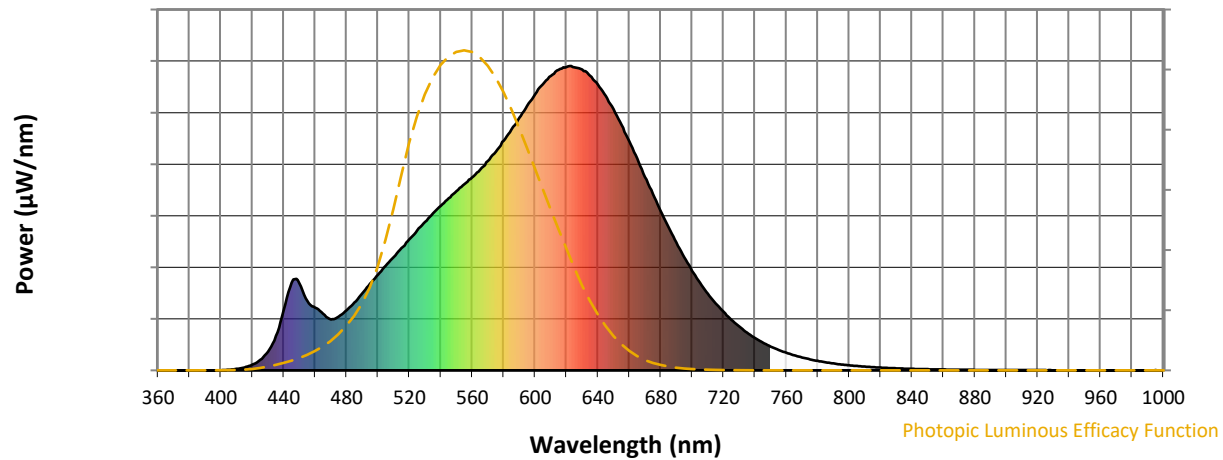
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 2700K 4-step quadrangle

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### Photopic Flux vs. Wavelength

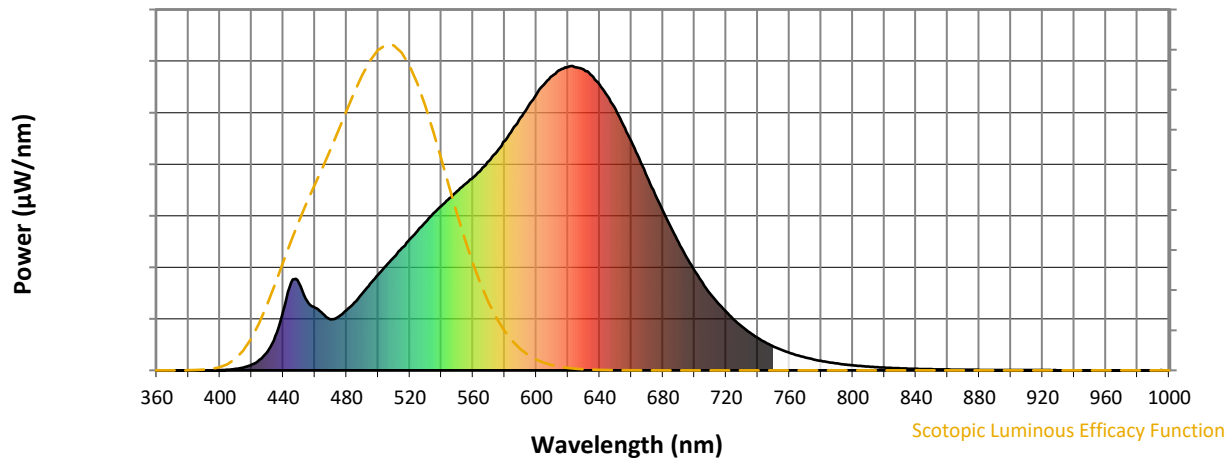


### Photopic Lumens: NR

| $\lambda$<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               | 253                                    | NR                             | 620               | 997                                    | NR                             | 750               | 78                                     | NR                             | 880               | 2                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 285                                    | NR                             | 625               | 996                                    | NR                             | 755               | 67                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 314                                    | NR                             | 630               | 989                                    | NR                             | 760               | 58                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 343                                    | NR                             | 635               | 969                                    | NR                             | 765               | 50                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 372                                    | NR                             | 640               | 939                                    | NR                             | 770               | 42                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 401                                    | NR                             | 645               | 901                                    | NR                             | 775               | 36                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 431                                    | NR                             | 650               | 858                                    | NR                             | 780               | 31                                     | NR                             | 910               | 1                                      | NR                             |
| 395               | 0                                      | NR                             | 525               | 459                                    | NR                             | 655               | 806                                    | NR                             | 785               | 26                                     | NR                             | 915               | 1                                      | NR                             |
| 400               | 0                                      | NR                             | 530               | 488                                    | NR                             | 660               | 752                                    | NR                             | 790               | 23                                     | NR                             | 920               | 1                                      | NR                             |
| 405               | 2                                      | NR                             | 535               | 516                                    | NR                             | 665               | 696                                    | NR                             | 795               | 19                                     | NR                             | 925               | 1                                      | NR                             |
| 410               | 5                                      | NR                             | 540               | 540                                    | NR                             | 670               | 636                                    | NR                             | 800               | 17                                     | NR                             | 930               | 0                                      | NR                             |
| 415               | 10                                     | NR                             | 545               | 566                                    | NR                             | 675               | 579                                    | NR                             | 805               | 14                                     | NR                             | 935               | 0                                      | NR                             |
| 420               | 19                                     | NR                             | 550               | 589                                    | NR                             | 680               | 524                                    | NR                             | 810               | 12                                     | NR                             | 940               | 0                                      | NR                             |
| 425               | 34                                     | NR                             | 555               | 612                                    | NR                             | 685               | 470                                    | NR                             | 815               | 11                                     | NR                             | 945               | 0                                      | NR                             |
| 430               | 61                                     | NR                             | 560               | 634                                    | NR                             | 690               | 421                                    | NR                             | 820               | 9                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 113                                    | NR                             | 565               | 660                                    | NR                             | 695               | 371                                    | NR                             | 825               | 8                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 198                                    | NR                             | 570               | 688                                    | NR                             | 700               | 327                                    | NR                             | 830               | 7                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 288                                    | NR                             | 575               | 719                                    | NR                             | 705               | 288                                    | NR                             | 835               | 6                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 286                                    | NR                             | 580               | 754                                    | NR                             | 710               | 251                                    | NR                             | 840               | 5                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 228                                    | NR                             | 585               | 791                                    | NR                             | 715               | 220                                    | NR                             | 845               | 4                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 207                                    | NR                             | 590               | 831                                    | NR                             | 720               | 192                                    | NR                             | 850               | 4                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 186                                    | NR                             | 595               | 870                                    | NR                             | 725               | 166                                    | NR                             | 855               | 3                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 168                                    | NR                             | 600               | 907                                    | NR                             | 730               | 144                                    | NR                             | 860               | 3                                      | NR                             | 990               | 1                                      | NR                             |
| 475               | 177                                    | NR                             | 605               | 940                                    | NR                             | 735               | 124                                    | NR                             | 865               | 2                                      | NR                             | 995               | 1                                      | NR                             |
| 480               | 198                                    | NR                             | 610               | 967                                    | NR                             | 740               | 106                                    | NR                             | 870               | 2                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 223                                    | NR                             | 615               | 988                                    | NR                             | 745               | 91                                     | NR                             | 875               | 2                                      | NR                             |                   |                                        |                                |

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### Scotopic Flux vs. Wavelength



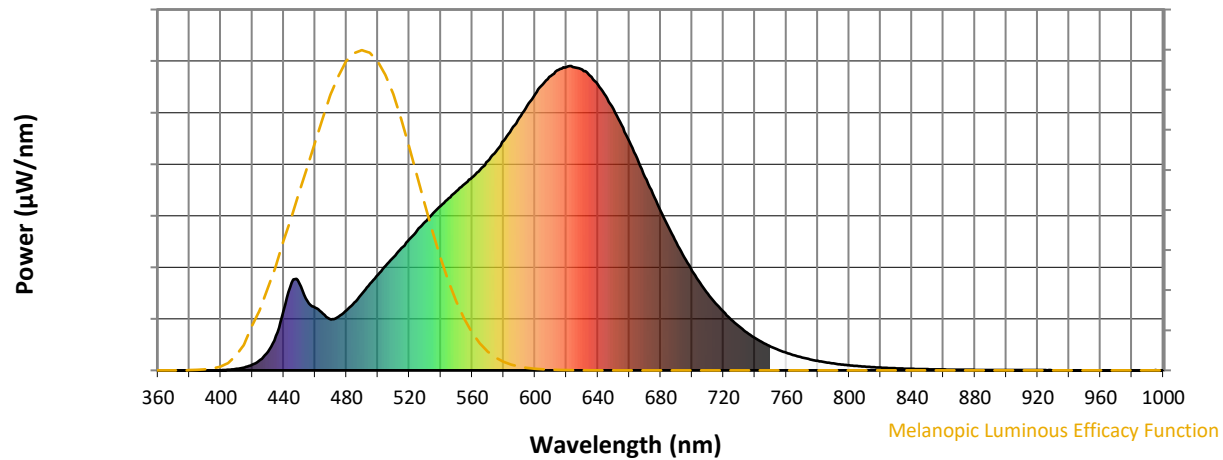
Scotopic Lumens: NR

S/P: 1.27

| 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       | 253                         | NR               | 620       | 997                         | NR               | 750       | 78                          | NR               | 880       | 2                           | NR               |
| 365       | 0                           | NR               | 495       | 285                         | NR               | 625       | 996                         | NR               | 755       | 67                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 314                         | NR               | 630       | 989                         | NR               | 760       | 58                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 343                         | NR               | 635       | 969                         | NR               | 765       | 50                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 372                         | NR               | 640       | 939                         | NR               | 770       | 42                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 401                         | NR               | 645       | 901                         | NR               | 775       | 36                          | NR               | 905       | 1                           | NR               |
| 390       | 0                           | NR               | 520       | 431                         | NR               | 650       | 858                         | NR               | 780       | 31                          | NR               | 910       | 1                           | NR               |
| 395       | 0                           | NR               | 525       | 459                         | NR               | 655       | 806                         | NR               | 785       | 26                          | NR               | 915       | 1                           | NR               |
| 400       | 0                           | NR               | 530       | 488                         | NR               | 660       | 752                         | NR               | 790       | 23                          | NR               | 920       | 1                           | NR               |
| 405       | 2                           | NR               | 535       | 516                         | NR               | 665       | 696                         | NR               | 795       | 19                          | NR               | 925       | 1                           | NR               |
| 410       | 5                           | NR               | 540       | 540                         | NR               | 670       | 636                         | NR               | 800       | 17                          | NR               | 930       | 0                           | NR               |
| 415       | 10                          | NR               | 545       | 566                         | NR               | 675       | 579                         | NR               | 805       | 14                          | NR               | 935       | 0                           | NR               |
| 420       | 19                          | NR               | 550       | 589                         | NR               | 680       | 524                         | NR               | 810       | 12                          | NR               | 940       | 0                           | NR               |
| 425       | 34                          | NR               | 555       | 612                         | NR               | 685       | 470                         | NR               | 815       | 11                          | NR               | 945       | 0                           | NR               |
| 430       | 61                          | NR               | 560       | 634                         | NR               | 690       | 421                         | NR               | 820       | 9                           | NR               | 950       | 0                           | NR               |
| 435       | 113                         | NR               | 565       | 660                         | NR               | 695       | 371                         | NR               | 825       | 8                           | NR               | 955       | 0                           | NR               |
| 440       | 198                         | NR               | 570       | 688                         | NR               | 700       | 327                         | NR               | 830       | 7                           | NR               | 960       | 0                           | NR               |
| 445       | 288                         | NR               | 575       | 719                         | NR               | 705       | 288                         | NR               | 835       | 6                           | NR               | 965       | 0                           | NR               |
| 450       | 286                         | NR               | 580       | 754                         | NR               | 710       | 251                         | NR               | 840       | 5                           | NR               | 970       | 0                           | NR               |
| 455       | 228                         | NR               | 585       | 791                         | NR               | 715       | 220                         | NR               | 845       | 4                           | NR               | 975       | 0                           | NR               |
| 460       | 207                         | NR               | 590       | 831                         | NR               | 720       | 192                         | NR               | 850       | 4                           | NR               | 980       | 0                           | NR               |
| 465       | 186                         | NR               | 595       | 870                         | NR               | 725       | 166                         | NR               | 855       | 3                           | NR               | 985       | 0                           | NR               |
| 470       | 168                         | NR               | 600       | 907                         | NR               | 730       | 144                         | NR               | 860       | 3                           | NR               | 990       | 1                           | NR               |
| 475       | 177                         | NR               | 605       | 940                         | NR               | 735       | 124                         | NR               | 865       | 2                           | NR               | 995       | 1                           | NR               |
| 480       | 198                         | NR               | 610       | 967                         | NR               | 740       | 106                         | NR               | 870       | 2                           | NR               | 1000      | 0                           | NR               |
| 485       | 223                         | NR               | 615       | 988                         | NR               | 745       | 91                          | NR               | 875       | 2                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength


**Melanopic Lumens: NR**
**M/P: 2.38**

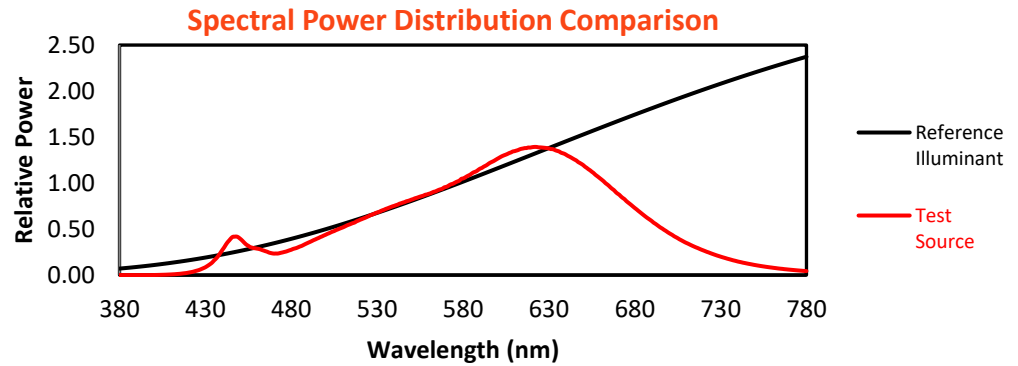
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | 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               | 253                                    | NR                             | 620               | 997                                    | NR                             | 750               | 78                                     | NR                             | 880               | 2                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 285                                    | NR                             | 625               | 996                                    | NR                             | 755               | 67                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 314                                    | NR                             | 630               | 989                                    | NR                             | 760               | 58                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 343                                    | NR                             | 635               | 969                                    | NR                             | 765               | 50                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 372                                    | NR                             | 640               | 939                                    | NR                             | 770               | 42                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 401                                    | NR                             | 645               | 901                                    | NR                             | 775               | 36                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 431                                    | NR                             | 650               | 858                                    | NR                             | 780               | 31                                     | NR                             | 910               | 1                                      | NR                             |
| 395               | 0                                      | NR                             | 525               | 459                                    | NR                             | 655               | 806                                    | NR                             | 785               | 26                                     | NR                             | 915               | 1                                      | NR                             |
| 400               | 0                                      | NR                             | 530               | 488                                    | NR                             | 660               | 752                                    | NR                             | 790               | 23                                     | NR                             | 920               | 1                                      | NR                             |
| 405               | 2                                      | NR                             | 535               | 516                                    | NR                             | 665               | 696                                    | NR                             | 795               | 19                                     | NR                             | 925               | 1                                      | NR                             |
| 410               | 5                                      | NR                             | 540               | 540                                    | NR                             | 670               | 636                                    | NR                             | 800               | 17                                     | NR                             | 930               | 0                                      | NR                             |
| 415               | 10                                     | NR                             | 545               | 566                                    | NR                             | 675               | 579                                    | NR                             | 805               | 14                                     | NR                             | 935               | 0                                      | NR                             |
| 420               | 19                                     | NR                             | 550               | 589                                    | NR                             | 680               | 524                                    | NR                             | 810               | 12                                     | NR                             | 940               | 0                                      | NR                             |
| 425               | 34                                     | NR                             | 555               | 612                                    | NR                             | 685               | 470                                    | NR                             | 815               | 11                                     | NR                             | 945               | 0                                      | NR                             |
| 430               | 61                                     | NR                             | 560               | 634                                    | NR                             | 690               | 421                                    | NR                             | 820               | 9                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 113                                    | NR                             | 565               | 660                                    | NR                             | 695               | 371                                    | NR                             | 825               | 8                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 198                                    | NR                             | 570               | 688                                    | NR                             | 700               | 327                                    | NR                             | 830               | 7                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 288                                    | NR                             | 575               | 719                                    | NR                             | 705               | 288                                    | NR                             | 835               | 6                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 286                                    | NR                             | 580               | 754                                    | NR                             | 710               | 251                                    | NR                             | 840               | 5                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 228                                    | NR                             | 585               | 791                                    | NR                             | 715               | 220                                    | NR                             | 845               | 4                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 207                                    | NR                             | 590               | 831                                    | NR                             | 720               | 192                                    | NR                             | 850               | 4                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 186                                    | NR                             | 595               | 870                                    | NR                             | 725               | 166                                    | NR                             | 855               | 3                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 168                                    | NR                             | 600               | 907                                    | NR                             | 730               | 144                                    | NR                             | 860               | 3                                      | NR                             | 990               | 1                                      | NR                             |
| 475               | 177                                    | NR                             | 605               | 940                                    | NR                             | 735               | 124                                    | NR                             | 865               | 2                                      | NR                             | 995               | 1                                      | NR                             |
| 480               | 198                                    | NR                             | 610               | 967                                    | NR                             | 740               | 106                                    | NR                             | 870               | 2                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 223                                    | NR                             | 615               | 988                                    | NR                             | 745               | 91                                     | NR                             | 875               | 2                                      | NR                             |                   |                                        |                                |

REPORT NUMBER: SP1-2407-184-13

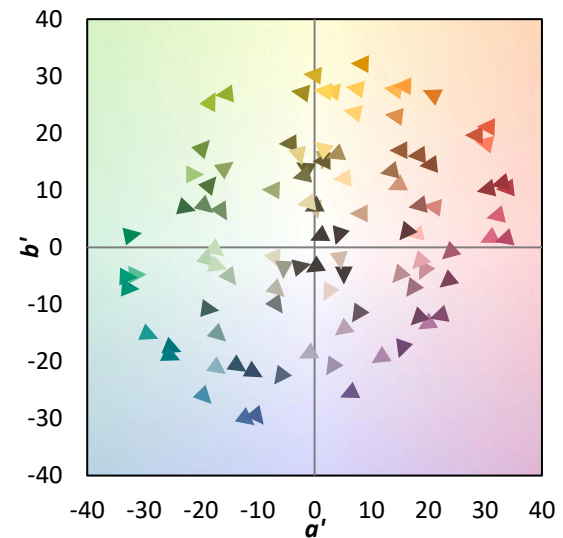
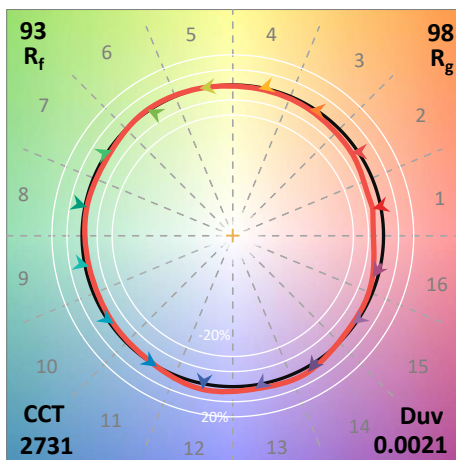
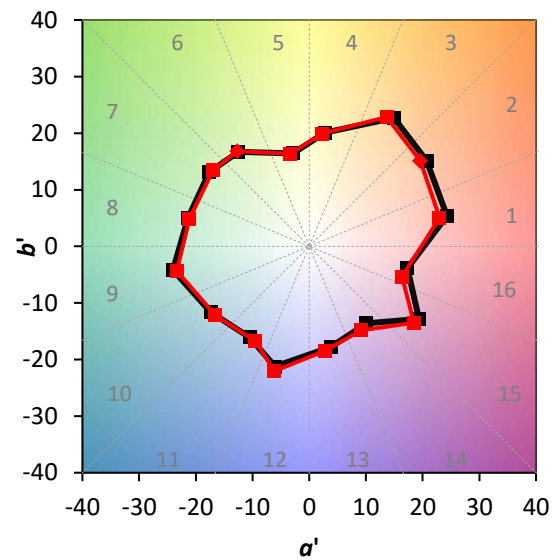
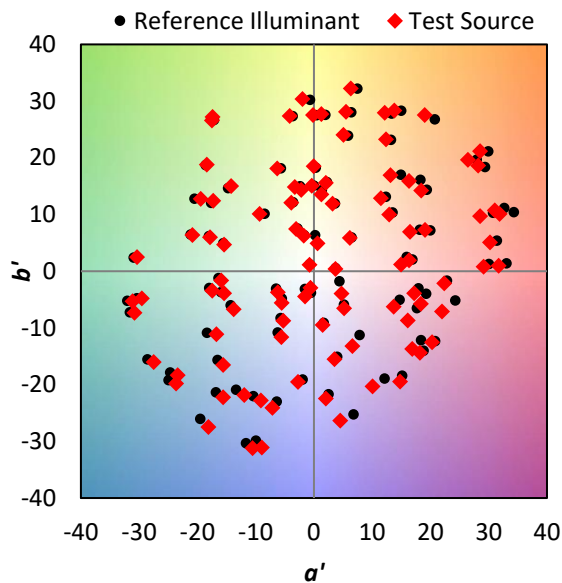
TM-30-18

### Summary

$R_f = 92.6$   
 $R_g = 98$   
 $CIE\ R_a = 91.8$   
 $R_9 = 54.7$



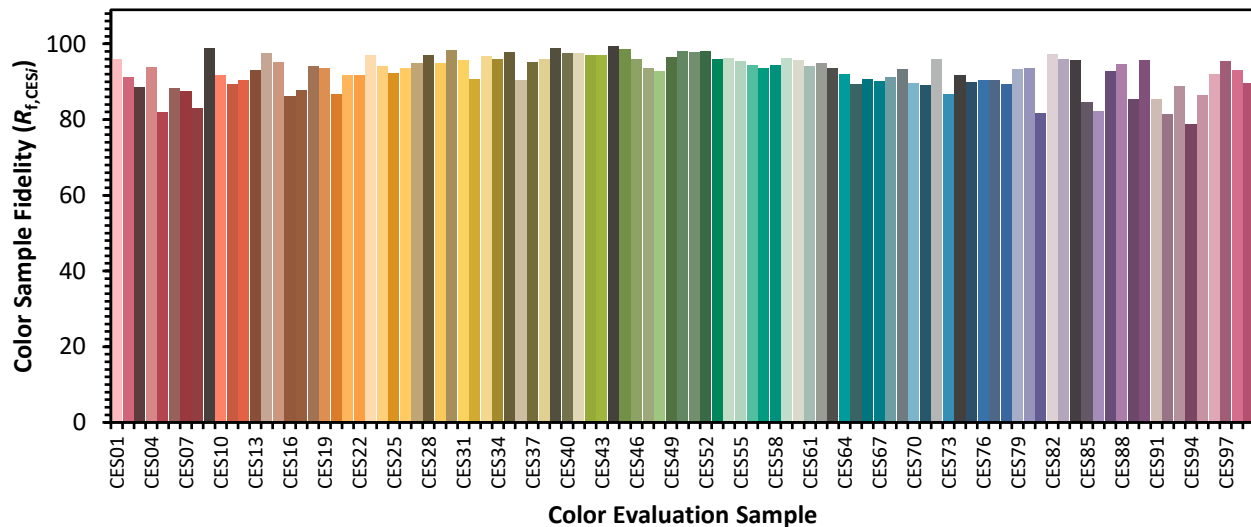
### Color Vector Graphics



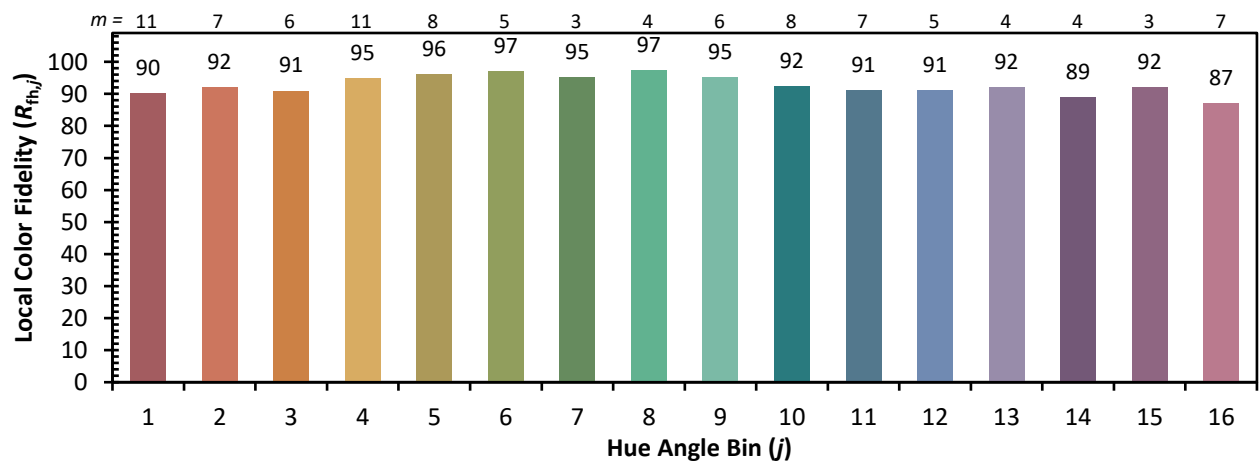
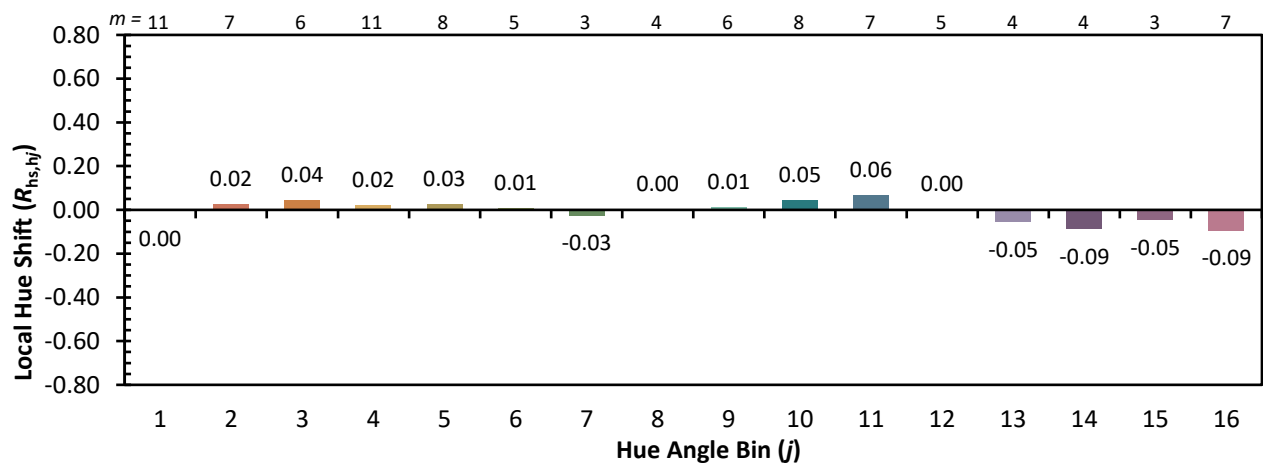
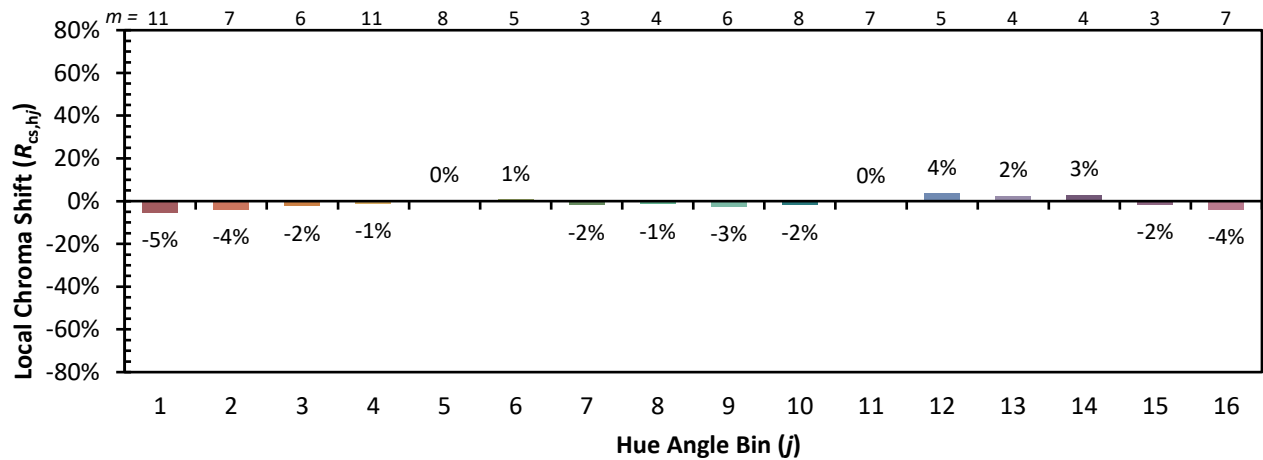


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

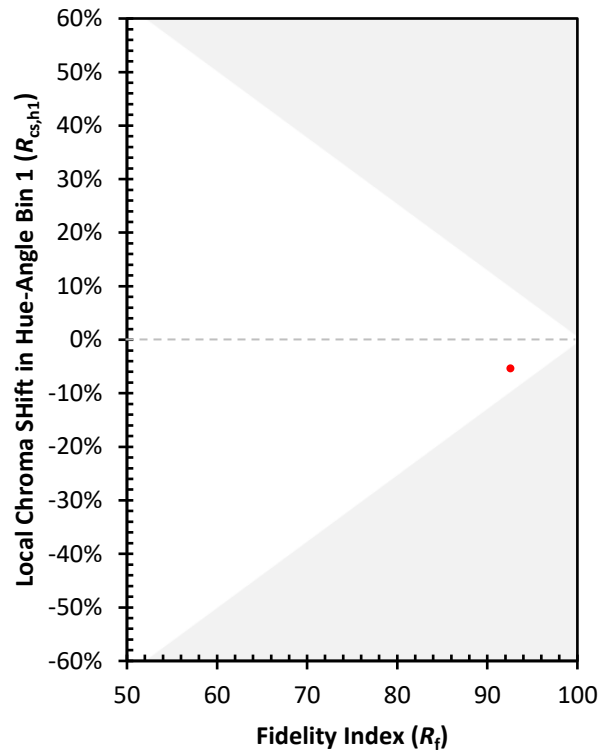
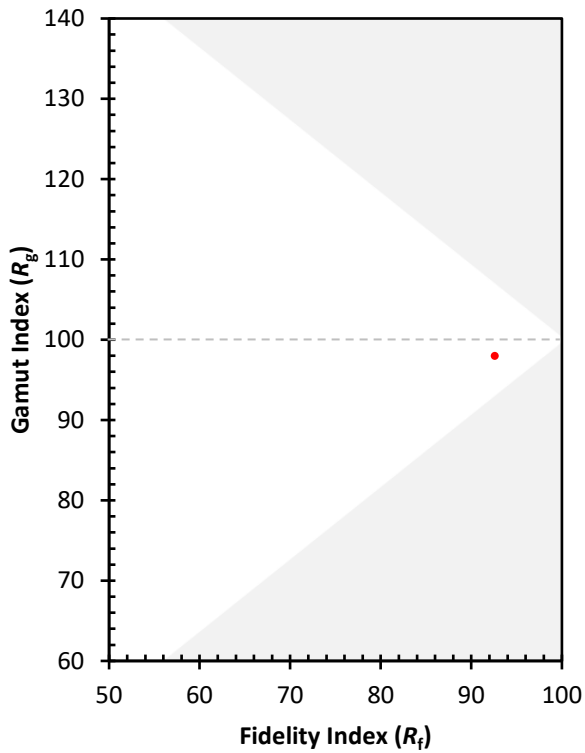
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 94 | CES51 = 98 | CES76 = 90 |
| CES02 = 64 | CES27 = 95 | CES52 = 98 | CES77 = 90 |
| CES03 = 32 | CES28 = 97 | CES53 = 96 | CES78 = 89 |
| CES04 = 71 | CES29 = 95 | CES54 = 96 | CES79 = 93 |
| CES05 = 51 | CES30 = 98 | CES55 = 95 | CES80 = 94 |
| CES06 = 52 | CES31 = 96 | CES56 = 94 | CES81 = 82 |
| CES07 = 44 | CES32 = 91 | CES57 = 94 | CES82 = 97 |
| CES08 = 43 | CES33 = 97 | CES58 = 94 | CES83 = 96 |
| CES09 = 29 | CES34 = 96 | CES59 = 96 | CES84 = 96 |
| CES10 = 77 | CES35 = 98 | CES60 = 96 | CES85 = 85 |
| CES11 = 59 | CES36 = 90 | CES61 = 94 | CES86 = 82 |
| CES12 = 66 | CES37 = 95 | CES62 = 95 | CES87 = 93 |
| CES13 = 44 | CES38 = 96 | CES63 = 94 | CES88 = 95 |
| CES14 = 74 | CES39 = 99 | CES64 = 92 | CES89 = 85 |
| CES15 = 72 | CES40 = 98 | CES65 = 89 | CES90 = 96 |
| CES16 = 48 | CES41 = 98 | CES66 = 91 | CES91 = 85 |
| CES17 = 50 | CES42 = 97 | CES67 = 90 | CES92 = 82 |
| CES18 = 57 | CES43 = 97 | CES68 = 91 | CES93 = 89 |
| CES19 = 72 | CES44 = 99 | CES69 = 93 | CES94 = 79 |
| CES20 = 68 | CES45 = 99 | CES70 = 90 | CES95 = 87 |
| CES21 = 87 | CES46 = 96 | CES71 = 89 | CES96 = 92 |
| CES22 = 79 | CES47 = 94 | CES72 = 96 | CES97 = 96 |
| CES23 = 92 | CES48 = 93 | CES73 = 87 | CES98 = 93 |
| CES24 = 91 | CES49 = 96 | CES74 = 92 | CES99 = 90 |
| CES25 = 72 | CES50 = 98 | CES75 = 90 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)