

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: P1063273

Luminaire Tested: **GLAN-SA4A-740-U-T2BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1063273  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: GLAN-SA4A-740-U-T2BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 615mA 4xLight Square PACKAGE  
70CRI 4000K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (56) 4000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14536.8 lumens  
Efficiency: N/A  
Efficacy: 135.4 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B0 - U0 - G3

Input Watts (W): 107.4  
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

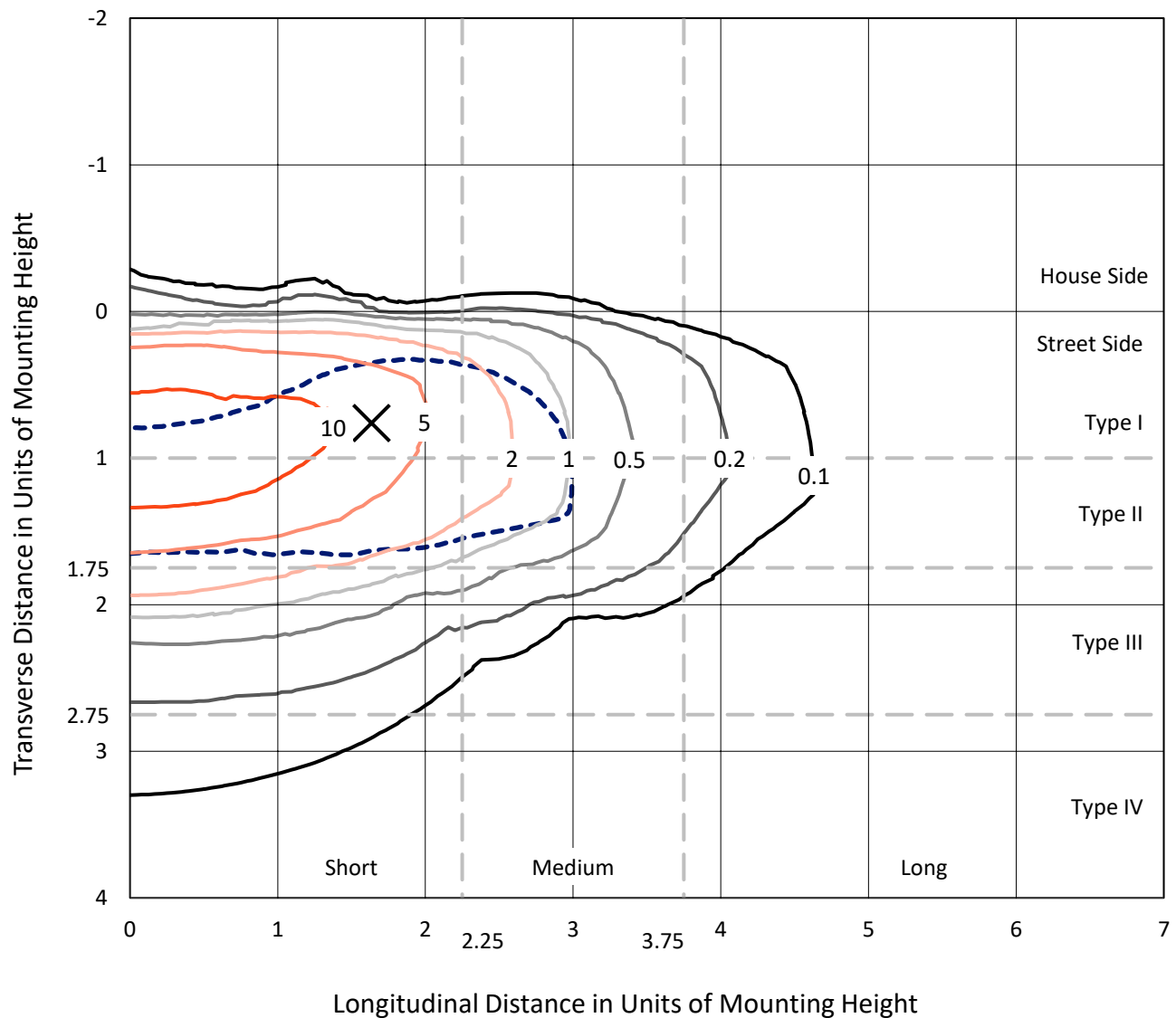


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CATALOG NUMBER: GLAN-SA4A-740-U-T2BC

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

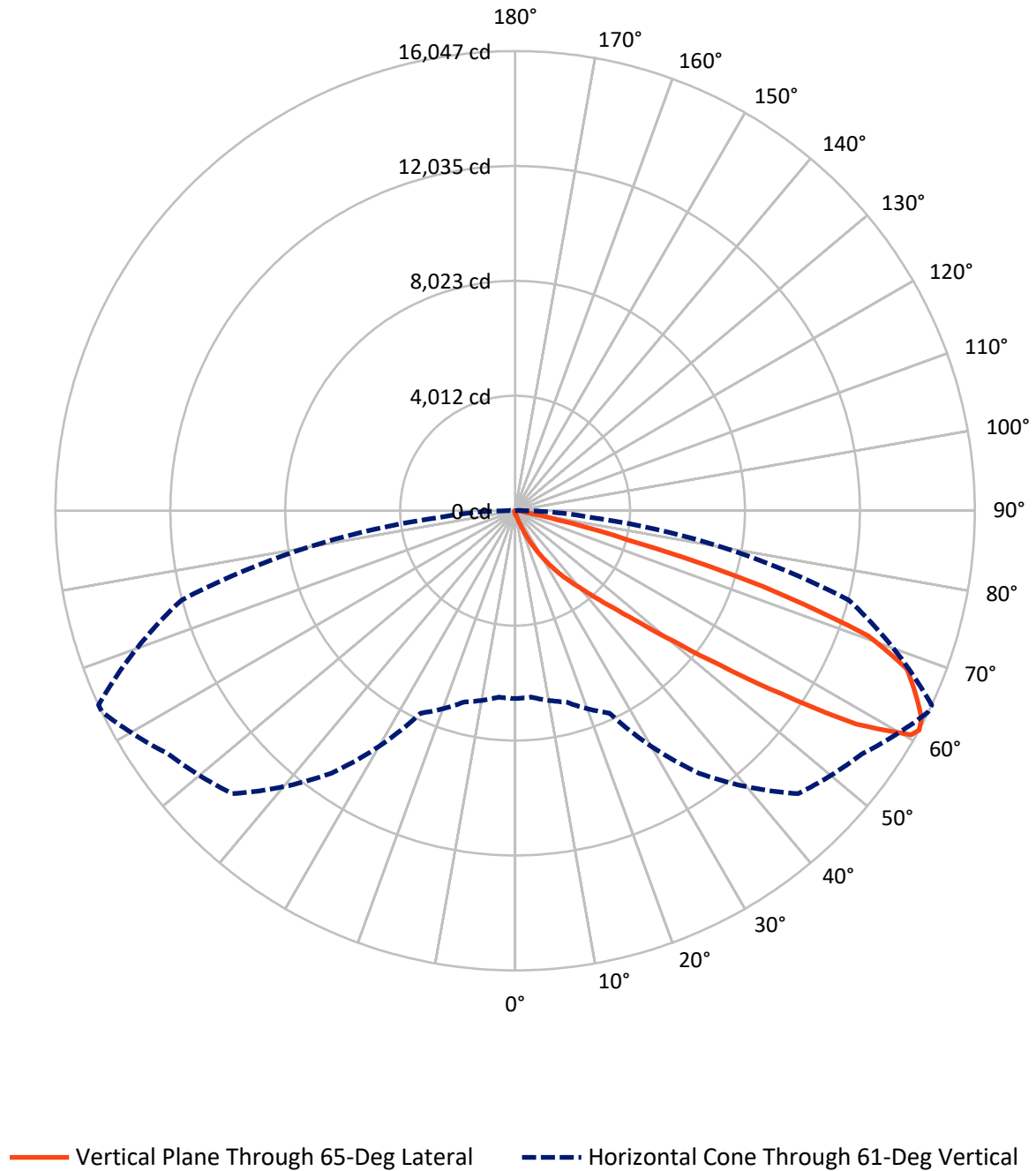


Based on 15 foot mounting height. Maximum calculated value = 19.2 fc  
 Type II - Short - N/A

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CATALOG NUMBER: GLAN-SA4A-740-U-T2BC

## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 62.1     | 0.0    | 62.1    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 14474.8  | 0.0    | 14474.8 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 14536.8  | 0.0    | 14536.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 11.3    | 0.1       |
| 10°-20°   | 119.5   | 0.8       |
| 20°-30°   | 429.0   | 3.0       |
| 30°-40°   | 1142.2  | 7.9       |
| 40°-50°   | 3000.5  | 20.6      |
| 50°-60°   | 4648.3  | 32.0      |
| 60°-70°   | 3897.5  | 26.8      |
| 70°-80°   | 1147.0  | 7.9       |
| 80°-90°   | 141.5   | 1.0       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 14536.8 | 100.0     |
| 0°-180°   | 14536.8 | 100.0     |



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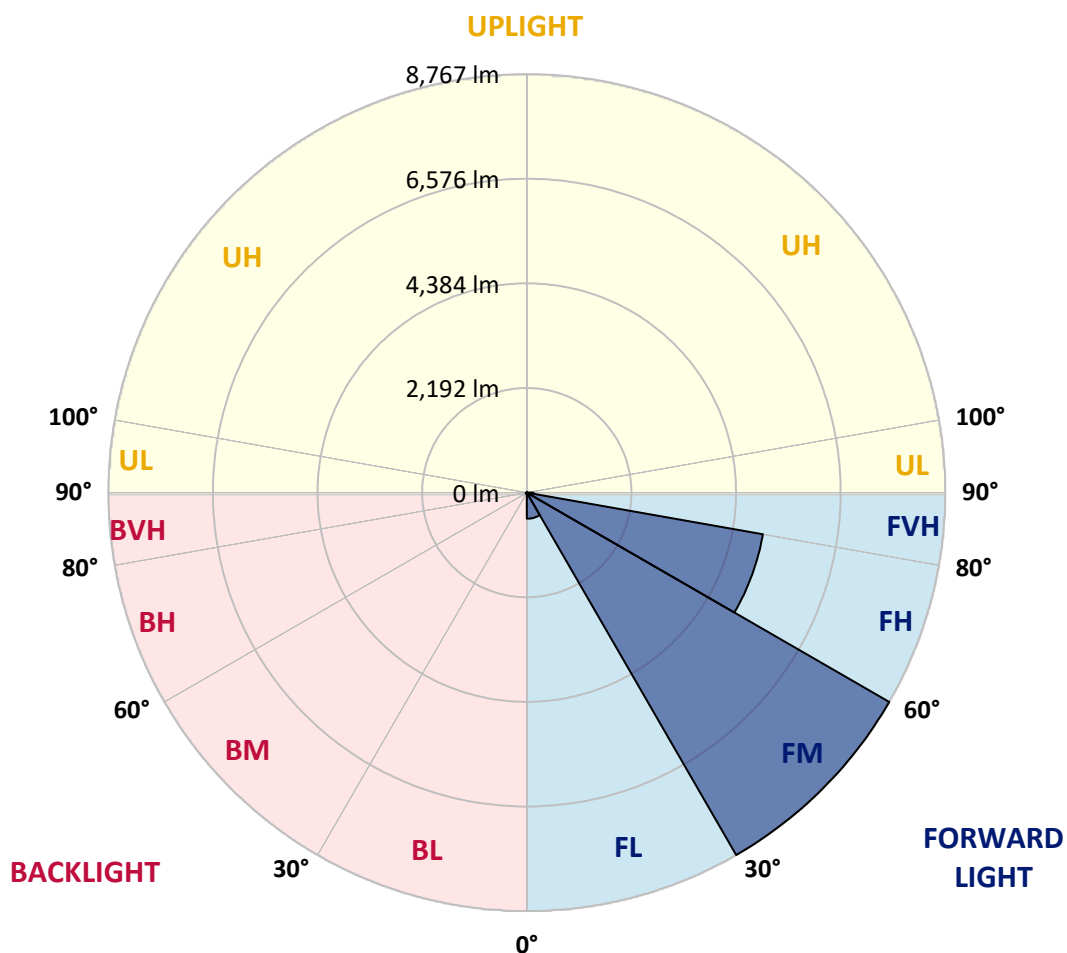
CATALOG NUMBER: GLAN-SA4A-740-U-T2BC

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 545.9  | 3.8       |                         |      |         |
| FM   | (30°-60°)   | 8767.3 | 60.3      |                         |      |         |
| FH   | (60°-80°)   | 5022.6 | 34.6      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 138.9  | 1.0       |                         |      | G2/225  |
| BL   | (0°-30°)    | 13.9   | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 23.6   | 0.2       | B0/220                  |      |         |
| BH   | (60°-80°)   | 21.9   | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 2.6    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

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

Type II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 64°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 89.0    | 89.0    | 89.0    | 89.0    | 89.0    | 89.0    | 89.0    | 89.0    | 89.0    | 89.0    | 89.0   |
| 2.5°  | 108.0   | 109.0   | 107.0   | 103.0   | 100.0   | 100.0   | 99.0    | 96.0    | 96.0    | 93.0    | 91.0   |
| 5°    | 151.0   | 149.0   | 145.0   | 137.0   | 130.0   | 123.0   | 116.0   | 109.0   | 108.0   | 99.0    | 93.0   |
| 7.5°  | 247.0   | 249.0   | 236.0   | 211.0   | 190.0   | 163.0   | 138.0   | 123.0   | 121.0   | 106.0   | 94.0   |
| 10°   | 542.0   | 527.0   | 497.0   | 400.0   | 329.0   | 248.0   | 184.0   | 143.0   | 141.0   | 114.0   | 96.0   |
| 12.5° | 988.0   | 976.0   | 921.0   | 821.0   | 638.0   | 444.0   | 269.0   | 177.0   | 171.0   | 121.0   | 97.0   |
| 15°   | 1424.0  | 1405.0  | 1375.0  | 1274.0  | 1060.0  | 796.0   | 440.0   | 242.0   | 226.0   | 131.0   | 96.0   |
| 17.5° | 1702.0  | 1705.0  | 1678.0  | 1635.0  | 1497.0  | 1178.0  | 760.0   | 361.0   | 330.0   | 149.0   | 94.0   |
| 20°   | 1945.0  | 1938.0  | 1953.0  | 1930.0  | 1833.0  | 1601.0  | 1106.0  | 572.0   | 519.0   | 178.0   | 95.0   |
| 22.5° | 2224.9  | 2241.9  | 2252.9  | 2247.9  | 2140.9  | 1943.0  | 1499.0  | 856.0   | 789.0   | 231.0   | 98.0   |
| 25°   | 2599.9  | 2597.9  | 2598.9  | 2585.9  | 2481.9  | 2261.9  | 1893.0  | 1209.0  | 1141.0  | 317.0   | 105.0  |
| 27.5° | 2992.9  | 3004.9  | 3009.9  | 2962.9  | 2826.9  | 2610.9  | 2257.9  | 1595.0  | 1515.0  | 455.0   | 114.0  |
| 30°   | 3529.9  | 3519.9  | 3496.9  | 3400.9  | 3235.9  | 2967.9  | 2617.9  | 2000.0  | 1916.0  | 648.0   | 128.0  |
| 32.5° | 4253.9  | 4242.9  | 4126.9  | 3914.9  | 3667.9  | 3339.9  | 2979.9  | 2405.9  | 2303.9  | 889.0   | 147.0  |
| 35°   | 5446.9  | 5463.9  | 5178.9  | 4629.9  | 4186.9  | 3786.9  | 3380.9  | 2809.9  | 2719.9  | 1186.0  | 173.0  |
| 37.5° | 7273.8  | 7180.8  | 6793.8  | 5823.9  | 4869.9  | 4344.9  | 3763.9  | 3217.9  | 3139.9  | 1552.0  | 207.0  |
| 40°   | 9048.8  | 8956.8  | 8844.8  | 7925.8  | 6056.9  | 4959.9  | 4299.9  | 3696.9  | 3595.9  | 1965.0  | 257.0  |
| 42.5° | 10914.7 | 10863.7 | 10858.7 | 10165.7 | 8222.8  | 5926.9  | 4944.9  | 4257.9  | 4171.9  | 2417.9  | 339.0  |
| 45°   | 12236.7 | 12185.7 | 12292.7 | 12413.7 | 11172.7 | 7998.8  | 6067.9  | 4986.9  | 4861.9  | 2967.9  | 470.0  |
| 47.5° | 12414.7 | 12416.7 | 12702.7 | 13081.7 | 13364.7 | 11203.7 | 7563.8  | 5952.9  | 5800.9  | 3754.9  | 690.0  |
| 50°   | 11822.7 | 11845.7 | 12300.7 | 12978.7 | 13740.7 | 13892.7 | 10201.7 | 7354.8  | 7129.8  | 4687.9  | 1002.0 |
| 52.5° | 10695.7 | 10721.7 | 11355.7 | 12470.7 | 13394.7 | 14538.6 | 13307.7 | 9188.8  | 8929.8  | 5851.9  | 1442.0 |
| 55°   | 9680.8  | 9696.8  | 10423.7 | 11832.7 | 12977.7 | 14187.7 | 15151.6 | 11637.7 | 11297.7 | 7283.8  | 1876.0 |
| 57.5° | 8675.8  | 8638.8  | 9111.8  | 10724.7 | 12906.7 | 13756.7 | 15423.6 | 14428.6 | 14053.7 | 8848.8  | 2213.9 |
| 60°   | 7331.8  | 7269.8  | 7649.8  | 8675.8  | 11972.7 | 14039.7 | 14914.6 | 15972.6 | 15887.6 | 11027.7 | 2474.9 |
| 61°   | 6558.8  | 6532.8  | 6914.8  | 7794.8  | 11186.7 | 13967.7 | 14792.6 | 16037.6 | 16046.6 | 12058.7 | 2591.9 |
| 62.5° | 4683.9  | 4757.9  | 5341.9  | 6485.8  | 9369.8  | 13500.7 | 14808.6 | 15836.6 | 15925.6 | 13428.7 | 2894.9 |
| 65°   | 2081.9  | 2200.9  | 2654.9  | 3585.9  | 5448.9  | 11230.7 | 14666.6 | 15395.6 | 15351.6 | 13804.7 | 3938.9 |
| 67.5° | 1235.0  | 1253.0  | 1479.0  | 2031.9  | 2885.9  | 6040.9  | 12942.7 | 14812.6 | 14753.6 | 12017.7 | 4900.9 |
| 70°   | 973.0   | 982.0   | 1054.0  | 1275.0  | 1675.0  | 2313.9  | 7386.8  | 12815.7 | 13072.7 | 9744.8  | 4797.9 |
| 72.5° | 923.0   | 921.0   | 931.0   | 970.0   | 1055.0  | 1148.0  | 2859.9  | 8518.8  | 9041.8  | 7017.8  | 4022.9 |
| 75°   | 911.0   | 907.0   | 897.0   | 882.0   | 764.0   | 676.0   | 886.0   | 3767.9  | 4070.9  | 4794.9  | 3028.9 |
| 77.5° | 884.0   | 885.0   | 887.0   | 846.0   | 655.0   | 478.0   | 429.0   | 1209.0  | 1487.0  | 3042.9  | 2152.9 |
| 80°   | 598.0   | 607.0   | 622.0   | 606.0   | 589.0   | 346.0   | 303.0   | 430.0   | 436.0   | 1708.0  | 1422.0 |
| 82.5° | 303.0   | 303.0   | 296.0   | 264.0   | 228.0   | 225.0   | 241.0   | 312.0   | 316.0   | 864.0   | 669.0  |
| 85°   | 183.0   | 193.0   | 197.0   | 179.0   | 164.0   | 151.0   | 184.0   | 248.0   | 257.0   | 335.0   | 156.0  |
| 87.5° | 41.0    | 42.0    | 46.0    | 61.0    | 89.0    | 121.0   | 171.0   | 227.0   | 231.0   | 215.0   | 19.0   |
| 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: P1063273

CATALOG NUMBER: GLAN-SA4A-740-U-T2BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|-------|------|------|------|------|------|------|------|------|------|
| 0°    | 89.0   | 89.0  | 89.0 | 89.0 | 89.0 | 89.0 | 89.0 | 89.0 | 89.0 | 89.0 | 89.0 |
| 2.5°  | 90.0   | 88.0  | 87.0 | 84.0 | 81.0 | 78.0 | 76.0 | 75.0 | 76.0 | 77.0 | 77.0 |
| 5°    | 89.0   | 86.0  | 81.0 | 76.0 | 72.0 | 68.0 | 64.0 | 63.0 | 63.0 | 64.0 | 64.0 |
| 7.5°  | 89.0   | 84.0  | 77.0 | 71.0 | 65.0 | 59.0 | 56.0 | 54.0 | 55.0 | 55.0 | 55.0 |
| 10°   | 89.0   | 83.0  | 74.0 | 65.0 | 58.0 | 51.0 | 46.0 | 44.0 | 44.0 | 44.0 | 44.0 |
| 12.5° | 88.0   | 82.0  | 71.0 | 60.0 | 50.0 | 42.0 | 36.0 | 33.0 | 34.0 | 34.0 | 34.0 |
| 15°   | 86.0   | 79.0  | 67.0 | 51.0 | 40.0 | 32.0 | 26.0 | 23.0 | 24.0 | 26.0 | 27.0 |
| 17.5° | 83.0   | 76.0  | 60.0 | 43.0 | 32.0 | 24.0 | 18.0 | 16.0 | 17.0 | 20.0 | 20.0 |
| 20°   | 82.0   | 73.0  | 53.0 | 35.0 | 24.0 | 17.0 | 12.0 | 10.0 | 11.0 | 15.0 | 16.0 |
| 22.5° | 82.0   | 71.0  | 48.0 | 29.0 | 18.0 | 11.0 | 7.0  | 4.0  | 4.0  | 7.0  | 7.0  |
| 25°   | 83.0   | 70.0  | 44.0 | 24.0 | 13.0 | 8.0  | 4.0  | 2.0  | 4.0  | 11.0 | 13.0 |
| 27.5° | 85.0   | 69.0  | 42.0 | 20.0 | 10.0 | 7.0  | 3.0  | 7.0  | 12.0 | 12.0 | 12.0 |
| 30°   | 87.0   | 67.0  | 39.0 | 17.0 | 9.0  | 5.0  | 5.0  | 10.0 | 10.0 | 12.0 | 13.0 |
| 32.5° | 90.0   | 66.0  | 37.0 | 15.0 | 7.0  | 4.0  | 7.0  | 6.0  | 6.0  | 7.0  | 8.0  |
| 35°   | 96.0   | 67.0  | 35.0 | 15.0 | 7.0  | 5.0  | 6.0  | 3.0  | 2.0  | 2.0  | 2.0  |
| 37.5° | 104.0  | 68.0  | 32.0 | 13.0 | 6.0  | 6.0  | 3.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 117.0  | 71.0  | 30.0 | 12.0 | 5.0  | 5.0  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 139.0  | 77.0  | 29.0 | 11.0 | 5.0  | 4.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 183.0  | 91.0  | 27.0 | 10.0 | 5.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 263.0  | 124.0 | 26.0 | 8.0  | 3.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 384.0  | 168.0 | 25.0 | 7.0  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 490.0  | 177.0 | 17.0 | 6.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 502.0  | 122.0 | 13.0 | 4.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 400.0  | 79.0  | 11.0 | 3.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 303.0  | 60.0  | 10.0 | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 61°   | 291.0  | 54.0  | 10.0 | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 321.0  | 47.0  | 9.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 522.0  | 39.0  | 8.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 907.0  | 34.0  | 7.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 1146.0 | 32.0  | 6.0  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 999.0  | 29.0  | 6.0  | 2.0  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 601.0  | 25.0  | 6.0  | 4.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 315.0  | 19.0  | 6.0  | 5.0  | 3.0  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 153.0  | 17.0  | 7.0  | 5.0  | 4.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 60.0   | 14.0  | 8.0  | 7.0  | 5.0  | 3.0  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 27.0   | 12.0  | 9.0  | 8.0  | 7.0  | 4.0  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 14.0   | 11.0  | 10.0 | 9.0  | 7.0  | 5.0  | 2.0  | 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: SP1-2407-184-1

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-740-U-5WQ

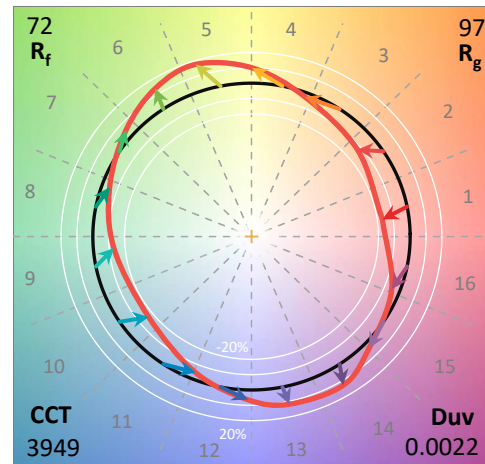
Data in this report applies to families of products including GSS-SB1A-740-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-1  
 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-740-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 4000K CCT 26 LEDS

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 3949     | CRI (Ra): | 70.7 |      |       |
| CIE u':                   | 0.2248   | R1:       | 68.0 | R9:  | -36.7 |
| CIE v':                   | 0.5053   | R2:       | 76.0 | R10: | 45.1  |
| Duv:                      | 0.0022   | R3:       | 84.3 | R11: | 70.7  |
| CIE x:                    | 0.3844   | R4:       | 72.0 | R12: | 47.1  |
| CIE y:                    | 0.3840   | R5:       | 68.6 | R13: | 68.5  |
| CIE z:                    | 0.2316   | R6:       | 68.3 | R14: | 91.1  |
| Peak Wavelength (nm):     | 440      | R7:       | 77.9 | R15: | 58.7  |
| Dominant Wavelength (nm): | 578      | R8:       | 50.3 |      |       |
| Purity:                   | 30.60026 |           |      |      |       |
| Rf:                       | 71.8     |           |      |      |       |
| Rg:                       | 96.5     |           |      |      |       |



### Test Conditions

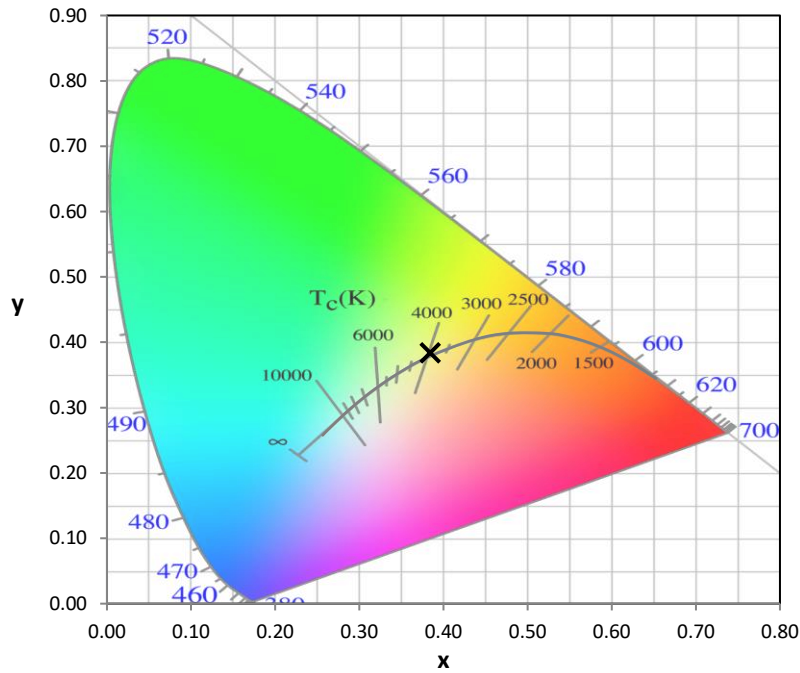
Stabilization Time: 34M  
 Operation Time: 1H 34M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-1

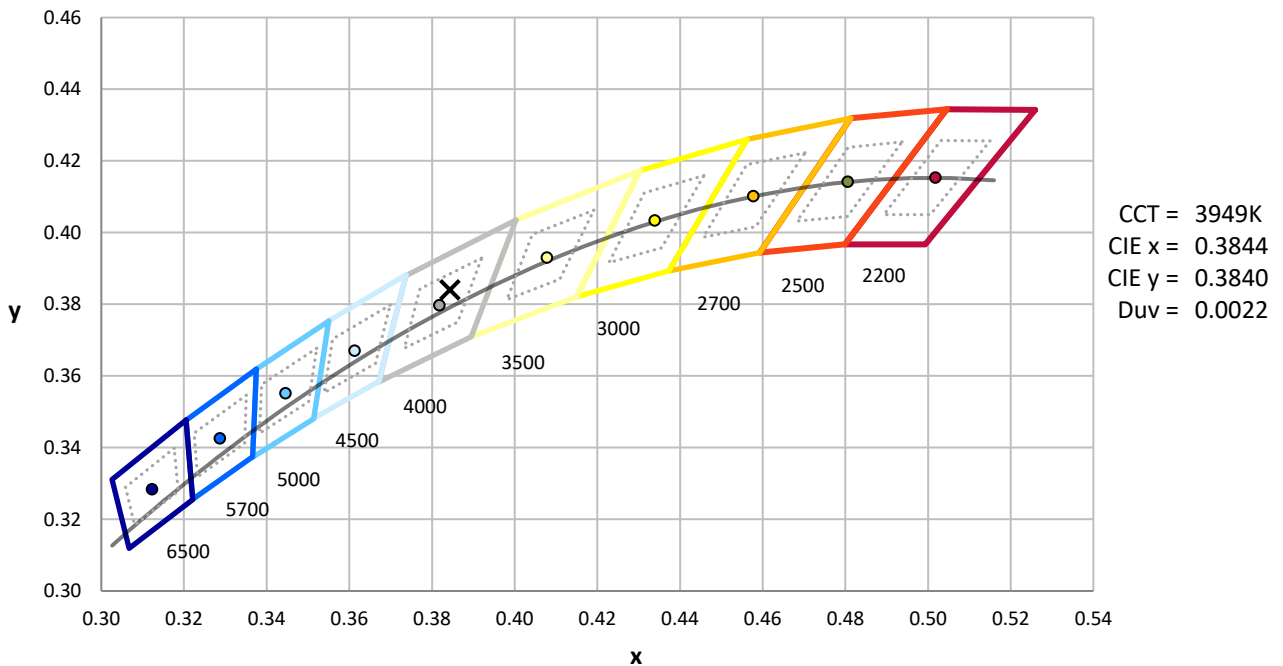
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



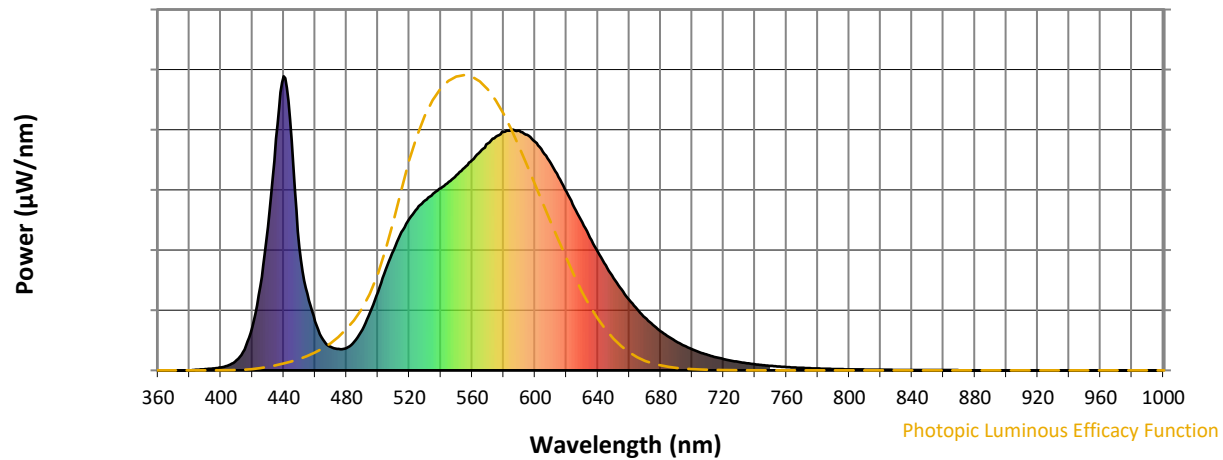
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 4000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

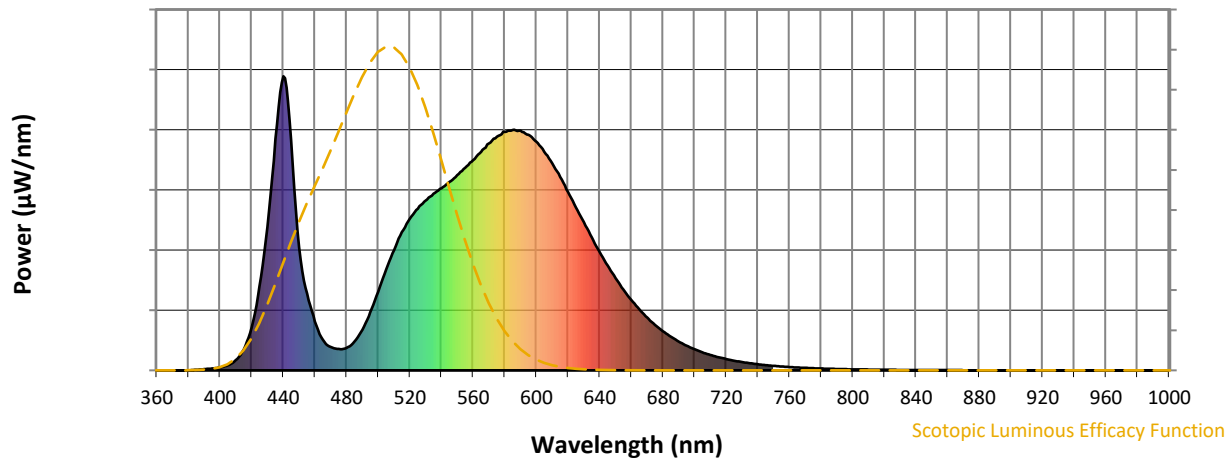


### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 360               | 0                             | NR                             | 490               | 139                           | NR                             | 620               | 607                           | NR                             | 750               | 15                            | NR                             | 880               | 0                             | NR                             |
| 365               | 0                             | NR                             | 495               | 198                           | NR                             | 625               | 554                           | NR                             | 755               | 13                            | NR                             | 885               | 0                             | NR                             |
| 370               | 0                             | NR                             | 500               | 267                           | NR                             | 630               | 504                           | NR                             | 760               | 11                            | NR                             | 890               | 0                             | NR                             |
| 375               | 0                             | NR                             | 505               | 343                           | NR                             | 635               | 452                           | NR                             | 765               | 10                            | NR                             | 895               | 0                             | NR                             |
| 380               | 0                             | NR                             | 510               | 410                           | NR                             | 640               | 403                           | NR                             | 770               | 8                             | NR                             | 900               | 0                             | NR                             |
| 385               | 2                             | NR                             | 515               | 470                           | NR                             | 645               | 357                           | NR                             | 775               | 7                             | NR                             | 905               | 0                             | NR                             |
| 390               | 4                             | NR                             | 520               | 516                           | NR                             | 650               | 314                           | NR                             | 780               | 6                             | NR                             | 910               | 0                             | NR                             |
| 395               | 7                             | NR                             | 525               | 550                           | NR                             | 655               | 275                           | NR                             | 785               | 5                             | NR                             | 915               | 0                             | NR                             |
| 400               | 10                            | NR                             | 530               | 578                           | NR                             | 660               | 240                           | NR                             | 790               | 5                             | NR                             | 920               | 0                             | NR                             |
| 405               | 17                            | NR                             | 535               | 601                           | NR                             | 665               | 208                           | NR                             | 795               | 4                             | NR                             | 925               | 0                             | NR                             |
| 410               | 35                            | NR                             | 540               | 620                           | NR                             | 670               | 179                           | NR                             | 800               | 4                             | NR                             | 930               | 0                             | NR                             |
| 415               | 70                            | NR                             | 545               | 641                           | NR                             | 675               | 155                           | NR                             | 805               | 3                             | NR                             | 935               | 0                             | NR                             |
| 420               | 147                           | NR                             | 550               | 664                           | NR                             | 680               | 133                           | NR                             | 810               | 3                             | NR                             | 940               | 0                             | NR                             |
| 425               | 285                           | NR                             | 555               | 689                           | NR                             | 685               | 114                           | NR                             | 815               | 2                             | NR                             | 945               | 0                             | NR                             |
| 430               | 487                           | NR                             | 560               | 715                           | NR                             | 690               | 98                            | NR                             | 820               | 2                             | NR                             | 950               | 0                             | NR                             |
| 435               | 787                           | NR                             | 565               | 743                           | NR                             | 695               | 84                            | NR                             | 825               | 2                             | NR                             | 955               | 0                             | NR                             |
| 440               | 1000                          | NR                             | 570               | 771                           | NR                             | 700               | 72                            | NR                             | 830               | 2                             | NR                             | 960               | 0                             | NR                             |
| 445               | 783                           | NR                             | 575               | 794                           | NR                             | 705               | 61                            | NR                             | 835               | 1                             | NR                             | 965               | 0                             | NR                             |
| 450               | 417                           | NR                             | 580               | 811                           | NR                             | 710               | 52                            | NR                             | 840               | 1                             | NR                             | 970               | 0                             | NR                             |
| 455               | 261                           | NR                             | 585               | 817                           | NR                             | 715               | 45                            | NR                             | 845               | 1                             | NR                             | 975               | 0                             | NR                             |
| 460               | 167                           | NR                             | 590               | 815                           | NR                             | 720               | 39                            | NR                             | 850               | 1                             | NR                             | 980               | 0                             | NR                             |
| 465               | 104                           | NR                             | 595               | 801                           | NR                             | 725               | 33                            | NR                             | 855               | 1                             | NR                             | 985               | 0                             | NR                             |
| 470               | 79                            | NR                             | 600               | 777                           | NR                             | 730               | 28                            | NR                             | 860               | 1                             | NR                             | 990               | 0                             | NR                             |
| 475               | 73                            | NR                             | 605               | 744                           | NR                             | 735               | 24                            | NR                             | 865               | 1                             | NR                             | 995               | 0                             | NR                             |
| 480               | 76                            | NR                             | 610               | 704                           | NR                             | 740               | 21                            | NR                             | 870               | 1                             | NR                             | 1000              | 0                             | NR                             |
| 485               | 98                            | NR                             | 615               | 657                           | NR                             | 745               | 18                            | NR                             | 875               | 1                             | NR                             |                   |                               |                                |

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### Scotopic Flux vs. Wavelength



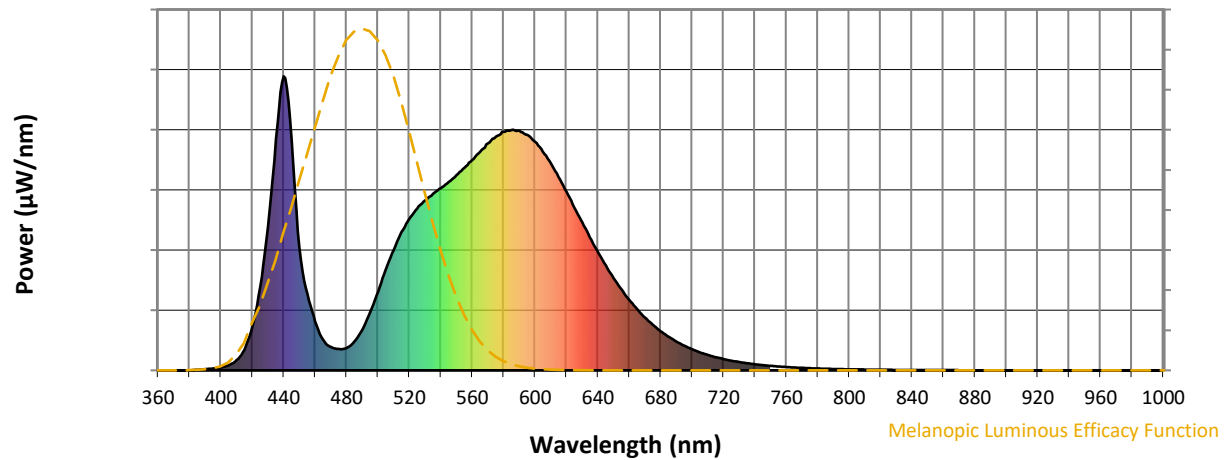
Scotopic Lumens: NR

S/P: 1.47

| 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       | 139                         | NR               | 620       | 607                         | NR               | 750       | 15                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 198                         | NR               | 625       | 554                         | NR               | 755       | 13                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 267                         | NR               | 630       | 504                         | NR               | 760       | 11                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 343                         | NR               | 635       | 452                         | NR               | 765       | 10                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 410                         | NR               | 640       | 403                         | NR               | 770       | 8                           | NR               | 900       | 0                           | NR               |
| 385       | 2                           | NR               | 515       | 470                         | NR               | 645       | 357                         | NR               | 775       | 7                           | NR               | 905       | 0                           | NR               |
| 390       | 4                           | NR               | 520       | 516                         | NR               | 650       | 314                         | NR               | 780       | 6                           | NR               | 910       | 0                           | NR               |
| 395       | 7                           | NR               | 525       | 550                         | NR               | 655       | 275                         | NR               | 785       | 5                           | NR               | 915       | 0                           | NR               |
| 400       | 10                          | NR               | 530       | 578                         | NR               | 660       | 240                         | NR               | 790       | 5                           | NR               | 920       | 0                           | NR               |
| 405       | 17                          | NR               | 535       | 601                         | NR               | 665       | 208                         | NR               | 795       | 4                           | NR               | 925       | 0                           | NR               |
| 410       | 35                          | NR               | 540       | 620                         | NR               | 670       | 179                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 70                          | NR               | 545       | 641                         | NR               | 675       | 155                         | NR               | 805       | 3                           | NR               | 935       | 0                           | NR               |
| 420       | 147                         | NR               | 550       | 664                         | NR               | 680       | 133                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 285                         | NR               | 555       | 689                         | NR               | 685       | 114                         | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 487                         | NR               | 560       | 715                         | NR               | 690       | 98                          | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 787                         | NR               | 565       | 743                         | NR               | 695       | 84                          | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 1000                        | NR               | 570       | 771                         | NR               | 700       | 72                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 783                         | NR               | 575       | 794                         | NR               | 705       | 61                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 417                         | NR               | 580       | 811                         | NR               | 710       | 52                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 261                         | NR               | 585       | 817                         | NR               | 715       | 45                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 167                         | NR               | 590       | 815                         | NR               | 720       | 39                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 104                         | NR               | 595       | 801                         | NR               | 725       | 33                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 79                          | NR               | 600       | 777                         | NR               | 730       | 28                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 73                          | NR               | 605       | 744                         | NR               | 735       | 24                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 76                          | NR               | 610       | 704                         | NR               | 740       | 21                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 98                          | NR               | 615       | 657                         | NR               | 745       | 18                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.78

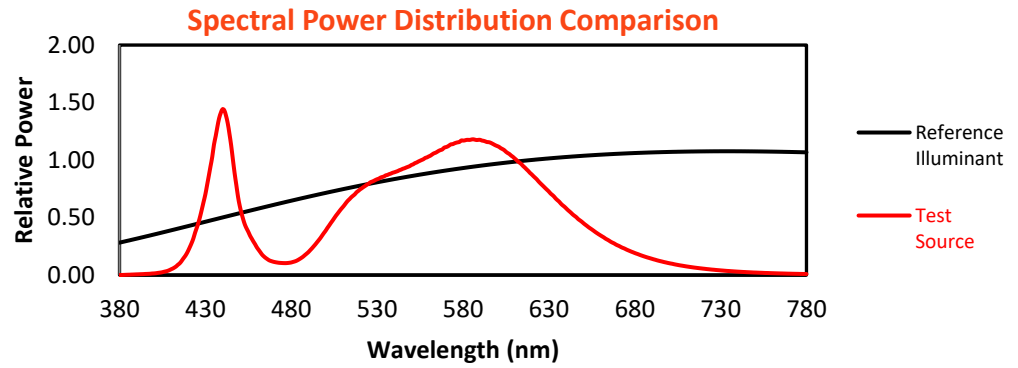
| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 139                         | NR               | 620       | 607                         | NR               | 750       | 15                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 198                         | NR               | 625       | 554                         | NR               | 755       | 13                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 267                         | NR               | 630       | 504                         | NR               | 760       | 11                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 343                         | NR               | 635       | 452                         | NR               | 765       | 10                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 410                         | NR               | 640       | 403                         | NR               | 770       | 8                           | NR               | 900       | 0                           | NR               |
| 385       | 2                           | NR               | 515       | 470                         | NR               | 645       | 357                         | NR               | 775       | 7                           | NR               | 905       | 0                           | NR               |
| 390       | 4                           | NR               | 520       | 516                         | NR               | 650       | 314                         | NR               | 780       | 6                           | NR               | 910       | 0                           | NR               |
| 395       | 7                           | NR               | 525       | 550                         | NR               | 655       | 275                         | NR               | 785       | 5                           | NR               | 915       | 0                           | NR               |
| 400       | 10                          | NR               | 530       | 578                         | NR               | 660       | 240                         | NR               | 790       | 5                           | NR               | 920       | 0                           | NR               |
| 405       | 17                          | NR               | 535       | 601                         | NR               | 665       | 208                         | NR               | 795       | 4                           | NR               | 925       | 0                           | NR               |
| 410       | 35                          | NR               | 540       | 620                         | NR               | 670       | 179                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 70                          | NR               | 545       | 641                         | NR               | 675       | 155                         | NR               | 805       | 3                           | NR               | 935       | 0                           | NR               |
| 420       | 147                         | NR               | 550       | 664                         | NR               | 680       | 133                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 285                         | NR               | 555       | 689                         | NR               | 685       | 114                         | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 487                         | NR               | 560       | 715                         | NR               | 690       | 98                          | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 787                         | NR               | 565       | 743                         | NR               | 695       | 84                          | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 1000                        | NR               | 570       | 771                         | NR               | 700       | 72                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 783                         | NR               | 575       | 794                         | NR               | 705       | 61                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 417                         | NR               | 580       | 811                         | NR               | 710       | 52                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 261                         | NR               | 585       | 817                         | NR               | 715       | 45                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 167                         | NR               | 590       | 815                         | NR               | 720       | 39                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 104                         | NR               | 595       | 801                         | NR               | 725       | 33                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 79                          | NR               | 600       | 777                         | NR               | 730       | 28                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 73                          | NR               | 605       | 744                         | NR               | 735       | 24                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 76                          | NR               | 610       | 704                         | NR               | 740       | 21                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 98                          | NR               | 615       | 657                         | NR               | 745       | 18                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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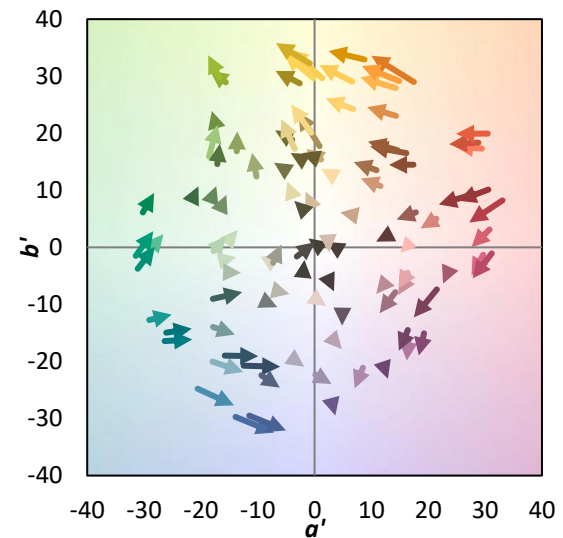
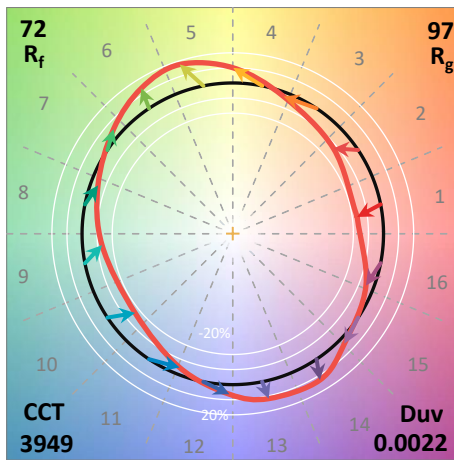
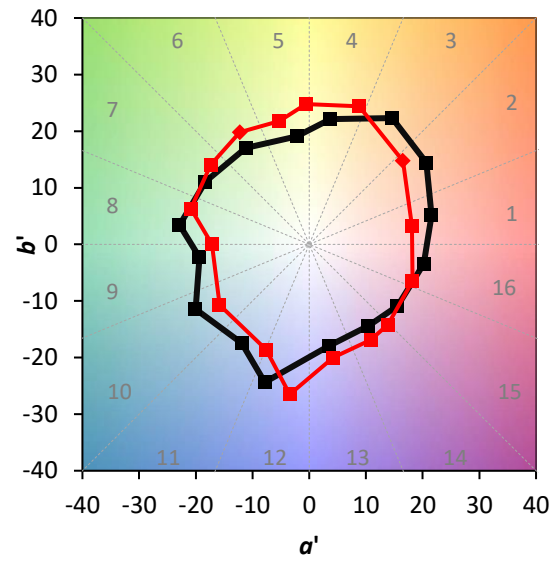
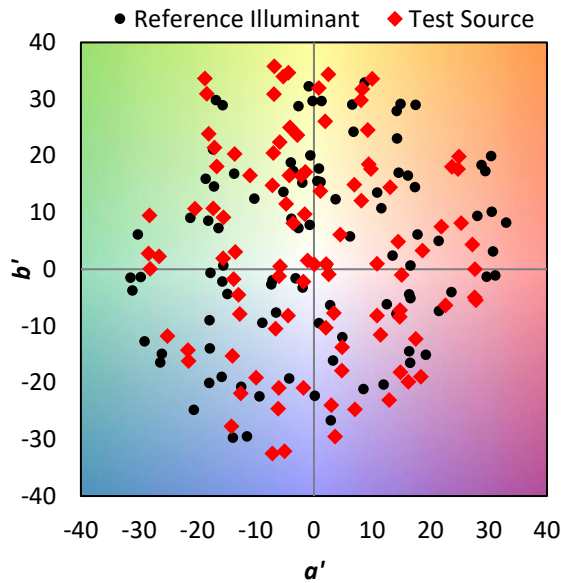
TM-30-18

### Summary

$R_f = 71.8$   
 $R_g = 96.5$   
 $CIE R_a = 70.7$   
 $R_g = -36.7$



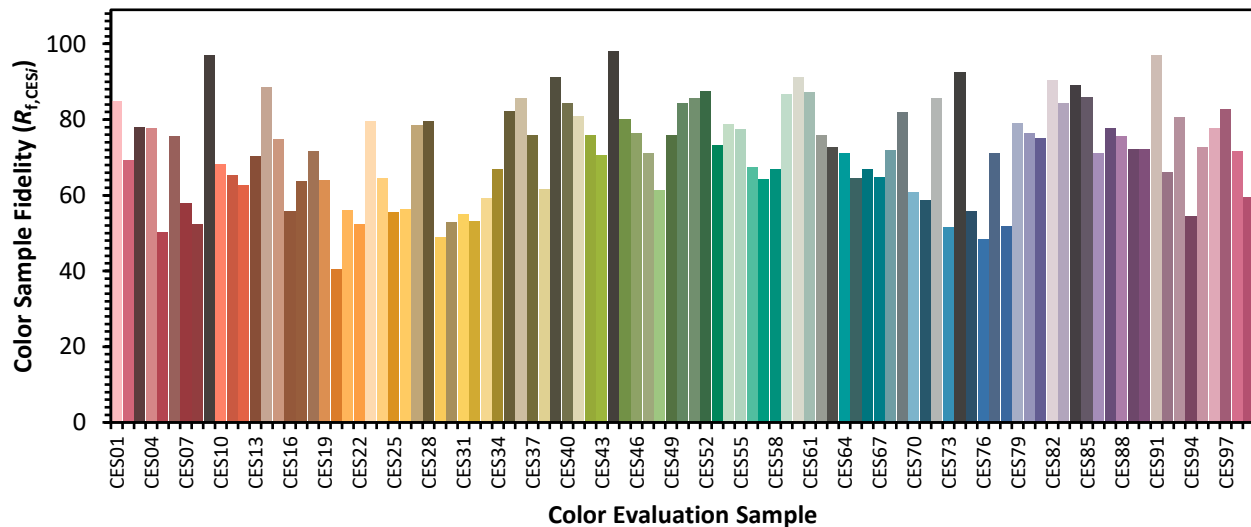
### Color Vector Graphics



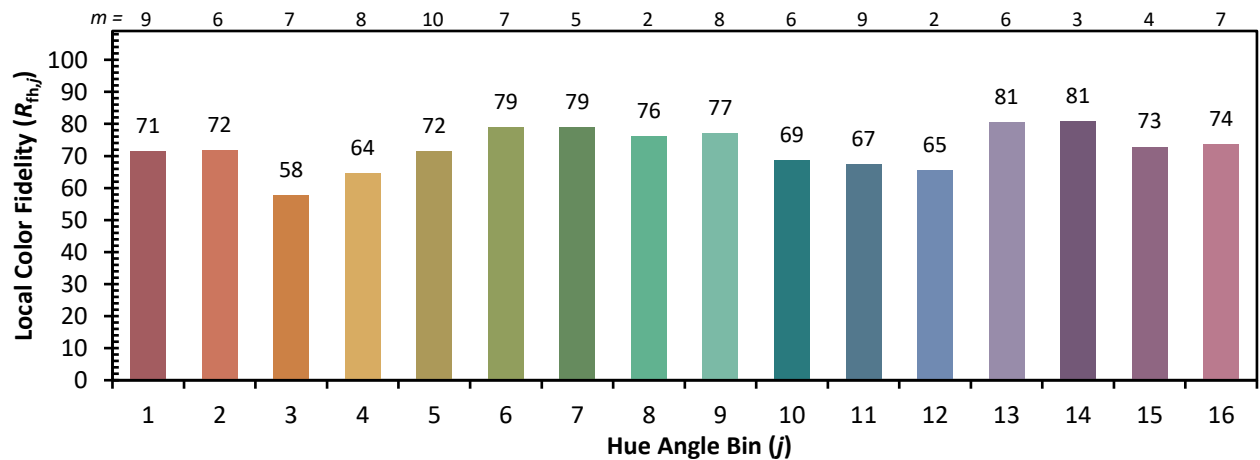
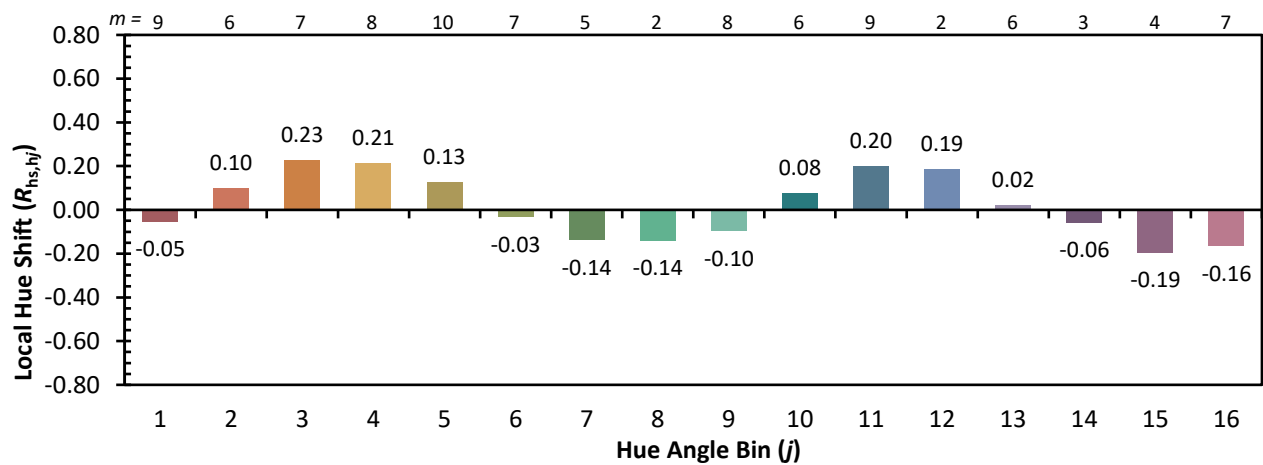
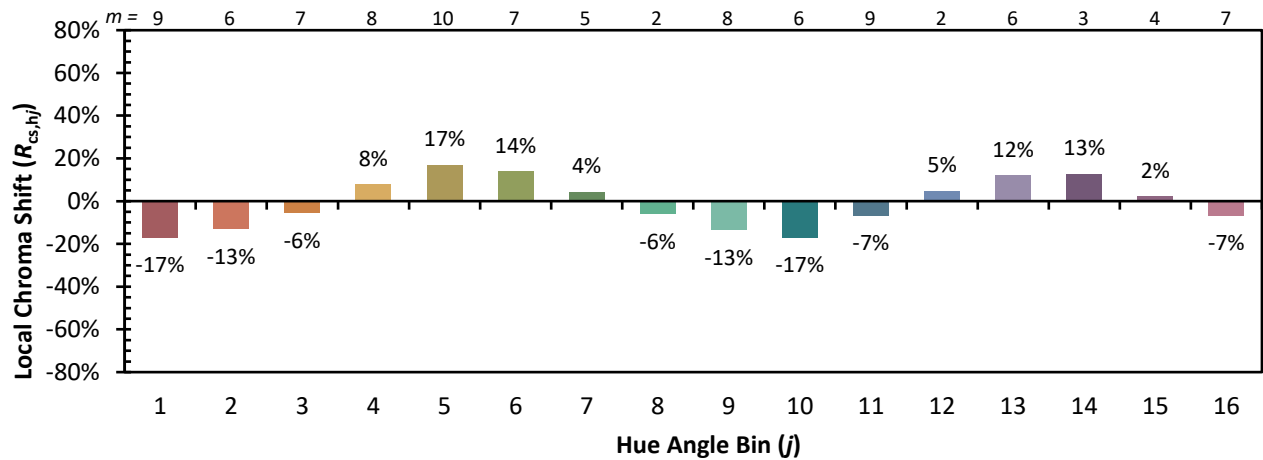


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

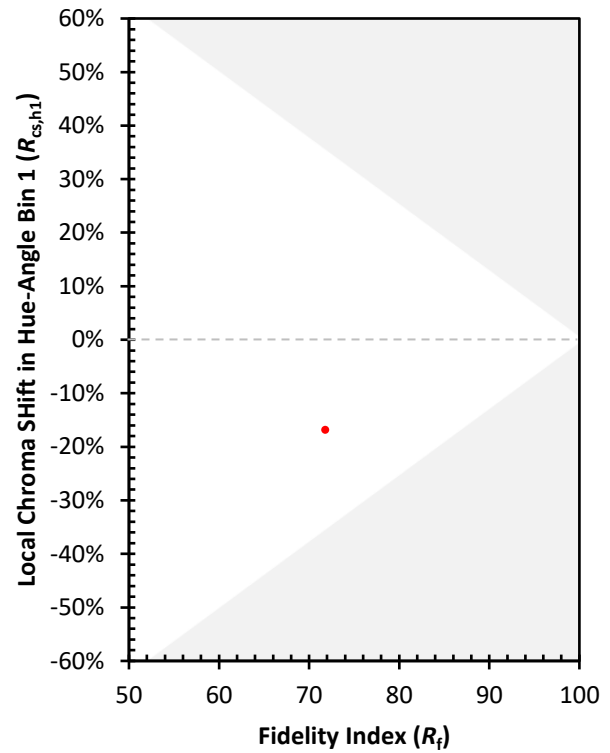
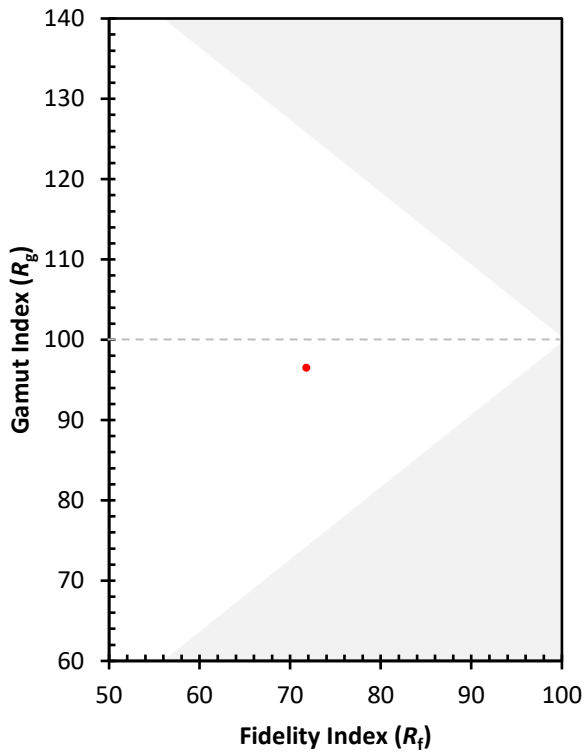
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 56 | CES51 = 86 | CES76 = 48 |
| CES02 = 61 | CES27 = 79 | CES52 = 88 | CES77 = 71 |
| CES03 = 30 | CES28 = 80 | CES53 = 73 | CES78 = 52 |
| CES04 = 70 | CES29 = 49 | CES54 = 79 | CES79 = 79 |
| CES05 = 47 | CES30 = 53 | CES55 = 77 | CES80 = 77 |
| CES06 = 50 | CES31 = 55 | CES56 = 67 | CES81 = 75 |
| CES07 = 40 | CES32 = 53 | CES57 = 64 | CES82 = 90 |
| CES08 = 39 | CES33 = 59 | CES58 = 67 | CES83 = 84 |
| CES09 = 29 | CES34 = 67 | CES59 = 87 | CES84 = 89 |
| CES10 = 74 | CES35 = 82 | CES60 = 91 | CES85 = 86 |
| CES11 = 57 | CES36 = 86 | CES61 = 87 | CES86 = 71 |
| CES12 = 63 | CES37 = 76 | CES62 = 76 | CES87 = 78 |
| CES13 = 42 | CES38 = 62 | CES63 = 73 | CES88 = 76 |
| CES14 = 74 | CES39 = 91 | CES64 = 71 | CES89 = 72 |
| CES15 = 71 | CES40 = 84 | CES65 = 64 | CES90 = 72 |
| CES16 = 46 | CES41 = 81 | CES66 = 67 | CES91 = 97 |
| CES17 = 49 | CES42 = 76 | CES67 = 65 | CES92 = 66 |
| CES18 = 56 | CES43 = 71 | CES68 = 72 | CES93 = 81 |
| CES19 = 72 | CES44 = 98 | CES69 = 82 | CES94 = 55 |
| CES20 = 65 | CES45 = 80 | CES70 = 61 | CES95 = 73 |
| CES21 = 86 | CES46 = 76 | CES71 = 59 | CES96 = 78 |
| CES22 = 78 | CES47 = 71 | CES72 = 86 | CES97 = 83 |
| CES23 = 92 | CES48 = 61 | CES73 = 52 | CES98 = 72 |
| CES24 = 91 | CES49 = 76 | CES74 = 93 | CES99 = 60 |
| CES25 = 72 | CES50 = 84 | CES75 = 56 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)