

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: P1379513

Luminaire Tested: **VAL-T-SB3C-722-U-SL4-HSS**

Issue Date: 02/18/2026

This test was performed under the Supervised Manufacturer's Testing Program. The results of this test have not been  
influenced by sources from within Cooper Lighting Solutions or from external interests.

**Test Information**

Test Method: LM-79-08  
 Report Number: P1379513  
 Test Lab: INNOVATION CENTER(G3)  
 Issue Date: 02/18/2026  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: VAL-T-SB3C-722-U-SL4-HSS  
 Description: GALLEON II WALL SLIM HIGH DENSITY LED ARRAYS 3SQUARE 150W 70CRI  
 2200K FIXTURE w/ TYPE IV SPILL CONTROL DISTRIBUTION OPTIC AND HOUSE SIDE  
 SHIELD  
 Light Source: (78) 2200K CCT, 70 CRI LEDS  
 Ballast/Driver: ELECTRONIC DRIVER  
 Luminaire Equipment:

| <u>Sample No.</u> | <u>Condition</u> | <u>Description</u> |
|-------------------|------------------|--------------------|
| a                 | good             | reflector          |
| b                 | good             | lens               |
| c                 | good             | housing            |
| d                 | good             | cord               |

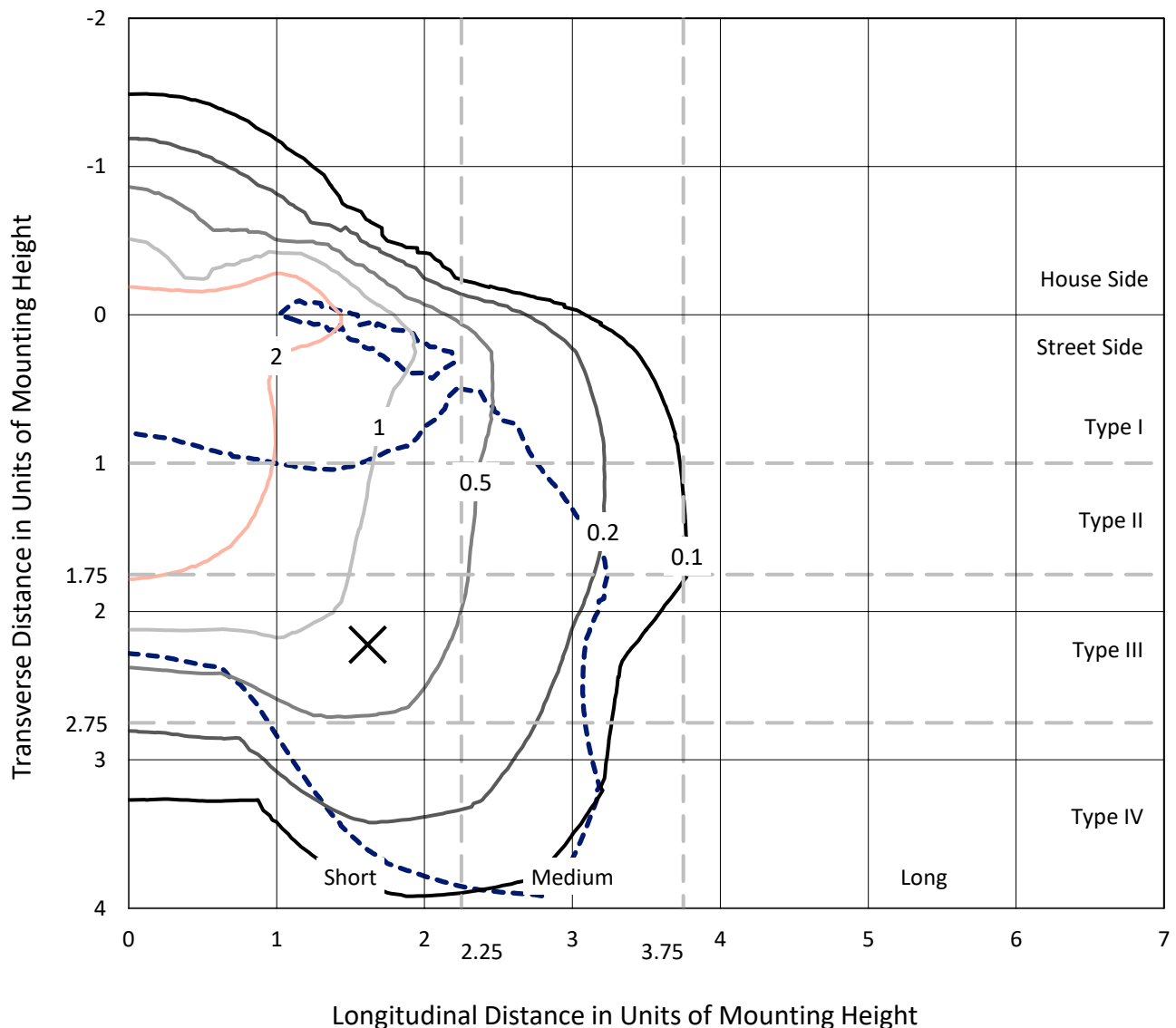
**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 10956.2 lumens  
 Efficiency: N/A  
 Efficacy: 73.0 lumens/watt  
 Luminous Opening: Rectangular (W 1.5' x L: 0.5' x H: 0')  
 IES Classification: Type IV - Short  
 BUG Rating: B2 - U0 - G2  
  
 Input Watts (W): 150  
 Input Voltage (V): 120  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: 0.98  
 Total Harmonic Distortion (THDi): 6.3%  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 28.75 FT

REPORT NUMBER: P1379513  
 CATALOG NUMBER: VAL-T-SB3C-722-U-SL4-HSS

## Iso-Footcandle Lines of Horizontal Illumination

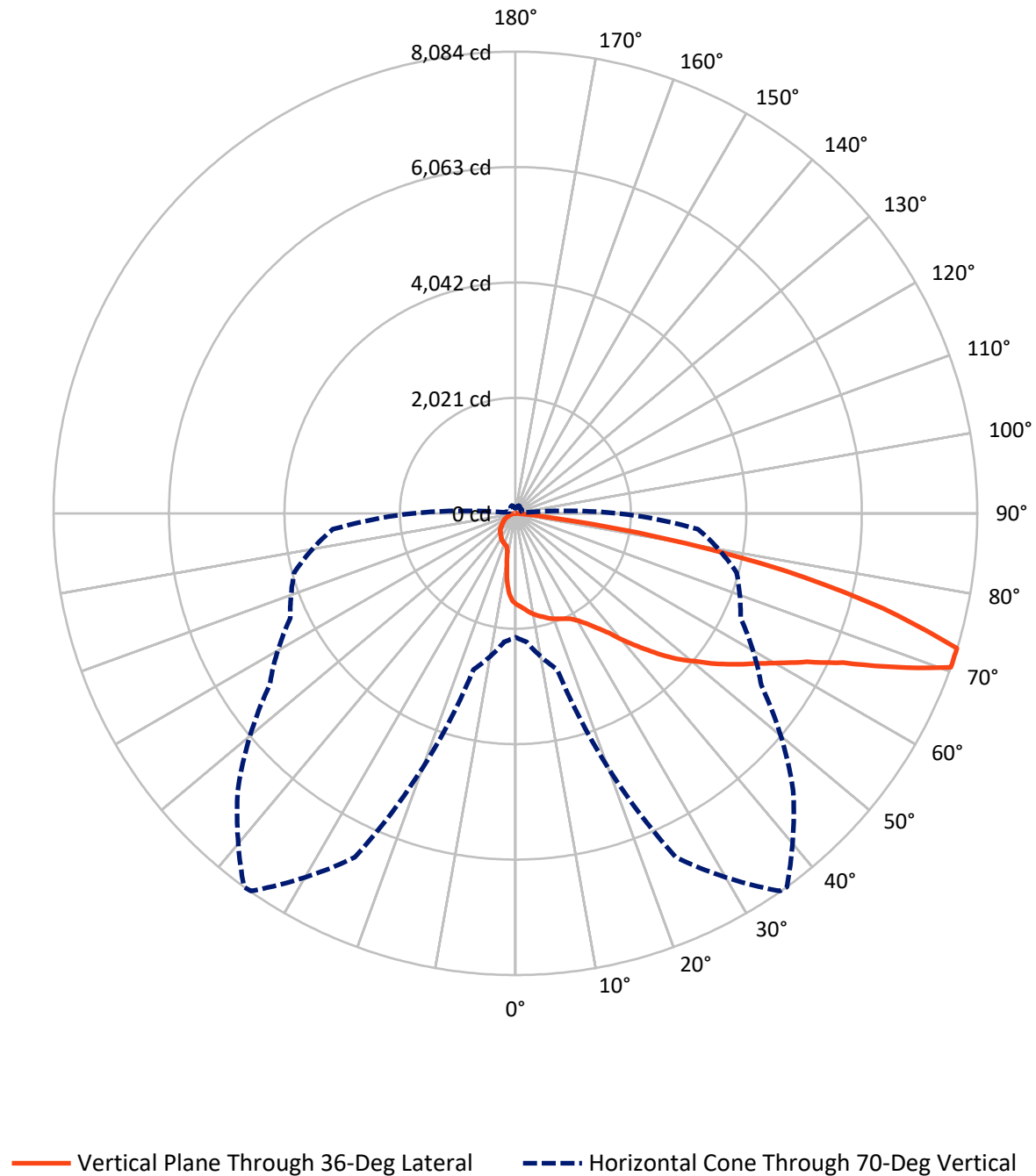
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 4.9 fc  
 Type IV - Short - N/A

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CATALOG NUMBER: VAL-T-SB3C-722-U-SL4-HSS

## Luminous Intensity Polar Plot



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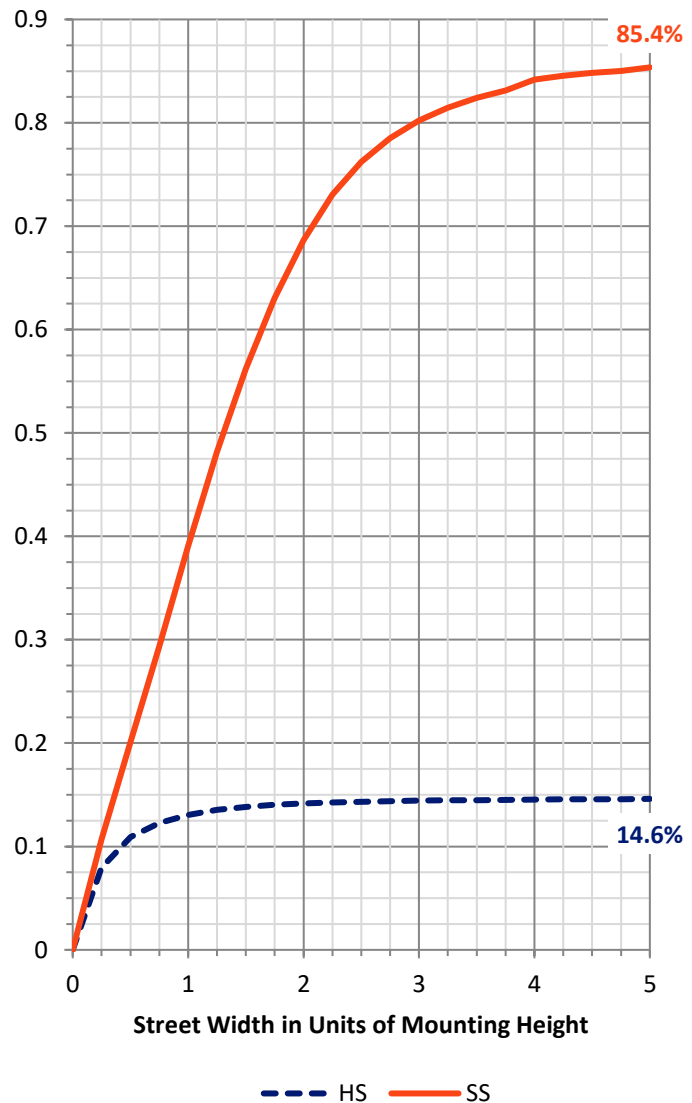
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1617.3   | 0.0    | 1617.3  |
|                    | % Fixture | 14.8     | 0.0    | 14.8    |
| <b>Street Side</b> | Lumens    | 9338.9   | 0.0    | 9338.9  |
|                    | % Fixture | 85.2     | 0.0    | 85.2    |
| <b>Total</b>       | Lumens    | 10956.2  | 0.0    | 10956.2 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 144.8   | 1.3       |
| 10°-20°   | 401.5   | 3.7       |
| 20°-30°   | 676.7   | 6.2       |
| 30°-40°   | 1080.8  | 9.9       |
| 40°-50°   | 1766.4  | 16.1      |
| 50°-60°   | 2383.3  | 21.8      |
| 60°-70°   | 2646.9  | 24.2      |
| 70°-80°   | 1752.3  | 16.0      |
| 80°-90°   | 103.5   | 0.9       |
| 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°    | 10956.2 | 100.0     |
| 0°-180°   | 10956.2 | 100.0     |



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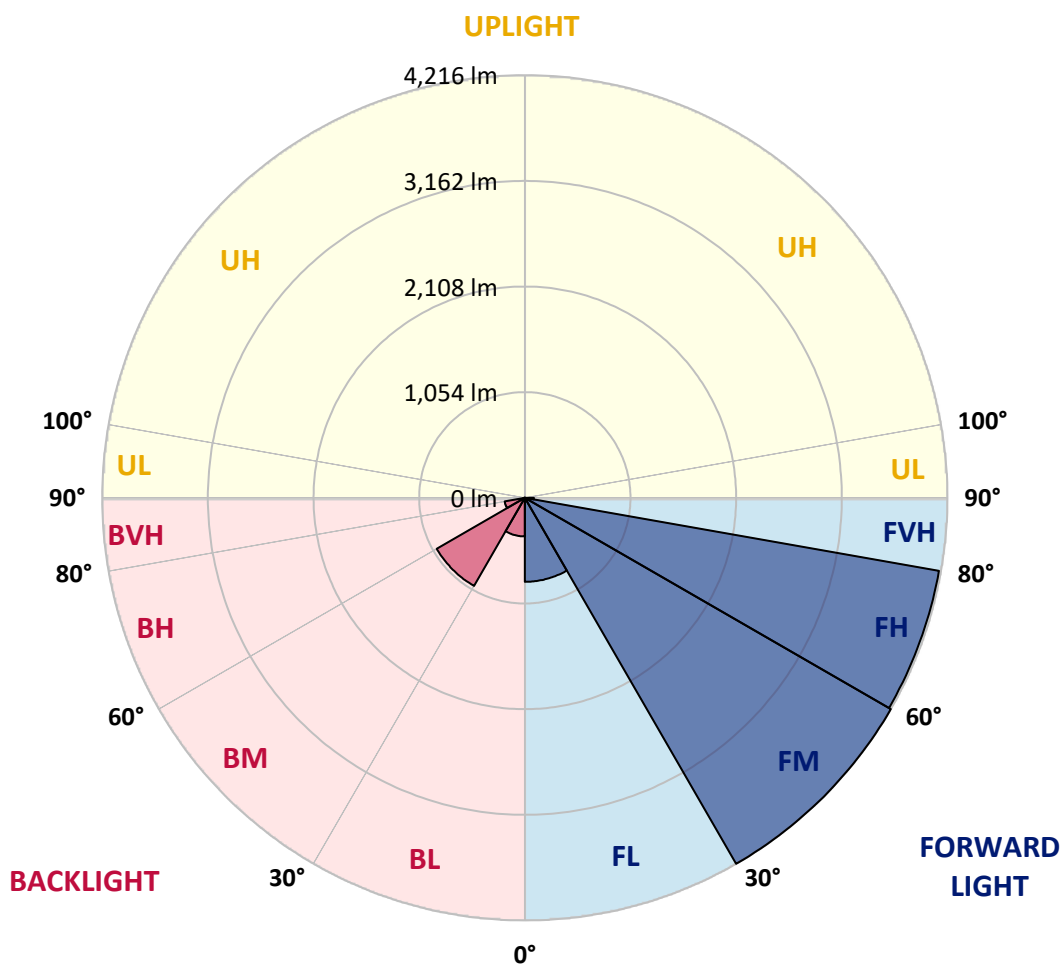
CATALOG NUMBER: VAL-T-SB3C-722-U-SL4-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 837.9  | 7.6       |                         |      |         |
| FM   | (30°-60°)   | 4215.9 | 38.5      |                         |      |         |
| FH   | (60°-80°)   | 4194.7 | 38.3      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 90.3   | 0.8       |                         |      | G1/100  |
| BL   | (0°-30°)    | 385.1  | 3.5       | B1/500                  |      |         |
| BM   | (30°-60°)   | 1014.5 | 9.3       | B2/2500                 |      |         |
| BH   | (60°-80°)   | 204.5  | 1.9       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 13.2   | 0.1       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G2**

Type IV Short





REPORT NUMBER: P1379513

CATALOG NUMBER: VAL-T-SB3C-722-U-SL4-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 36°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 |
| 2.5°  | 1645.3 | 1630.3 | 1637.8 | 1641.6 | 1630.3 | 1634.1 | 1626.6 | 1622.9 | 1607.9 | 1619.1 | 1604.2 |
| 5°    | 1705.1 | 1701.4 | 1697.6 | 1697.6 | 1686.4 | 1682.7 | 1671.5 | 1664.0 | 1649.0 | 1637.8 | 1619.1 |
| 7.5°  | 1776.2 | 1753.7 | 1750.0 | 1757.5 | 1735.0 | 1746.3 | 1735.0 | 1723.8 | 1697.6 | 1667.7 | 1637.8 |
| 10°   | 1832.3 | 1821.0 | 1806.1 | 1802.3 | 1806.1 | 1798.6 | 1787.4 | 1776.2 | 1761.2 | 1723.8 | 1690.2 |
| 12.5° | 1895.8 | 1888.3 | 1873.4 | 1865.9 | 1839.7 | 1843.5 | 1843.5 | 1828.5 | 1806.1 | 1783.6 | 1746.3 |
| 15°   | 1966.9 | 1937.0 | 1929.5 | 1910.8 | 1895.8 | 1884.6 | 1888.3 | 1892.1 | 1865.9 | 1843.5 | 1806.1 |
| 17.5° | 2000.5 | 1993.0 | 1974.3 | 1951.9 | 1951.9 | 1937.0 | 1933.2 | 1933.2 | 1922.0 | 1914.5 | 1869.6 |
| 20°   | 2052.9 | 2045.4 | 2011.7 | 1993.0 | 1974.3 | 1970.6 | 1981.8 | 1981.8 | 1963.1 | 1959.4 | 1951.9 |
| 22.5° | 2131.4 | 2109.0 | 2064.1 | 2034.2 | 2011.7 | 2008.0 | 2023.0 | 2019.2 | 2019.2 | 2023.0 | 2037.9 |
| 25°   | 2206.2 | 2180.0 | 2131.4 | 2082.8 | 2034.2 | 2041.7 | 2060.4 | 2064.1 | 2049.1 | 2071.6 | 2127.7 |
| 27.5° | 2318.4 | 2314.6 | 2239.8 | 2142.6 | 2097.7 | 2094.0 | 2101.5 | 2094.0 | 2079.0 | 2105.2 | 2209.9 |
| 30°   | 2613.8 | 2580.1 | 2456.7 | 2277.2 | 2176.3 | 2183.7 | 2172.5 | 2127.7 | 2090.3 | 2120.2 | 2288.4 |
| 32.5° | 2901.7 | 2823.2 | 2696.0 | 2490.4 | 2303.4 | 2307.1 | 2228.6 | 2142.6 | 2101.5 | 2135.1 | 2367.0 |
| 35°   | 3320.5 | 3238.2 | 3047.5 | 2688.6 | 2497.8 | 2464.2 | 2303.4 | 2198.7 | 2123.9 | 2161.3 | 2456.7 |
| 37.5° | 3911.3 | 3791.6 | 3533.6 | 3081.2 | 2669.9 | 2654.9 | 2434.3 | 2247.3 | 2142.6 | 2157.6 | 2576.4 |
| 40°   | 4367.5 | 4251.6 | 4042.2 | 3496.2 | 2965.3 | 2935.3 | 2639.9 | 2340.8 | 2146.4 | 2176.3 | 2688.6 |
| 42.5° | 4763.9 | 4704.0 | 4423.6 | 3862.7 | 3271.9 | 3208.3 | 2838.1 | 2456.7 | 2224.9 | 2224.9 | 2875.5 |
| 45°   | 5294.8 | 5182.7 | 4864.8 | 4206.7 | 3578.5 | 3507.5 | 3099.9 | 2639.9 | 2322.1 | 2281.0 | 3070.0 |
| 47.5° | 5762.3 | 5668.8 | 5298.6 | 4532.0 | 3870.2 | 3810.3 | 3350.4 | 2838.1 | 2445.5 | 2381.9 | 3298.1 |
| 50°   | 6274.5 | 6177.3 | 5751.0 | 4920.9 | 4158.1 | 4072.1 | 3627.1 | 3021.4 | 2595.1 | 2539.0 | 3571.0 |
| 52.5° | 6629.8 | 6547.5 | 6121.2 | 5272.4 | 4434.8 | 4375.0 | 3851.5 | 3208.3 | 2770.8 | 2714.7 | 3832.8 |
| 55°   | 6865.3 | 6734.5 | 6319.4 | 5579.0 | 4741.4 | 4666.6 | 4053.4 | 3417.7 | 2969.0 | 2950.3 | 4057.1 |
| 57.5° | 6977.5 | 6846.7 | 6495.2 | 5848.3 | 5044.3 | 4962.0 | 4303.9 | 3645.8 | 3227.0 | 3242.0 | 4296.5 |
| 60°   | 6917.7 | 6820.5 | 6562.5 | 6102.5 | 5380.8 | 5313.5 | 4543.2 | 3907.6 | 3492.5 | 3556.1 | 4408.6 |
| 62.5° | 6476.5 | 6498.9 | 6569.9 | 6480.2 | 5810.9 | 5728.6 | 4891.0 | 4240.4 | 3855.2 | 3866.4 | 4397.4 |
| 65°   | 5010.7 | 5104.1 | 5919.3 | 6917.7 | 6412.9 | 6304.5 | 5369.6 | 4659.2 | 4102.0 | 3974.9 | 4105.7 |
| 67.5° | 3185.9 | 3384.1 | 4281.5 | 7160.8 | 7254.2 | 7186.9 | 6001.6 | 5003.2 | 4161.8 | 4135.7 | 3840.3 |
| 70°   | 2168.8 | 2258.5 | 2830.6 | 6644.7 | 8073.1 | 8084.4 | 6876.6 | 5253.7 | 4348.8 | 4008.5 | 3208.3 |
| 72.5° | 1705.1 | 1712.6 | 2000.5 | 5986.6 | 8039.5 | 8080.6 | 6813.0 | 5515.5 | 4217.9 | 3571.0 | 2445.5 |
| 75°   | 1144.2 | 1174.1 | 1364.8 | 4883.5 | 6678.4 | 6644.7 | 5564.1 | 4236.6 | 3847.7 | 2823.2 | 1585.5 |
| 77.5° | 321.6  | 332.8  | 568.4  | 3111.1 | 4681.6 | 4823.7 | 4038.4 | 1454.6 | 2677.3 | 1293.8 | 598.3  |
| 80°   | 97.2   | 104.7  | 231.8  | 893.7  | 2239.8 | 2565.2 | 2101.5 | 437.5  | 646.9  | 306.6  | 119.7  |
| 82.5° | 41.1   | 44.9   | 138.4  | 205.7  | 512.3  | 553.4  | 493.6  | 115.9  | 201.9  | 97.2   | 41.1   |
| 85°   | 15.0   | 18.7   | 44.9   | 48.6   | 78.5   | 71.0   | 56.1   | 37.4   | 52.4   | 44.9   | 22.4   |
| 87.5° | 0.0    | 3.7    | 3.7    | 7.5    | 11.2   | 11.2   | 15.0   | 15.0   | 15.0   | 15.0   | 15.0   |
| 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: P1379513

CATALOG NUMBER: VAL-T-SB3C-722-U-SL4-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 | 1589.2 |
| 2.5°  | 1592.9 | 1589.2 | 1574.2 | 1555.5 | 1544.3 | 1540.6 | 1529.4 | 1506.9 | 1514.4 | 1518.2 | 1499.5 |
| 5°    | 1607.9 | 1581.7 | 1551.8 | 1514.4 | 1473.3 | 1439.6 | 1394.8 | 1361.1 | 1338.7 | 1334.9 | 1331.2 |
| 7.5°  | 1622.9 | 1600.4 | 1548.1 | 1465.8 | 1383.5 | 1297.5 | 1181.6 | 1099.4 | 1039.5 | 1009.6 | 1020.8 |
| 10°   | 1671.5 | 1634.1 | 1544.3 | 1417.2 | 1241.4 | 1054.5 | 886.2  | 789.0  | 732.9  | 706.7  | 695.5  |
| 12.5° | 1720.1 | 1667.7 | 1544.3 | 1331.2 | 1032.0 | 796.5  | 661.9  | 631.9  | 631.9  | 639.4  | 635.7  |
| 15°   | 1783.6 | 1723.8 | 1555.5 | 1200.3 | 818.9  | 624.5  | 602.0  | 605.8  | 617.0  | 624.5  | 624.5  |
| 17.5° | 1854.7 | 1809.8 | 1555.5 | 1035.8 | 639.4  | 579.6  | 583.3  | 594.5  | 605.8  | 609.5  | 613.2  |
| 20°   | 1955.7 | 1892.1 | 1506.9 | 845.1  | 560.9  | 560.9  | 568.4  | 575.9  | 590.8  | 598.3  | 602.0  |
| 22.5° | 2049.1 | 1978.1 | 1417.2 | 673.1  | 538.5  | 542.2  | 557.2  | 564.6  | 579.6  | 587.1  | 583.3  |
| 25°   | 2165.1 | 2097.7 | 1320.0 | 545.9  | 516.0  | 523.5  | 534.7  | 545.9  | 568.4  | 575.9  | 575.9  |
| 27.5° | 2292.2 | 2232.4 | 1245.2 | 534.7  | 493.6  | 504.8  | 523.5  | 538.5  | 557.2  | 564.6  | 564.6  |
| 30°   | 2430.5 | 2370.7 | 1200.3 | 575.9  | 482.4  | 478.6  | 501.1  | 512.3  | 534.7  | 553.4  | 557.2  |
| 32.5° | 2576.4 | 2482.9 | 1185.4 | 658.1  | 489.8  | 459.9  | 478.6  | 493.6  | 523.5  | 545.9  | 545.9  |
| 35°   | 2785.8 | 2651.2 | 1185.4 | 747.9  | 519.8  | 441.2  | 456.2  | 474.9  | 508.5  | 531.0  | 531.0  |
| 37.5° | 3043.8 | 2916.7 | 1301.3 | 811.4  | 545.9  | 426.3  | 433.8  | 452.5  | 478.6  | 508.5  | 512.3  |
| 40°   | 3350.4 | 3290.6 | 1607.9 | 852.6  | 560.9  | 411.3  | 418.8  | 426.3  | 441.2  | 471.2  | 478.6  |
| 42.5° | 3679.5 | 3615.9 | 2045.4 | 893.7  | 553.4  | 400.1  | 396.4  | 396.4  | 403.8  | 422.5  | 426.3  |
| 45°   | 3997.3 | 3907.6 | 2438.0 | 878.7  | 519.8  | 377.7  | 370.2  | 359.0  | 359.0  | 373.9  | 373.9  |
| 47.5° | 4277.8 | 4117.0 | 2628.7 | 777.8  | 478.6  | 355.2  | 340.3  | 321.6  | 321.6  | 329.1  | 329.1  |
| 50°   | 4457.2 | 4109.5 | 2509.1 | 617.0  | 418.8  | 332.8  | 310.4  | 295.4  | 291.7  | 295.4  | 291.7  |
| 52.5° | 4483.4 | 3847.7 | 2064.1 | 478.6  | 362.7  | 306.6  | 280.4  | 273.0  | 269.2  | 269.2  | 269.2  |
| 55°   | 4307.7 | 3365.4 | 1450.8 | 366.5  | 317.8  | 276.7  | 258.0  | 254.3  | 250.5  | 246.8  | 243.1  |
| 57.5° | 4004.8 | 2666.1 | 886.2  | 295.4  | 287.9  | 250.5  | 239.3  | 235.6  | 228.1  | 216.9  | 213.1  |
| 60°   | 3600.9 | 1963.1 | 467.4  | 250.5  | 250.5  | 220.6  | 220.6  | 220.6  | 201.9  | 187.0  | 179.5  |
| 62.5° | 3152.2 | 1323.7 | 261.8  | 213.1  | 209.4  | 198.2  | 201.9  | 198.2  | 179.5  | 153.3  | 149.6  |
| 65°   | 2651.2 | 751.6  | 175.7  | 175.7  | 179.5  | 172.0  | 179.5  | 175.7  | 149.6  | 123.4  | 115.9  |
| 67.5° | 2288.4 | 392.6  | 138.4  | 149.6  | 149.6  | 142.1  | 153.3  | 157.1  | 134.6  | 108.4  | 101.0  |
| 70°   | 1791.1 | 198.2  | 112.2  | 123.4  | 123.4  | 112.2  | 134.6  | 145.8  | 123.4  | 93.5   | 89.7   |
| 72.5° | 1263.9 | 123.4  | 93.5   | 97.2   | 93.5   | 86.0   | 115.9  | 130.9  | 108.4  | 78.5   | 74.8   |
| 75°   | 770.3  | 82.3   | 71.0   | 78.5   | 67.3   | 67.3   | 101.0  | 115.9  | 93.5   | 63.6   | 59.8   |
| 77.5° | 359.0  | 59.8   | 52.4   | 56.1   | 48.6   | 52.4   | 82.3   | 89.7   | 67.3   | 52.4   | 48.6   |
| 80°   | 89.7   | 41.1   | 41.1   | 37.4   | 37.4   | 41.1   | 59.8   | 56.1   | 48.6   | 44.9   | 41.1   |
| 82.5° | 37.4   | 29.9   | 26.2   | 26.2   | 26.2   | 29.9   | 37.4   | 37.4   | 41.1   | 37.4   | 37.4   |
| 85°   | 18.7   | 18.7   | 18.7   | 18.7   | 22.4   | 22.4   | 29.9   | 33.7   | 33.7   | 33.7   | 29.9   |
| 87.5° | 11.2   | 11.2   | 11.2   | 11.2   | 11.2   | 15.0   | 18.7   | 22.4   | 26.2   | 15.0   | 11.2   |
| 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: SP1-2407-184-2

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-722-U-5WQ

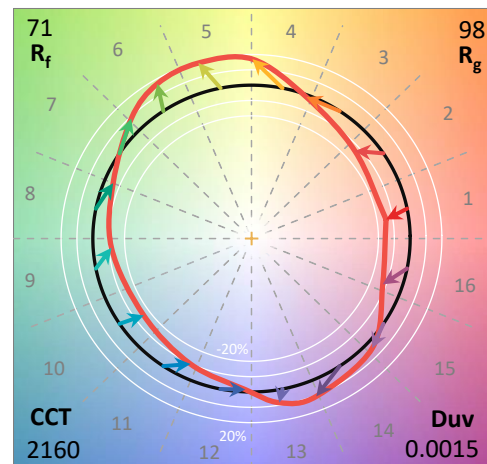
Data in this report applies to families of products including GSS-SB1A-722-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-2  
 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-722-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 2200K CCT 26 LEDS

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 2160     | CRI (Ra): | 71.9 |      |       |
| CIE u':                   | 0.2927   | R1:       | 68.7 | R9:  | -17.8 |
| CIE v':                   | 0.5388   | R2:       | 82.6 | R10: | 60.5  |
| Duv:                      | 0.0015   | R3:       | 95.5 | R11: | 60.2  |
| CIE x:                    | 0.5130   | R4:       | 66.4 | R12: | 48.2  |
| CIE y:                    | 0.4197   | R5:       | 65.4 | R13: | 70.7  |
| CIE z:                    | 0.0674   | R6:       | 75.9 | R14: | 96.8  |
| Peak Wavelength (nm):     | 609      | R7:       | 77.2 | R15: | 61.8  |
| Dominant Wavelength (nm): | 587      | R8:       | 43.5 |      |       |
| Purity:                   | 79.96089 |           |      |      |       |
| Rf:                       | 70.6     |           |      |      |       |
| Rg:                       | 97.6     |           |      |      |       |



### Test Conditions

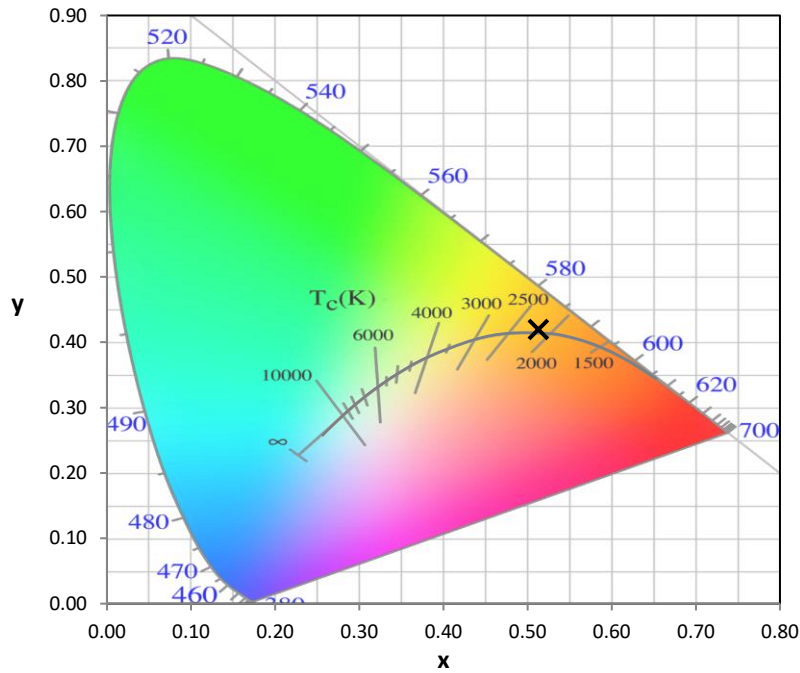
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-2

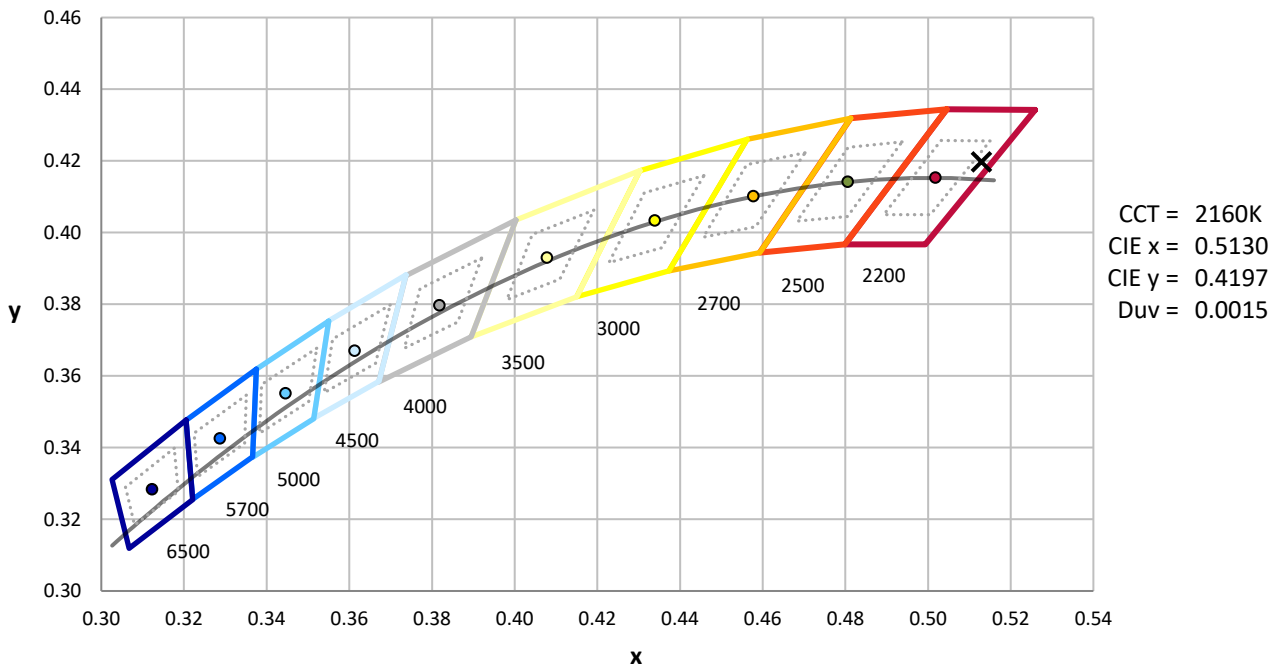
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



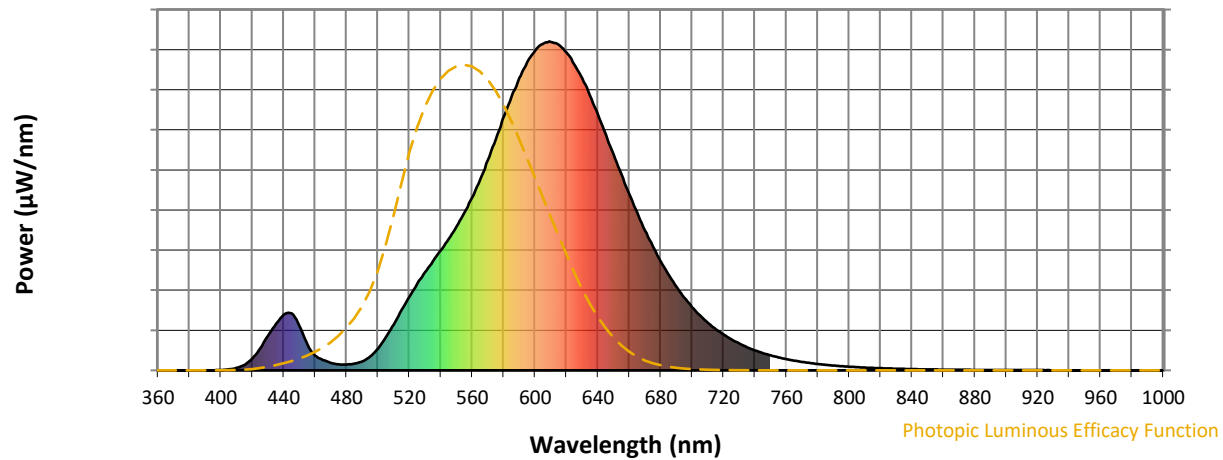
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 2200K 7-step quadrangle

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### Photopic Flux vs. Wavelength

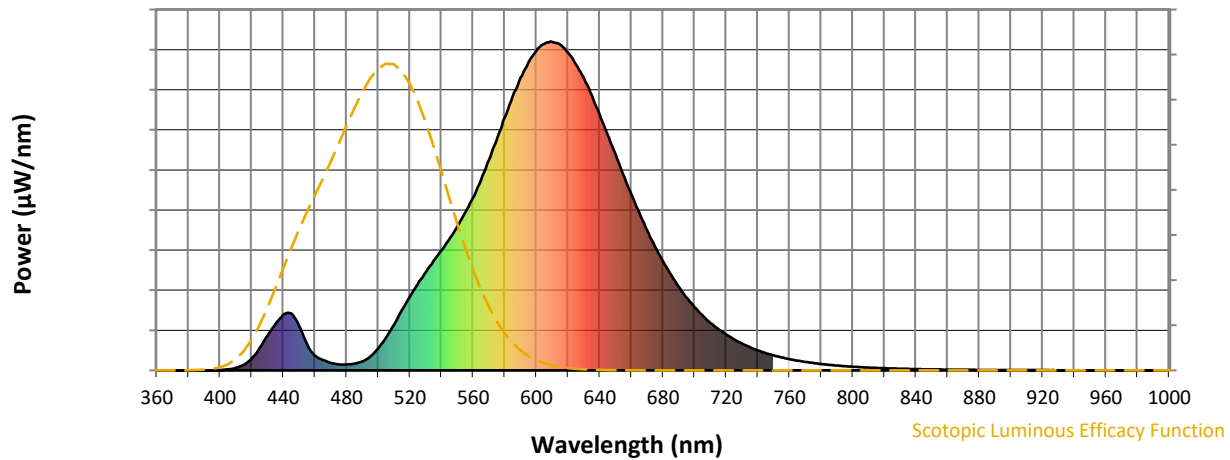


### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 27                                   | NR                             | 620               | 966                                  | NR                             | 750               | 46                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 42                                   | NR                             | 625               | 930                                  | NR                             | 755               | 39                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 67                                   | NR                             | 630               | 888                                  | NR                             | 760               | 34                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 101                                  | NR                             | 635               | 835                                  | NR                             | 765               | 30                                   | NR                             | 895               | 1                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 139                                  | NR                             | 640               | 778                                  | NR                             | 770               | 26                                   | NR                             | 900               | 1                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 183                                  | NR                             | 645               | 717                                  | NR                             | 775               | 22                                   | NR                             | 905               | 1                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 224                                  | NR                             | 650               | 656                                  | NR                             | 780               | 19                                   | NR                             | 910               | 1                                    | NR                             |
| 395               | 0                                    | NR                             | 525               | 262                                  | NR                             | 655               | 595                                  | NR                             | 785               | 17                                   | NR                             | 915               | 1                                    | NR                             |
| 400               | 1                                    | NR                             | 530               | 299                                  | NR                             | 660               | 536                                  | NR                             | 790               | 15                                   | NR                             | 920               | 1                                    | NR                             |
| 405               | 3                                    | NR                             | 535               | 332                                  | NR                             | 665               | 480                                  | NR                             | 795               | 13                                   | NR                             | 925               | 1                                    | NR                             |
| 410               | 7                                    | NR                             | 540               | 365                                  | NR                             | 670               | 425                                  | NR                             | 800               | 11                                   | NR                             | 930               | 1                                    | NR                             |
| 415               | 17                                   | NR                             | 545               | 400                                  | NR                             | 675               | 376                                  | NR                             | 805               | 10                                   | NR                             | 935               | 0                                    | NR                             |
| 420               | 36                                   | NR                             | 550               | 437                                  | NR                             | 680               | 332                                  | NR                             | 810               | 8                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 67                                   | NR                             | 555               | 479                                  | NR                             | 685               | 291                                  | NR                             | 815               | 8                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 105                                  | NR                             | 560               | 525                                  | NR                             | 690               | 255                                  | NR                             | 820               | 7                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 141                                  | NR                             | 565               | 579                                  | NR                             | 695               | 221                                  | NR                             | 825               | 6                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 169                                  | NR                             | 570               | 639                                  | NR                             | 700               | 192                                  | NR                             | 830               | 5                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 173                                  | NR                             | 575               | 703                                  | NR                             | 705               | 167                                  | NR                             | 835               | 4                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 136                                  | NR                             | 580               | 769                                  | NR                             | 710               | 144                                  | NR                             | 840               | 4                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 80                                   | NR                             | 585               | 832                                  | NR                             | 715               | 125                                  | NR                             | 845               | 3                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 45                                   | NR                             | 590               | 890                                  | NR                             | 720               | 109                                  | NR                             | 850               | 3                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 32                                   | NR                             | 595               | 937                                  | NR                             | 725               | 94                                   | NR                             | 855               | 3                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 23                                   | NR                             | 600               | 972                                  | NR                             | 730               | 81                                   | NR                             | 860               | 2                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 18                                   | NR                             | 605               | 992                                  | NR                             | 735               | 70                                   | NR                             | 865               | 2                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 18                                   | NR                             | 610               | 998                                  | NR                             | 740               | 61                                   | NR                             | 870               | 2                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 20                                   | NR                             | 615               | 990                                  | NR                             | 745               | 53                                   | NR                             | 875               | 2                                    | NR                             |                   |                                      |                                |

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### Scotopic Flux vs. Wavelength



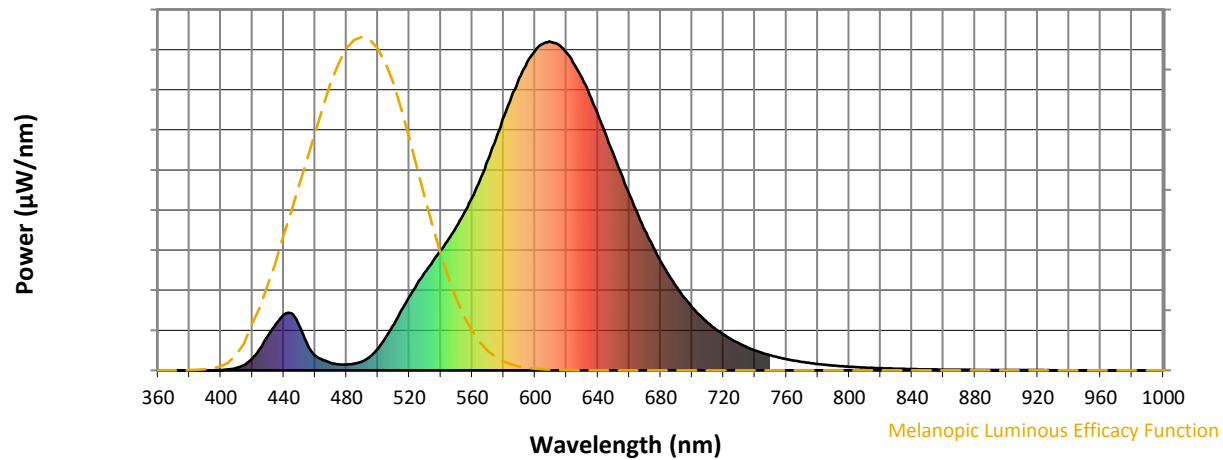
Scotopic Lumens: NR

S/P: 0.8

| $\lambda$<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               | 27                                   | NR                             | 620               | 966                                  | NR                             | 750               | 46                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 42                                   | NR                             | 625               | 930                                  | NR                             | 755               | 39                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 67                                   | NR                             | 630               | 888                                  | NR                             | 760               | 34                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 101                                  | NR                             | 635               | 835                                  | NR                             | 765               | 30                                   | NR                             | 895               | 1                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 139                                  | NR                             | 640               | 778                                  | NR                             | 770               | 26                                   | NR                             | 900               | 1                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 183                                  | NR                             | 645               | 717                                  | NR                             | 775               | 22                                   | NR                             | 905               | 1                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 224                                  | NR                             | 650               | 656                                  | NR                             | 780               | 19                                   | NR                             | 910               | 1                                    | NR                             |
| 395               | 0                                    | NR                             | 525               | 262                                  | NR                             | 655               | 595                                  | NR                             | 785               | 17                                   | NR                             | 915               | 1                                    | NR                             |
| 400               | 1                                    | NR                             | 530               | 299                                  | NR                             | 660               | 536                                  | NR                             | 790               | 15                                   | NR                             | 920               | 1                                    | NR                             |
| 405               | 3                                    | NR                             | 535               | 332                                  | NR                             | 665               | 480                                  | NR                             | 795               | 13                                   | NR                             | 925               | 1                                    | NR                             |
| 410               | 7                                    | NR                             | 540               | 365                                  | NR                             | 670               | 425                                  | NR                             | 800               | 11                                   | NR                             | 930               | 1                                    | NR                             |
| 415               | 17                                   | NR                             | 545               | 400                                  | NR                             | 675               | 376                                  | NR                             | 805               | 10                                   | NR                             | 935               | 0                                    | NR                             |
| 420               | 36                                   | NR                             | 550               | 437                                  | NR                             | 680               | 332                                  | NR                             | 810               | 8                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 67                                   | NR                             | 555               | 479                                  | NR                             | 685               | 291                                  | NR                             | 815               | 8                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 105                                  | NR                             | 560               | 525                                  | NR                             | 690               | 255                                  | NR                             | 820               | 7                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 141                                  | NR                             | 565               | 579                                  | NR                             | 695               | 221                                  | NR                             | 825               | 6                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 169                                  | NR                             | 570               | 639                                  | NR                             | 700               | 192                                  | NR                             | 830               | 5                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 173                                  | NR                             | 575               | 703                                  | NR                             | 705               | 167                                  | NR                             | 835               | 4                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 136                                  | NR                             | 580               | 769                                  | NR                             | 710               | 144                                  | NR                             | 840               | 4                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 80                                   | NR                             | 585               | 832                                  | NR                             | 715               | 125                                  | NR                             | 845               | 3                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 45                                   | NR                             | 590               | 890                                  | NR                             | 720               | 109                                  | NR                             | 850               | 3                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 32                                   | NR                             | 595               | 937                                  | NR                             | 725               | 94                                   | NR                             | 855               | 3                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 23                                   | NR                             | 600               | 972                                  | NR                             | 730               | 81                                   | NR                             | 860               | 2                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 18                                   | NR                             | 605               | 992                                  | NR                             | 735               | 70                                   | NR                             | 865               | 2                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 18                                   | NR                             | 610               | 998                                  | NR                             | 740               | 61                                   | NR                             | 870               | 2                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 20                                   | NR                             | 615               | 990                                  | NR                             | 745               | 53                                   | NR                             | 875               | 2                                    | NR                             |                   |                                      |                                |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.21

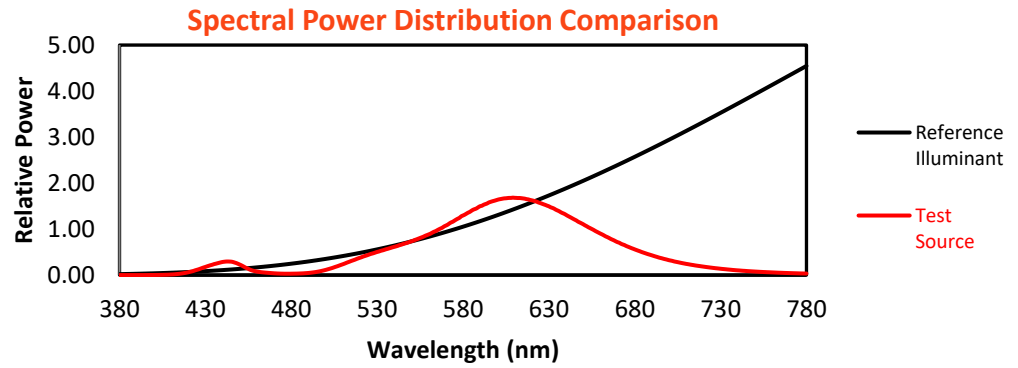
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | 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               | 27                                     | NR                             | 620               | 966                                    | NR                             | 750               | 46                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 42                                     | NR                             | 625               | 930                                    | NR                             | 755               | 39                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 67                                     | NR                             | 630               | 888                                    | NR                             | 760               | 34                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 101                                    | NR                             | 635               | 835                                    | NR                             | 765               | 30                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 139                                    | NR                             | 640               | 778                                    | NR                             | 770               | 26                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 183                                    | NR                             | 645               | 717                                    | NR                             | 775               | 22                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 224                                    | NR                             | 650               | 656                                    | NR                             | 780               | 19                                     | NR                             | 910               | 1                                      | NR                             |
| 395               | 0                                      | NR                             | 525               | 262                                    | NR                             | 655               | 595                                    | NR                             | 785               | 17                                     | NR                             | 915               | 1                                      | NR                             |
| 400               | 1                                      | NR                             | 530               | 299                                    | NR                             | 660               | 536                                    | NR                             | 790               | 15                                     | NR                             | 920               | 1                                      | NR                             |
| 405               | 3                                      | NR                             | 535               | 332                                    | NR                             | 665               | 480                                    | NR                             | 795               | 13                                     | NR                             | 925               | 1                                      | NR                             |
| 410               | 7                                      | NR                             | 540               | 365                                    | NR                             | 670               | 425                                    | NR                             | 800               | 11                                     | NR                             | 930               | 1                                      | NR                             |
| 415               | 17                                     | NR                             | 545               | 400                                    | NR                             | 675               | 376                                    | NR                             | 805               | 10                                     | NR                             | 935               | 0                                      | NR                             |
| 420               | 36                                     | NR                             | 550               | 437                                    | NR                             | 680               | 332                                    | NR                             | 810               | 8                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 67                                     | NR                             | 555               | 479                                    | NR                             | 685               | 291                                    | NR                             | 815               | 8                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 105                                    | NR                             | 560               | 525                                    | NR                             | 690               | 255                                    | NR                             | 820               | 7                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 141                                    | NR                             | 565               | 579                                    | NR                             | 695               | 221                                    | NR                             | 825               | 6                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 169                                    | NR                             | 570               | 639                                    | NR                             | 700               | 192                                    | NR                             | 830               | 5                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 173                                    | NR                             | 575               | 703                                    | NR                             | 705               | 167                                    | NR                             | 835               | 4                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 136                                    | NR                             | 580               | 769                                    | NR                             | 710               | 144                                    | NR                             | 840               | 4                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 80                                     | NR                             | 585               | 832                                    | NR                             | 715               | 125                                    | NR                             | 845               | 3                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 45                                     | NR                             | 590               | 890                                    | NR                             | 720               | 109                                    | NR                             | 850               | 3                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 32                                     | NR                             | 595               | 937                                    | NR                             | 725               | 94                                     | NR                             | 855               | 3                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 23                                     | NR                             | 600               | 972                                    | NR                             | 730               | 81                                     | NR                             | 860               | 2                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 18                                     | NR                             | 605               | 992                                    | NR                             | 735               | 70                                     | NR                             | 865               | 2                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 18                                     | NR                             | 610               | 998                                    | NR                             | 740               | 61                                     | NR                             | 870               | 2                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 20                                     | NR                             | 615               | 990                                    | NR                             | 745               | 53                                     | NR                             | 875               | 2                                      | NR                             |                   |                                        |                                |

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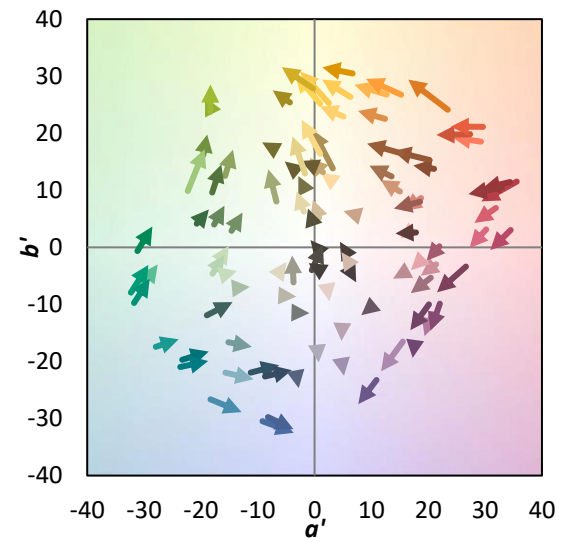
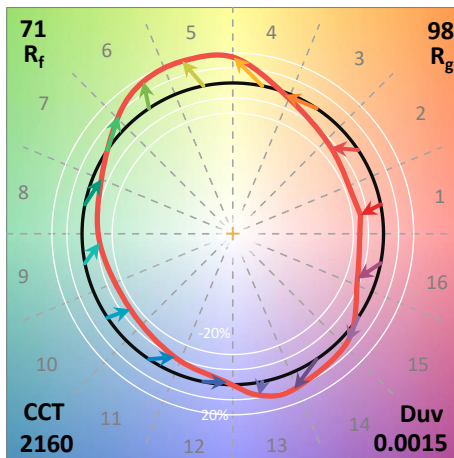
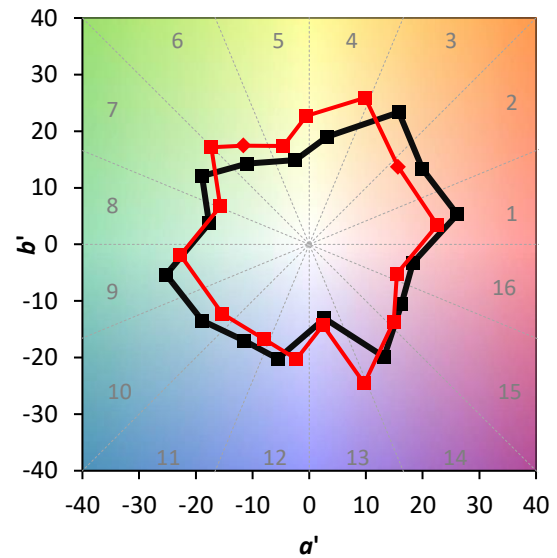
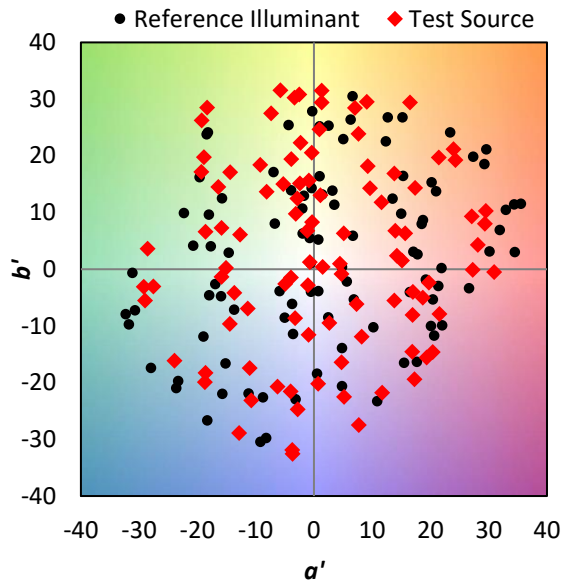
TM-30-18

### Summary

$R_f = 70.6$   
 $R_g = 97.6$   
 $CIE R_a = 71.9$   
 $R_g = -17.8$



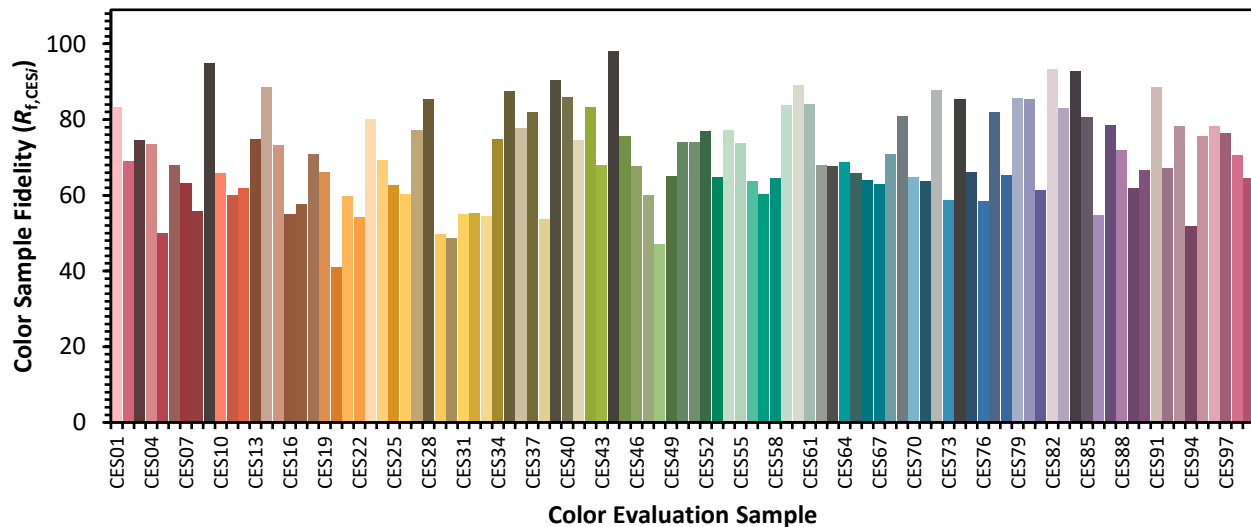
### Color Vector Graphics

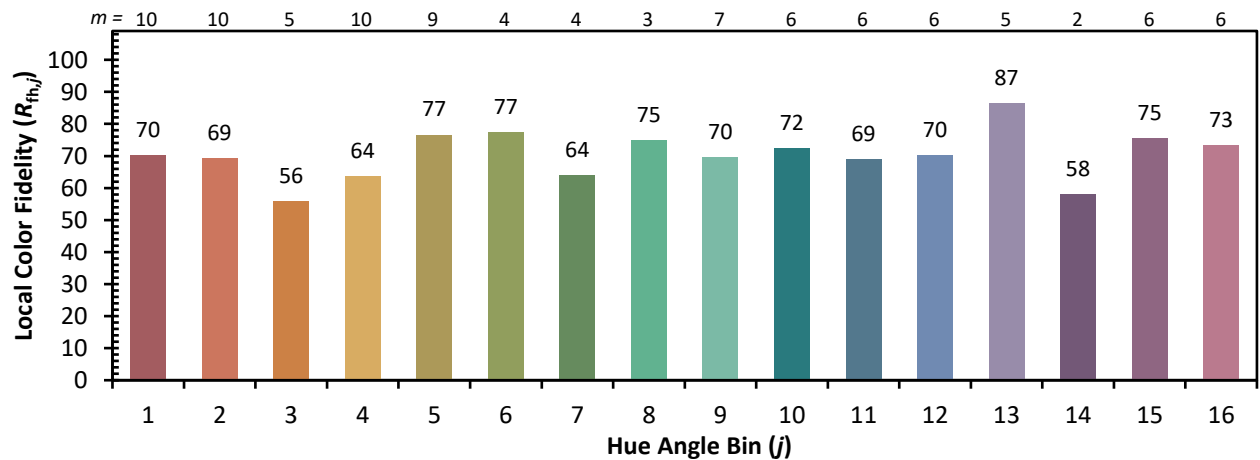
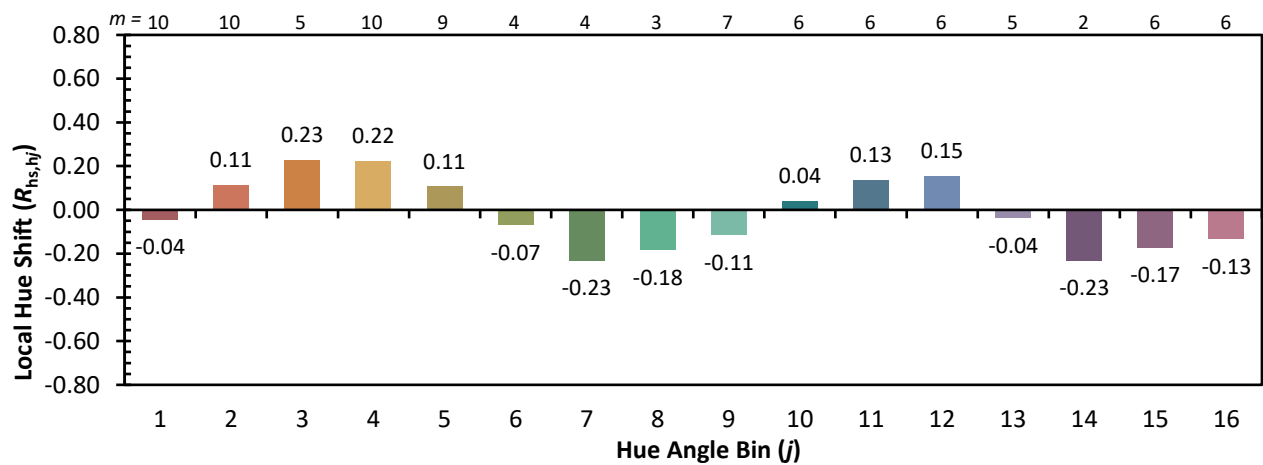
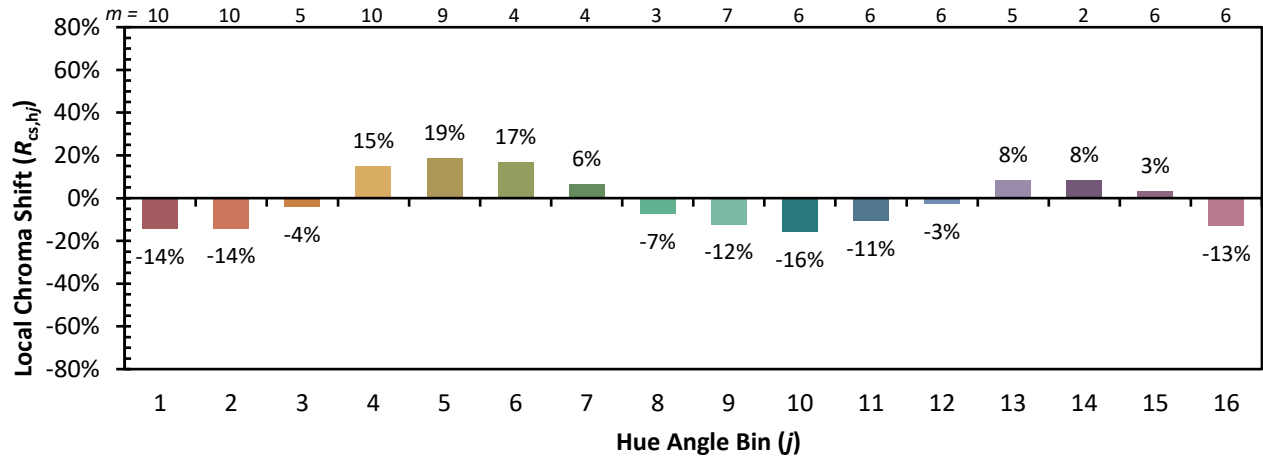




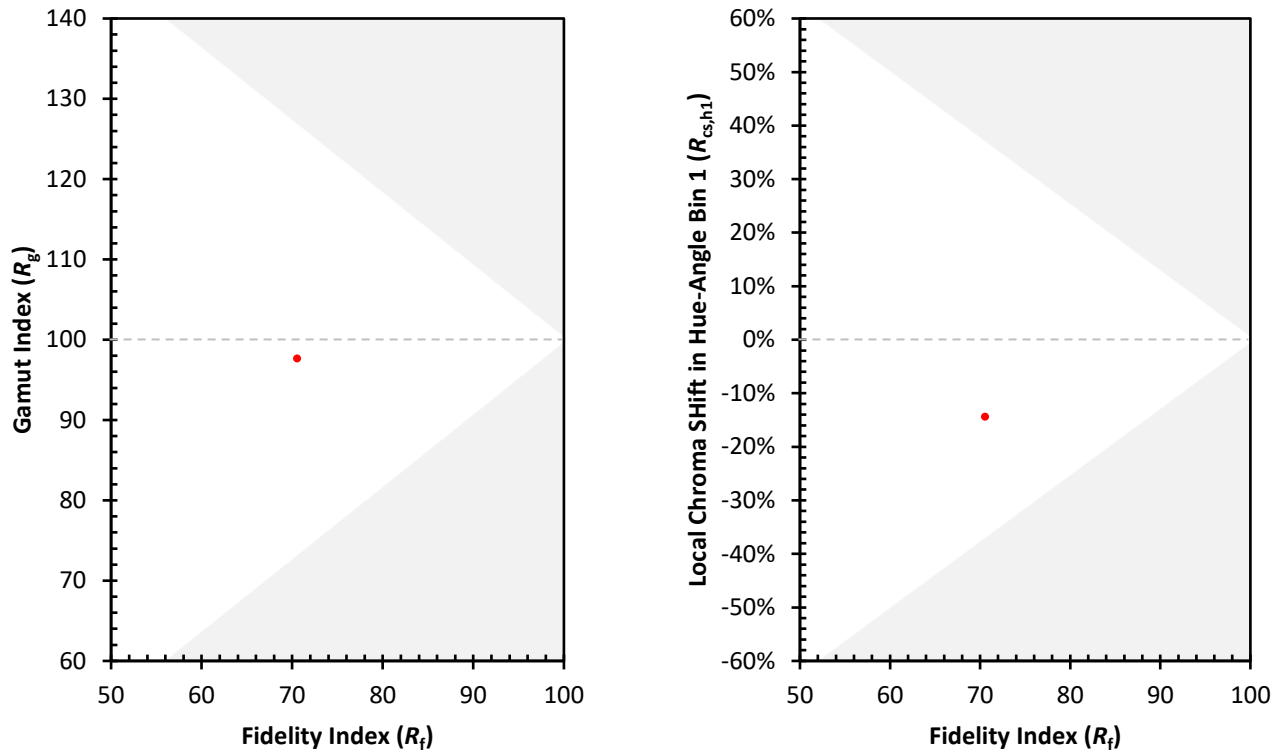
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 60 | CES51 = 74 | CES76 = 58 |
| CES02 = 65 | CES27 = 77 | CES52 = 77 | CES77 = 82 |
| CES03 = 32 | CES28 = 85 | CES53 = 65 | CES78 = 65 |
| CES04 = 72 | CES29 = 50 | CES54 = 77 | CES79 = 86 |
| CES05 = 52 | CES30 = 49 | CES55 = 74 | CES80 = 85 |
| CES06 = 53 | CES31 = 55 | CES56 = 64 | CES81 = 61 |
| CES07 = 44 | CES32 = 55 | CES57 = 60 | CES82 = 93 |
| CES08 = 43 | CES33 = 55 | CES58 = 64 | CES83 = 83 |
| CES09 = 29 | CES34 = 75 | CES59 = 84 | CES84 = 93 |
| CES10 = 79 | CES35 = 88 | CES60 = 89 | CES85 = 81 |
| CES11 = 62 | CES36 = 78 | CES61 = 84 | CES86 = 55 |
| CES12 = 68 | CES37 = 82 | CES62 = 68 | CES87 = 79 |
| CES13 = 45 | CES38 = 54 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 86 | CES65 = 66 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 89 |
| CES17 = 51 | CES42 = 83 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 68 | CES68 = 71 | CES93 = 78 |
| CES19 = 74 | CES44 = 98 | CES69 = 81 | CES94 = 52 |
| CES20 = 68 | CES45 = 76 | CES70 = 65 | CES95 = 76 |
| CES21 = 89 | CES46 = 68 | CES71 = 64 | CES96 = 78 |
| CES22 = 81 | CES47 = 60 | CES72 = 88 | CES97 = 76 |
| CES23 = 92 | CES48 = 47 | CES73 = 59 | CES98 = 71 |
| CES24 = 92 | CES49 = 65 | CES74 = 85 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)