

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: P1384501

Luminaire Tested: **VAL-T-SB2C-722-U-SL3-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: P1384501  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 02/18/2026  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: VAL-T-SB2C-722-U-SL3-HSS  
 Description: GALLEON II WALL SLIM HIGH DENSITY LED ARRAYS 25 SQUARE 102W 70CRI  
 2200K FIXTURE w/ TYPE III SPILL CONTROL DISTRIBUTION OPTIC AND HOUSE SIDE  
 SHIELD  
 Light Source: (52) 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               |

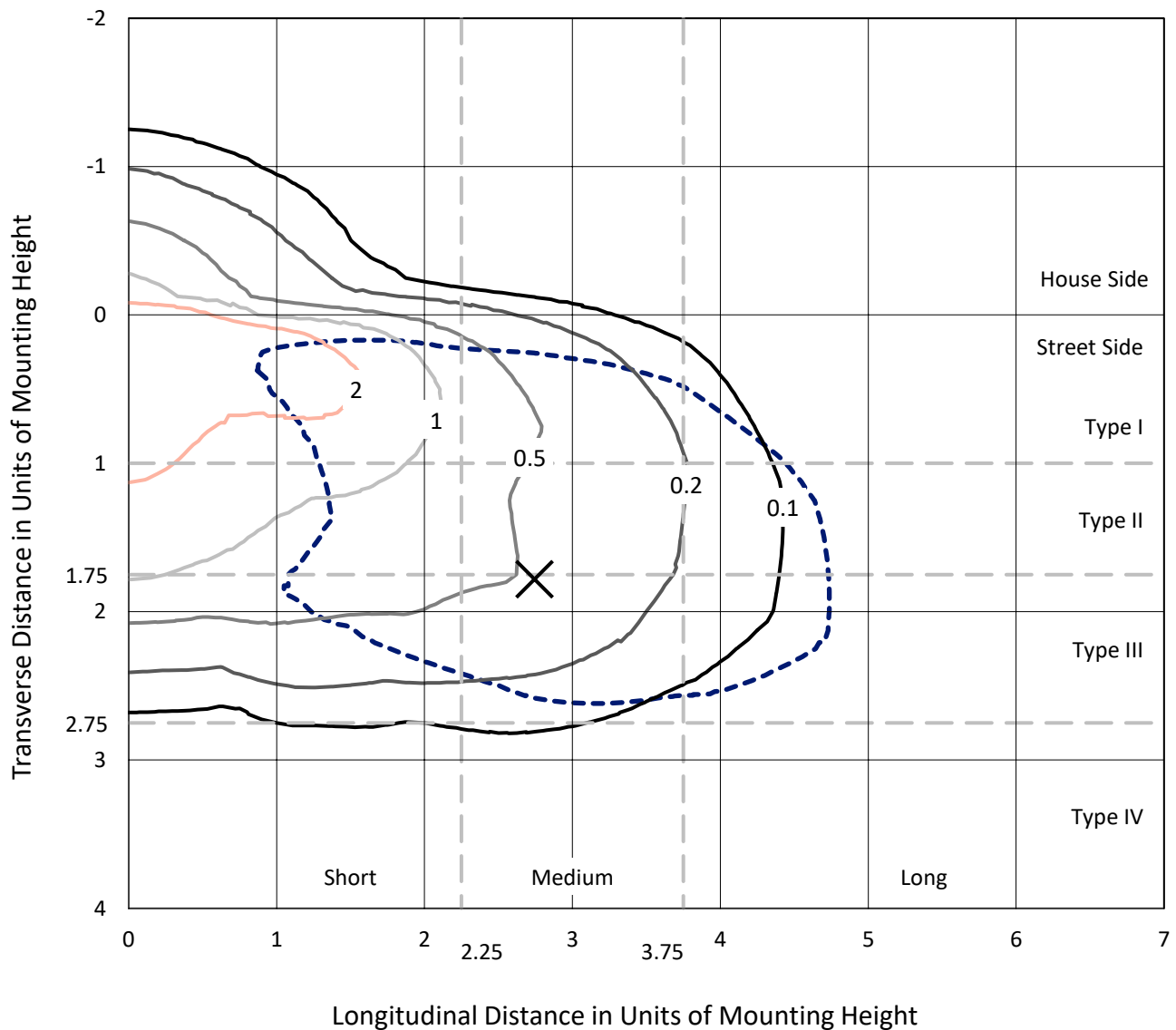
**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 8135.2 lumens  
 Efficiency: N/A  
 Efficacy: 79.8 lumens/watt  
 Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')  
 IES Classification: Type III - Medium  
 BUG Rating: B1 - U0 - G2  
  
 Input Watts (W): 102  
 Input Voltage (V): 120  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: 0.98  
 Total Harmonic Distortion (THDi): 9.5%  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 28.75 FT

REPORT NUMBER: P1384501  
 CATALOG NUMBER: VAL-T-SB2C-722-U-SL3-HSS

## Iso-Footcandle Lines of Horizontal Illumination

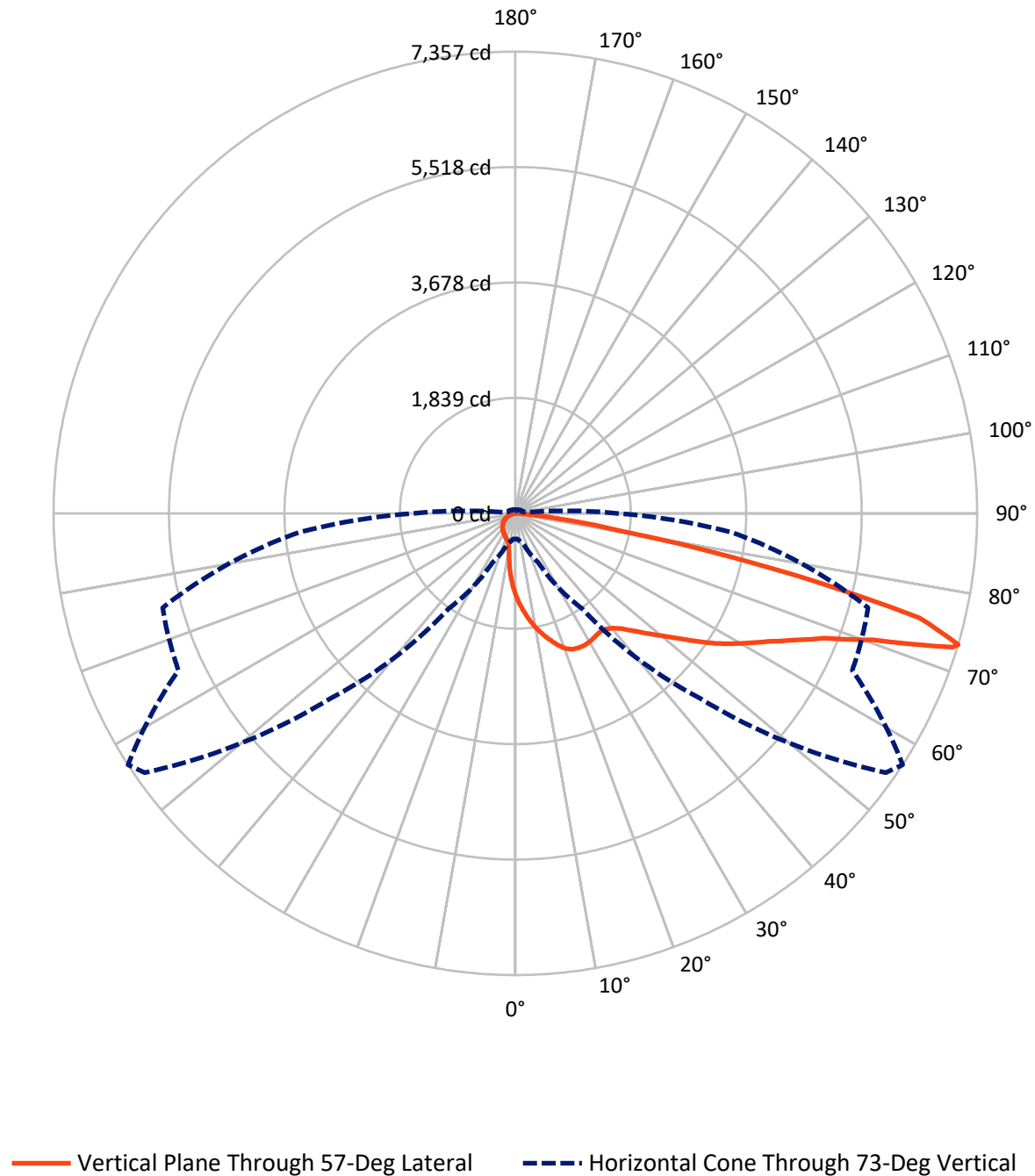
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 4.8 fc  
 Type III - Medium - N/A

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## Luminous Intensity Polar Plot



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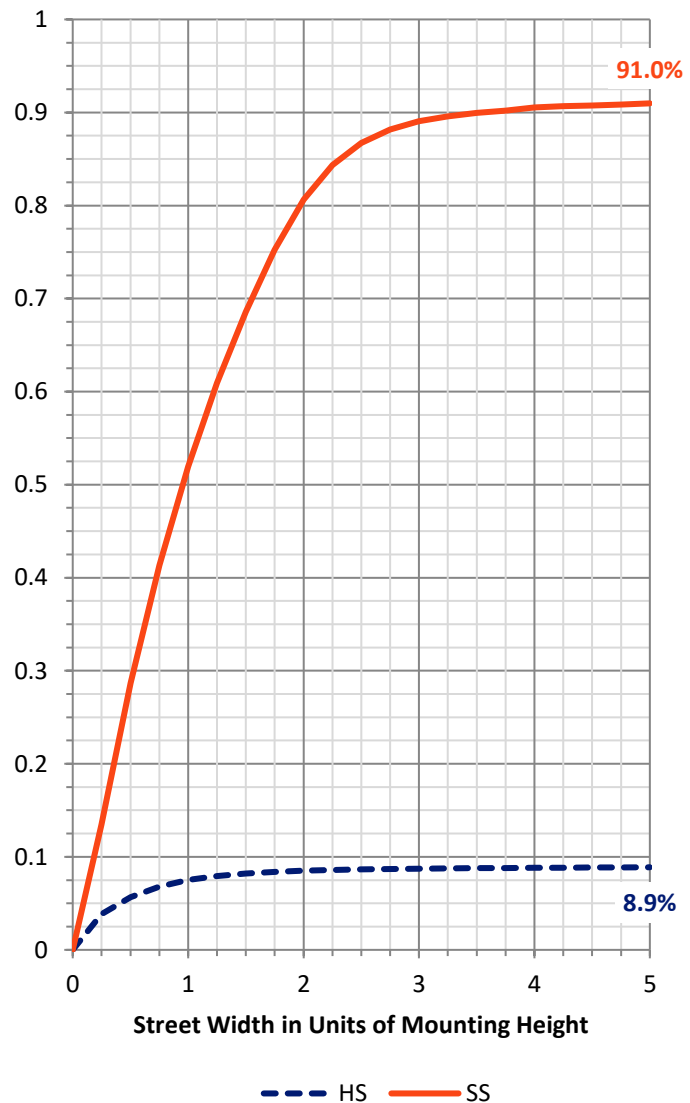
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 728.7    | 0.0    | 728.7  |
|                    | % Fixture | 9.0      | 0.0    | 9.0    |
| <b>Street Side</b> | Lumens    | 7406.5   | 0.0    | 7406.5 |
|                    | % Fixture | 91.0     | 0.0    | 91.0   |
| <b>Total</b>       | Lumens    | 8135.2   | 0.0    | 8135.2 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 121.3  | 1.5       |
| 10°-20°   | 347.9  | 4.3       |
| 20°-30°   | 528.1  | 6.5       |
| 30°-40°   | 764.8  | 9.4       |
| 40°-50°   | 1142.1 | 14.0      |
| 50°-60°   | 1653.7 | 20.3      |
| 60°-70°   | 2003.4 | 24.6      |
| 70°-80°   | 1446.9 | 17.8      |
| 80°-90°   | 126.9  | 1.6       |
| 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°    | 8135.2 | 100.0     |
| 0°-180°   | 8135.2 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P1384501

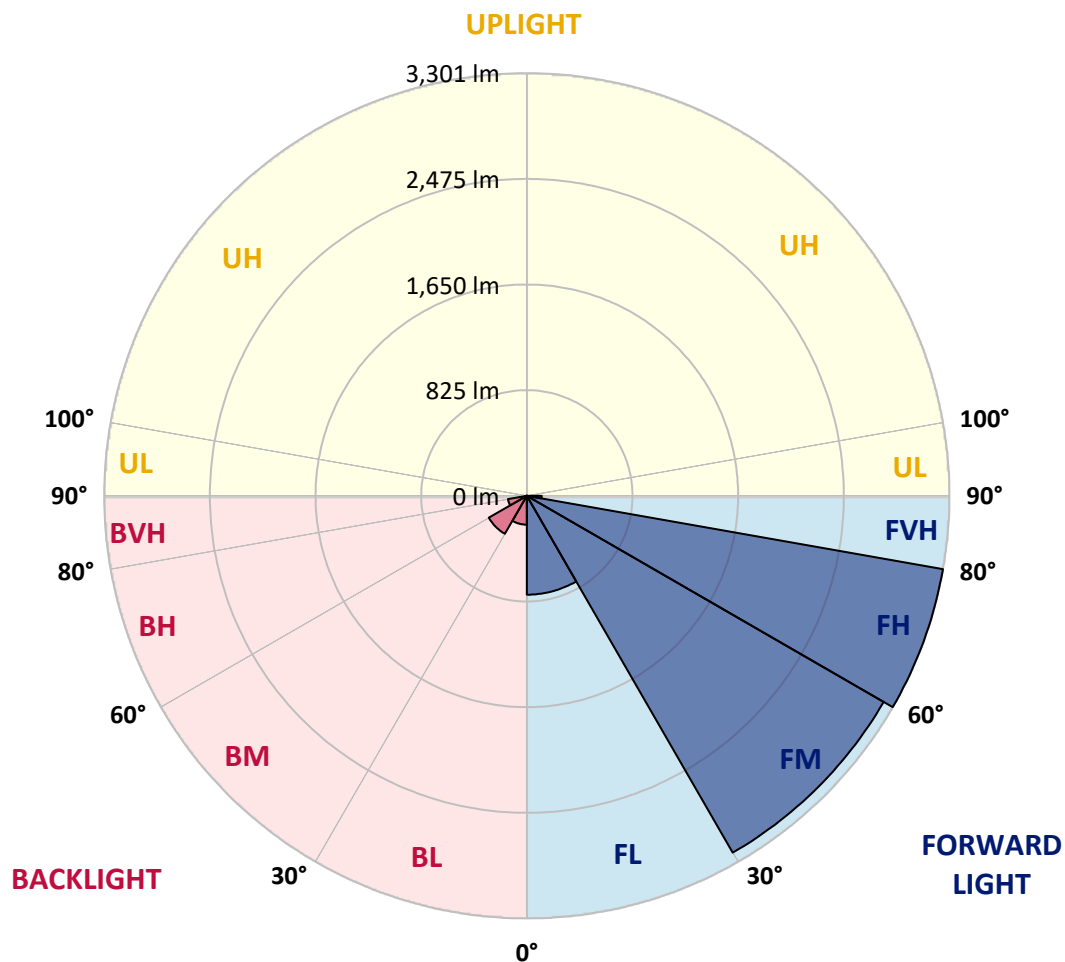
CATALOG NUMBER: VAL-T-SB2C-722-U-SL3-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 772.1  | 9.5       |                         |      |         |
| FM   | (30°-60°)   | 3217.9 | 39.6      |                         |      |         |
| FH   | (60°-80°)   | 3300.7 | 40.6      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 115.9  | 1.4       |                         |      | G2/225  |
| BL   | (0°-30°)    | 225.3  | 2.8       | B1/500                  |      |         |
| BM   | (30°-60°)   | 342.7  | 4.2       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 149.7  | 1.8       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 11.0   | 0.1       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G2**

Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 57°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 |
| 2.5°  | 1573.6 | 1578.9 | 1560.4 | 1549.8 | 1528.6 | 1494.1 | 1459.7 | 1459.7 | 1419.9 | 1382.9 | 1335.2 |
| 5°    | 1806.7 | 1790.8 | 1782.9 | 1756.4 | 1716.7 | 1674.3 | 1613.3 | 1597.4 | 1533.9 | 1454.4 | 1359.0 |
| 7.5°  | 1984.2 | 1965.7 | 1957.7 | 1933.9 | 1888.8 | 1833.2 | 1751.1 | 1737.8 | 1645.1 | 1528.6 | 1390.8 |
| 10°   | 2092.8 | 2079.6 | 2079.6 | 2061.0 | 2026.6 | 1968.3 | 1886.2 | 1867.7 | 1756.4 | 1597.4 | 1412.0 |
| 12.5° | 2045.1 | 2039.8 | 2071.6 | 2114.0 | 2129.9 | 2095.5 | 2008.1 | 1984.2 | 1857.1 | 1674.3 | 1438.5 |
| 15°   | 1827.9 | 1822.6 | 1880.9 | 1992.2 | 2127.3 | 2185.6 | 2119.3 | 2098.1 | 1965.7 | 1753.7 | 1465.0 |
| 17.5° | 1618.6 | 1610.7 | 1666.3 | 1777.6 | 1978.9 | 2196.1 | 2235.9 | 2209.4 | 2074.3 | 1833.2 | 1494.1 |
| 20°   | 1499.4 | 1491.5 | 1528.6 | 1618.6 | 1801.4 | 2111.4 | 2296.8 | 2302.1 | 2193.5 | 1920.6 | 1523.3 |
| 22.5° | 1457.0 | 1454.4 | 1472.9 | 1533.9 | 1663.7 | 1965.7 | 2320.7 | 2352.4 | 2323.3 | 2021.3 | 1565.6 |
| 25°   | 1475.6 | 1465.0 | 1470.3 | 1494.1 | 1586.8 | 1849.1 | 2307.4 | 2368.3 | 2431.9 | 2143.2 | 1621.3 |
| 27.5° | 1523.3 | 1515.3 | 1507.4 | 1507.4 | 1555.1 | 1764.3 | 2273.0 | 2373.6 | 2543.2 | 2275.6 | 1669.0 |
| 30°   | 1602.7 | 1592.1 | 1568.3 | 1539.2 | 1555.1 | 1711.4 | 2233.2 | 2360.4 | 2638.6 | 2418.7 | 1735.2 |
| 32.5° | 1782.9 | 1774.9 | 1706.1 | 1613.3 | 1592.1 | 1698.1 | 2188.2 | 2336.6 | 2741.9 | 2588.2 | 1812.0 |
| 35°   | 1960.4 | 1952.4 | 1904.7 | 1772.3 | 1655.7 | 1708.7 | 2159.1 | 2320.7 | 2869.0 | 2794.9 | 1902.1 |
| 37.5° | 2039.8 | 2026.6 | 1989.5 | 1918.0 | 1804.1 | 1769.6 | 2167.0 | 2339.2 | 3051.8 | 3022.7 | 2013.4 |
| 40°   | 2140.5 | 2119.3 | 2063.7 | 1997.5 | 1947.1 | 1910.0 | 2230.6 | 2402.8 | 3255.8 | 3285.0 | 2135.2 |
| 42.5° | 2288.9 | 2265.0 | 2182.9 | 2090.2 | 2031.9 | 2106.1 | 2352.4 | 2516.7 | 3507.5 | 3576.4 | 2283.6 |
| 45°   | 2492.9 | 2461.1 | 2355.1 | 2233.2 | 2161.7 | 2204.1 | 2516.7 | 2678.3 | 3788.3 | 3907.5 | 2455.8 |
| 47.5° | 2678.3 | 2670.3 | 2551.1 | 2410.7 | 2326.0 | 2270.3 | 2694.2 | 2866.4 | 4085.0 | 4278.4 | 2633.3 |
| 50°   | 2853.1 | 2824.0 | 2707.4 | 2569.7 | 2498.2 | 2405.4 | 2890.2 | 3075.7 | 4381.7 | 4617.5 | 2824.0 |
| 52.5° | 3043.9 | 3012.1 | 2853.1 | 2696.8 | 2625.3 | 2604.1 | 3144.5 | 3324.7 | 4641.3 | 4975.1 | 3017.4 |
| 55°   | 3192.2 | 3147.2 | 2972.4 | 2842.5 | 2728.6 | 2800.2 | 3417.4 | 3624.0 | 4871.8 | 5298.3 | 3213.4 |
| 57.5° | 3377.7 | 3319.4 | 3070.4 | 2975.0 | 2887.6 | 2998.8 | 3724.7 | 3923.4 | 5112.9 | 5571.2 | 3409.5 |
| 60°   | 3539.3 | 3494.2 | 3253.2 | 3133.9 | 3051.8 | 3224.0 | 4024.1 | 4198.9 | 5301.0 | 5804.3 | 3589.6 |
| 62.5° | 3046.5 | 3041.2 | 3104.8 | 3462.4 | 3340.6 | 3565.8 | 4344.6 | 4498.3 | 5414.9 | 5960.6 | 3663.8 |
| 65°   | 2161.7 | 2177.6 | 2355.1 | 3467.7 | 3902.2 | 4138.0 | 4765.8 | 4866.5 | 5420.2 | 5783.1 | 3518.1 |
| 67.5° | 1374.9 | 1359.0 | 1578.9 | 2903.5 | 3923.4 | 5266.5 | 5406.9 | 5306.3 | 5176.4 | 5592.4 | 3536.6 |
| 70°   | 823.9  | 829.2  | 903.4  | 2106.1 | 3234.6 | 5523.5 | 6302.3 | 6042.7 | 5322.1 | 5732.8 | 3552.5 |
| 72.5° | 447.7  | 458.3  | 564.3  | 1033.2 | 2143.2 | 4394.9 | 7250.7 | 7287.8 | 5820.2 | 5799.0 | 3491.6 |
| 73°   | 408.0  | 410.6  | 506.0  | 863.6  | 1854.4 | 4177.7 | 7205.7 | 7356.7 | 5920.9 | 5817.5 | 3451.8 |
| 75°   | 270.2  | 270.2  | 344.4  | 490.1  | 813.3  | 3247.9 | 5981.8 | 6649.4 | 6262.6 | 5626.8 | 3141.9 |
| 77.5° | 166.9  | 177.5  | 238.4  | 339.1  | 296.7  | 1634.5 | 3518.1 | 4069.1 | 5584.4 | 4233.3 | 1973.6 |
| 80°   | 60.9   | 66.2   | 148.4  | 222.5  | 172.2  | 619.9  | 1475.6 | 1692.8 | 2588.2 | 2148.5 | 712.6  |
| 82.5° | 31.8   | 34.4   | 92.7   | 113.9  | 92.7   | 161.6  | 659.6  | 704.7  | 1043.8 | 559.0  | 132.5  |
| 85°   | 15.9   | 18.5   | 39.7   | 47.7   | 37.1   | 53.0   | 164.2  | 153.7  | 235.8  | 74.2   | 37.1   |
| 87.5° | 0.0    | 0.0    | 2.6    | 5.3    | 7.9    | 10.6   | 15.9   | 15.9   | 18.5   | 21.2   | 21.2   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



REPORT NUMBER: P1384501

CATALOG NUMBER: VAL-T-SB2C-722-U-SL3-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 |
| 2.5°  | 1306.0 | 1284.8 | 1234.5 | 1184.2 | 1147.1 | 1107.3 | 1070.3 | 1038.5 | 1019.9 | 1012.0 | 1019.9 |
| 5°    | 1308.7 | 1263.6 | 1160.3 | 1057.0 | 956.3  | 874.2  | 797.4  | 741.8  | 702.0  | 688.8  | 683.5  |
| 7.5°  | 1308.7 | 1234.5 | 1072.9 | 903.4  | 755.0  | 646.4  | 569.6  | 535.1  | 516.6  | 513.9  | 513.9  |
| 10°   | 1306.0 | 1200.1 | 974.9  | 752.4  | 582.8  | 508.6  | 484.8  | 479.5  | 479.5  | 479.5  | 482.1  |
| 12.5° | 1303.4 | 1168.3 | 863.6  | 606.7  | 490.1  | 466.3  | 458.3  | 458.3  | 461.0  | 463.6  | 466.3  |
| 15°   | 1298.1 | 1120.6 | 747.1  | 506.0  | 455.7  | 447.7  | 442.4  | 442.4  | 445.1  | 450.4  | 450.4  |
| 17.5° | 1292.8 | 1072.9 | 633.1  | 461.0  | 439.8  | 431.8  | 429.2  | 426.5  | 431.8  | 437.1  | 437.1  |
| 20°   | 1282.2 | 1012.0 | 537.8  | 437.1  | 423.9  | 418.6  | 415.9  | 413.3  | 415.9  | 421.2  | 423.9  |
| 22.5° | 1268.9 | 935.2  | 474.2  | 421.2  | 410.6  | 402.7  | 400.0  | 397.4  | 397.4  | 408.0  | 408.0  |
| 25°   | 1255.7 | 850.4  | 437.1  | 405.3  | 394.7  | 386.8  | 381.5  | 378.8  | 381.5  | 389.4  | 389.4  |
| 27.5° | 1229.2 | 757.7  | 413.3  | 392.1  | 381.5  | 370.9  | 365.6  | 360.3  | 362.9  | 370.9  | 370.9  |
| 30°   | 1189.5 | 659.6  | 400.0  | 378.8  | 365.6  | 352.3  | 344.4  | 339.1  | 341.7  | 349.7  | 352.3  |
| 32.5° | 1131.2 | 574.9  | 394.7  | 368.2  | 352.3  | 333.8  | 323.2  | 315.2  | 317.9  | 328.5  | 328.5  |
| 35°   | 1070.3 | 513.9  | 392.1  | 357.6  | 336.4  | 317.9  | 299.4  | 288.8  | 294.1  | 304.7  | 307.3  |
| 37.5° | 1006.7 | 479.5  | 392.1  | 352.3  | 325.8  | 302.0  | 275.5  | 264.9  | 267.6  | 278.2  | 280.8  |
| 40°   | 951.0  | 463.6  | 394.7  | 347.0  | 312.6  | 283.5  | 254.3  | 241.1  | 246.4  | 259.6  | 257.0  |
| 42.5° | 929.9  | 461.0  | 394.7  | 333.8  | 299.4  | 264.9  | 233.1  | 219.9  | 225.2  | 233.1  | 235.8  |
| 45°   | 953.7  | 471.5  | 389.4  | 320.5  | 280.8  | 243.7  | 217.2  | 204.0  | 206.6  | 211.9  | 217.2  |
| 47.5° | 1035.8 | 484.8  | 381.5  | 304.7  | 264.9  | 227.8  | 201.3  | 190.7  | 185.4  | 193.4  | 196.0  |
| 50°   | 1149.7 | 492.7  | 368.2  | 288.8  | 251.7  | 211.9  | 188.1  | 174.8  | 169.5  | 172.2  | 174.8  |
| 52.5° | 1279.5 | 492.7  | 355.0  | 272.9  | 238.4  | 196.0  | 177.5  | 164.2  | 153.7  | 156.3  | 156.3  |
| 55°   | 1409.3 | 487.4  | 320.5  | 259.6  | 225.2  | 185.4  | 166.9  | 148.4  | 140.4  | 140.4  | 137.8  |
| 57.5° | 1544.5 | 479.5  | 278.2  | 241.1  | 209.3  | 172.2  | 153.7  | 137.8  | 127.2  | 121.9  | 121.9  |
| 60°   | 1676.9 | 468.9  | 254.3  | 222.5  | 190.7  | 161.6  | 140.4  | 127.2  | 113.9  | 106.0  | 103.3  |
| 62.5° | 1745.8 | 439.8  | 227.8  | 198.7  | 172.2  | 145.7  | 127.2  | 113.9  | 98.0   | 87.4   | 84.8   |
| 65°   | 1708.7 | 378.8  | 196.0  | 177.5  | 156.3  | 129.8  | 113.9  | 100.7  | 82.1   | 68.9   | 68.9   |
| 67.5° | 1748.4 | 317.9  | 166.9  | 151.0  | 135.1  | 111.3  | 95.4   | 87.4   | 71.5   | 60.9   | 60.9   |
| 70°   | 1761.7 | 249.0  | 140.4  | 129.8  | 116.6  | 92.7   | 82.1   | 76.8   | 63.6   | 53.0   | 50.3   |
| 72.5° | 1663.7 | 185.4  | 113.9  | 108.6  | 95.4   | 71.5   | 68.9   | 63.6   | 53.0   | 42.4   | 42.4   |
| 73°   | 1623.9 | 172.2  | 108.6  | 103.3  | 90.1   | 68.9   | 66.2   | 60.9   | 50.3   | 42.4   | 39.7   |
| 75°   | 1430.5 | 132.5  | 90.1   | 84.8   | 71.5   | 58.3   | 55.6   | 50.3   | 42.4   | 34.4   | 34.4   |
| 77.5° | 948.4  | 95.4   | 68.9   | 63.6   | 53.0   | 45.0   | 42.4   | 37.1   | 31.8   | 26.5   | 26.5   |
| 80°   | 349.7  | 63.6   | 50.3   | 45.0   | 39.7   | 37.1   | 31.8   | 26.5   | 21.2   | 21.2   | 18.5   |
| 82.5° | 71.5   | 42.4   | 37.1   | 31.8   | 29.1   | 26.5   | 21.2   | 18.5   | 15.9   | 15.9   | 15.9   |
| 85°   | 29.1   | 26.5   | 21.2   | 21.2   | 21.2   | 18.5   | 15.9   | 15.9   | 13.2   | 13.2   | 10.6   |
| 87.5° | 18.5   | 15.9   | 15.9   | 13.2   | 13.2   | 10.6   | 10.6   | 10.6   | 10.6   | 10.6   | 10.6   |
| 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

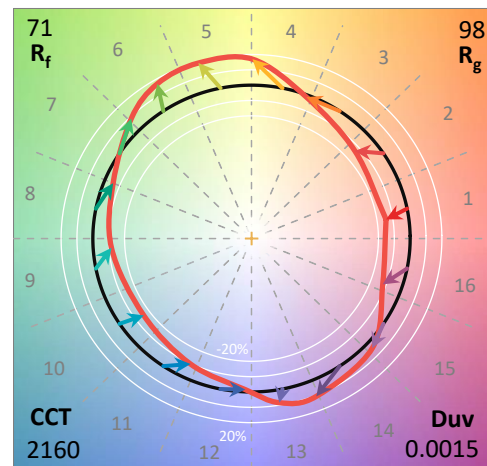
Data in this report applies to families of products including GSS-SB1A-722-U-5WQ

### 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

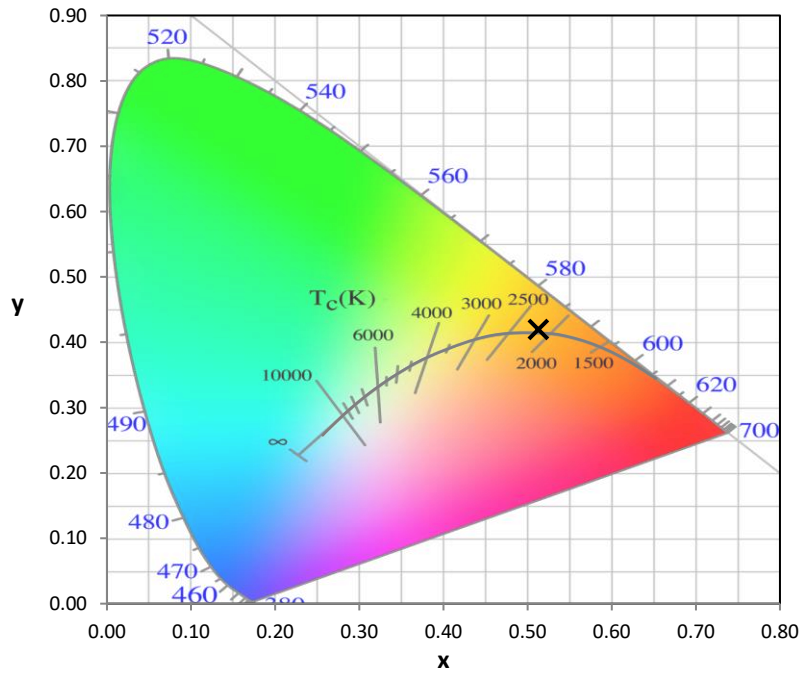
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

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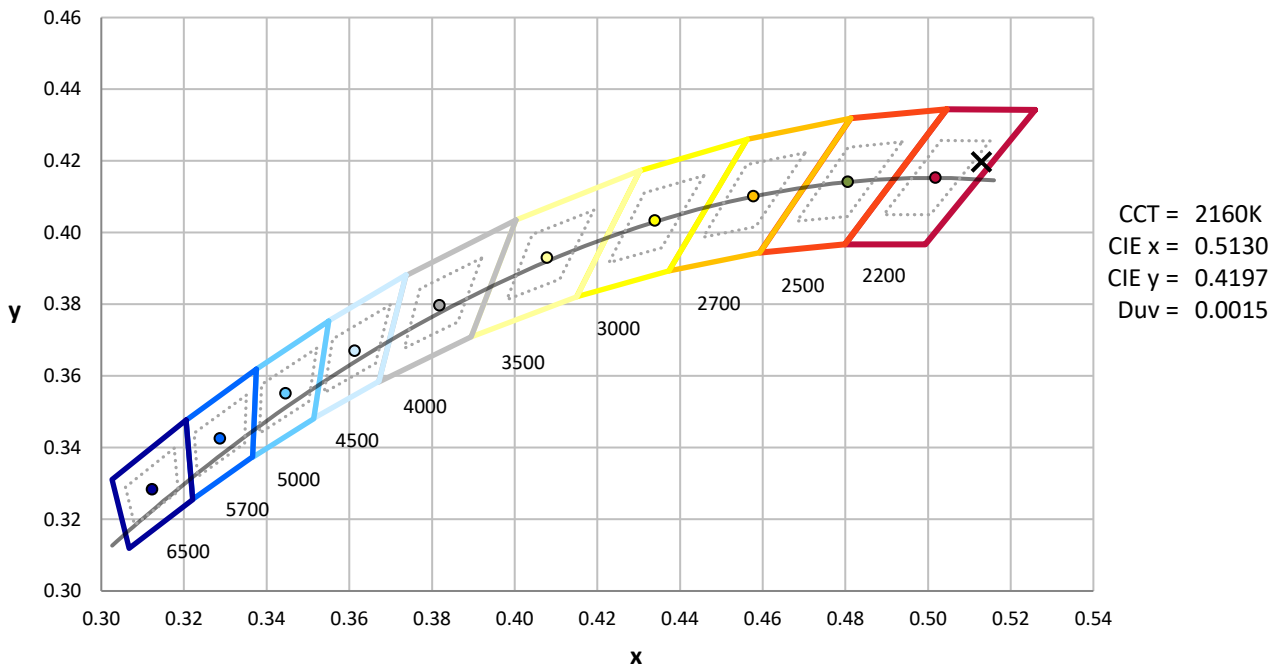
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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

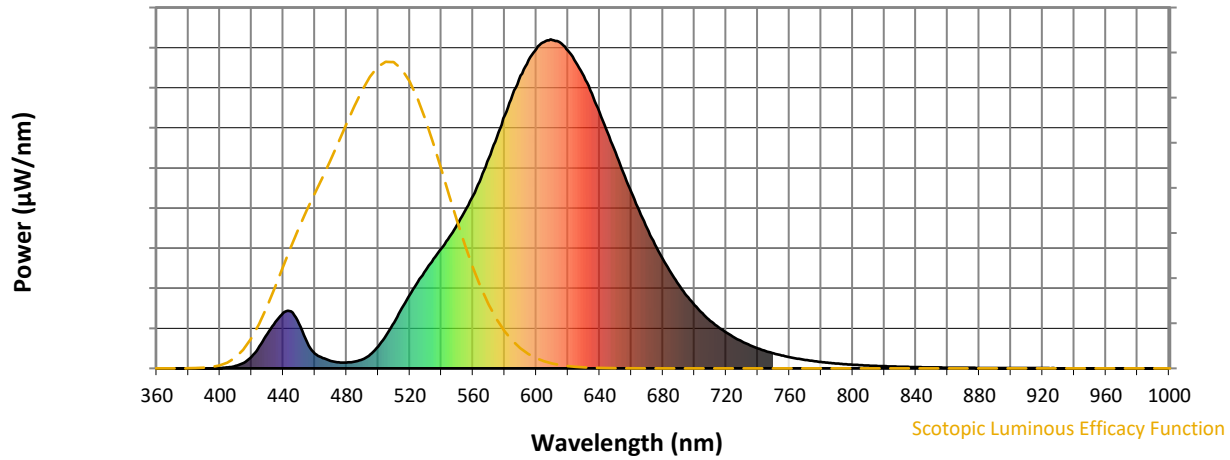


### Photopic Lumens: NR

| 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       | 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



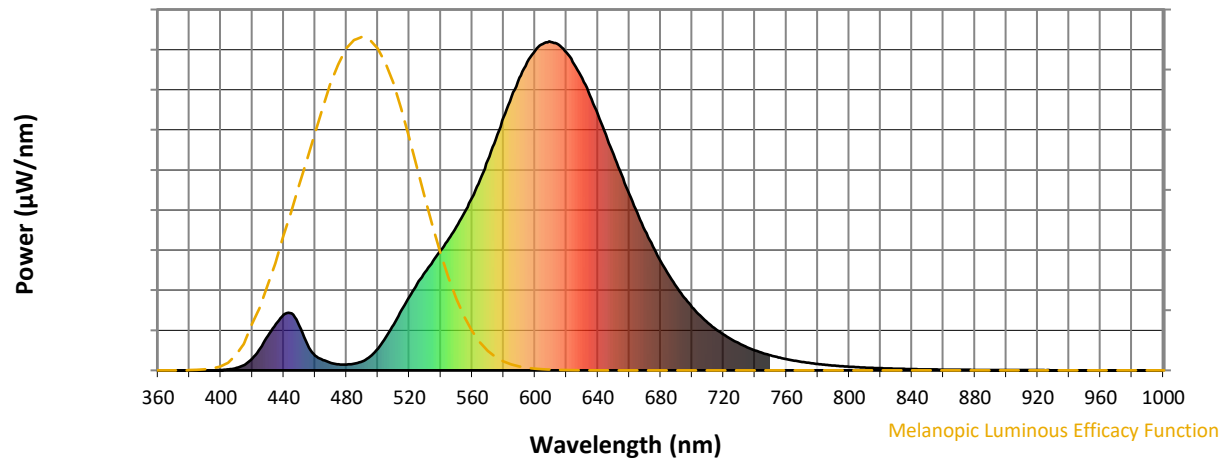
Scotopic Lumens: NR

S/P: 0.8

| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(Φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 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

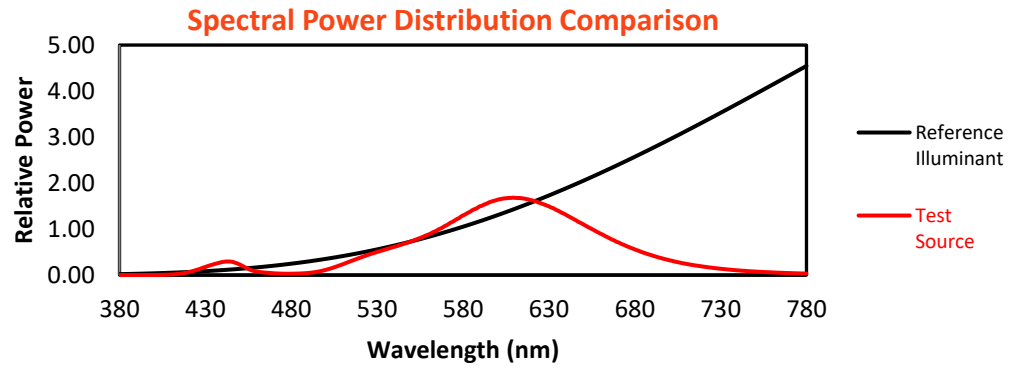
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | 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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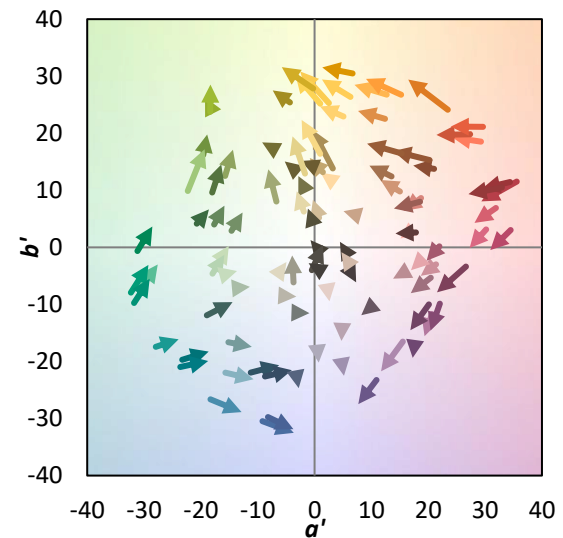
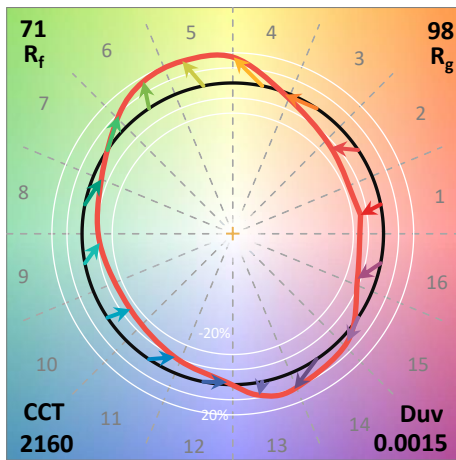
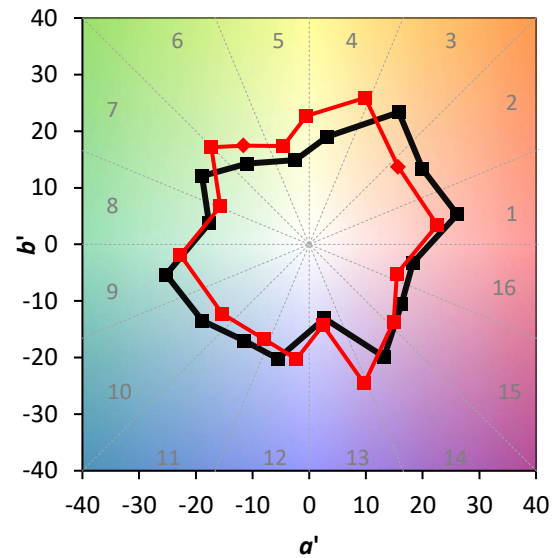
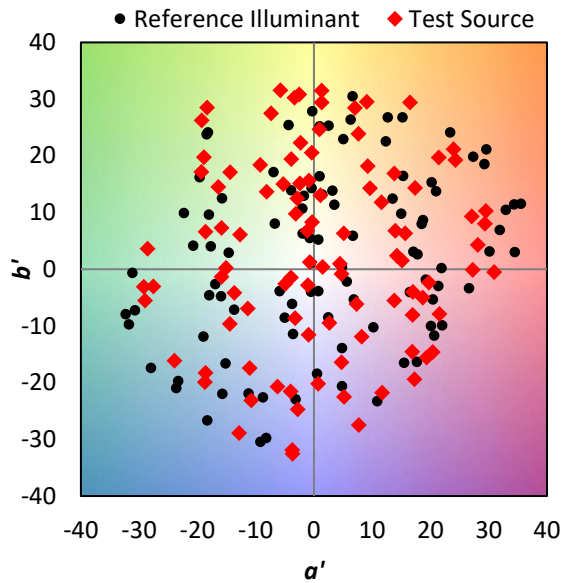
TM-30-18

### Summary

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



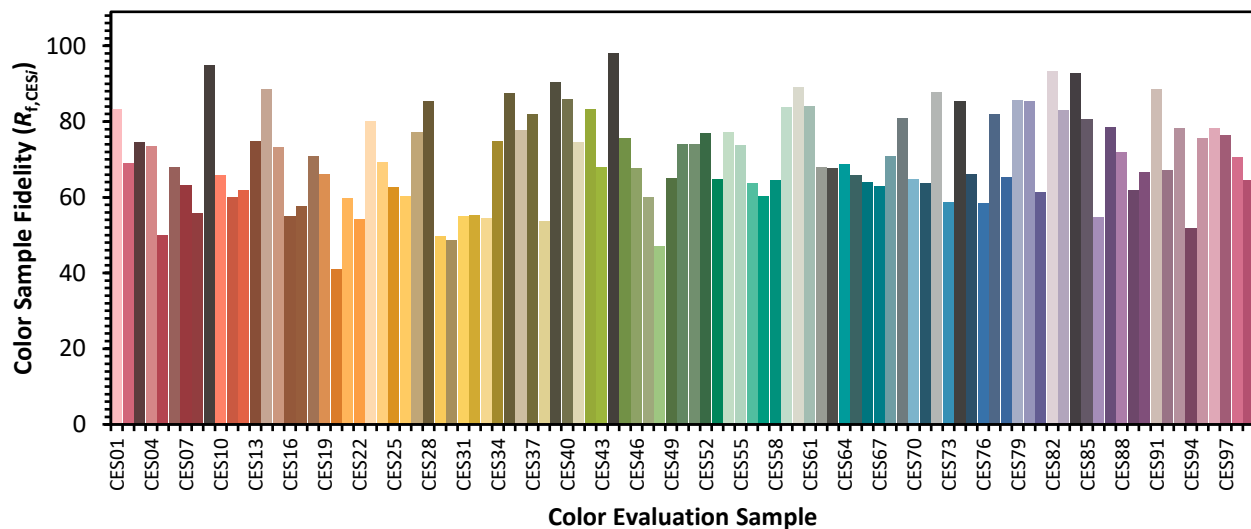
### Color Vector Graphics



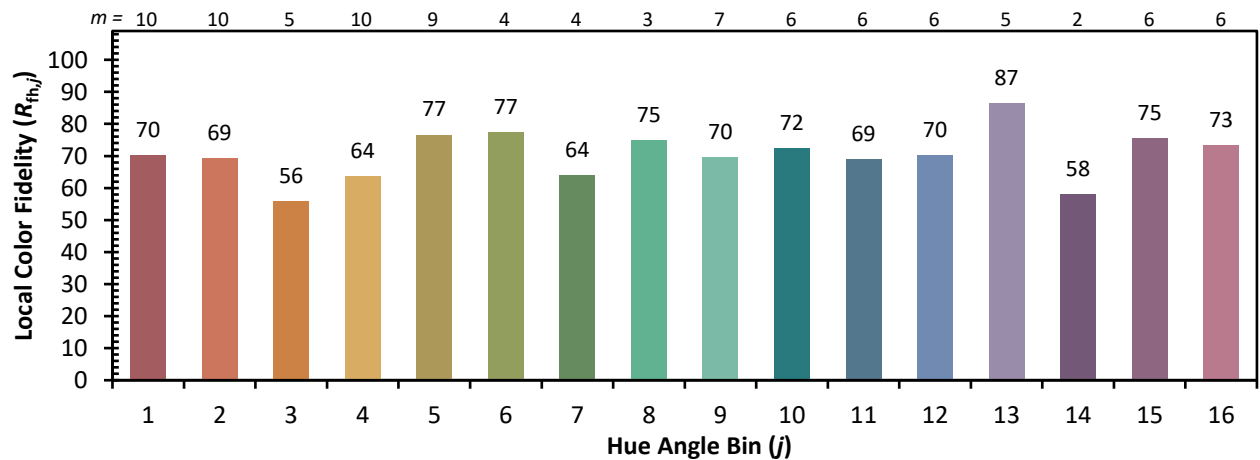
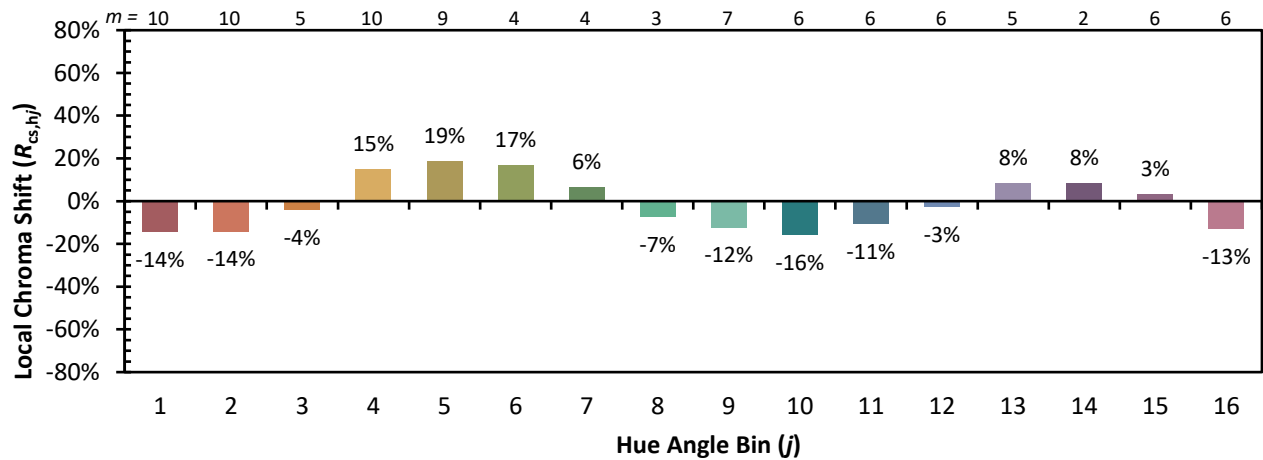


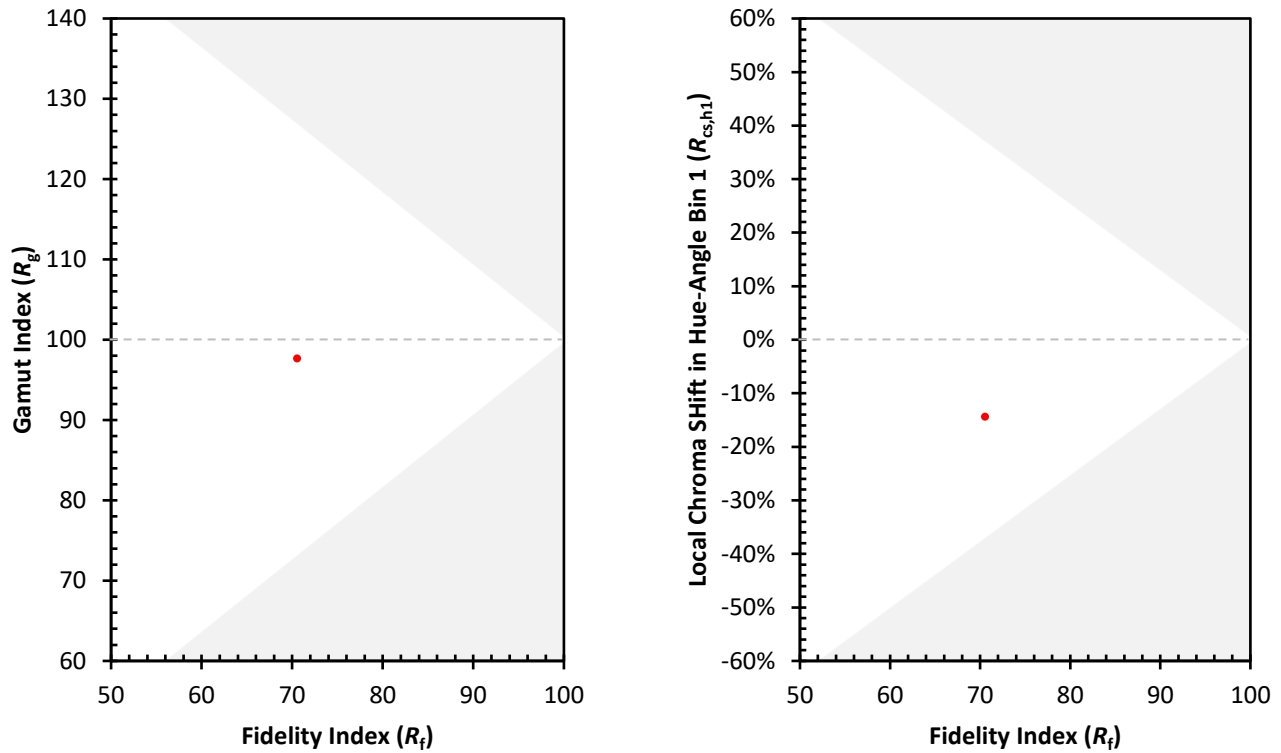
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| 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)