

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: P1387953

Luminaire Tested: **VAL-T-SB1C-722-U-T4W**

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: P1387953  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 02/18/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: VAL-T-SB1C-722-U-T4W  
Description: GALLEON II WALL SLIM HIGH DENSITY LED ARRAYS 1SQUARE 52W 70CRI  
2200K FIXTURE w/ TYPE IV WIDE DISTRIBUTION OPTIC  
Light Source: (26) 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               |

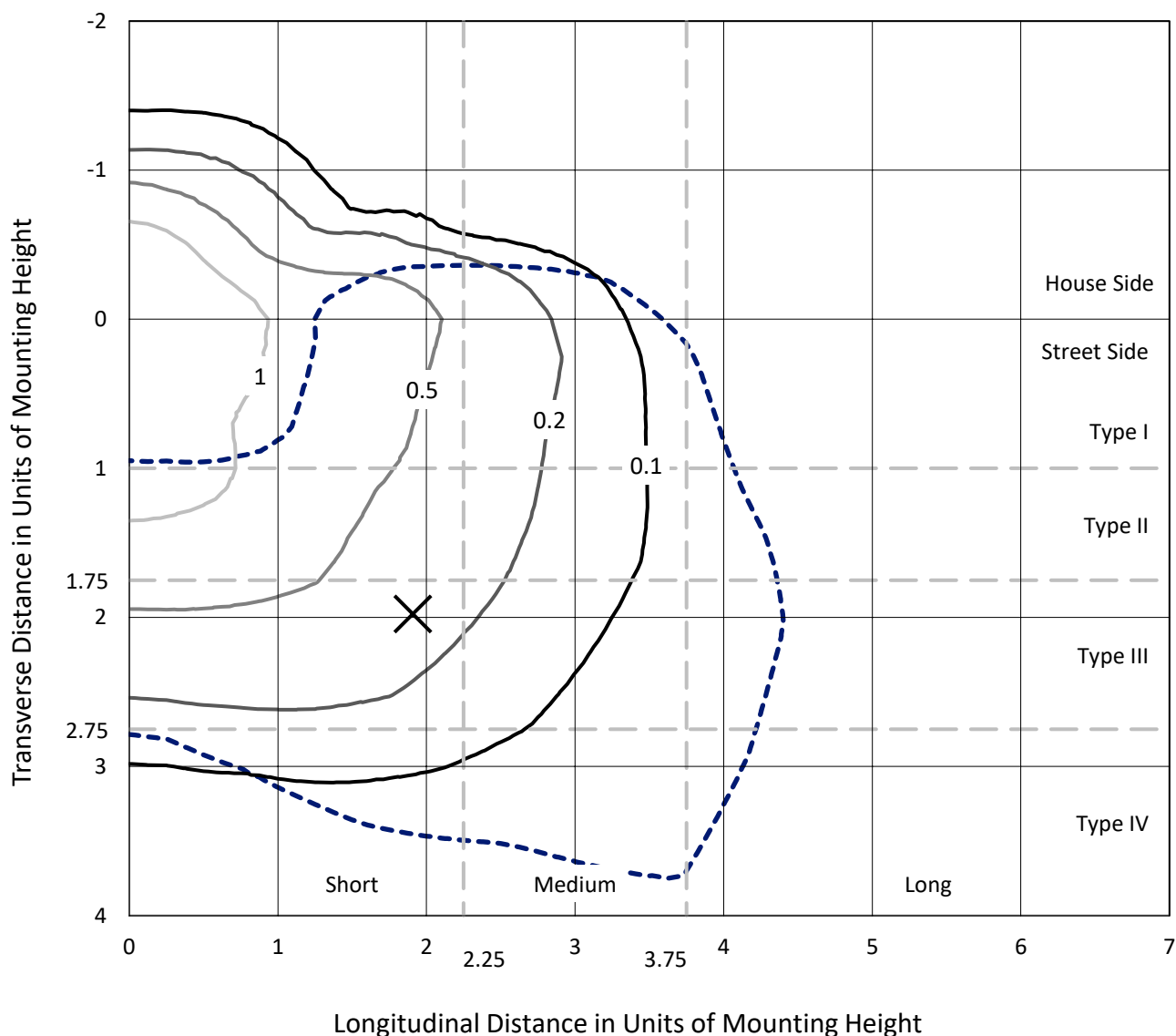
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5347.8 lumens  
Efficiency: N/A  
Efficacy: 102.8 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G2  
  
Input Watts (W): 52  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.98  
Total Harmonic Distortion (THDi): 10.1%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

REPORT NUMBER: P1387953  
 CATALOG NUMBER: VAL-T-SB1C-722-U-T4W

## Iso-Footcandle Lines of Horizontal Illumination

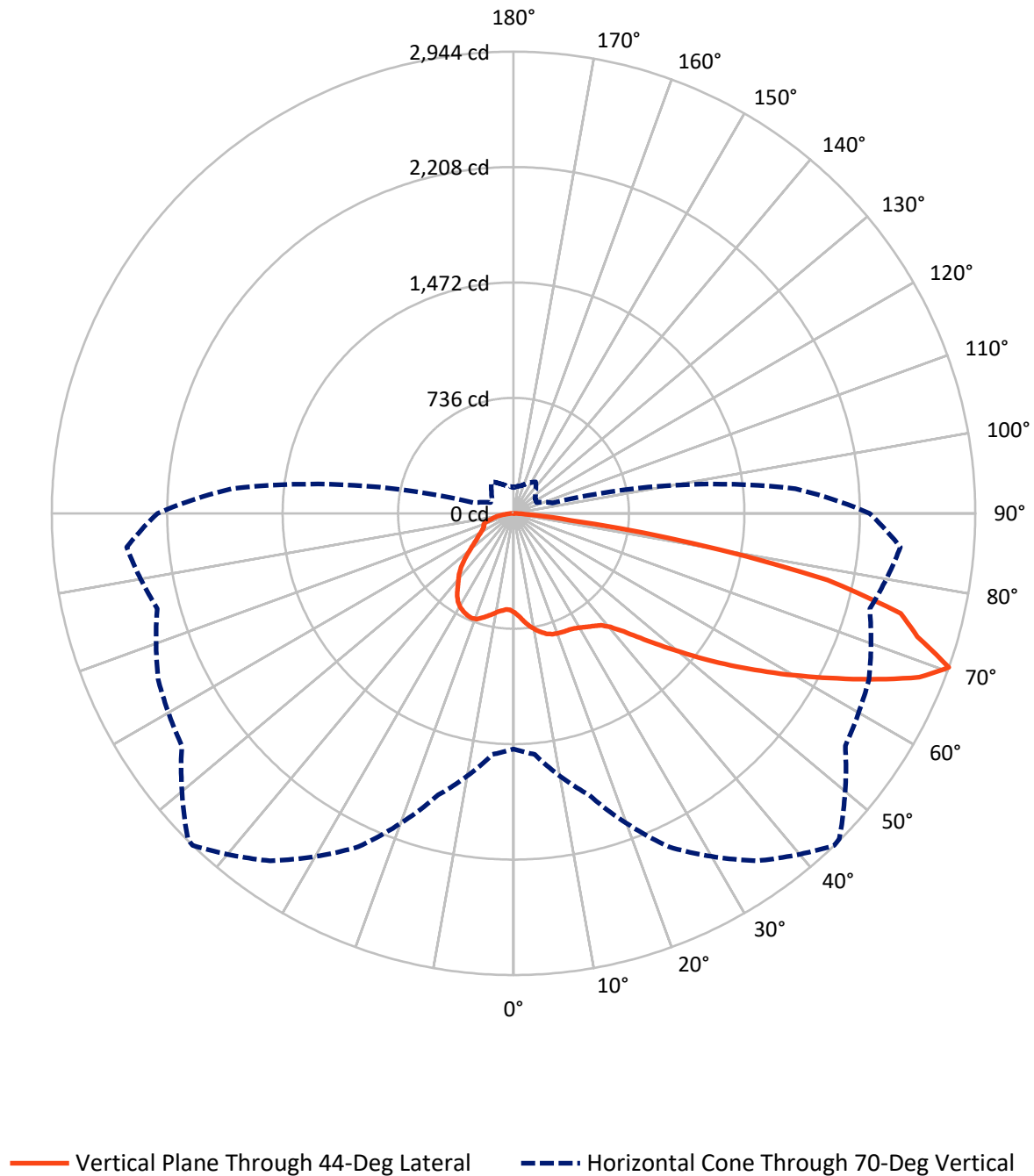
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 1.9 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: VAL-T-SB1C-722-U-T4W

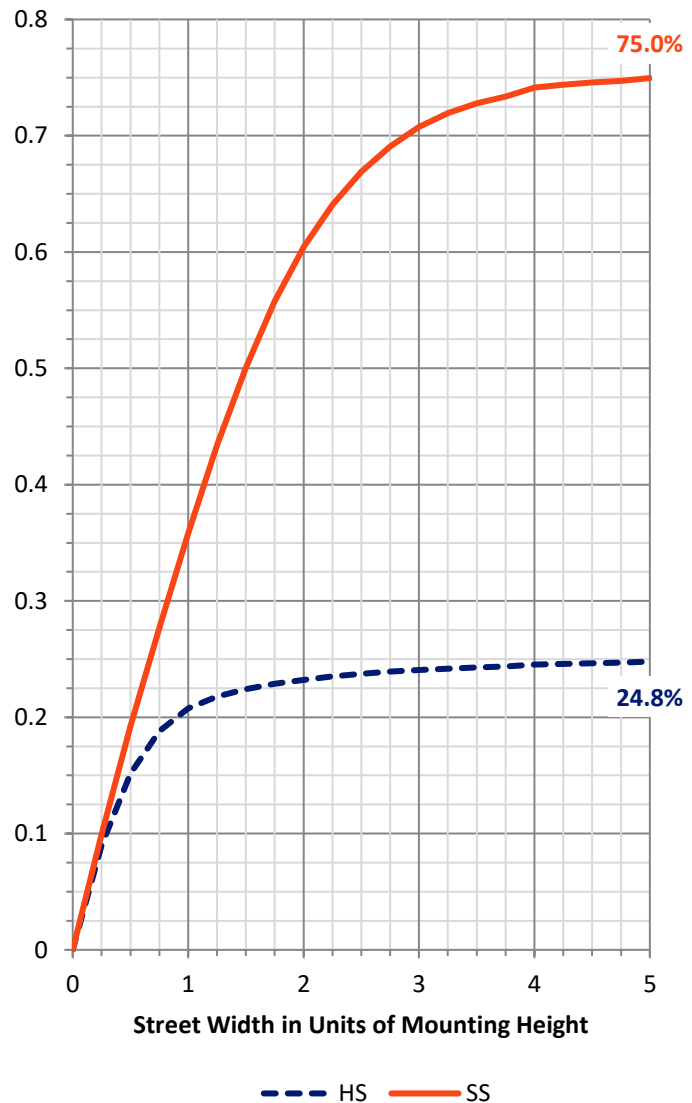
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1340.0   | 0.0    | 1340.0 |
|                    | % Fixture | 25.1     | 0.0    | 25.1   |
| <b>Street Side</b> | Lumens    | 4007.8   | 0.0    | 4007.8 |
|                    | % Fixture | 74.9     | 0.0    | 74.9   |
| <b>Total</b>       | Lumens    | 5347.8   | 0.0    | 5347.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 63.8   | 1.2       |
| 10°-20°   | 209.4  | 3.9       |
| 20°-30°   | 360.2  | 6.7       |
| 30°-40°   | 507.8  | 9.5       |
| 40°-50°   | 702.7  | 13.1      |
| 50°-60°   | 1043.6 | 19.5      |
| 60°-70°   | 1394.8 | 26.1      |
| 70°-80°   | 983.9  | 18.4      |
| 80°-90°   | 81.5   | 1.5       |
| 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°    | 5347.8 | 100.0     |
| 0°-180°   | 5347.8 | 100.0     |





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CATALOG NUMBER: VAL-T-SB1C-722-U-T4W

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 44°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 631.9  | 631.9  | 631.9  | 631.9  | 631.9  | 631.9  | 631.9  | 631.9  | 631.9  | 631.9  | 631.9  |
| 2.5°  | 678.7  | 674.8  | 670.9  | 669.6  | 664.4  | 656.6  | 656.6  | 654.0  | 647.5  | 642.3  | 638.4  |
| 5°    | 722.8  | 724.1  | 717.6  | 712.4  | 704.6  | 691.6  | 692.9  | 681.3  | 668.3  | 654.0  | 643.6  |
| 7.5°  | 765.6  | 765.6  | 757.8  | 751.3  | 740.9  | 725.4  | 725.4  | 707.2  | 691.6  | 672.2  | 657.9  |
| 10°   | 804.5  | 801.9  | 791.5  | 783.8  | 769.5  | 752.6  | 751.3  | 733.2  | 713.7  | 691.6  | 672.2  |
| 12.5° | 834.4  | 834.4  | 824.0  | 811.0  | 795.4  | 777.3  | 776.0  | 756.5  | 737.0  | 713.7  | 690.3  |
| 15°   | 862.9  | 856.4  | 847.3  | 830.5  | 812.3  | 798.0  | 795.4  | 778.6  | 759.1  | 738.3  | 712.4  |
| 17.5° | 873.3  | 870.7  | 859.0  | 842.2  | 825.3  | 809.7  | 809.7  | 794.1  | 779.9  | 759.1  | 733.2  |
| 20°   | 870.7  | 866.8  | 856.4  | 842.2  | 829.2  | 816.2  | 816.2  | 804.5  | 796.7  | 777.3  | 753.9  |
| 22.5° | 857.7  | 853.8  | 847.3  | 834.4  | 827.9  | 820.1  | 820.1  | 813.6  | 811.0  | 799.3  | 777.3  |
| 25°   | 853.8  | 851.2  | 842.2  | 830.5  | 824.0  | 822.7  | 824.0  | 825.3  | 827.9  | 818.8  | 800.6  |
| 27.5° | 856.4  | 856.4  | 848.6  | 837.0  | 829.2  | 830.5  | 831.8  | 839.6  | 847.3  | 842.2  | 826.6  |
| 30°   | 873.3  | 869.4  | 864.2  | 852.5  | 843.5  | 844.8  | 844.8  | 860.3  | 868.1  | 861.6  | 849.9  |
| 32.5° | 901.8  | 898.0  | 890.2  | 865.5  | 856.4  | 862.9  | 865.5  | 878.5  | 883.7  | 877.2  | 872.0  |
| 35°   | 968.0  | 971.9  | 946.0  | 901.8  | 877.2  | 882.4  | 885.0  | 894.1  | 900.5  | 898.0  | 892.8  |
| 37.5° | 1088.7 | 1090.0 | 1057.6 | 978.4  | 921.3  | 905.7  | 907.0  | 920.0  | 927.8  | 918.7  | 914.8  |
| 40°   | 1239.2 | 1240.5 | 1195.1 | 1087.4 | 991.4  | 952.5  | 951.2  | 953.8  | 965.4  | 949.9  | 947.3  |
| 42.5° | 1402.7 | 1384.6 | 1345.6 | 1222.4 | 1095.2 | 1030.3 | 1018.6 | 1010.8 | 1025.1 | 1005.7 | 992.7  |
| 45°   | 1558.4 | 1545.5 | 1492.3 | 1365.1 | 1219.8 | 1132.8 | 1121.1 | 1082.2 | 1105.6 | 1090.0 | 1066.6 |
| 47.5° | 1688.2 | 1677.8 | 1637.6 | 1519.5 | 1361.2 | 1256.1 | 1237.9 | 1176.9 | 1218.5 | 1210.7 | 1182.1 |
| 50°   | 1784.2 | 1773.8 | 1746.6 | 1673.9 | 1540.3 | 1393.6 | 1376.8 | 1302.8 | 1345.6 | 1359.9 | 1337.8 |
| 52.5° | 1854.3 | 1851.7 | 1841.3 | 1829.6 | 1721.9 | 1553.3 | 1533.8 | 1441.7 | 1511.7 | 1539.0 | 1532.5 |
| 55°   | 1960.7 | 1955.5 | 1959.4 | 1978.9 | 1916.6 | 1723.2 | 1694.7 | 1587.0 | 1683.0 | 1733.6 | 1744.0 |
| 57.5° | 2061.9 | 2061.9 | 2095.7 | 2146.3 | 2138.5 | 1906.2 | 1872.5 | 1757.0 | 1890.6 | 1915.3 | 1964.6 |
| 60°   | 2156.6 | 2165.7 | 2212.4 | 2324.0 | 2346.1 | 2104.7 | 2064.5 | 1952.9 | 2087.9 | 2115.1 | 2204.7 |
| 62.5° | 2116.4 | 2138.5 | 2287.7 | 2468.1 | 2540.7 | 2317.6 | 2277.3 | 2168.3 | 2309.8 | 2277.3 | 2357.8 |
| 65°   | 1911.4 | 1945.1 | 2176.1 | 2477.2 | 2730.2 | 2551.1 | 2517.4 | 2411.0 | 2431.7 | 2302.0 | 2443.4 |
| 67.5° | 1696.0 | 1745.3 | 2013.9 | 2366.9 | 2779.5 | 2789.9 | 2760.0 | 2560.2 | 2430.4 | 2327.9 | 2530.4 |
| 70°   | 1502.6 | 1542.9 | 1859.5 | 2347.4 | 2705.5 | 2944.3 | 2937.8 | 2582.3 | 2500.5 | 2351.3 | 2475.9 |
| 72.5° | 1053.7 | 1109.5 | 1433.9 | 2167.0 | 2727.6 | 2692.6 | 2678.3 | 2736.7 | 2552.4 | 2265.6 | 2194.3 |
| 75°   | 378.9  | 401.0  | 743.5  | 1466.3 | 2168.3 | 2549.8 | 2561.5 | 2535.6 | 2501.8 | 2029.5 | 1649.3 |
| 77.5° | 112.9  | 120.7  | 211.5  | 581.3  | 1215.9 | 2046.3 | 2065.8 | 1997.0 | 1880.3 | 1223.7 | 624.2  |
| 80°   | 61.0   | 66.2   | 99.9   | 170.0  | 455.5  | 1154.9 | 1208.1 | 1022.5 | 677.4  | 323.1  | 140.1  |
| 82.5° | 29.8   | 32.4   | 51.9   | 83.0   | 195.9  | 367.2  | 368.5  | 327.0  | 220.6  | 97.3   | 51.9   |
| 85°   | 10.4   | 11.7   | 16.9   | 31.1   | 67.5   | 75.3   | 75.3   | 70.1   | 64.9   | 48.0   | 23.4   |
| 87.5° | 2.6    | 2.6    | 3.9    | 5.2    | 6.5    | 7.8    | 7.8    | 9.1    | 10.4   | 11.7   | 11.7   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 631.9  | 631.9  | 631.9 | 631.9 | 631.9 | 631.9 | 631.9 | 631.9 | 631.9 | 631.9 | 631.9 |
| 2.5°  | 635.8  | 630.6  | 626.8 | 622.9 | 620.3 | 615.1 | 613.8 | 613.8 | 612.5 | 613.8 | 612.5 |
| 5°    | 639.7  | 631.9  | 625.5 | 620.3 | 617.7 | 615.1 | 615.1 | 616.4 | 615.1 | 616.4 | 615.1 |
| 7.5°  | 647.5  | 642.3  | 635.8 | 628.0 | 626.8 | 625.5 | 626.8 | 629.3 | 630.6 | 631.9 | 629.3 |
| 10°   | 663.1  | 655.3  | 646.2 | 642.3 | 639.7 | 638.4 | 642.3 | 647.5 | 648.8 | 651.4 | 648.8 |
| 12.5° | 681.3  | 672.2  | 665.7 | 656.6 | 656.6 | 657.9 | 661.8 | 668.3 | 672.2 | 676.1 | 672.2 |
| 15°   | 702.0  | 692.9  | 683.8 | 676.1 | 674.8 | 677.4 | 683.8 | 690.3 | 691.6 | 692.9 | 690.3 |
| 17.5° | 722.8  | 713.7  | 702.0 | 692.9 | 691.6 | 698.1 | 700.7 | 700.7 | 698.1 | 698.1 | 694.2 |
| 20°   | 743.5  | 737.0  | 725.4 | 708.5 | 713.7 | 716.3 | 708.5 | 702.0 | 698.1 | 696.8 | 692.9 |
| 22.5° | 768.2  | 757.8  | 744.8 | 726.7 | 730.6 | 720.2 | 705.9 | 703.3 | 699.4 | 700.7 | 696.8 |
| 25°   | 791.5  | 785.1  | 764.3 | 740.9 | 730.6 | 713.7 | 704.6 | 704.6 | 700.7 | 703.3 | 702.0 |
| 27.5° | 818.8  | 811.0  | 782.5 | 748.7 | 721.5 | 703.3 | 702.0 | 702.0 | 695.5 | 696.8 | 695.5 |
| 30°   | 846.0  | 834.4  | 796.7 | 742.2 | 699.4 | 687.7 | 691.6 | 690.3 | 687.7 | 691.6 | 694.2 |
| 32.5° | 869.4  | 860.3  | 804.5 | 726.7 | 672.2 | 667.0 | 669.6 | 676.1 | 682.5 | 686.4 | 691.6 |
| 35°   | 894.1  | 883.7  | 811.0 | 699.4 | 642.3 | 634.5 | 633.2 | 652.7 | 664.4 | 670.9 | 674.8 |
| 37.5° | 920.0  | 907.0  | 814.9 | 669.6 | 613.8 | 590.4 | 594.3 | 609.9 | 622.9 | 634.5 | 643.6 |
| 40°   | 955.0  | 942.1  | 820.1 | 637.1 | 583.9 | 552.8 | 547.6 | 551.5 | 560.6 | 577.4 | 586.5 |
| 42.5° | 1007.0 | 986.2  | 820.1 | 595.6 | 541.1 | 519.0 | 500.9 | 486.6 | 481.4 | 491.8 | 497.0 |
| 45°   | 1078.3 | 1047.2 | 814.9 | 552.8 | 491.8 | 476.2 | 446.4 | 423.0 | 402.3 | 391.9 | 389.3 |
| 47.5° | 1196.4 | 1141.9 | 809.7 | 511.3 | 445.1 | 425.6 | 389.3 | 362.0 | 332.2 | 304.9 | 298.5 |
| 50°   | 1354.7 | 1267.8 | 811.0 | 469.7 | 398.4 | 372.4 | 340.0 | 311.4 | 276.4 | 250.4 | 246.5 |
| 52.5° | 1563.6 | 1444.3 | 818.8 | 424.3 | 353.0 | 329.6 | 302.3 | 273.8 | 238.8 | 219.3 | 218.0 |
| 55°   | 1806.3 | 1657.1 | 846.0 | 373.7 | 311.4 | 293.3 | 273.8 | 246.5 | 216.7 | 199.8 | 197.2 |
| 57.5° | 2089.2 | 1903.6 | 900.5 | 320.5 | 273.8 | 267.3 | 251.7 | 225.8 | 201.1 | 184.3 | 181.7 |
| 60°   | 2368.2 | 2142.4 | 942.1 | 273.8 | 244.0 | 244.0 | 229.7 | 210.2 | 176.5 | 162.2 | 159.6 |
| 62.5° | 2497.9 | 2216.3 | 862.9 | 236.2 | 220.6 | 224.5 | 215.4 | 188.2 | 177.8 | 171.3 | 167.4 |
| 65°   | 2529.1 | 2174.8 | 648.8 | 207.6 | 201.1 | 214.1 | 199.8 | 201.1 | 192.0 | 185.6 | 181.7 |
| 67.5° | 2491.4 | 2056.7 | 415.2 | 183.0 | 186.9 | 201.1 | 220.6 | 221.9 | 192.0 | 177.8 | 175.2 |
| 70°   | 2270.8 | 1803.7 | 255.6 | 162.2 | 167.4 | 198.5 | 245.3 | 208.9 | 181.7 | 170.0 | 164.8 |
| 72.5° | 1894.5 | 1488.4 | 179.1 | 142.7 | 142.7 | 188.2 | 220.6 | 195.9 | 167.4 | 160.9 | 154.4 |
| 75°   | 1330.1 | 1007.0 | 131.1 | 119.4 | 119.4 | 146.6 | 203.7 | 179.1 | 157.0 | 159.6 | 157.0 |
| 77.5° | 452.9  | 327.0  | 94.7  | 92.1  | 88.2  | 125.9 | 181.7 | 171.3 | 145.3 | 137.5 | 127.2 |
| 80°   | 133.7  | 105.1  | 70.1  | 64.9  | 63.6  | 101.2 | 153.1 | 125.9 | 103.8 | 94.7  | 88.2  |
| 82.5° | 51.9   | 46.7   | 45.4  | 41.5  | 40.2  | 67.5  | 101.2 | 86.9  | 77.9  | 64.9  | 63.6  |
| 85°   | 20.8   | 20.8   | 23.4  | 23.4  | 20.8  | 36.3  | 61.0  | 48.0  | 45.4  | 40.2  | 38.9  |
| 87.5° | 10.4   | 10.4   | 9.1   | 6.5   | 6.5   | 7.8   | 6.5   | 6.5   | 6.5   | 6.5   | 6.5   |
| 90°   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



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

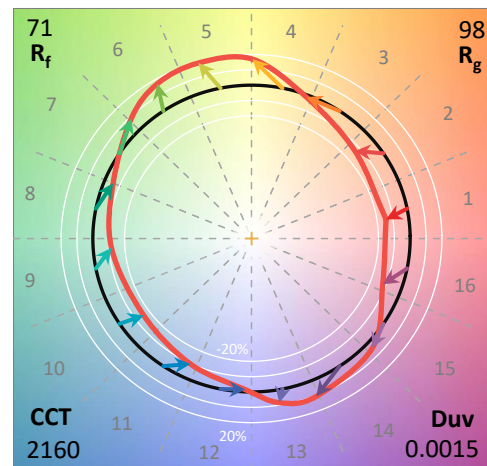
Data in this report applies to families of products including GSS-SB1A-722-U-5WQ

### 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

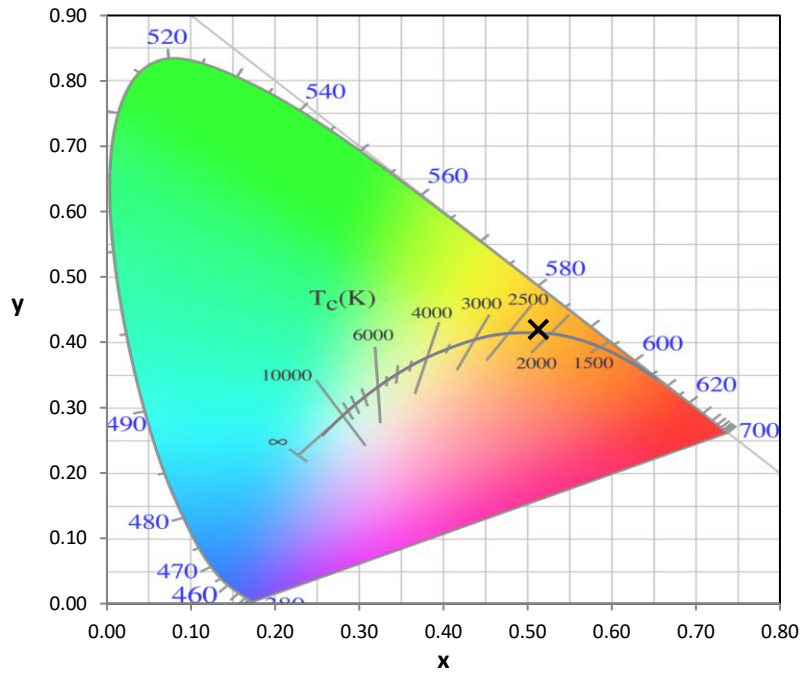
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

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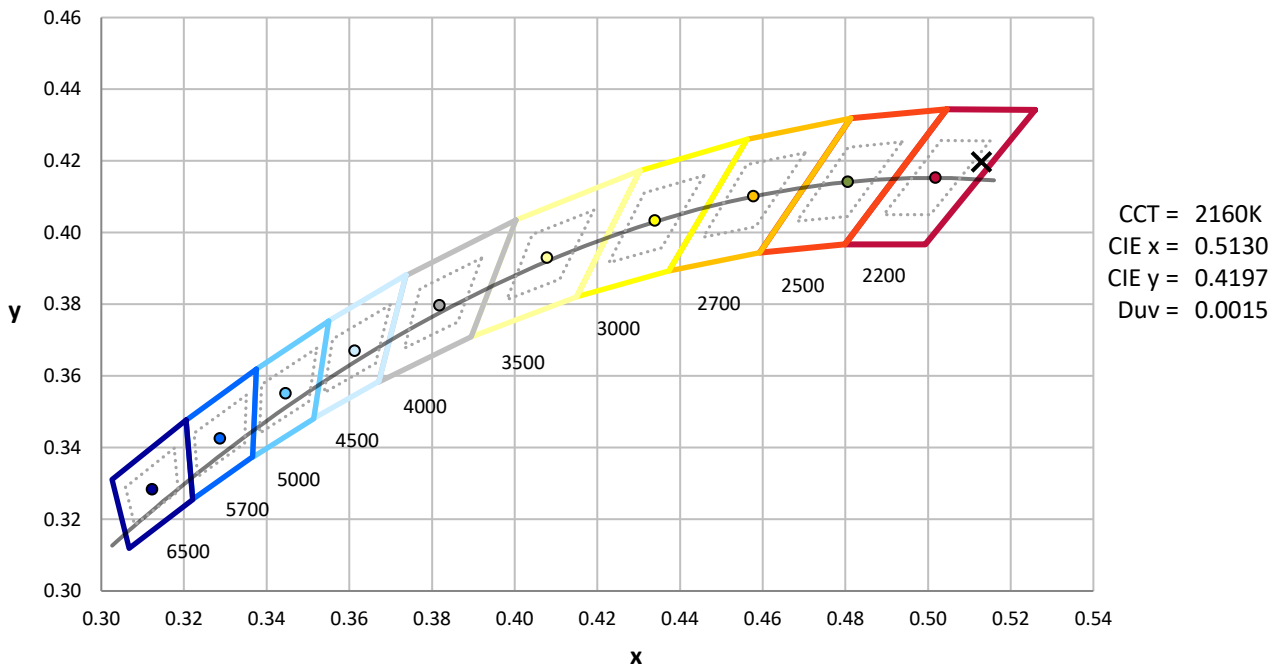
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



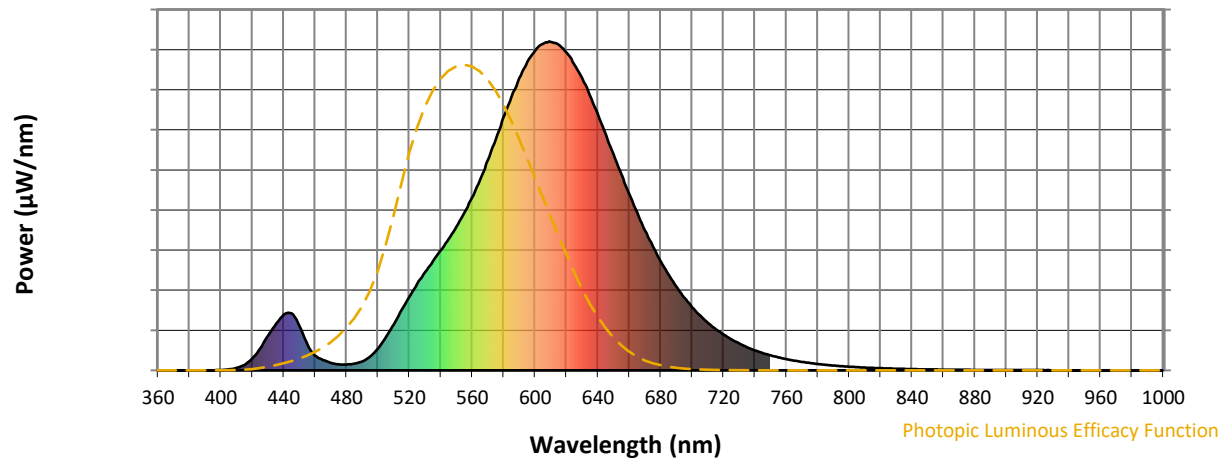
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 2200K 7-step quadrangle

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### Photopic Flux vs. Wavelength

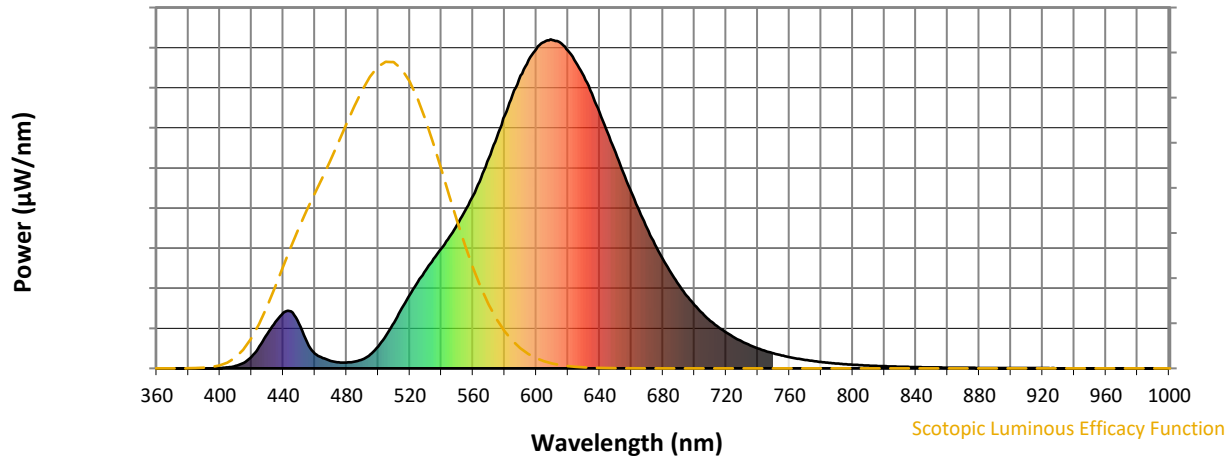


### Photopic Lumens: NR

| $\lambda$<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



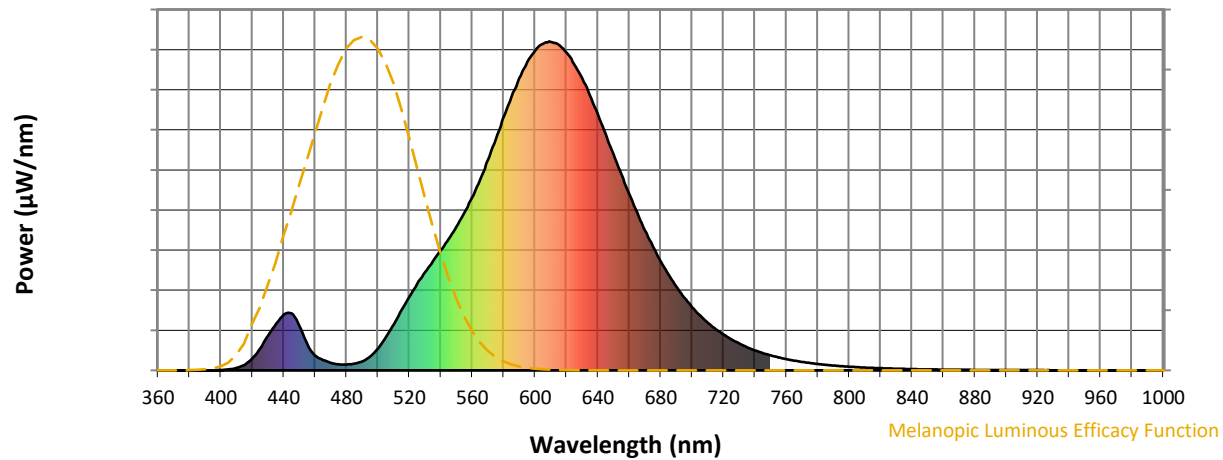
Scotopic Lumens: NR

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

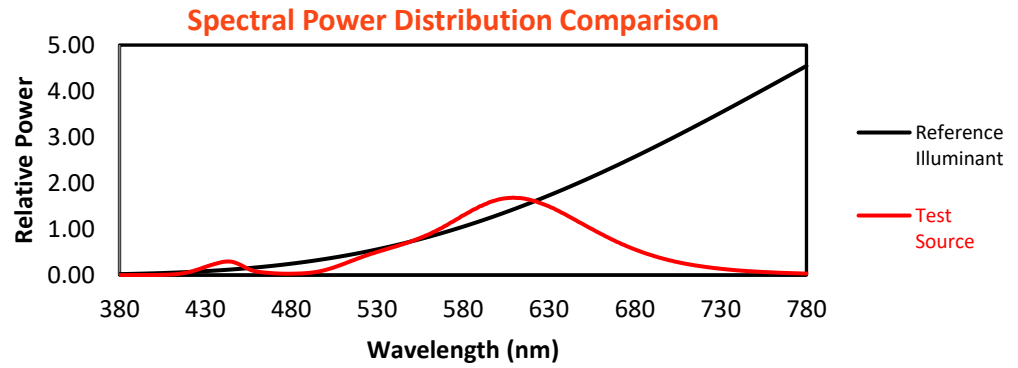
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm)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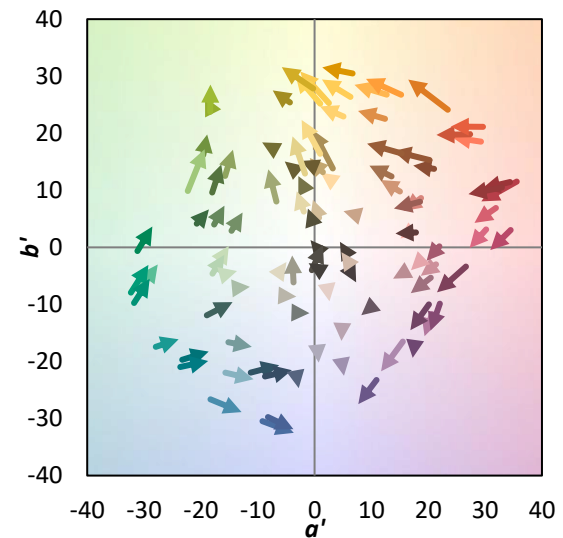
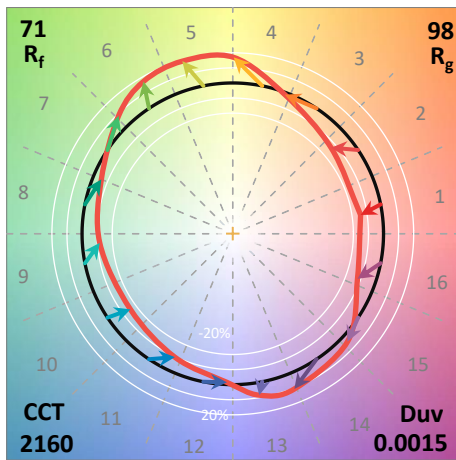
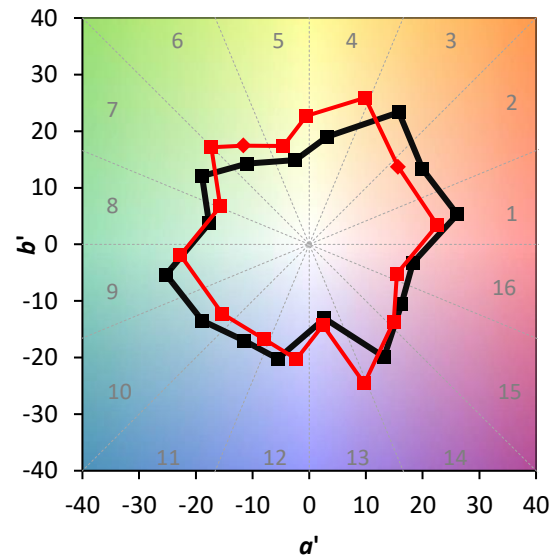
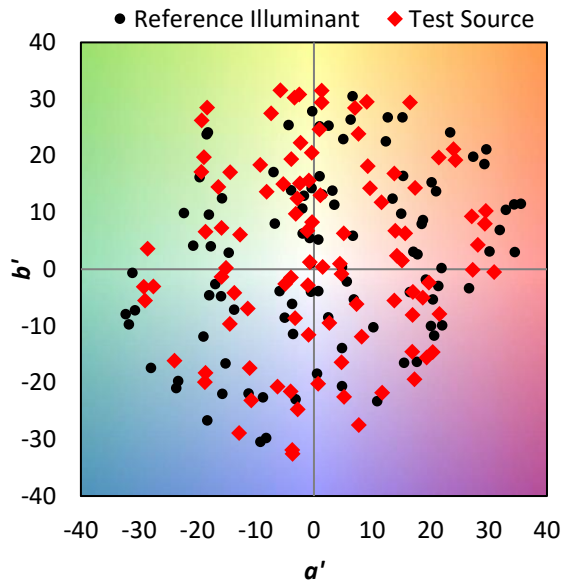
TM-30-18

### Summary

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



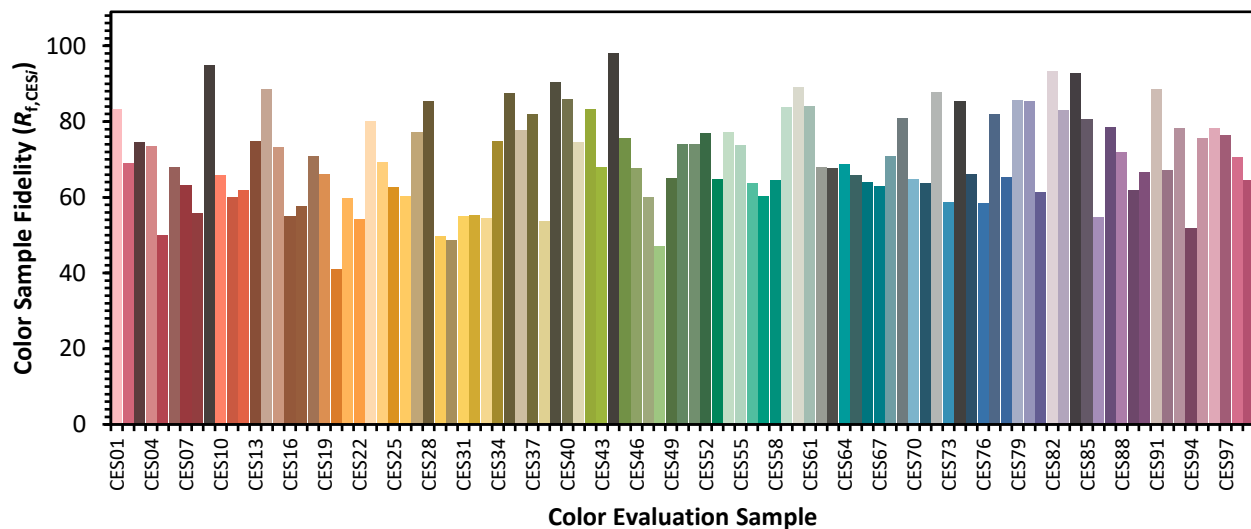
### Color Vector Graphics



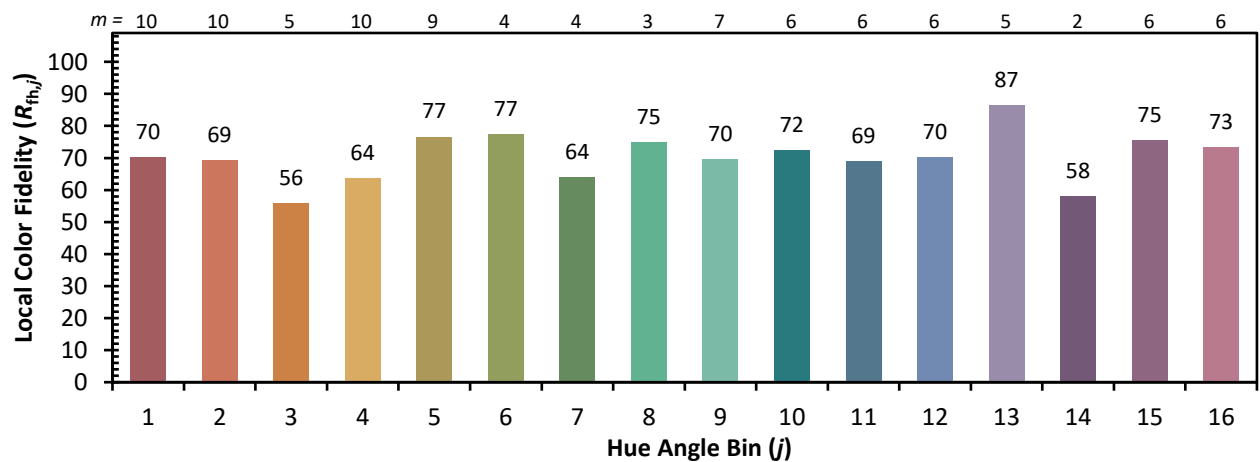
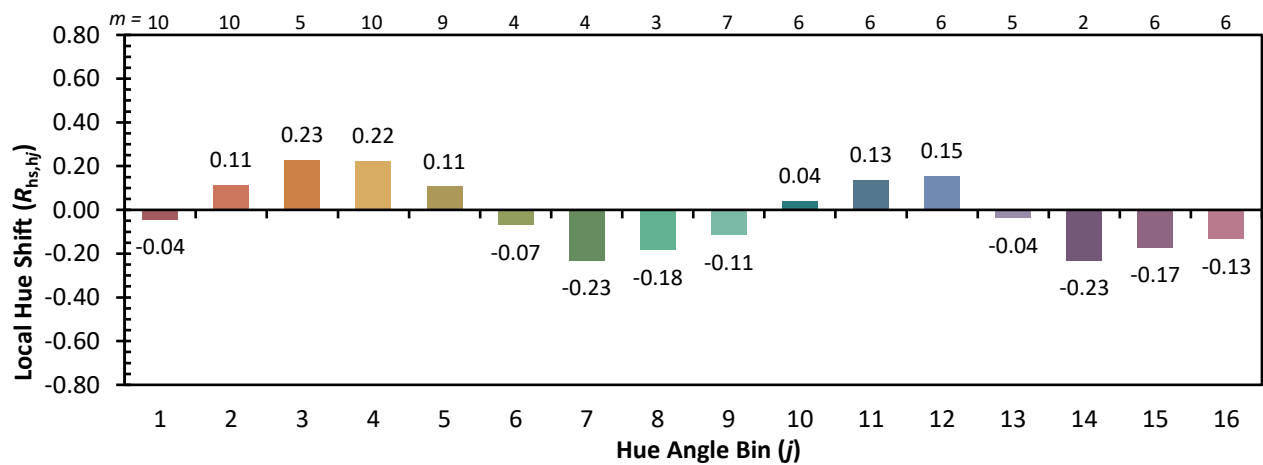
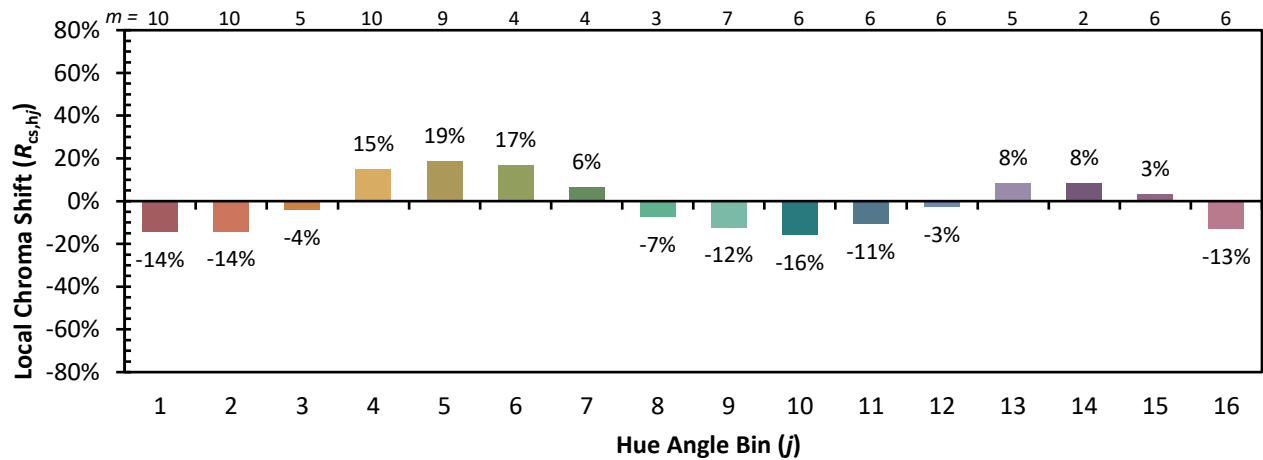


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

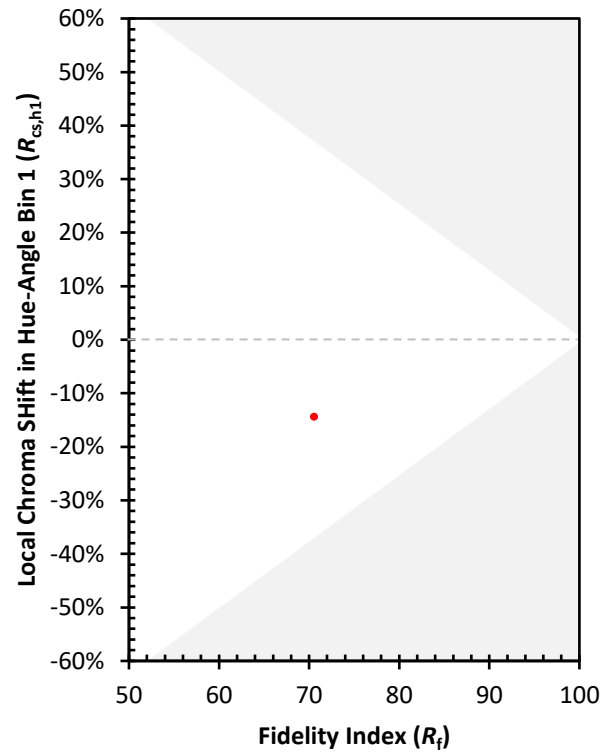
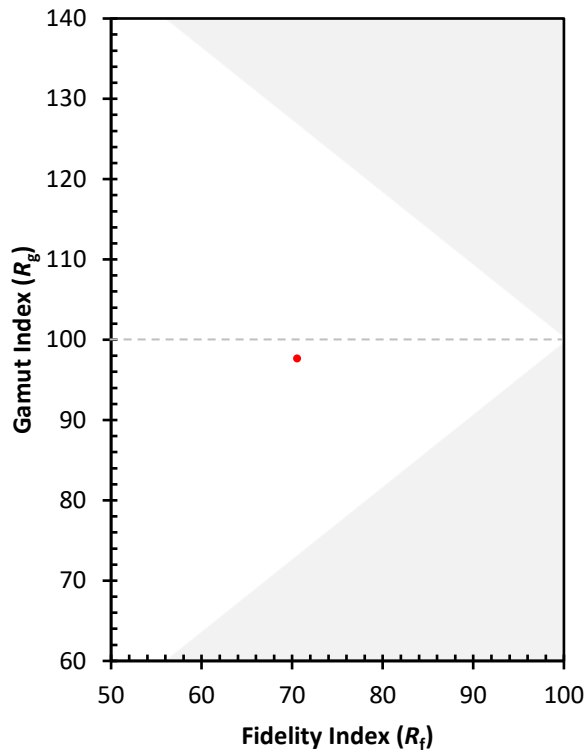
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 60 | CES51 = 74 | CES76 = 58 |
| CES02 = 65 | CES27 = 77 | CES52 = 77 | CES77 = 82 |
| CES03 = 32 | CES28 = 85 | CES53 = 65 | CES78 = 65 |
| CES04 = 72 | CES29 = 50 | CES54 = 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)