

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: P1379168

Luminaire Tested: **VAL-T-SB1B-730-U-SL4**

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: P1379168  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 02/18/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: VAL-T-SB1B-730-U-SL4  
Description: GALLEON II WALL SLIM HIGH DENSITY LED ARRAYS 15 SQUARE 40W 70CRI  
3000K FIXTURE w/ TYPE IV SPILL CONTROL DISTRIBUTION OPTIC  
Light Source: (26) 3000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER  
Luminaire Equipment: 

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

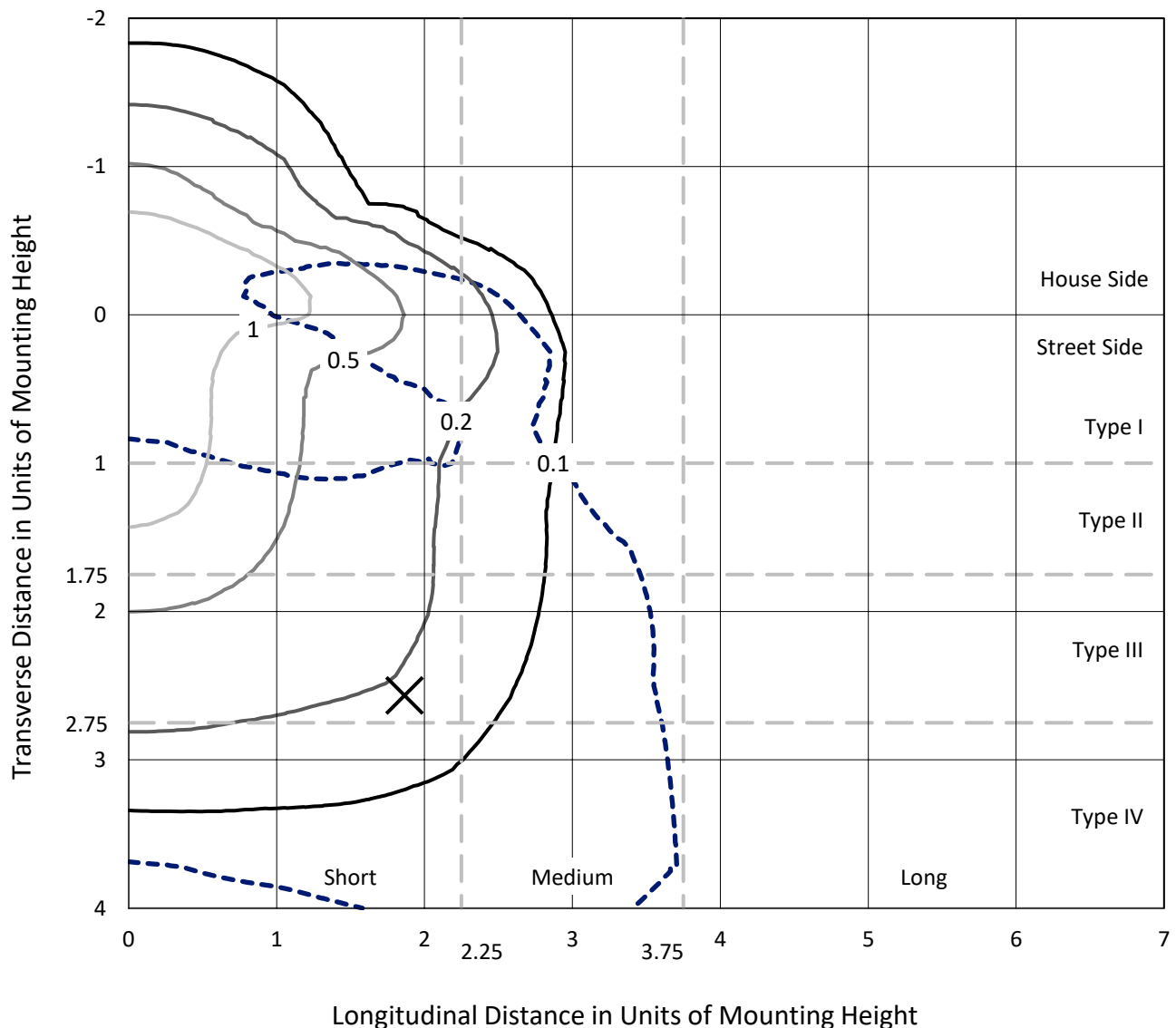
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4918.8 lumens  
Efficiency: N/A  
Efficacy: 123.0 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G1  
  
Input Watts (W): 40  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.98  
Total Harmonic Distortion (THDi): 5.3%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

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## Iso-Footcandle Lines of Horizontal Illumination

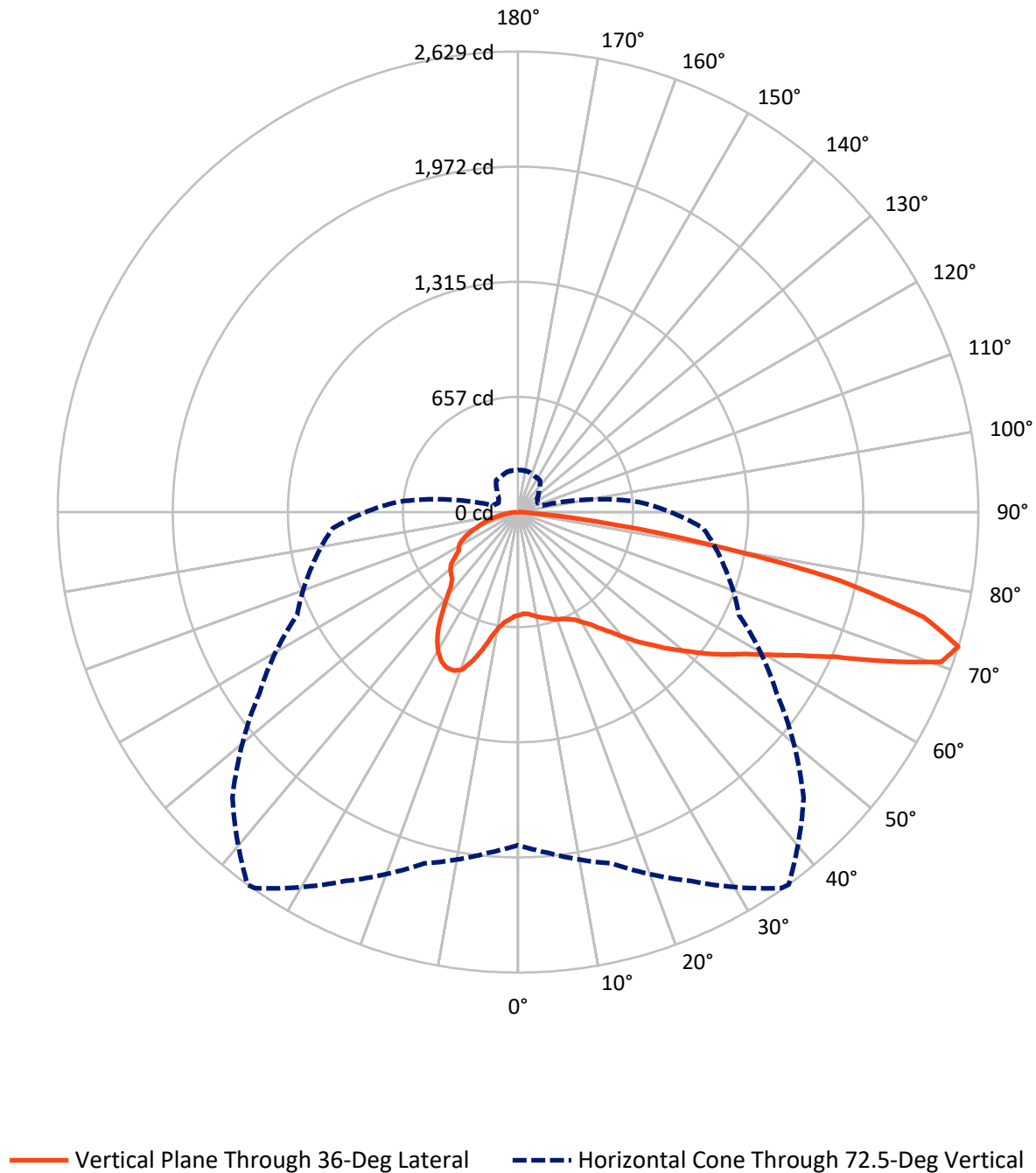
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 2 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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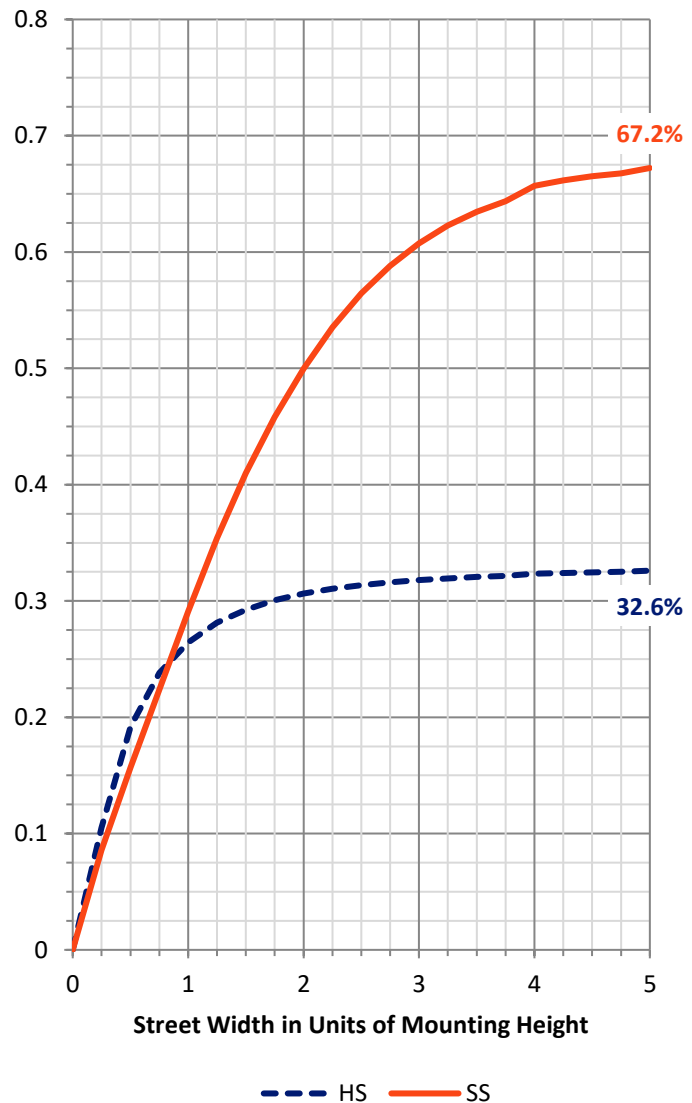
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1618.7   | 0.0    | 1618.7 |
|                    | % Fixture | 32.9     | 0.0    | 32.9   |
| <b>Street Side</b> | Lumens    | 3300.0   | 0.0    | 3300.0 |
|                    | % Fixture | 67.1     | 0.0    | 67.1   |
| <b>Total</b>       | Lumens    | 4918.8   | 0.0    | 4918.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 58.3   | 1.2       |
| 10°-20°   | 201.0  | 4.1       |
| 20°-30°   | 381.7  | 7.8       |
| 30°-40°   | 557.3  | 11.3      |
| 40°-50°   | 741.3  | 15.1      |
| 50°-60°   | 950.5  | 19.3      |
| 60°-70°   | 1118.0 | 22.7      |
| 70°-80°   | 837.5  | 17.0      |
| 80°-90°   | 73.1   | 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°    | 4918.8 | 100.0     |
| 0°-180°   | 4918.8 | 100.0     |

**Coefficient of Utilization**



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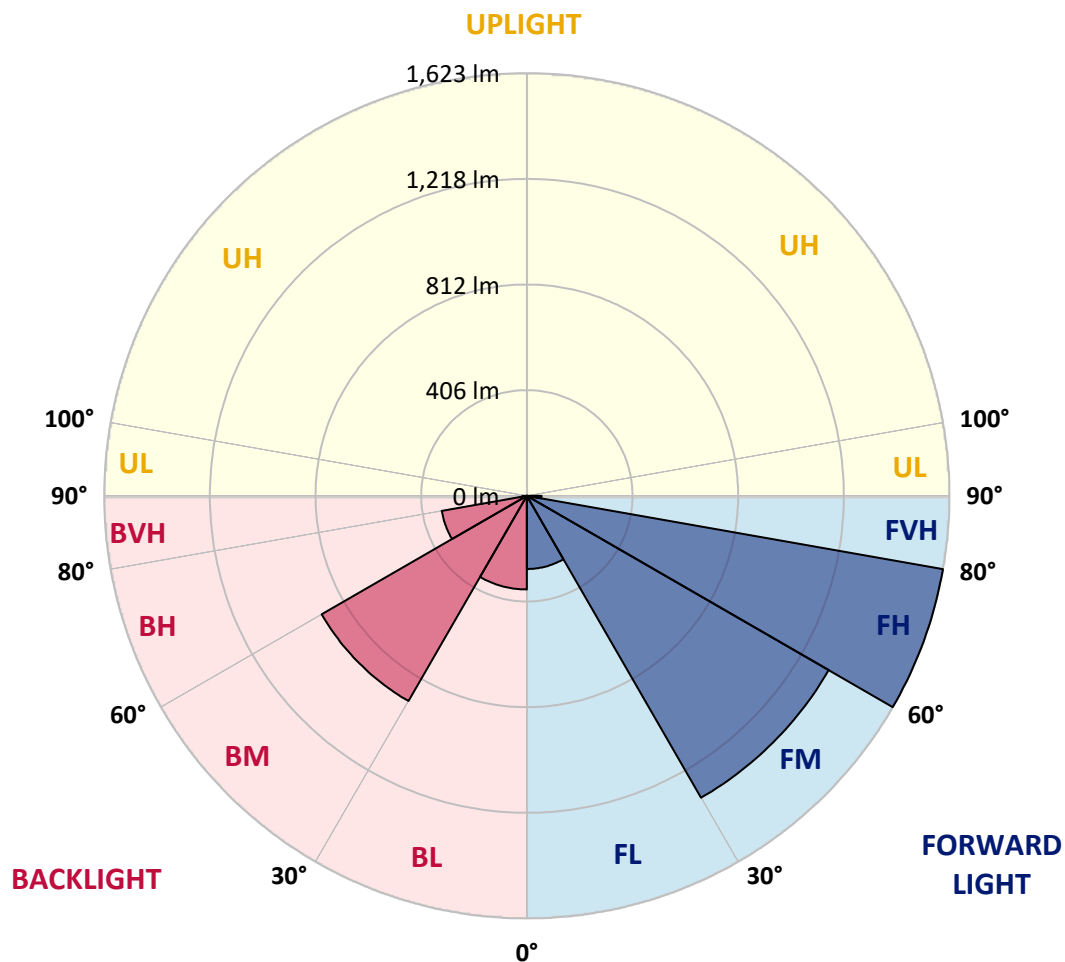
CATALOG NUMBER: VAL-T-SB1B-730-U-SL4

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 281.2  | 5.7       |                         |      |         |
| FM   | (30°-60°)   | 1339.1 | 27.2      |                         |      |         |
| FH   | (60°-80°)   | 1623.5 | 33.0      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 56.3   | 1.1       |                         |      | G1/100  |
| BL   | (0°-30°)    | 359.8  | 7.3       | B1/500                  |      |         |
| BM   | (30°-60°)   | 910.0  | 18.5      | B1/1000                 |      |         |
| BH   | (60°-80°)   | 332.1  | 6.8       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 16.8   | 0.3       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G1**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 36°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 589.0  | 589.0  | 589.0  | 589.0  | 589.0  | 589.0  | 589.0  | 589.0  | 589.0  | 589.0  | 589.0  |
| 2.5°  | 584.6  | 581.2  | 583.4  | 581.2  | 581.2  | 581.2  | 583.4  | 583.4  | 586.8  | 586.8  | 586.8  |
| 5°    | 589.0  | 587.9  | 589.0  | 587.9  | 584.6  | 584.6  | 586.8  | 584.6  | 590.1  | 587.9  | 591.3  |
| 7.5°  | 601.3  | 599.1  | 599.1  | 595.7  | 596.8  | 594.6  | 596.8  | 593.5  | 596.8  | 594.6  | 594.6  |
| 10°   | 615.8  | 612.4  | 613.6  | 609.1  | 605.8  | 606.9  | 609.1  | 605.8  | 606.9  | 608.0  | 608.0  |
| 12.5° | 628.1  | 625.8  | 625.8  | 616.9  | 619.1  | 619.1  | 621.4  | 618.0  | 620.3  | 619.1  | 623.6  |
| 15°   | 643.7  | 640.3  | 638.1  | 631.4  | 630.3  | 629.2  | 632.5  | 629.2  | 634.8  | 633.6  | 639.2  |
| 17.5° | 658.2  | 654.8  | 652.6  | 641.5  | 639.2  | 642.6  | 643.7  | 641.5  | 647.0  | 649.3  | 660.4  |
| 20°   | 671.6  | 672.7  | 664.9  | 651.5  | 651.5  | 652.6  | 652.6  | 652.6  | 661.5  | 664.9  | 677.2  |
| 22.5° | 695.0  | 692.8  | 685.0  | 669.3  | 662.6  | 662.6  | 672.7  | 666.0  | 671.6  | 679.4  | 700.6  |
| 25°   | 725.1  | 720.7  | 707.3  | 687.2  | 676.0  | 677.2  | 680.5  | 676.0  | 682.7  | 691.7  | 724.0  |
| 27.5° | 778.7  | 773.1  | 749.7  | 709.5  | 696.1  | 697.2  | 698.3  | 686.1  | 685.0  | 699.5  | 744.1  |
| 30°   | 856.8  | 850.1  | 814.4  | 764.2  | 728.5  | 730.7  | 718.4  | 696.1  | 688.3  | 703.9  | 767.5  |
| 32.5° | 941.5  | 932.6  | 896.9  | 825.5  | 777.6  | 766.4  | 743.0  | 703.9  | 691.7  | 708.4  | 788.7  |
| 35°   | 1043.1 | 1035.3 | 991.7  | 891.3  | 825.5  | 818.8  | 772.0  | 720.7  | 700.6  | 711.7  | 808.8  |
| 37.5° | 1187.0 | 1166.9 | 1114.5 | 976.1  | 883.5  | 873.5  | 809.9  | 744.1  | 701.7  | 709.5  | 836.7  |
| 40°   | 1310.8 | 1290.7 | 1233.8 | 1083.2 | 957.2  | 941.5  | 865.7  | 772.0  | 712.9  | 714.0  | 872.4  |
| 42.5° | 1440.2 | 1421.2 | 1359.9 | 1173.6 | 1023.0 | 1015.2 | 914.8  | 805.4  | 727.4  | 726.2  | 912.5  |
| 45°   | 1576.3 | 1577.4 | 1482.6 | 1281.8 | 1101.1 | 1085.5 | 975.0  | 850.1  | 754.1  | 740.7  | 978.4  |
| 47.5° | 1768.2 | 1747.0 | 1631.0 | 1385.5 | 1188.1 | 1168.0 | 1038.6 | 896.9  | 794.3  | 774.2  | 1052.0 |
| 50°   | 1923.2 | 1907.6 | 1767.1 | 1504.9 | 1269.5 | 1248.3 | 1113.3 | 948.2  | 830.0  | 821.1  | 1150.2 |
| 52.5° | 2052.7 | 2025.9 | 1896.5 | 1617.6 | 1361.0 | 1342.0 | 1174.7 | 998.4  | 880.2  | 875.7  | 1265.1 |
| 55°   | 2124.0 | 2096.2 | 1985.7 | 1722.4 | 1464.7 | 1435.7 | 1243.9 | 1058.7 | 940.4  | 942.7  | 1393.3 |
| 57.5° | 2179.8 | 2150.8 | 2042.6 | 1801.6 | 1567.4 | 1528.3 | 1319.7 | 1124.5 | 1011.8 | 1033.0 | 1568.5 |
| 60°   | 2199.9 | 2170.9 | 2090.6 | 1906.5 | 1677.8 | 1653.3 | 1405.6 | 1205.9 | 1094.4 | 1139.0 | 1739.2 |
| 62.5° | 2228.9 | 2235.6 | 2178.7 | 2034.8 | 1821.7 | 1800.5 | 1516.1 | 1306.3 | 1195.9 | 1231.6 | 1799.4 |
| 65°   | 2252.3 | 2249.0 | 2255.7 | 2212.2 | 2022.5 | 1992.4 | 1680.1 | 1436.9 | 1263.9 | 1262.8 | 1769.3 |
| 67.5° | 2197.7 | 2201.0 | 2236.7 | 2343.8 | 2301.4 | 2272.4 | 1892.0 | 1557.3 | 1296.3 | 1322.0 | 1673.4 |
| 70°   | 2156.4 | 2166.4 | 2214.4 | 2348.3 | 2560.2 | 2563.6 | 2187.6 | 1660.0 | 1388.9 | 1322.0 | 1405.6 |
| 72.5° | 1902.1 | 1953.4 | 2077.2 | 2323.7 | 2621.6 | 2629.4 | 2307.0 | 1803.9 | 1392.2 | 1221.6 | 1062.0 |
| 75°   | 1259.5 | 1299.6 | 1629.9 | 2085.0 | 2404.1 | 2391.8 | 2136.3 | 1734.7 | 1303.0 | 996.2  | 676.0  |
| 77.5° | 371.5  | 447.3  | 763.1  | 1292.9 | 1799.4 | 1877.5 | 1752.6 | 1187.0 | 966.1  | 467.4  | 241.0  |
| 80°   | 106.0  | 118.3  | 213.1  | 454.0  | 971.7  | 1055.3 | 1088.8 | 567.8  | 286.7  | 123.8  | 80.3   |
| 82.5° | 51.3   | 53.5   | 77.0   | 127.2  | 416.1  | 455.2  | 381.5  | 171.8  | 77.0   | 44.6   | 31.2   |
| 85°   | 8.9    | 11.2   | 19.0   | 37.9   | 74.7   | 90.4   | 84.8   | 34.6   | 23.4   | 20.1   | 14.5   |
| 87.5° | 2.2    | 2.2    | 3.3    | 3.3    | 4.5    | 4.5    | 4.5    | 5.6    | 5.6    | 5.6    | 5.6    |
| 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: P1379168

CATALOG NUMBER: VAL-T-SB1B-730-U-SL4

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|
| 0°    | 589.0  | 589.0  | 589.0  | 589.0  | 589.0  | 589.0  | 589.0 | 589.0 | 589.0 | 589.0 | 589.0 |
| 2.5°  | 592.4  | 592.4  | 596.8  | 599.1  | 599.1  | 595.7  | 595.7 | 605.8 | 601.3 | 603.5 | 602.4 |
| 5°    | 593.5  | 597.9  | 597.9  | 604.6  | 608.0  | 613.6  | 615.8 | 620.3 | 624.7 | 624.7 | 623.6 |
| 7.5°  | 600.2  | 603.5  | 609.1  | 613.6  | 622.5  | 631.4  | 634.8 | 648.1 | 650.4 | 656.0 | 653.7 |
| 10°   | 610.2  | 615.8  | 624.7  | 637.0  | 648.1  | 662.6  | 669.3 | 683.8 | 691.7 | 700.6 | 695.0 |
| 12.5° | 625.8  | 632.5  | 647.0  | 663.8  | 688.3  | 710.6  | 728.5 | 743.0 | 754.1 | 764.2 | 760.8 |
| 15°   | 642.6  | 656.0  | 674.9  | 705.0  | 748.5  | 788.7  | 812.1 | 836.7 | 842.3 | 851.2 | 850.1 |
| 17.5° | 671.6  | 680.5  | 718.4  | 778.7  | 835.6  | 870.1  | 890.2 | 902.5 | 899.2 | 902.5 | 900.3 |
| 20°   | 695.0  | 717.3  | 785.4  | 873.5  | 929.3  | 951.6  | 953.8 | 942.7 | 919.2 | 914.8 | 905.8 |
| 22.5° | 729.6  | 763.1  | 872.4  | 963.9  | 1008.5 | 1006.2 | 973.9 | 940.4 | 910.3 | 898.0 | 893.6 |
| 25°   | 763.1  | 823.3  | 963.9  | 1049.8 | 1062.0 | 1023.0 | 973.9 | 930.4 | 890.2 | 878.0 | 867.9 |
| 27.5° | 805.4  | 892.5  | 1067.6 | 1122.3 | 1085.5 | 1025.2 | 952.7 | 903.6 | 865.7 | 845.6 | 841.1 |
| 30°   | 849.0  | 972.8  | 1154.6 | 1156.8 | 1092.1 | 1001.8 | 913.7 | 870.1 | 826.6 | 806.6 | 807.7 |
| 32.5° | 908.1  | 1060.9 | 1228.2 | 1182.5 | 1073.2 | 954.9  | 861.2 | 814.4 | 776.4 | 766.4 | 764.2 |
| 35°   | 966.1  | 1160.2 | 1287.4 | 1184.7 | 1028.6 | 889.1  | 792.1 | 739.6 | 716.2 | 706.2 | 710.6 |
| 37.5° | 1048.6 | 1261.7 | 1322.0 | 1163.5 | 963.9  | 801.0  | 710.6 | 669.3 | 651.5 | 648.1 | 652.6 |
| 40°   | 1139.0 | 1355.4 | 1344.3 | 1139.0 | 875.7  | 707.3  | 632.5 | 606.9 | 595.7 | 597.9 | 605.8 |
| 42.5° | 1236.1 | 1432.4 | 1361.0 | 1083.2 | 772.0  | 621.4  | 570.1 | 558.9 | 575.6 | 585.7 | 592.4 |
| 45°   | 1339.8 | 1502.7 | 1366.6 | 1004.0 | 674.9  | 555.6  | 534.4 | 555.6 | 581.2 | 585.7 | 589.0 |
| 47.5° | 1442.4 | 1564.0 | 1366.6 | 899.2  | 582.3  | 512.0  | 523.2 | 551.1 | 571.2 | 563.4 | 564.5 |
| 50°   | 1540.6 | 1613.1 | 1363.2 | 777.6  | 517.6  | 489.7  | 508.7 | 526.6 | 517.6 | 495.3 | 497.5 |
| 52.5° | 1629.9 | 1656.6 | 1339.8 | 652.6  | 464.1  | 484.2  | 485.3 | 463.0 | 442.9 | 431.7 | 434.0 |
| 55°   | 1729.1 | 1696.8 | 1270.6 | 541.1  | 429.5  | 469.7  | 438.4 | 409.4 | 419.5 | 416.1 | 415.0 |
| 57.5° | 1832.9 | 1743.6 | 1175.8 | 445.1  | 397.1  | 435.1  | 400.5 | 398.3 | 397.1 | 392.7 | 387.1 |
| 60°   | 1922.1 | 1781.6 | 1034.1 | 350.3  | 349.2  | 382.6  | 392.7 | 387.1 | 381.5 | 372.6 | 368.1 |
| 62.5° | 1870.8 | 1686.7 | 826.6  | 283.4  | 300.1  | 341.4  | 378.2 | 367.0 | 368.1 | 360.3 | 357.0 |
| 65°   | 1725.8 | 1499.3 | 563.4  | 236.5  | 253.2  | 304.6  | 343.6 | 333.6 | 328.0 | 325.7 | 323.5 |
| 67.5° | 1538.4 | 1298.5 | 371.5  | 187.4  | 212.0  | 266.6  | 303.4 | 291.2 | 299.0 | 299.0 | 297.9 |
| 70°   | 1210.4 | 992.9  | 234.3  | 152.8  | 168.5  | 220.9  | 252.1 | 257.7 | 268.9 | 270.0 | 268.9 |
| 72.5° | 870.1  | 679.4  | 146.1  | 122.7  | 133.9  | 168.5  | 219.8 | 225.3 | 237.6 | 239.8 | 239.8 |
| 75°   | 513.2  | 382.6  | 98.2   | 98.2   | 103.7  | 137.2  | 181.8 | 199.7 | 205.3 | 207.5 | 205.3 |
| 77.5° | 206.4  | 147.3  | 64.7   | 72.5   | 80.3   | 110.4  | 139.4 | 161.8 | 159.5 | 158.4 | 152.8 |
| 80°   | 73.6   | 63.6   | 44.6   | 48.0   | 58.0   | 82.6   | 103.7 | 110.4 | 117.1 | 113.8 | 110.4 |
| 82.5° | 30.1   | 29.0   | 27.9   | 31.2   | 34.6   | 50.2   | 72.5  | 72.5  | 73.6  | 72.5  | 71.4  |
| 85°   | 11.2   | 11.2   | 13.4   | 15.6   | 19.0   | 23.4   | 32.4  | 41.3  | 34.6  | 24.5  | 25.7  |
| 87.5° | 5.6    | 5.6    | 4.5    | 4.5    | 5.6    | 7.8    | 7.8   | 10.0  | 10.0  | 5.6   | 3.3   |
| 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: SP1-2407-184-4

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-730-U-5WQ

Data in this report applies to families of products including GSS-SB1A-730-U-5WQ

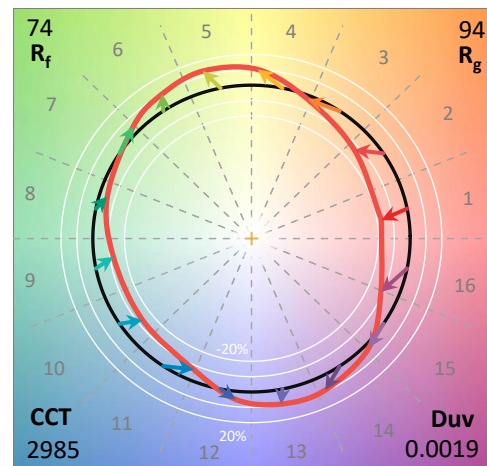
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-4  
 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-730-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 3000K CCT 26 LEDS

### Spectral Parameters

CCT (K): 2985  
 CIE  $u'$ : 0.2504  
 CIE  $v'$ : 0.5243  
 Duv: 0.0019  
 CIE x: 0.4408  
 CIE y: 0.4101  
 CIE z: 0.1491  
 Peak Wavelength (nm): 595  
 Dominant Wavelength (nm): 582  
 Purity: 55.41818  
 R<sub>f</sub>: 73.8  
 R<sub>g</sub>: 94.4

CRI (Ra): 70.8  
 R1: 66.3  
 R2: 80.6  
 R3: 94.5  
 R4: 68.2  
 R5: 66.5  
 R6: 74.7  
 R7: 76.2  
 R8: 39.6  
 R9: -43.2  
 R10: 57.6  
 R11: 64.8  
 R12: 53.5  
 R13: 68.7  
 R14: 97.0  
 R15: 56.4



### Test Conditions

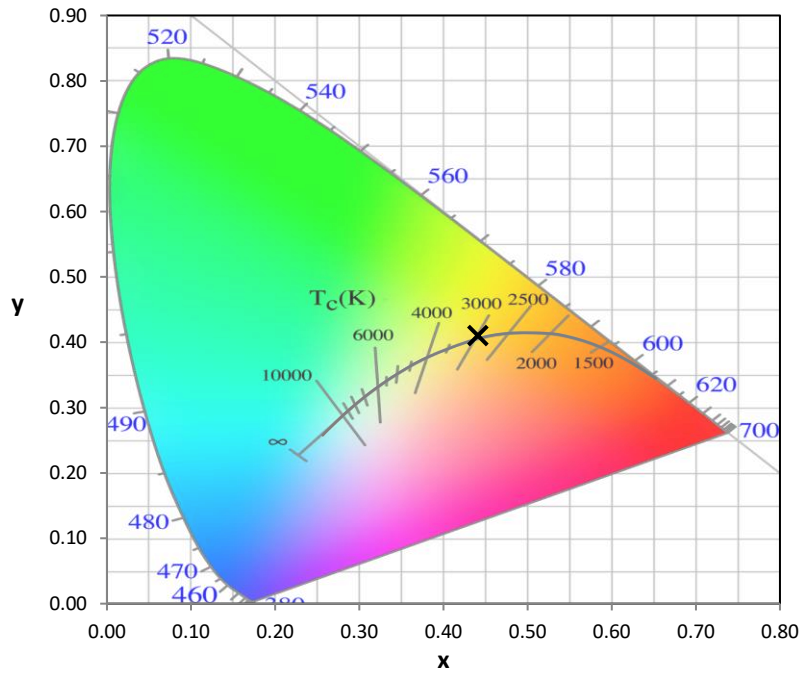
Stabilization Time: 36M  
 Operation Time: 1H 36M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-4

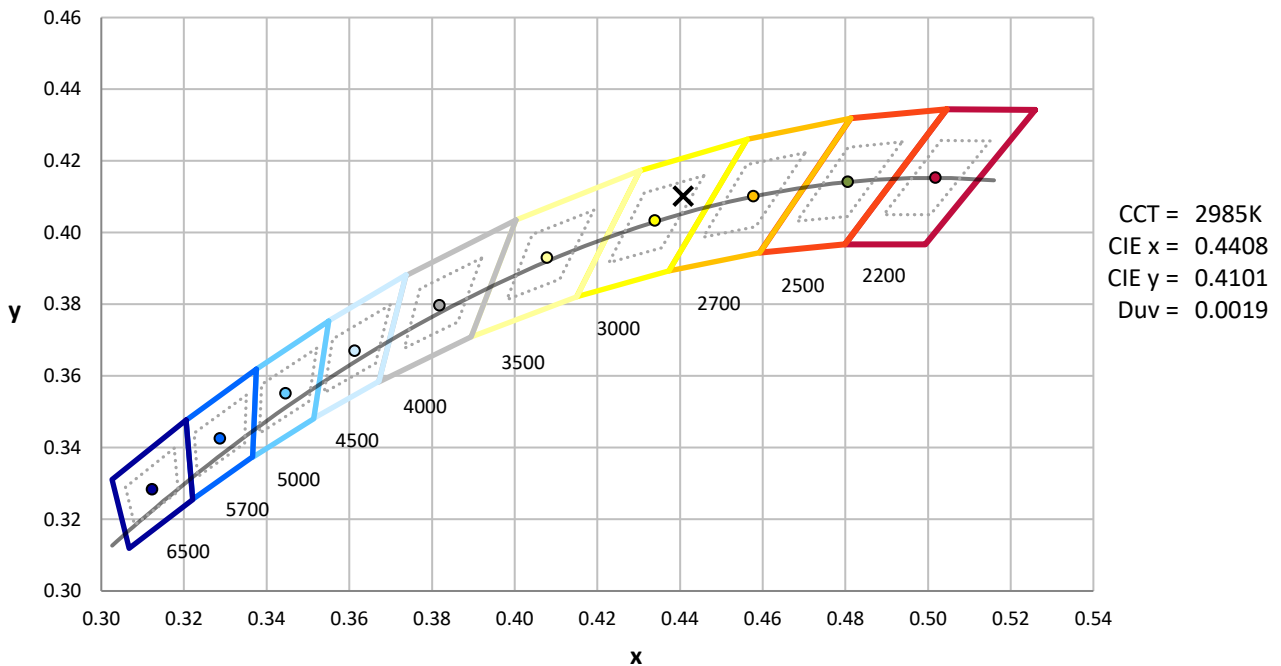
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



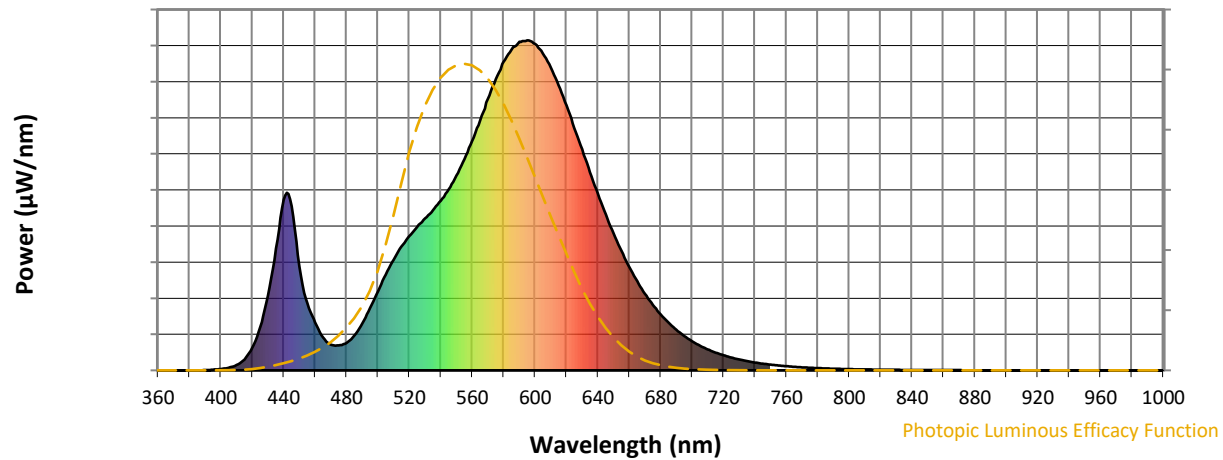
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

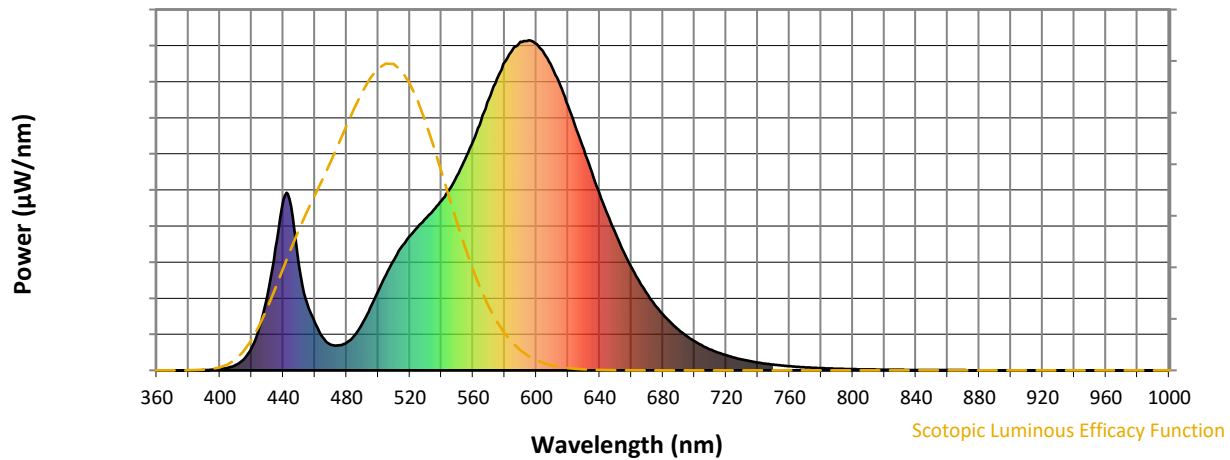


### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 360               | 0                             | NR                             | 490               | 142                           | NR                             | 620               | 803                           | NR                             | 750               | 17                            | NR                             | 880               | 0                             | NR                             |
| 365               | 0                             | NR                             | 495               | 189                           | NR                             | 625               | 734                           | NR                             | 755               | 15                            | NR                             | 885               | 0                             | NR                             |
| 370               | 0                             | NR                             | 500               | 240                           | NR                             | 630               | 670                           | NR                             | 760               | 13                            | NR                             | 890               | 0                             | NR                             |
| 375               | 0                             | NR                             | 505               | 290                           | NR                             | 635               | 600                           | NR                             | 765               | 11                            | NR                             | 895               | 0                             | NR                             |
| 380               | 0                             | NR                             | 510               | 335                           | NR                             | 640               | 535                           | NR                             | 770               | 9                             | NR                             | 900               | 0                             | NR                             |
| 385               | 0                             | NR                             | 515               | 375                           | NR                             | 645               | 473                           | NR                             | 775               | 8                             | NR                             | 905               | 0                             | NR                             |
| 390               | 1                             | NR                             | 520               | 408                           | NR                             | 650               | 415                           | NR                             | 780               | 7                             | NR                             | 910               | 0                             | NR                             |
| 395               | 2                             | NR                             | 525               | 434                           | NR                             | 655               | 362                           | NR                             | 785               | 6                             | NR                             | 915               | 0                             | NR                             |
| 400               | 4                             | NR                             | 530               | 461                           | NR                             | 660               | 313                           | NR                             | 790               | 5                             | NR                             | 920               | 0                             | NR                             |
| 405               | 8                             | NR                             | 535               | 486                           | NR                             | 665               | 271                           | NR                             | 795               | 4                             | NR                             | 925               | 0                             | NR                             |
| 410               | 16                            | NR                             | 540               | 514                           | NR                             | 670               | 231                           | NR                             | 800               | 4                             | NR                             | 930               | 0                             | NR                             |
| 415               | 33                            | NR                             | 545               | 549                           | NR                             | 675               | 198                           | NR                             | 805               | 3                             | NR                             | 935               | 0                             | NR                             |
| 420               | 69                            | NR                             | 550               | 591                           | NR                             | 680               | 169                           | NR                             | 810               | 3                             | NR                             | 940               | 0                             | NR                             |
| 425               | 131                           | NR                             | 555               | 640                           | NR                             | 685               | 144                           | NR                             | 815               | 2                             | NR                             | 945               | 0                             | NR                             |
| 430               | 227                           | NR                             | 560               | 695                           | NR                             | 690               | 123                           | NR                             | 820               | 2                             | NR                             | 950               | 0                             | NR                             |
| 435               | 369                           | NR                             | 565               | 757                           | NR                             | 695               | 104                           | NR                             | 825               | 2                             | NR                             | 955               | 0                             | NR                             |
| 440               | 517                           | NR                             | 570               | 822                           | NR                             | 700               | 88                            | NR                             | 830               | 2                             | NR                             | 960               | 0                             | NR                             |
| 445               | 498                           | NR                             | 575               | 882                           | NR                             | 705               | 75                            | NR                             | 835               | 1                             | NR                             | 965               | 0                             | NR                             |
| 450               | 315                           | NR                             | 580               | 935                           | NR                             | 710               | 63                            | NR                             | 840               | 1                             | NR                             | 970               | 0                             | NR                             |
| 455               | 204                           | NR                             | 585               | 972                           | NR                             | 715               | 54                            | NR                             | 845               | 1                             | NR                             | 975               | 0                             | NR                             |
| 460               | 145                           | NR                             | 590               | 996                           | NR                             | 720               | 46                            | NR                             | 850               | 1                             | NR                             | 980               | 0                             | NR                             |
| 465               | 100                           | NR                             | 595               | 1000                          | NR                             | 725               | 39                            | NR                             | 855               | 1                             | NR                             | 985               | 0                             | NR                             |
| 470               | 78                            | NR                             | 600               | 989                           | NR                             | 730               | 33                            | NR                             | 860               | 1                             | NR                             | 990               | 0                             | NR                             |
| 475               | 76                            | NR                             | 605               | 960                           | NR                             | 735               | 28                            | NR                             | 865               | 1                             | NR                             | 995               | 0                             | NR                             |
| 480               | 83                            | NR                             | 610               | 918                           | NR                             | 740               | 24                            | NR                             | 870               | 1                             | NR                             | 1000              | 0                             | NR                             |
| 485               | 105                           | NR                             | 615               | 864                           | NR                             | 745               | 20                            | NR                             | 875               | 1                             | NR                             |                   |                               |                                |

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### Scotopic Flux vs. Wavelength



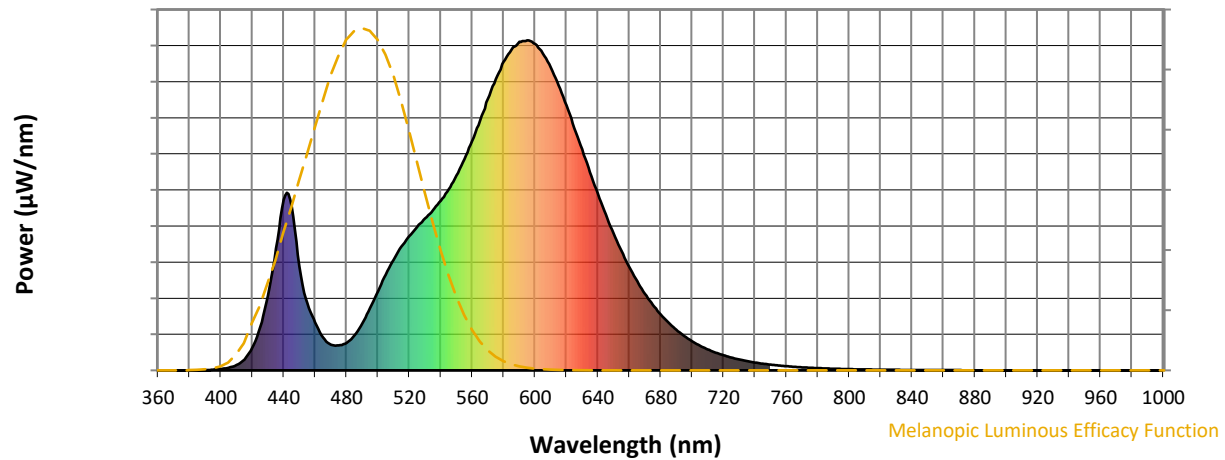
Scotopic Lumens: NR

S/P: 1.19

| 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       | 142                         | NR               | 620       | 803                         | NR               | 750       | 17                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 189                         | NR               | 625       | 734                         | NR               | 755       | 15                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 240                         | NR               | 630       | 670                         | NR               | 760       | 13                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 290                         | NR               | 635       | 600                         | NR               | 765       | 11                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 335                         | NR               | 640       | 535                         | NR               | 770       | 9                           | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 375                         | NR               | 645       | 473                         | NR               | 775       | 8                           | NR               | 905       | 0                           | NR               |
| 390       | 1                           | NR               | 520       | 408                         | NR               | 650       | 415                         | NR               | 780       | 7                           | NR               | 910       | 0                           | NR               |
| 395       | 2                           | NR               | 525       | 434                         | NR               | 655       | 362                         | NR               | 785       | 6                           | NR               | 915       | 0                           | NR               |
| 400       | 4                           | NR               | 530       | 461                         | NR               | 660       | 313                         | NR               | 790       | 5                           | NR               | 920       | 0                           | NR               |
| 405       | 8                           | NR               | 535       | 486                         | NR               | 665       | 271                         | NR               | 795       | 4                           | NR               | 925       | 0                           | NR               |
| 410       | 16                          | NR               | 540       | 514                         | NR               | 670       | 231                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 33                          | NR               | 545       | 549                         | NR               | 675       | 198                         | NR               | 805       | 3                           | NR               | 935       | 0                           | NR               |
| 420       | 69                          | NR               | 550       | 591                         | NR               | 680       | 169                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 131                         | NR               | 555       | 640                         | NR               | 685       | 144                         | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 227                         | NR               | 560       | 695                         | NR               | 690       | 123                         | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 369                         | NR               | 565       | 757                         | NR               | 695       | 104                         | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 517                         | NR               | 570       | 822                         | NR               | 700       | 88                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 498                         | NR               | 575       | 882                         | NR               | 705       | 75                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 315                         | NR               | 580       | 935                         | NR               | 710       | 63                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 204                         | NR               | 585       | 972                         | NR               | 715       | 54                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 145                         | NR               | 590       | 996                         | NR               | 720       | 46                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 100                         | NR               | 595       | 1000                        | NR               | 725       | 39                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 78                          | NR               | 600       | 989                         | NR               | 730       | 33                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 76                          | NR               | 605       | 960                         | NR               | 735       | 28                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 83                          | NR               | 610       | 918                         | NR               | 740       | 24                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 105                         | NR               | 615       | 864                         | NR               | 745       | 20                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.13

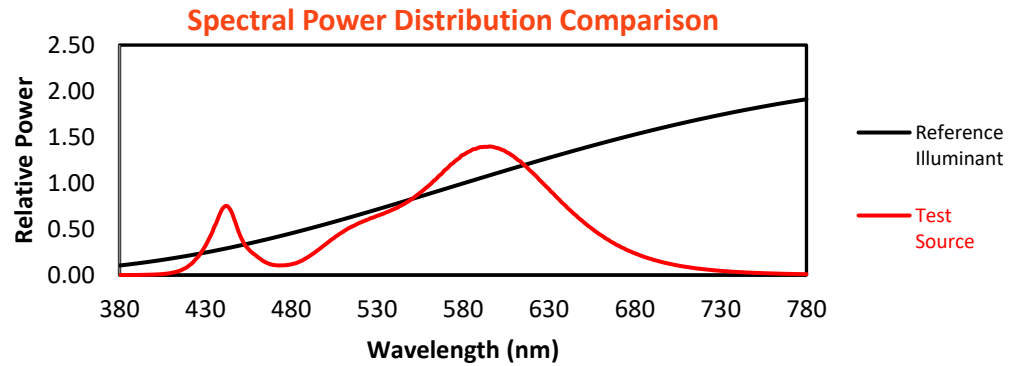
| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<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               | 142                                  | NR                             | 620               | 803                                  | NR                             | 750               | 17                                   | NR                             | 880               | 0                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 189                                  | NR                             | 625               | 734                                  | NR                             | 755               | 15                                   | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 240                                  | NR                             | 630               | 670                                  | NR                             | 760               | 13                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 290                                  | NR                             | 635               | 600                                  | NR                             | 765               | 11                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 335                                  | NR                             | 640               | 535                                  | NR                             | 770               | 9                                    | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 375                                  | NR                             | 645               | 473                                  | NR                             | 775               | 8                                    | NR                             | 905               | 0                                    | NR                             |
| 390               | 1                                    | NR                             | 520               | 408                                  | NR                             | 650               | 415                                  | NR                             | 780               | 7                                    | NR                             | 910               | 0                                    | NR                             |
| 395               | 2                                    | NR                             | 525               | 434                                  | NR                             | 655               | 362                                  | NR                             | 785               | 6                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 4                                    | NR                             | 530               | 461                                  | NR                             | 660               | 313                                  | NR                             | 790               | 5                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 8                                    | NR                             | 535               | 486                                  | NR                             | 665               | 271                                  | NR                             | 795               | 4                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 16                                   | NR                             | 540               | 514                                  | NR                             | 670               | 231                                  | NR                             | 800               | 4                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 33                                   | NR                             | 545               | 549                                  | NR                             | 675               | 198                                  | NR                             | 805               | 3                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 69                                   | NR                             | 550               | 591                                  | NR                             | 680               | 169                                  | NR                             | 810               | 3                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 131                                  | NR                             | 555               | 640                                  | NR                             | 685               | 144                                  | NR                             | 815               | 2                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 227                                  | NR                             | 560               | 695                                  | NR                             | 690               | 123                                  | NR                             | 820               | 2                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 369                                  | NR                             | 565               | 757                                  | NR                             | 695               | 104                                  | NR                             | 825               | 2                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 517                                  | NR                             | 570               | 822                                  | NR                             | 700               | 88                                   | NR                             | 830               | 2                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 498                                  | NR                             | 575               | 882                                  | NR                             | 705               | 75                                   | NR                             | 835               | 1                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 315                                  | NR                             | 580               | 935                                  | NR                             | 710               | 63                                   | NR                             | 840               | 1                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 204                                  | NR                             | 585               | 972                                  | NR                             | 715               | 54                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 145                                  | NR                             | 590               | 996                                  | NR                             | 720               | 46                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 100                                  | NR                             | 595               | 1000                                 | NR                             | 725               | 39                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 78                                   | NR                             | 600               | 989                                  | NR                             | 730               | 33                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 76                                   | NR                             | 605               | 960                                  | NR                             | 735               | 28                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 83                                   | NR                             | 610               | 918                                  | NR                             | 740               | 24                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 105                                  | NR                             | 615               | 864                                  | NR                             | 745               | 20                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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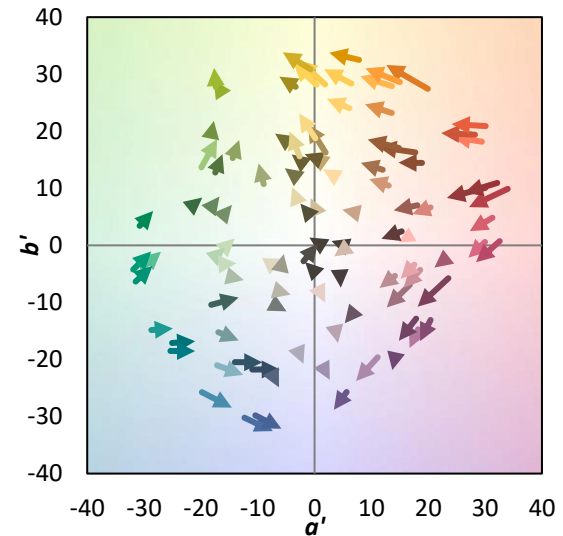
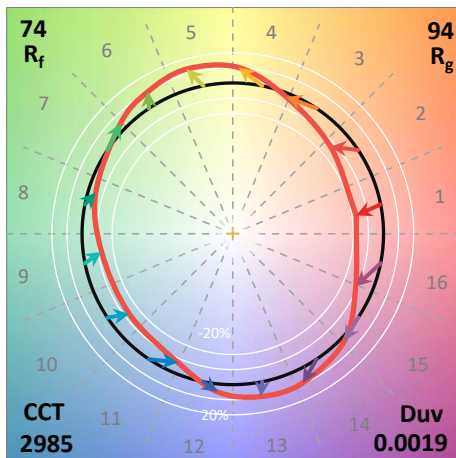
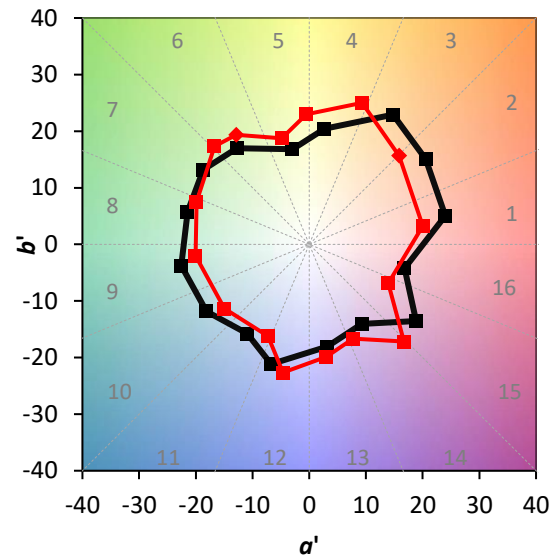
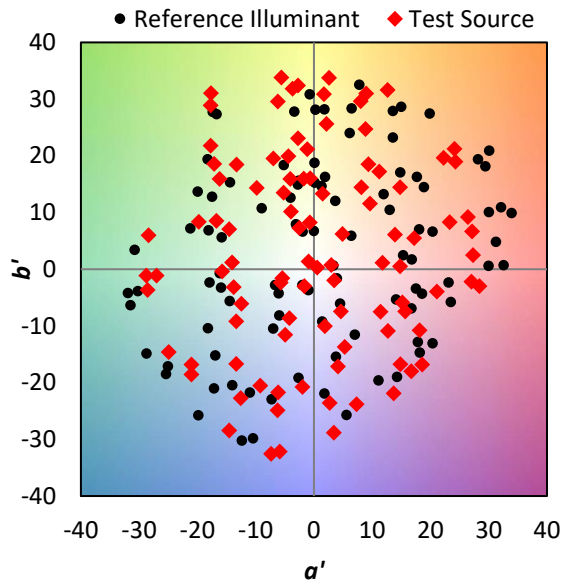
TM-30-18

### Summary

$R_f = 73.8$   
 $R_g = 94.4$   
 $CIE\ R_a = 70.8$   
 $R_g = -43.2$



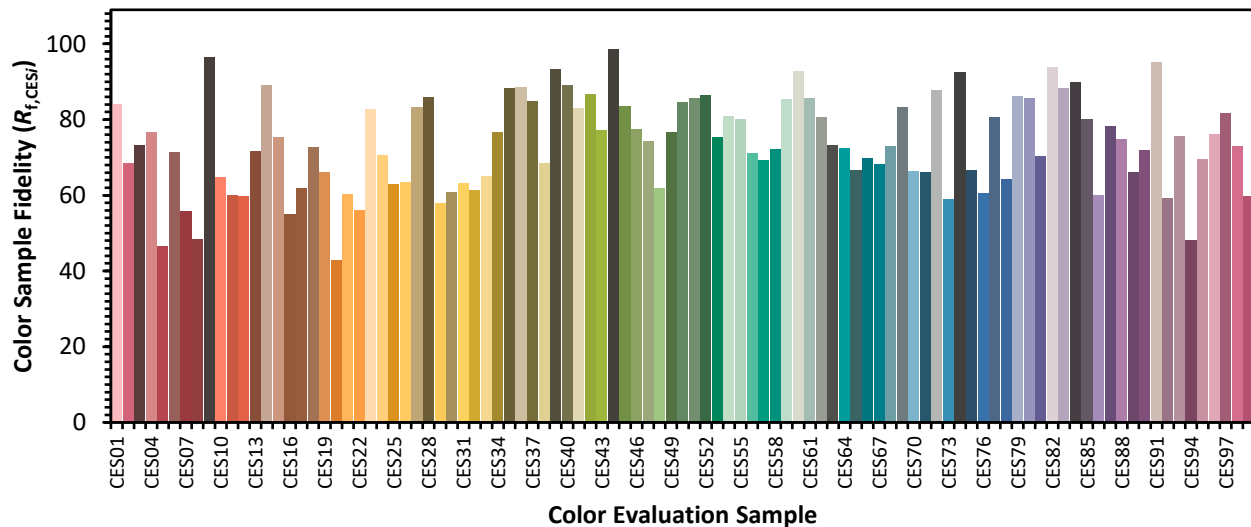
### Color Vector Graphics



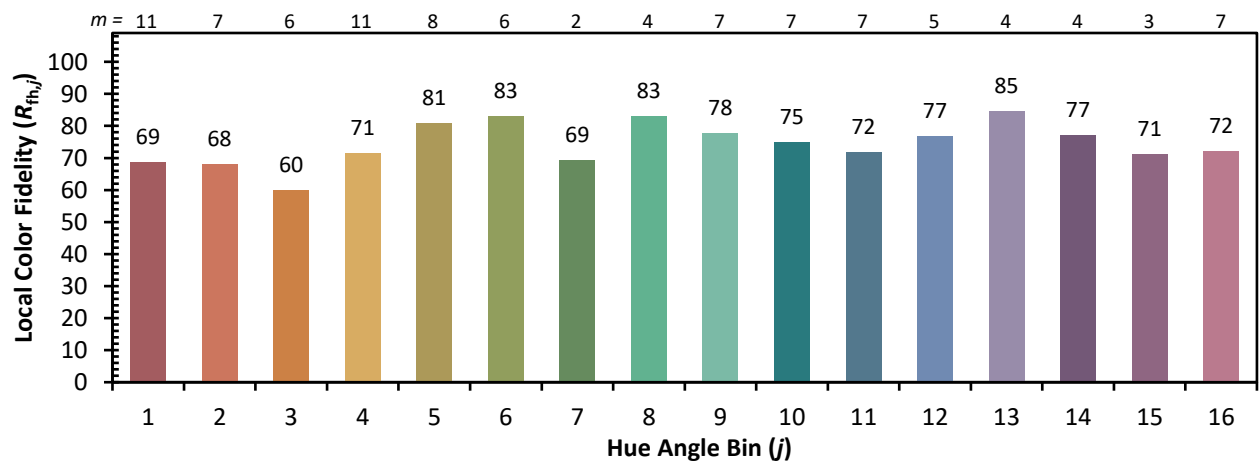
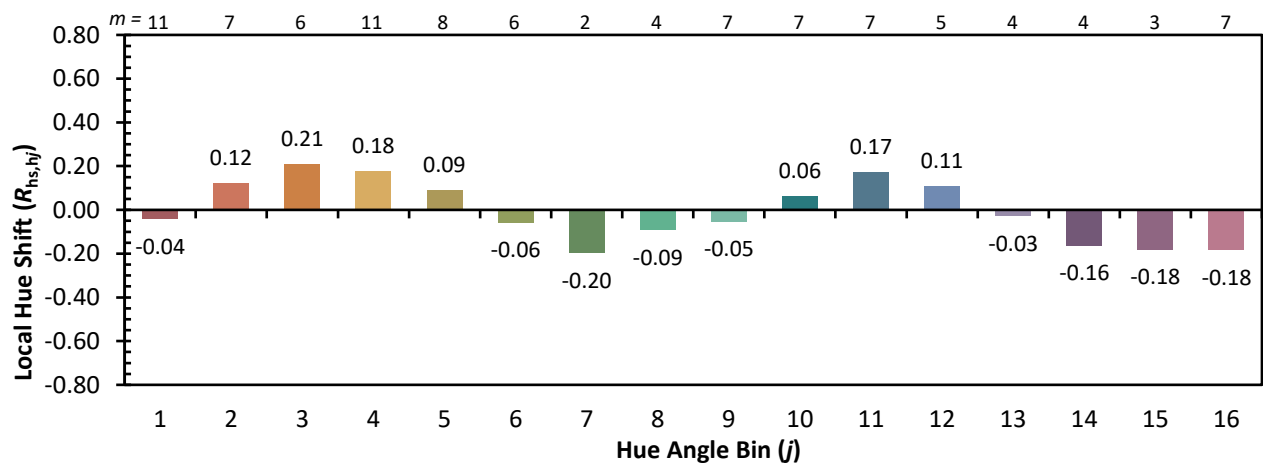
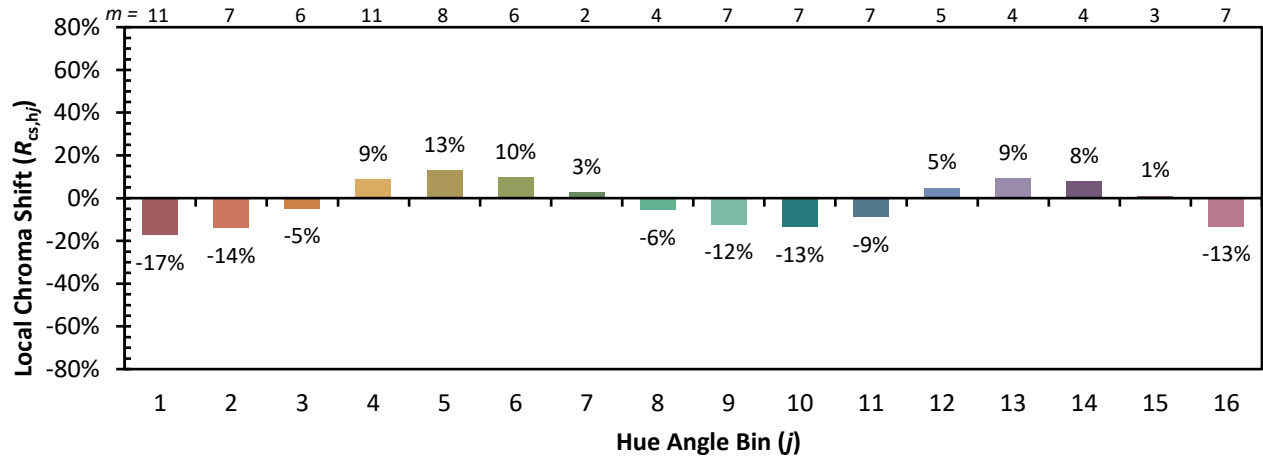


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

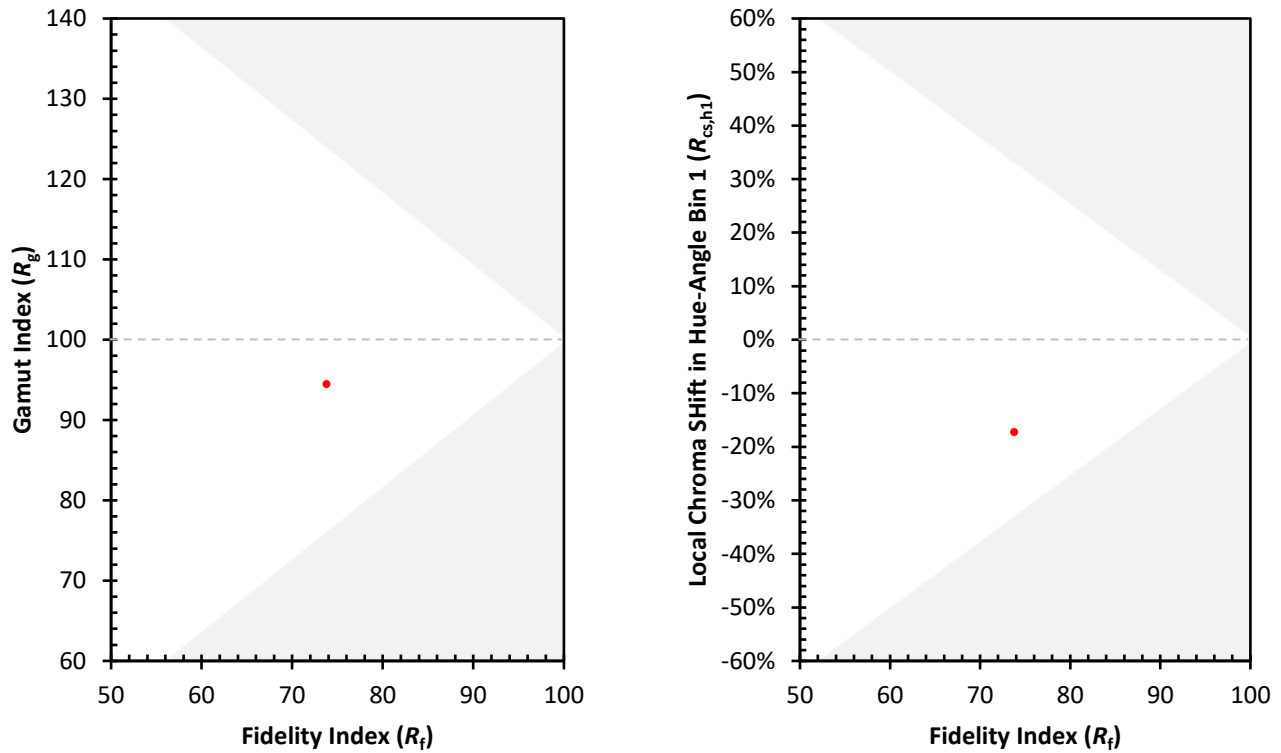
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 63 | CES51 = 86 | CES76 = 61 |
| CES02 = 62 | CES27 = 83 | CES52 = 86 | CES77 = 81 |
| CES03 = 31 | CES28 = 86 | CES53 = 75 | CES78 = 64 |
| CES04 = 71 | CES29 = 58 | CES54 = 81 | CES79 = 86 |
| CES05 = 49 | CES30 = 61 | CES55 = 80 | CES80 = 86 |
| CES06 = 51 | CES31 = 63 | CES56 = 71 | CES81 = 70 |
| CES07 = 41 | CES32 = 61 | CES57 = 69 | CES82 = 94 |
| CES08 = 40 | CES33 = 65 | CES58 = 72 | CES83 = 88 |
| CES09 = 29 | CES34 = 77 | CES59 = 85 | CES84 = 90 |
| CES10 = 76 | CES35 = 88 | CES60 = 93 | CES85 = 80 |
| CES11 = 59 | CES36 = 89 | CES61 = 86 | CES86 = 60 |
| CES12 = 65 | CES37 = 85 | CES62 = 81 | CES87 = 78 |
| CES13 = 43 | CES38 = 69 | CES63 = 73 | CES88 = 75 |
| CES14 = 74 | CES39 = 93 | CES64 = 72 | CES89 = 66 |
| CES15 = 71 | CES40 = 89 | CES65 = 67 | CES90 = 72 |
| CES16 = 47 | CES41 = 83 | CES66 = 70 | CES91 = 95 |
| CES17 = 50 | CES42 = 87 | CES67 = 68 | CES92 = 59 |
| CES18 = 56 | CES43 = 77 | CES68 = 73 | CES93 = 76 |
| CES19 = 73 | CES44 = 99 | CES69 = 83 | CES94 = 48 |
| CES20 = 66 | CES45 = 83 | CES70 = 66 | CES95 = 70 |
| CES21 = 87 | CES46 = 77 | CES71 = 66 | CES96 = 76 |
| CES22 = 79 | CES47 = 74 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 62 | CES73 = 59 | CES98 = 73 |
| CES24 = 91 | CES49 = 77 | CES74 = 93 | CES99 = 60 |
| CES25 = 73 | CES50 = 85 | CES75 = 67 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)