

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: P1378761

Luminaire Tested: **VAL-T-SB1C-727-U-T4FT-HSS**

Issue Date: 02/18/2026

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

**Test Information**

Test Method: LM-79-08  
 Report Number: P1378761  
 Test Lab: INNOVATION CENTER(G3)  
 Issue Date: 02/18/2026  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: VAL-T-SB1C-727-U-T4FT-HSS  
 Description: GALLEON II WALL SLIM HIGH DENSITY LED ARRAYS 1SQUARE 52W 70CRI  
 2700K FIXTURE w/ TYPE IV FORWARD THROW DISTRIBUTION OPTIC AND HOUSE SIDE  
 SHIELD  
 Light Source: (26) 2700K 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               |

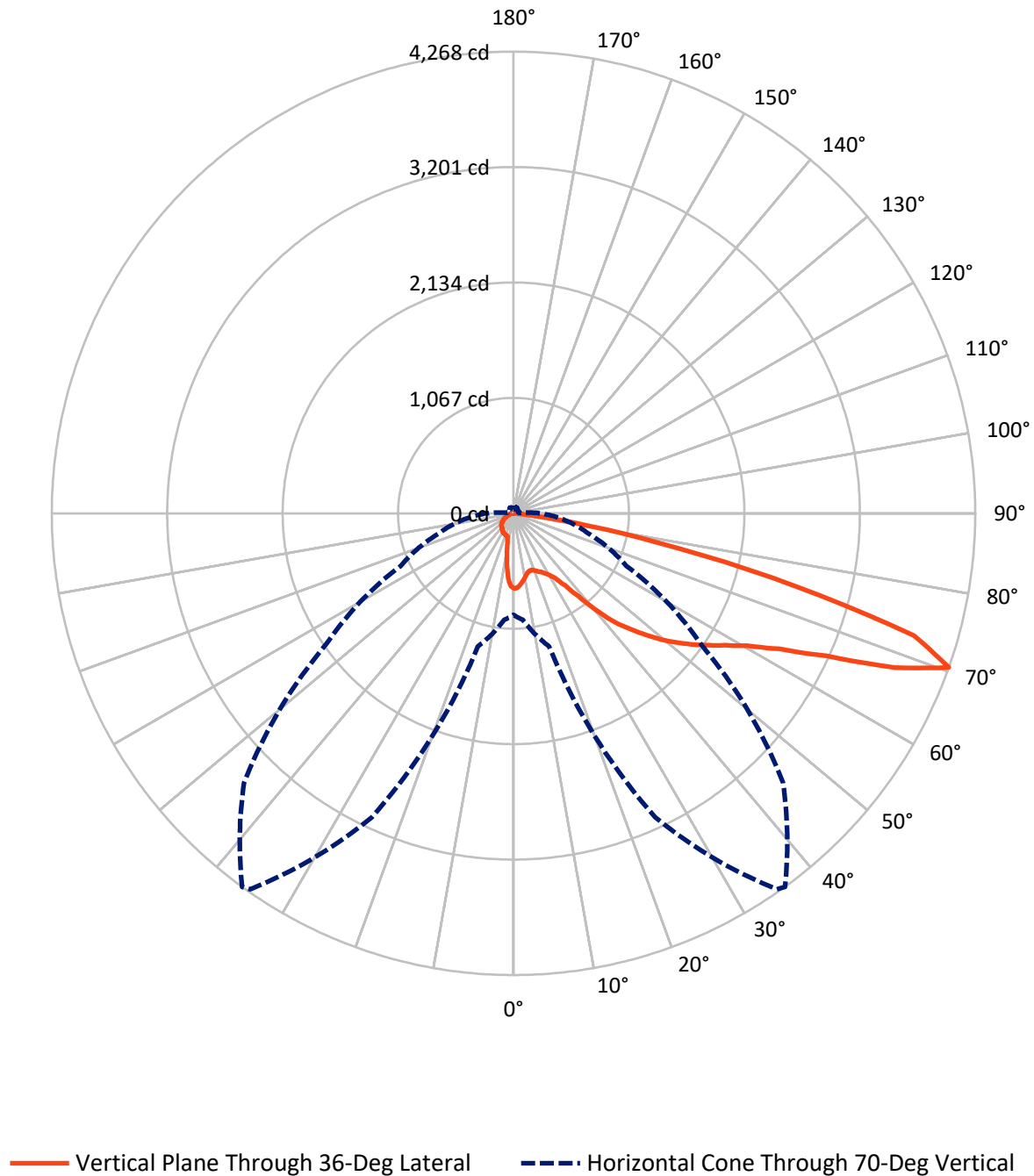
**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 4349.8 lumens  
 Efficiency: N/A  
 Efficacy: 83.7 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): 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



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CATALOG NUMBER: VAL-T-SB1C-727-U-T4FT-HSS

## Luminous Intensity Polar Plot



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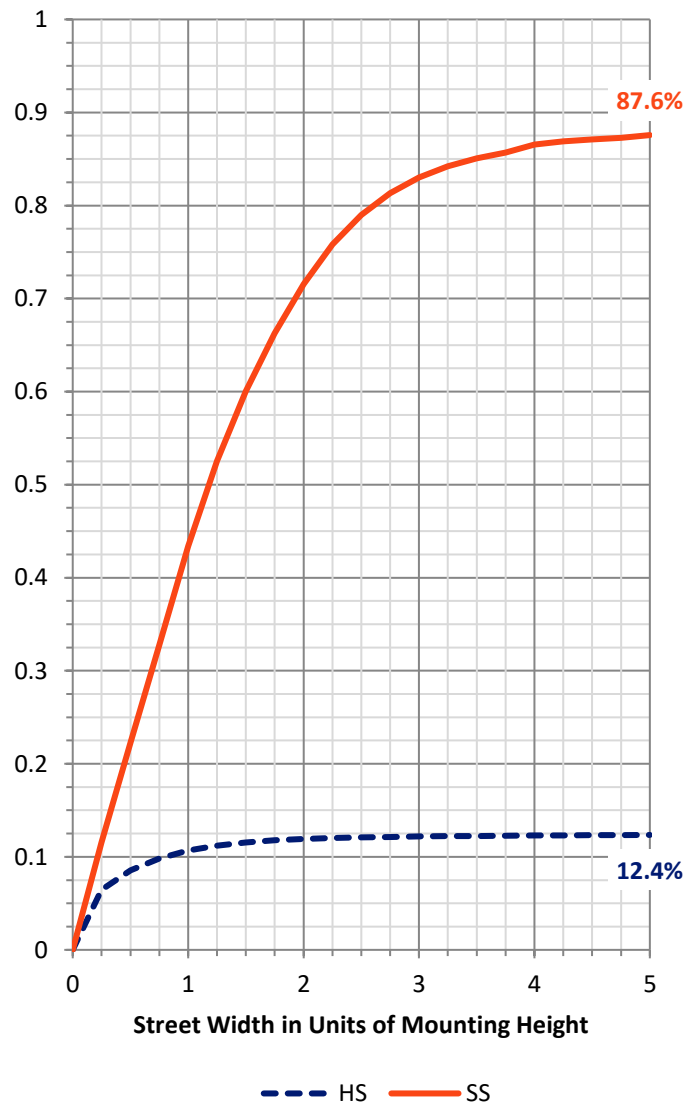
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 541.8    | 0.0    | 541.8  |
|                    | % Fixture | 12.5     | 0.0    | 12.5   |
| <b>Street Side</b> | Lumens    | 3808.0   | 0.0    | 3808.0 |
|                    | % Fixture | 87.5     | 0.0    | 87.5   |
| <b>Total</b>       | Lumens    | 4349.8   | 0.0    | 4349.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 58.7   | 1.3       |
| 10°-20°   | 138.7  | 3.2       |
| 20°-30°   | 226.5  | 5.2       |
| 30°-40°   | 404.8  | 9.3       |
| 40°-50°   | 724.7  | 16.7      |
| 50°-60°   | 1052.5 | 24.2      |
| 60°-70°   | 1173.8 | 27.0      |
| 70°-80°   | 540.3  | 12.4      |
| 80°-90°   | 30.0   | 0.7       |
| 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°    | 4349.8 | 100.0     |
| 0°-180°   | 4349.8 | 100.0     |

**Coefficient of Utilization**



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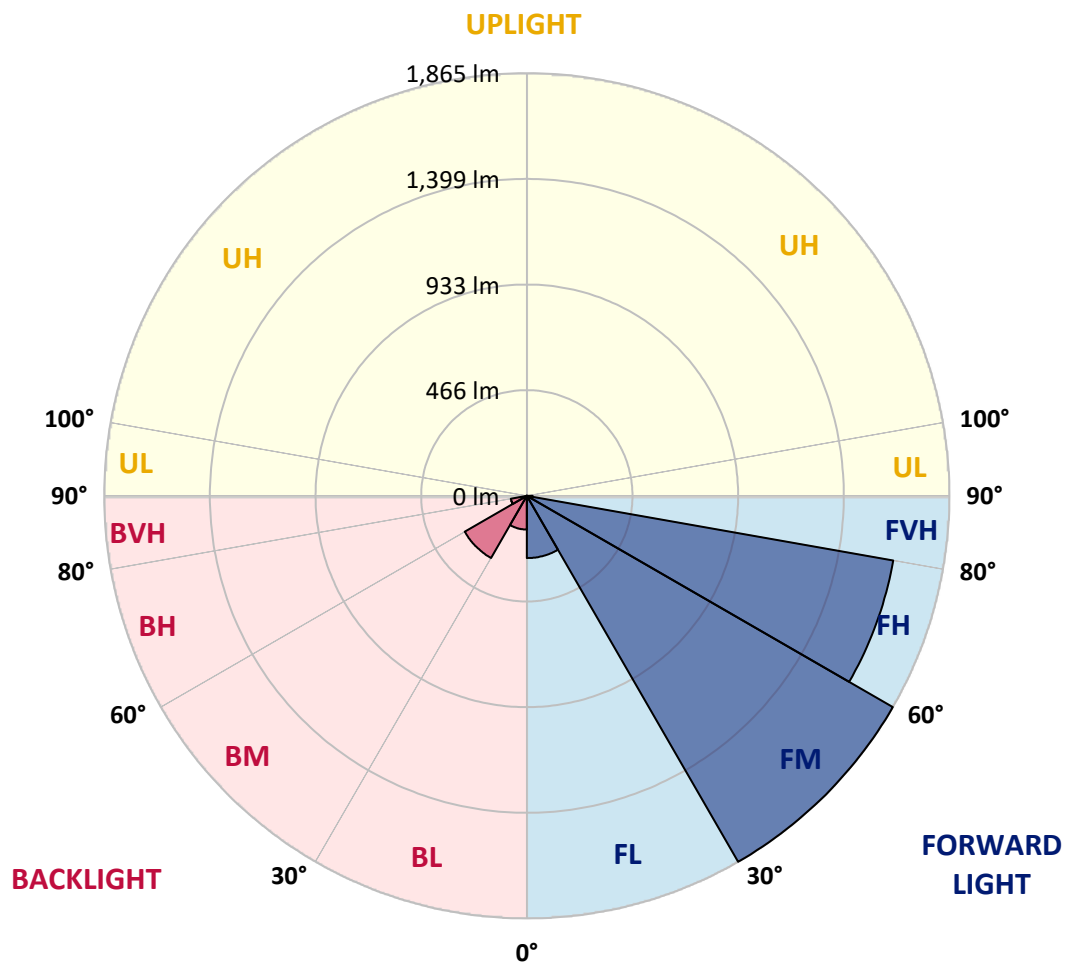
CATALOG NUMBER: VAL-T-SB1C-727-U-T4FT-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 274.9  | 6.3       |                         |      |         |
| FM   | (30°-60°)   | 1865.2 | 42.9      |                         |      |         |
| FH   | (60°-80°)   | 1642.2 | 37.8      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 25.6   | 0.6       |                         |      | G1/100  |
| BL   | (0°-30°)    | 148.9  | 3.4       | B1/500                  |      |         |
| BM   | (30°-60°)   | 316.7  | 7.3       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 71.8   | 1.7       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 4.4    | 0.1       |                         |      | G0/10   |
| 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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CATALOG NUMBER: VAL-T-SB1C-727-U-T4FT-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 36°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 695.0  | 695.0  | 695.0  | 695.0  | 695.0  | 695.0  | 695.0  | 695.0  | 695.0  | 695.0  | 695.0  |
| 2.5°  | 686.8  | 684.0  | 684.0  | 686.8  | 693.6  | 689.5  | 686.8  | 690.9  | 692.2  | 696.3  | 697.7  |
| 5°    | 645.8  | 647.2  | 643.1  | 652.6  | 659.5  | 660.8  | 670.4  | 682.7  | 689.5  | 703.2  | 704.5  |
| 7.5°  | 592.6  | 598.0  | 600.8  | 614.4  | 628.1  | 629.4  | 647.2  | 666.3  | 686.8  | 705.9  | 715.4  |
| 10°   | 550.2  | 551.6  | 554.3  | 569.3  | 593.9  | 596.7  | 621.2  | 652.6  | 682.7  | 714.1  | 725.0  |
| 12.5° | 522.9  | 525.7  | 525.7  | 537.9  | 562.5  | 565.3  | 593.9  | 636.2  | 679.9  | 716.8  | 737.3  |
| 15°   | 522.9  | 520.2  | 520.2  | 529.8  | 548.9  | 551.6  | 578.9  | 624.0  | 673.1  | 725.0  | 757.8  |
| 17.5° | 525.7  | 527.0  | 524.3  | 531.1  | 547.5  | 550.2  | 574.8  | 617.1  | 674.5  | 737.3  | 774.1  |
| 20°   | 536.6  | 536.6  | 533.8  | 544.8  | 559.8  | 563.9  | 584.4  | 619.9  | 679.9  | 755.0  | 797.4  |
| 22.5° | 551.6  | 547.5  | 546.1  | 558.4  | 577.5  | 584.4  | 602.1  | 633.5  | 688.1  | 776.9  | 821.9  |
| 25°   | 573.4  | 569.3  | 566.6  | 580.3  | 598.0  | 600.8  | 632.2  | 656.7  | 710.0  | 805.6  | 862.9  |
| 27.5° | 614.4  | 608.9  | 595.3  | 604.8  | 626.7  | 629.4  | 660.8  | 690.9  | 740.0  | 838.3  | 909.3  |
| 30°   | 740.0  | 731.8  | 692.2  | 652.6  | 660.8  | 664.9  | 696.3  | 734.6  | 781.0  | 888.8  | 979.0  |
| 32.5° | 888.8  | 891.6  | 841.1  | 766.0  | 716.8  | 718.2  | 738.7  | 791.9  | 841.1  | 959.8  | 1065.0 |
| 35°   | 1080.0 | 1071.8 | 1003.5 | 916.1  | 823.3  | 819.2  | 813.7  | 872.5  | 928.4  | 1048.6 | 1172.8 |
| 37.5° | 1262.9 | 1260.2 | 1204.2 | 1095.0 | 987.1  | 970.8  | 932.5  | 979.0  | 1030.8 | 1160.5 | 1293.0 |
| 40°   | 1399.5 | 1385.8 | 1353.1 | 1280.7 | 1189.2 | 1179.7 | 1099.1 | 1110.0 | 1159.2 | 1310.7 | 1418.6 |
| 42.5° | 1488.2 | 1485.5 | 1447.3 | 1425.4 | 1383.1 | 1379.0 | 1283.4 | 1288.9 | 1316.2 | 1481.4 | 1566.0 |
| 45°   | 1575.6 | 1568.8 | 1536.0 | 1522.4 | 1525.1 | 1534.6 | 1521.0 | 1489.6 | 1510.1 | 1671.2 | 1724.4 |
| 47.5° | 1663.0 | 1646.6 | 1622.0 | 1627.5 | 1684.8 | 1697.1 | 1742.2 | 1717.6 | 1691.7 | 1888.3 | 1873.3 |
| 50°   | 1695.8 | 1697.1 | 1703.9 | 1736.7 | 1830.9 | 1859.6 | 1964.7 | 1915.6 | 1874.6 | 2116.3 | 2045.3 |
| 52.5° | 1708.0 | 1714.9 | 1761.3 | 1818.6 | 1968.8 | 2004.3 | 2209.1 | 2147.7 | 2034.4 | 2337.5 | 2157.2 |
| 55°   | 1721.7 | 1717.6 | 1810.4 | 1884.2 | 2113.6 | 2151.8 | 2433.0 | 2333.4 | 2184.5 | 2504.0 | 2252.8 |
| 57.5° | 1791.3 | 1792.7 | 1865.1 | 1944.2 | 2248.7 | 2300.6 | 2637.8 | 2513.6 | 2267.8 | 2629.7 | 2280.1 |
| 60°   | 1901.9 | 1927.9 | 1977.0 | 2063.0 | 2409.8 | 2483.6 | 2839.9 | 2644.7 | 2352.5 | 2632.4 | 2161.3 |
| 62.5° | 1966.1 | 1981.1 | 2120.4 | 2288.3 | 2685.6 | 2759.4 | 3054.3 | 2747.1 | 2308.8 | 2389.4 | 1856.9 |
| 65°   | 1744.9 | 1757.2 | 2069.9 | 2629.7 | 3115.7 | 3177.2 | 3290.5 | 2755.3 | 2078.1 | 1985.2 | 1441.8 |
| 67.5° | 1302.5 | 1335.3 | 1708.0 | 2988.7 | 3775.2 | 3805.2 | 3577.2 | 2553.2 | 1708.0 | 1388.6 | 846.5  |
| 70°   | 939.4  | 988.5  | 1273.9 | 3099.3 | 4243.5 | 4268.1 | 3522.6 | 2117.6 | 1149.6 | 712.7  | 398.7  |
| 72.5° | 679.9  | 705.9  | 909.3  | 2906.8 | 3993.6 | 3870.7 | 2484.9 | 1324.4 | 606.2  | 363.2  | 183.0  |
| 75°   | 469.7  | 488.8  | 578.9  | 2187.3 | 2721.1 | 2696.6 | 1253.4 | 480.6  | 294.9  | 210.3  | 110.6  |
| 77.5° | 193.9  | 193.9  | 259.4  | 1231.5 | 1522.4 | 1546.9 | 569.3  | 131.1  | 155.6  | 121.5  | 64.2   |
| 80°   | 62.8   | 62.8   | 103.8  | 436.9  | 704.5  | 712.7  | 204.8  | 64.2   | 83.3   | 73.7   | 34.1   |
| 82.5° | 23.2   | 21.8   | 53.2   | 144.7  | 174.8  | 185.7  | 56.0   | 31.4   | 50.5   | 43.7   | 16.4   |
| 85°   | 8.2    | 8.2    | 19.1   | 30.0   | 32.8   | 28.7   | 15.0   | 15.0   | 24.6   | 20.5   | 6.8    |
| 87.5° | 0.0    | 0.0    | 1.4    | 2.7    | 4.1    | 4.1    | 4.1    | 4.1    | 5.5    | 4.1    | 4.1    |
| 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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CATALOG NUMBER: VAL-T-SB1C-727-U-T4FT-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 695.0  | 695.0  | 695.0 | 695.0 | 695.0 | 695.0 | 695.0 | 695.0 | 695.0 | 695.0 | 695.0 |
| 2.5°  | 695.0  | 697.7  | 692.2 | 686.8 | 685.4 | 678.6 | 674.5 | 669.0 | 667.7 | 666.3 | 669.0 |
| 5°    | 703.2  | 703.2  | 689.5 | 674.5 | 656.7 | 632.2 | 606.2 | 583.0 | 573.4 | 562.5 | 563.9 |
| 7.5°  | 712.7  | 705.9  | 685.4 | 645.8 | 592.6 | 533.8 | 484.7 | 447.8 | 426.0 | 406.9 | 412.3 |
| 10°   | 720.9  | 714.1  | 671.7 | 595.3 | 506.5 | 427.4 | 356.4 | 315.4 | 289.5 | 274.4 | 281.3 |
| 12.5° | 733.2  | 719.5  | 648.5 | 531.1 | 409.6 | 312.7 | 258.0 | 236.2 | 229.4 | 225.3 | 225.3 |
| 15°   | 746.8  | 723.6  | 613.0 | 458.8 | 316.8 | 236.2 | 221.2 | 221.2 | 222.6 | 222.6 | 223.9 |
| 17.5° | 760.5  | 725.0  | 574.8 | 375.5 | 245.8 | 215.7 | 217.1 | 218.5 | 221.2 | 218.5 | 218.5 |
| 20°   | 776.9  | 734.6  | 525.7 | 301.7 | 215.7 | 211.6 | 213.0 | 215.7 | 218.5 | 215.7 | 217.1 |
| 22.5° | 804.2  | 744.1  | 483.3 | 254.0 | 211.6 | 208.9 | 208.9 | 213.0 | 214.4 | 210.3 | 211.6 |
| 25°   | 835.6  | 756.4  | 438.3 | 234.8 | 214.4 | 204.8 | 207.5 | 210.3 | 211.6 | 208.9 | 208.9 |
| 27.5° | 875.2  | 776.9  | 394.6 | 234.8 | 217.1 | 202.1 | 203.4 | 207.5 | 210.3 | 206.2 | 208.9 |
| 30°   | 932.5  | 801.5  | 367.3 | 241.7 | 219.8 | 196.6 | 198.0 | 203.4 | 207.5 | 204.8 | 206.2 |
| 32.5° | 1003.5 | 843.8  | 344.1 | 247.1 | 218.5 | 191.1 | 189.8 | 198.0 | 204.8 | 203.4 | 206.2 |
| 35°   | 1090.9 | 892.9  | 329.0 | 252.6 | 215.7 | 187.1 | 181.6 | 192.5 | 203.4 | 203.4 | 204.8 |
| 37.5° | 1178.3 | 944.8  | 335.9 | 251.2 | 208.9 | 184.3 | 174.8 | 184.3 | 196.6 | 200.7 | 203.4 |
| 40°   | 1282.1 | 1002.2 | 352.3 | 243.0 | 204.8 | 176.1 | 169.3 | 176.1 | 188.4 | 195.2 | 198.0 |
| 42.5° | 1374.9 | 1056.8 | 368.6 | 233.5 | 199.3 | 167.9 | 163.8 | 169.3 | 176.1 | 183.0 | 187.1 |
| 45°   | 1484.1 | 1099.1 | 363.2 | 222.6 | 193.9 | 161.1 | 159.7 | 161.1 | 163.8 | 166.6 | 169.3 |
| 47.5° | 1562.0 | 1112.8 | 338.6 | 213.0 | 181.6 | 155.6 | 152.9 | 151.6 | 148.8 | 148.8 | 150.2 |
| 50°   | 1646.6 | 1074.5 | 289.5 | 202.1 | 163.8 | 148.8 | 143.4 | 139.3 | 135.2 | 132.4 | 133.8 |
| 52.5° | 1683.5 | 976.2  | 243.0 | 183.0 | 143.4 | 139.3 | 132.4 | 127.0 | 121.5 | 120.2 | 118.8 |
| 55°   | 1668.4 | 841.1  | 200.7 | 154.3 | 128.3 | 128.3 | 121.5 | 116.1 | 110.6 | 106.5 | 105.1 |
| 57.5° | 1611.1 | 701.8  | 161.1 | 114.7 | 113.3 | 116.1 | 110.6 | 105.1 | 99.7  | 94.2  | 94.2  |
| 60°   | 1477.3 | 537.9  | 124.2 | 92.8  | 98.3  | 102.4 | 101.0 | 96.9  | 87.4  | 79.2  | 79.2  |
| 62.5° | 1246.6 | 364.5  | 88.7  | 75.1  | 83.3  | 90.1  | 91.5  | 87.4  | 76.5  | 66.9  | 65.5  |
| 65°   | 947.5  | 214.4  | 68.3  | 64.2  | 71.0  | 77.8  | 80.6  | 76.5  | 64.2  | 53.2  | 50.5  |
| 67.5° | 576.2  | 116.1  | 53.2  | 54.6  | 61.4  | 65.5  | 69.6  | 66.9  | 56.0  | 45.1  | 43.7  |
| 70°   | 245.8  | 58.7   | 43.7  | 45.1  | 49.2  | 50.5  | 58.7  | 60.1  | 50.5  | 39.6  | 38.2  |
| 72.5° | 113.3  | 43.7   | 35.5  | 38.2  | 36.9  | 38.2  | 50.5  | 53.2  | 43.7  | 31.4  | 31.4  |
| 75°   | 65.5   | 32.8   | 27.3  | 30.0  | 24.6  | 28.7  | 41.0  | 43.7  | 36.9  | 25.9  | 24.6  |
| 77.5° | 35.5   | 23.2   | 19.1  | 20.5  | 17.7  | 21.8  | 32.8  | 34.1  | 27.3  | 20.5  | 20.5  |
| 80°   | 20.5   | 15.0   | 13.7  | 12.3  | 12.3  | 15.0  | 23.2  | 21.8  | 17.7  | 17.7  | 17.7  |
| 82.5° | 10.9   | 8.2    | 8.2   | 8.2   | 8.2   | 9.6   | 12.3  | 13.7  | 15.0  | 15.0  | 15.0  |
| 85°   | 5.5    | 4.1    | 4.1   | 4.1   | 5.5   | 6.8   | 9.6   | 10.9  | 12.3  | 12.3  | 12.3  |
| 87.5° | 2.7    | 2.7    | 2.7   | 2.7   | 2.7   | 4.1   | 6.8   | 8.2   | 9.6   | 5.5   | 2.7   |
| 90°   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-3

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-727-U-5WQ

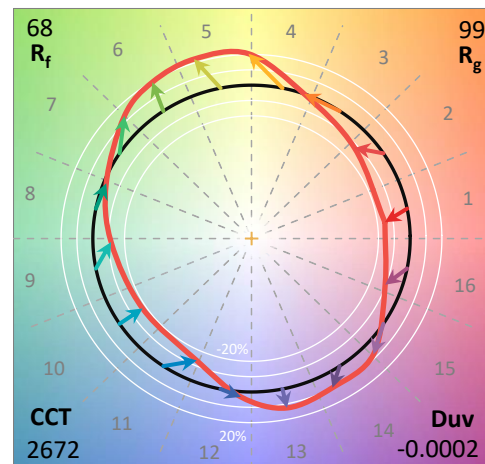
Data in this report applies to families of products including GSS-SB1A-727-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-3  
 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-727-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 2700K CCT 26 LEDS

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 2672     | CRI (Ra): | 71.1 |      |       |
| CIE u':                   | 0.2638   | R1:       | 68.3 | R9:  | -27.8 |
| CIE v':                   | 0.5276   | R2:       | 79.8 | R10: | 54.4  |
| Duv:                      | -0.0002  | R3:       | 91.2 | R11: | 65.8  |
| CIE x:                    | 0.4619   | R4:       | 69.4 | R12: | 45.6  |
| CIE y:                    | 0.4106   | R5:       | 66.5 | R13: | 69.8  |
| CIE z:                    | 0.1275   | R6:       | 72.6 | R14: | 94.5  |
| Peak Wavelength (nm):     | 601      | R7:       | 77.0 | R15: | 60.1  |
| Dominant Wavelength (nm): | 584      | R8:       | 44.1 |      |       |
| Purity:                   | 61.88407 |           |      |      |       |
| Rf:                       | 67.9     |           |      |      |       |
| Rg:                       | 98.6     |           |      |      |       |



### Test Conditions

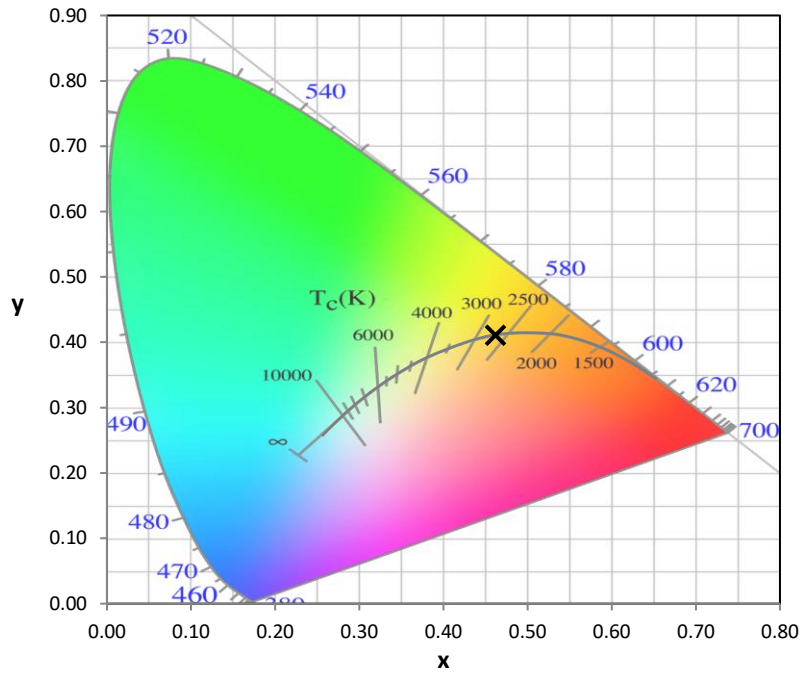
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-3

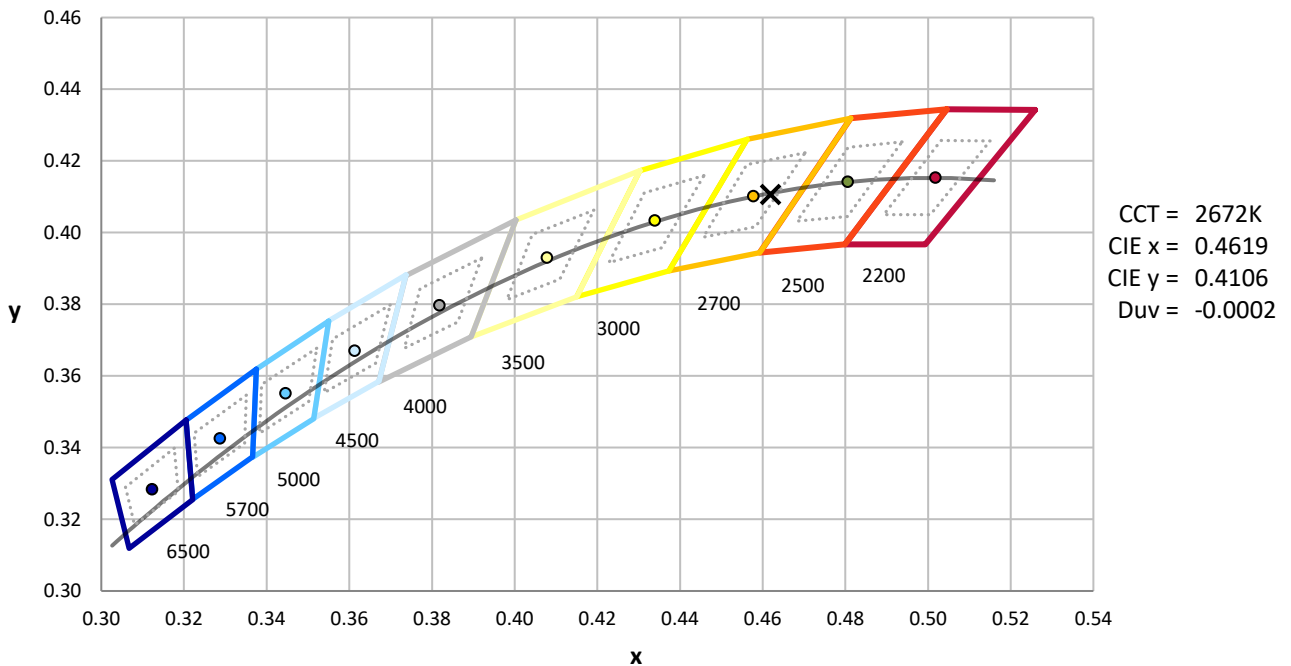
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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

REPORT NUMBER: SP1-2407-184-3

**CIE 1931 Chromaticity Diagram**



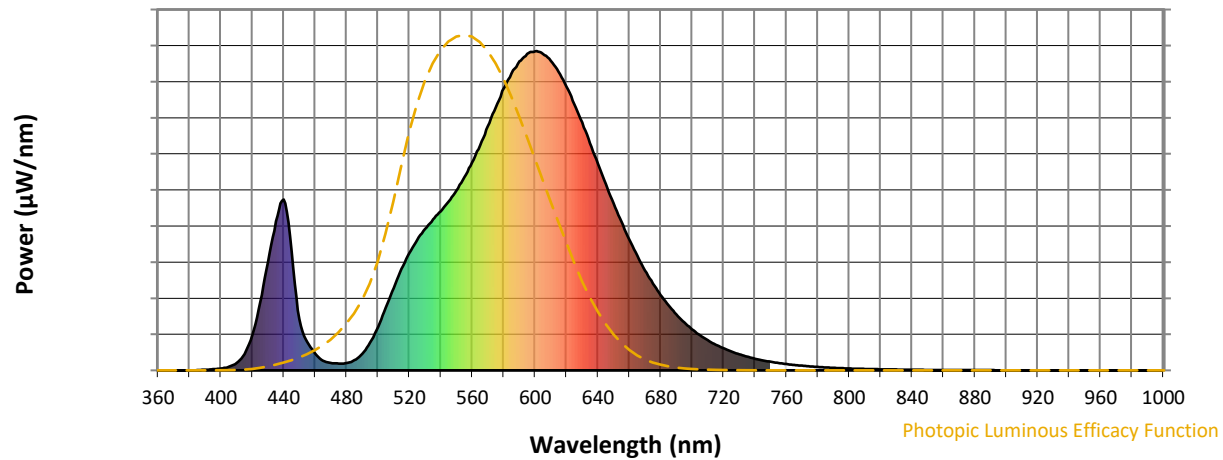
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 2700K 4-step quadrangle

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### Photopic Flux vs. Wavelength

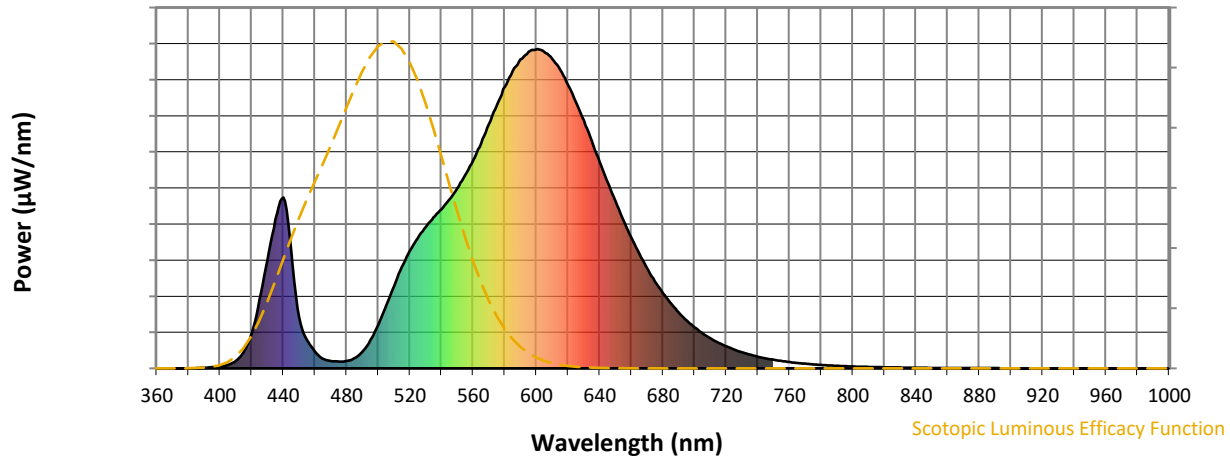


### Photopic Lumens: NR

| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 52                          | NR               | 620       | 888                         | NR               | 750       | 27                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 87                          | NR               | 625       | 834                         | NR               | 755       | 23                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 135                         | NR               | 630       | 776                         | NR               | 760       | 20                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 196                         | NR               | 635       | 712                         | NR               | 765       | 17                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 258                         | NR               | 640       | 648                         | NR               | 770       | 15                          | NR               | 900       | 0                           | NR               |
| 385       | 1                           | NR               | 515       | 317                         | NR               | 645       | 583                         | NR               | 775       | 12                          | NR               | 905       | 0                           | NR               |
| 390       | 2                           | NR               | 520       | 368                         | NR               | 650       | 523                         | NR               | 780       | 11                          | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 408                         | NR               | 655       | 465                         | NR               | 785       | 9                           | NR               | 915       | 0                           | NR               |
| 400       | 6                           | NR               | 530       | 443                         | NR               | 660       | 410                         | NR               | 790       | 8                           | NR               | 920       | 0                           | NR               |
| 405       | 11                          | NR               | 535       | 473                         | NR               | 665       | 360                         | NR               | 795       | 7                           | NR               | 925       | 0                           | NR               |
| 410       | 23                          | NR               | 540       | 498                         | NR               | 670       | 313                         | NR               | 800       | 6                           | NR               | 930       | 0                           | NR               |
| 415       | 51                          | NR               | 545       | 530                         | NR               | 675       | 272                         | NR               | 805       | 5                           | NR               | 935       | 0                           | NR               |
| 420       | 111                         | NR               | 550       | 563                         | NR               | 680       | 236                         | NR               | 810       | 4                           | NR               | 940       | 0                           | NR               |
| 425       | 214                         | NR               | 555       | 605                         | NR               | 685       | 203                         | NR               | 815       | 4                           | NR               | 945       | 0                           | NR               |
| 430       | 339                         | NR               | 560       | 651                         | NR               | 690       | 175                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 467                         | NR               | 565       | 705                         | NR               | 695       | 150                         | NR               | 825       | 3                           | NR               | 955       | 0                           | NR               |
| 440       | 535                         | NR               | 570       | 765                         | NR               | 700       | 128                         | NR               | 830       | 3                           | NR               | 960       | 0                           | NR               |
| 445       | 372                         | NR               | 575       | 824                         | NR               | 705       | 110                         | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 160                         | NR               | 580       | 882                         | NR               | 710       | 94                          | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 89                          | NR               | 585       | 930                         | NR               | 715       | 80                          | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 53                          | NR               | 590       | 968                         | NR               | 720       | 69                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 31                          | NR               | 595       | 991                         | NR               | 725       | 59                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 23                          | NR               | 600       | 999                         | NR               | 730       | 50                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 21                          | NR               | 605       | 992                         | NR               | 735       | 43                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 23                          | NR               | 610       | 969                         | NR               | 740       | 36                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 32                          | NR               | 615       | 935                         | NR               | 745       | 31                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Scotopic Flux vs. Wavelength



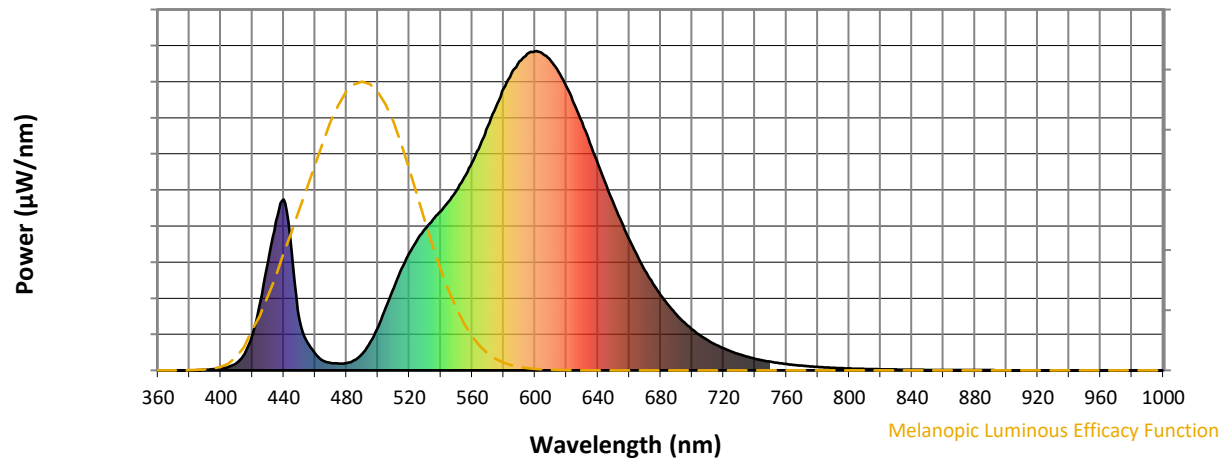
Scotopic Lumens: NR

S/P: 1.02

| $\lambda$<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               | 52                                   | NR                             | 620               | 888                                  | NR                             | 750               | 27                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 87                                   | NR                             | 625               | 834                                  | NR                             | 755               | 23                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 135                                  | NR                             | 630               | 776                                  | NR                             | 760               | 20                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 196                                  | NR                             | 635               | 712                                  | NR                             | 765               | 17                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 258                                  | NR                             | 640               | 648                                  | NR                             | 770               | 15                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 1                                    | NR                             | 515               | 317                                  | NR                             | 645               | 583                                  | NR                             | 775               | 12                                   | NR                             | 905               | 0                                    | NR                             |
| 390               | 2                                    | NR                             | 520               | 368                                  | NR                             | 650               | 523                                  | NR                             | 780               | 11                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 4                                    | NR                             | 525               | 408                                  | NR                             | 655               | 465                                  | NR                             | 785               | 9                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 6                                    | NR                             | 530               | 443                                  | NR                             | 660               | 410                                  | NR                             | 790               | 8                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 11                                   | NR                             | 535               | 473                                  | NR                             | 665               | 360                                  | NR                             | 795               | 7                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 23                                   | NR                             | 540               | 498                                  | NR                             | 670               | 313                                  | NR                             | 800               | 6                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 51                                   | NR                             | 545               | 530                                  | NR                             | 675               | 272                                  | NR                             | 805               | 5                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 111                                  | NR                             | 550               | 563                                  | NR                             | 680               | 236                                  | NR                             | 810               | 4                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 214                                  | NR                             | 555               | 605                                  | NR                             | 685               | 203                                  | NR                             | 815               | 4                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 339                                  | NR                             | 560               | 651                                  | NR                             | 690               | 175                                  | NR                             | 820               | 3                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 467                                  | NR                             | 565               | 705                                  | NR                             | 695               | 150                                  | NR                             | 825               | 3                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 535                                  | NR                             | 570               | 765                                  | NR                             | 700               | 128                                  | NR                             | 830               | 3                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 372                                  | NR                             | 575               | 824                                  | NR                             | 705               | 110                                  | NR                             | 835               | 2                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 160                                  | NR                             | 580               | 882                                  | NR                             | 710               | 94                                   | NR                             | 840               | 2                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 89                                   | NR                             | 585               | 930                                  | NR                             | 715               | 80                                   | NR                             | 845               | 2                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 53                                   | NR                             | 590               | 968                                  | NR                             | 720               | 69                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 31                                   | NR                             | 595               | 991                                  | NR                             | 725               | 59                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 23                                   | NR                             | 600               | 999                                  | NR                             | 730               | 50                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 21                                   | NR                             | 605               | 992                                  | NR                             | 735               | 43                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 23                                   | NR                             | 610               | 969                                  | NR                             | 740               | 36                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 32                                   | NR                             | 615               | 935                                  | NR                             | 745               | 31                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.71

| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 52                          | NR               | 620       | 888                         | NR               | 750       | 27                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 87                          | NR               | 625       | 834                         | NR               | 755       | 23                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 135                         | NR               | 630       | 776                         | NR               | 760       | 20                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 196                         | NR               | 635       | 712                         | NR               | 765       | 17                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 258                         | NR               | 640       | 648                         | NR               | 770       | 15                          | NR               | 900       | 0                           | NR               |
| 385       | 1                           | NR               | 515       | 317                         | NR               | 645       | 583                         | NR               | 775       | 12                          | NR               | 905       | 0                           | NR               |
| 390       | 2                           | NR               | 520       | 368                         | NR               | 650       | 523                         | NR               | 780       | 11                          | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 408                         | NR               | 655       | 465                         | NR               | 785       | 9                           | NR               | 915       | 0                           | NR               |
| 400       | 6                           | NR               | 530       | 443                         | NR               | 660       | 410                         | NR               | 790       | 8                           | NR               | 920       | 0                           | NR               |
| 405       | 11                          | NR               | 535       | 473                         | NR               | 665       | 360                         | NR               | 795       | 7                           | NR               | 925       | 0                           | NR               |
| 410       | 23                          | NR               | 540       | 498                         | NR               | 670       | 313                         | NR               | 800       | 6                           | NR               | 930       | 0                           | NR               |
| 415       | 51                          | NR               | 545       | 530                         | NR               | 675       | 272                         | NR               | 805       | 5                           | NR               | 935       | 0                           | NR               |
| 420       | 111                         | NR               | 550       | 563                         | NR               | 680       | 236                         | NR               | 810       | 4                           | NR               | 940       | 0                           | NR               |
| 425       | 214                         | NR               | 555       | 605                         | NR               | 685       | 203                         | NR               | 815       | 4                           | NR               | 945       | 0                           | NR               |
| 430       | 339                         | NR               | 560       | 651                         | NR               | 690       | 175                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 467                         | NR               | 565       | 705                         | NR               | 695       | 150                         | NR               | 825       | 3                           | NR               | 955       | 0                           | NR               |
| 440       | 535                         | NR               | 570       | 765                         | NR               | 700       | 128                         | NR               | 830       | 3                           | NR               | 960       | 0                           | NR               |
| 445       | 372                         | NR               | 575       | 824                         | NR               | 705       | 110                         | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 160                         | NR               | 580       | 882                         | NR               | 710       | 94                          | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 89                          | NR               | 585       | 930                         | NR               | 715       | 80                          | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 53                          | NR               | 590       | 968                         | NR               | 720       | 69                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 31                          | NR               | 595       | 991                         | NR               | 725       | 59                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 23                          | NR               | 600       | 999                         | NR               | 730       | 50                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 21                          | NR               | 605       | 992                         | NR               | 735       | 43                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 23                          | NR               | 610       | 969                         | NR               | 740       | 36                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 32                          | NR               | 615       | 935                         | NR               | 745       | 31                          | NR               | 875       | 1                           | NR               |           |                             |                  |

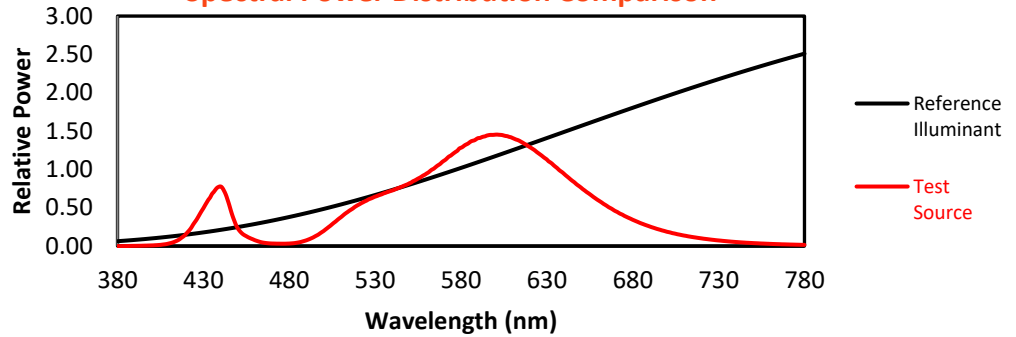
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TM-30-18

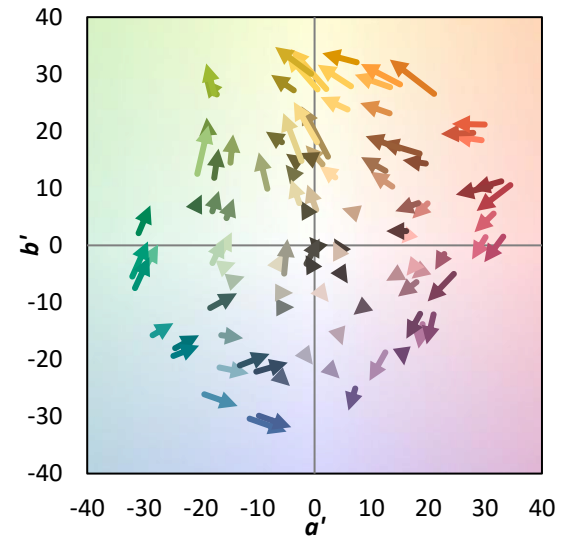
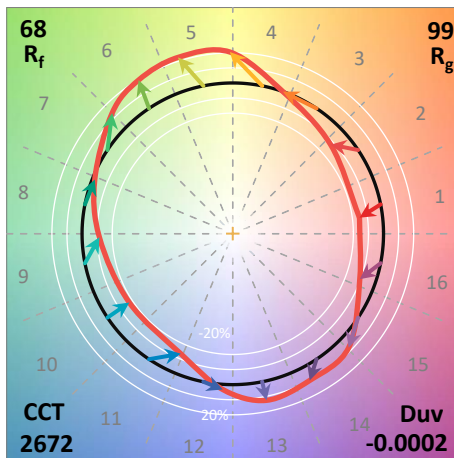
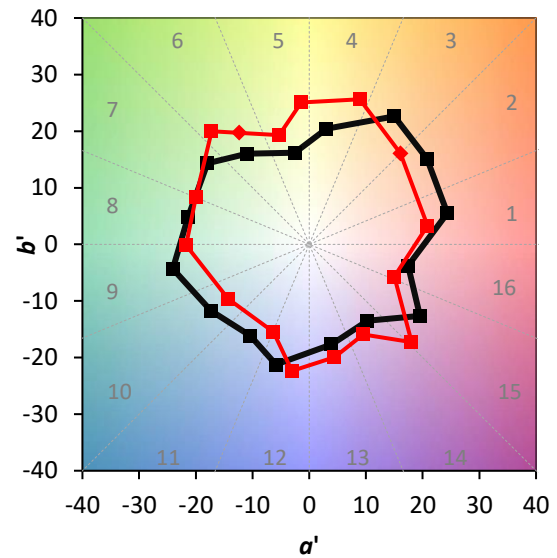
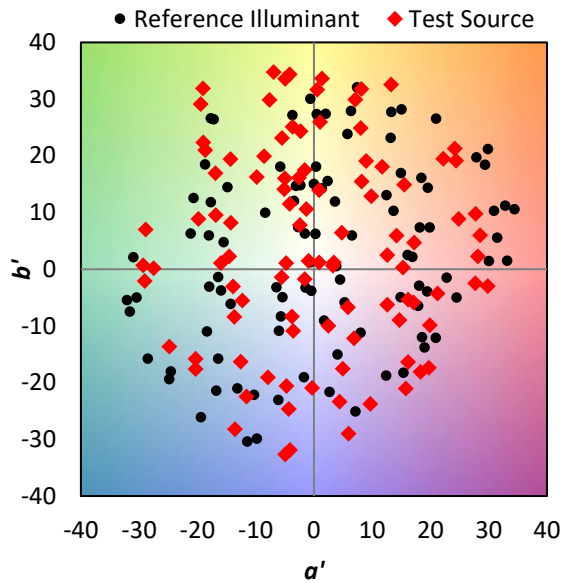
### Summary

$R_f = 67.9$   
 $R_g = 98.6$   
 $CIE R_a = 71.1$   
 $R_g = -27.8$

### Spectral Power Distribution Comparison



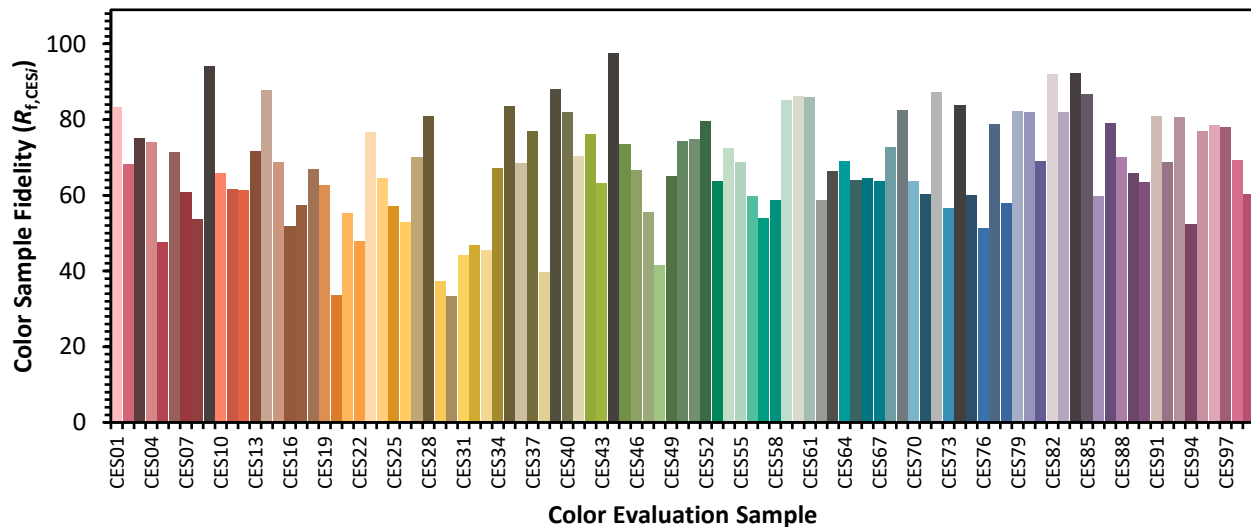
### Color Vector Graphics



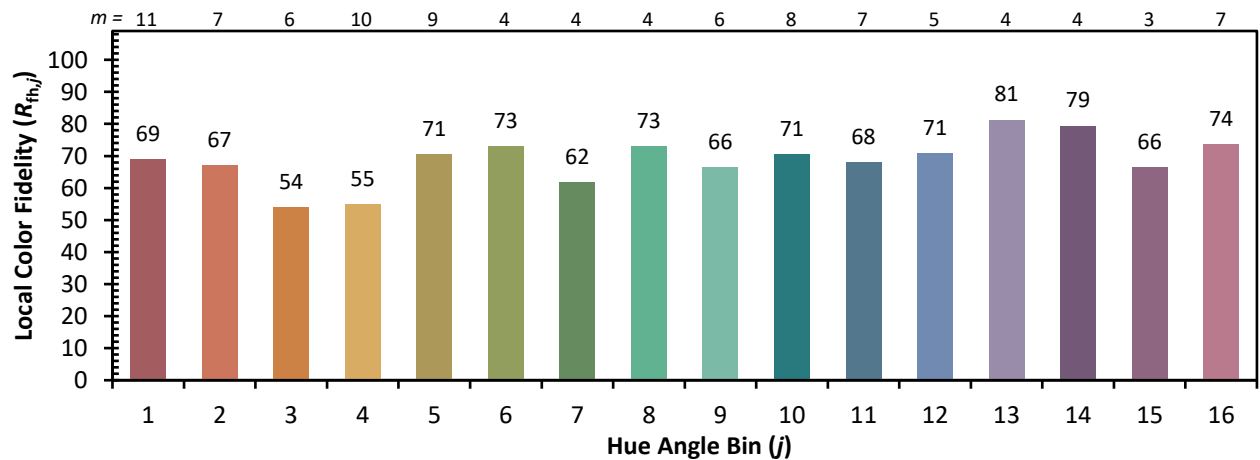
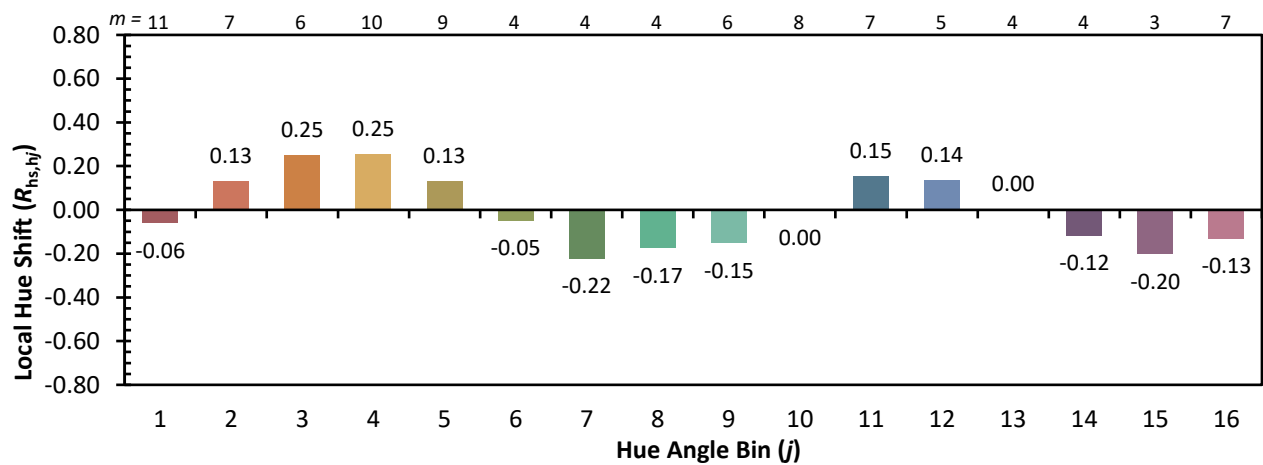
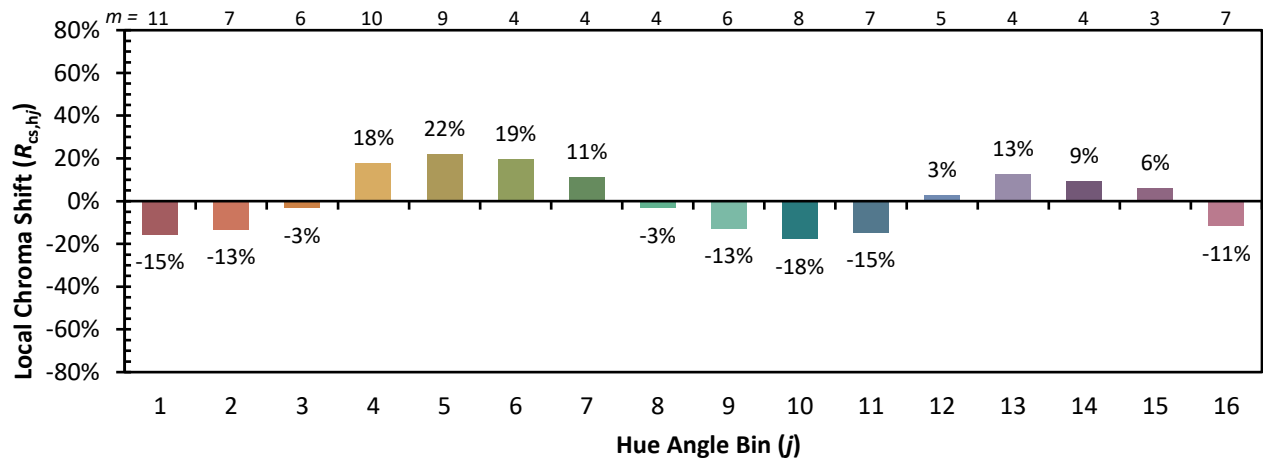


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

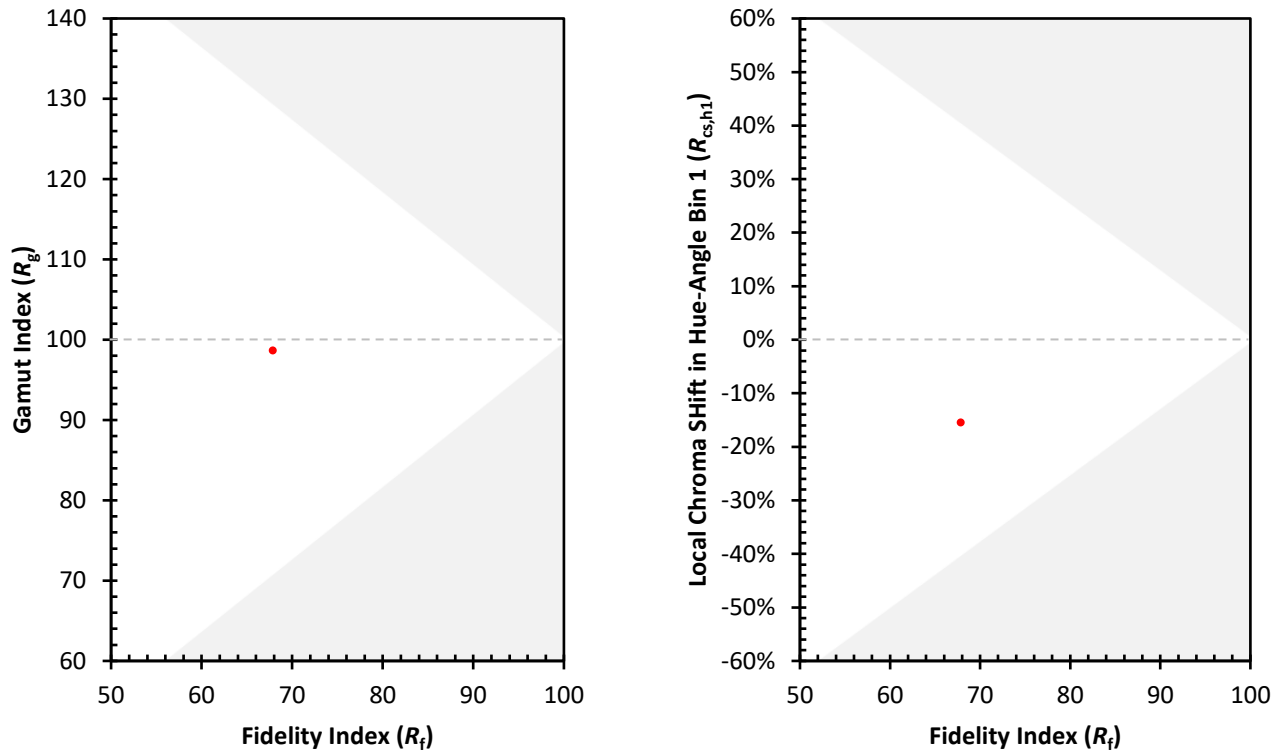
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 53 | CES51 = 75 | CES76 = 51 |
| CES02 = 63 | CES27 = 70 | CES52 = 80 | CES77 = 79 |
| CES03 = 31 | CES28 = 81 | CES53 = 64 | CES78 = 58 |
| CES04 = 71 | CES29 = 37 | CES54 = 73 | CES79 = 82 |
| CES05 = 50 | CES30 = 33 | CES55 = 69 | CES80 = 82 |
| CES06 = 52 | CES31 = 44 | CES56 = 60 | CES81 = 69 |
| CES07 = 42 | CES32 = 47 | CES57 = 54 | CES82 = 92 |
| CES08 = 41 | CES33 = 45 | CES58 = 59 | CES83 = 82 |
| CES09 = 29 | CES34 = 67 | CES59 = 85 | CES84 = 92 |
| CES10 = 77 | CES35 = 84 | CES60 = 86 | CES85 = 87 |
| CES11 = 60 | CES36 = 68 | CES61 = 86 | CES86 = 60 |
| CES12 = 66 | CES37 = 77 | CES62 = 59 | CES87 = 79 |
| CES13 = 44 | CES38 = 40 | CES63 = 66 | CES88 = 70 |
| CES14 = 74 | CES39 = 88 | CES64 = 69 | CES89 = 66 |
| CES15 = 72 | CES40 = 82 | CES65 = 64 | CES90 = 64 |
| CES16 = 48 | CES41 = 70 | CES66 = 65 | CES91 = 81 |
| CES17 = 51 | CES42 = 76 | CES67 = 64 | CES92 = 69 |
| CES18 = 57 | CES43 = 63 | CES68 = 73 | CES93 = 81 |
| CES19 = 73 | CES44 = 97 | CES69 = 83 | CES94 = 53 |
| CES20 = 67 | CES45 = 74 | CES70 = 64 | CES95 = 77 |
| CES21 = 88 | CES46 = 67 | CES71 = 60 | CES96 = 79 |
| CES22 = 80 | CES47 = 55 | CES72 = 87 | CES97 = 78 |
| CES23 = 92 | CES48 = 42 | CES73 = 57 | CES98 = 69 |
| CES24 = 92 | CES49 = 65 | CES74 = 84 | CES99 = 60 |
| CES25 = 73 | CES50 = 74 | CES75 = 60 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)