

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



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: P800710

Luminaire Tested: **ARCH-M-PA2-60-727-24VDC-T2U**

Issue Date: 5/19/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P800710  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1910-568-12)  
Test Lab: INNOVATION CENTER  
Issue Date: 5/19/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: ARCH-M-PA2-60-727-24VDC-T2U  
Description: ARCHEON-M ROADWAY AND AREA LUMINAIRE  
(2) 70 CRI, 2700K, 405mA LIGHT ENGINES WITH 16 LEDS AND TYPE II U OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8618 lumens  
Efficiency: N/A  
Efficacy: 141.3 lumens/watt  
Luminous Opening: Rectangular (W 0.75' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B2 - U0 - G2

Input Watts (W): 61  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

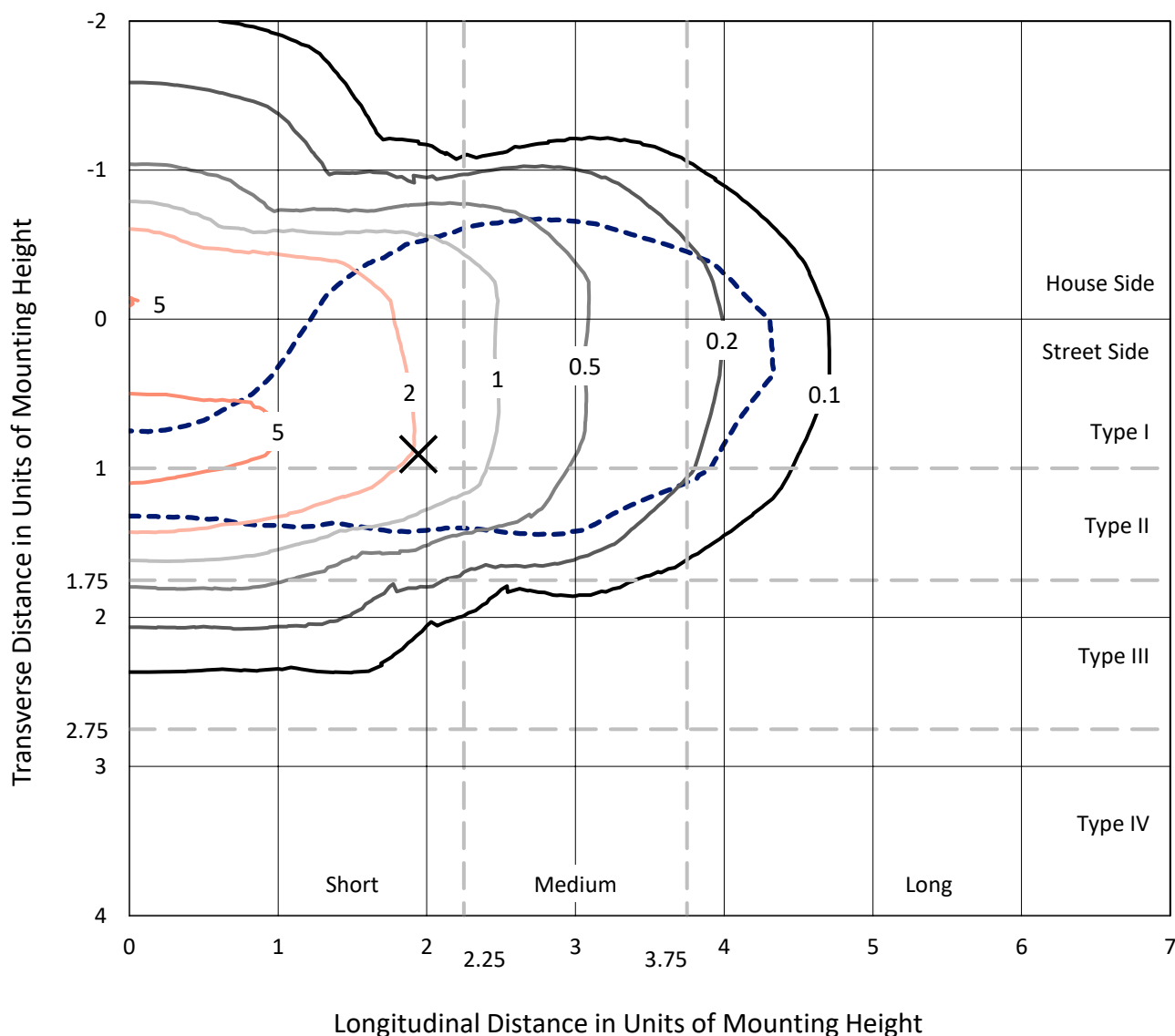
REPORT NUMBER: P800710

CATALOG NUMBER: ARCH-M-PA2-60-727-24VDC-T2U

## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd

--- 1/2 Max cd

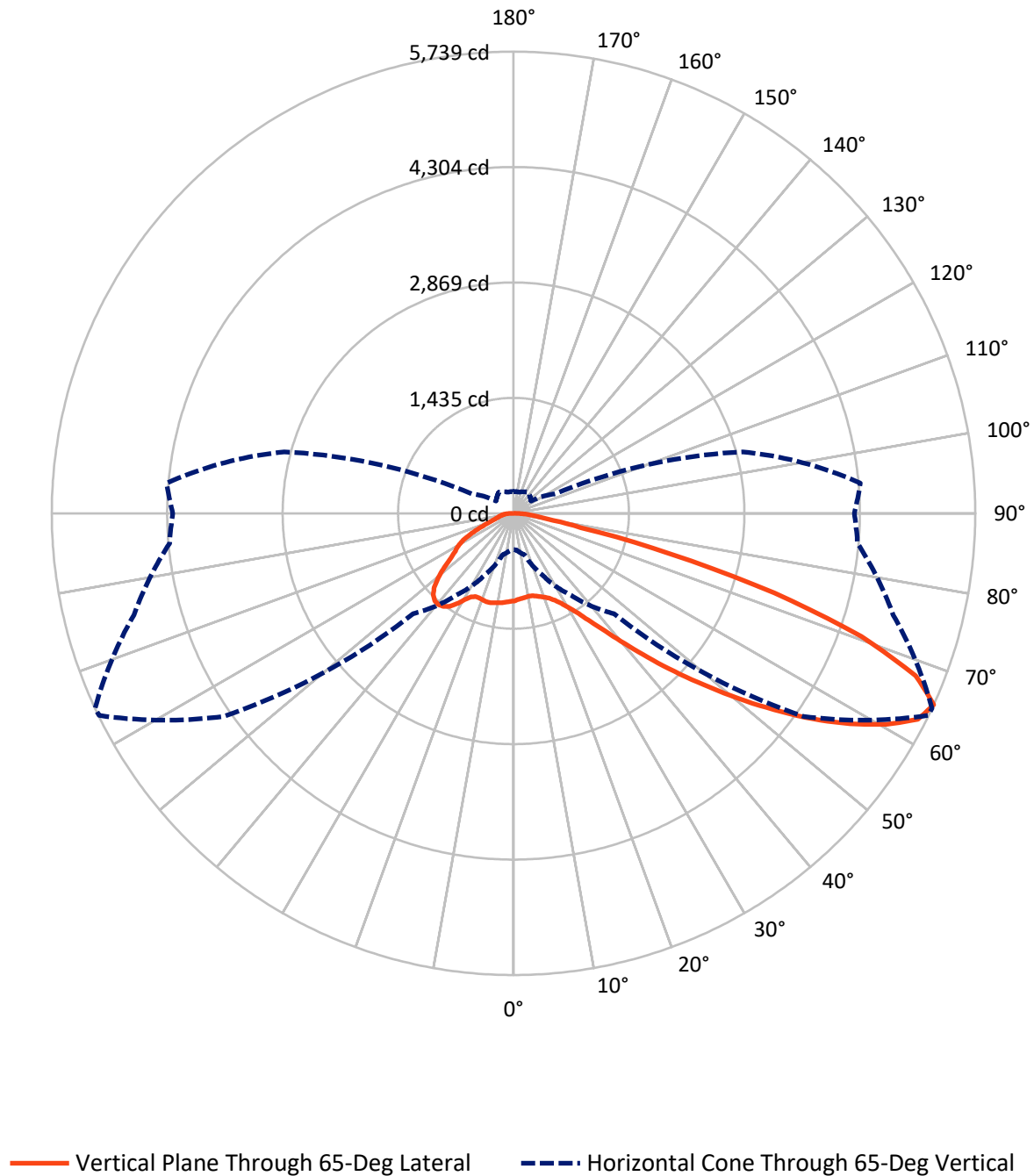


Based on 15 foot mounting height. Maximum calculated value = 6.6 fc

Type II - Short - N/A

REPORT NUMBER: P800710  
CATALOG NUMBER: ARCH-M-PA2-60-727-24VDC-T2U

## Luminous Intensity Polar Plot



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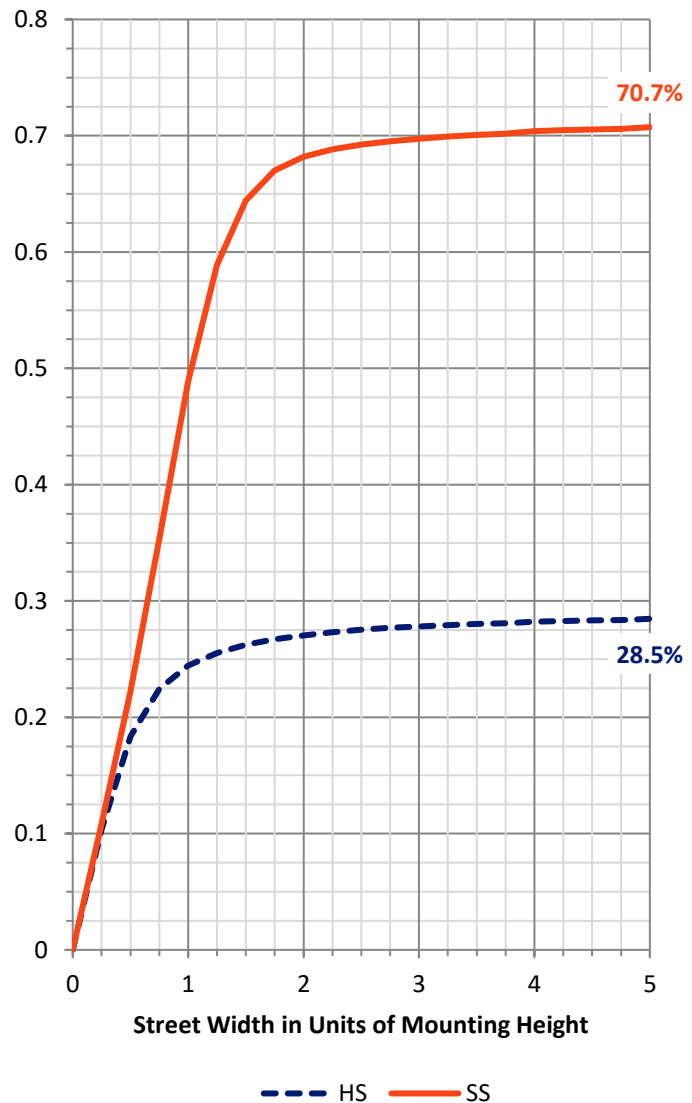
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 2491.6   | 0.0    | 2491.6 |
|                    | % Fixture | 28.9     | 0.0    | 28.9   |
| <b>Street Side</b> | Lumens    | 6126.4   | 0.0    | 6126.4 |
|                    | % Fixture | 71.1     | 0.0    | 71.1   |
| <b>Total</b>       | Lumens    | 8618.0   | 0.0    | 8618.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 103.7  | 1.2       |
| 10°-20°   | 309.7  | 3.6       |
| 20°-30°   | 550.2  | 6.4       |
| 30°-40°   | 930.8  | 10.8      |
| 40°-50°   | 1620.4 | 18.8      |
| 50°-60°   | 2094.0 | 24.3      |
| 60°-70°   | 1832.4 | 21.3      |
| 70°-80°   | 996.7  | 11.6      |
| 80°-90°   | 180.1  | 2.1       |
| 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°    | 8618.0 | 100.0     |
| 0°-180°   | 8618.0 | 100.0     |

**Coefficient of Utilization**



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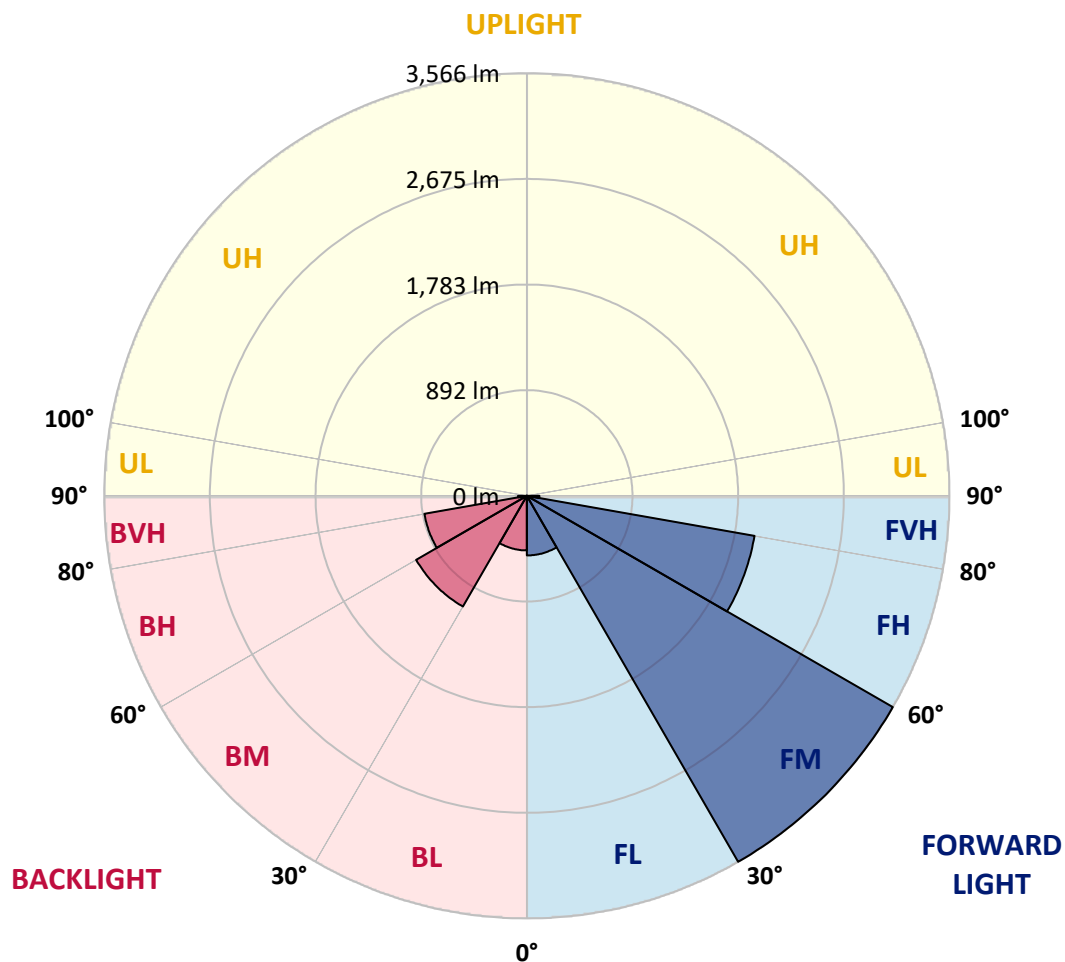
CATALOG NUMBER: ARCH-M-PA2-60-727-24VDC-T2U

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 502.8  | 5.8       |                         |      |         |
| FM   | (30°-60°)   | 3566.4 | 41.4      |                         |      |         |
| FH   | (60°-80°)   | 1951.2 | 22.6      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 106.0  | 1.2       |                         |      | G2/225  |
| BL   | (0°-30°)    | 460.9  | 5.3       | B1/500                  |      |         |
| BM   | (30°-60°)   | 1078.8 | 12.5      | B2/2500                 |      |         |
| BH   | (60°-80°)   | 877.8  | 10.2      | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 74.1   | 0.9       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

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

Type II Short



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CATALOG NUMBER: ARCH-M-PA2-60-727-24VDC-T2U

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 64°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 |
| 2.5°  | 1069.7 | 1068.5 | 1066.3 | 1068.5 | 1069.7 | 1072.0 | 1070.8 | 1073.1 | 1072.0 | 1075.4 | 1081.0 |
| 5°    | 1042.5 | 1040.2 | 1039.1 | 1044.7 | 1048.1 | 1053.8 | 1056.1 | 1064.0 | 1062.9 | 1068.5 | 1077.6 |
| 7.5°  | 1011.8 | 1011.8 | 1010.7 | 1017.5 | 1022.0 | 1032.3 | 1040.2 | 1053.8 | 1054.9 | 1065.1 | 1075.4 |
| 10°   | 988.0  | 989.1  | 988.0  | 993.7  | 1000.5 | 1013.0 | 1026.6 | 1045.9 | 1047.0 | 1061.7 | 1072.0 |
| 12.5° | 978.9  | 978.9  | 978.9  | 986.9  | 996.0  | 1013.0 | 1028.8 | 1049.3 | 1051.5 | 1067.4 | 1076.5 |
| 15°   | 991.4  | 992.5  | 990.3  | 998.2  | 1008.4 | 1028.8 | 1043.6 | 1065.1 | 1067.4 | 1082.2 | 1087.8 |
| 17.5° | 1035.7 | 1040.2 | 1034.5 | 1039.1 | 1036.8 | 1052.7 | 1066.3 | 1087.8 | 1089.0 | 1101.4 | 1103.7 |
| 20°   | 1123.0 | 1127.5 | 1118.5 | 1112.8 | 1092.4 | 1091.2 | 1096.9 | 1113.9 | 1113.9 | 1121.9 | 1116.2 |
| 22.5° | 1258.0 | 1262.5 | 1246.6 | 1225.1 | 1176.3 | 1152.5 | 1140.0 | 1148.0 | 1146.8 | 1150.2 | 1135.5 |
| 25°   | 1437.2 | 1436.1 | 1416.8 | 1377.1 | 1298.8 | 1241.0 | 1210.3 | 1197.9 | 1197.9 | 1191.1 | 1172.9 |
| 27.5° | 1659.5 | 1642.5 | 1608.5 | 1560.9 | 1452.0 | 1371.4 | 1305.6 | 1273.9 | 1268.2 | 1247.8 | 1213.7 |
| 30°   | 1896.6 | 1884.1 | 1835.4 | 1766.2 | 1640.3 | 1537.0 | 1428.1 | 1364.6 | 1361.2 | 1317.0 | 1265.9 |
| 32.5° | 2175.7 | 2155.2 | 2100.8 | 2018.0 | 1867.1 | 1721.9 | 1585.8 | 1489.4 | 1483.7 | 1413.4 | 1343.1 |
| 35°   | 2534.1 | 2517.1 | 2411.6 | 2328.8 | 2134.8 | 1944.3 | 1783.2 | 1655.0 | 1650.5 | 1564.3 | 1474.6 |
| 37.5° | 2964.0 | 2919.8 | 2817.7 | 2662.3 | 2458.1 | 2232.4 | 2028.2 | 1867.1 | 1861.5 | 1766.2 | 1652.7 |
| 40°   | 3347.4 | 3307.7 | 3217.0 | 3074.1 | 2855.1 | 2604.4 | 2327.7 | 2132.6 | 2126.9 | 2011.2 | 1868.3 |
| 42.5° | 3631.0 | 3603.8 | 3544.8 | 3462.0 | 3305.5 | 3153.5 | 2709.9 | 2453.6 | 2443.4 | 2293.6 | 2115.5 |
| 45°   | 3795.5 | 3774.0 | 3739.9 | 3760.3 | 3758.1 | 3729.7 | 3165.9 | 2835.9 | 2803.0 | 2609.0 | 2391.2 |
| 47.5° | 3755.8 | 3736.5 | 3750.1 | 3908.9 | 4127.9 | 4292.3 | 3696.8 | 3227.2 | 3183.0 | 2930.0 | 2685.0 |
| 50°   | 3468.8 | 3476.8 | 3548.2 | 3852.2 | 4343.4 | 4708.6 | 4285.5 | 3673.0 | 3614.0 | 3253.3 | 2964.0 |
| 52.5° | 2945.9 | 2965.2 | 3138.7 | 3564.1 | 4319.6 | 4978.6 | 4817.5 | 4133.5 | 4055.3 | 3568.6 | 3218.1 |
| 55°   | 2340.1 | 2388.9 | 2613.5 | 3060.5 | 4008.8 | 4997.9 | 5219.1 | 4596.3 | 4510.1 | 3864.7 | 3439.3 |
| 57.5° | 1731.0 | 1803.6 | 2063.4 | 2474.0 | 3413.2 | 4692.8 | 5419.9 | 5038.7 | 4934.4 | 4158.5 | 3673.0 |
| 60°   | 1098.0 | 1142.3 | 1441.7 | 1926.1 | 2612.4 | 3946.4 | 5393.8 | 5415.3 | 5324.6 | 4451.2 | 3916.9 |
| 62.5° | 701.0  | 722.6  | 873.4  | 1373.7 | 1826.3 | 2922.1 | 5109.1 | 5700.1 | 5638.8 | 4717.7 | 4148.3 |
| 65°   | 450.3  | 459.4  | 536.5  | 845.1  | 1243.2 | 1763.9 | 4400.1 | 5730.7 | 5738.6 | 4884.5 | 4291.2 |
| 67.5° | 366.4  | 370.9  | 399.3  | 521.8  | 879.1  | 974.4  | 3065.0 | 5295.1 | 5391.5 | 4841.4 | 4242.4 |
| 70°   | 333.5  | 339.2  | 368.7  | 416.3  | 680.6  | 672.7  | 1483.7 | 4430.7 | 4588.4 | 4592.9 | 4025.8 |
| 72.5° | 281.3  | 289.3  | 329.0  | 393.6  | 526.3  | 530.9  | 628.4  | 3155.7 | 3388.3 | 4105.2 | 3700.2 |
| 75°   | 234.8  | 239.3  | 273.4  | 347.1  | 445.8  | 424.2  | 441.3  | 1673.2 | 2008.9 | 3291.9 | 3354.2 |
| 77.5° | 190.6  | 195.1  | 220.1  | 276.8  | 395.9  | 330.1  | 347.1  | 693.1  | 856.4  | 2234.7 | 2741.7 |
| 80°   | 136.1  | 140.7  | 169.0  | 215.5  | 299.5  | 297.2  | 257.5  | 382.3  | 415.2  | 1208.1 | 1780.9 |
| 82.5° | 97.6   | 101.0  | 128.2  | 154.3  | 207.6  | 298.3  | 194.0  | 259.8  | 272.2  | 535.4  | 718.0  |
| 85°   | 65.8   | 65.8   | 88.5   | 102.1  | 133.9  | 188.3  | 156.5  | 175.8  | 183.8  | 254.1  | 194.0  |
| 87.5° | 28.4   | 28.4   | 47.6   | 52.2   | 70.3   | 87.3   | 116.8  | 88.5   | 90.7   | 137.3  | 79.4   |
| 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: P800710

CATALOG NUMBER: ARCH-M-PA2-60-727-24VDC-T2U

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 | 1089.0 |
| 2.5°  | 1084.4 | 1085.6 | 1087.8 | 1094.6 | 1099.2 | 1106.0 | 1109.4 | 1113.9 | 1113.9 | 1111.7 | 1112.8 |
| 5°    | 1082.2 | 1085.6 | 1093.5 | 1106.0 | 1113.9 | 1126.4 | 1135.5 | 1142.3 | 1144.6 | 1142.3 | 1143.4 |
| 7.5°  | 1081.0 | 1086.7 | 1100.3 | 1118.5 | 1129.8 | 1145.7 | 1158.2 | 1166.1 | 1171.8 | 1169.5 | 1170.6 |
| 10°   | 1077.6 | 1086.7 | 1103.7 | 1126.4 | 1143.4 | 1159.3 | 1170.6 | 1174.0 | 1177.4 | 1175.2 | 1174.0 |
| 12.5° | 1082.2 | 1092.4 | 1110.5 | 1137.7 | 1157.0 | 1169.5 | 1172.9 | 1167.2 | 1159.3 | 1154.8 | 1153.6 |
| 15°   | 1091.2 | 1101.4 | 1119.6 | 1148.0 | 1165.0 | 1169.5 | 1161.6 | 1143.4 | 1125.3 | 1115.1 | 1113.9 |
| 17.5° | 1103.7 | 1110.5 | 1125.3 | 1150.2 | 1163.8 | 1158.2 | 1142.3 | 1120.7 | 1107.1 | 1099.2 | 1100.3 |
| 20°   | 1111.7 | 1111.7 | 1123.0 | 1142.3 | 1153.6 | 1149.1 | 1129.8 | 1106.0 | 1084.4 | 1074.2 | 1070.8 |
| 22.5° | 1123.0 | 1117.3 | 1118.5 | 1135.5 | 1151.4 | 1144.6 | 1103.7 | 1061.7 | 1031.1 | 1019.8 | 1018.6 |
| 25°   | 1153.6 | 1137.7 | 1127.5 | 1137.7 | 1175.2 | 1119.6 | 1037.9 | 989.1  | 960.8  | 950.6  | 951.7  |
| 27.5° | 1191.1 | 1169.5 | 1148.0 | 1165.0 | 1194.5 | 1062.9 | 954.0  | 898.4  | 881.4  | 873.4  | 876.8  |
| 30°   | 1228.5 | 1200.1 | 1171.8 | 1233.0 | 1180.8 | 974.4  | 846.2  | 791.8  | 777.0  | 771.4  | 775.9  |
| 32.5° | 1297.7 | 1251.2 | 1217.1 | 1323.8 | 1138.9 | 873.4  | 729.4  | 679.5  | 665.9  | 659.1  | 656.8  |
| 35°   | 1413.4 | 1354.4 | 1320.4 | 1403.2 | 1079.9 | 761.1  | 622.8  | 587.6  | 572.8  | 558.1  | 555.8  |
| 37.5° | 1580.1 | 1508.7 | 1478.0 | 1448.6 | 997.1  | 650.0  | 541.1  | 517.3  | 495.7  | 473.0  | 471.9  |
| 40°   | 1779.8 | 1686.8 | 1664.1 | 1469.0 | 882.5  | 545.6  | 484.4  | 461.7  | 434.5  | 412.9  | 414.0  |
| 42.5° | 2010.1 | 1890.9 | 1842.2 | 1463.3 | 740.7  | 490.0  | 443.5  | 418.6  | 394.8  | 375.5  | 374.3  |
| 45°   | 2256.2 | 2121.2 | 2008.9 | 1423.6 | 600.1  | 451.5  | 418.6  | 389.1  | 365.3  | 343.7  | 341.4  |
| 47.5° | 2528.4 | 2377.6 | 2163.2 | 1346.5 | 495.7  | 424.2  | 403.8  | 361.9  | 340.3  | 326.7  | 326.7  |
| 50°   | 2803.0 | 2622.6 | 2305.0 | 1229.6 | 434.5  | 403.8  | 382.3  | 347.1  | 330.1  | 318.7  | 318.7  |
| 52.5° | 3037.8 | 2877.8 | 2421.8 | 1090.1 | 395.9  | 386.8  | 367.5  | 340.3  | 322.2  | 311.9  | 310.8  |
| 55°   | 3265.8 | 3114.9 | 2526.2 | 951.7  | 364.1  | 364.1  | 364.1  | 334.6  | 314.2  | 305.1  | 304.0  |
| 57.5° | 3492.6 | 3364.5 | 2635.1 | 861.0  | 335.8  | 344.8  | 357.3  | 327.8  | 307.4  | 299.5  | 298.3  |
| 60°   | 3749.0 | 3663.9 | 2761.0 | 797.4  | 310.8  | 324.4  | 348.2  | 319.9  | 296.1  | 289.3  | 288.1  |
| 62.5° | 4021.2 | 4021.2 | 2875.6 | 707.8  | 288.1  | 307.4  | 334.6  | 309.7  | 285.9  | 280.2  | 279.0  |
| 65°   | 4234.5 | 4326.4 | 2949.3 | 574.0  | 265.4  | 290.4  | 318.7  | 296.1  | 272.2  | 271.1  | 268.8  |
| 67.5° | 4259.5 | 4403.5 | 2902.8 | 433.3  | 245.0  | 272.2  | 302.9  | 281.3  | 258.6  | 258.6  | 255.2  |
| 70°   | 4080.2 | 4226.6 | 2757.6 | 324.4  | 230.3  | 254.1  | 282.5  | 263.2  | 241.6  | 243.9  | 238.2  |
| 72.5° | 3780.8 | 3817.1 | 2396.9 | 256.4  | 213.3  | 234.8  | 257.5  | 242.7  | 223.5  | 223.5  | 215.5  |
| 75°   | 3386.0 | 3184.1 | 1741.2 | 214.4  | 192.8  | 212.1  | 232.5  | 220.1  | 203.0  | 197.4  | 192.8  |
| 77.5° | 2695.2 | 2307.2 | 1011.8 | 184.9  | 175.8  | 190.6  | 204.2  | 195.1  | 180.4  | 167.9  | 167.9  |
| 80°   | 1642.5 | 1352.1 | 446.9  | 159.9  | 155.4  | 166.7  | 175.8  | 165.6  | 153.1  | 140.7  | 137.3  |
| 82.5° | 625.0  | 521.8  | 216.7  | 137.3  | 136.1  | 142.9  | 149.7  | 139.5  | 130.4  | 124.8  | 107.8  |
| 85°   | 171.3  | 157.7  | 148.6  | 114.6  | 112.3  | 111.2  | 119.1  | 114.6  | 102.1  | 83.9   | 74.9   |
| 87.5° | 64.7   | 73.7   | 80.5   | 70.3   | 74.9   | 69.2   | 79.4   | 72.6   | 64.7   | 42.0   | 37.4   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

STREETWORKS

Report Number: SP1-2101-121-5

Luminaire Tested: IFLD-S-SA2E-727-U-T2

Test Date: 03/04/2021

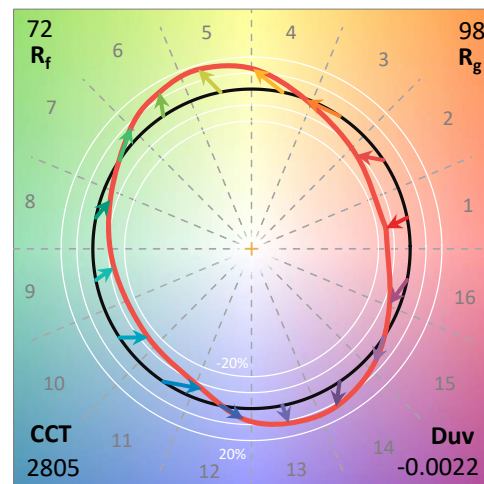
### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-5  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 03/04/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2E-727-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 1500mA.

### Spectral Parameters

|                           |         |           |      |      |       |
|---------------------------|---------|-----------|------|------|-------|
| CCT (K):                  | 2805    | CRI (Ra): | 72.4 |      |       |
| CIE u':                   | 0.2586  | R1:       | 69.8 | R9:  | -15.0 |
| CIE v':                   | 0.5221  | R2:       | 81.3 | R10: | 55.6  |
| Duv:                      | -0.0022 | R3:       | 90.2 | R11: | 61.7  |
| CIE x:                    | 0.4477  | R4:       | 68.5 | R12: | 47.2  |
| CIE y:                    | 0.4017  | R5:       | 67.5 | R13: | 71.4  |
| CIE z:                    | 0.1506  | R6:       | 72.4 | R14: | 93.9  |
| Peak Wavelength (nm):     | 599     | R7:       | 79.4 |      |       |
| Dominant Wavelength (nm): | 584     | R8:       | 49.9 |      |       |
| Purity:                   | 55.3    |           |      |      |       |
| Rf:                       | 71.9    |           |      |      |       |
| Rg:                       | 97.9    |           |      |      |       |



### Test Conditions

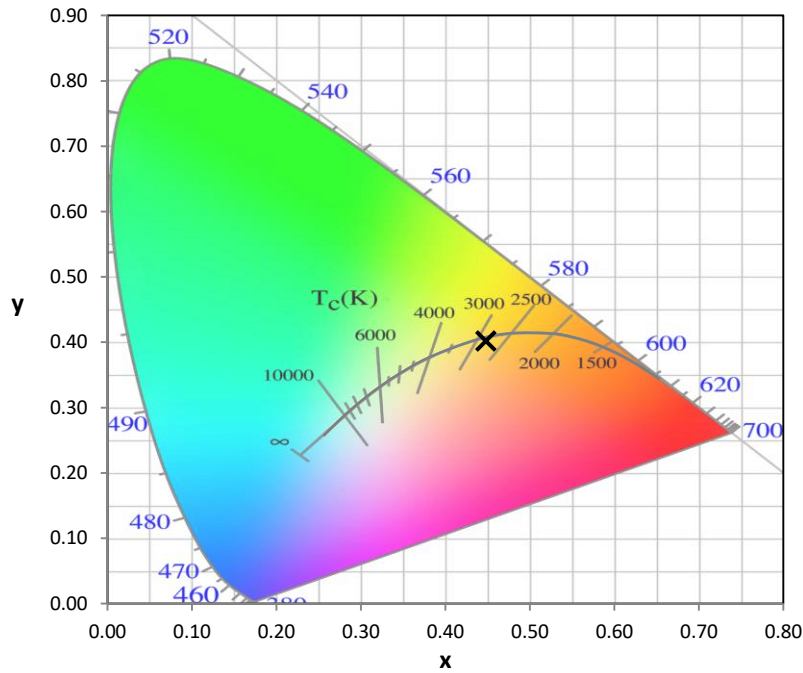
Stabilization Time: 60M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.3/31%  
 Sphere Temperature (°C): 24.8

REPORT NUMBER: SP1-2101-121-5

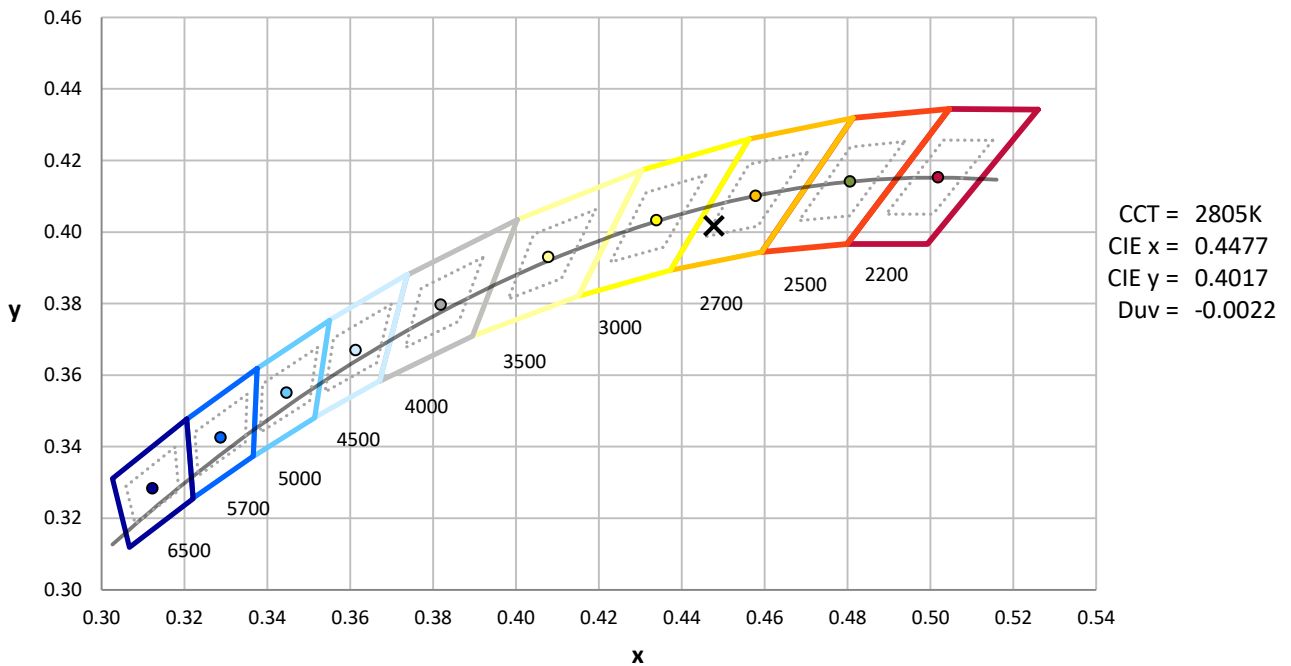
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 1/31/2021        | 7/31/2021            |
| Power Meter                    | IN0071                | 12/1/2020        | 12/1/2021            |
| AC Power Source                | IN0063                | 12/1/2020        | 12/1/2021            |
| DC Power Source                | IN0208                | 12/1/2020        | 12/1/2021            |
| Sphere Thermometer             | IN0085                | 12/1/2020        | 12/1/2021            |
| Room Thermometer               | IN0046                | 12/1/2020        | 12/1/2021            |

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**CIE 1931 Chromaticity Diagram**



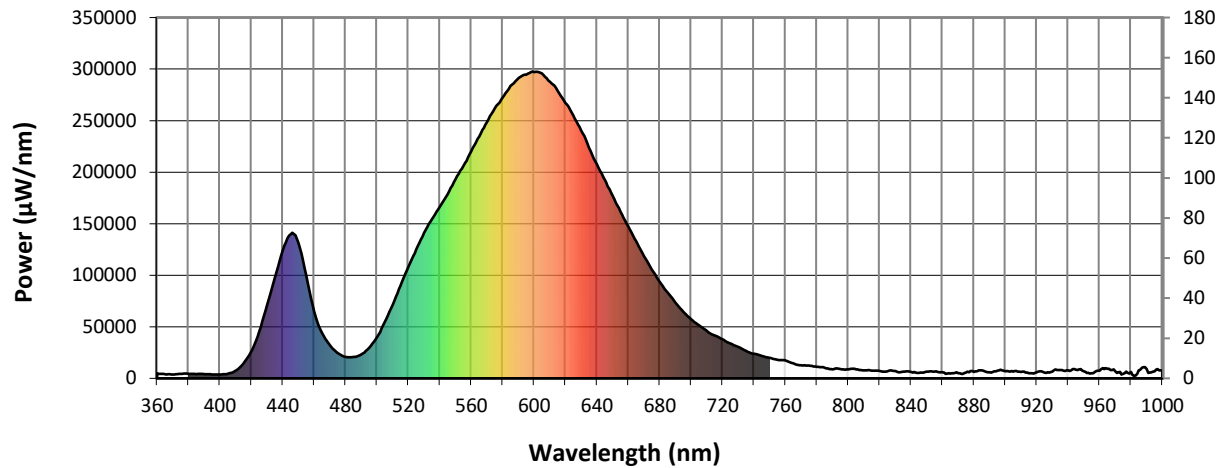
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 2700K 4-step quadrangle

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### Photopic Flux vs. Wavelength

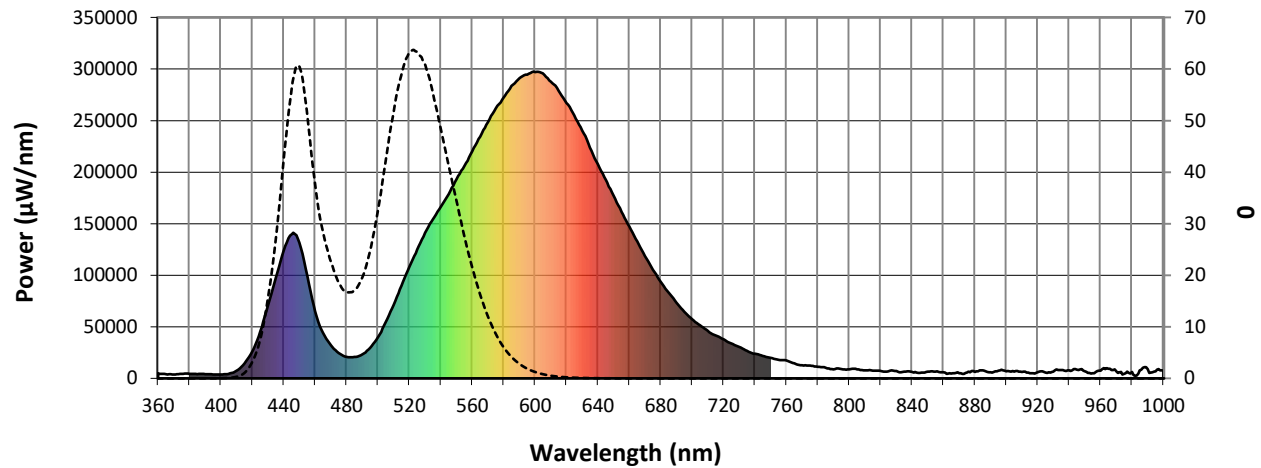


#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 4854             | 0.0              | 490       | 23280            | 3.3              | 620       | 266893           | 69.5             | 750       | 19996            | 0.0              | 880       | 6314             | 0.0              |
| 365       | 4049             | 0.0              | 495       | 29582            | 5.4              | 625       | 255096           | 56.3             | 755       | 17900            | 0.0              | 885       | 7853             | 0.0              |
| 370       | 3795             | 0.0              | 500       | 39981            | 8.8              | 630       | 240244           | 43.5             | 760       | 17272            | 0.0              | 890       | 5823             | 0.0              |
| 375       | 4296             | 0.0              | 505       | 54556            | 15.3             | 635       | 223787           | 33.6             | 765       | 14514            | 0.0              | 895       | 7346             | 0.0              |
| 380       | 4496             | 0.0              | 510       | 71364            | 24.5             | 640       | 207566           | 24.8             | 770       | 12643            | 0.0              | 900       | 6920             | 0.0              |
| 385       | 4186             | 0.0              | 515       | 89828            | 37.2             | 645       | 192517           | 18.5             | 775       | 12475            | 0.0              | 905       | 6608             | 0.0              |
| 390       | 3945             | 0.0              | 520       | 108414           | 52.6             | 650       | 177187           | 12.9             | 780       | 11188            | 0.0              | 910       | 6279             | 0.0              |
| 395       | 3780             | 0.0              | 525       | 124929           | 67.1             | 655       | 161553           | 9.3              | 785       | 10229            | 0.0              | 915       | 5131             | 0.0              |
| 400       | 3679             | 0.0              | 530       | 141352           | 83.2             | 660       | 147361           | 6.1              | 790       | 8578             | 0.0              | 920       | 5855             | 0.0              |
| 405       | 4475             | 0.0              | 535       | 154552           | 95.8             | 665       | 132756           | 4.2              | 795       | 9114             | 0.0              | 925       | 5678             | 0.0              |
| 410       | 7499             | 0.0              | 540       | 166297           | 108.4            | 670       | 118534           | 2.6              | 800       | 8597             | 0.0              | 930       | 6661             | 0.0              |
| 415       | 14449            | 0.0              | 545       | 178874           | 119.1            | 675       | 105260           | 1.8              | 805       | 8790             | 0.0              | 935       | 8074             | 0.0              |
| 420       | 26000            | 0.1              | 550       | 193176           | 131.3            | 680       | 93637            | 1.1              | 810       | 7814             | 0.0              | 940       | 7823             | 0.0              |
| 425       | 45491            | 0.2              | 555       | 206008           | 140.7            | 685       | 83217            | 0.7              | 815       | 7533             | 0.0              | 945       | 8364             | 0.0              |
| 430       | 70707            | 0.6              | 560       | 220126           | 149.6            | 690       | 73671            | 0.4              | 820       | 7303             | 0.0              | 950       | 6763             | 0.0              |
| 435       | 98169            | 1.2              | 565       | 234383           | 155.8            | 695       | 64520            | 0.3              | 825       | 6745             | 0.0              | 955       | 4883             | 0.0              |
| 440       | 123846           | 1.9              | 570       | 248161           | 161.4            | 700       | 57442            | 0.2              | 830       | 7209             | 0.0              | 960       | 7488             | 0.0              |
| 445       | 139822           | 2.9              | 575       | 261970           | 163.0            | 705       | 51479            | 0.1              | 835       | 6674             | 0.0              | 965       | 9316             | 0.0              |
| 450       | 131679           | 3.4              | 580       | 272271           | 161.8            | 710       | 45940            | 0.1              | 840       | 6151             | 0.0              | 970       | 6857             | 0.0              |
| 455       | 99242            | 3.3              | 585       | 283822           | 157.7            | 715       | 41575            | 0.0              | 845       | 5371             | 0.0              | 975       | 4388             | 0.0              |
| 460       | 65216            | 2.7              | 590       | 291192           | 150.6            | 720       | 37753            | 0.0              | 850       | 6484             | 0.0              | 980       | 6095             | 0.0              |
| 465       | 44137            | 2.3              | 595       | 294651           | 139.7            | 725       | 33818            | 0.0              | 855       | 6614             | 0.0              | 985       | 7701             | 0.0              |
| 470       | 32002            | 2.0              | 600       | 297168           | 128.1            | 730       | 30414            | 0.0              | 860       | 5959             | 0.0              | 990       | 9045             | 0.0              |
| 475       | 24549            | 1.9              | 605       | 295658           | 114.5            | 735       | 26662            | 0.0              | 865       | 4768             | 0.0              | 995       | 6989             | 0.0              |
| 480       | 20801            | 2.0              | 610       | 287633           | 98.8             | 740       | 23848            | 0.0              | 870       | 5098             | 0.0              | 1000      | 7341             | 0.0              |
| 485       | 20656            | 2.4              | 615       | 279152           | 84.3             | 745       | 21851            | 0.0              | 875       | 5516             | 0.0              |           |                  |                  |

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### Scotopic Flux vs. Wavelength



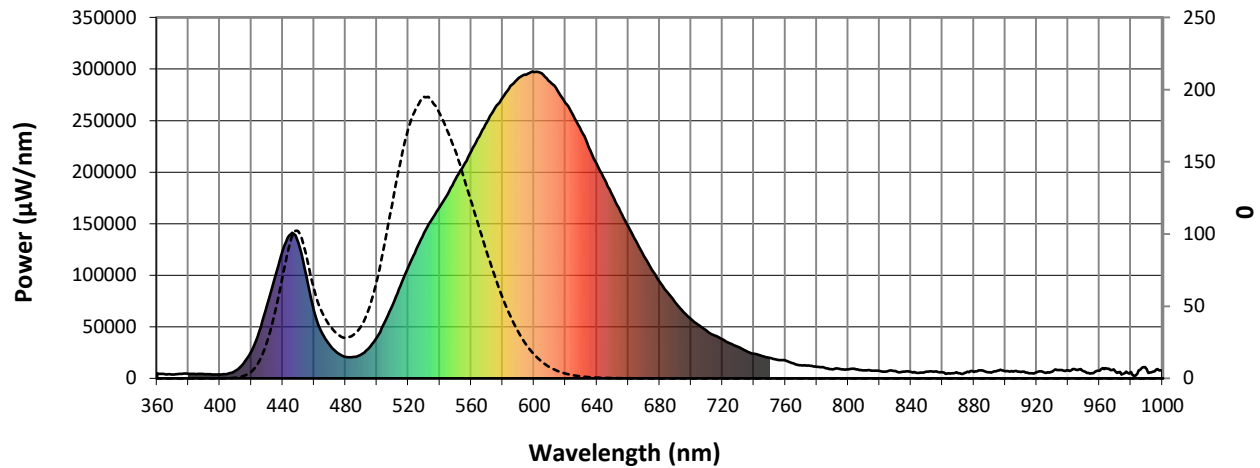
Scotopic Lumens: 15895.6

S/P: 1.11

| λ (nm) | Power (μW/nm) | Lumens (Φ/nm) | λ (nm) | Power (μW/nm) | Lumens (Φ/nm) | λ (nm) | Power (μW/nm) | Lumens (Φ/nm) | λ (nm) | Power (μW/nm) | Lumens (Φ/nm) | λ (nm) | Power (μW/nm) | Lumens (Φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 4854          | 0.0           | 490    | 23280         | 35.8          | 620    | 266893        | 3.3           | 750    | 19996         | 0.0           | 880    | 6314          | 0.0           |
| 365    | 4049          | 0.0           | 495    | 29582         | 47.8          | 625    | 255096        | 2.2           | 755    | 17900         | 0.0           | 885    | 7853          | 0.0           |
| 370    | 3795          | 0.0           | 500    | 39981         | 66.9          | 630    | 240244        | 1.4           | 760    | 17272         | 0.0           | 890    | 5823          | 0.0           |
| 375    | 4296          | 0.0           | 505    | 54556         | 92.7          | 635    | 223787        | 0.9           | 765    | 14514         | 0.0           | 895    | 7346          | 0.0           |
| 380    | 4496          | 0.0           | 510    | 71364         | 121.0         | 640    | 207566        | 0.5           | 770    | 12643         | 0.0           | 900    | 6920          | 0.0           |
| 385    | 4186          | 0.0           | 515    | 89828         | 148.9         | 645    | 192517        | 0.3           | 775    | 12475         | 0.0           | 905    | 6608          | 0.0           |
| 390    | 3945          | 0.0           | 520    | 108414        | 172.3         | 650    | 177187        | 0.2           | 780    | 11188         | 0.0           | 910    | 6279          | 0.0           |
| 395    | 3780          | 0.0           | 525    | 124929        | 186.9         | 655    | 161553        | 0.1           | 785    | 10229         | 0.0           | 915    | 5131          | 0.0           |
| 400    | 3679          | 0.1           | 530    | 141352        | 194.9         | 660    | 147361        | 0.1           | 790    | 8578          | 0.0           | 920    | 5855          | 0.0           |
| 405    | 4475          | 0.1           | 535    | 154552        | 192.6         | 665    | 132756        | 0.0           | 795    | 9114          | 0.0           | 925    | 5678          | 0.0           |
| 410    | 7499          | 0.4           | 540    | 166297        | 183.8         | 670    | 118534        | 0.0           | 800    | 8597          | 0.0           | 930    | 6661          | 0.0           |
| 415    | 14449         | 1.5           | 545    | 178874        | 171.5         | 675    | 105260        | 0.0           | 805    | 8790          | 0.0           | 935    | 8074          | 0.0           |
| 420    | 26000         | 4.3           | 550    | 193176        | 158.0         | 680    | 93637         | 0.0           | 810    | 7814          | 0.0           | 940    | 7823          | 0.0           |
| 425    | 45491         | 11.1          | 555    | 206008        | 140.8         | 685    | 83217         | 0.0           | 815    | 7533          | 0.0           | 945    | 8364          | 0.0           |
| 430    | 70707         | 24.1          | 560    | 220126        | 123.0         | 690    | 73671         | 0.0           | 820    | 7303          | 0.0           | 950    | 6763          | 0.0           |
| 435    | 98169         | 43.9          | 565    | 234383        | 105.2         | 695    | 64520         | 0.0           | 825    | 6745          | 0.0           | 955    | 4883          | 0.0           |
| 440    | 123846        | 69.2          | 570    | 248161        | 87.6          | 700    | 57442         | 0.0           | 830    | 7209          | 0.0           | 960    | 7488          | 0.0           |
| 445    | 139822        | 93.6          | 575    | 261970        | 71.3          | 705    | 51479         | 0.0           | 835    | 6674          | 0.0           | 965    | 9316          | 0.0           |
| 450    | 131679        | 102.1         | 580    | 272271        | 56.1          | 710    | 45940         | 0.0           | 840    | 6151          | 0.0           | 970    | 6857          | 0.0           |
| 455    | 99242         | 86.7          | 585    | 283822        | 43.4          | 715    | 41575         | 0.0           | 845    | 5371          | 0.0           | 975    | 4388          | 0.0           |
| 460    | 65216         | 63.0          | 590    | 291192        | 32.4          | 720    | 37753         | 0.0           | 850    | 6484          | 0.0           | 980    | 6095          | 0.0           |
| 465    | 44137         | 46.6          | 595    | 294651        | 23.5          | 725    | 33818         | 0.0           | 855    | 6614          | 0.0           | 985    | 7701          | 0.0           |
| 470    | 32002         | 36.9          | 600    | 297168        | 16.7          | 730    | 30414         | 0.0           | 860    | 5959          | 0.0           | 990    | 9045          | 0.0           |
| 475    | 24549         | 30.7          | 605    | 295658        | 11.6          | 735    | 26662         | 0.0           | 865    | 4768          | 0.0           | 995    | 6989          | 0.0           |
| 480    | 20801         | 28.1          | 610    | 287633        | 7.8           | 740    | 23848         | 0.0           | 870    | 5098          | 0.0           | 1000   | 7341          | 0.0           |
| 485    | 20656         | 29.9          | 615    | 279152        | 5.2           | 745    | 21851         | 0.0           | 875    | 5516          | 0.0           |        |               |               |

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### Melanopic Flux vs. Wavelength

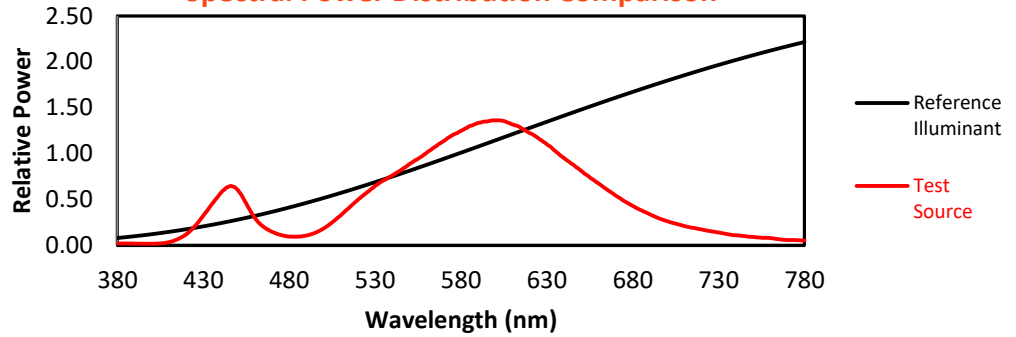

**Melanopic Lumens: 5527.7**
**M/P: 0.39**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 4854             | 0.0              | 490       | 23280            | 19.4             | 620       | 266893           | 0.2              | 750       | 19996            | 0.0              | 880       | 6314             | 0.0              |
| 365       | 4049             | 0.0              | 495       | 29582            | 24.4             | 625       | 255096           | 0.1              | 755       | 17900            | 0.0              | 885       | 7853             | 0.0              |
| 370       | 3795             | 0.0              | 500       | 39981            | 32.1             | 630       | 240244           | 0.1              | 760       | 17272            | 0.0              | 890       | 5823             | 0.0              |
| 375       | 4296             | 0.0              | 505       | 54556            | 41.9             | 635       | 223787           | 0.1              | 765       | 14514            | 0.0              | 895       | 7346             | 0.0              |
| 380       | 4496             | 0.0              | 510       | 71364            | 51.2             | 640       | 207566           | 0.0              | 770       | 12643            | 0.0              | 900       | 6920             | 0.0              |
| 385       | 4186             | 0.0              | 515       | 89828            | 58.7             | 645       | 192517           | 0.0              | 775       | 12475            | 0.0              | 905       | 6608             | 0.0              |
| 390       | 3945             | 0.0              | 520       | 108414           | 63.1             | 650       | 177187           | 0.0              | 780       | 11188            | 0.0              | 910       | 6279             | 0.0              |
| 395       | 3780             | 0.0              | 525       | 124929           | 63.4             | 655       | 161553           | 0.0              | 785       | 10229            | 0.0              | 915       | 5131             | 0.0              |
| 400       | 3679             | 0.0              | 530       | 141352           | 61.1             | 660       | 147361           | 0.0              | 790       | 8578             | 0.0              | 920       | 5855             | 0.0              |
| 405       | 4475             | 0.1              | 535       | 154552           | 55.6             | 665       | 132756           | 0.0              | 795       | 9114             | 0.0              | 925       | 5678             | 0.0              |
| 410       | 7499             | 0.3              | 540       | 166297           | 48.7             | 670       | 118534           | 0.0              | 800       | 8597             | 0.0              | 930       | 6661             | 0.0              |
| 415       | 14449            | 1.0              | 545       | 178874           | 41.5             | 675       | 105260           | 0.0              | 805       | 8790             | 0.0              | 935       | 8074             | 0.0              |
| 420       | 26000            | 3.0              | 550       | 193176           | 34.7             | 680       | 93637            | 0.0              | 810       | 7814             | 0.0              | 940       | 7823             | 0.0              |
| 425       | 45491            | 7.1              | 555       | 206008           | 27.8             | 685       | 83217            | 0.0              | 815       | 7533             | 0.0              | 945       | 8364             | 0.0              |
| 430       | 70707            | 14.9             | 560       | 220126           | 21.7             | 690       | 73671            | 0.0              | 820       | 7303             | 0.0              | 950       | 6763             | 0.0              |
| 435       | 98169            | 26.2             | 565       | 234383           | 16.5             | 695       | 64520            | 0.0              | 825       | 6745             | 0.0              | 955       | 4883             | 0.0              |
| 440       | 123846           | 41.4             | 570       | 248161           | 12.1             | 700       | 57442            | 0.0              | 830       | 7209             | 0.0              | 960       | 7488             | 0.0              |
| 445       | 139822           | 55.1             | 575       | 261970           | 8.7              | 705       | 51479            | 0.0              | 835       | 6674             | 0.0              | 965       | 9316             | 0.0              |
| 450       | 131679           | 60.7             | 580       | 272271           | 6.1              | 710       | 45940            | 0.0              | 840       | 6151             | 0.0              | 970       | 6857             | 0.0              |
| 455       | 99242            | 52.0             | 585       | 283822           | 4.2              | 715       | 41575            | 0.0              | 845       | 5371             | 0.0              | 975       | 4388             | 0.0              |
| 460       | 65216            | 38.4             | 590       | 291192           | 2.9              | 720       | 37753            | 0.0              | 850       | 6484             | 0.0              | 980       | 6095             | 0.0              |
| 465       | 44137            | 28.8             | 595       | 294651           | 1.9              | 725       | 33818            | 0.0              | 855       | 6614             | 0.0              | 985       | 7701             | 0.0              |
| 470       | 32002            | 22.9             | 600       | 297168           | 1.3              | 730       | 30414            | 0.0              | 860       | 5959             | 0.0              | 990       | 9045             | 0.0              |
| 475       | 24549            | 18.7             | 605       | 295658           | 0.8              | 735       | 26662            | 0.0              | 865       | 4768             | 0.0              | 995       | 6989             | 0.0              |
| 480       | 20801            | 16.7             | 610       | 287633           | 0.5              | 740       | 23848            | 0.0              | 870       | 5098             | 0.0              | 1000      | 7341             | 0.0              |
| 485       | 20656            | 17.0             | 615       | 279152           | 0.3              | 745       | 21851            | 0.0              | 875       | 5516             | 0.0              |           |                  |                  |

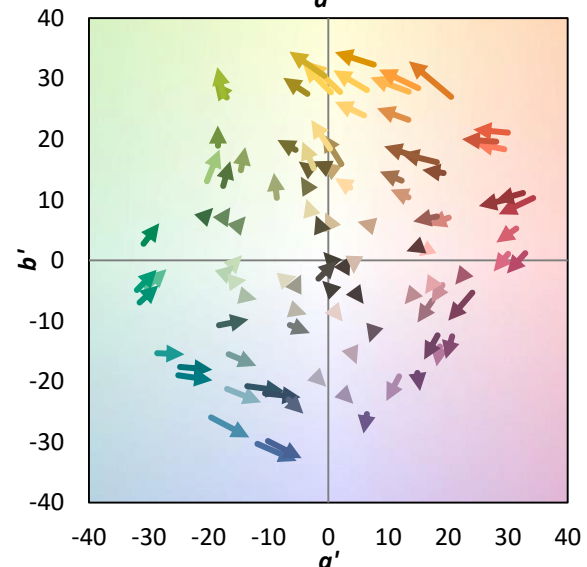
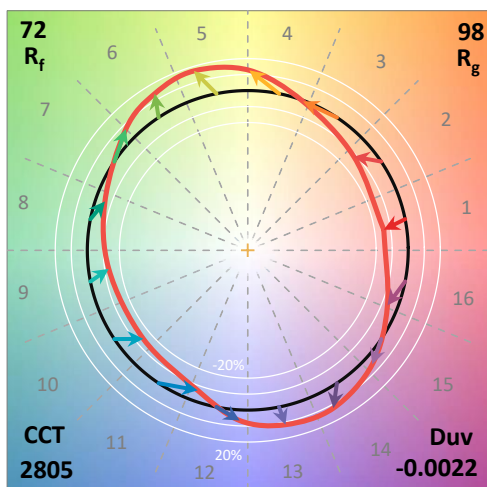
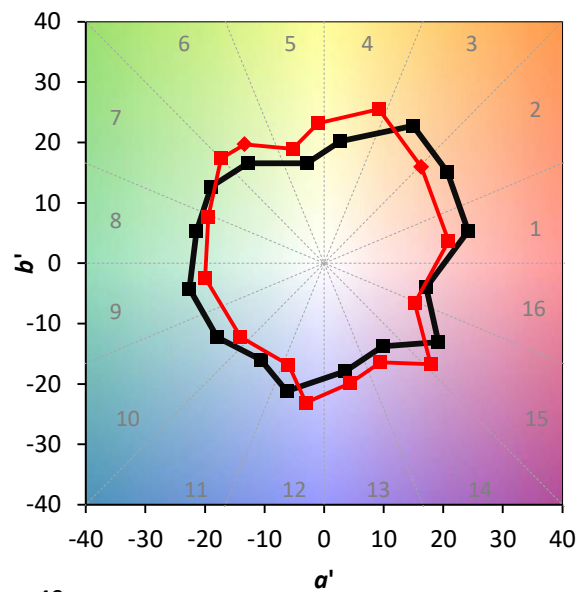
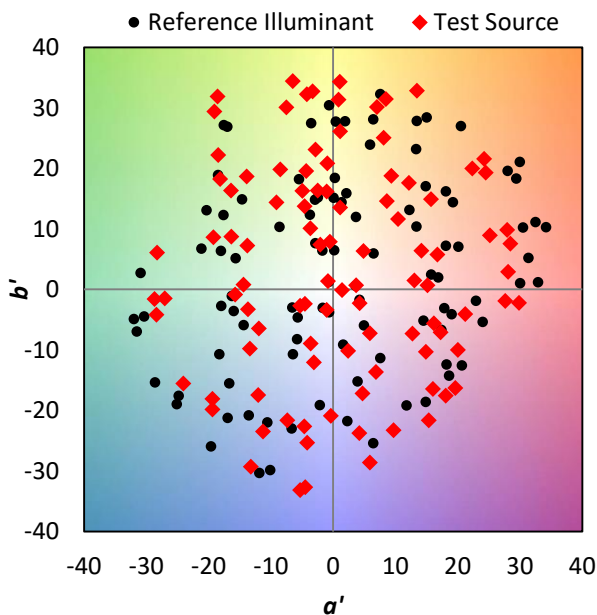
### Summary

$R_f = 71.9$   
 $R_g = 97.9$   
 CIE  $R_a = 72.4$   
 $R_g = -15.0$

### Spectral Power Distribution Comparison



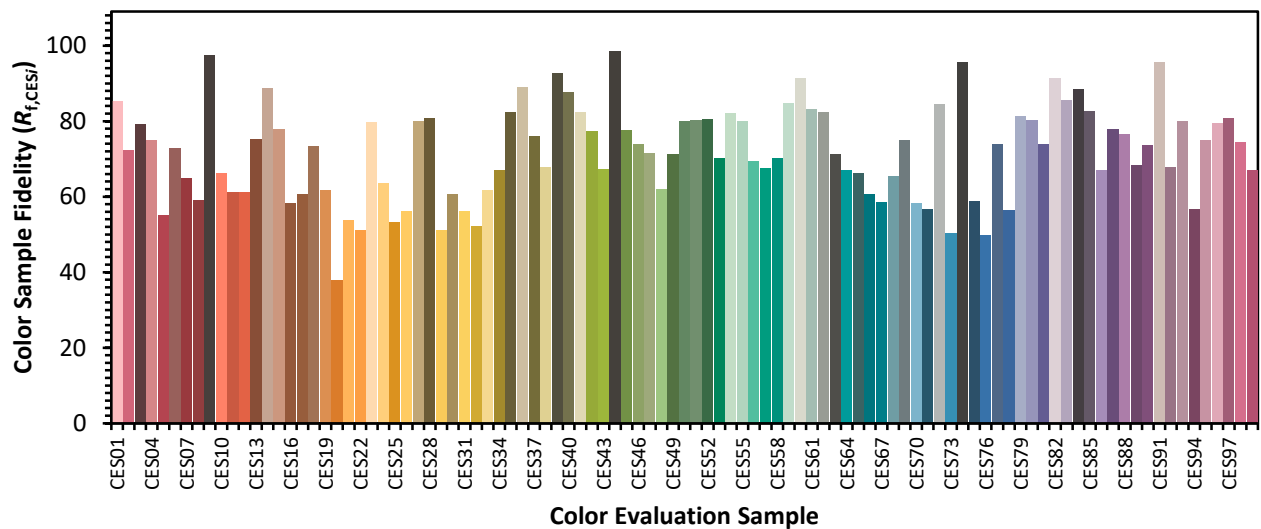
### Color Vector Graphics



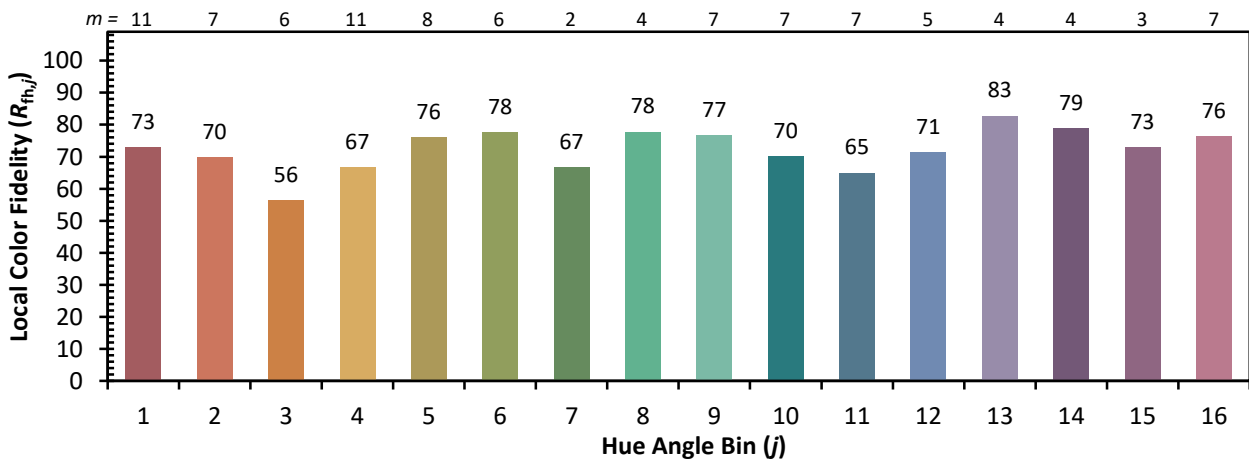
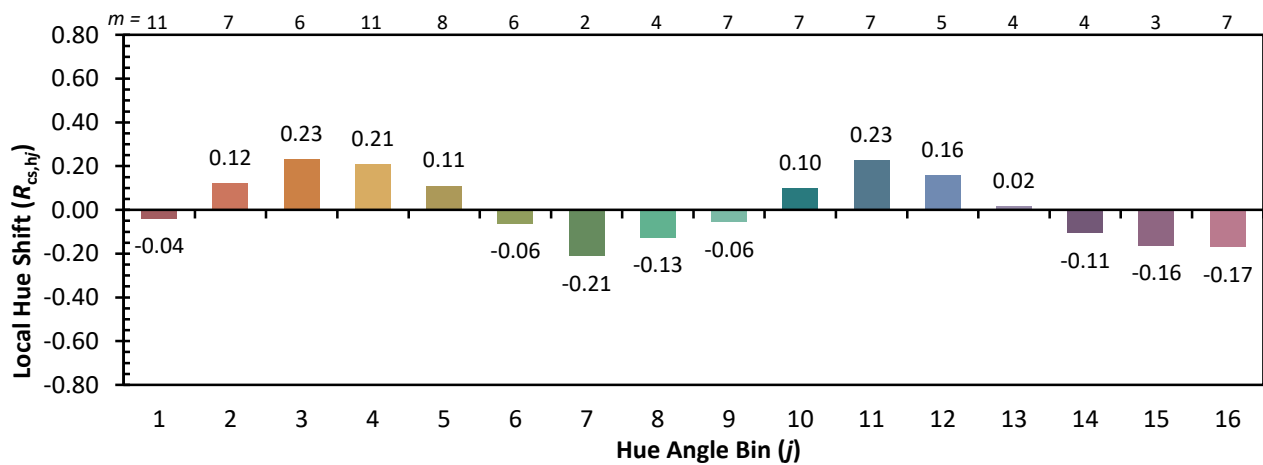
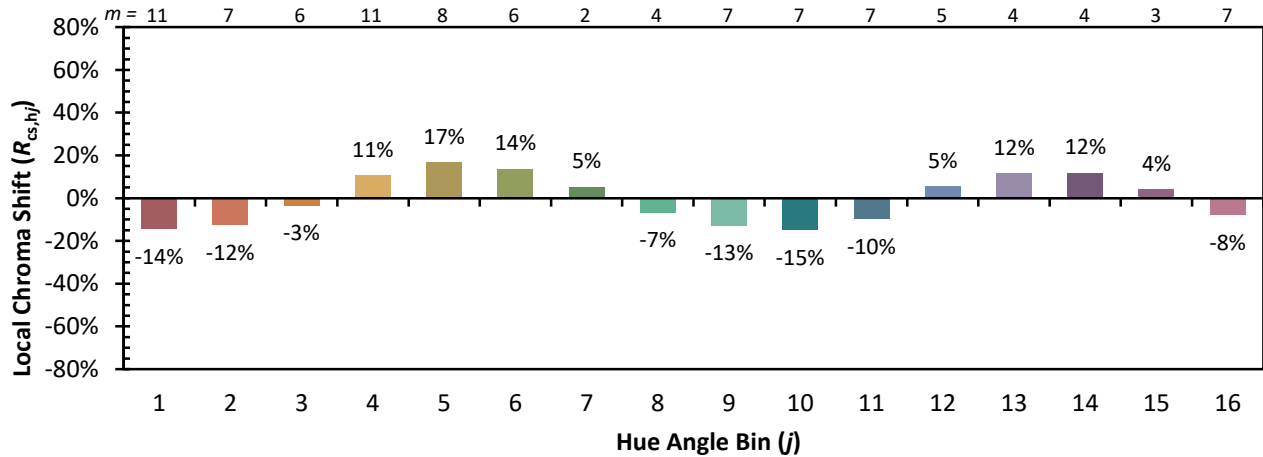


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

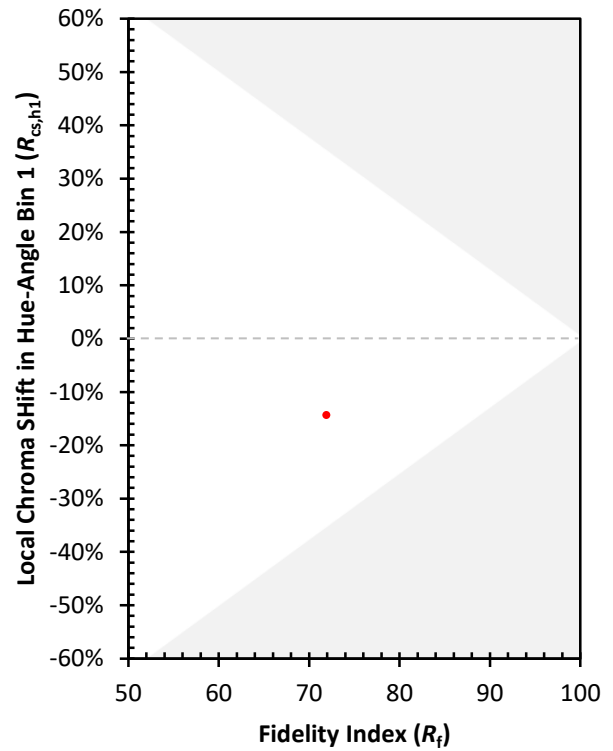
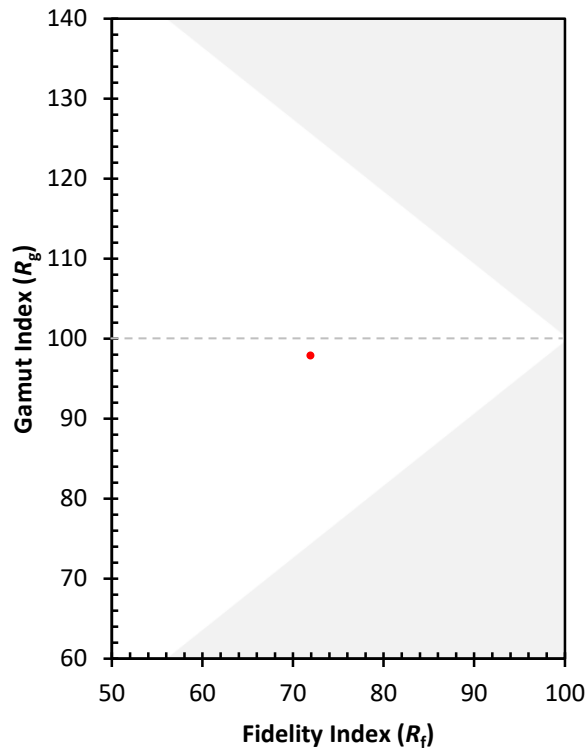
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 56 | CES51 = 80 | CES76 = 50 |
| CES02 = 63 | CES27 = 80 | CES52 = 81 | CES77 = 74 |
| CES03 = 31 | CES28 = 81 | CES53 = 70 | CES78 = 56 |
| CES04 = 71 | CES29 = 51 | CES54 = 82 | CES79 = 81 |
| CES05 = 50 | CES30 = 61 | CES55 = 80 | CES80 = 80 |
| CES06 = 52 | CES31 = 56 | CES56 = 69 | CES81 = 74 |
| CES07 = 42 | CES32 = 52 | CES57 = 67 | CES82 = 91 |
| CES08 = 41 | CES33 = 62 | CES58 = 70 | CES83 = 86 |
| CES09 = 29 | CES34 = 67 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 83 | CES60 = 91 | CES85 = 83 |
| CES11 = 60 | CES36 = 89 | CES61 = 83 | CES86 = 67 |
| CES12 = 66 | CES37 = 76 | CES62 = 82 | CES87 = 78 |
| CES13 = 43 | CES38 = 68 | CES63 = 71 | CES88 = 76 |
| CES14 = 74 | CES39 = 93 | CES64 = 67 | CES89 = 68 |
| CES15 = 71 | CES40 = 88 | CES65 = 66 | CES90 = 74 |
| CES16 = 48 | CES41 = 82 | CES66 = 61 | CES91 = 96 |
| CES17 = 50 | CES42 = 77 | CES67 = 58 | CES92 = 68 |
| CES18 = 57 | CES43 = 67 | CES68 = 65 | CES93 = 80 |
| CES19 = 73 | CES44 = 99 | CES69 = 75 | CES94 = 57 |
| CES20 = 67 | CES45 = 78 | CES70 = 58 | CES95 = 75 |
| CES21 = 88 | CES46 = 74 | CES71 = 57 | CES96 = 79 |
| CES22 = 80 | CES47 = 71 | CES72 = 85 | CES97 = 81 |
| CES23 = 92 | CES48 = 62 | CES73 = 50 | CES98 = 75 |
| CES24 = 91 | CES49 = 71 | CES74 = 96 | CES99 = 67 |
| CES25 = 73 | CES50 = 80 | CES75 = 59 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)