

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: P800795

Luminaire Tested: **ARCH-M-PA2-80-730-24VDC-T4W**

Issue Date: 5/19/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P800795  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1910-568-11)  
Test Lab: INNOVATION CENTER  
Issue Date: 5/19/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: ARCH-M-PA2-80-730-24VDC-T4W  
Description: ARCHEON-M ROADWAY AND AREA LUMINAIRE  
(2) 70 CRI, 3000K, 535mA LIGHT ENGINES WITH 16 LEDS AND TYPE IV WIDE OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11973 lumens  
Efficiency: N/A  
Efficacy: 149.7 lumens/watt  
Luminous Opening: Rectangular (W 0.75' x L: 1' x H: 0')  
IES Classification: Type IV - Medium  
BUG Rating: B2 - U0 - G3

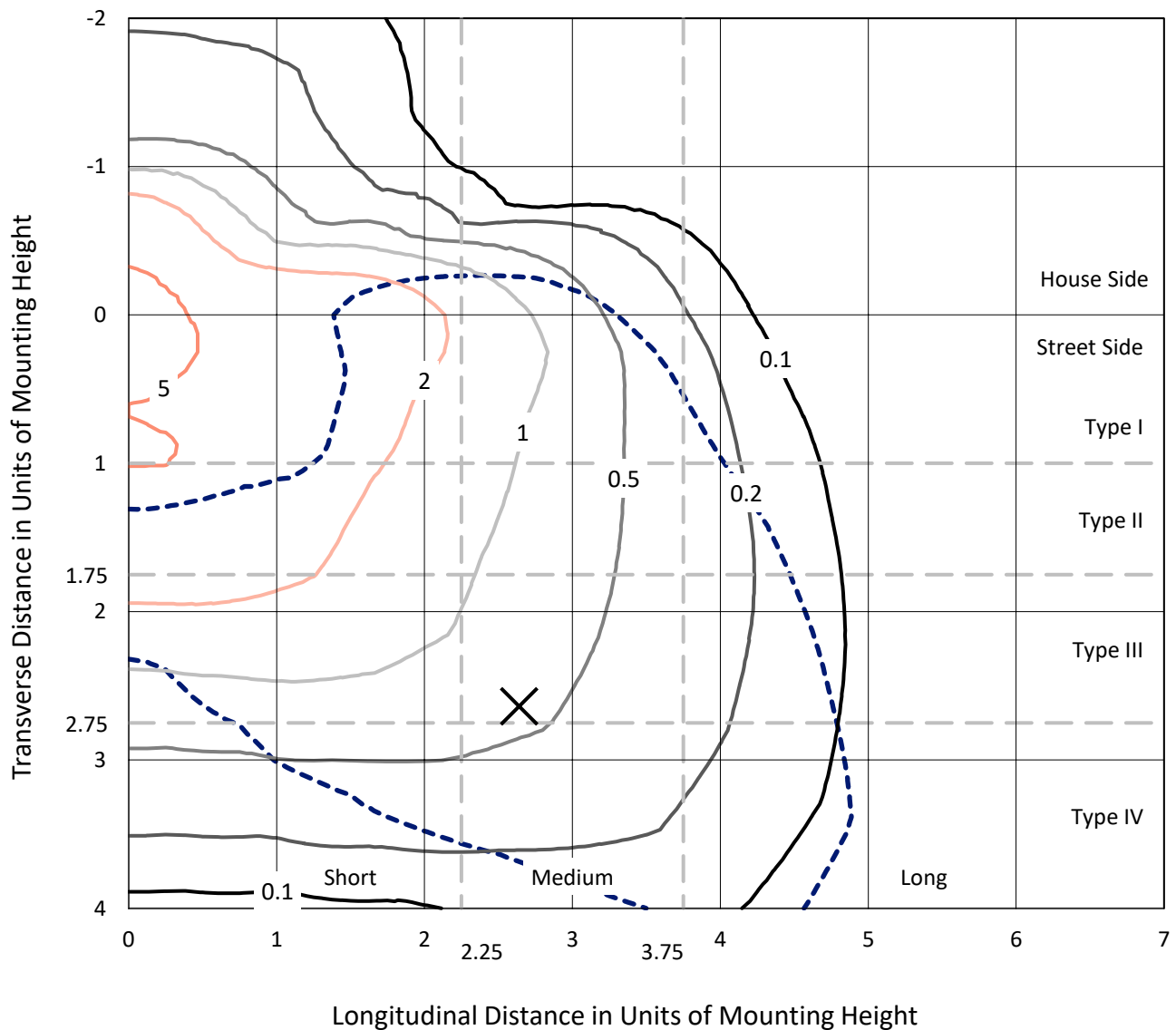
Input Watts (W): 80  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

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## Iso-Footcandle Lines of Horizontal Illumination

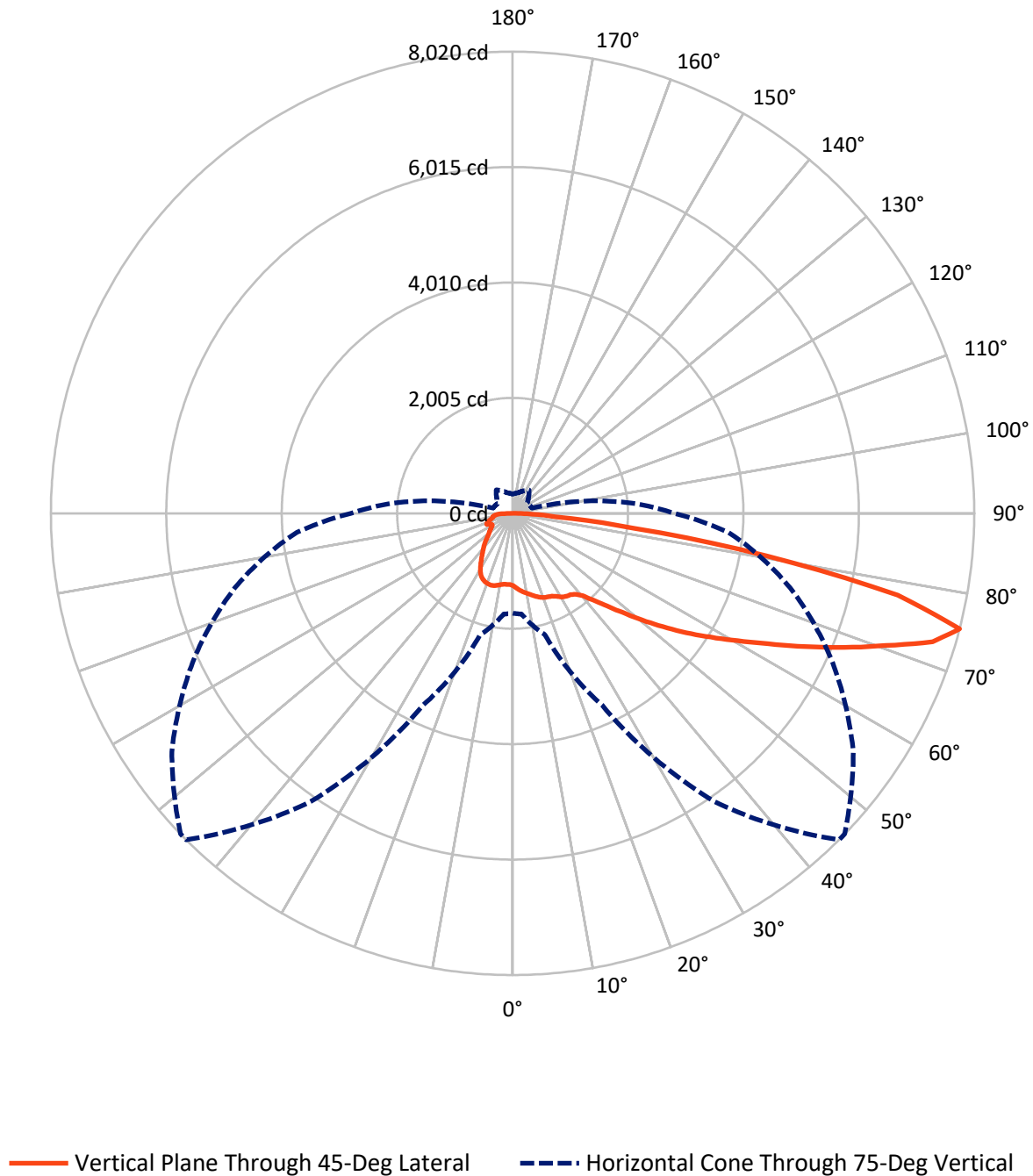
× Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 6.6 fc  
 Type IV - Medium - N/A

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## Luminous Intensity Polar Plot



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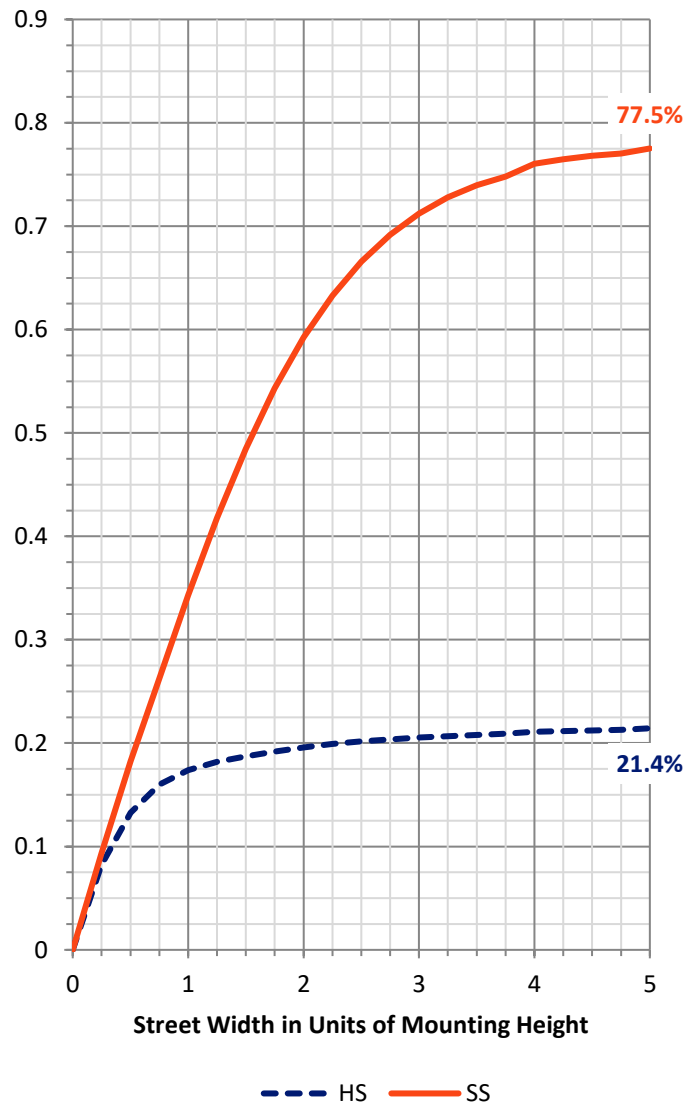
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2646.0   | 0.0    | 2646.0  |
|                    | % Fixture | 22.1     | 0.0    | 22.1    |
| <b>Street Side</b> | Lumens    | 9327.0   | 0.0    | 9327.0  |
|                    | % Fixture | 77.9     | 0.0    | 77.9    |
| <b>Total</b>       | Lumens    | 11973.0  | 0.0    | 11973.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 124.4   | 1.0       |
| 10°-20°   | 395.7   | 3.3       |
| 20°-30°   | 674.7   | 5.6       |
| 30°-40°   | 945.3   | 7.9       |
| 40°-50°   | 1388.8  | 11.6      |
| 50°-60°   | 2210.3  | 18.5      |
| 60°-70°   | 3144.2  | 26.3      |
| 70°-80°   | 2632.6  | 22.0      |
| 80°-90°   | 456.9   | 3.8       |
| 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°    | 11973.0 | 100.0     |
| 0°-180°   | 11973.0 | 100.0     |

**Coefficient of Utilization**



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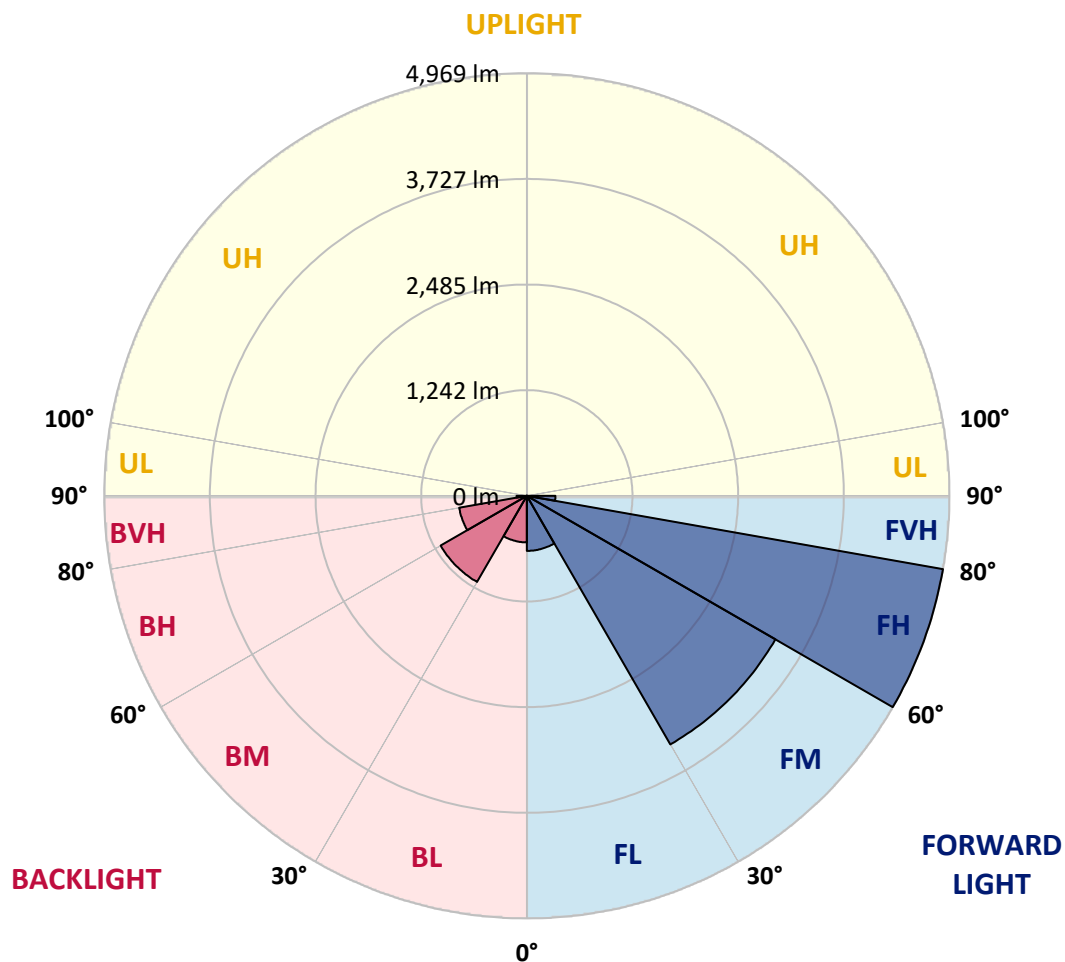
CATALOG NUMBER: ARCH-M-PA2-80-730-24VDC-T4W

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 647.2  | 5.4       |                         |      |         |
| FM   | (30°-60°)   | 3374.8 | 28.2      |                         |      |         |
| FH   | (60°-80°)   | 4969.1 | 41.5      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 335.9  | 2.8       |                         |      | G3/500  |
| BL   | (0°-30°)    | 547.6  | 4.6       | B2/1000                 |      |         |
| BM   | (30°-60°)   | 1169.6 | 9.8       | B2/2500                 |      |         |
| BH   | (60°-80°)   | 807.7  | 6.7       | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 121.0  | 1.0       |                         |      | G2/225  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G3**

Type IV Medium





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CATALOG NUMBER: ARCH-M-PA2-80-730-24VDC-T4W

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 46°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 |
| 2.5°  | 1329.4 | 1323.0 | 1319.8 | 1319.8 | 1307.0 | 1299.0 | 1297.4 | 1286.2 | 1276.6 | 1267.0 | 1259.0 |
| 5°    | 1406.2 | 1401.4 | 1391.8 | 1383.8 | 1366.2 | 1343.8 | 1340.6 | 1316.6 | 1292.6 | 1270.2 | 1251.0 |
| 7.5°  | 1476.6 | 1467.0 | 1455.8 | 1439.8 | 1411.0 | 1380.6 | 1375.8 | 1342.2 | 1308.6 | 1275.0 | 1249.4 |
| 10°   | 1535.8 | 1526.2 | 1510.2 | 1487.8 | 1451.0 | 1414.2 | 1409.4 | 1374.2 | 1339.0 | 1299.0 | 1262.2 |
| 12.5° | 1591.8 | 1583.8 | 1559.8 | 1529.4 | 1486.2 | 1452.6 | 1447.8 | 1417.4 | 1380.6 | 1335.8 | 1287.8 |
| 15°   | 1639.8 | 1631.8 | 1606.2 | 1571.0 | 1521.4 | 1495.8 | 1489.4 | 1460.6 | 1423.8 | 1375.8 | 1326.2 |
| 17.5° | 1663.8 | 1663.8 | 1636.6 | 1598.2 | 1551.8 | 1532.6 | 1527.8 | 1492.6 | 1459.0 | 1412.6 | 1363.0 |
| 20°   | 1671.8 | 1675.0 | 1655.8 | 1609.4 | 1569.4 | 1561.4 | 1556.6 | 1527.8 | 1489.4 | 1444.6 | 1398.2 |
| 22.5° | 1676.6 | 1683.0 | 1667.0 | 1614.2 | 1580.6 | 1575.8 | 1572.6 | 1553.4 | 1523.0 | 1479.8 | 1433.4 |
| 25°   | 1692.6 | 1692.6 | 1681.4 | 1622.2 | 1595.0 | 1593.4 | 1593.4 | 1582.2 | 1561.4 | 1524.6 | 1478.2 |
| 27.5° | 1716.6 | 1715.0 | 1700.6 | 1639.8 | 1627.0 | 1631.8 | 1630.2 | 1628.6 | 1614.2 | 1577.4 | 1527.8 |
| 30°   | 1756.6 | 1756.6 | 1740.6 | 1675.0 | 1667.0 | 1687.8 | 1689.4 | 1692.6 | 1670.2 | 1612.6 | 1572.6 |
| 32.5° | 1817.3 | 1811.0 | 1795.0 | 1710.2 | 1697.4 | 1716.6 | 1719.8 | 1718.2 | 1699.0 | 1644.6 | 1625.4 |
| 35°   | 2004.5 | 1990.1 | 1932.5 | 1788.6 | 1724.6 | 1735.8 | 1737.4 | 1745.4 | 1748.6 | 1705.4 | 1695.8 |
| 37.5° | 2332.5 | 2313.3 | 2225.3 | 1974.1 | 1811.0 | 1783.8 | 1782.2 | 1803.0 | 1820.5 | 1782.2 | 1782.2 |
| 40°   | 2689.2 | 2673.2 | 2622.0 | 2294.1 | 1970.9 | 1881.3 | 1874.9 | 1894.1 | 1916.5 | 1889.3 | 1897.3 |
| 42.5° | 2996.4 | 3009.2 | 3014.0 | 2633.2 | 2210.9 | 2063.7 | 2046.1 | 2018.9 | 2054.1 | 2030.1 | 2062.1 |
| 45°   | 3226.8 | 3220.4 | 3308.3 | 2980.4 | 2521.3 | 2292.5 | 2268.5 | 2194.9 | 2239.7 | 2238.1 | 2308.5 |
| 47.5° | 3471.5 | 3460.3 | 3497.1 | 3306.7 | 2874.8 | 2572.4 | 2535.7 | 2426.9 | 2494.1 | 2540.5 | 2657.2 |
| 50°   | 3703.5 | 3706.7 | 3719.5 | 3564.3 | 3258.8 | 2913.2 | 2866.8 | 2721.2 | 2817.2 | 2914.8 | 3079.6 |
| 52.5° | 4005.8 | 3983.5 | 3967.5 | 3865.1 | 3689.1 | 3268.4 | 3238.0 | 3071.6 | 3206.0 | 3321.1 | 3540.3 |
| 55°   | 4269.8 | 4255.4 | 4245.8 | 4241.0 | 4049.0 | 3660.3 | 3628.3 | 3455.5 | 3649.1 | 3730.7 | 4053.8 |
| 57.5° | 4551.4 | 4543.4 | 4594.6 | 4676.2 | 4599.4 | 4058.6 | 4025.0 | 3858.7 | 4074.6 | 4132.2 | 4610.6 |
| 60°   | 4757.7 | 4762.5 | 4903.3 | 5111.3 | 5058.5 | 4490.6 | 4450.6 | 4303.4 | 4489.0 | 4540.2 | 5167.3 |
| 62.5° | 4759.3 | 4807.3 | 5133.7 | 5506.4 | 5567.2 | 4988.1 | 4941.7 | 4781.7 | 4914.5 | 4914.5 | 5666.4 |
| 65°   | 4305.0 | 4359.4 | 5092.1 | 5604.0 | 6082.4 | 5580.0 | 5535.2 | 5284.1 | 5333.7 | 5266.5 | 6135.2 |
| 67.5° | 3852.3 | 3916.3 | 4605.8 | 5612.0 | 6443.9 | 6213.5 | 6160.8 | 5786.4 | 5701.6 | 5532.0 | 6463.1 |
| 70°   | 3551.5 | 3596.3 | 4172.2 | 5508.0 | 6661.5 | 6875.9 | 6835.9 | 6263.1 | 5991.2 | 5754.4 | 6394.3 |
| 72.5° | 2990.0 | 2974.0 | 3524.3 | 5013.7 | 6783.1 | 7627.8 | 7594.2 | 6781.5 | 6242.3 | 5648.8 | 5453.6 |
| 75°   | 1735.8 | 1755.0 | 2186.9 | 3673.1 | 6114.4 | 8019.7 | 8016.5 | 7224.6 | 6132.0 | 4989.7 | 3757.9 |
| 77.5° | 500.7  | 515.1  | 718.3  | 1614.2 | 3866.7 | 6840.7 | 7059.8 | 6607.1 | 5183.3 | 3556.3 | 1948.5 |
| 80°   | 219.2  | 230.4  | 312.0  | 537.5  | 1665.4 | 4468.2 | 4660.2 | 4468.2 | 3126.0 | 1631.8 | 764.7  |
| 82.5° | 129.6  | 137.6  | 203.2  | 332.8  | 798.3  | 2126.1 | 2385.3 | 2082.9 | 1348.6 | 692.7  | 316.8  |
| 85°   | 73.6   | 76.8   | 116.8  | 211.2  | 502.3  | 743.9  | 835.1  | 782.3  | 657.5  | 393.5  | 166.4  |
| 87.5° | 33.6   | 35.2   | 57.6   | 99.2   | 281.6  | 251.2  | 260.8  | 345.6  | 380.7  | 240.0  | 83.2   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



REPORT NUMBER: P800795

CATALOG NUMBER: ARCH-M-PA2-80-730-24VDC-T4W

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 | 1257.4 |
| 2.5°  | 1255.8 | 1251.0 | 1241.4 | 1238.2 | 1233.4 | 1235.0 | 1236.6 | 1236.6 | 1238.2 | 1233.4 | 1233.4 |
| 5°    | 1243.0 | 1235.0 | 1225.4 | 1225.4 | 1225.4 | 1238.2 | 1249.4 | 1255.8 | 1259.0 | 1259.0 | 1255.8 |
| 7.5°  | 1238.2 | 1228.6 | 1217.4 | 1220.6 | 1223.8 | 1239.8 | 1260.6 | 1281.4 | 1287.8 | 1287.8 | 1284.6 |
| 10°   | 1247.8 | 1238.2 | 1230.2 | 1235.0 | 1243.0 | 1255.8 | 1271.8 | 1291.0 | 1307.0 | 1308.6 | 1307.0 |
| 12.5° | 1270.2 | 1259.0 | 1251.0 | 1260.6 | 1270.2 | 1278.2 | 1286.2 | 1294.2 | 1315.0 | 1318.2 | 1318.2 |
| 15°   | 1307.0 | 1295.8 | 1286.2 | 1294.2 | 1297.4 | 1297.4 | 1297.4 | 1297.4 | 1318.2 | 1321.4 | 1321.4 |
| 17.5° | 1343.8 | 1334.2 | 1324.6 | 1326.2 | 1316.6 | 1303.8 | 1299.0 | 1297.4 | 1308.6 | 1318.2 | 1319.8 |
| 20°   | 1379.0 | 1371.0 | 1361.4 | 1345.4 | 1321.4 | 1297.4 | 1289.4 | 1289.4 | 1295.8 | 1310.2 | 1310.2 |
| 22.5° | 1417.4 | 1407.8 | 1391.8 | 1355.0 | 1315.0 | 1281.4 | 1273.4 | 1278.2 | 1286.2 | 1305.4 | 1303.8 |
| 25°   | 1460.6 | 1447.8 | 1420.6 | 1351.8 | 1294.2 | 1254.2 | 1255.8 | 1270.2 | 1284.6 | 1305.4 | 1305.4 |
| 27.5° | 1508.6 | 1491.0 | 1436.6 | 1326.2 | 1247.8 | 1209.4 | 1223.8 | 1257.4 | 1278.2 | 1300.6 | 1303.8 |
| 30°   | 1561.4 | 1545.4 | 1449.4 | 1281.4 | 1172.6 | 1137.4 | 1172.6 | 1227.0 | 1259.0 | 1279.8 | 1284.6 |
| 32.5° | 1625.4 | 1612.6 | 1460.6 | 1223.8 | 1075.1 | 1044.7 | 1095.8 | 1163.0 | 1214.2 | 1238.2 | 1243.0 |
| 35°   | 1705.4 | 1692.6 | 1475.0 | 1158.2 | 983.9  | 951.9  | 998.3  | 1067.1 | 1134.2 | 1164.6 | 1174.2 |
| 37.5° | 1809.4 | 1790.2 | 1487.8 | 1087.9 | 907.1  | 870.3  | 892.7  | 955.1  | 1015.9 | 1057.5 | 1068.7 |
| 40°   | 1942.1 | 1911.7 | 1499.0 | 1007.9 | 839.9  | 798.3  | 806.3  | 836.7  | 871.9  | 908.7  | 923.1  |
| 42.5° | 2129.3 | 2068.5 | 1500.6 | 923.1  | 771.1  | 732.7  | 729.5  | 739.1  | 739.1  | 739.1  | 743.9  |
| 45°   | 2390.1 | 2274.9 | 1503.8 | 843.1  | 700.7  | 660.7  | 651.1  | 647.9  | 623.9  | 577.5  | 574.3  |
| 47.5° | 2719.6 | 2545.2 | 1518.2 | 775.9  | 627.1  | 591.9  | 579.1  | 566.3  | 521.5  | 473.5  | 463.9  |
| 50°   | 3142.0 | 2858.8 | 1547.0 | 711.9  | 564.7  | 540.7  | 524.7  | 494.3  | 444.7  | 407.9  | 398.3  |
| 52.5° | 3628.3 | 3231.6 | 1574.2 | 644.7  | 518.3  | 502.3  | 483.1  | 446.3  | 393.5  | 371.1  | 367.9  |
| 55°   | 4186.6 | 3647.5 | 1628.6 | 585.5  | 478.3  | 467.1  | 449.5  | 414.3  | 374.3  | 358.4  | 356.8  |
| 57.5° | 4757.7 | 4113.0 | 1705.4 | 532.7  | 439.9  | 433.5  | 433.5  | 403.1  | 377.5  | 371.1  | 371.1  |
| 60°   | 5308.1 | 4513.0 | 1646.2 | 483.1  | 404.7  | 407.9  | 438.3  | 430.3  | 411.1  | 419.1  | 423.9  |
| 62.5° | 5735.2 | 4748.1 | 1335.8 | 443.1  | 379.1  | 407.9  | 486.3  | 486.3  | 463.9  | 460.7  | 460.7  |
| 65°   | 5917.6 | 4744.9 | 939.1  | 412.7  | 369.5  | 447.9  | 542.3  | 516.7  | 457.5  | 435.1  | 430.3  |
| 67.5° | 5871.2 | 4537.0 | 647.9  | 391.9  | 366.3  | 489.5  | 567.9  | 495.9  | 428.7  | 409.5  | 395.1  |
| 70°   | 5463.2 | 4097.0 | 499.1  | 372.7  | 361.6  | 471.9  | 559.9  | 471.9  | 406.3  | 388.7  | 375.9  |
| 72.5° | 4407.4 | 3285.9 | 414.3  | 353.6  | 342.4  | 436.7  | 532.7  | 449.5  | 388.7  | 369.5  | 356.8  |
| 75°   | 2810.8 | 2066.9 | 350.4  | 328.0  | 305.6  | 391.9  | 495.9  | 427.1  | 369.5  | 344.0  | 334.4  |
| 77.5° | 1351.8 | 891.1  | 305.6  | 297.6  | 275.2  | 363.2  | 459.1  | 398.3  | 344.0  | 323.2  | 316.8  |
| 80°   | 547.1  | 407.9  | 265.6  | 267.2  | 252.8  | 345.6  | 433.5  | 371.1  | 318.4  | 296.0  | 284.8  |
| 82.5° | 284.8  | 236.8  | 224.0  | 230.4  | 230.4  | 329.6  | 414.3  | 348.8  | 296.0  | 286.4  | 249.6  |
| 85°   | 153.6  | 147.2  | 172.8  | 185.6  | 200.0  | 297.6  | 385.5  | 324.8  | 270.4  | 232.0  | 224.0  |
| 87.5° | 75.2   | 96.0   | 97.6   | 112.0  | 139.2  | 238.4  | 324.8  | 272.0  | 225.6  | 187.2  | 184.0  |
| 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: SP1-2101-121-6

Luminaire Tested: IFLD-S-SA2E-730-U-T2

Test Date: 03/04/2021

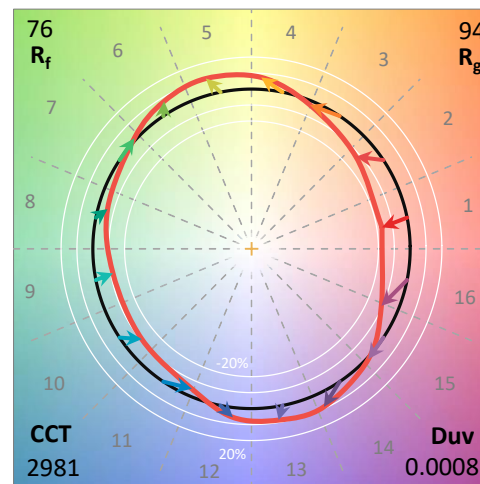
### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-6  
 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-730-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 2981   | CRI (Ra): | 72.3 |      |       |
| CIE u':                   | 0.2509 | R1:       | 68.0 | R9:  | -36.9 |
| CIE v':                   | 0.5228 | R2:       | 82.9 | R10: | 62.7  |
| Duv:                      | 0.0008 | R3:       | 95.0 | R11: | 65.3  |
| CIE x:                    | 0.4393 | R4:       | 68.7 | R12: | 58.3  |
| CIE y:                    | 0.4068 | R5:       | 68.4 | R13: | 70.8  |
| CIE z:                    | 0.1540 | R6:       | 77.8 | R14: | 97.4  |
| Peak Wavelength (nm):     | 598    | R7:       | 76.5 |      |       |
| Dominant Wavelength (nm): | 582    | R8:       | 41.3 |      |       |
| Purity:                   | 54.3   |           |      |      |       |
| Rf:                       | 76.2   |           |      |      |       |
| Rg:                       | 94.1   |           |      |      |       |



### Test Conditions

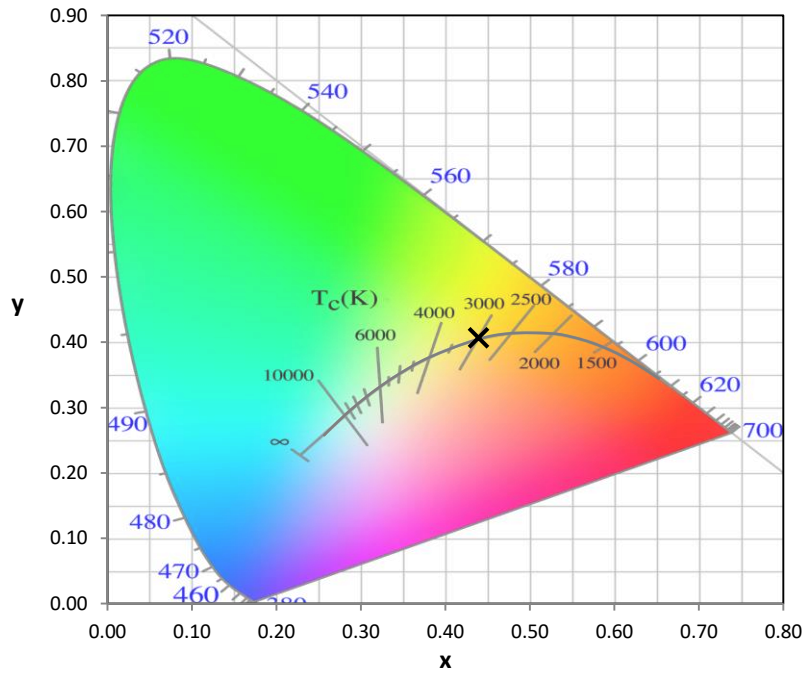
Stabilization Time: 64M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0/30%  
 Sphere Temperature (°C): 24.1

REPORT NUMBER: SP1-2101-121-6

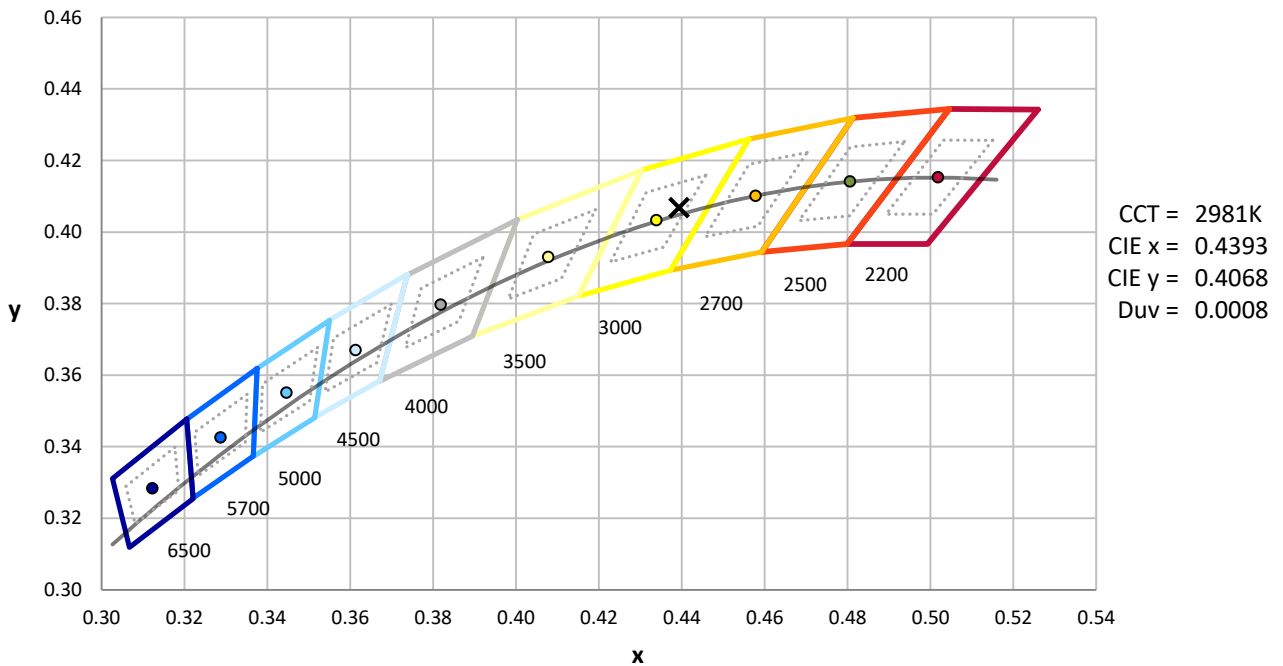
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



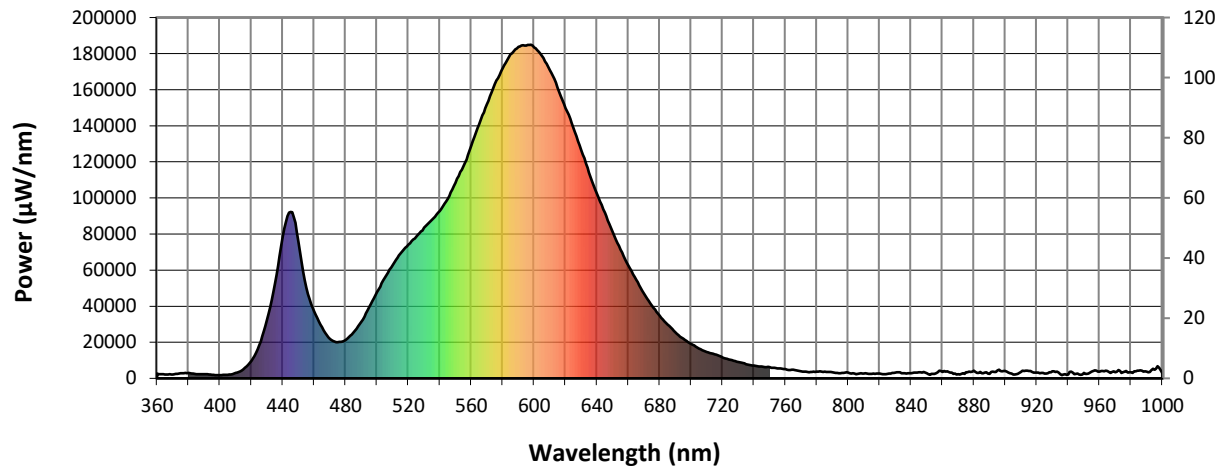
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2101-121-6

### Photopic Flux vs. Wavelength

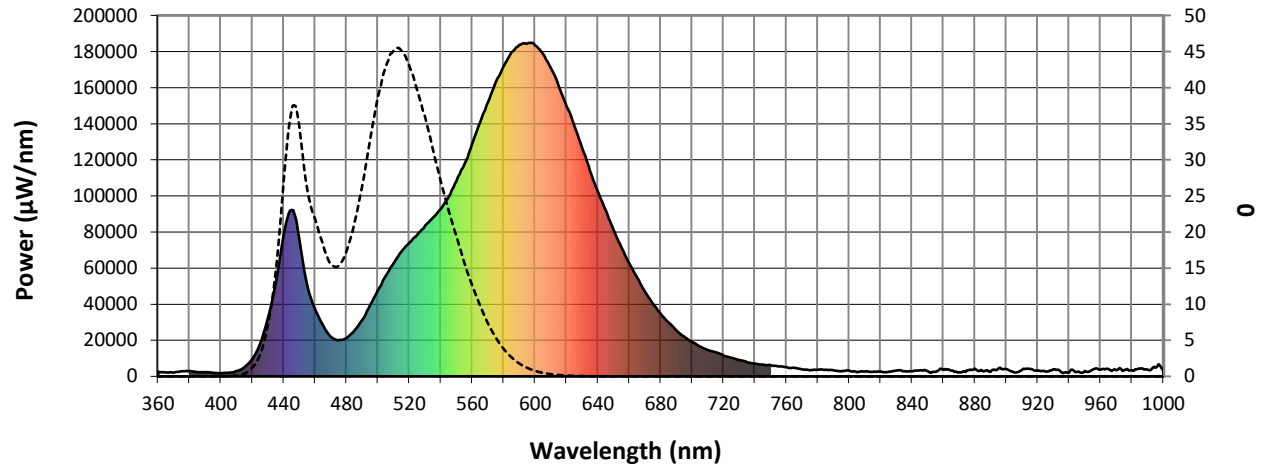


#####

| 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       | 2718             | 0.0              | 490       | 31388            | 4.5              | 620       | 149681           | 39.0             | 750       | 6127             | 0.0              | 880       | 4244             | 0.0              |
| 365       | 2104             | 0.0              | 495       | 39325            | 7.1              | 625       | 139059           | 30.7             | 755       | 5537             | 0.0              | 885       | 2890             | 0.0              |
| 370       | 2172             | 0.0              | 500       | 47816            | 10.5             | 630       | 126485           | 22.9             | 760       | 5066             | 0.0              | 890       | 2506             | 0.0              |
| 375       | 2770             | 0.0              | 505       | 55667            | 15.6             | 635       | 114115           | 17.1             | 765       | 4739             | 0.0              | 895       | 4522             | 0.0              |
| 380       | 2942             | 0.0              | 510       | 62766            | 21.6             | 640       | 102385           | 12.2             | 770       | 3828             | 0.0              | 900       | 4104             | 0.0              |
| 385       | 2372             | 0.0              | 515       | 69117            | 28.6             | 645       | 91895            | 8.8              | 775       | 3411             | 0.0              | 905       | 2090             | 0.0              |
| 390       | 2265             | 0.0              | 520       | 74088            | 35.9             | 650       | 81196            | 5.9              | 780       | 3776             | 0.0              | 910       | 3618             | 0.0              |
| 395       | 2023             | 0.0              | 525       | 78477            | 42.1             | 655       | 71232            | 4.1              | 785       | 3744             | 0.0              | 915       | 4126             | 0.0              |
| 400       | 1804             | 0.0              | 530       | 83585            | 49.2             | 660       | 62529            | 2.6              | 790       | 3446             | 0.0              | 920       | 3214             | 0.0              |
| 405       | 2029             | 0.0              | 535       | 87899            | 54.5             | 665       | 54721            | 1.7              | 795       | 2834             | 0.0              | 925       | 2696             | 0.0              |
| 410       | 2968             | 0.0              | 540       | 92850            | 60.5             | 670       | 47069            | 1.0              | 800       | 3213             | 0.0              | 930       | 3892             | 0.0              |
| 415       | 5120             | 0.0              | 545       | 99487            | 66.2             | 675       | 40348            | 0.7              | 805       | 2357             | 0.0              | 935       | 2376             | 0.0              |
| 420       | 9660             | 0.0              | 550       | 108411           | 73.7             | 680       | 34816            | 0.4              | 810       | 2616             | 0.0              | 940       | 2172             | 0.0              |
| 425       | 18379            | 0.1              | 555       | 117570           | 80.3             | 685       | 29890            | 0.3              | 815       | 2510             | 0.0              | 945       | 2531             | 0.0              |
| 430       | 32455            | 0.3              | 560       | 128783           | 87.5             | 690       | 25584            | 0.1              | 820       | 2684             | 0.0              | 950       | 3041             | 0.0              |
| 435       | 52561            | 0.6              | 565       | 140888           | 93.7             | 695       | 21945            | 0.1              | 825       | 2434             | 0.0              | 955       | 3777             | 0.0              |
| 440       | 78320            | 1.2              | 570       | 151789           | 98.7             | 700       | 19163            | 0.1              | 830       | 3163             | 0.0              | 960       | 3733             | 0.0              |
| 445       | 92278            | 1.9              | 575       | 163210           | 101.6            | 705       | 16563            | 0.0              | 835       | 2905             | 0.0              | 965       | 4082             | 0.0              |
| 450       | 75996            | 2.0              | 580       | 171760           | 102.1            | 710       | 14632            | 0.0              | 840       | 2917             | 0.0              | 970       | 3333             | 0.0              |
| 455       | 50251            | 1.7              | 585       | 179606           | 99.8             | 715       | 13282            | 0.0              | 845       | 3384             | 0.0              | 975       | 3396             | 0.0              |
| 460       | 37320            | 1.5              | 590       | 183682           | 95.0             | 720       | 11587            | 0.0              | 850       | 2926             | 0.0              | 980       | 3415             | 0.0              |
| 465       | 28321            | 1.5              | 595       | 184440           | 87.4             | 725       | 10271            | 0.0              | 855       | 2420             | 0.0              | 985       | 4316             | 0.0              |
| 470       | 21814            | 1.4              | 600       | 183413           | 79.0             | 730       | 9052             | 0.0              | 860       | 3637             | 0.0              | 990       | 3771             | 0.0              |
| 475       | 19996            | 1.6              | 605       | 178745           | 69.2             | 735       | 7872             | 0.0              | 865       | 3162             | 0.0              | 995       | 4745             | 0.0              |
| 480       | 21364            | 2.0              | 610       | 170867           | 58.7             | 740       | 7066             | 0.0              | 870       | 2292             | 0.0              | 1000      | 2768             | 0.0              |
| 485       | 25425            | 3.0              | 615       | 161088           | 48.6             | 745       | 6501             | 0.0              | 875       | 3357             | 0.0              |           |                  |                  |

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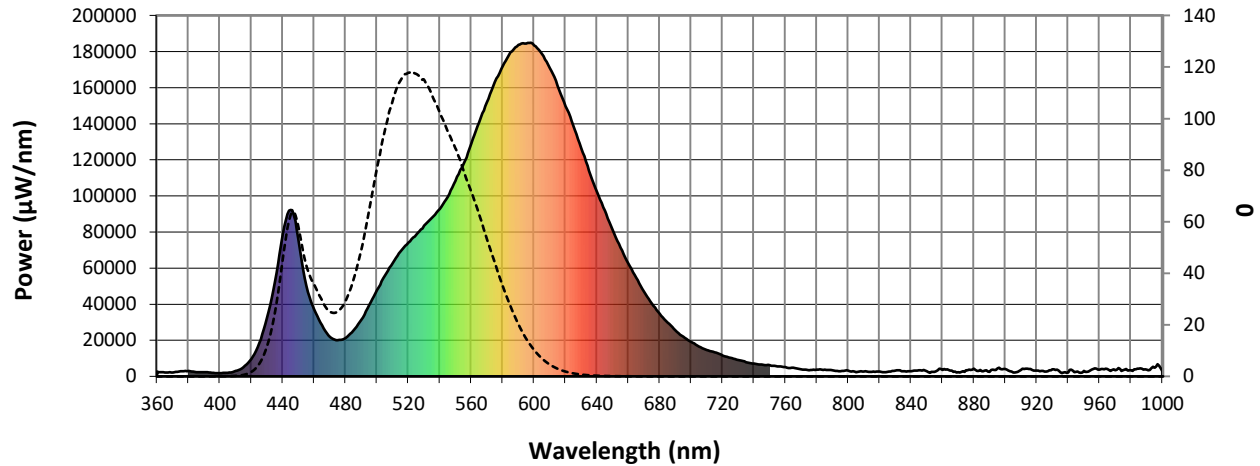
### Scotopic Flux vs. Wavelength


**Scotopic Lumens: 10635.1**
**S/P: 1.22**

| 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       | 2718             | 0.0              | 490       | 31388            | 48.3             | 620       | 149681           | 1.9              | 750       | 6127             | 0.0              | 880       | 4244             | 0.0              |
| 365       | 2104             | 0.0              | 495       | 39325            | 63.6             | 625       | 139059           | 1.2              | 755       | 5537             | 0.0              | 885       | 2890             | 0.0              |
| 370       | 2172             | 0.0              | 500       | 47816            | 80.0             | 630       | 126485           | 0.7              | 760       | 5066             | 0.0              | 890       | 2506             | 0.0              |
| 375       | 2770             | 0.0              | 505       | 55667            | 94.6             | 635       | 114115           | 0.4              | 765       | 4739             | 0.0              | 895       | 4522             | 0.0              |
| 380       | 2942             | 0.0              | 510       | 62766            | 106.4            | 640       | 102385           | 0.3              | 770       | 3828             | 0.0              | 900       | 4104             | 0.0              |
| 385       | 2372             | 0.0              | 515       | 69117            | 114.6            | 645       | 91895            | 0.2              | 775       | 3411             | 0.0              | 905       | 2090             | 0.0              |
| 390       | 2265             | 0.0              | 520       | 74088            | 117.8            | 650       | 81196            | 0.1              | 780       | 3776             | 0.0              | 910       | 3618             | 0.0              |
| 395       | 2023             | 0.0              | 525       | 78477            | 117.4            | 655       | 71232            | 0.1              | 785       | 3744             | 0.0              | 915       | 4126             | 0.0              |
| 400       | 1804             | 0.0              | 530       | 83585            | 115.2            | 660       | 62529            | 0.0              | 790       | 3446             | 0.0              | 920       | 3214             | 0.0              |
| 405       | 2029             | 0.1              | 535       | 87899            | 109.5            | 665       | 54721            | 0.0              | 795       | 2834             | 0.0              | 925       | 2696             | 0.0              |
| 410       | 2968             | 0.2              | 540       | 92850            | 102.6            | 670       | 47069            | 0.0              | 800       | 3213             | 0.0              | 930       | 3892             | 0.0              |
| 415       | 5120             | 0.5              | 545       | 99487            | 95.4             | 675       | 40348            | 0.0              | 805       | 2357             | 0.0              | 935       | 2376             | 0.0              |
| 420       | 9660             | 1.6              | 550       | 108411           | 88.6             | 680       | 34816            | 0.0              | 810       | 2616             | 0.0              | 940       | 2172             | 0.0              |
| 425       | 18379            | 4.5              | 555       | 117570           | 80.3             | 685       | 29890            | 0.0              | 815       | 2510             | 0.0              | 945       | 2531             | 0.0              |
| 430       | 32455            | 11.0             | 560       | 128783           | 72.0             | 690       | 25584            | 0.0              | 820       | 2684             | 0.0              | 950       | 3041             | 0.0              |
| 435       | 52561            | 23.5             | 565       | 140888           | 63.2             | 695       | 21945            | 0.0              | 825       | 2434             | 0.0              | 955       | 3777             | 0.0              |
| 440       | 78320            | 43.8             | 570       | 151789           | 53.6             | 700       | 19163            | 0.0              | 830       | 3163             | 0.0              | 960       | 3733             | 0.0              |
| 445       | 92278            | 61.8             | 575       | 163210           | 44.4             | 705       | 16563            | 0.0              | 835       | 2905             | 0.0              | 965       | 4082             | 0.0              |
| 450       | 75996            | 58.9             | 580       | 171760           | 35.4             | 710       | 14632            | 0.0              | 840       | 2917             | 0.0              | 970       | 3333             | 0.0              |
| 455       | 50251            | 43.9             | 585       | 179606           | 27.4             | 715       | 13282            | 0.0              | 845       | 3384             | 0.0              | 975       | 3396             | 0.0              |
| 460       | 37320            | 36.0             | 590       | 183682           | 20.5             | 720       | 11587            | 0.0              | 850       | 2926             | 0.0              | 980       | 3415             | 0.0              |
| 465       | 28321            | 29.9             | 595       | 184440           | 14.7             | 725       | 10271            | 0.0              | 855       | 2420             | 0.0              | 985       | 4316             | 0.0              |
| 470       | 21814            | 25.1             | 600       | 183413           | 10.3             | 730       | 9052             | 0.0              | 860       | 3637             | 0.0              | 990       | 3771             | 0.0              |
| 475       | 19996            | 25.0             | 605       | 178745           | 7.0              | 735       | 7872             | 0.0              | 865       | 3162             | 0.0              | 995       | 4745             | 0.0              |
| 480       | 21364            | 28.9             | 610       | 170867           | 4.6              | 740       | 7066             | 0.0              | 870       | 2292             | 0.0              | 1000      | 2768             | 0.0              |
| 485       | 25425            | 36.9             | 615       | 161088           | 3.0              | 745       | 6501             | 0.0              | 875       | 3357             | 0.0              |           |                  |                  |

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### Melanopic Flux vs. Wavelength



**Melanopic Lumens: 3860**

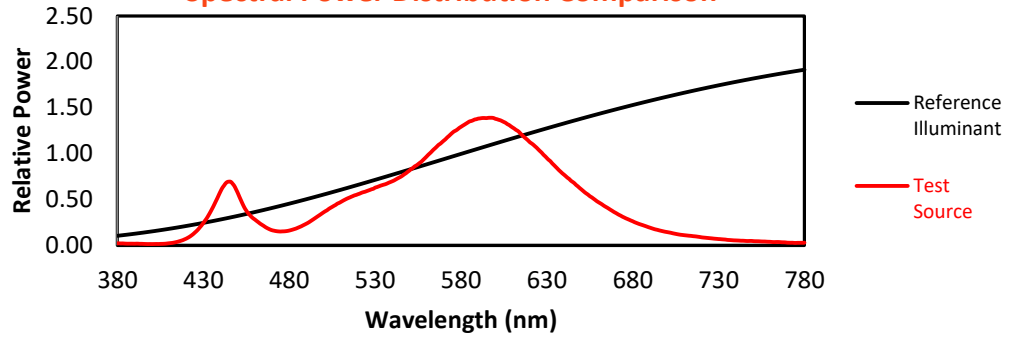
**M/P: 0.44**

| 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       | 2718             | 0.0              | 490       | 31388            | 26.1             | 620       | 149681           | 0.1              | 750       | 6127             | 0.0              | 880       | 4244             | 0.0              |
| 365       | 2104             | 0.0              | 495       | 39325            | 32.5             | 625       | 139059           | 0.1              | 755       | 5537             | 0.0              | 885       | 2890             | 0.0              |
| 370       | 2172             | 0.0              | 500       | 47816            | 38.4             | 630       | 126485           | 0.0              | 760       | 5066             | 0.0              | 890       | 2506             | 0.0              |
| 375       | 2770             | 0.0              | 505       | 55667            | 42.7             | 635       | 114115           | 0.0              | 765       | 4739             | 0.0              | 895       | 4522             | 0.0              |
| 380       | 2942             | 0.0              | 510       | 62766            | 45.1             | 640       | 102385           | 0.0              | 770       | 3828             | 0.0              | 900       | 4104             | 0.0              |
| 385       | 2372             | 0.0              | 515       | 69117            | 45.2             | 645       | 91895            | 0.0              | 775       | 3411             | 0.0              | 905       | 2090             | 0.0              |
| 390       | 2265             | 0.0              | 520       | 74088            | 43.1             | 650       | 81196            | 0.0              | 780       | 3776             | 0.0              | 910       | 3618             | 0.0              |
| 395       | 2023             | 0.0              | 525       | 78477            | 39.8             | 655       | 71232            | 0.0              | 785       | 3744             | 0.0              | 915       | 4126             | 0.0              |
| 400       | 1804             | 0.0              | 530       | 83585            | 36.1             | 660       | 62529            | 0.0              | 790       | 3446             | 0.0              | 920       | 3214             | 0.0              |
| 405       | 2029             | 0.0              | 535       | 87899            | 31.6             | 665       | 54721            | 0.0              | 795       | 2834             | 0.0              | 925       | 2696             | 0.0              |
| 410       | 2968             | 0.1              | 540       | 92850            | 27.2             | 670       | 47069            | 0.0              | 800       | 3213             | 0.0              | 930       | 3892             | 0.0              |
| 415       | 5120             | 0.3              | 545       | 99487            | 23.1             | 675       | 40348            | 0.0              | 805       | 2357             | 0.0              | 935       | 2376             | 0.0              |
| 420       | 9660             | 1.1              | 550       | 108411           | 19.5             | 680       | 34816            | 0.0              | 810       | 2616             | 0.0              | 940       | 2172             | 0.0              |
| 425       | 18379            | 2.9              | 555       | 117570           | 15.9             | 685       | 29890            | 0.0              | 815       | 2510             | 0.0              | 945       | 2531             | 0.0              |
| 430       | 32455            | 6.9              | 560       | 128783           | 12.7             | 690       | 25584            | 0.0              | 820       | 2684             | 0.0              | 950       | 3041             | 0.0              |
| 435       | 52561            | 14.0             | 565       | 140888           | 9.9              | 695       | 21945            | 0.0              | 825       | 2434             | 0.0              | 955       | 3777             | 0.0              |
| 440       | 78320            | 26.2             | 570       | 151789           | 7.4              | 700       | 19163            | 0.0              | 830       | 3163             | 0.0              | 960       | 3733             | 0.0              |
| 445       | 92278            | 36.4             | 575       | 163210           | 5.4              | 705       | 16563            | 0.0              | 835       | 2905             | 0.0              | 965       | 4082             | 0.0              |
| 450       | 75996            | 35.0             | 580       | 171760           | 3.8              | 710       | 14632            | 0.0              | 840       | 2917             | 0.0              | 970       | 3333             | 0.0              |
| 455       | 50251            | 26.3             | 585       | 179606           | 2.7              | 715       | 13282            | 0.0              | 845       | 3384             | 0.0              | 975       | 3396             | 0.0              |
| 460       | 37320            | 22.0             | 590       | 183682           | 1.8              | 720       | 11587            | 0.0              | 850       | 2926             | 0.0              | 980       | 3415             | 0.0              |
| 465       | 28321            | 18.5             | 595       | 184440           | 1.2              | 725       | 10271            | 0.0              | 855       | 2420             | 0.0              | 985       | 4316             | 0.0              |
| 470       | 21814            | 15.6             | 600       | 183413           | 0.8              | 730       | 9052             | 0.0              | 860       | 3637             | 0.0              | 990       | 3771             | 0.0              |
| 475       | 19996            | 15.3             | 605       | 178745           | 0.5              | 735       | 7872             | 0.0              | 865       | 3162             | 0.0              | 995       | 4745             | 0.0              |
| 480       | 21364            | 17.2             | 610       | 170867           | 0.3              | 740       | 7066             | 0.0              | 870       | 2292             | 0.0              | 1000      | 2768             | 0.0              |
| 485       | 25425            | 21.0             | 615       | 161088           | 0.2              | 745       | 6501             | 0.0              | 875       | 3357             | 0.0              |           |                  |                  |

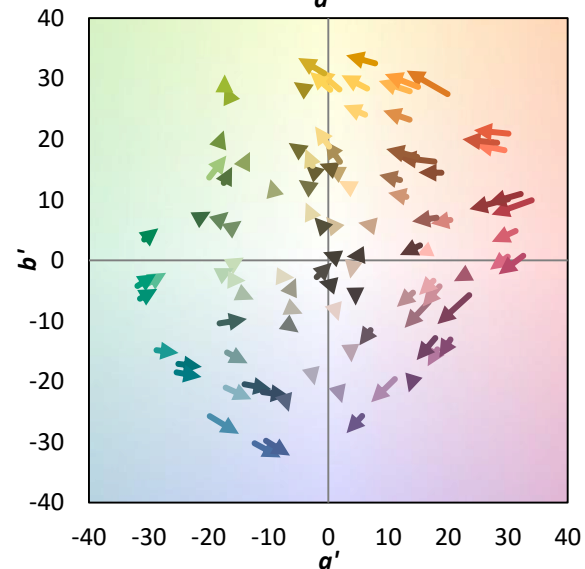
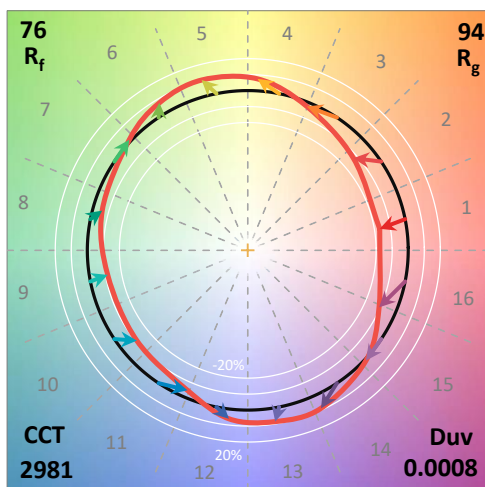
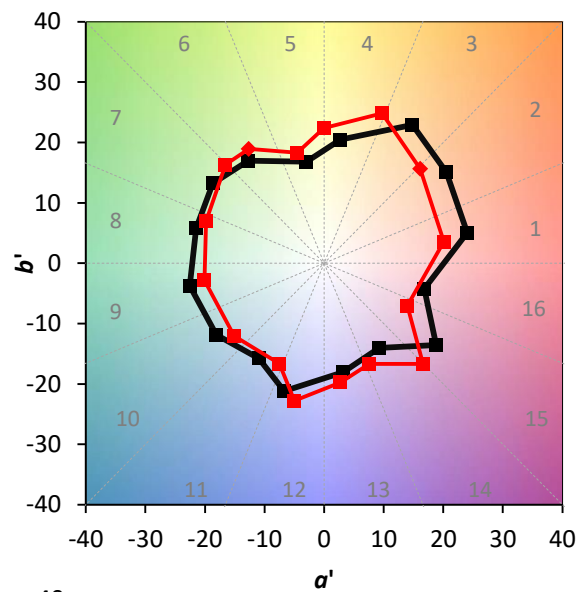
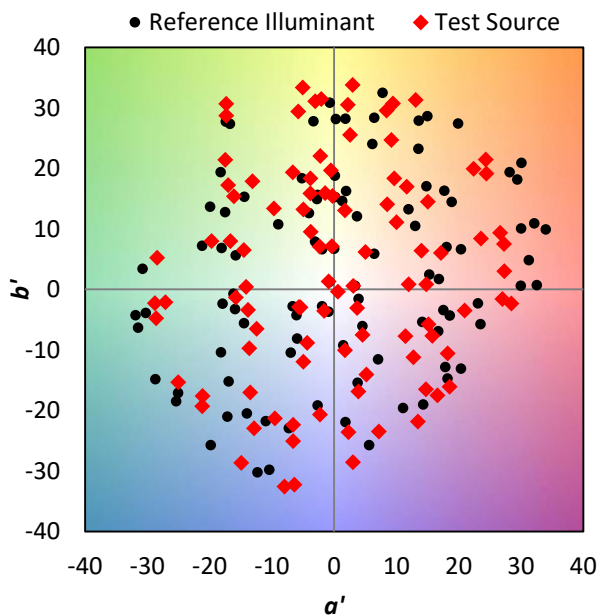
### Summary

$R_f = 76.2$   
 $R_g = 94.1$   
 CIE  $R_a = 72.3$   
 $R_g = -36.9$

### Spectral Power Distribution Comparison



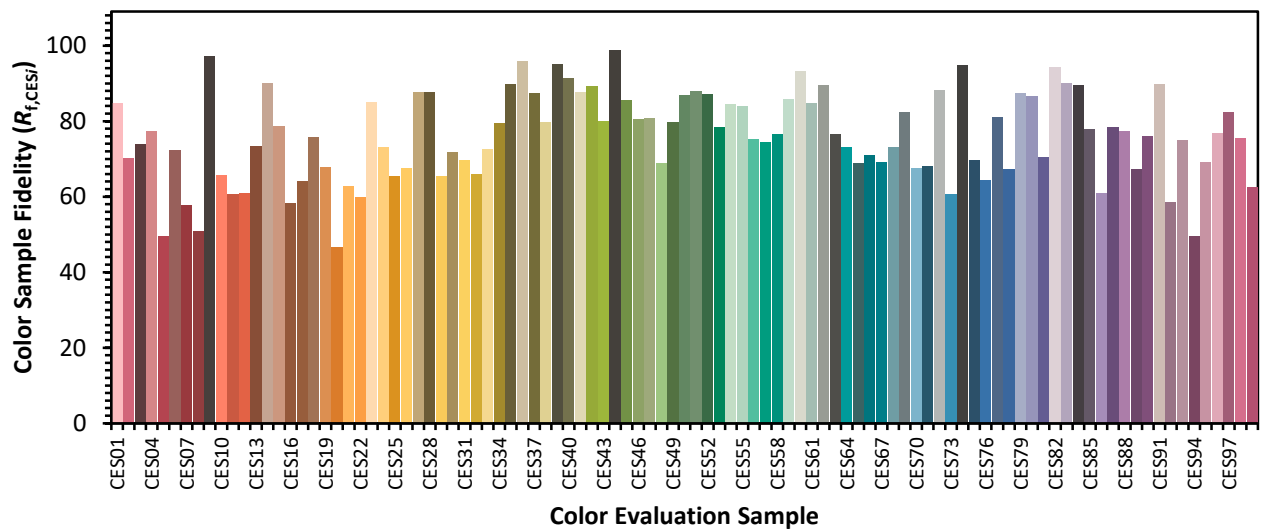
### Color Vector Graphics

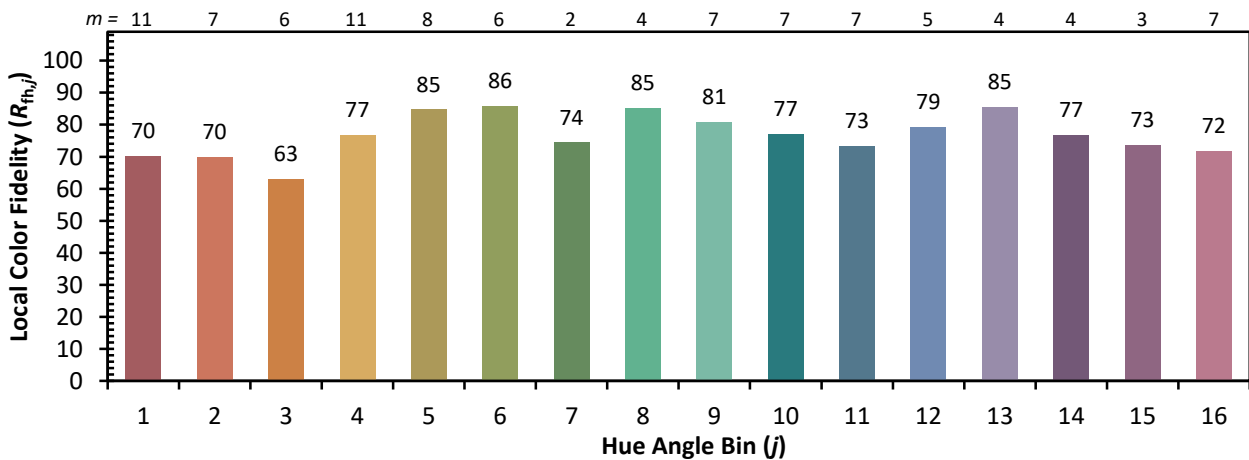
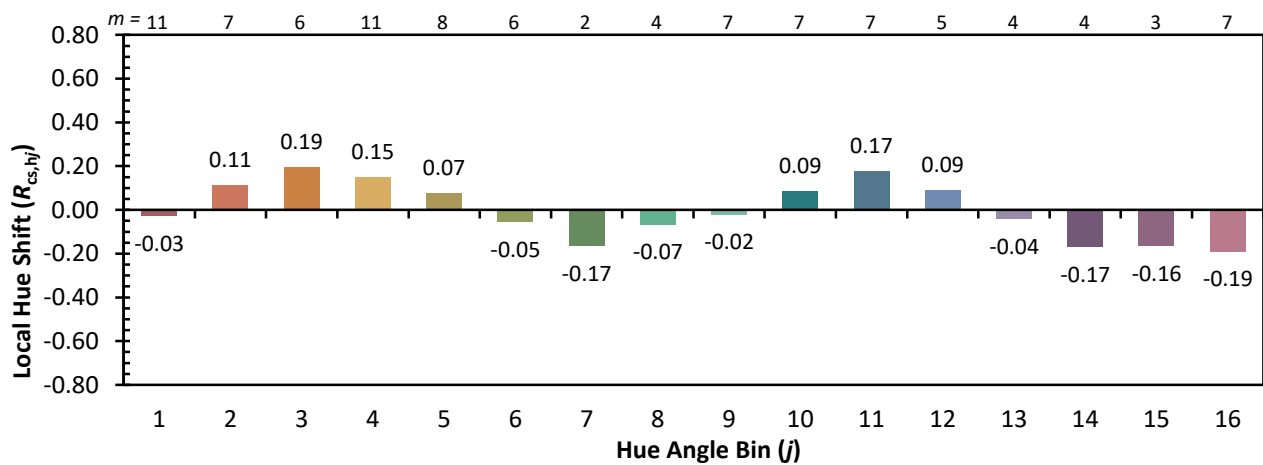
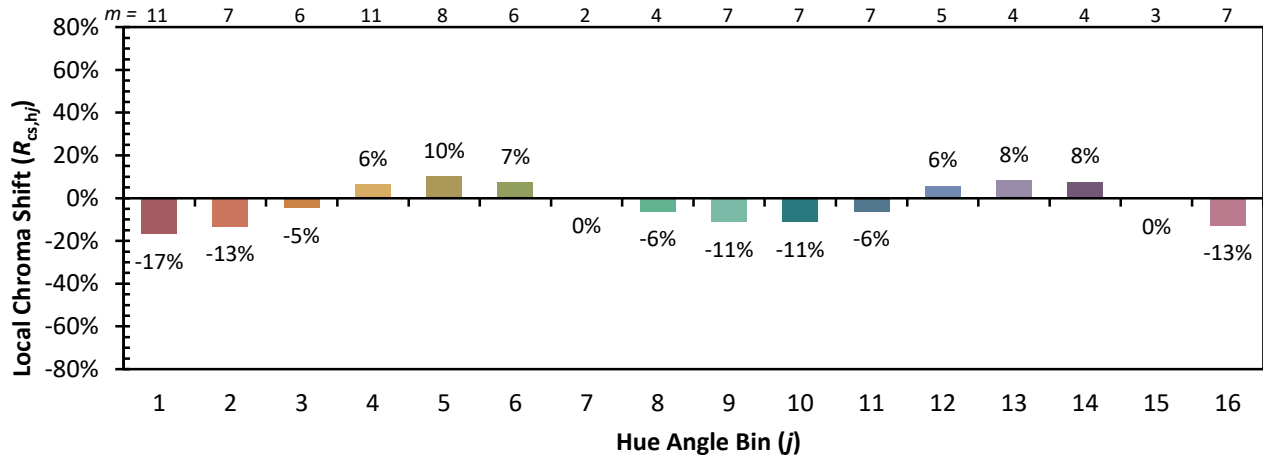




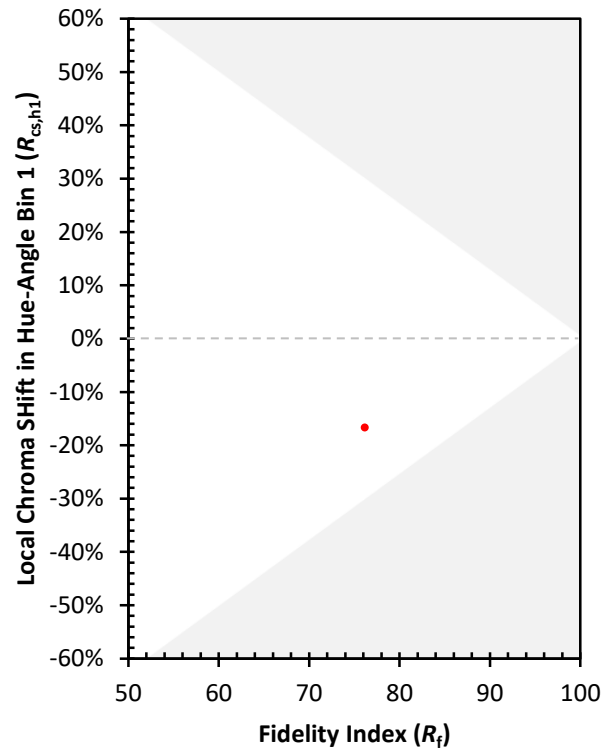
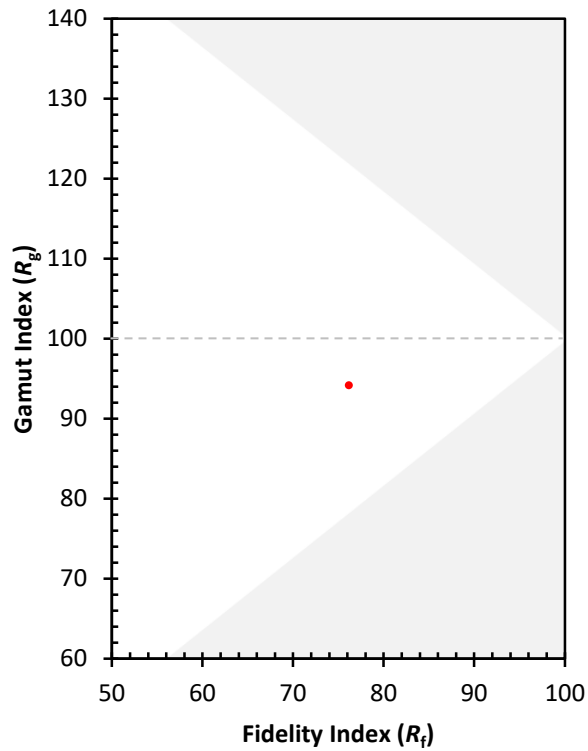
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 88 | CES76 = 64 |
| CES02 = 63 | CES27 = 88 | CES52 = 87 | CES77 = 81 |
| CES03 = 31 | CES28 = 88 | CES53 = 79 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 72 | CES55 = 84 | CES80 = 87 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 66 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 77 | CES83 = 90 |
| CES09 = 29 | CES34 = 80 | CES59 = 86 | CES84 = 90 |
| CES10 = 76 | CES35 = 90 | CES60 = 93 | CES85 = 78 |
| CES11 = 59 | CES36 = 96 | CES61 = 85 | CES86 = 61 |
| CES12 = 65 | CES37 = 88 | CES62 = 90 | CES87 = 79 |
| CES13 = 43 | CES38 = 80 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 73 | CES89 = 67 |
| CES15 = 71 | CES40 = 91 | CES65 = 69 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 71 | CES91 = 90 |
| CES17 = 50 | CES42 = 89 | CES67 = 69 | CES92 = 59 |
| CES18 = 56 | CES43 = 80 | CES68 = 73 | CES93 = 75 |
| CES19 = 73 | CES44 = 99 | CES69 = 82 | CES94 = 50 |
| CES20 = 66 | CES45 = 85 | CES70 = 68 | CES95 = 69 |
| CES21 = 87 | CES46 = 80 | CES71 = 68 | CES96 = 77 |
| CES22 = 79 | CES47 = 81 | CES72 = 88 | CES97 = 83 |
| CES23 = 92 | CES48 = 69 | CES73 = 61 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 63 |
| CES25 = 73 | CES50 = 87 | CES75 = 70 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)