

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: McGRAW-EDISON

Report Number: P385923

Luminaire Tested: **GWC-SA1C-730-U-T3**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P385923  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-14)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GWC-SA1C-730-U-T3  
Description: GALLEON WALL LUMINAIRE  
(1) 70 CRI, 3000K, 1050mA LIGHTSQUARE WITH 16 LEDS AND TYPE III OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6881 lumens  
Efficiency: N/A  
Efficacy: 116.6 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B1 - U0 - G2

Input Watts (W): 59  
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: 28.75 FT

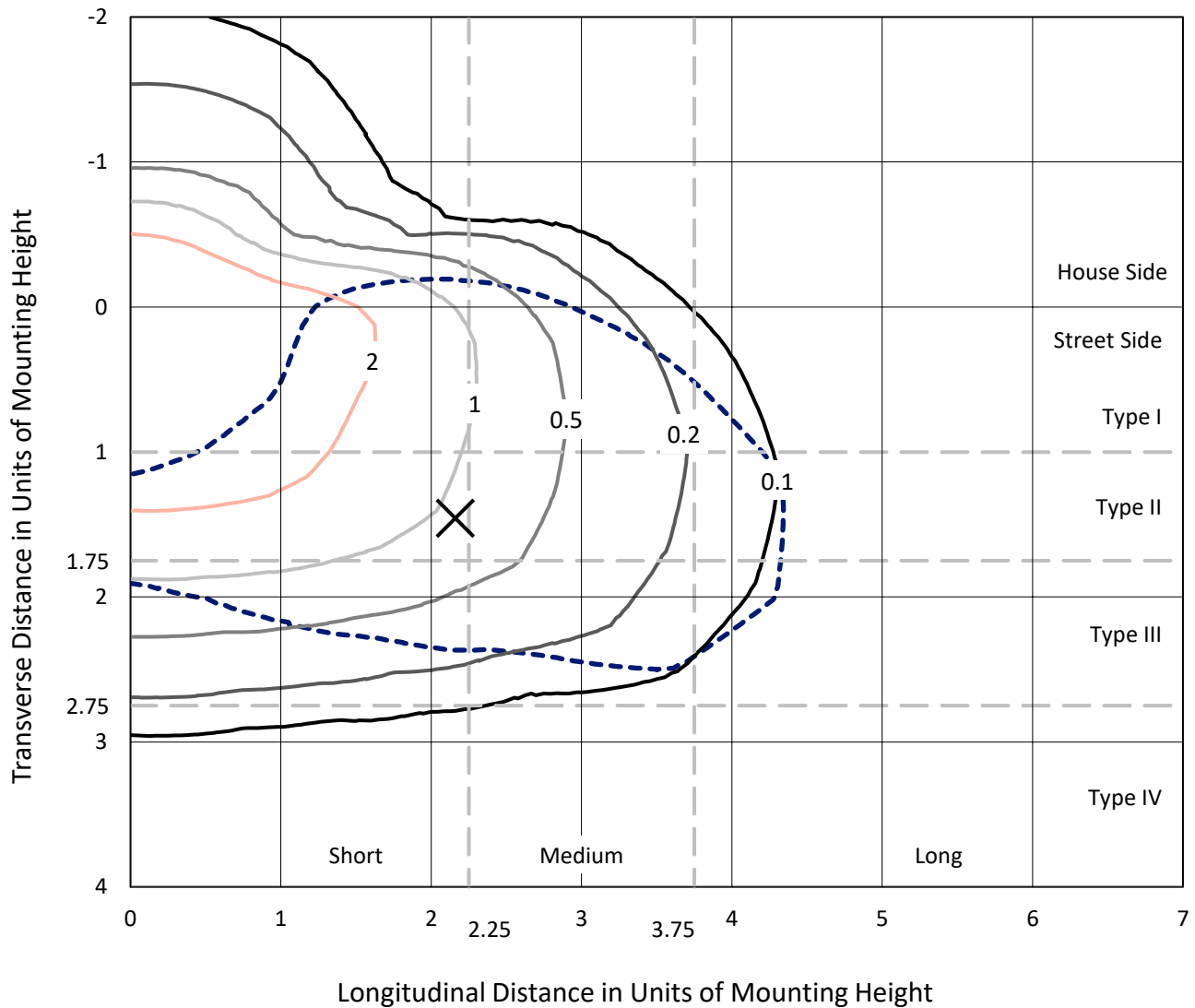


REPORT NUMBER: P385923

CATALOG NUMBER: GWC-SA1C-730-U-T3

## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd  
 - - - 1/2 Max cd

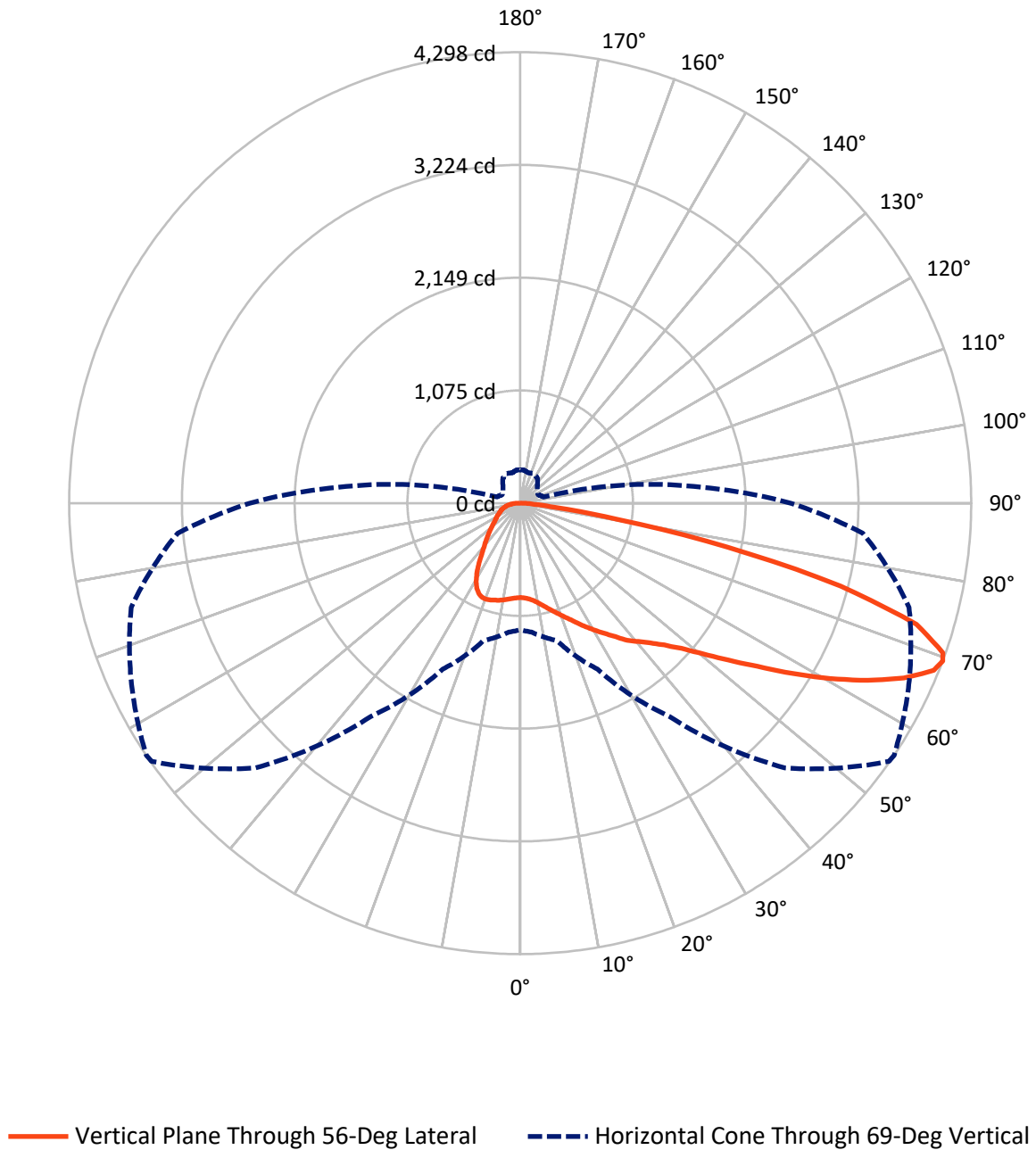


Based on 15 foot mounting height. Maximum calculated value = 4.3 fc  
 Type III - Short - N/A

REPORT NUMBER: P385923

CATALOG NUMBER: GWC-SA1C-730-U-T3

## Luminous Intensity Polar Plot



REPORT NUMBER: P385923

CATALOG NUMBER: GWC-SA1C-730-U-T3

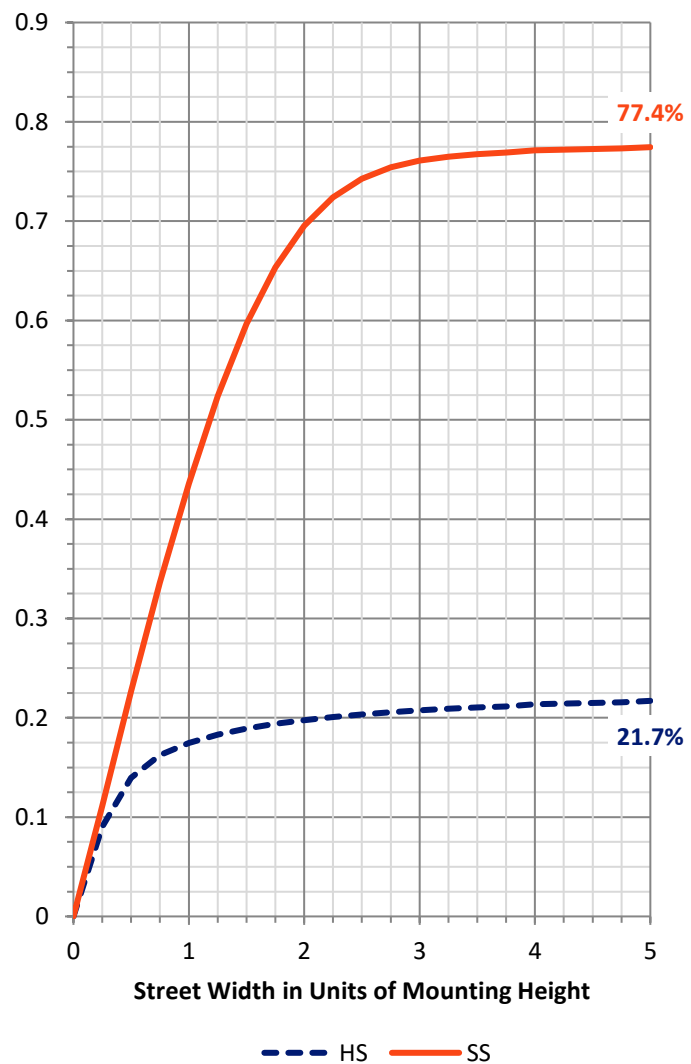
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1532.4   | 0.0    | 1532.4 |
|                    | % Fixture | 22.3     | 0.0    | 22.3   |
| <b>Street Side</b> | Lumens    | 5348.6   | 0.0    | 5348.6 |
|                    | % Fixture | 77.7     | 0.0    | 77.7   |
| <b>Total</b>       | Lumens    | 6881.0   | 0.0    | 6881.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 88.4   | 1.3       |
| 10°-20°   | 284.1  | 4.1       |
| 20°-30°   | 495.9  | 7.2       |
| 30°-40°   | 712.4  | 10.4      |
| 40°-50°   | 985.9  | 14.3      |
| 50°-60°   | 1444.5 | 21.0      |
| 60°-70°   | 1761.2 | 25.6      |
| 70°-80°   | 973.7  | 14.2      |
| 80°-90°   | 134.8  | 2.0       |
| 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°    | 6881.0 | 100.0     |
| 0°-180°   | 6881.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P385923

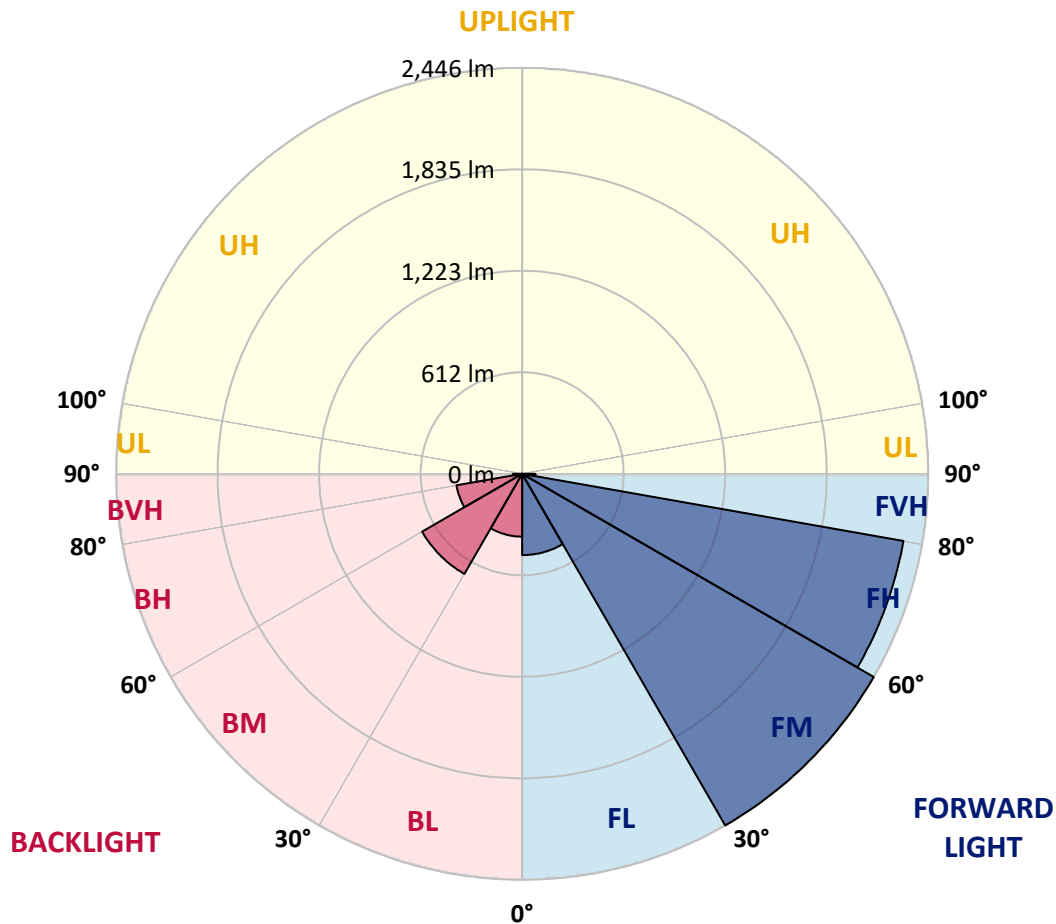
CATALOG NUMBER: GWC-SA1C-730-U-T3

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 489.7  | 7.1       |                         |      |         |
| FM   | (30°-60°)   | 2446.5 | 35.6      |                         |      |         |
| FH   | (60°-80°)   | 2333.0 | 33.9      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 79.4   | 1.2       |                         |      | G1/100  |
| BL   | (0°-30°)    | 378.7  | 5.5       | B1/500                  |      |         |
| BM   | (30°-60°)   | 696.4  | 10.1      | B1/1000                 |      |         |
| BH   | (60°-80°)   | 401.8  | 5.8       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 55.4   | 0.8       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G2**

Type III Short



REPORT NUMBER: P385923

CATALOG NUMBER: GWC-SA1C-730-U-T3

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 56°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 899.6  | 899.6  | 899.6  | 899.6  | 899.6  | 899.6  | 899.6  | 899.6  | 899.6  | 899.6  | 899.6  |
| 2.5°  | 905.3  | 906.2  | 905.5  | 907.4  | 905.3  | 906.7  | 905.5  | 905.5  | 904.8  | 902.7  | 900.3  |
| 5°    | 919.5  | 921.4  | 920.2  | 922.1  | 919.5  | 920.0  | 917.8  | 917.8  | 915.7  | 911.2  | 906.5  |
| 7.5°  | 941.8  | 943.9  | 943.0  | 944.9  | 941.3  | 941.3  | 938.5  | 938.2  | 934.0  | 926.6  | 921.2  |
| 10°   | 968.3  | 971.2  | 970.2  | 973.1  | 970.2  | 971.2  | 968.3  | 968.3  | 962.6  | 952.2  | 945.3  |
| 12.5° | 1007.0 | 1010.5 | 1007.9 | 1007.7 | 1006.5 | 1008.4 | 1006.0 | 1005.5 | 1000.3 | 986.1  | 976.6  |
| 15°   | 1058.6 | 1062.4 | 1057.0 | 1056.5 | 1049.9 | 1049.2 | 1049.2 | 1048.5 | 1045.1 | 1028.1 | 1012.4 |
| 17.5° | 1118.1 | 1119.3 | 1114.6 | 1107.0 | 1098.5 | 1093.0 | 1092.3 | 1094.2 | 1094.2 | 1074.3 | 1049.4 |
| 20°   | 1176.5 | 1178.6 | 1174.8 | 1166.3 | 1155.4 | 1147.3 | 1141.6 | 1145.4 | 1145.2 | 1121.5 | 1086.1 |
| 22.5° | 1240.0 | 1245.0 | 1239.3 | 1228.4 | 1215.6 | 1206.6 | 1196.6 | 1199.9 | 1200.2 | 1171.0 | 1122.2 |
| 25°   | 1322.2 | 1317.7 | 1314.2 | 1298.8 | 1280.5 | 1271.3 | 1262.0 | 1265.3 | 1264.4 | 1224.3 | 1159.4 |
| 27.5° | 1395.0 | 1396.0 | 1391.2 | 1374.9 | 1353.8 | 1333.4 | 1332.9 | 1335.0 | 1331.5 | 1279.8 | 1194.5 |
| 30°   | 1479.6 | 1480.1 | 1473.5 | 1458.8 | 1435.8 | 1409.5 | 1403.3 | 1406.9 | 1399.3 | 1332.4 | 1231.5 |
| 32.5° | 1563.8 | 1566.2 | 1558.8 | 1541.0 | 1522.5 | 1490.5 | 1478.2 | 1480.6 | 1461.6 | 1386.2 | 1269.6 |
| 35°   | 1637.5 | 1640.8 | 1638.5 | 1626.6 | 1606.5 | 1579.0 | 1564.3 | 1562.8 | 1539.4 | 1452.1 | 1320.1 |
| 37.5° | 1712.7 | 1715.7 | 1713.1 | 1703.2 | 1695.1 | 1666.0 | 1658.1 | 1658.1 | 1617.4 | 1519.5 | 1384.3 |
| 40°   | 1789.9 | 1794.7 | 1791.6 | 1777.8 | 1771.0 | 1757.7 | 1739.0 | 1734.5 | 1690.4 | 1600.3 | 1489.1 |
| 42.5° | 1861.8 | 1867.9 | 1880.2 | 1872.2 | 1858.2 | 1860.1 | 1822.4 | 1820.0 | 1787.8 | 1719.8 | 1620.7 |
| 45°   | 1963.7 | 1972.7 | 1993.6 | 1987.4 | 1984.5 | 1974.1 | 1929.3 | 1927.2 | 1914.9 | 1880.5 | 1784.0 |
| 47.5° | 2074.9 | 2087.2 | 2124.9 | 2126.1 | 2156.6 | 2137.0 | 2076.0 | 2068.7 | 2071.5 | 2073.0 | 1983.4 |
| 50°   | 2177.3 | 2190.8 | 2252.6 | 2281.8 | 2353.9 | 2358.1 | 2260.7 | 2254.1 | 2265.2 | 2297.9 | 2215.7 |
| 52.5° | 2259.0 | 2276.1 | 2353.4 | 2443.5 | 2567.0 | 2602.0 | 2488.0 | 2483.1 | 2491.3 | 2547.8 | 2478.3 |
| 55°   | 2319.0 | 2337.5 | 2421.7 | 2585.7 | 2782.9 | 2844.8 | 2749.7 | 2745.0 | 2750.2 | 2822.0 | 2763.9 |
| 57.5° | 2333.0 | 2337.5 | 2459.6 | 2681.5 | 2965.2 | 3113.8 | 3070.0 | 3060.5 | 3034.9 | 3097.5 | 3079.2 |
| 60°   | 2267.3 | 2285.4 | 2428.3 | 2715.1 | 3106.2 | 3379.1 | 3404.7 | 3392.8 | 3321.0 | 3372.2 | 3357.5 |
| 62.5° | 2134.1 | 2166.4 | 2311.4 | 2663.9 | 3161.5 | 3595.7 | 3733.0 | 3718.8 | 3595.0 | 3628.2 | 3557.6 |
| 65°   | 1916.5 | 1930.3 | 2082.7 | 2487.3 | 3091.3 | 3734.4 | 4025.7 | 4018.6 | 3862.9 | 3811.0 | 3594.6 |
| 67.5° | 1527.3 | 1553.1 | 1682.5 | 2118.2 | 2804.2 | 3718.1 | 4252.1 | 4251.4 | 4037.8 | 3878.8 | 3463.5 |
| 69°   | 1206.6 | 1233.3 | 1356.6 | 1744.9 | 2481.4 | 3568.5 | 4290.0 | 4298.3 | 4087.1 | 3837.5 | 3276.2 |
| 70°   | 961.9  | 993.0  | 1077.6 | 1469.7 | 2194.8 | 3371.3 | 4258.5 | 4273.5 | 4077.7 | 3769.5 | 3103.4 |
| 72.5° | 409.4  | 434.5  | 494.7  | 757.6  | 1337.6 | 2517.4 | 3893.7 | 3950.1 | 3857.9 | 3450.0 | 2564.8 |
| 75°   | 178.7  | 186.6  | 213.8  | 308.9  | 593.8  | 1370.1 | 3050.3 | 3154.6 | 3298.7 | 2916.1 | 1910.6 |
| 77.5° | 130.8  | 134.2  | 149.1  | 181.3  | 266.4  | 517.5  | 1961.6 | 2022.2 | 2379.0 | 2122.0 | 1172.0 |
| 80°   | 101.2  | 103.6  | 115.2  | 133.2  | 174.0  | 209.3  | 894.6  | 946.8  | 1337.6 | 1089.9 | 488.1  |
| 82.5° | 80.6   | 82.3   | 90.3   | 98.1   | 120.2  | 126.8  | 297.0  | 329.5  | 493.8  | 301.0  | 129.2  |
| 85°   | 74.9   | 76.8   | 79.6   | 71.6   | 77.0   | 74.4   | 128.5  | 134.4  | 149.1  | 118.3  | 54.0   |
| 87.5° | 33.9   | 40.1   | 78.9   | 55.7   | 41.0   | 32.7   | 52.6   | 55.0   | 61.9   | 62.1   | 23.9   |
| 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: P385923

CATALOG NUMBER: GWC-SA1C-730-U-T3

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 899.6  | 899.6  | 899.6  | 899.6  | 899.6 | 899.6 | 899.6 | 899.6 | 899.6 | 899.6 | 899.6 |
| 2.5°  | 901.7  | 901.0  | 902.2  | 899.4  | 902.9 | 902.7 | 901.5 | 902.0 | 904.3 | 904.1 | 904.3 |
| 5°    | 907.2  | 906.7  | 908.1  | 906.0  | 910.3 | 911.7 | 911.9 | 914.0 | 916.7 | 917.4 | 917.4 |
| 7.5°  | 920.9  | 920.9  | 921.6  | 918.8  | 921.6 | 921.4 | 920.2 | 922.3 | 925.0 | 925.2 | 925.0 |
| 10°   | 944.6  | 944.9  | 943.7  | 936.3  | 934.0 | 927.6 | 921.6 | 921.9 | 925.2 | 927.8 | 928.5 |
| 12.5° | 974.5  | 973.5  | 968.3  | 954.8  | 944.9 | 931.8 | 925.7 | 925.4 | 928.7 | 930.9 | 931.6 |
| 15°   | 1008.6 | 1006.0 | 992.5  | 970.5  | 952.9 | 940.1 | 930.2 | 927.8 | 925.9 | 923.5 | 923.8 |
| 17.5° | 1040.9 | 1034.9 | 1012.4 | 981.8  | 963.4 | 946.3 | 927.1 | 911.7 | 901.0 | 894.8 | 892.9 |
| 20°   | 1073.6 | 1062.0 | 1029.5 | 992.5  | 969.0 | 938.0 | 901.0 | 869.7 | 850.3 | 841.3 | 839.6 |
| 22.5° | 1103.4 | 1084.7 | 1045.4 | 1003.7 | 964.5 | 910.0 | 851.9 | 806.4 | 779.4 | 767.3 | 768.3 |
| 25°   | 1132.6 | 1106.5 | 1062.0 | 1011.5 | 941.8 | 860.7 | 783.7 | 727.7 | 696.4 | 682.9 | 682.5 |
| 27.5° | 1158.2 | 1128.6 | 1080.0 | 1005.1 | 899.4 | 790.5 | 702.8 | 648.3 | 622.2 | 610.6 | 608.7 |
| 30°   | 1187.6 | 1156.3 | 1103.9 | 980.7  | 837.2 | 709.5 | 623.9 | 585.5 | 567.0 | 555.4 | 553.3 |
| 32.5° | 1223.4 | 1194.0 | 1123.6 | 936.3  | 757.8 | 624.9 | 562.3 | 535.5 | 518.7 | 505.6 | 503.2 |
| 35°   | 1275.5 | 1243.8 | 1128.6 | 872.8  | 670.6 | 558.0 | 517.0 | 489.5 | 466.7 | 449.9 | 448.3 |
| 37.5° | 1341.0 | 1306.1 | 1117.2 | 790.5  | 586.0 | 514.6 | 479.3 | 445.4 | 415.8 | 392.1 | 388.3 |
| 40°   | 1435.3 | 1382.7 | 1085.7 | 695.7  | 523.6 | 481.2 | 442.6 | 403.9 | 367.2 | 339.4 | 334.0 |
| 42.5° | 1548.6 | 1472.5 | 1037.3 | 601.4  | 477.9 | 447.3 | 406.1 | 358.2 | 323.1 | 303.4 | 300.6 |
| 45°   | 1692.7 | 1565.9 | 970.2  | 518.9  | 432.8 | 413.4 | 366.7 | 322.6 | 300.8 | 286.4 | 284.0 |
| 47.5° | 1857.3 | 1670.7 | 899.8  | 451.8  | 394.7 | 381.6 | 335.2 | 306.7 | 289.4 | 278.1 | 275.9 |
| 50°   | 2059.5 | 1789.0 | 825.2  | 396.8  | 356.3 | 343.5 | 320.2 | 298.0 | 284.2 | 275.4 | 273.3 |
| 52.5° | 2287.5 | 1922.4 | 771.3  | 353.4  | 324.5 | 315.3 | 312.4 | 293.2 | 282.1 | 275.4 | 273.3 |
| 55°   | 2533.1 | 2058.3 | 713.3  | 316.9  | 297.0 | 299.6 | 307.2 | 293.7 | 286.1 | 278.1 | 275.0 |
| 57.5° | 2778.9 | 2198.6 | 648.6  | 286.1  | 275.2 | 288.0 | 303.7 | 294.6 | 288.2 | 280.4 | 277.6 |
| 60°   | 2973.3 | 2287.5 | 548.3  | 260.3  | 257.9 | 275.2 | 295.1 | 287.5 | 279.2 | 279.5 | 279.0 |
| 62.5° | 3064.0 | 2282.7 | 437.6  | 237.3  | 240.6 | 257.9 | 281.4 | 276.4 | 269.5 | 278.8 | 279.5 |
| 65°   | 3013.1 | 2169.0 | 340.6  | 216.4  | 222.1 | 239.9 | 267.2 | 270.9 | 273.3 | 291.1 | 293.5 |
| 67.5° | 2799.3 | 1947.6 | 263.8  | 198.2  | 205.3 | 227.6 | 268.6 | 295.1 | 298.2 | 316.9 | 316.7 |
| 69°   | 2578.1 | 1739.9 | 229.2  | 188.7  | 197.0 | 230.6 | 287.1 | 310.5 | 298.9 | 318.8 | 316.0 |
| 70°   | 2392.7 | 1575.6 | 210.7  | 182.3  | 193.2 | 236.1 | 299.4 | 310.3 | 295.4 | 312.4 | 307.7 |
| 72.5° | 1842.8 | 1133.6 | 178.7  | 170.4  | 180.4 | 225.9 | 302.9 | 303.4 | 287.1 | 290.4 | 282.3 |
| 75°   | 1263.9 | 716.4  | 156.0  | 154.3  | 161.0 | 203.6 | 291.6 | 289.9 | 265.5 | 260.7 | 254.1 |
| 77.5° | 696.9  | 363.9  | 132.5  | 138.9  | 143.4 | 180.4 | 265.0 | 262.6 | 242.5 | 232.5 | 230.2 |
| 80°   | 268.8  | 159.3  | 111.9  | 123.5  | 126.3 | 156.2 | 232.3 | 230.2 | 213.3 | 200.5 | 197.0 |
| 82.5° | 101.5  | 83.4   | 92.4   | 106.9  | 106.0 | 129.0 | 196.7 | 195.6 | 179.2 | 160.5 | 154.8 |
| 85°   | 46.9   | 50.0   | 73.2   | 88.2   | 81.3  | 95.5  | 157.4 | 159.5 | 139.6 | 117.3 | 117.3 |
| 87.5° | 19.9   | 28.0   | 51.9   | 66.6   | 54.8  | 64.5  | 115.4 | 110.2 | 101.2 | 70.2  | 65.9  |
| 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)

INVUE

Report Number: SP1-2012-088-7

Luminaire Tested: WIS-SA-730-2A-U-SL3-HSS

Test Date: 01/20/2021

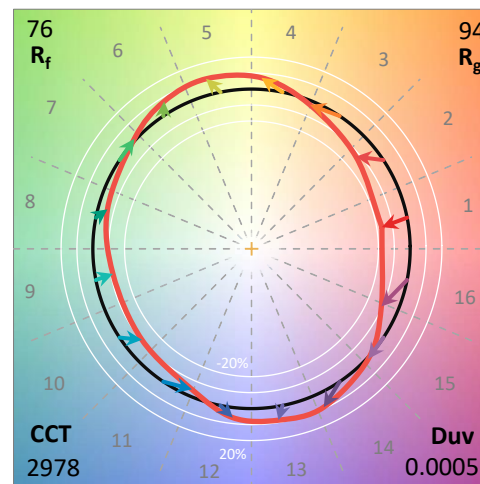
### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2012-088-7  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 01/20/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: INVUE  
 Catalog Number: **WIS-SA-730-2A-U-SL3-HSS**  
 Description: INVUE WALL PACK

SHIELD

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 2978   | CRI (Ra): | 72.4 |      |       |
| CIE u':                   | 0.2511 | R1:       | 68.2 | R9:  | -36.8 |
| CIE v':                   | 0.5225 | R2:       | 83.1 | R10: | 63.2  |
| Duv:                      | 0.0005 | R3:       | 94.9 | R11: | 65.5  |
| CIE x:                    | 0.4391 | R4:       | 68.7 | R12: | 58.5  |
| CIE y:                    | 0.4060 | R5:       | 68.6 | R13: | 71.0  |
| CIE z:                    | 0.1549 | R6:       | 78.2 | R14: | 97.4  |
| Peak Wavelength (nm):     | 596    | R7:       | 76.3 |      |       |
| Dominant Wavelength (nm): | 582    | R8:       | 41.2 |      |       |
| Purity:                   | 54     |           |      |      |       |
|                           |        |           |      |      |       |
| Rf:                       | 76.2   |           |      |      |       |
| Rg:                       | 94.2   |           |      |      |       |



### Test Conditions

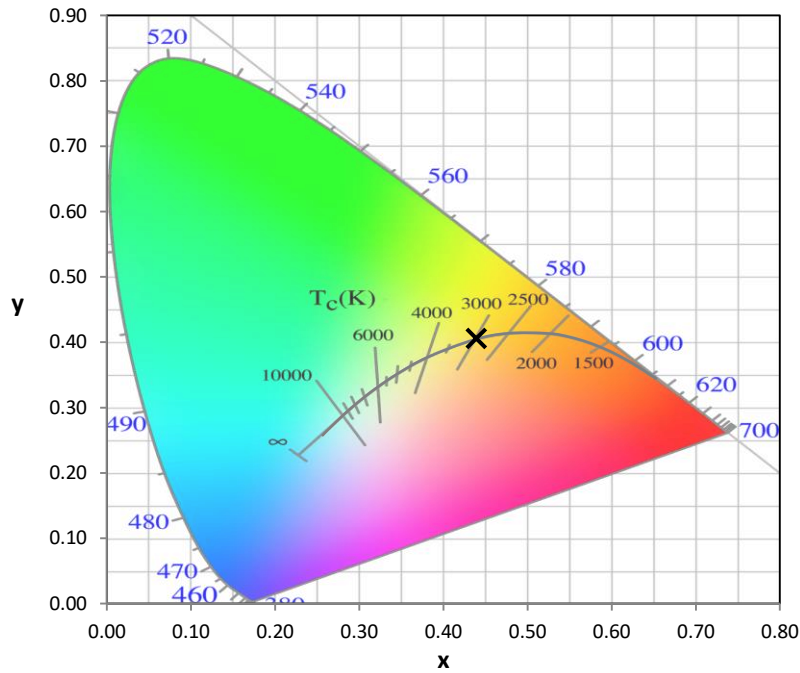
Stabilization Time: 82M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.6/28%  
 Sphere Temperature (°C): 25.5

REPORT NUMBER: SP1-2012-088-7

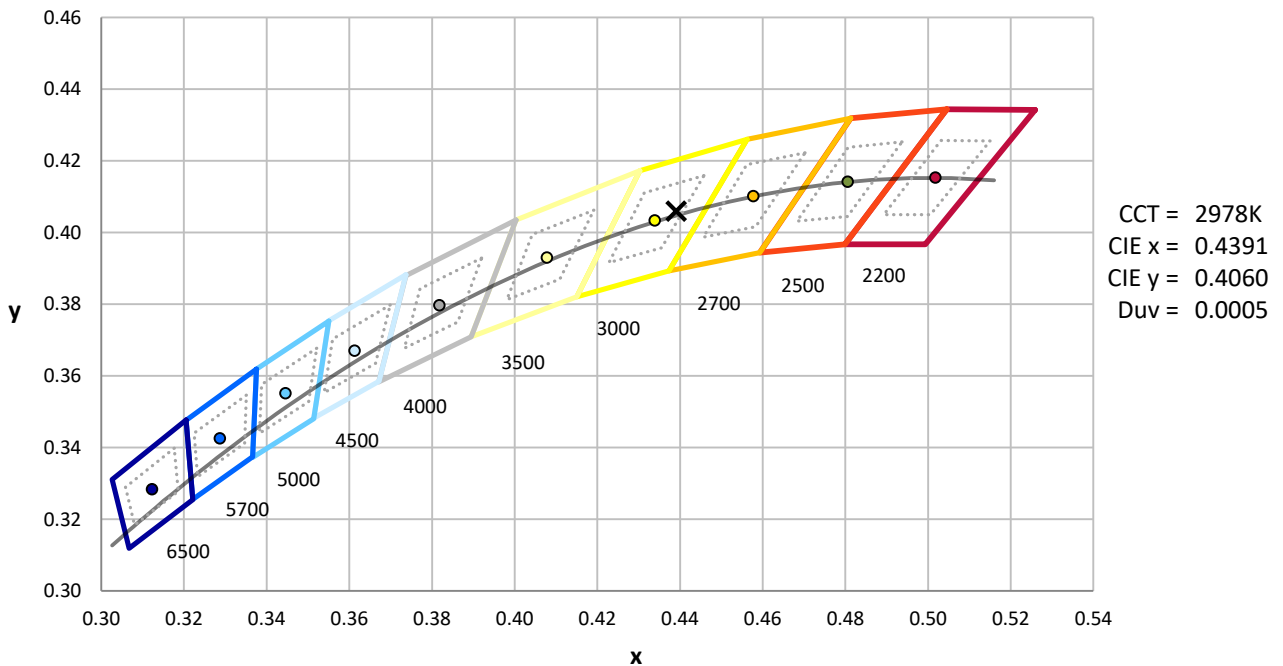
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 7/29/2020        | 1/29/2021            |
| 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            |

REPORT NUMBER: SP1-2012-088-7

**CIE 1931 Chromaticity Diagram**



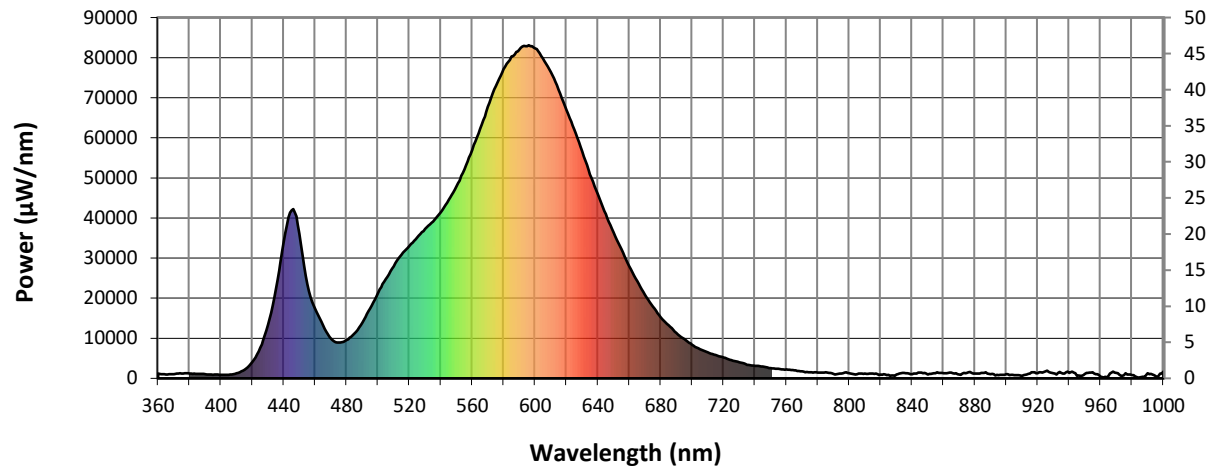
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2012-088-7

### Photopic Flux vs. Wavelength

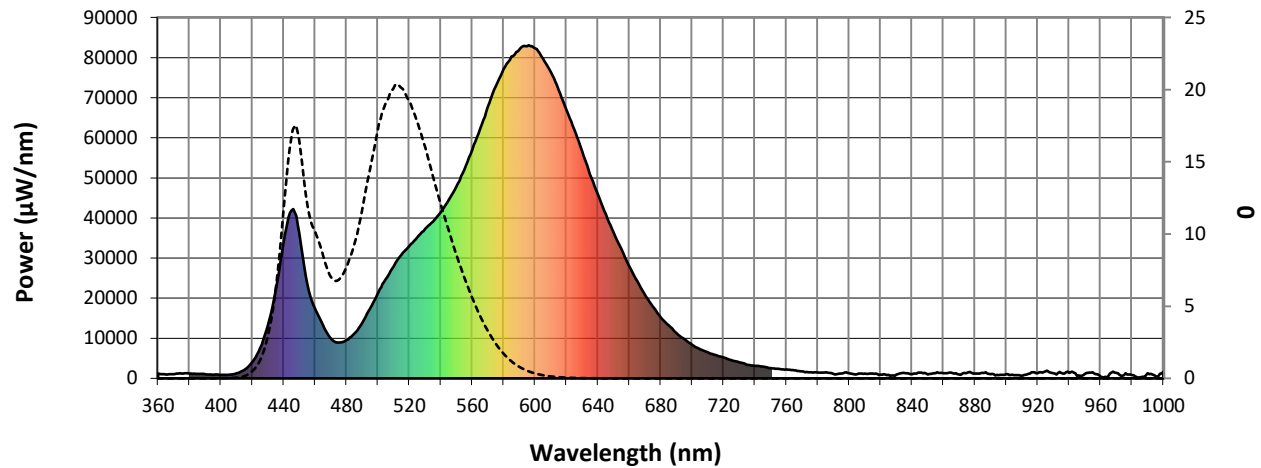


#####

| 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       | 1195             | 0.0              | 490       | 13880            | 2.0              | 620       | 66879            | 17.4             | 750       | 2571             | 0.0              | 880       | 1235             | 0.0              |
| 365       | 985              | 0.0              | 495       | 17408            | 3.2              | 625       | 62111            | 13.7             | 755       | 2394             | 0.0              | 885       | 1368             | 0.0              |
| 370       | 1066             | 0.0              | 500       | 21285            | 4.7              | 630       | 56551            | 10.2             | 760       | 2199             | 0.0              | 890       | 1027             | 0.0              |
| 375       | 1227             | 0.0              | 505       | 24779            | 6.9              | 635       | 50866            | 7.6              | 765       | 2031             | 0.0              | 895       | 822              | 0.0              |
| 380       | 1176             | 0.0              | 510       | 27951            | 9.6              | 640       | 45859            | 5.5              | 770       | 1735             | 0.0              | 900       | 1068             | 0.0              |
| 385       | 1115             | 0.0              | 515       | 30815            | 12.8             | 645       | 40924            | 3.9              | 775       | 1538             | 0.0              | 905       | 823              | 0.0              |
| 390       | 1039             | 0.0              | 520       | 33040            | 16.0             | 650       | 36434            | 2.7              | 780       | 1455             | 0.0              | 910       | 531              | 0.0              |
| 395       | 908              | 0.0              | 525       | 35159            | 18.9             | 655       | 32132            | 1.8              | 785       | 1506             | 0.0              | 915       | 1184             | 0.0              |
| 400       | 903              | 0.0              | 530       | 37292            | 22.0             | 660       | 27953            | 1.2              | 790       | 1154             | 0.0              | 920       | 1320             | 0.0              |
| 405       | 911              | 0.0              | 535       | 39123            | 24.3             | 665       | 24284            | 0.8              | 795       | 1232             | 0.0              | 925       | 1757             | 0.0              |
| 410       | 1264             | 0.0              | 540       | 41391            | 27.0             | 670       | 20822            | 0.5              | 800       | 1247             | 0.0              | 930       | 1279             | 0.0              |
| 415       | 2142             | 0.0              | 545       | 44515            | 29.6             | 675       | 17848            | 0.3              | 805       | 1043             | 0.0              | 935       | 1399             | 0.0              |
| 420       | 4052             | 0.0              | 550       | 47864            | 32.5             | 680       | 15278            | 0.2              | 810       | 1235             | 0.0              | 940       | 1325             | 0.0              |
| 425       | 7647             | 0.0              | 555       | 52101            | 35.6             | 685       | 13213            | 0.1              | 815       | 1173             | 0.0              | 945       | 612              | 0.0              |
| 430       | 13366            | 0.1              | 560       | 56892            | 38.7             | 690       | 11304            | 0.1              | 820       | 948              | 0.0              | 950       | 1094             | 0.0              |
| 435       | 22367            | 0.3              | 565       | 62242            | 41.4             | 695       | 9794             | 0.0              | 825       | 846              | 0.0              | 955       | 1493             | 0.0              |
| 440       | 34007            | 0.5              | 570       | 67731            | 44.0             | 700       | 8390             | 0.0              | 830       | 987              | 0.0              | 960       | 385              | 0.0              |
| 445       | 41889            | 0.9              | 575       | 72883            | 45.3             | 705       | 7303             | 0.0              | 835       | 1395             | 0.0              | 965       | 585              | 0.0              |
| 450       | 36090            | 0.9              | 580       | 77104            | 45.8             | 710       | 6501             | 0.0              | 840       | 1079             | 0.0              | 970       | 1360             | 0.0              |
| 455       | 23459            | 0.8              | 585       | 80305            | 44.6             | 715       | 5811             | 0.0              | 845       | 1430             | 0.0              | 975       | 805              | 0.0              |
| 460       | 17429            | 0.7              | 590       | 82039            | 42.4             | 720       | 5196             | 0.0              | 850       | 984              | 0.0              | 980       | 813              | 0.0              |
| 465       | 13265            | 0.7              | 595       | 82883            | 39.3             | 725       | 4576             | 0.0              | 855       | 1315             | 0.0              | 985       | 214              | 0.0              |
| 470       | 9887             | 0.6              | 600       | 82307            | 35.5             | 730       | 4031             | 0.0              | 860       | 1245             | 0.0              | 990       | 1247             | 0.0              |
| 475       | 8912             | 0.7              | 605       | 79818            | 30.9             | 735       | 3393             | 0.0              | 865       | 1445             | 0.0              | 995       | 597              | 0.0              |
| 480       | 9543             | 0.9              | 610       | 76405            | 26.2             | 740       | 3117             | 0.0              | 870       | 998              | 0.0              | 1000      | 1691             | 0.0              |
| 485       | 11169            | 1.3              | 615       | 71967            | 21.7             | 745       | 2946             | 0.0              | 875       | 1326             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2012-088-7

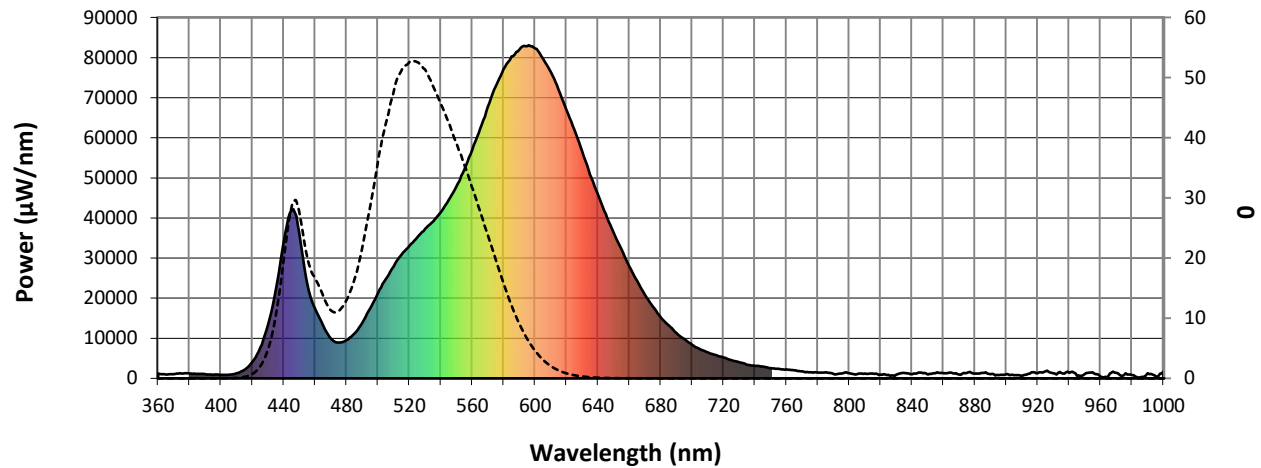
### Scotopic Flux vs. Wavelength


**Scotopic Lumens: 1728.4**
**S/P: 0.45**

| 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       | 1195             | 0.0              | 490       | 13880            | 21.4             | 620       | 66879            | 0.8              | 750       | 2571             | 0.0              | 880       | 1235             | 0.0              |
| 365       | 985              | 0.0              | 495       | 17408            | 28.1             | 625       | 62111            | 0.5              | 755       | 2394             | 0.0              | 885       | 1368             | 0.0              |
| 370       | 1066             | 0.0              | 500       | 21285            | 35.6             | 630       | 56551            | 0.3              | 760       | 2199             | 0.0              | 890       | 1027             | 0.0              |
| 375       | 1227             | 0.0              | 505       | 24779            | 42.1             | 635       | 50866            | 0.2              | 765       | 2031             | 0.0              | 895       | 822              | 0.0              |
| 380       | 1176             | 0.0              | 510       | 27951            | 47.4             | 640       | 45859            | 0.1              | 770       | 1735             | 0.0              | 900       | 1068             | 0.0              |
| 385       | 1115             | 0.0              | 515       | 30815            | 51.1             | 645       | 40924            | 0.1              | 775       | 1538             | 0.0              | 905       | 823              | 0.0              |
| 390       | 1039             | 0.0              | 520       | 33040            | 52.5             | 650       | 36434            | 0.0              | 780       | 1455             | 0.0              | 910       | 531              | 0.0              |
| 395       | 908              | 0.0              | 525       | 35159            | 52.6             | 655       | 32132            | 0.0              | 785       | 1506             | 0.0              | 915       | 1184             | 0.0              |
| 400       | 903              | 0.0              | 530       | 37292            | 51.4             | 660       | 27953            | 0.0              | 790       | 1154             | 0.0              | 920       | 1320             | 0.0              |
| 405       | 911              | 0.0              | 535       | 39123            | 48.8             | 665       | 24284            | 0.0              | 795       | 1232             | 0.0              | 925       | 1757             | 0.0              |
| 410       | 1264             | 0.1              | 540       | 41391            | 45.7             | 670       | 20822            | 0.0              | 800       | 1247             | 0.0              | 930       | 1279             | 0.0              |
| 415       | 2142             | 0.2              | 545       | 44515            | 42.7             | 675       | 17848            | 0.0              | 805       | 1043             | 0.0              | 935       | 1399             | 0.0              |
| 420       | 4052             | 0.7              | 550       | 47864            | 39.1             | 680       | 15278            | 0.0              | 810       | 1235             | 0.0              | 940       | 1325             | 0.0              |
| 425       | 7647             | 1.9              | 555       | 52101            | 35.6             | 685       | 13213            | 0.0              | 815       | 1173             | 0.0              | 945       | 612              | 0.0              |
| 430       | 13366            | 4.5              | 560       | 56892            | 31.8             | 690       | 11304            | 0.0              | 820       | 948              | 0.0              | 950       | 1094             | 0.0              |
| 435       | 22367            | 10.0             | 565       | 62242            | 27.9             | 695       | 9794             | 0.0              | 825       | 846              | 0.0              | 955       | 1493             | 0.0              |
| 440       | 34007            | 19.0             | 570       | 67731            | 23.9             | 700       | 8390             | 0.0              | 830       | 987              | 0.0              | 960       | 385              | 0.0              |
| 445       | 41889            | 28.0             | 575       | 72883            | 19.8             | 705       | 7303             | 0.0              | 835       | 1395             | 0.0              | 965       | 585              | 0.0              |
| 450       | 36090            | 28.0             | 580       | 77104            | 15.9             | 710       | 6501             | 0.0              | 840       | 1079             | 0.0              | 970       | 1360             | 0.0              |
| 455       | 23459            | 20.5             | 585       | 80305            | 12.3             | 715       | 5811             | 0.0              | 845       | 1430             | 0.0              | 975       | 805              | 0.0              |
| 460       | 17429            | 16.8             | 590       | 82039            | 9.1              | 720       | 5196             | 0.0              | 850       | 984              | 0.0              | 980       | 813              | 0.0              |
| 465       | 13265            | 14.0             | 595       | 82883            | 6.6              | 725       | 4576             | 0.0              | 855       | 1315             | 0.0              | 985       | 214              | 0.0              |
| 470       | 9887             | 11.4             | 600       | 82307            | 4.6              | 730       | 4031             | 0.0              | 860       | 1245             | 0.0              | 990       | 1247             | 0.0              |
| 475       | 8912             | 11.1             | 605       | 79818            | 3.1              | 735       | 3393             | 0.0              | 865       | 1445             | 0.0              | 995       | 597              | 0.0              |
| 480       | 9543             | 12.9             | 610       | 76405            | 2.1              | 740       | 3117             | 0.0              | 870       | 998              | 0.0              | 1000      | 1691             | 0.0              |
| 485       | 11169            | 16.2             | 615       | 71967            | 1.3              | 745       | 2946             | 0.0              | 875       | 1326             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2012-088-7

### Melanopic Flux vs. Wavelength


**Melanopic Lumens: 4752**
**S/P: 1.23**

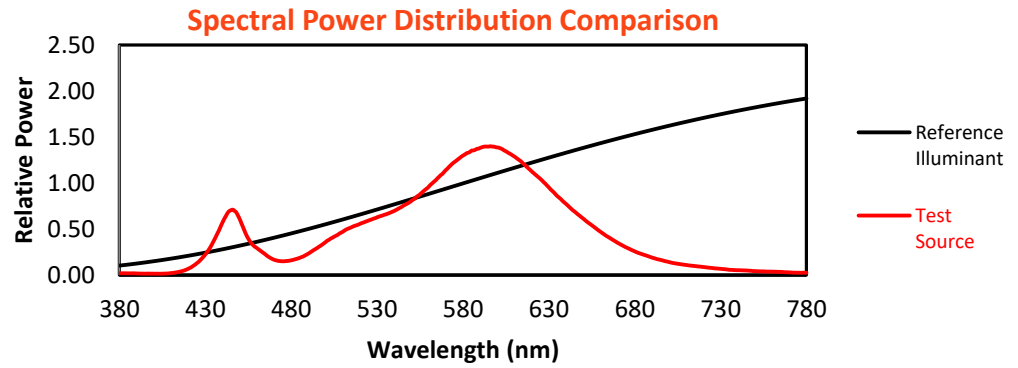
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1195             | 0.0              | 490       | 13880            | 11.5             | 620       | 66879            | 0.1              | 750       | 2571             | 0.0              | 880       | 1235             | 0.0              |
| 365       | 985              | 0.0              | 495       | 17408            | 14.4             | 625       | 62111            | 0.0              | 755       | 2394             | 0.0              | 885       | 1368             | 0.0              |
| 370       | 1066             | 0.0              | 500       | 21285            | 17.1             | 630       | 56551            | 0.0              | 760       | 2199             | 0.0              | 890       | 1027             | 0.0              |
| 375       | 1227             | 0.0              | 505       | 24779            | 19.0             | 635       | 50866            | 0.0              | 765       | 2031             | 0.0              | 895       | 822              | 0.0              |
| 380       | 1176             | 0.0              | 510       | 27951            | 20.1             | 640       | 45859            | 0.0              | 770       | 1735             | 0.0              | 900       | 1068             | 0.0              |
| 385       | 1115             | 0.0              | 515       | 30815            | 20.1             | 645       | 40924            | 0.0              | 775       | 1538             | 0.0              | 905       | 823              | 0.0              |
| 390       | 1039             | 0.0              | 520       | 33040            | 19.2             | 650       | 36434            | 0.0              | 780       | 1455             | 0.0              | 910       | 531              | 0.0              |
| 395       | 908              | 0.0              | 525       | 35159            | 17.8             | 655       | 32132            | 0.0              | 785       | 1506             | 0.0              | 915       | 1184             | 0.0              |
| 400       | 903              | 0.0              | 530       | 37292            | 16.1             | 660       | 27953            | 0.0              | 790       | 1154             | 0.0              | 920       | 1320             | 0.0              |
| 405       | 911              | 0.0              | 535       | 39123            | 14.1             | 665       | 24284            | 0.0              | 795       | 1232             | 0.0              | 925       | 1757             | 0.0              |
| 410       | 1264             | 0.0              | 540       | 41391            | 12.1             | 670       | 20822            | 0.0              | 800       | 1247             | 0.0              | 930       | 1279             | 0.0              |
| 415       | 2142             | 0.1              | 545       | 44515            | 10.3             | 675       | 17848            | 0.0              | 805       | 1043             | 0.0              | 935       | 1399             | 0.0              |
| 420       | 4052             | 0.5              | 550       | 47864            | 8.6              | 680       | 15278            | 0.0              | 810       | 1235             | 0.0              | 940       | 1325             | 0.0              |
| 425       | 7647             | 1.2              | 555       | 52101            | 7.0              | 685       | 13213            | 0.0              | 815       | 1173             | 0.0              | 945       | 612              | 0.0              |
| 430       | 13366            | 2.8              | 560       | 56892            | 5.6              | 690       | 11304            | 0.0              | 820       | 948              | 0.0              | 950       | 1094             | 0.0              |
| 435       | 22367            | 6.0              | 565       | 62242            | 4.4              | 695       | 9794             | 0.0              | 825       | 846              | 0.0              | 955       | 1493             | 0.0              |
| 440       | 34007            | 11.4             | 570       | 67731            | 3.3              | 700       | 8390             | 0.0              | 830       | 987              | 0.0              | 960       | 385              | 0.0              |
| 445       | 41889            | 16.5             | 575       | 72883            | 2.4              | 705       | 7303             | 0.0              | 835       | 1395             | 0.0              | 965       | 585              | 0.0              |
| 450       | 36090            | 16.6             | 580       | 77104            | 1.7              | 710       | 6501             | 0.0              | 840       | 1079             | 0.0              | 970       | 1360             | 0.0              |
| 455       | 23459            | 12.3             | 585       | 80305            | 1.2              | 715       | 5811             | 0.0              | 845       | 1430             | 0.0              | 975       | 805              | 0.0              |
| 460       | 17429            | 10.3             | 590       | 82039            | 0.8              | 720       | 5196             | 0.0              | 850       | 984              | 0.0              | 980       | 813              | 0.0              |
| 465       | 13265            | 8.7              | 595       | 82883            | 0.5              | 725       | 4576             | 0.0              | 855       | 1315             | 0.0              | 985       | 214              | 0.0              |
| 470       | 9887             | 7.1              | 600       | 82307            | 0.3              | 730       | 4031             | 0.0              | 860       | 1245             | 0.0              | 990       | 1247             | 0.0              |
| 475       | 8912             | 6.8              | 605       | 79818            | 0.2              | 735       | 3393             | 0.0              | 865       | 1445             | 0.0              | 995       | 597              | 0.0              |
| 480       | 9543             | 7.7              | 610       | 76405            | 0.1              | 740       | 3117             | 0.0              | 870       | 998              | 0.0              | 1000      | 1691             | 0.0              |
| 485       | 11169            | 9.2              | 615       | 71967            | 0.1              | 745       | 2946             | 0.0              | 875       | 1326             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2012-088-7

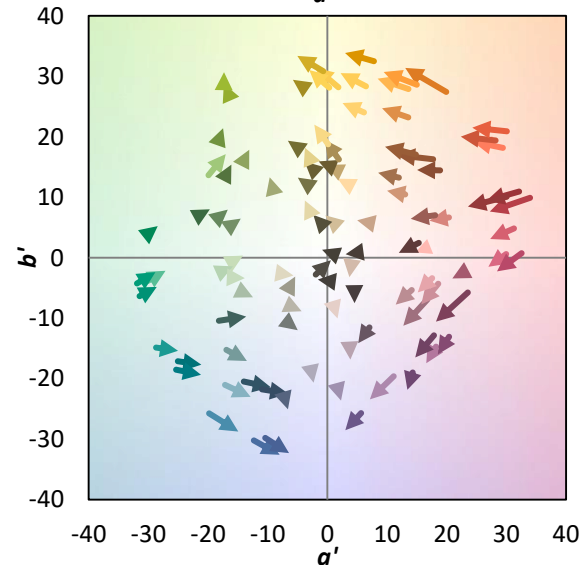
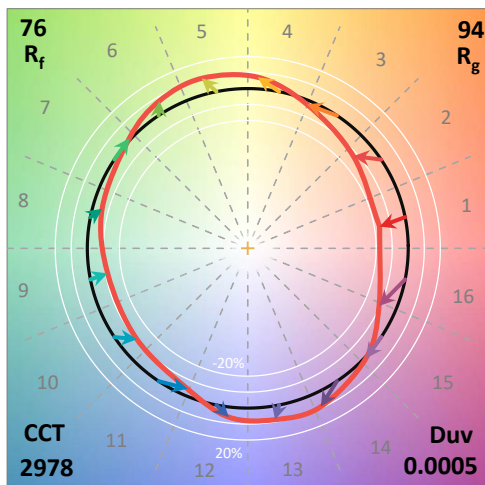
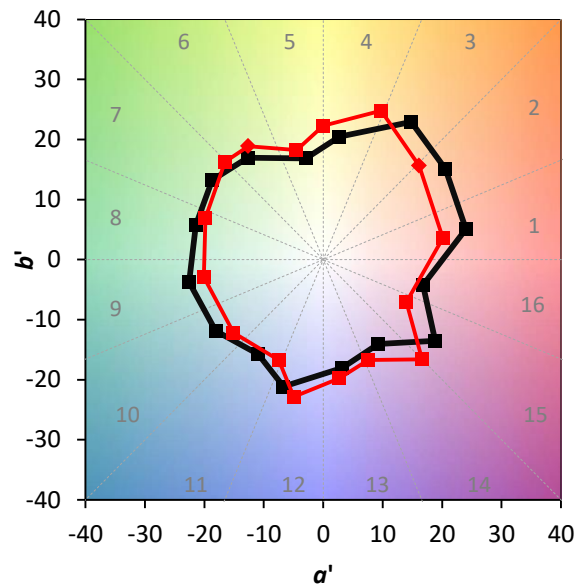
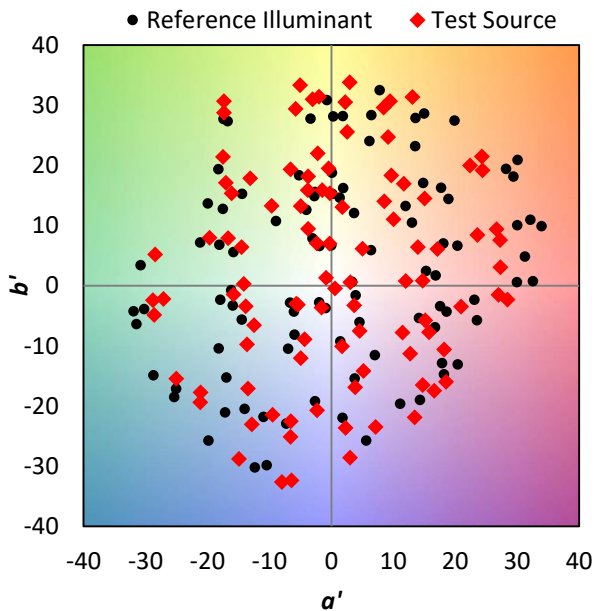
TM-30-18

### Summary

$R_f = 76.2$   
 $R_g = 94.2$   
 CIE  $R_a = 72.4$   
 $R_g = -36.8$



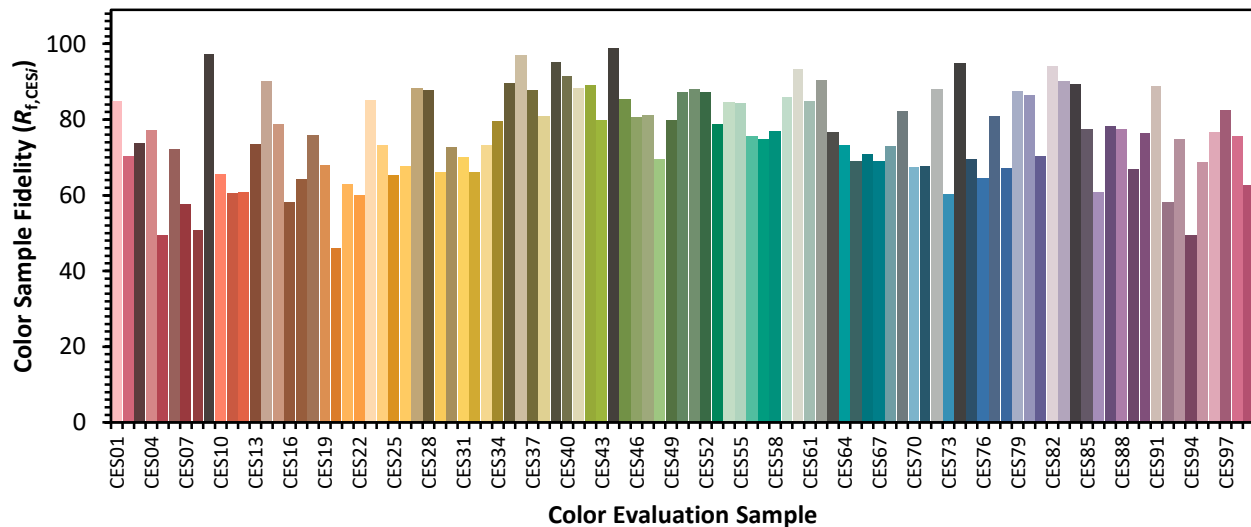
### Color Vector Graphics



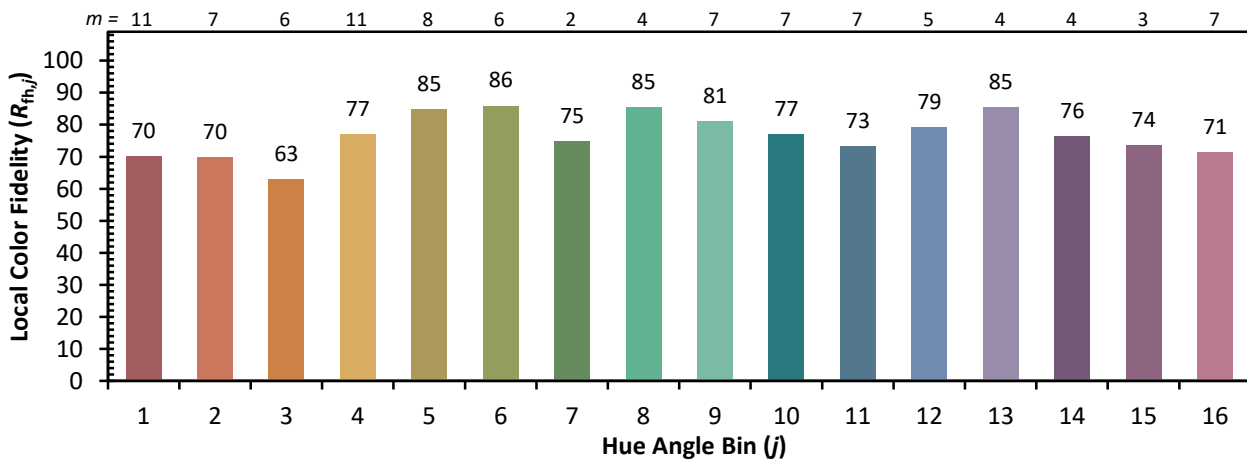
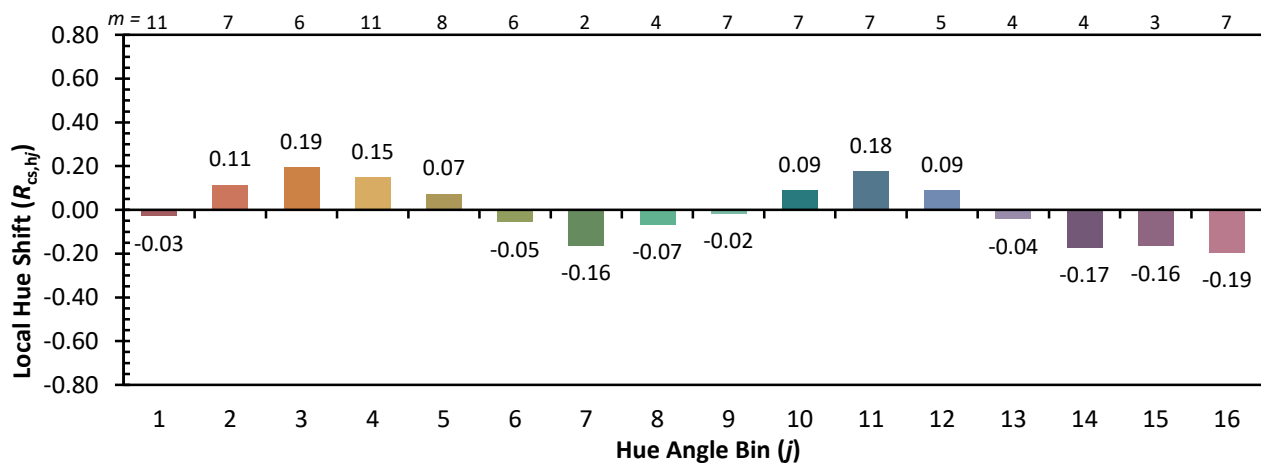
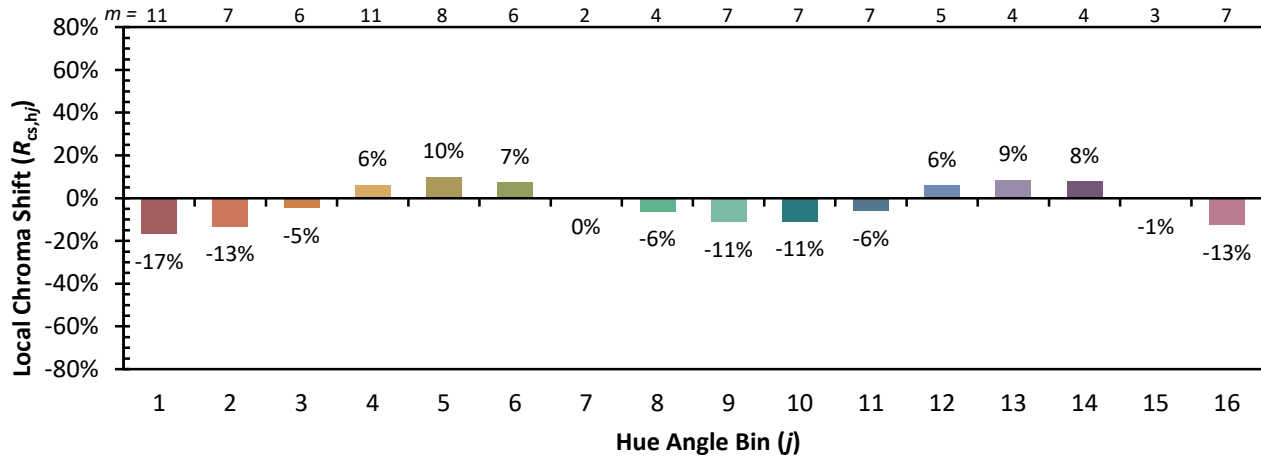


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

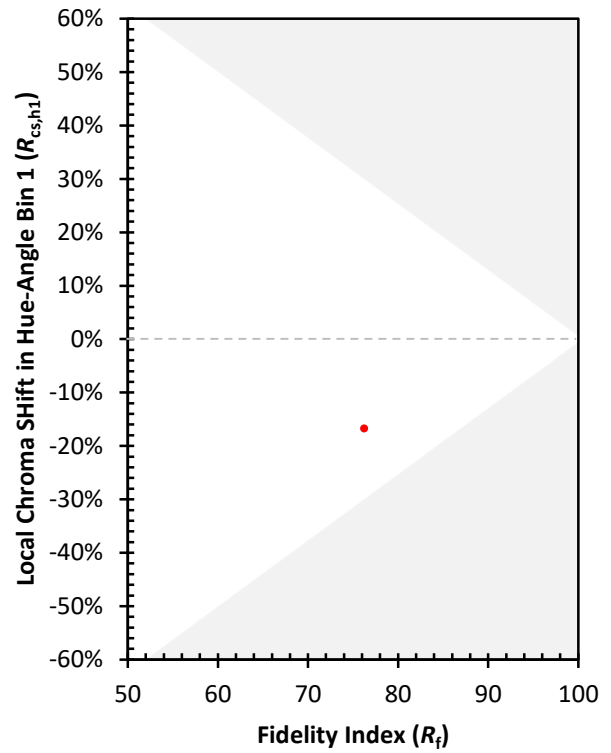
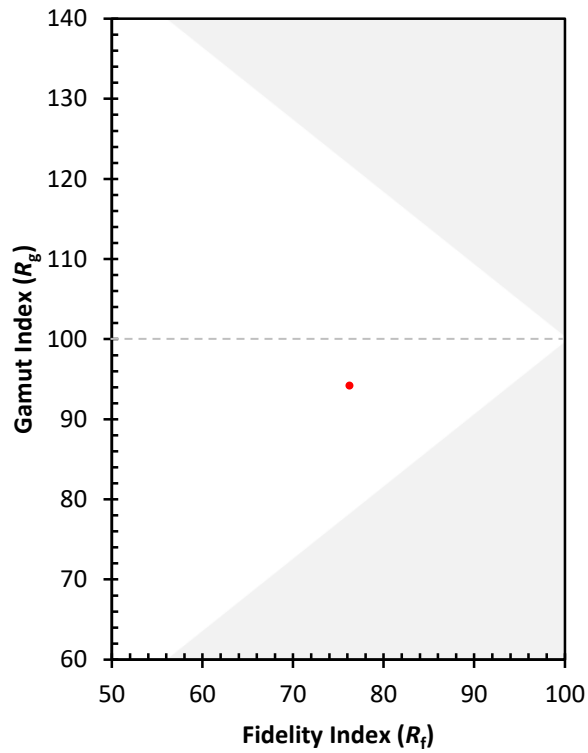
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 68 | CES51 = 88 | CES76 = 65 |
| CES02 = 63 | CES27 = 88 | CES52 = 87 | CES77 = 81 |
| CES03 = 31 | CES28 = 88 | CES53 = 79 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 85 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 87 |
| CES06 = 51 | CES31 = 70 | CES56 = 76 | CES81 = 70 |
| CES07 = 41 | CES32 = 66 | CES57 = 75 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 77 | CES83 = 90 |
| CES09 = 29 | CES34 = 80 | CES59 = 86 | CES84 = 89 |
| CES10 = 76 | CES35 = 90 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 85 | CES86 = 61 |
| CES12 = 65 | CES37 = 88 | CES62 = 90 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 78 |
| CES14 = 74 | CES39 = 95 | CES64 = 73 | CES89 = 67 |
| CES15 = 71 | CES40 = 91 | CES65 = 69 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 71 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 69 | CES92 = 58 |
| CES18 = 56 | CES43 = 80 | CES68 = 73 | CES93 = 75 |
| CES19 = 73 | CES44 = 99 | CES69 = 82 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 67 | CES95 = 69 |
| CES21 = 87 | CES46 = 81 | CES71 = 68 | CES96 = 77 |
| CES22 = 79 | CES47 = 81 | CES72 = 88 | CES97 = 83 |
| CES23 = 92 | CES48 = 69 | CES73 = 60 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 63 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 |            |



### Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)