Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled data based on original data using

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

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P631723

Luminaire Tested: GWS-SA2B-730-U-T2-W-GRSBK

Issue Date: 1/10/2023

Report Generated By 670246102 / DESKTOP-G35701P

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | P631723 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-20) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 1/10/2023 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GWS-SA2B-730-U-T2-W-GRSBK |
| Description: | GALLEON WALL SLIM LUMINAIRE. (2) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK |
| Light Source: | (32) 3000K CCT, 70 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 3732.9 lumens |
| Efficiency: | N/A |
| Efficacy: | 80.5 lumens/watt |
| Luminous Opening: | Rectangular (W 1' x L: 0.5' x H: 0') |
| IES Classification: | Type II - Short |
| BUG Rating: | B1 - U0 - G0 |

| | |
|---|---|
| Input Watts (W): | 46.4 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 0 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

Cooper Lighting Solutions Photometric Lab
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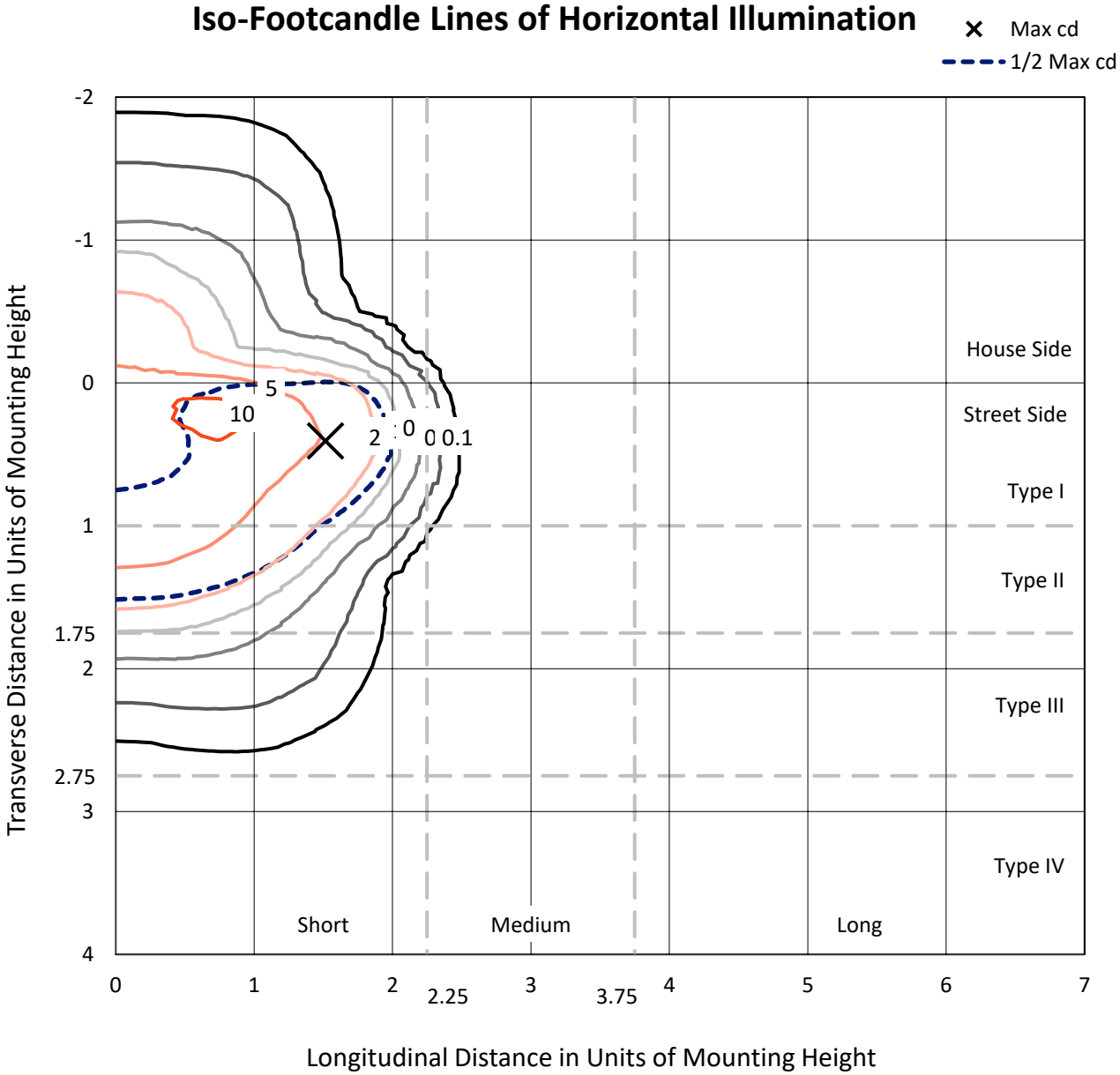
Scaled Data Report

REPORT NUMBER: P631723
CATALOG NUMBER: GWS-SA2B-730-U-T2-W-GRSBK

## Iso-Footcandle Lines of Horizontal Illumination




Based on 10 foot mounting height. Maximum calculated value = 11.6 fc
Type II - Short - N/A

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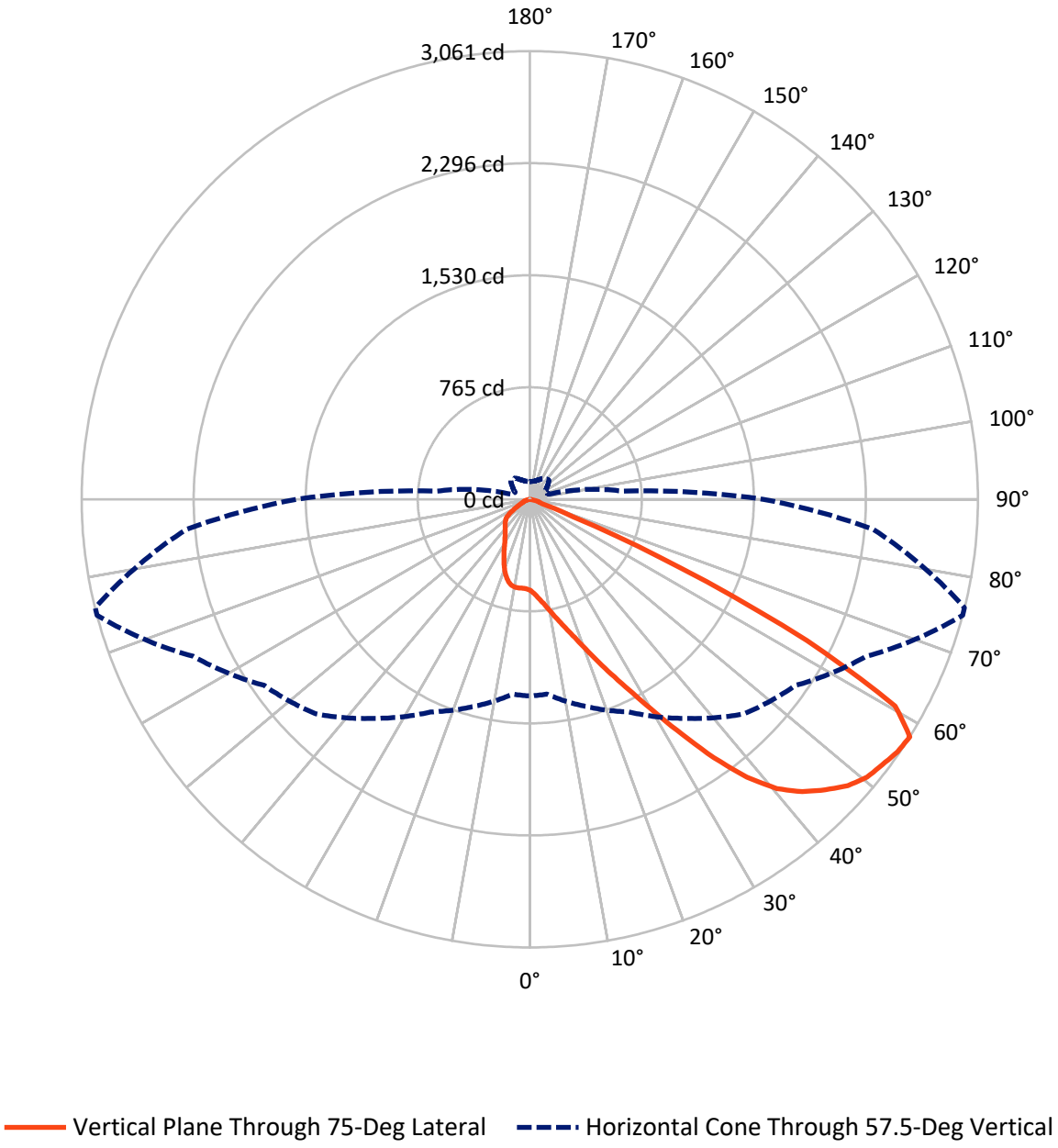
CATALOG NUMBER: GWS-SA2B-730-U-T2-W-GRSBK

## Luminous Intensity Polar Plot



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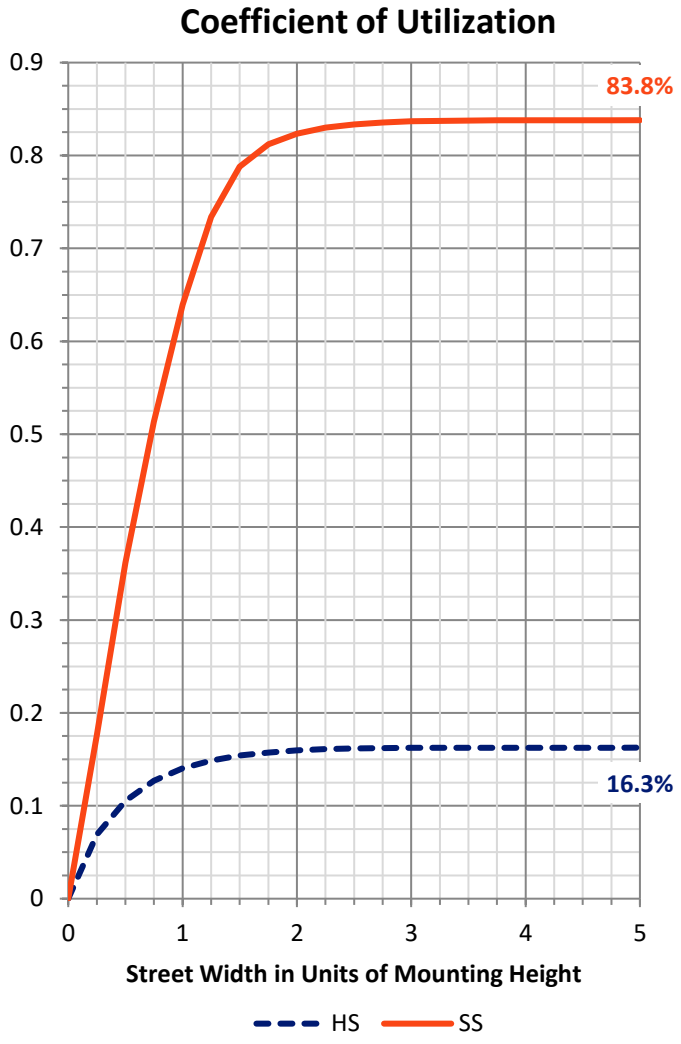
REPORT NUMBER: P631723
CATALOG NUMBER: GWS-SA2B-730-U-T2-W-GRSBK

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 609.8 | 0.0 | 609.8 |
| | % Fixture | 16.3 | 0.0 | 16.3 |
| **Street Side** | Lumens | 3123.1 | 0.0 | 3123.1 |
| | % Fixture | 83.7 | 0.0 | 83.7 |
| **Total** | Lumens | 3732.9 | 0.0 | 3732.9 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 63.4 | 1.7 |
| 10°-20° | 205.8 | 5.5 |
| 20°-30° | 376.9 | 10.1 |
| 30°-40° | 625.3 | 16.7 |
| 40°-50° | 954.9 | 25.6 |
| 50°-60° | 1073.0 | 28.7 |
| 60°-70° | 395.8 | 10.6 |
| 70°-80° | 37.8 | 1.0 |
| 80°-90° | 0.0 | 0.0 |
| 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° | 3732.9 | 100.0 |
| 0°-180° | 3732.9 | 100.0 |



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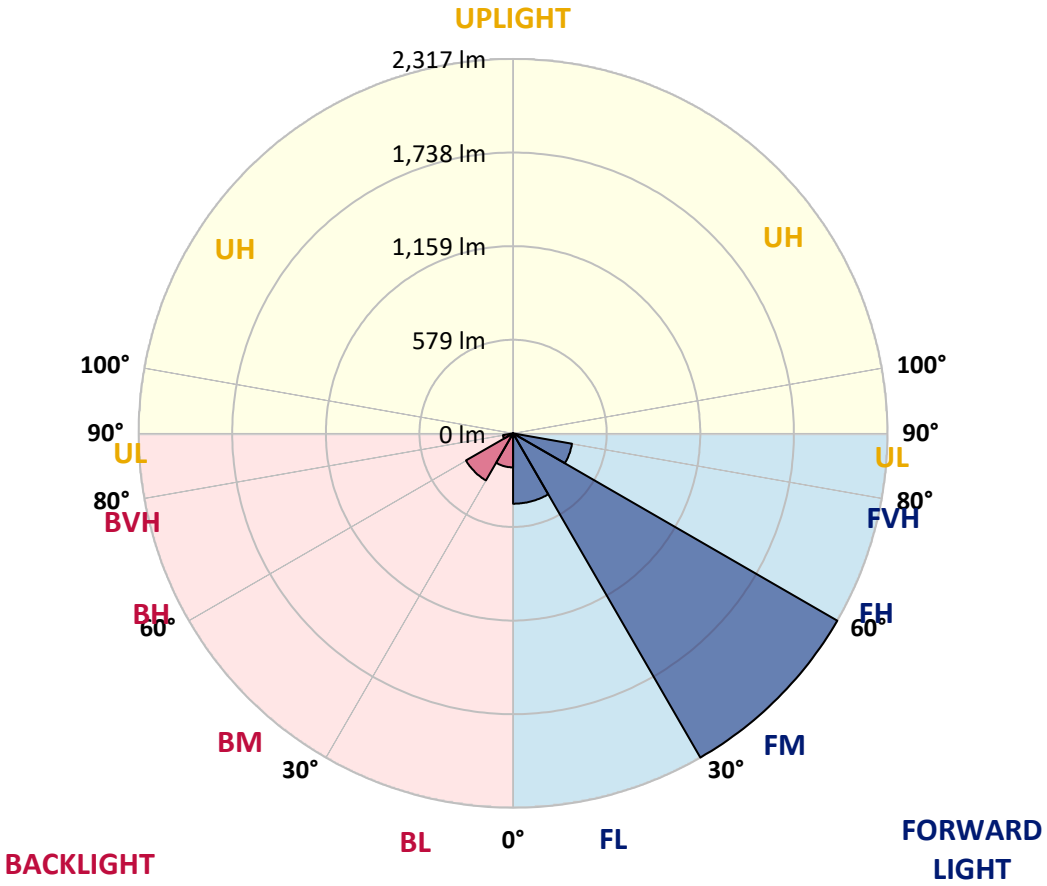
REPORT NUMBER: P631723
CATALOG NUMBER: GWS-SA2B-730-U-T2-W-GRSBK

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 435.6 | 11.7 | | | |
| FM | (30°-60°) | 2317.2 | 62.1 | | | |
| FH | (60°-80°) | 370.3 | 9.9 | | | G0/660 |
| FVH | (80°-90°) | 0.0 | 0.0 | | | G0/10 |
| BL | (0°-30°) | 210.4 | 5.6 | B1/500 | | |
| BM | (30°-60°) | 336.0 | 9.0 | B1/1000 | | |
| BH | (60°-80°) | 63.3 | 1.7 | B0/110 | | G0/110 |
| BVH | (80°-90°) | 0.0 | 0.0 | | | G0/10 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B1-U0-G0**
Type II Short



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Scaled Data Report

REPORT NUMBER: P631723
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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 76° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 622.6 | 622.6 | 622.6 | 622.6 | 622.6 | 622.6 | 622.6 | 622.6 | *622.6* | 622.6 | 622.6 |
| 2.5° | 695.6 | 702.8 | 700.5 | 696.0 | 693.3 | 683.9 | 678.0 | 660.9 | *648.7* | 647.4 | 636.1 |
| 5° | 783.4 | 782.1 | 780.3 | 774.9 | 770.4 | 755.5 | 737.9 | 709.1 | *683.4* | 680.3 | 656.4 |
| 7.5° | 831.6 | 832.5 | 833.4 | 832.5 | 829.4 | 818.1 | 798.7 | 765.0 | *725.8* | 723.1 | 685.2 |
| 10° | 851.5 | 853.3 | 857.8 | 866.3 | 874.0 | 873.1 | 861.8 | 827.1 | *778.9* | 774.4 | 723.5 |
| 12.5° | 860.9 | 863.2 | 870.4 | 886.6 | 907.3 | 923.5 | 925.3 | 894.2 | *841.1* | 833.9 | 769.0 |
| 15° | 874.0 | 876.2 | 885.2 | 906.4 | 936.6 | 968.6 | 989.3 | 969.5 | *910.0* | 902.4 | 819.0 |
| 17.5° | 879.8 | 883.0 | 896.1 | 924.0 | 963.2 | 1012.3 | 1059.1 | 1057.3 | *991.6* | 985.7 | 877.1 |
| 20° | 891.1 | 893.3 | 905.1 | 935.2 | 982.5 | 1053.3 | 1132.1 | 1160.5 | *1091.1* | 1082.6 | 947.4 |
| 22.5° | 926.7 | 927.6 | 933.0 | 951.9 | 996.1 | 1083.0 | 1206.4 | 1280.8 | *1208.7* | 1197.4 | 1026.2 |
| 25° | 984.8 | 984.4 | 986.6 | 989.8 | 1022.2 | 1113.2 | 1278.1 | 1416.4 | *1343.4* | 1331.2 | 1115.4 |
| 27.5° | 1058.7 | 1058.7 | 1064.1 | 1055.1 | 1068.1 | 1150.6 | 1348.8 | 1572.3 | *1500.2* | 1483.1 | 1213.2 |
| 30° | 1145.6 | 1145.2 | 1157.8 | 1143.4 | 1147.4 | 1209.6 | 1424.9 | 1742.1 | *1689.4* | 1668.2 | 1325.8 |
| 32.5° | 1263.7 | 1261.0 | 1275.4 | 1255.6 | 1242.0 | 1298.8 | 1517.7 | 1919.6 | *1916.0* | 1883.6 | 1467.3 |
| 35° | 1412.8 | 1408.3 | 1412.8 | 1393.4 | 1369.1 | 1423.6 | 1639.4 | 2096.6 | *2167.4* | 2133.1 | 1635.8 |
| 37.5° | 1561.0 | 1575.4 | 1580.4 | 1547.0 | 1527.2 | 1581.7 | 1785.8 | 2255.2 | *2407.5* | 2371.9 | 1811.0 |
| 40° | 1735.8 | 1731.3 | 1748.4 | 1711.0 | 1698.4 | 1758.8 | 1929.1 | 2373.3 | *2597.6* | 2563.8 | 1966.9 |
| 42.5° | 1864.6 | 1872.7 | 1893.9 | 1873.2 | 1863.3 | 1920.0 | 2049.3 | 2442.2 | *2729.6* | 2696.3 | 2078.2 |
| 45° | 2019.2 | 2025.0 | 2033.1 | 2016.0 | 2005.6 | 2061.5 | 2136.3 | 2472.4 | *2830.1* | 2794.0 | 2153.0 |
| 47.5° | 2186.3 | 2190.8 | 2190.8 | 2155.7 | 2122.3 | 2145.3 | 2194.4 | 2489.5 | *2922.4* | 2887.7 | 2208.4 |
| 50° | 2306.1 | 2308.4 | 2328.2 | 2303.4 | 2230.9 | 2195.3 | 2221.0 | 2506.2 | *2983.7* | 2951.2 | 2226.4 |
| 52.5° | 2199.8 | 2197.1 | 2262.4 | 2313.8 | 2333.2 | 2262.4 | 2266.9 | 2530.5 | *3013.4* | 2985.5 | 2240.8 |
| 55° | 1852.5 | 1848.0 | 1939.9 | 2064.7 | 2235.4 | 2325.9 | 2322.3 | 2544.9 | *3046.3* | 3029.2 | 2293.1 |
| 57.5° | *1343.0* | *1335.3* | *1463.2* | *1602.0* | *1825.9* | *2071.4* | *2215.6* | *2536.8* | *3060.7* | *3059.4* | *2353.9* |
| 60° | 807.3 | 801.0 | 921.7 | 1067.7 | 1240.7 | 1487.6 | 1726.8 | 2272.3 | *2867.9* | 2870.6 | 2195.8 |
| 62.5° | 496.9 | 502.8 | 611.8 | 686.1 | 750.5 | 824.9 | 963.2 | 1528.6 | *2124.6* | 2142.1 | 1543.0 |
| 65° | 334.3 | 338.8 | 439.7 | 533.4 | 533.4 | 436.1 | 374.4 | 730.7 | *1133.5* | 1103.7 | 729.8 |
| 67.5° | 224.4 | 229.3 | 309.0 | 418.5 | 434.3 | 304.1 | 151.8 | 218.0 | *315.8* | 306.3 | 180.7 |
| 70° | 132.0 | 137.4 | 205.9 | 287.0 | 316.3 | 211.7 | 101.4 | 92.4 | *89.7* | 86.9 | 70.3 |
| 72.5° | 59.0 | 61.3 | 105.0 | 146.0 | 133.3 | 89.2 | 71.6 | 73.9 | *69.8* | 68.5 | 57.2 |
| 75° | 18.0 | 18.9 | 27.0 | 31.5 | 32.0 | 32.0 | 43.2 | 58.1 | *55.0* | 55.4 | 44.1 |
| 77.5° | 4.5 | 4.5 | 7.2 | 6.8 | 3.6 | 3.2 | 8.1 | 13.1 | *13.5* | 12.2 | 9.0 |
| 80° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 0.5 | 0.5 | *0.5* | 0.5 | 0.5 |
| 82.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 | 0.0 |
| 85° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 | 0.0 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 | 0.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 | 0.0 |

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Scaled Data Report

REPORT NUMBER: P631723
CATALOG NUMBER: GWS-SA2B-730-U-T2-W-GRSBK

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 622.6 | 622.6 | 622.6 | 622.6 | 622.6 | 622.6 | 622.6 | 622.6 | 622.6 | 622.6 | 622.6 |
| 2.5° | 631.2 | 619.4 | 611.8 | 601.0 | 593.3 | 585.2 | 578.0 | 572.1 | 569.0 | 568.1 | 568.5 |
| 5° | 645.6 | 627.1 | 609.1 | 588.4 | 573.9 | 560.4 | 549.6 | 541.1 | 537.0 | 535.6 | 535.6 |
| 7.5° | 667.6 | 642.0 | 610.0 | 577.5 | 553.2 | 532.0 | 519.4 | 510.0 | 506.4 | 505.5 | 502.8 |
| 10° | 696.5 | 661.3 | 608.6 | 558.2 | 523.9 | 501.9 | 492.9 | 490.1 | 491.5 | 491.9 | 491.5 |
| 12.5° | 731.2 | 681.6 | 600.1 | 529.8 | 492.9 | 479.3 | 480.2 | 487.4 | 495.6 | 499.6 | 500.5 |
| 15° | 768.1 | 700.1 | 580.7 | 496.0 | 466.3 | 465.8 | 478.9 | 495.6 | 511.3 | 518.1 | 519.9 |
| 17.5° | 809.6 | 714.9 | 551.0 | 460.0 | 443.3 | 456.4 | 479.8 | 505.5 | 526.6 | 537.9 | 540.2 |
| 20° | 855.1 | 727.1 | 513.1 | 426.2 | 423.0 | 446.4 | 478.9 | 510.4 | 536.5 | 549.2 | 551.4 |
| 22.5° | 902.4 | 735.7 | 469.4 | 395.1 | 404.6 | 435.2 | 470.3 | 501.0 | 525.7 | 540.2 | 542.0 |
| 25° | 956.4 | 736.6 | 424.8 | 369.0 | 387.4 | 419.9 | 449.6 | 474.8 | 495.6 | 508.2 | 509.5 |
| 27.5° | 1003.7 | 725.8 | 385.2 | 347.8 | 371.7 | 400.9 | 420.8 | 434.7 | 449.2 | 456.4 | 456.8 |
| 30° | 1058.2 | 706.8 | 347.8 | 330.7 | 355.4 | 377.5 | 387.4 | 390.6 | 391.9 | 393.3 | 391.5 |
| 32.5° | 1123.1 | 683.9 | 319.9 | 314.0 | 337.0 | 351.8 | 354.5 | 348.2 | 340.6 | 329.8 | 327.1 |
| 35° | 1202.8 | 663.1 | 296.9 | 297.8 | 316.7 | 325.7 | 323.5 | 309.9 | 295.1 | 282.0 | 279.8 |
| 37.5° | 1289.3 | 645.6 | 279.3 | 282.0 | 294.6 | 300.9 | 294.2 | 279.3 | 272.6 | 261.3 | 261.7 |
| 40° | 1365.9 | 631.2 | 263.5 | 266.2 | 272.1 | 278.0 | 267.1 | 257.2 | 269.9 | 269.0 | 269.9 |
| 42.5° | 1420.4 | 619.0 | 250.0 | 248.7 | 252.7 | 256.8 | 248.7 | 243.7 | 264.9 | 259.0 | 262.2 |
| 45° | 1452.4 | 607.7 | 238.8 | 230.7 | 237.0 | 244.2 | 238.8 | 232.5 | 239.7 | 212.6 | 210.4 |
| 47.5° | 1474.0 | 601.4 | 228.9 | 213.1 | 224.4 | 237.0 | 225.7 | 210.4 | 200.0 | 176.6 | 174.8 |
| 50° | 1476.3 | 598.3 | 217.1 | 195.1 | 209.5 | 223.0 | 209.9 | 188.8 | 173.9 | 163.5 | 162.2 |
| 52.5° | 1488.0 | 604.6 | 200.9 | 172.1 | 187.9 | 209.5 | 200.5 | 179.3 | 159.0 | 150.0 | 148.2 |
| 55° | 1540.3 | 631.2 | 173.9 | 140.6 | 163.5 | 199.1 | 192.8 | 159.9 | 140.6 | 135.2 | 133.8 |
| 57.5° | *1594.3* | *636.6* | *137.0* | *111.3* | *142.4* | *184.3* | *176.1* | *147.3* | *128.4* | *122.1* | *120.7* |
| 60° | 1457.8 | 524.4 | 102.7 | 91.9 | 125.7 | 170.3 | 163.1 | 139.7 | 117.6 | 109.9 | 108.6 |
| 62.5° | 957.8 | 283.4 | 81.5 | 77.9 | 105.9 | 144.2 | 148.7 | 126.1 | 105.0 | 96.9 | 96.4 |
| 65° | 441.5 | 131.5 | 62.6 | 61.7 | 82.9 | 114.9 | 127.9 | 110.4 | 88.7 | 81.5 | 81.5 |
| 67.5° | 120.3 | 65.3 | 49.1 | 45.5 | 56.3 | 77.0 | 93.3 | 82.4 | 63.1 | 54.5 | 54.1 |
| 70° | 59.9 | 52.7 | 44.1 | 39.2 | 40.5 | 47.8 | 55.0 | 46.0 | 32.0 | 26.1 | 25.7 |
| 72.5° | 49.1 | 43.2 | 37.4 | 33.3 | 30.6 | 29.3 | 28.4 | 23.0 | 14.9 | 11.3 | 10.8 |
| 75° | 36.5 | 31.1 | 26.6 | 21.6 | 18.5 | 17.1 | 15.3 | 11.3 | 6.3 | 3.6 | 3.2 |
| 77.5° | 8.1 | 7.7 | 7.2 | 5.4 | 5.0 | 4.1 | 3.2 | 2.3 | 0.9 | 0.0 | 0.0 |
| 80° | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

Data in this report applies to families of products SA1C-730-U-5WQ .

Report Generated By FNC07603 / LDUCLS01DT446
Version: v6.13

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

## Test Information

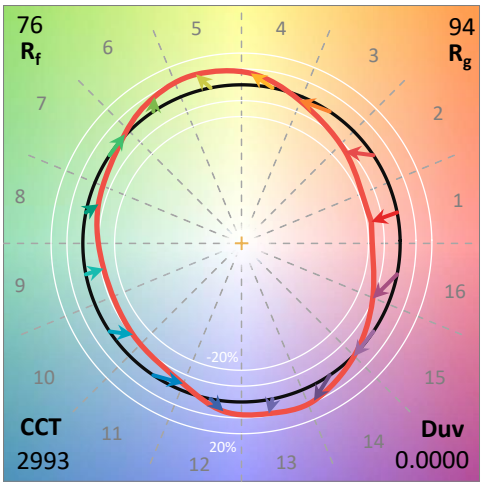
| | |
|---|---|
| Test Method: | LM-79-2008 |
| Report Number: | SP1-1908-441-2-R4 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 10/28/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | **SA1C-730-U-5WQ** |
| Description: | McGRAW EDISON ROADWAY AND AREA LUMINAIRE |

***THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.***TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 2993 | CRI (Ra): | 71.8 | | |
| CIE u': | 0.2508 | R1: | 67.5 | R9: | -38.3 |
| CIE v': | 0.5215 | R2: | 82.9 | R10: | 62.5 |
| Duv: | 0.0000 | R3: | 94.7 | R11: | 63.7 |
| CIE x: | 0.4374 | R4: | 67.7 | R12: | 57.8 |
| CIE y: | 0.4043 | R5: | 67.9 | R13: | 70.4 |
| CIE z: | 0.1583 | R6: | 77.6 | R14: | 97.3 |
| Peak Wavelength (nm): | 593 | R7: | 76.0 | | |
| Dominant Wavelength (nm): | 582 | R8: | 40.5 | | |
| Purity: | 53 | | | | |

| | |
|---|---|
| Rf: | 75.7 |
| Rg: | 93.9 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 53M |
| Operation Time: | 12H |
| Room Temperature (°C) / RH%: | 25.0./44% |
| Sphere Temperature (°C): | 25.7 |

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REPORT NUMBER: SP1-1908-441-2-R4

| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/28/2019 | 12/28/2019 |
| Power Meter | IN0071 | 12/5/2018 | 12/5/2019 |
| AC Power Source | IN0063 | 12/5/2018 | 12/5/2019 |
| DC Power Source | IN0208 | 12/5/2018 | 12/5/2019 |
| Sphere Thermometer | IN0085 | 12/5/2018 | 12/5/2019 |
| Room Thermometer | IN0046 | 12/5/2018 | 12/5/2019 |

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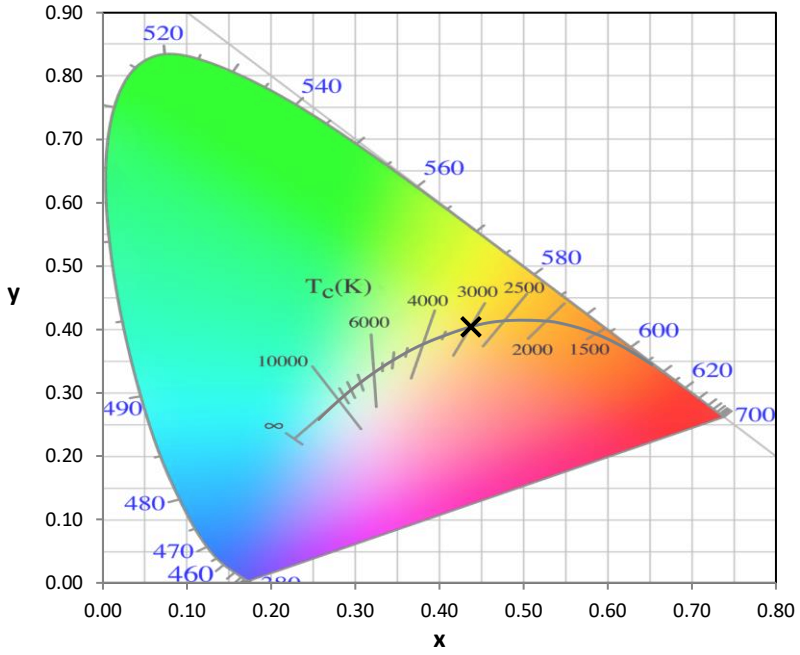
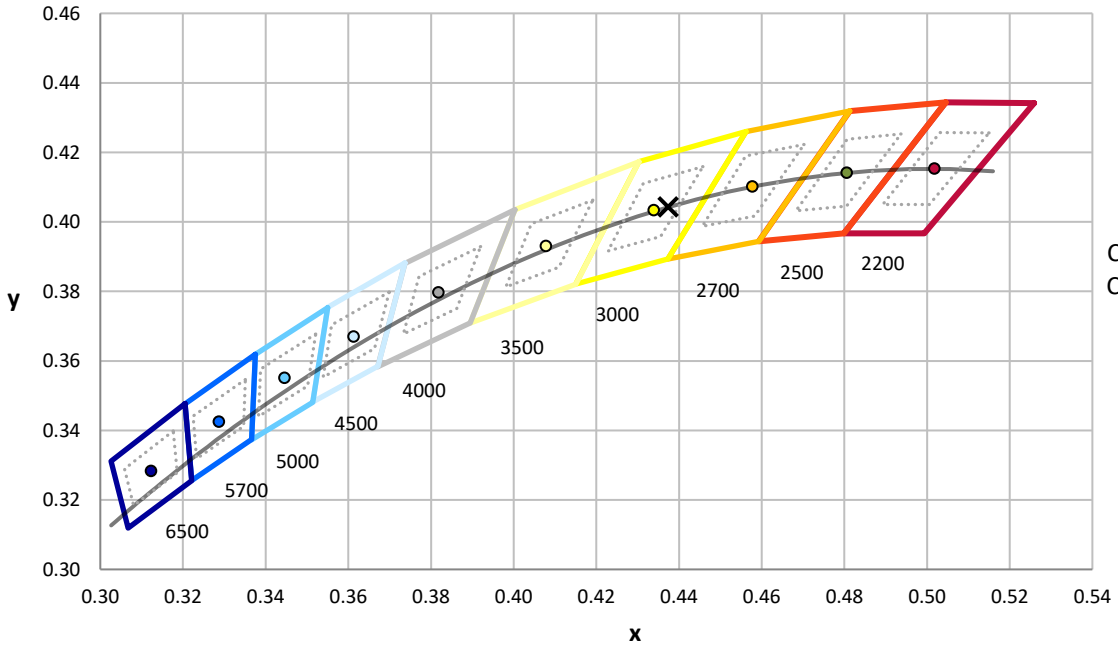
REPORT NUMBER: SP1-1908-441-2-R4

## CIE 1931 Chromaticity Diagram




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




CCT = 2993K
CIE x = 0.4374
CIE y = 0.4043
Duv = 0.0000

Point lies inside the ANSI 3000K 4-step quadrangle

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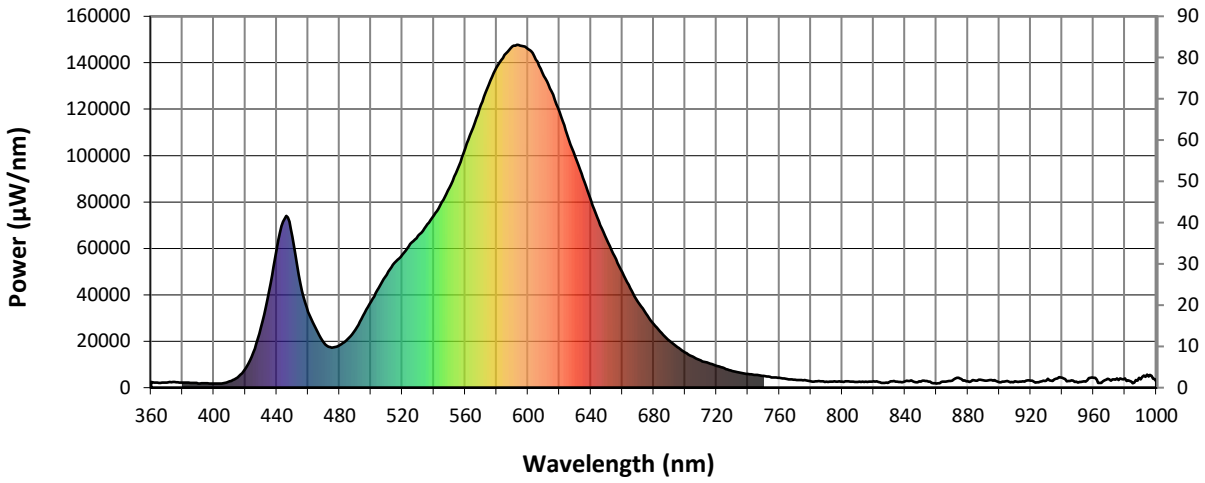
## Photopic Flux vs. Wavelength




######

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

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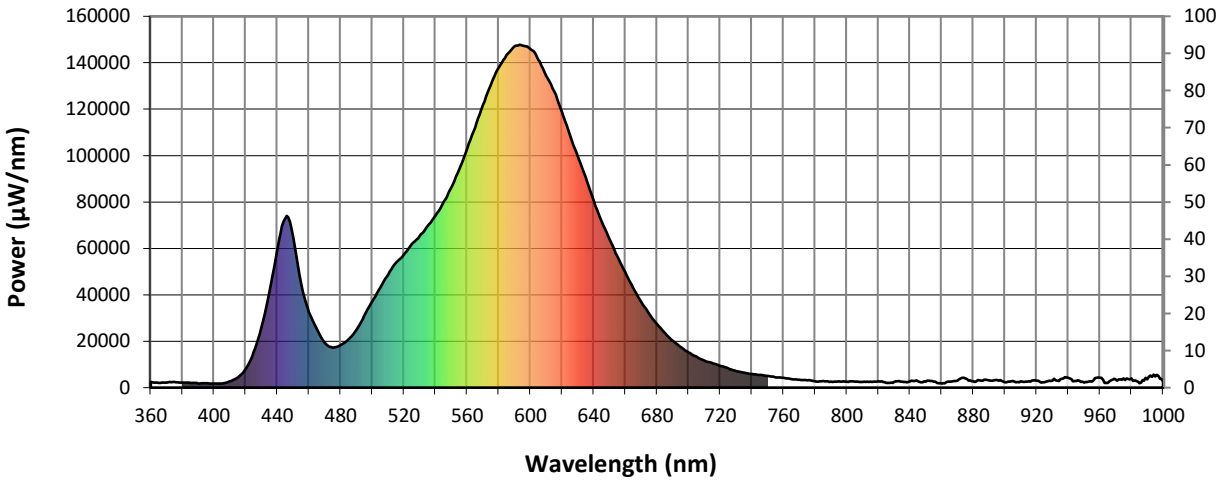
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: 8494.8** **S/P: 1.23**

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

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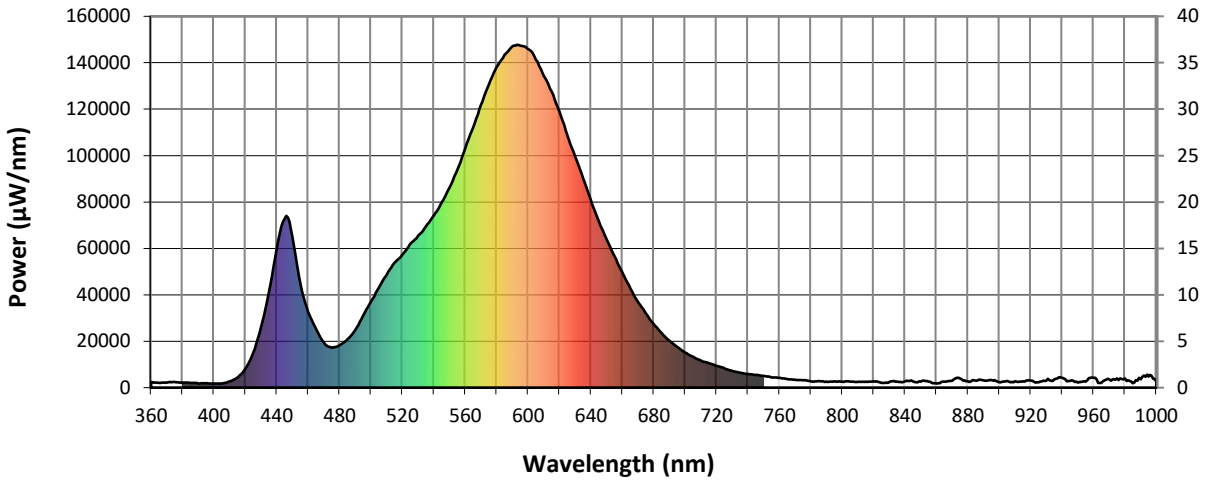
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: 3101.5** **M/P: 0.45**

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

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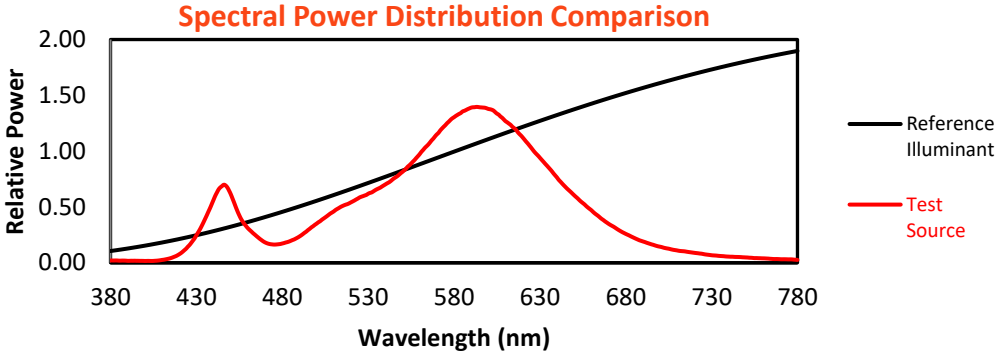
# TM-30-18

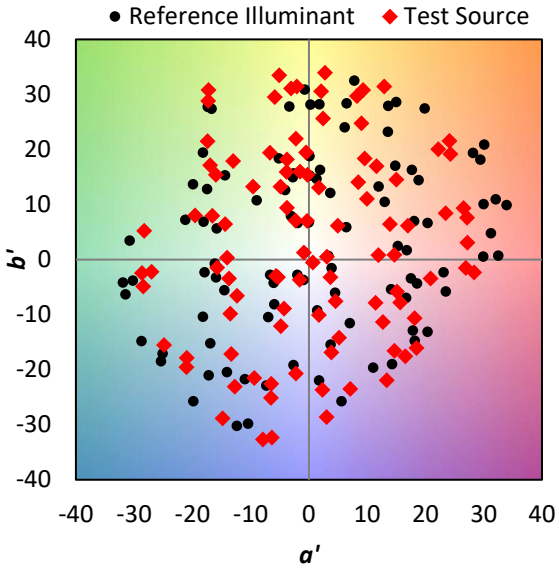
## Summary

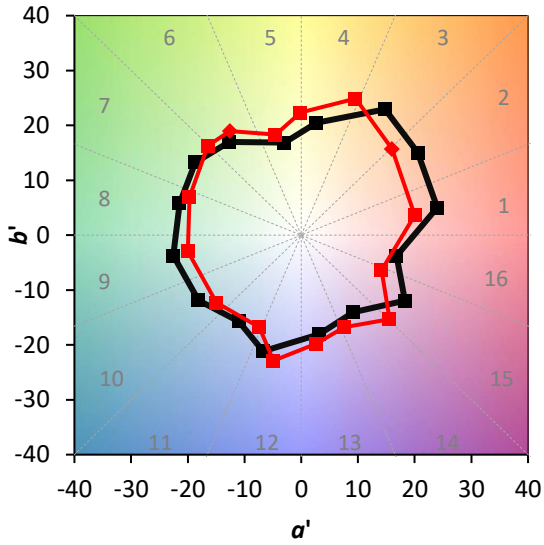
$R_f$ = 75.7
$R_g$ = 93.9
CIE $R_a$ = 71.8
$R_9$ = -38.3

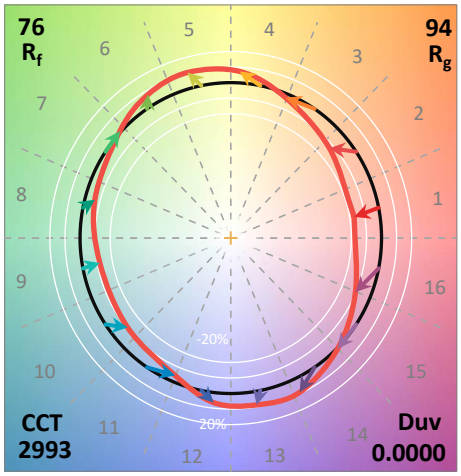
## Spectral Power Distribution Comparison

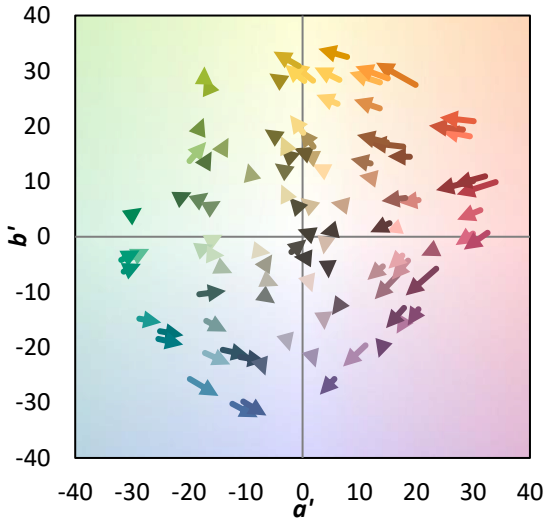



## Color Vector Graphics



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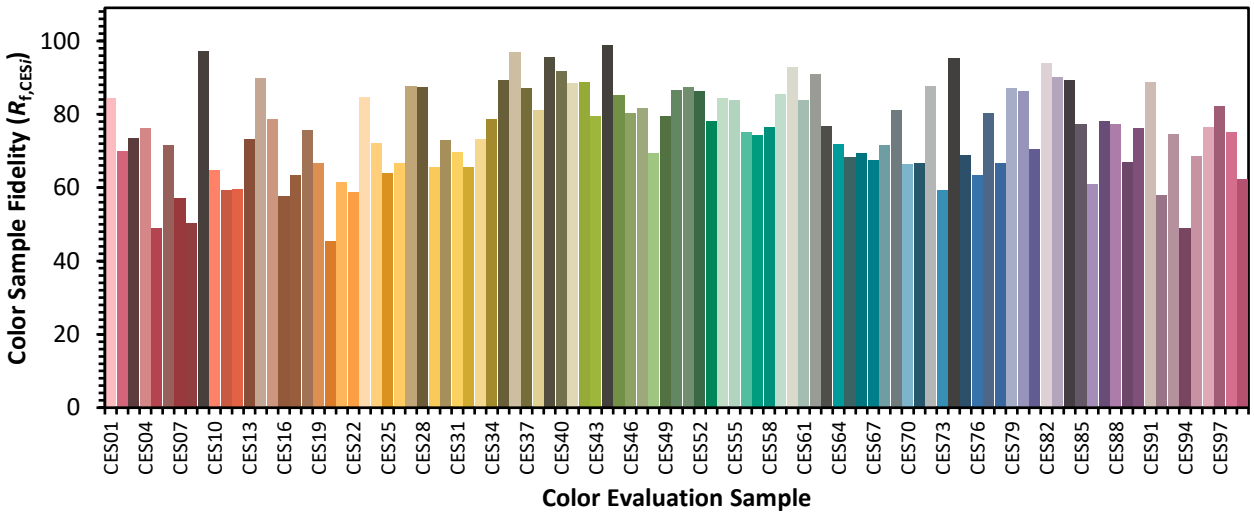
## Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 | |



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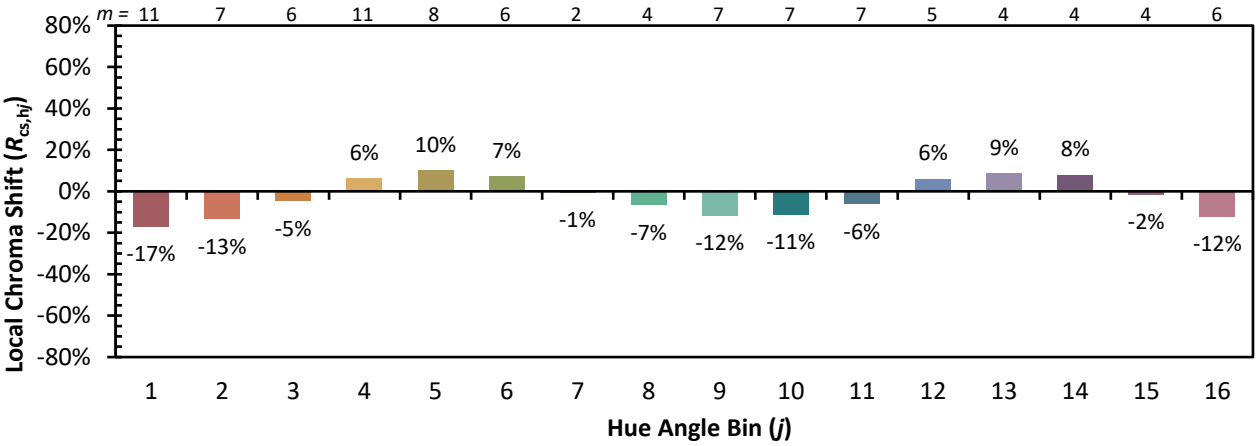
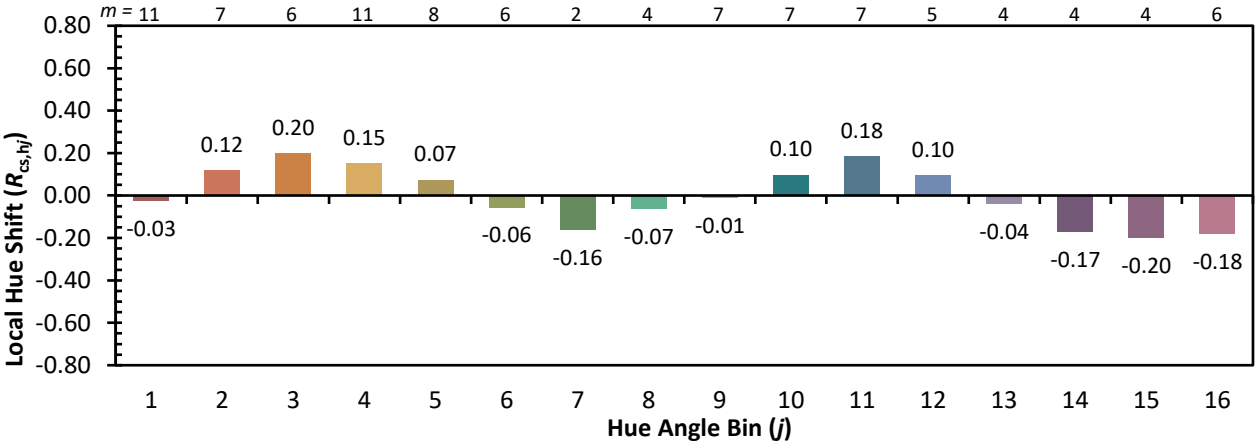
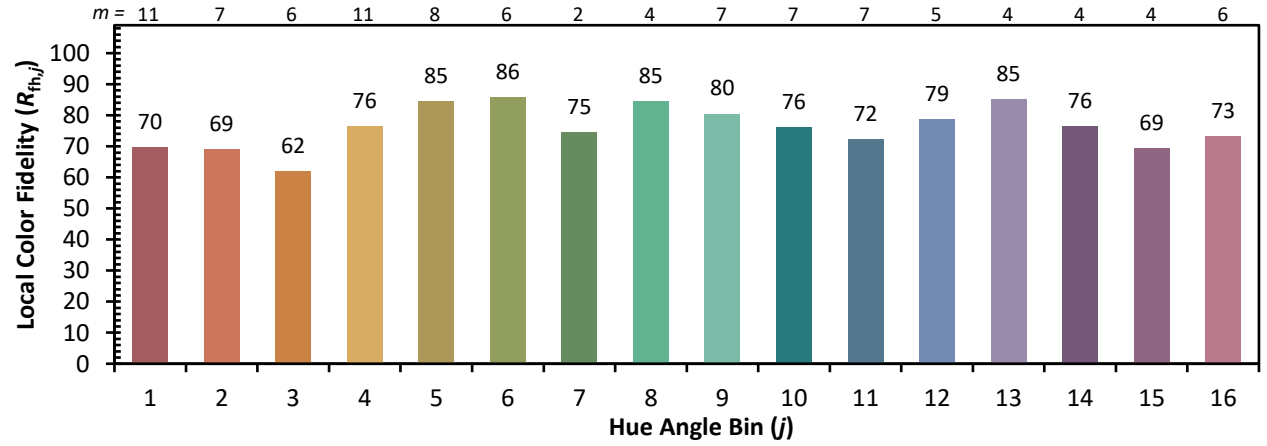
## Color Rendition by Hue-Angle Bin



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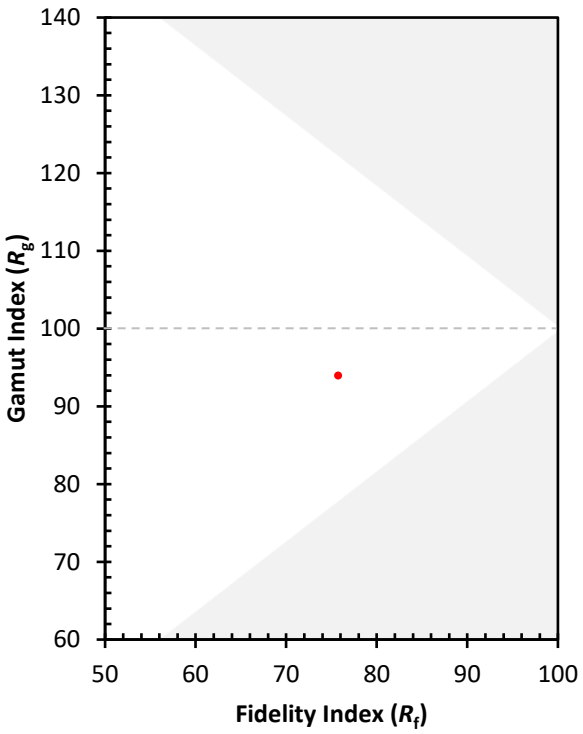
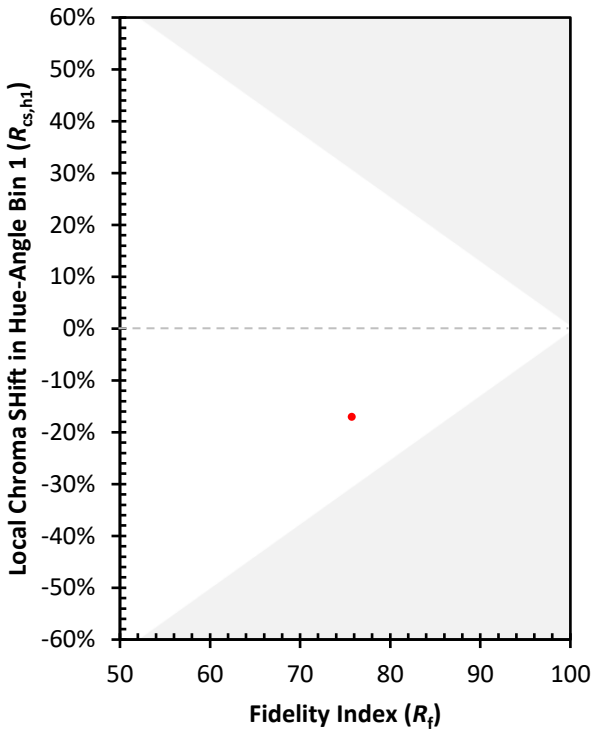
## TM-30-18

### Measure Comparisons




(END OF REPORT)