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: P629251

Luminaire Tested: GWS-SA1B-730-U-T2-W-GRSWH

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: | P629251 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-21) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 1/10/2023 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GWS-SA1B-730-U-T2-W-GRSWH |
| Description: | GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II OPTICS W/ FACTORY INSLLED GLARE SHIELD, WH |
| Light Source: | (16) 3000K CCT, 70 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 2721 lumens |
| Efficiency: | N/A |
| Efficacy: | 108.8 lumens/watt |
| Luminous Opening: | Rectangular (W 0.5' x L: 0.5' x H: 0') |
| IES Classification: | Type II - Short |
| BUG Rating: | B1 - U0 - G1 |

| | |
|---|---|
| Input Watts (W): | 25 |
| 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 |

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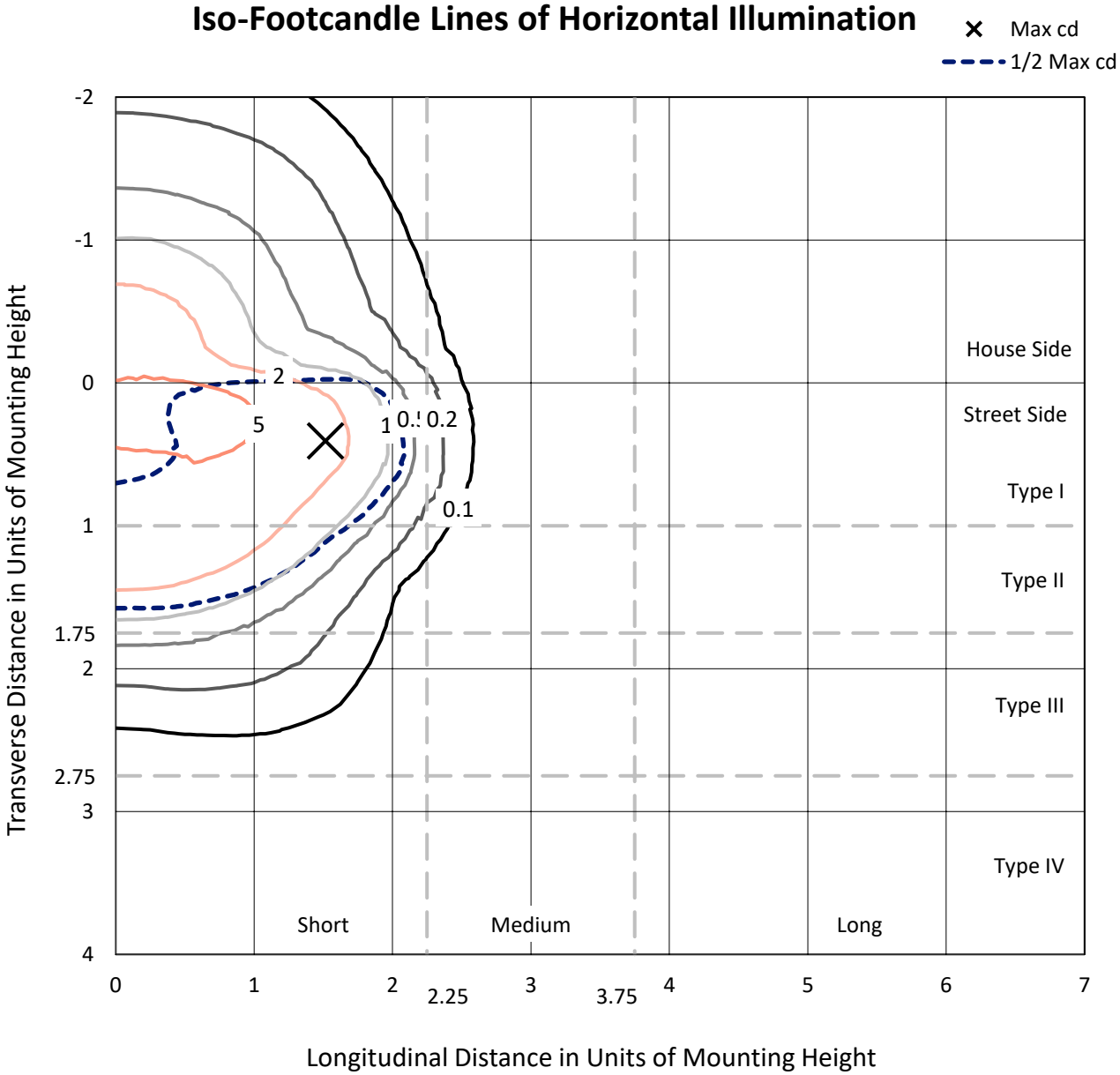
Scaled Data Report

REPORT NUMBER: P629251
CATALOG NUMBER: GWS-SA1B-730-U-T2-W-GRSWH

## Iso-Footcandle Lines of Horizontal Illumination




Based on 10 foot mounting height. Maximum calculated value = 7.2 fc
Type II - Short - N/A

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REPORT NUMBER: P629251
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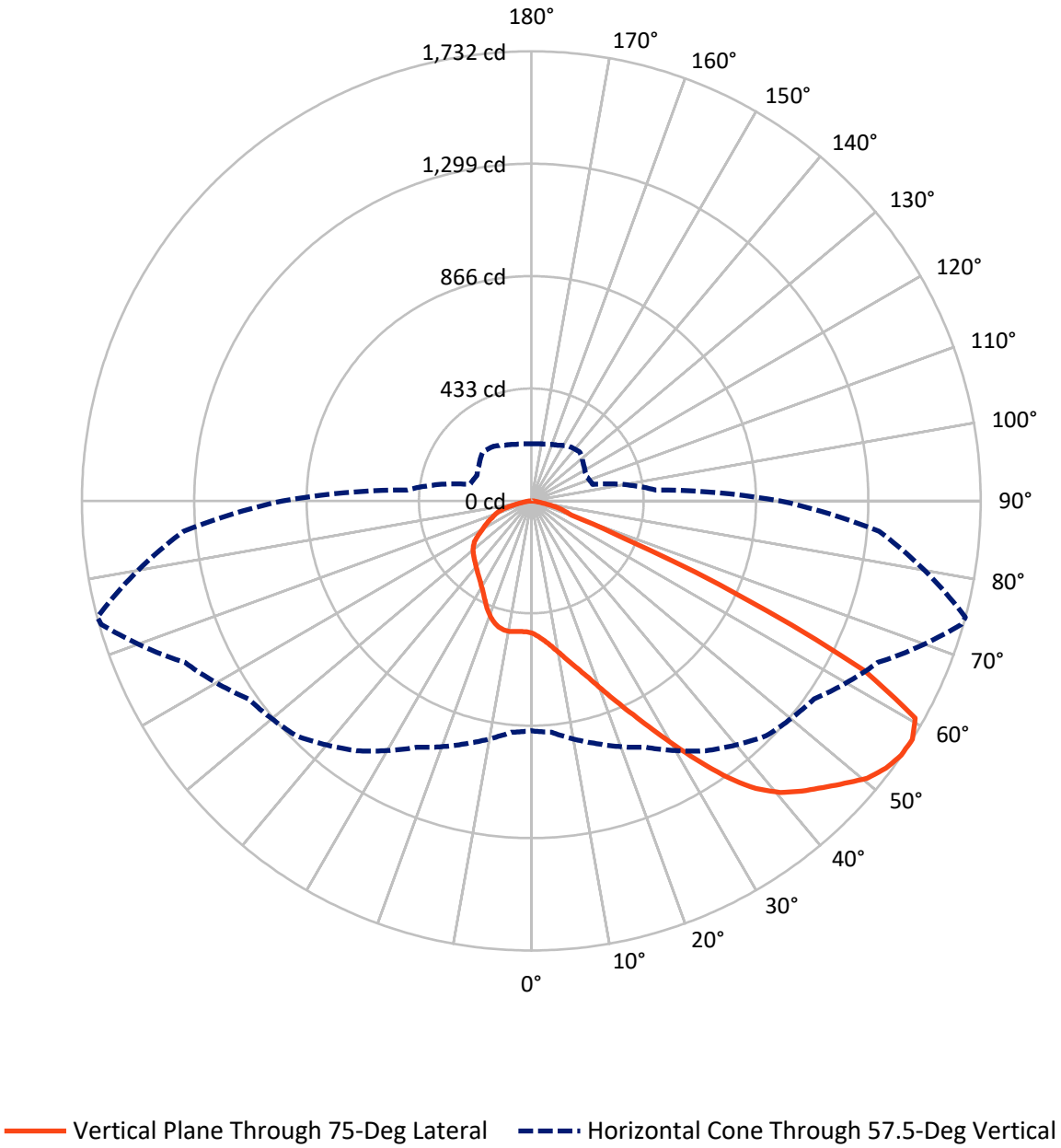
## Luminous Intensity Polar Plot



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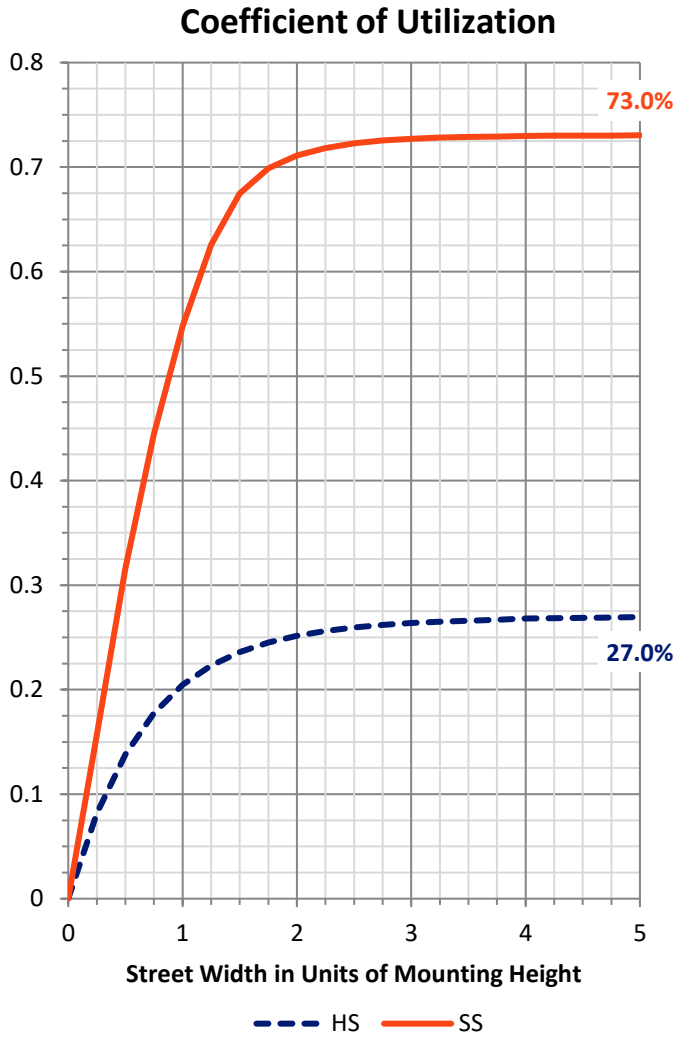
REPORT NUMBER: P629251
CATALOG NUMBER: GWS-SA1B-730-U-T2-W-GRSWH

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 736.1 | 0.0 | 736.1 |
| | % Fixture | 27.1 | 0.0 | 27.1 |
| **Street Side** | Lumens | 1984.9 | 0.0 | 1984.9 |
| | % Fixture | 72.9 | 0.0 | 72.9 |
| **Total** | Lumens | 2721.0 | 0.0 | 2721.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 51.0 | 1.9 |
| 10°-20° | 162.4 | 6.0 |
| 20°-30° | 287.9 | 10.6 |
| 30°-40° | 440.8 | 16.2 |
| 40°-50° | 613.7 | 22.6 |
| 50°-60° | 703.2 | 25.8 |
| 60°-70° | 361.3 | 13.3 |
| 70°-80° | 91.0 | 3.3 |
| 80°-90° | 9.7 | 0.4 |
| 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° | 2721.0 | 100.0 |
| 0°-180° | 2721.0 | 100.0 |



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REPORT NUMBER: P629251
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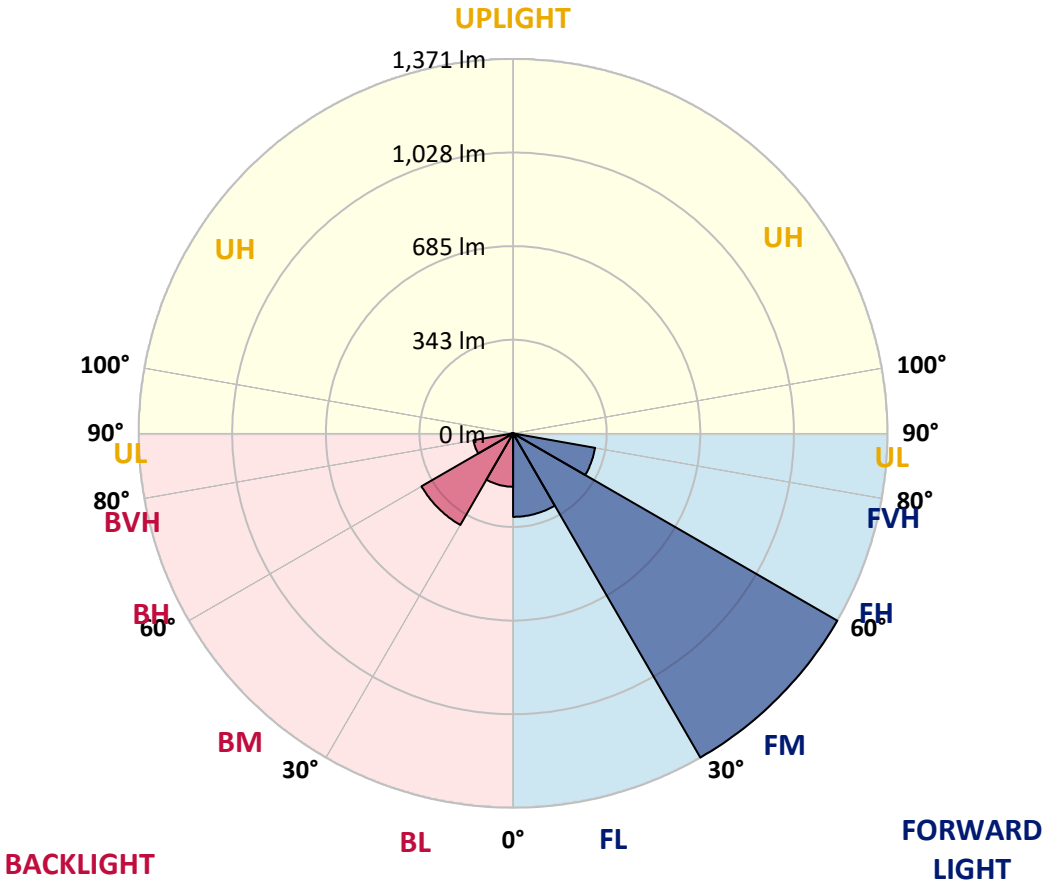
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 305.7 | 11.2 | | | |
| FM | (30°-60°) | 1370.6 | 50.4 | | | |
| FH | (60°-80°) | 305.0 | 11.2 | | | G0/660 |
| FVH | (80°-90°) | 3.6 | 0.1 | | | G0/10 |
| BL | (0°-30°) | 195.5 | 7.2 | B1/500 | | |
| BM | (30°-60°) | 387.1 | 14.2 | B1/1000 | | |
| BH | (60°-80°) | 147.3 | 5.4 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 6.1 | 0.2 | | | G0/10 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B1-U0-G1**
Type II Short



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Scaled Data Report

REPORT NUMBER: P629251
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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 74° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 509.6 | 509.6 | 509.6 | 509.6 | 509.6 | 509.6 | 509.6 | 509.6 | 509.6 | *509.6* | 509.6 |
| 2.5° | 547.5 | 548.9 | 547.5 | 549.8 | 545.1 | 543.0 | 537.9 | 530.2 | 524.1 | *523.1* | 516.4 |
| 5° | 590.1 | 593.1 | 591.2 | 590.3 | 584.0 | 579.3 | 571.6 | 556.1 | 543.5 | *541.6* | 528.3 |
| 7.5° | 617.4 | 619.5 | 619.5 | 620.2 | 617.9 | 612.5 | 604.3 | 586.1 | 568.3 | *565.5* | 545.4 |
| 10° | 626.6 | 628.2 | 631.2 | 637.1 | 641.8 | 643.4 | 638.0 | 620.5 | 598.7 | *595.9* | 567.8 |
| 12.5° | 628.7 | 630.5 | 635.2 | 646.0 | 658.8 | 670.5 | 671.5 | 658.6 | 634.3 | *631.2* | 593.8 |
| 15° | 632.6 | 634.5 | 640.8 | 654.2 | 673.1 | 695.6 | 709.4 | 700.5 | 673.6 | *670.3* | 623.3 |
| 17.5° | 632.2 | 634.3 | 643.6 | 661.4 | 686.9 | 719.4 | 746.1 | 749.9 | 722.0 | *716.4* | 656.7 |
| 20° | 631.0 | 632.9 | 642.9 | 664.7 | 696.3 | 741.0 | 789.2 | 808.6 | 778.6 | *773.5* | 695.8 |
| 22.5° | 640.4 | 642.5 | 650.2 | 668.2 | 701.2 | 757.6 | 828.9 | 875.7 | 845.8 | *838.5* | 740.7 |
| 25° | 661.4 | 664.5 | 669.1 | 681.5 | 710.1 | 772.3 | 869.7 | 951.8 | 921.1 | *912.5* | 789.6 |
| 27.5° | 693.9 | 697.7 | 704.2 | 710.1 | 730.0 | 791.0 | 910.1 | 1036.9 | 1006.3 | *997.2* | 841.3 |
| 30° | 733.7 | 738.6 | 747.1 | 751.0 | 764.6 | 818.6 | 954.1 | 1124.7 | 1106.9 | *1094.3* | 899.6 |
| 32.5° | 788.7 | 795.5 | 803.4 | 804.6 | 812.8 | 860.5 | 997.6 | 1211.7 | 1211.5 | *1202.6* | 965.8 |
| 35° | 860.3 | 867.5 | 869.2 | 870.8 | 874.8 | 918.1 | 1050.3 | 1291.0 | 1321.7 | *1311.4* | 1037.9 |
| 37.5° | 938.4 | 949.0 | 951.5 | 944.3 | 949.9 | 987.3 | 1109.5 | 1354.7 | 1417.6 | *1406.6* | 1107.6 |
| 40° | 1022.0 | 1026.2 | 1033.2 | 1021.7 | 1028.7 | 1066.7 | 1167.5 | 1395.4 | 1489.2 | *1477.5* | 1162.6 |
| 42.5° | 1081.9 | 1089.6 | 1100.1 | 1095.9 | 1099.9 | 1134.5 | 1208.2 | 1415.0 | 1540.2 | *1528.5* | 1202.1 |
| 45° | 1146.9 | 1149.2 | 1156.0 | 1155.1 | 1157.4 | 1189.7 | 1237.4 | 1423.7 | 1585.8 | *1575.3* | 1235.8 |
| 47.5° | 1203.5 | 1207.0 | 1211.5 | 1206.3 | 1201.2 | 1222.2 | 1261.3 | 1431.2 | 1638.5 | *1625.8* | 1271.1 |
| 50° | 1258.0 | 1261.1 | 1266.5 | 1251.5 | 1232.3 | 1237.7 | 1273.0 | 1441.5 | 1687.8 | *1678.9* | 1299.0 |
| 52.5° | 1268.1 | 1271.4 | 1296.6 | 1299.7 | 1275.1 | 1256.2 | 1293.6 | 1464.2 | 1716.8 | *1711.2* | 1309.0 |
| 55° | 1141.5 | 1147.4 | 1197.7 | 1255.5 | 1316.1 | 1310.0 | 1326.6 | 1476.1 | 1728.3 | *1729.7* | 1327.1 |
| 57.5° | *886.0* | *894.5* | *967.9* | *1047.2* | *1174.7* | *1280.3* | *1330.8* | *1473.1* | *1724.3* | *1732.1* | *1345.5* |
| 60° | 581.2 | 586.1 | 673.1 | 762.0 | 894.2 | 1040.2 | 1191.1 | 1418.3 | 1689.0 | *1700.0* | 1340.9 |
| 62.5° | 350.9 | 356.6 | 426.5 | 493.9 | 571.8 | 669.4 | 807.9 | 1139.9 | 1415.7 | *1440.3* | 1073.9 |
| 65° | 245.0 | 252.4 | 313.7 | 369.2 | 396.1 | 376.0 | 409.2 | 636.6 | 882.1 | *892.3* | 656.3 |
| 67.5° | 177.6 | 182.7 | 233.0 | 299.0 | 328.7 | 265.6 | 202.4 | 281.9 | 384.2 | *387.9* | 270.7 |
| 70° | 116.3 | 122.1 | 167.8 | 227.6 | 268.4 | 215.2 | 151.4 | 152.5 | 161.7 | *163.5* | 157.2 |
| 72.5° | 63.9 | 67.4 | 103.6 | 151.1 | 158.6 | 128.7 | 118.2 | 126.8 | 133.1 | *133.1* | 134.8 |
| 75° | 33.0 | 36.0 | 42.3 | 49.8 | 60.1 | 70.4 | 85.2 | 98.0 | 104.8 | *105.3* | 104.6 |
| 77.5° | 16.8 | 18.0 | 22.7 | 24.6 | 26.9 | 31.4 | 40.7 | 52.2 | 58.3 | *60.6* | 60.1 |
| 80° | 8.0 | 8.4 | 9.6 | 11.2 | 13.8 | 17.5 | 22.0 | 26.2 | 29.9 | *30.4* | 33.0 |
| 82.5° | 4.2 | 4.7 | 5.1 | 6.1 | 7.5 | 9.4 | 12.9 | 15.4 | 17.8 | *18.2* | 20.4 |
| 85° | 1.6 | 1.9 | 2.1 | 2.3 | 3.3 | 4.0 | 5.4 | 7.3 | 8.9 | *8.9* | 10.5 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.5 | 0.9 | 1.2 | 1.6 | *1.6* | 2.8 |
| 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: P629251
CATALOG NUMBER: GWS-SA1B-730-U-T2-W-GRSWH

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 509.6 | 509.6 | 509.6 | 509.6 | 509.6 | 509.6 | 509.6 | 509.6 | 509.6 | 509.6 | 509.6 |
| 2.5° | 514.7 | 507.9 | 504.9 | 500.0 | 496.0 | 491.6 | 488.1 | 485.5 | 483.8 | 482.9 | 482.0 |
| 5° | 523.1 | 512.9 | 504.7 | 494.8 | 488.1 | 481.5 | 476.1 | 472.4 | 470.5 | 469.1 | 468.2 |
| 7.5° | 536.3 | 522.4 | 507.0 | 491.8 | 479.9 | 469.3 | 462.6 | 458.6 | 456.0 | 455.1 | 454.4 |
| 10° | 554.3 | 535.1 | 509.6 | 485.5 | 467.7 | 456.2 | 451.6 | 449.7 | 449.9 | 449.4 | 449.2 |
| 12.5° | 574.6 | 548.4 | 508.9 | 474.2 | 454.6 | 447.8 | 448.0 | 451.1 | 454.6 | 455.5 | 455.8 |
| 15° | 596.6 | 561.5 | 502.1 | 459.7 | 444.3 | 445.0 | 451.1 | 458.3 | 464.9 | 467.5 | 467.9 |
| 17.5° | 620.5 | 572.5 | 489.7 | 443.8 | 435.9 | 443.4 | 454.6 | 466.5 | 476.1 | 480.3 | 481.5 |
| 20° | 647.1 | 581.9 | 472.1 | 428.2 | 427.9 | 440.3 | 456.7 | 472.4 | 484.5 | 490.2 | 491.1 |
| 22.5° | 675.5 | 587.7 | 450.6 | 413.7 | 419.7 | 436.3 | 455.1 | 471.4 | 484.3 | 489.9 | 491.1 |
| 25° | 704.0 | 589.6 | 427.0 | 400.3 | 411.3 | 430.0 | 447.1 | 460.2 | 472.4 | 477.3 | 478.2 |
| 27.5° | 730.7 | 584.2 | 404.5 | 388.9 | 403.6 | 420.7 | 432.1 | 439.2 | 447.6 | 451.3 | 452.0 |
| 30° | 757.8 | 573.5 | 385.6 | 379.7 | 394.9 | 407.8 | 413.0 | 413.4 | 416.7 | 416.7 | 417.2 |
| 32.5° | 785.2 | 557.5 | 369.0 | 370.8 | 384.2 | 392.6 | 393.3 | 387.9 | 383.9 | 377.4 | 377.2 |
| 35° | 816.8 | 541.4 | 355.4 | 360.8 | 371.5 | 376.7 | 374.6 | 364.3 | 354.7 | 343.9 | 343.5 |
| 37.5° | 846.0 | 524.8 | 343.9 | 350.5 | 357.3 | 361.0 | 356.1 | 343.7 | 335.7 | 324.7 | 323.1 |
| 40° | 870.1 | 509.8 | 332.9 | 339.7 | 343.0 | 346.3 | 338.3 | 328.3 | 329.4 | 323.3 | 323.1 |
| 42.5° | 884.2 | 495.3 | 322.6 | 327.8 | 329.9 | 332.2 | 325.2 | 317.7 | 324.0 | 319.4 | 319.6 |
| 45° | 894.5 | 482.7 | 313.3 | 315.2 | 320.3 | 323.8 | 317.3 | 308.8 | 310.2 | 292.2 | 288.0 |
| 47.5° | 906.2 | 475.7 | 304.4 | 302.5 | 311.6 | 317.7 | 307.7 | 295.5 | 287.1 | 269.3 | 267.7 |
| 50° | 918.6 | 473.1 | 295.0 | 289.9 | 300.9 | 306.7 | 295.0 | 279.8 | 268.8 | 259.2 | 258.3 |
| 52.5° | 922.8 | 472.8 | 283.3 | 274.7 | 285.7 | 293.9 | 284.0 | 268.6 | 255.5 | 246.1 | 245.7 |
| 55° | 939.4 | 479.6 | 268.4 | 253.9 | 264.1 | 281.0 | 273.7 | 251.5 | 241.0 | 236.8 | 236.3 |
| 57.5° | *958.8* | *480.8* | *244.7* | *231.2* | *245.4* | *265.3* | *256.2* | *237.0* | *225.5* | *220.4* | *219.9* |
| 60° | 950.8 | 452.0 | 219.5 | 213.8 | 229.5 | 250.6 | 242.2 | 225.5 | 212.2 | 207.3 | 206.8 |
| 62.5° | 724.6 | 319.1 | 201.0 | 198.9 | 212.4 | 229.3 | 227.6 | 210.3 | 197.7 | 194.2 | 193.7 |
| 65° | 435.9 | 224.1 | 183.2 | 183.0 | 192.6 | 208.7 | 210.8 | 196.8 | 183.4 | 178.5 | 178.5 |
| 67.5° | 215.5 | 171.5 | 163.1 | 161.9 | 168.0 | 179.5 | 188.3 | 176.9 | 165.6 | 161.0 | 160.3 |
| 70° | 152.3 | 151.1 | 148.3 | 145.1 | 146.2 | 150.9 | 154.7 | 145.1 | 133.1 | 128.4 | 127.5 |
| 72.5° | 131.7 | 132.0 | 130.1 | 127.5 | 126.6 | 123.3 | 120.0 | 113.0 | 105.8 | 100.8 | 101.3 |
| 75° | 102.2 | 102.7 | 103.9 | 102.9 | 100.4 | 96.9 | 93.4 | 84.5 | 78.6 | 73.9 | 73.0 |
| 77.5° | 59.7 | 62.0 | 65.7 | 64.8 | 65.3 | 60.4 | 59.0 | 50.3 | 44.9 | 41.6 | 40.9 |
| 80° | 33.7 | 35.1 | 36.7 | 37.9 | 36.5 | 34.4 | 31.4 | 26.7 | 25.0 | 22.7 | 22.2 |
| 82.5° | 20.4 | 21.8 | 22.5 | 23.4 | 22.9 | 20.1 | 17.8 | 14.7 | 13.3 | 12.2 | 11.9 |
| 85° | 10.3 | 11.2 | 11.9 | 12.4 | 11.0 | 9.1 | 8.2 | 6.6 | 5.6 | 4.9 | 4.9 |
| 87.5° | 2.6 | 2.8 | 3.3 | 2.8 | 2.6 | 1.2 | 0.9 | 0.2 | 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

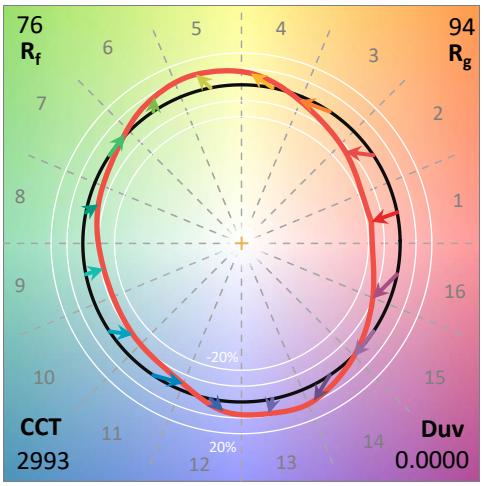
| | |
|---|---|
| Test Method: | LM-79-2008 |
| Report Number: | SP1-1908-441-2-R4 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 10/28/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| 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 |

Cooper Lighting Solutions Photometric Lab
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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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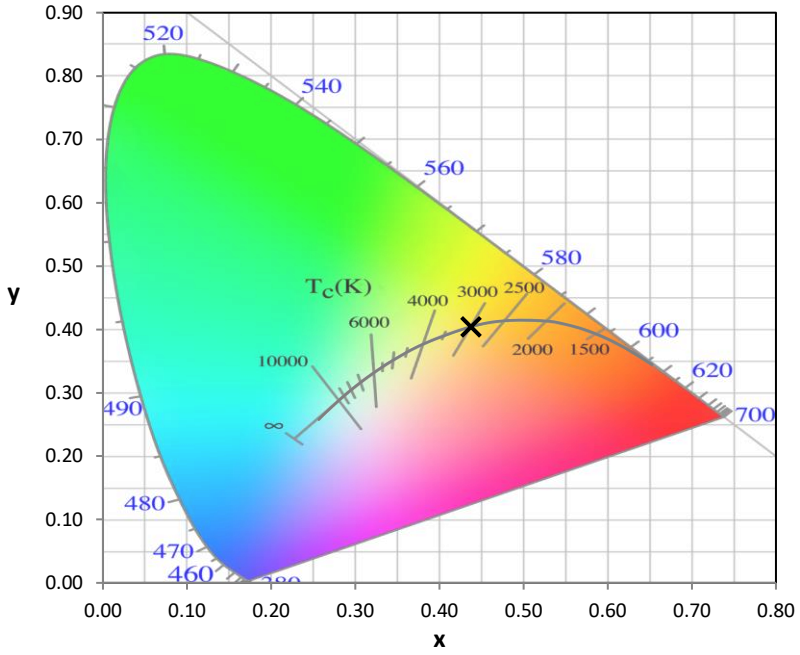
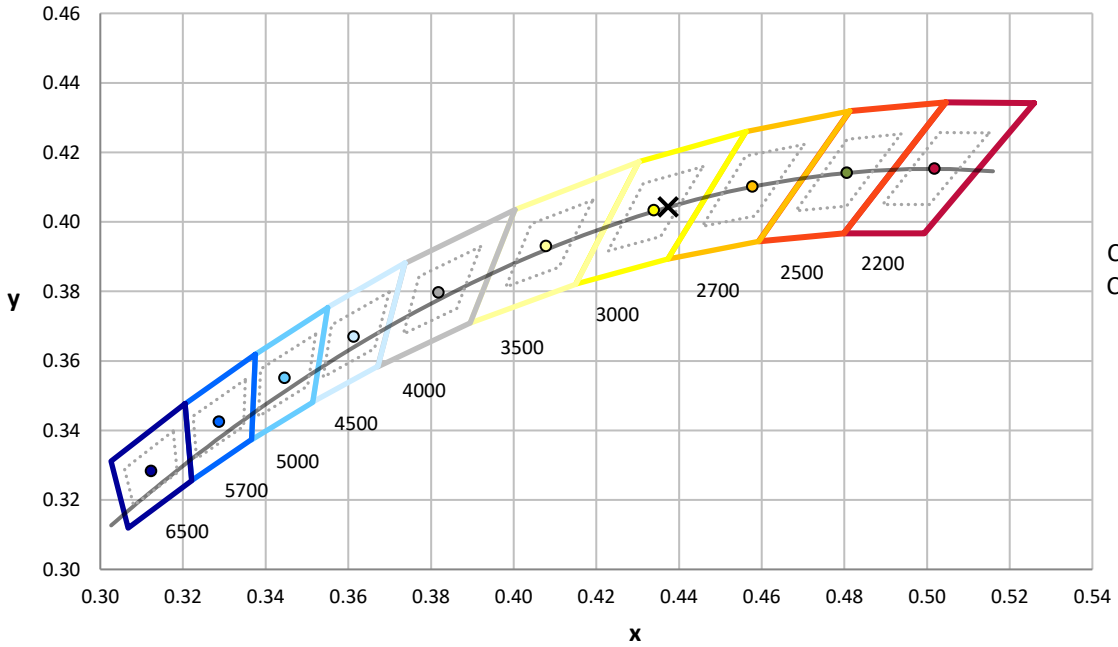
REPORT NUMBER: SP1-1908-441-2-R4

## 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

Cooper Lighting Solutions Photometric Lab
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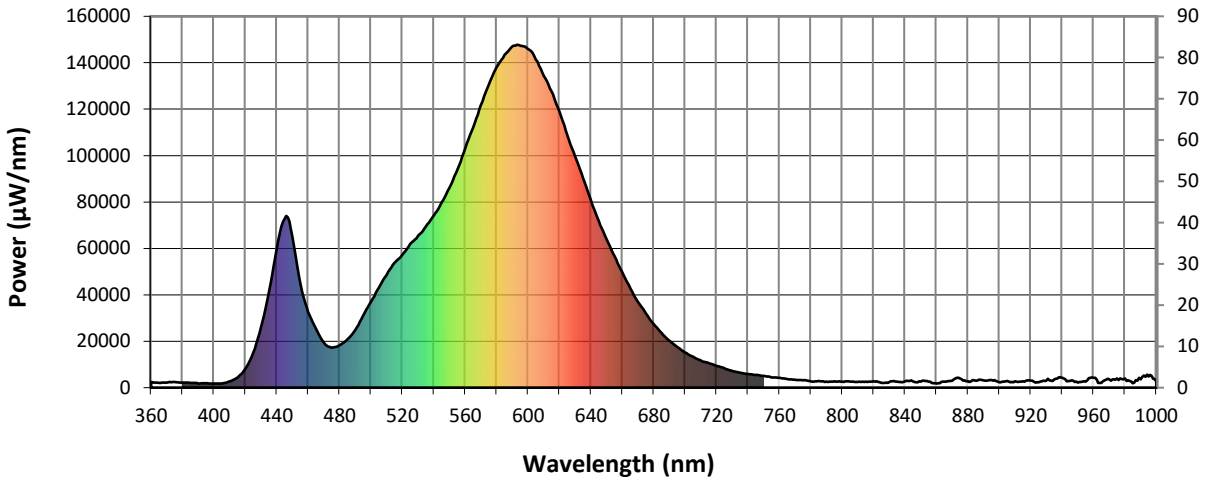
## Photopic Flux vs. Wavelength




######

| 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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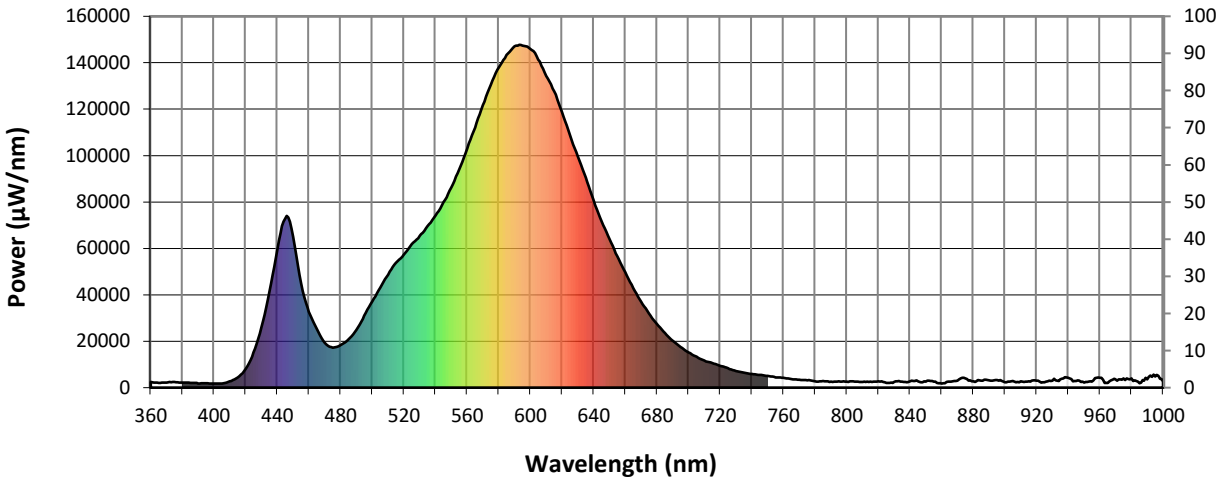
## Scotopic Flux vs. Wavelength




**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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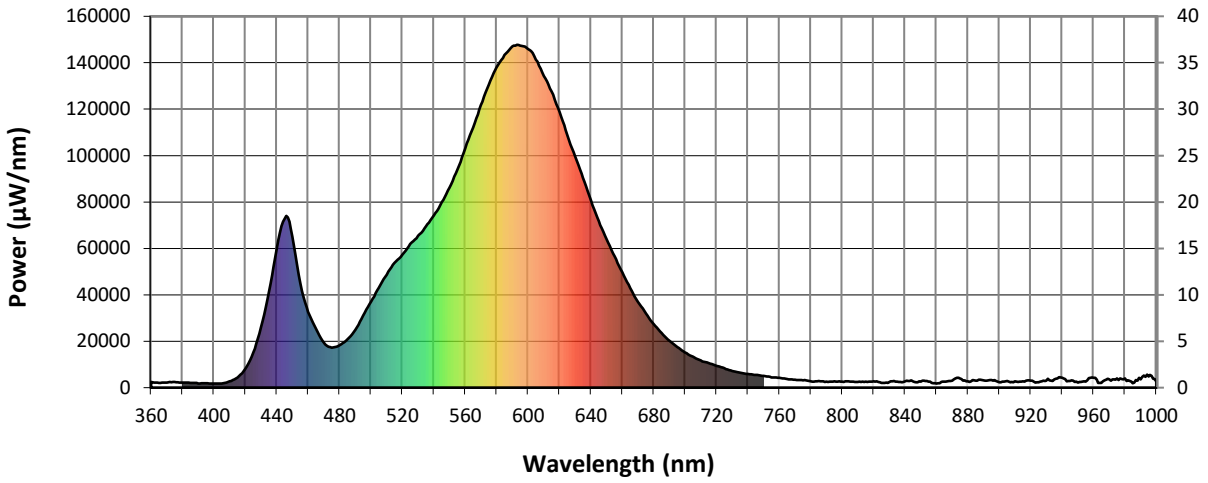
## Melanopic Flux vs. Wavelength




**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 |
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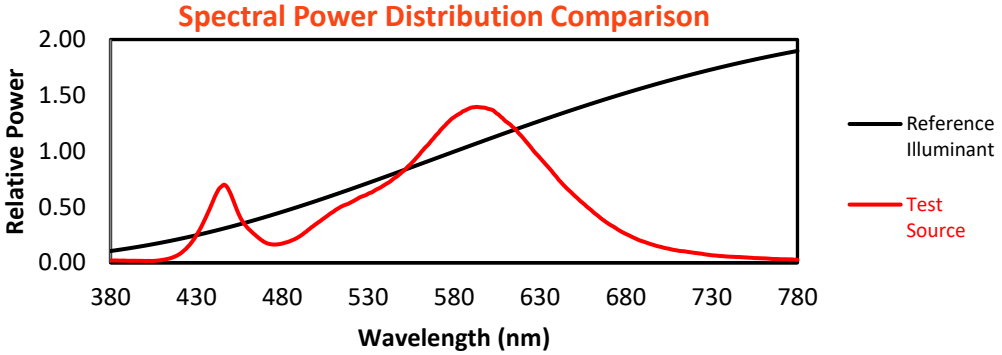
# TM-30-18

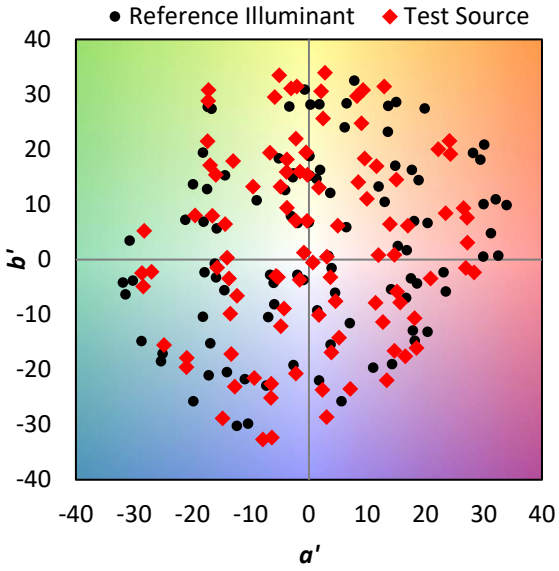
## Summary

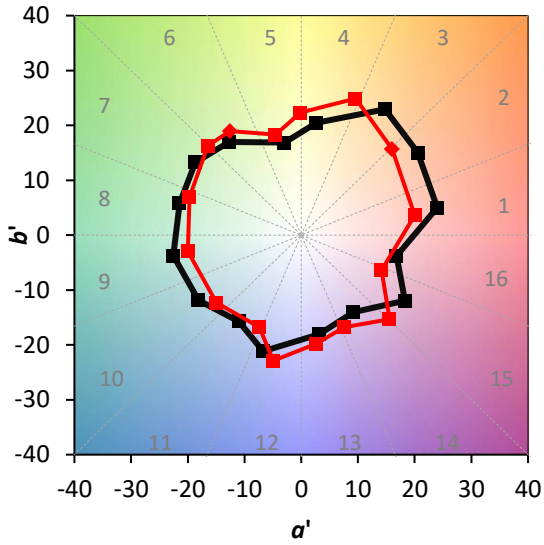
$R_f$ = 75.7
$R_g$ = 93.9
CIE $R_a$ = 71.8
$R_9$ = -38.3

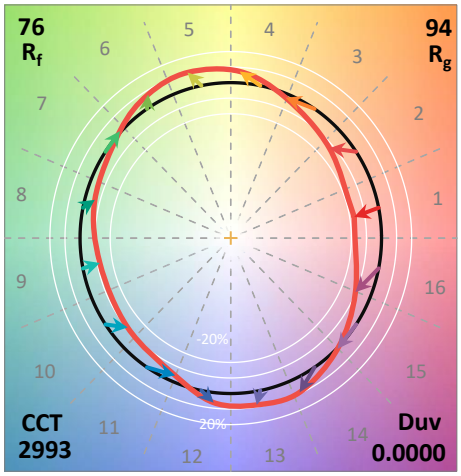
## Spectral Power Distribution Comparison

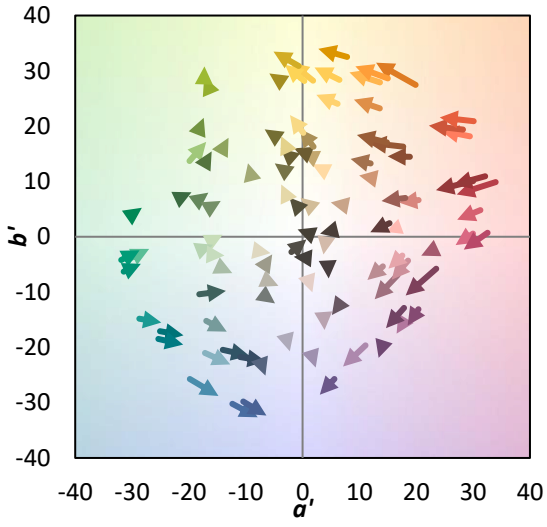



## Color Vector Graphics



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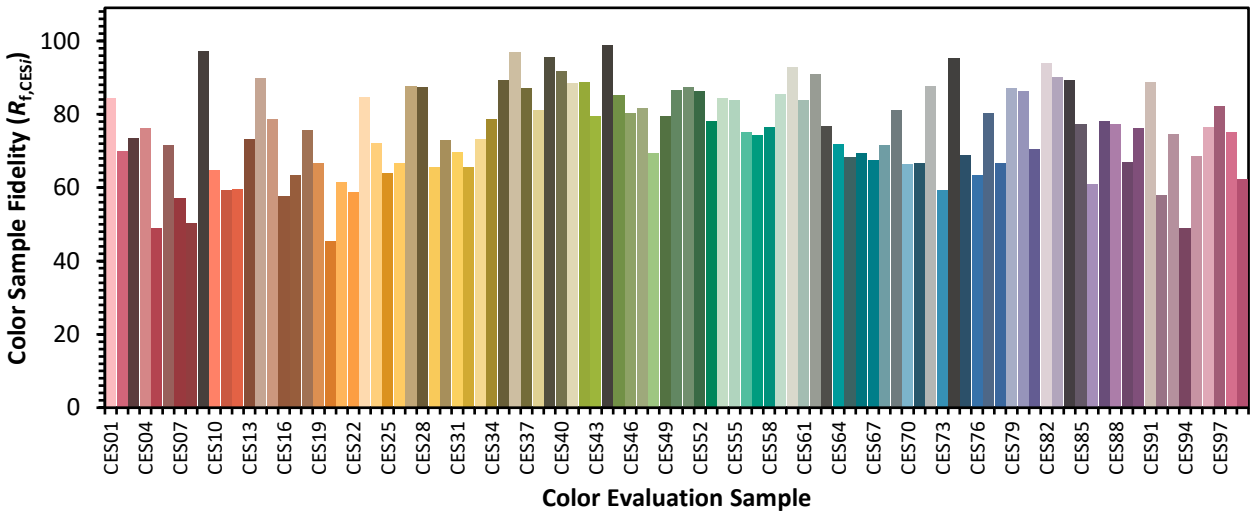
## Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|---|---|---|---|
| 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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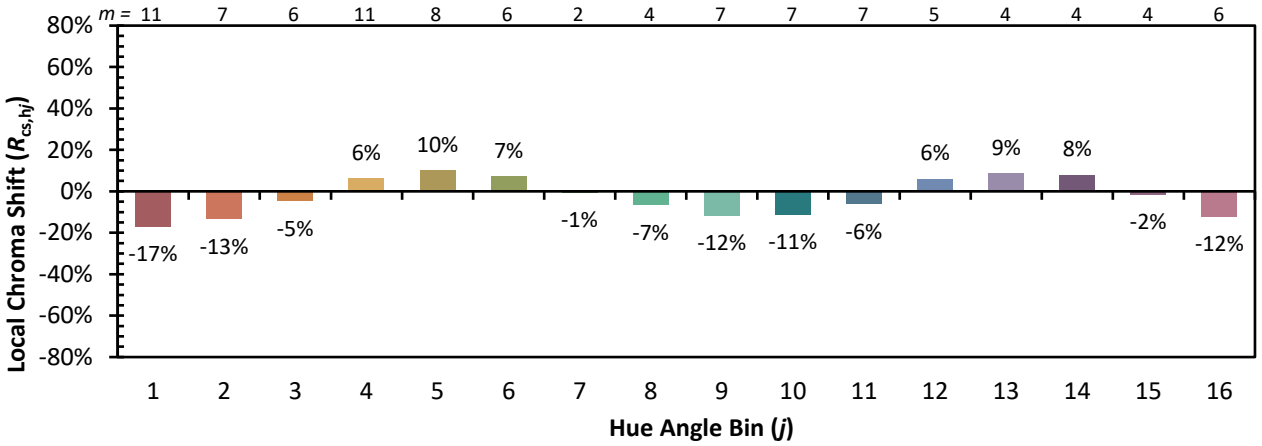
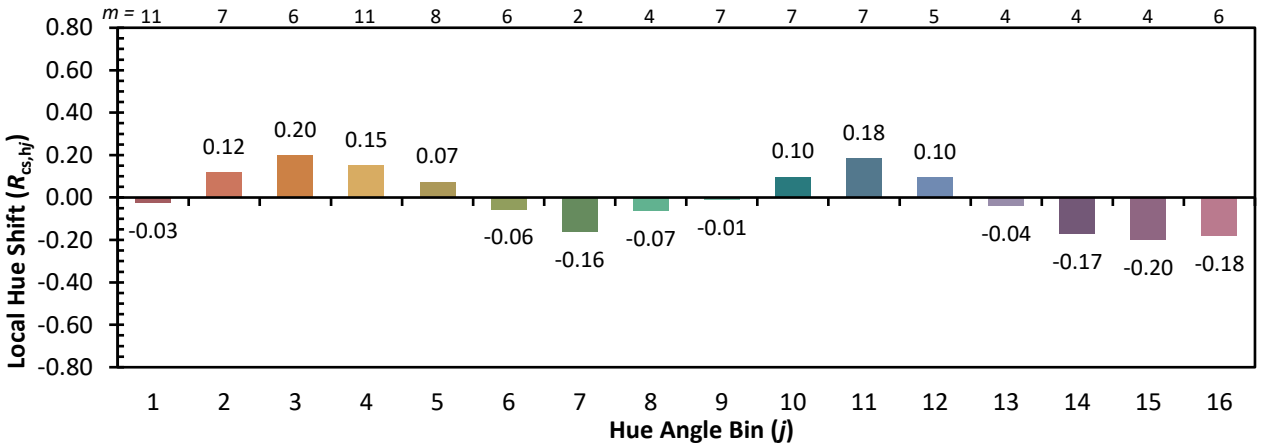
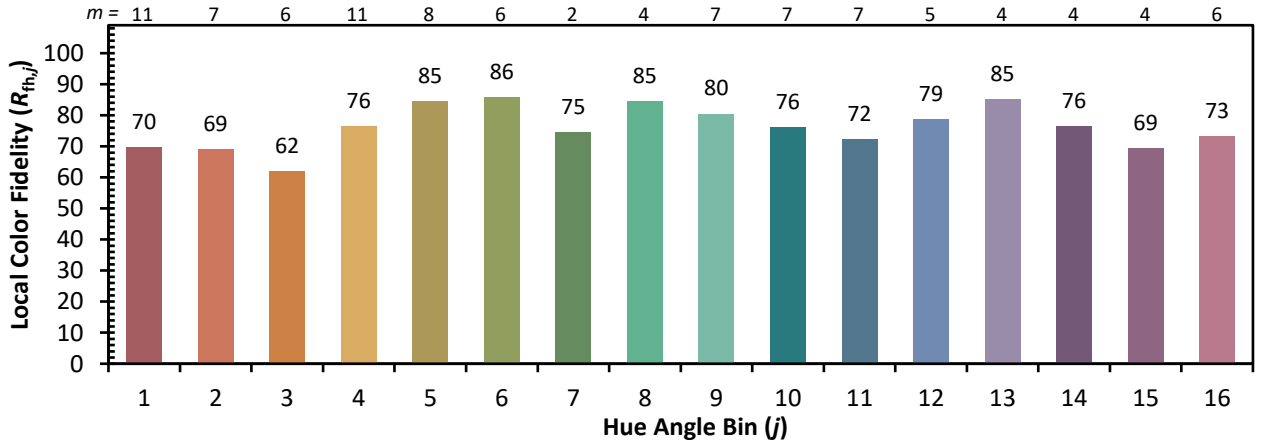
## TM-30-18

### Color Rendition by Hue-Angle Bin



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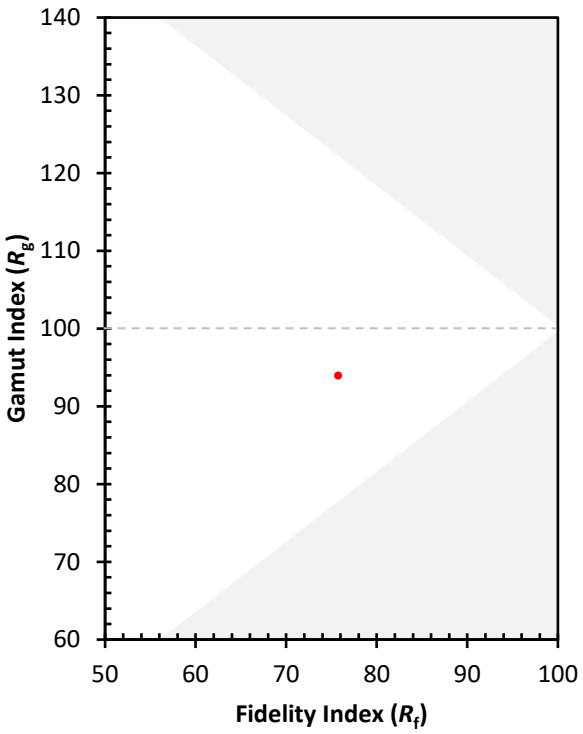
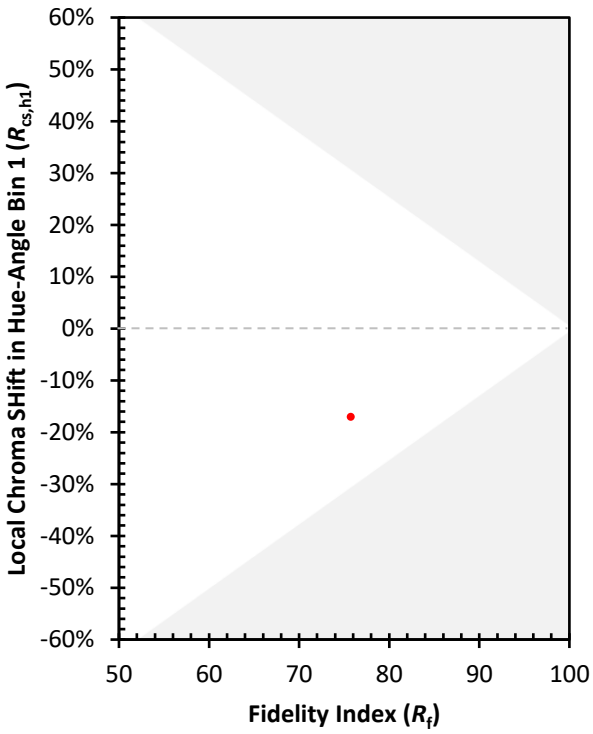
## TM-30-18

### Measure Comparisons




(END OF REPORT)