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: LUMARK

Report Number: P1449772

Luminaire Tested: **AXCS3A-GRF-W**

Issue Date: 5/12/2026

Report Generated By 670246072

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

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-08 |
| Report Number: | P1449772 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1901-095-1) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 5/12/2026 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | LUMARK |
| Catalog Number: | AXCS3A-GRF-W |
| Description: | 3A AXCENT LED FULL CUTOFF WALLPACK WITH 3000K 80CRI LEDS AND GLARE REDUCTING LENS |
| Light Source: | - |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 2888 lumens |
| Efficiency: | N/A |
| Efficacy: | 125.6 lumens/watt |
| Luminous Opening: | Rectangular (W 0.17' x L: 0.5' x H: 0') |
| IES Classification: | Type II - Short |
| BUG Rating: | B1 - U0 - G1 |

| | |
|---|---|
| Input Watts (W): | 23 |
| Input Voltage (V): | NR |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 25 FT |

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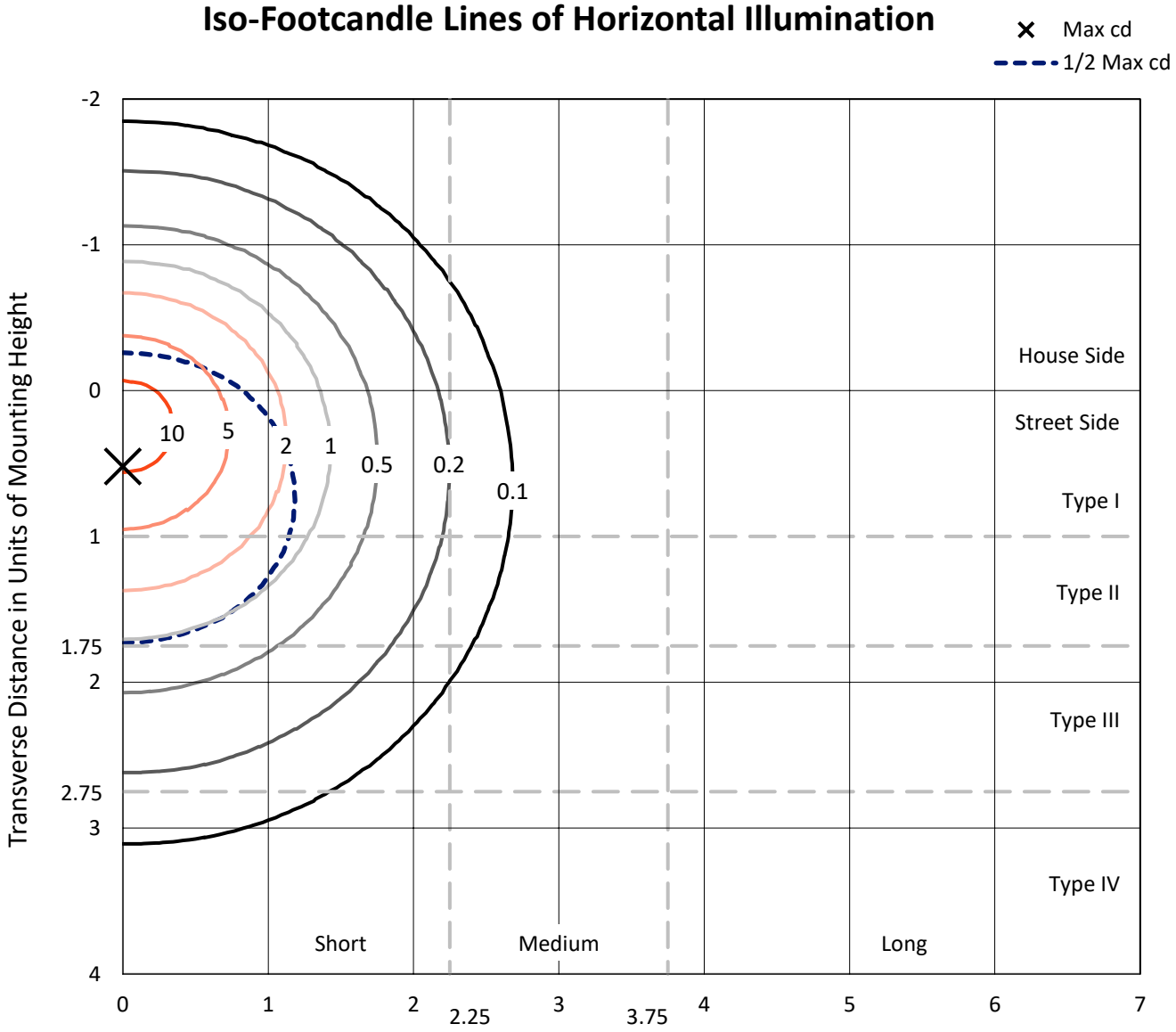
Scaled Data Report

REPORT NUMBER: P1449772
CATALOG NUMBER: AXCS3A-GRF-W

## Iso-Footcandle Lines of Horizontal Illumination




Based on 10 foot mounting height. Maximum calculated value = 12.8 fc
Type II - Short - N/A

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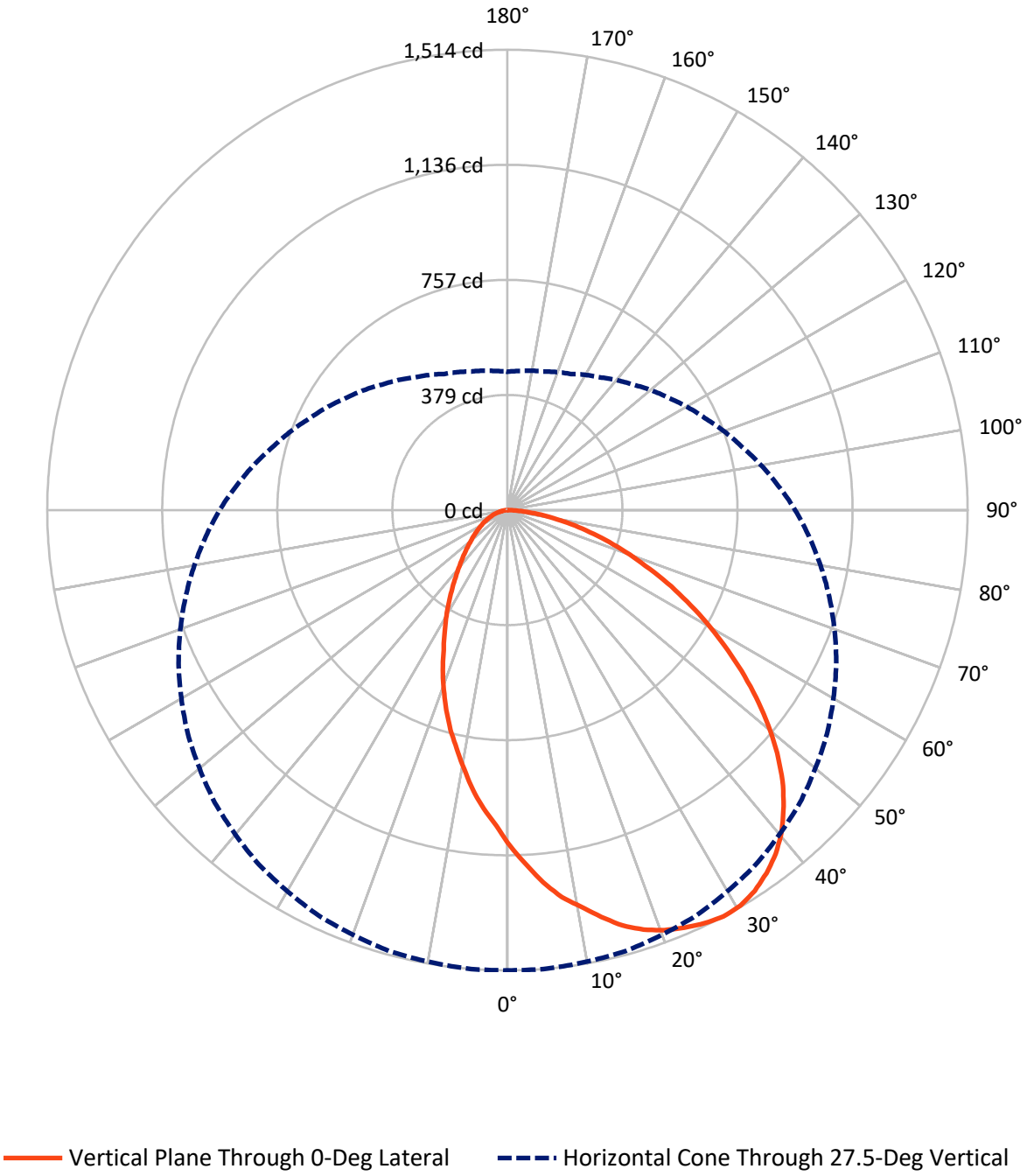
Scaled Data Report

REPORT NUMBER: P1449772
CATALOG NUMBER: AXCS3A-GRF-W

## Luminous Intensity Polar Plot



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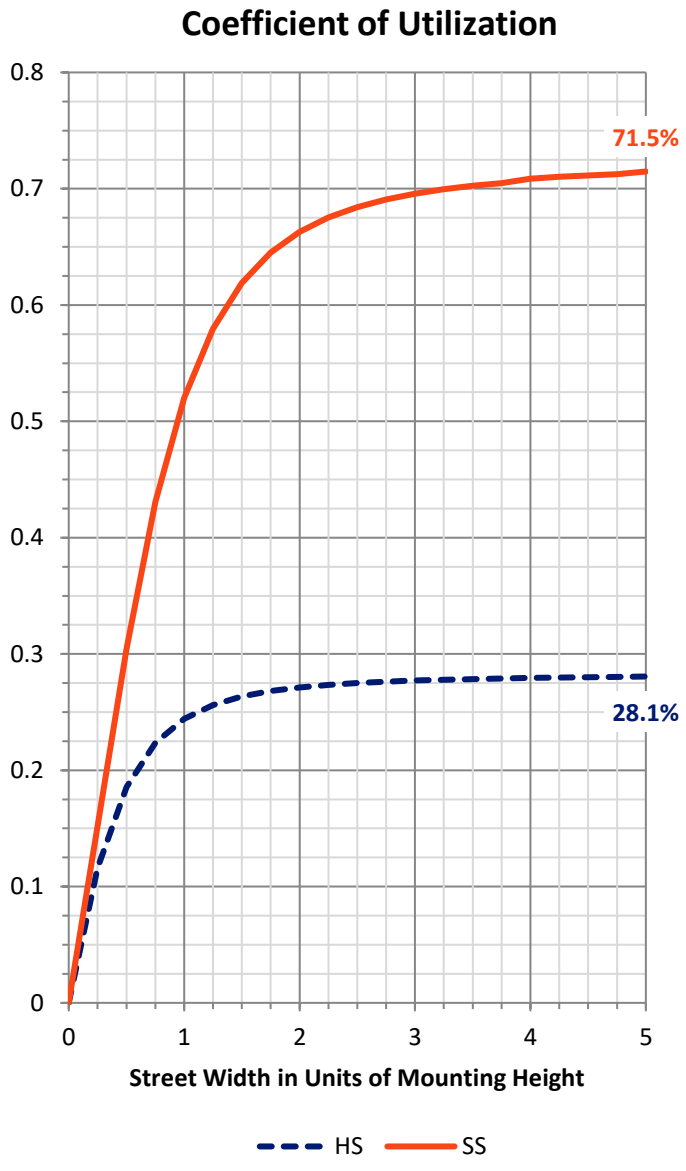
REPORT NUMBER: P1449772
CATALOG NUMBER: AXCS3A-GRF-W

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 817.1 | 0.0 | 817.1 |
| | % Fixture | 28.3 | 0.0 | 28.3 |
| **Street Side** | Lumens | 2070.9 | 0.0 | 2070.9 |
| | % Fixture | 71.7 | 0.0 | 71.7 |
| **Total** | Lumens | 2888.0 | 0.0 | 2888.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 105.0 | 3.6 |
| 10°-20° | 302.6 | 10.5 |
| 20°-30° | 457.6 | 15.8 |
| 30°-40° | 542.7 | 18.8 |
| 40°-50° | 538.8 | 18.7 |
| 50°-60° | 448.0 | 15.5 |
| 60°-70° | 306.3 | 10.6 |
| 70°-80° | 154.8 | 5.4 |
| 80°-90° | 32.2 | 1.1 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 2888.0 | 100.0 |
| 0°-180° | 2888.0 | 100.0 |



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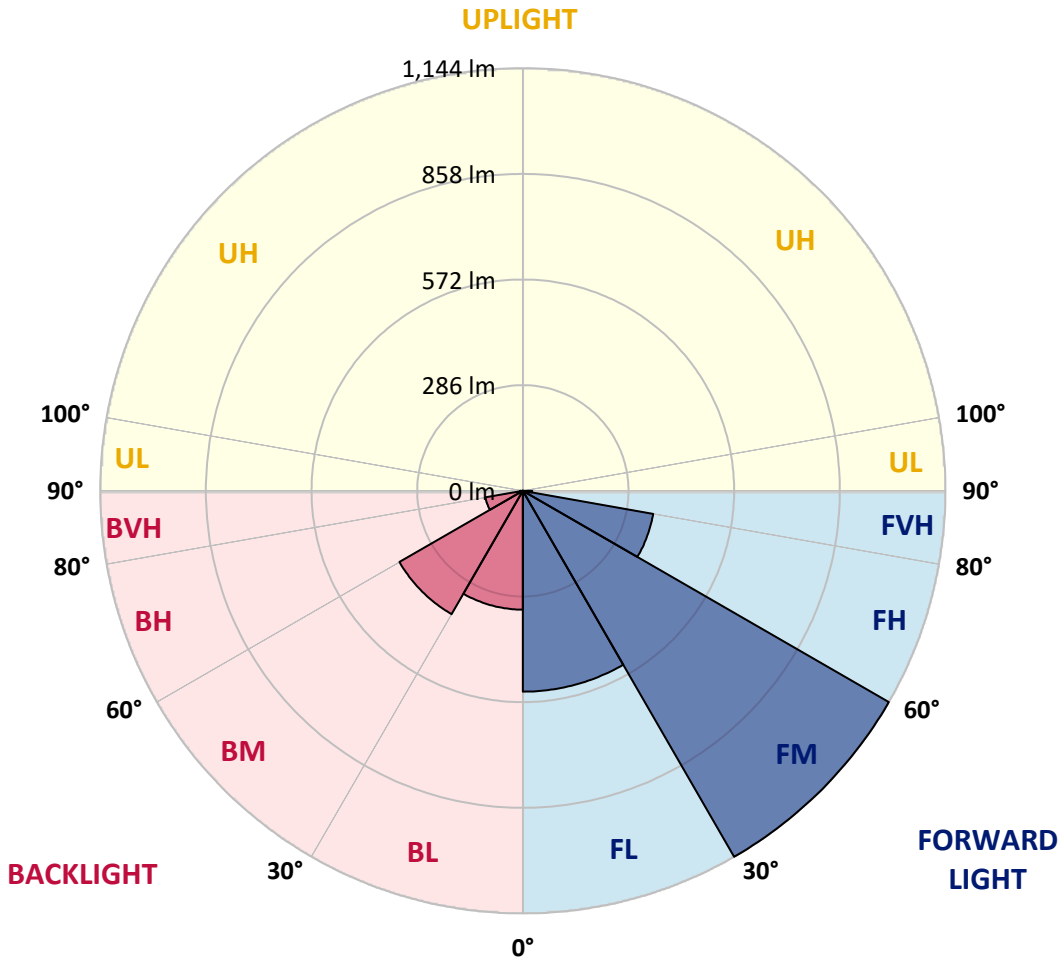
Scaled Data Report

REPORT NUMBER: P1449772
CATALOG NUMBER: AXCS3A-GRF-W

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 543.6 | 18.8 | | | |
| FM | (30°-60°) | 1144.0 | 39.6 | | | |
| FH | (60°-80°) | 358.3 | 12.4 | | | G0/660 |
| FVH | (80°-90°) | 25.0 | 0.9 | | | G1/100 |
| BL | (0°-30°) | 321.6 | 11.1 | B1/500 | | |
| BM | (30°-60°) | 385.6 | 13.4 | B1/1000 | | |
| BH | (60°-80°) | 102.8 | 3.6 | B0/110 | | G0/110 |
| BVH | (80°-90°) | 7.1 | 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: P1449772
CATALOG NUMBER: AXCS3A-GRF-W

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | *1106.2* | 1106.2 | 1106.2 | 1106.2 | 1106.2 | 1106.2 | 1106.2 | 1106.2 | 1106.2 | 1106.2 | 1106.2 |
| 2.5° | *1167.5* | 1163.4 | 1157.3 | 1155.2 | 1149.1 | 1143.0 | 1136.9 | 1128.7 | 1120.5 | 1112.4 | 1106.2 |
| 5° | *1230.7* | 1224.6 | 1216.5 | 1208.3 | 1200.1 | 1187.9 | 1171.5 | 1155.2 | 1136.9 | 1118.5 | 1108.3 |
| 7.5° | *1285.8* | 1279.7 | 1269.5 | 1259.3 | 1243.0 | 1226.7 | 1202.2 | 1175.6 | 1147.1 | 1120.5 | 1104.2 |
| 10° | *1326.7* | 1322.6 | 1312.4 | 1298.1 | 1277.7 | 1253.2 | 1222.6 | 1185.8 | 1149.1 | 1110.3 | 1091.9 |
| 12.5° | *1373.6* | 1367.5 | 1357.3 | 1338.9 | 1312.4 | 1281.8 | 1243.0 | 1200.1 | 1153.2 | 1104.2 | 1079.7 |
| 15° | *1418.5* | 1414.4 | 1402.2 | 1381.8 | 1353.2 | 1314.4 | 1267.5 | 1214.4 | 1157.3 | 1100.1 | 1069.5 |
| 17.5° | *1451.2* | 1449.1 | 1438.9 | 1414.4 | 1381.8 | 1334.8 | 1281.8 | 1220.5 | 1155.2 | 1087.9 | 1053.2 |
| 20° | *1475.7* | 1475.7 | 1463.4 | 1436.9 | 1398.1 | 1349.1 | 1287.9 | 1218.5 | 1145.0 | 1069.5 | 1028.7 |
| 22.5° | *1492.0* | 1492.0 | 1479.7 | 1451.2 | 1408.3 | 1355.2 | 1287.9 | 1210.3 | 1128.7 | 1045.0 | 1000.1 |
| 25° | *1506.3* | 1504.2 | 1494.0 | 1463.4 | 1418.5 | 1359.3 | 1287.9 | 1204.2 | 1114.4 | 1020.5 | 973.6 |
| 27.5° | *1514.4* | *1514.4* | *1502.2* | *1471.6* | *1424.6* | *1361.4* | *1283.8* | *1194.0* | *1096.0* | *996.0* | *947.0* |
| 30° | *1510.4* | 1508.3 | 1496.1 | 1465.5 | 1416.5 | 1351.2 | 1267.5 | 1171.5 | 1069.5 | 963.4 | 912.3 |
| 32.5° | *1494.0* | 1489.9 | 1477.7 | 1449.1 | 1398.1 | 1330.7 | 1245.0 | 1145.0 | 1038.9 | 926.6 | 871.5 |
| 35° | *1467.5* | 1467.5 | 1453.2 | 1424.6 | 1375.7 | 1306.3 | 1214.4 | 1114.4 | 1002.1 | 887.8 | 832.7 |
| 37.5° | *1434.8* | 1432.8 | 1418.5 | 1392.0 | 1343.0 | 1273.6 | 1181.8 | 1077.7 | 963.4 | 845.0 | 791.9 |
| 40° | *1389.9* | 1387.9 | 1373.6 | 1347.1 | 1298.1 | 1230.7 | 1138.9 | 1034.8 | 918.5 | 800.1 | 745.0 |
| 42.5° | *1332.8* | 1332.8 | 1318.5 | 1294.0 | 1247.1 | 1181.8 | 1091.9 | 985.8 | 871.5 | 753.1 | 700.1 |
| 45° | *1269.5* | 1267.5 | 1253.2 | 1230.7 | 1185.8 | 1120.5 | 1034.8 | 930.7 | 818.5 | 704.2 | 651.1 |
| 47.5° | *1194.0* | 1192.0 | 1179.7 | 1161.3 | 1118.5 | 1059.3 | 973.6 | 873.6 | 763.3 | 653.1 | 602.1 |
| 50° | *1112.4* | 1110.3 | 1098.1 | 1081.7 | 1043.0 | 985.8 | 904.2 | 810.3 | 706.2 | 600.1 | 553.1 |
| 52.5° | *1024.6* | 1024.6 | 1014.4 | 998.1 | 965.4 | 908.3 | 832.7 | 745.0 | 647.0 | 547.0 | 498.0 |
| 55° | *934.8* | 934.8 | 926.6 | 912.3 | 881.7 | 832.7 | 763.3 | 679.7 | 587.8 | 489.8 | 451.1 |
| 57.5° | *842.9* | 842.9 | 836.8 | 824.6 | 796.0 | 751.1 | 689.9 | 612.3 | 526.6 | 442.9 | 406.2 |
| 60° | *753.1* | 753.1 | 747.0 | 736.8 | 712.3 | 669.5 | 612.3 | 547.0 | 467.4 | 391.9 | 359.2 |
| 62.5° | *663.3* | 665.4 | 659.3 | 651.1 | 630.7 | 591.9 | 542.9 | 477.6 | 412.3 | 344.9 | 316.4 |
| 65° | *577.6* | 579.7 | 575.6 | 565.4 | 549.0 | 512.3 | 469.4 | 418.4 | 359.2 | 300.0 | 275.5 |
| 67.5° | *489.8* | 491.9 | 493.9 | 481.7 | 467.4 | 438.8 | 404.1 | 357.2 | 308.2 | 259.2 | 236.8 |
| 70° | *412.3* | 414.3 | 414.3 | 406.2 | 393.9 | 369.4 | 336.8 | 300.0 | 259.2 | 216.3 | 200.0 |
| 72.5° | *336.8* | 338.8 | 340.9 | 334.7 | 322.5 | 302.1 | 277.6 | 247.0 | 212.3 | 177.6 | 163.3 |
| 75° | *267.4* | 271.5 | 269.4 | 263.3 | 255.1 | 238.8 | 220.4 | 193.9 | 167.4 | 140.8 | 128.6 |
| 77.5° | *202.1* | 204.1 | 204.1 | 200.0 | 193.9 | 183.7 | 167.4 | 147.0 | 126.5 | 108.2 | 98.0 |
| 80° | *142.9* | 142.9 | 144.9 | 142.9 | 136.7 | 126.5 | 116.3 | 104.1 | 89.8 | 77.6 | 69.4 |
| 82.5° | *89.8* | 91.8 | 91.8 | 89.8 | 85.7 | 81.6 | 71.4 | 63.3 | 55.1 | 49.0 | 42.9 |
| 85° | *44.9* | 46.9 | 46.9 | 44.9 | 44.9 | 40.8 | 36.7 | 30.6 | 26.5 | 24.5 | 20.4 |
| 87.5° | *14.3* | 14.3 | 12.2 | 14.3 | 14.3 | 12.2 | 10.2 | 8.2 | 8.2 | 6.1 | 6.1 |
| 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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Peachtree City, GA 30269

Scaled Data Report

REPORT NUMBER: P1449772
CATALOG NUMBER: AXCS3A-GRF-W

**CANDELA DISTRIBUTION (continued):**

| | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1106.2 | 1106.2 | 1106.2 | 1106.2 | 1106.2 | 1106.2 | 1106.2 | 1106.2 | 1106.2 | 1106.2 |
| 2.5° | 1100.1 | 1087.9 | 1077.7 | 1065.4 | 1057.3 | 1049.1 | 1045.0 | 1038.9 | 1038.9 | 1038.9 |
| 5° | 1096.0 | 1075.6 | 1055.2 | 1034.8 | 1018.5 | 1004.2 | 996.0 | 987.9 | 983.8 | 985.8 |
| 7.5° | 1085.8 | 1055.2 | 1026.6 | 998.1 | 975.6 | 955.2 | 940.9 | 930.7 | 924.6 | 928.7 |
| 10° | 1069.5 | 1028.7 | 989.9 | 955.2 | 924.6 | 900.1 | 881.7 | 869.5 | 861.3 | 863.4 |
| 12.5° | 1053.2 | 1004.2 | 955.2 | 916.4 | 877.6 | 847.0 | 824.6 | 812.3 | 802.1 | 802.1 |
| 15° | 1038.9 | 977.7 | 924.6 | 875.6 | 832.7 | 798.0 | 771.5 | 757.2 | 747.0 | 747.0 |
| 17.5° | 1018.5 | 949.1 | 885.8 | 832.7 | 783.8 | 745.0 | 714.4 | 698.0 | 687.8 | 687.8 |
| 20° | 989.9 | 912.3 | 845.0 | 785.8 | 730.7 | 689.9 | 655.2 | 638.8 | 626.6 | 626.6 |
| 22.5° | 959.3 | 875.6 | 800.1 | 734.8 | 677.6 | 632.7 | 598.0 | 579.7 | 567.4 | 567.4 |
| 25° | 928.7 | 838.9 | 757.2 | 689.9 | 630.7 | 583.7 | 545.0 | 522.5 | 508.2 | 506.2 |
| 27.5° | *896.0* | *800.1* | *716.4* | *645.0* | *583.7* | *532.7* | *493.9* | *471.5* | *459.2* | *455.1* |
| 30° | 857.2 | 757.2 | 671.5 | 596.0 | 530.7 | 481.7 | 444.9 | 422.5 | 410.2 | 410.2 |
| 32.5° | 818.5 | 714.4 | 626.6 | 551.1 | 481.7 | 436.8 | 400.0 | 377.6 | 365.3 | 365.3 |
| 35° | 775.6 | 671.5 | 581.7 | 502.1 | 438.8 | 393.9 | 359.2 | 336.8 | 324.5 | 324.5 |
| 37.5° | 732.7 | 630.7 | 536.8 | 461.3 | 402.1 | 355.1 | 320.4 | 300.0 | 289.8 | 287.8 |
| 40° | 687.8 | 585.8 | 491.9 | 420.5 | 363.3 | 318.4 | 287.8 | 267.4 | 257.2 | 255.1 |
| 42.5° | 642.9 | 540.9 | 451.1 | 381.7 | 326.6 | 285.7 | 257.2 | 236.8 | 228.6 | 226.6 |
| 45° | 596.0 | 496.0 | 412.3 | 347.0 | 293.9 | 257.2 | 228.6 | 212.3 | 204.1 | 202.1 |
| 47.5° | 551.1 | 453.1 | 375.5 | 314.3 | 265.3 | 230.6 | 204.1 | 187.8 | 179.6 | 179.6 |
| 50° | 496.0 | 412.3 | 338.8 | 283.7 | 238.8 | 206.1 | 181.7 | 167.4 | 161.2 | 159.2 |
| 52.5° | 451.1 | 373.5 | 306.2 | 255.1 | 214.3 | 183.7 | 163.3 | 149.0 | 142.9 | 142.9 |
| 55° | 410.2 | 336.8 | 275.5 | 228.6 | 189.8 | 165.3 | 144.9 | 134.7 | 126.5 | 126.5 |
| 57.5° | 365.3 | 300.0 | 247.0 | 204.1 | 171.4 | 147.0 | 130.6 | 118.4 | 112.3 | 112.3 |
| 60° | 326.6 | 267.4 | 218.4 | 181.7 | 151.0 | 128.6 | 114.3 | 106.1 | 100.0 | 100.0 |
| 62.5° | 287.8 | 234.7 | 191.9 | 159.2 | 132.7 | 114.3 | 100.0 | 91.8 | 87.8 | 87.8 |
| 65° | 249.0 | 204.1 | 167.4 | 138.8 | 116.3 | 100.0 | 87.8 | 79.6 | 77.6 | 75.5 |
| 67.5° | 214.3 | 177.6 | 144.9 | 120.4 | 100.0 | 85.7 | 75.5 | 69.4 | 65.3 | 65.3 |
| 70° | 179.6 | 149.0 | 122.5 | 102.1 | 85.7 | 73.5 | 65.3 | 59.2 | 57.1 | 55.1 |
| 72.5° | 149.0 | 122.5 | 100.0 | 83.7 | 69.4 | 61.2 | 53.1 | 49.0 | 46.9 | 46.9 |
| 75° | 118.4 | 98.0 | 79.6 | 67.4 | 57.1 | 46.9 | 42.9 | 38.8 | 36.7 | 36.7 |
| 77.5° | 89.8 | 73.5 | 61.2 | 51.0 | 42.9 | 36.7 | 32.7 | 30.6 | 28.6 | 26.5 |
| 80° | 63.3 | 51.0 | 42.9 | 36.7 | 30.6 | 26.5 | 22.5 | 20.4 | 20.4 | 20.4 |
| 82.5° | 38.8 | 32.7 | 26.5 | 22.5 | 18.4 | 16.3 | 14.3 | 12.2 | 12.2 | 12.2 |
| 85° | 20.4 | 16.3 | 12.2 | 10.2 | 8.2 | 8.2 | 6.1 | 6.1 | 6.1 | 6.1 |
| 87.5° | 6.1 | 4.1 | 4.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Cooper Lighting Solutions Photometric Lab
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Peachtree City, GA 30269

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

Report Prepared for

Cooper Lighting Solutions

Lumark

Report Number: SP1-2512-637-1

Test Date: 01/12/2026

Luminaire Tested: AXCS4A-W

Data in this report applies to families of products including AXCS4A-W

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.05

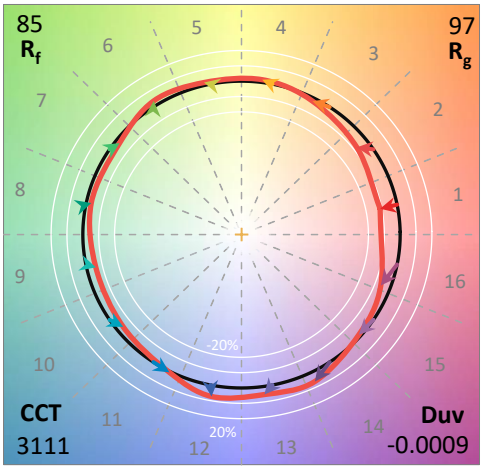
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2512-637-1 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 01/13/2026 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | Lumark |
| Catalog Number: | **AXCS4A-W** |
| Description: | 4A AXCENT SMALL WALLPACK, FULL CUTOFF, 3000K |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 3111 |
| CIE u': | 0.2472 |
| CIE v': | 0.5179 |
| Duv: | -0.0009 |
| CIE x: | 0.4280 |
| CIE y: | 0.3986 |
| CIE z: | 0.1733 |
| Peak Wavelength (nm): | 601 |
| Dominant Wavelength (nm): | 582 |
| Purity: | 48.11977 |
| Rf: | 85.3 |
| Rg: | 96.7 |

| | |
|---|---|
| CRI (Ra): | 83.4 |
| R1: | 82.0 |
| R2: | 91.4 |
| R3: | 96.3 |
| R4: | 81.9 |
| R5: | 82.5 |
| R6: | 89.7 |
| R7: | 83.1 |
| R8: | 60.2 |
| R9: | 8.9 |
| R10: | 80.6 |
| R11: | 81.8 |
| R12: | 73.2 |
| R13: | 84.3 |
| R14: | 98.6 |
| R15: | 74.6 |




## Test Conditions

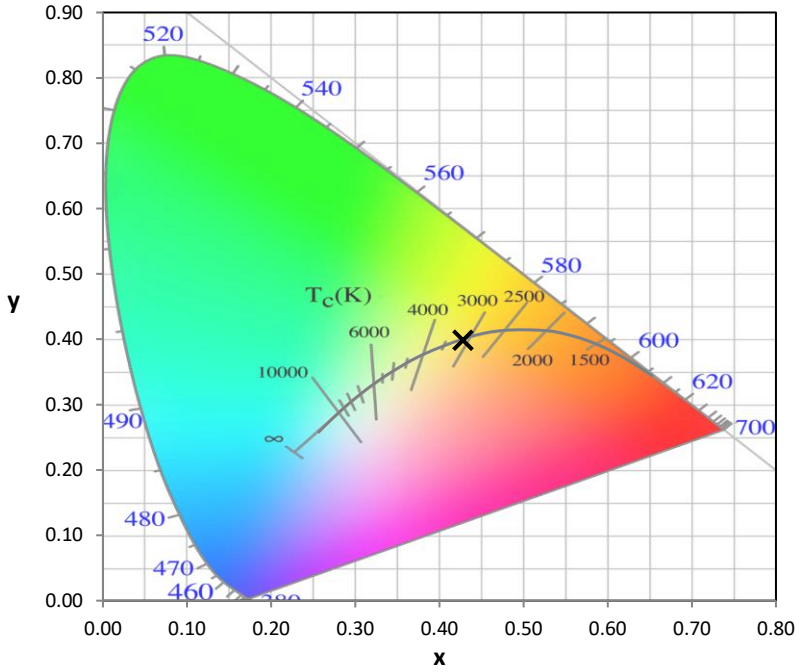
| | |
|---|---|
| Stabilization Time: | 52M |
| Operation Time: | 1H 52M |
| Sphere Temperature (°C): | 25.1 |

REPORT NUMBER: SP1-2512-637-1

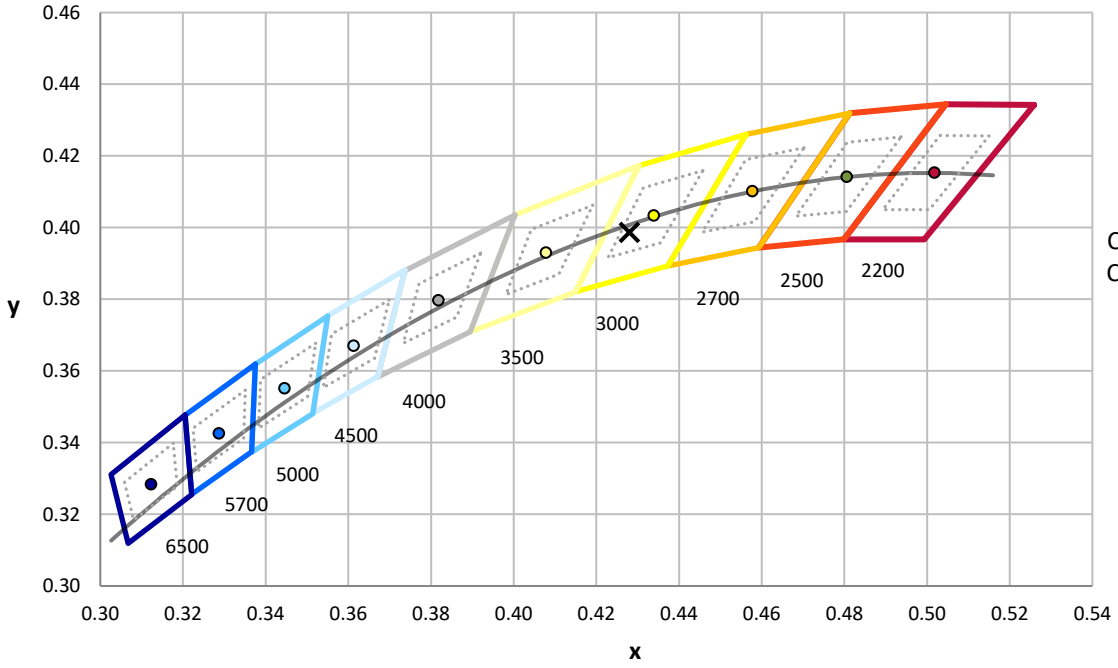
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 76INCH SPHERE IN0058 | 12/16/2025 | 6/16/2026 |
| Power Meter | XITRON INXT2011004 | 10/21/2025 | 10/21/2026 |
| AC Power Source | CHROMA 61603 IN0063 | 10/21/2025 | 10/21/2026 |
| DC Power Source | AGILENT E3634A IN0208 | 10/21/2025 | 10/21/2026 |
| Sphere Thermometer | ONSET IN0085 | 10/21/2025 | 10/21/2026 |
| Room Thermometer | ONSET IN0046 | 10/21/2025 | 10/21/2026 |

REPORT NUMBER: SP1-2512-637-1

## CIE 1931 Chromaticity Diagram




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

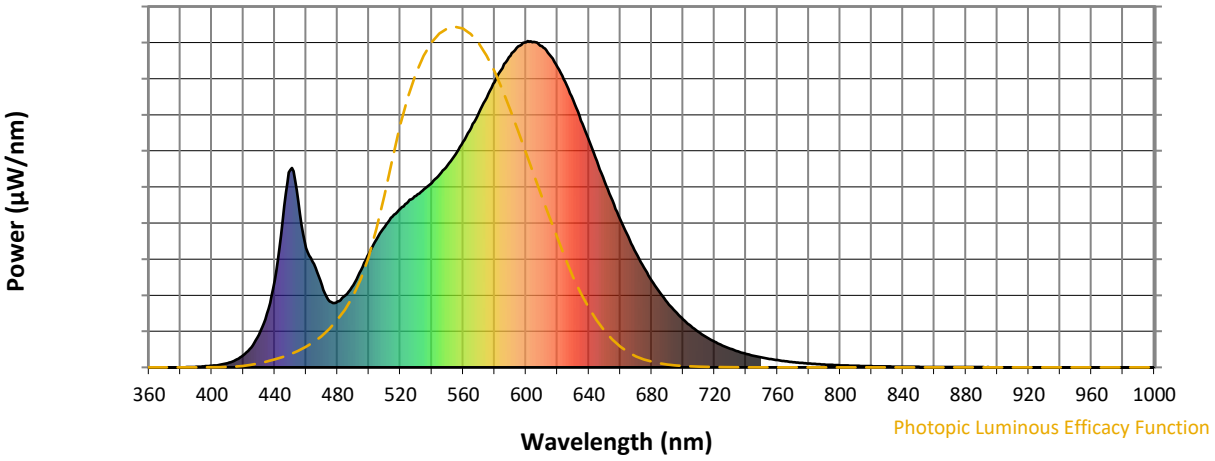



CCT = 3111K
CIE x = 0.4280
CIE y = 0.3986
Duv = -0.0009

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2512-637-1

## Photopic Flux vs. Wavelength




## Photopic Lumens: NR

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 252 | NR | 620 | 920 | NR | 750 | 30 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 298 | NR | 625 | 875 | NR | 755 | 26 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 349 | NR | 630 | 819 | NR | 760 | 22 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 394 | NR | 635 | 756 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 431 | NR | 640 | 696 | NR | 770 | 16 | NR | 900 | 1 | NR |
| 385 | 1 | NR | 515 | 462 | NR | 645 | 633 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 2 | NR | 520 | 487 | NR | 650 | 570 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 3 | NR | 525 | 507 | NR | 655 | 511 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 525 | NR | 660 | 453 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 8 | NR | 535 | 546 | NR | 665 | 401 | NR | 795 | 7 | NR | 925 | 0 | NR |
| 410 | 13 | NR | 540 | 565 | NR | 670 | 352 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 22 | NR | 545 | 591 | NR | 675 | 306 | NR | 805 | 6 | NR | 935 | 0 | NR |
| 420 | 38 | NR | 550 | 619 | NR | 680 | 266 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 61 | NR | 555 | 652 | NR | 685 | 230 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 100 | NR | 560 | 691 | NR | 690 | 199 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 165 | NR | 565 | 734 | NR | 695 | 171 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 265 | NR | 570 | 780 | NR | 700 | 147 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 450 | NR | 575 | 826 | NR | 705 | 126 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 605 | NR | 580 | 874 | NR | 710 | 108 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 508 | NR | 585 | 917 | NR | 715 | 92 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 366 | NR | 590 | 956 | NR | 720 | 79 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 317 | NR | 595 | 983 | NR | 725 | 67 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 251 | NR | 600 | 997 | NR | 730 | 57 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 202 | NR | 605 | 997 | NR | 735 | 49 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 202 | NR | 610 | 984 | NR | 740 | 42 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 220 | NR | 615 | 958 | NR | 745 | 35 | NR | 875 | 1 | NR | | | |

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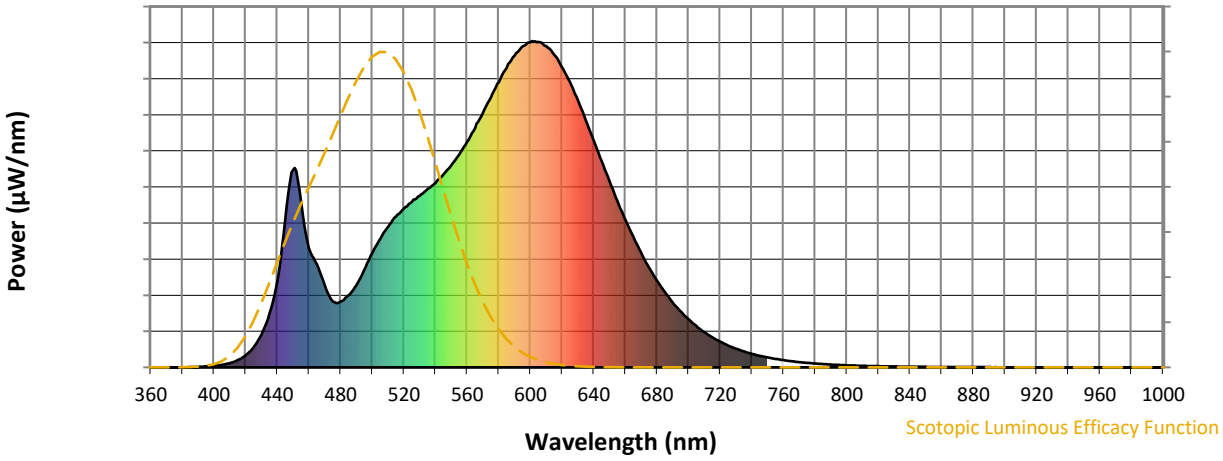
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.4**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 252 | NR | 620 | 920 | NR | 750 | 30 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 298 | NR | 625 | 875 | NR | 755 | 26 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 349 | NR | 630 | 819 | NR | 760 | 22 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 394 | NR | 635 | 756 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 431 | NR | 640 | 696 | NR | 770 | 16 | NR | 900 | 1 | NR |
| 385 | 1 | NR | 515 | 462 | NR | 645 | 633 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 2 | NR | 520 | 487 | NR | 650 | 570 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 3 | NR | 525 | 507 | NR | 655 | 511 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 525 | NR | 660 | 453 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 8 | NR | 535 | 546 | NR | 665 | 401 | NR | 795 | 7 | NR | 925 | 0 | NR |
| 410 | 13 | NR | 540 | 565 | NR | 670 | 352 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 22 | NR | 545 | 591 | NR | 675 | 306 | NR | 805 | 6 | NR | 935 | 0 | NR |
| 420 | 38 | NR | 550 | 619 | NR | 680 | 266 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 61 | NR | 555 | 652 | NR | 685 | 230 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 100 | NR | 560 | 691 | NR | 690 | 199 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 165 | NR | 565 | 734 | NR | 695 | 171 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 265 | NR | 570 | 780 | NR | 700 | 147 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 450 | NR | 575 | 826 | NR | 705 | 126 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 605 | NR | 580 | 874 | NR | 710 | 108 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 508 | NR | 585 | 917 | NR | 715 | 92 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 366 | NR | 590 | 956 | NR | 720 | 79 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 317 | NR | 595 | 983 | NR | 725 | 67 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 251 | NR | 600 | 997 | NR | 730 | 57 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 202 | NR | 605 | 997 | NR | 735 | 49 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 202 | NR | 610 | 984 | NR | 740 | 42 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 220 | NR | 615 | 958 | NR | 745 | 35 | NR | 875 | 1 | NR | | | |

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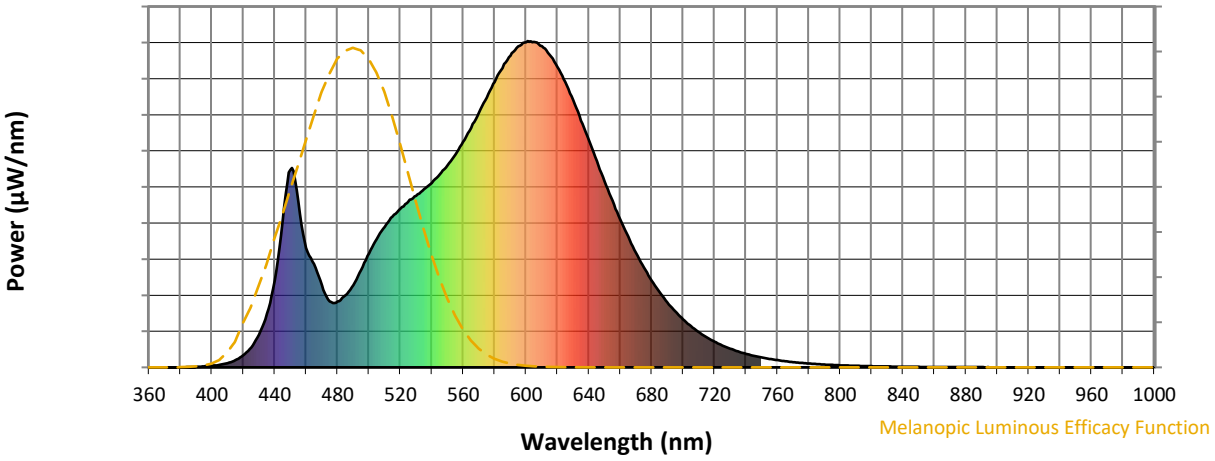
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.73**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 252 | NR | 620 | 920 | NR | 750 | 30 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 298 | NR | 625 | 875 | NR | 755 | 26 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 349 | NR | 630 | 819 | NR | 760 | 22 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 394 | NR | 635 | 756 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 431 | NR | 640 | 696 | NR | 770 | 16 | NR | 900 | 1 | NR |
| 385 | 1 | NR | 515 | 462 | NR | 645 | 633 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 2 | NR | 520 | 487 | NR | 650 | 570 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 3 | NR | 525 | 507 | NR | 655 | 511 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 525 | NR | 660 | 453 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 8 | NR | 535 | 546 | NR | 665 | 401 | NR | 795 | 7 | NR | 925 | 0 | NR |
| 410 | 13 | NR | 540 | 565 | NR | 670 | 352 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 22 | NR | 545 | 591 | NR | 675 | 306 | NR | 805 | 6 | NR | 935 | 0 | NR |
| 420 | 38 | NR | 550 | 619 | NR | 680 | 266 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 61 | NR | 555 | 652 | NR | 685 | 230 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 100 | NR | 560 | 691 | NR | 690 | 199 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 165 | NR | 565 | 734 | NR | 695 | 171 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 265 | NR | 570 | 780 | NR | 700 | 147 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 450 | NR | 575 | 826 | NR | 705 | 126 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 605 | NR | 580 | 874 | NR | 710 | 108 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 508 | NR | 585 | 917 | NR | 715 | 92 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 366 | NR | 590 | 956 | NR | 720 | 79 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 317 | NR | 595 | 983 | NR | 725 | 67 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 251 | NR | 600 | 997 | NR | 730 | 57 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 202 | NR | 605 | 997 | NR | 735 | 49 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 202 | NR | 610 | 984 | NR | 740 | 42 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 220 | NR | 615 | 958 | NR | 745 | 35 | NR | 875 | 1 | NR | | | |

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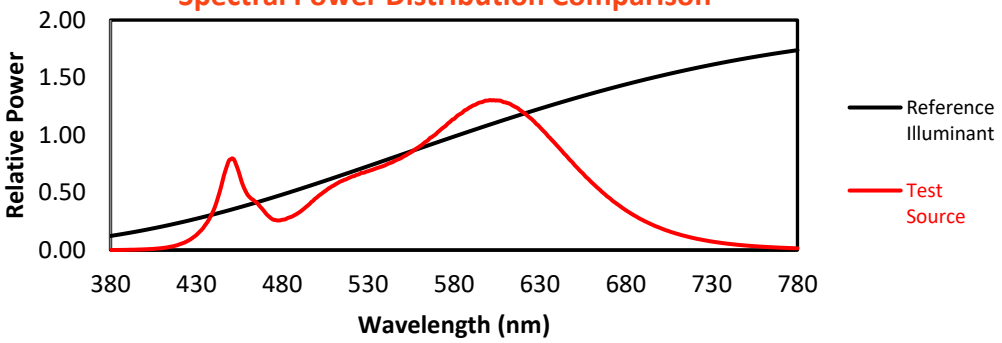
# TM-30-18

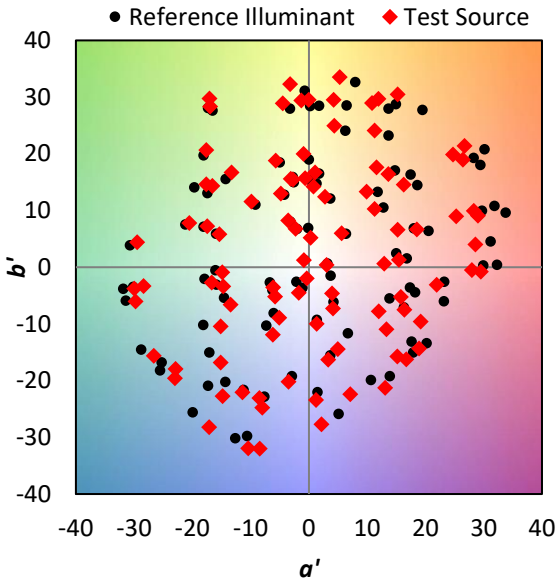
## Summary

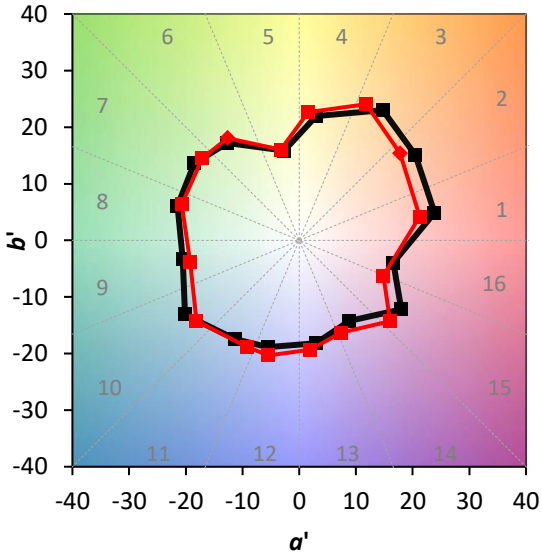
$R_f$ = 85.3
$R_g$ = 96.7
CIE $R_a$ = 83.4
$R_9$ = 8.9

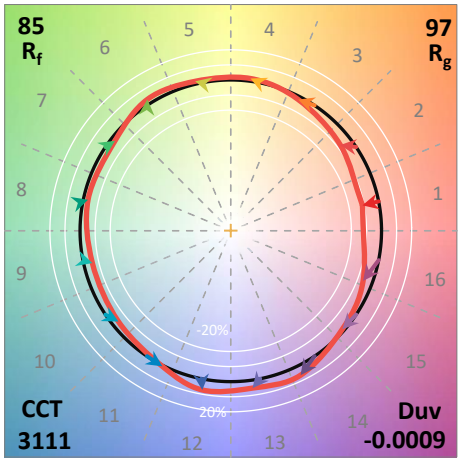
## Spectral Power Distribution Comparison

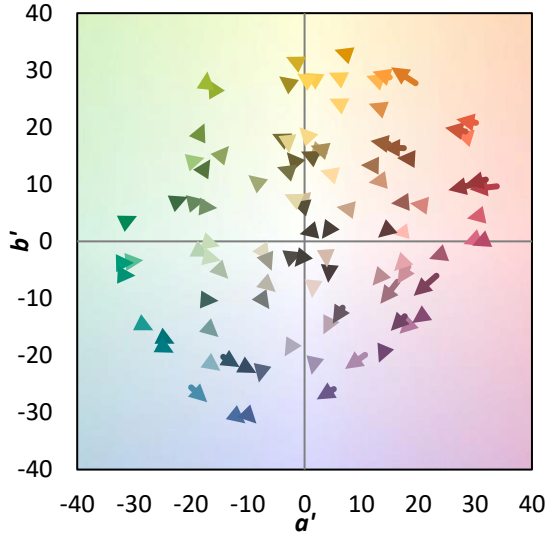



## Color Vector Graphics



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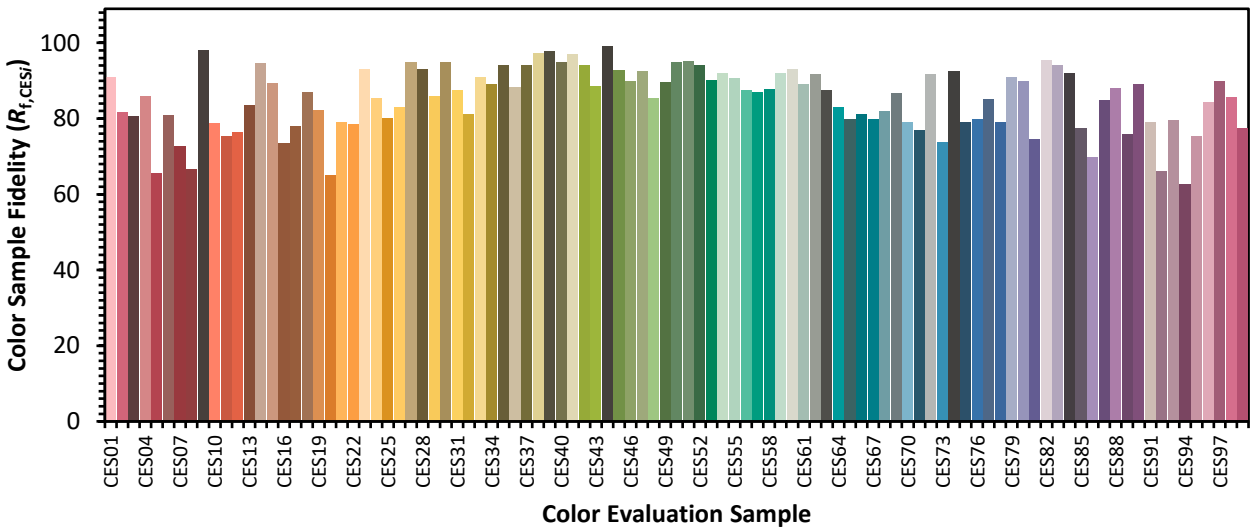
# TM-30-18

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

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 83 | CES51 = 95 | CES76 = 80 |
| CES02 = 63 | CES27 = 95 | CES52 = 94 | CES77 = 85 |
| CES03 = 31 | CES28 = 93 | CES53 = 90 | CES78 = 79 |
| CES04 = 70 | CES29 = 86 | CES54 = 92 | CES79 = 91 |
| CES05 = 49 | CES30 = 95 | CES55 = 91 | CES80 = 90 |
| CES06 = 51 | CES31 = 87 | CES56 = 88 | CES81 = 74 |
| CES07 = 42 | CES32 = 81 | CES57 = 87 | CES82 = 95 |
| CES08 = 41 | CES33 = 91 | CES58 = 88 | CES83 = 94 |
| CES09 = 29 | CES34 = 89 | CES59 = 92 | CES84 = 92 |
| CES10 = 76 | CES35 = 94 | CES60 = 93 | CES85 = 78 |
| CES11 = 59 | CES36 = 88 | CES61 = 89 | CES86 = 70 |
| CES12 = 65 | CES37 = 94 | CES62 = 92 | CES87 = 85 |
| CES13 = 43 | CES38 = 97 | CES63 = 87 | CES88 = 88 |
| CES14 = 74 | CES39 = 98 | CES64 = 83 | CES89 = 76 |
| CES15 = 71 | CES40 = 95 | CES65 = 80 | CES90 = 89 |
| CES16 = 47 | CES41 = 97 | CES66 = 81 | CES91 = 79 |
| CES17 = 50 | CES42 = 94 | CES67 = 80 | CES92 = 66 |
| CES18 = 56 | CES43 = 89 | CES68 = 82 | CES93 = 80 |
| CES19 = 72 | CES44 = 99 | CES69 = 87 | CES94 = 63 |
| CES20 = 66 | CES45 = 93 | CES70 = 79 | CES95 = 75 |
| CES21 = 87 | CES46 = 90 | CES71 = 77 | CES96 = 84 |
| CES22 = 79 | CES47 = 93 | CES72 = 92 | CES97 = 90 |
| CES23 = 92 | CES48 = 86 | CES73 = 74 | CES98 = 86 |
| CES24 = 91 | CES49 = 90 | CES74 = 93 | CES99 = 77 |
| CES25 = 72 | CES50 = 95 | CES75 = 79 | |



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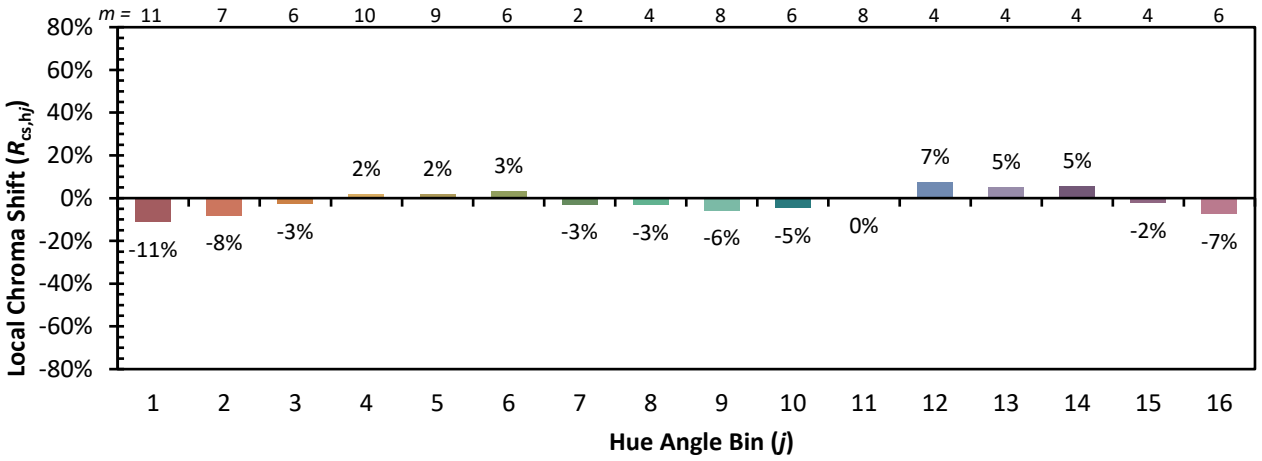
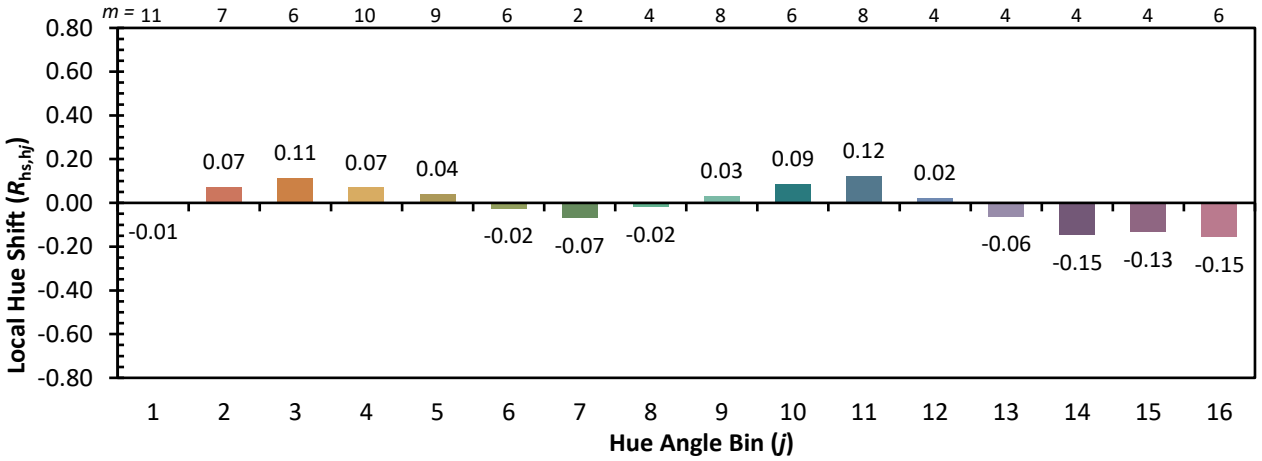
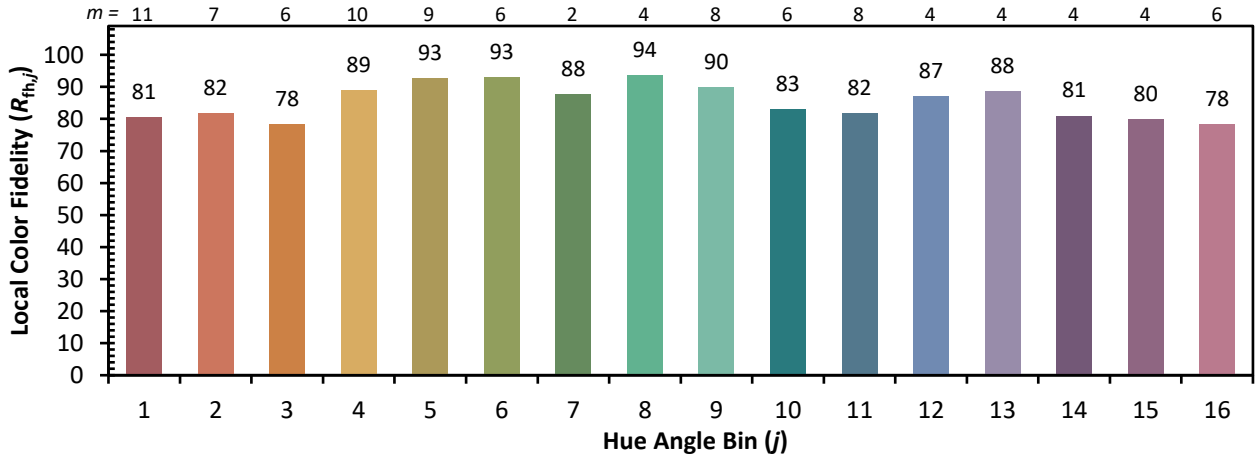
# TM-30-18

## Color Rendition by Hue-Angle Bin



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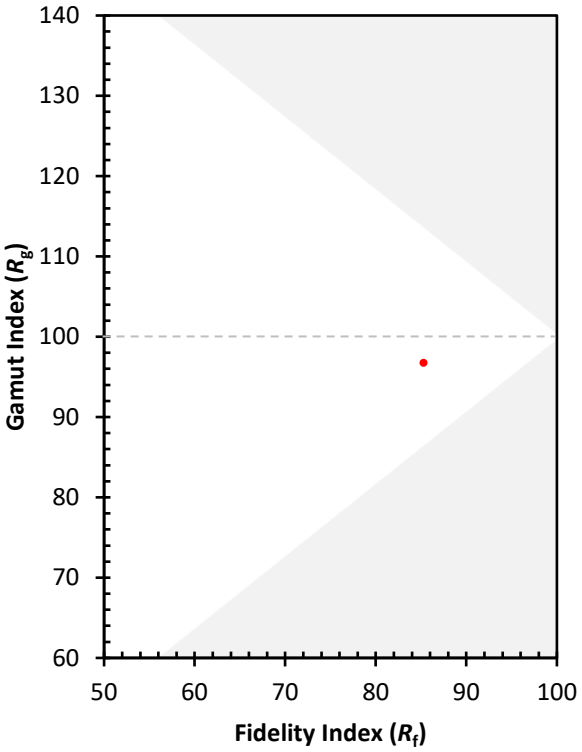
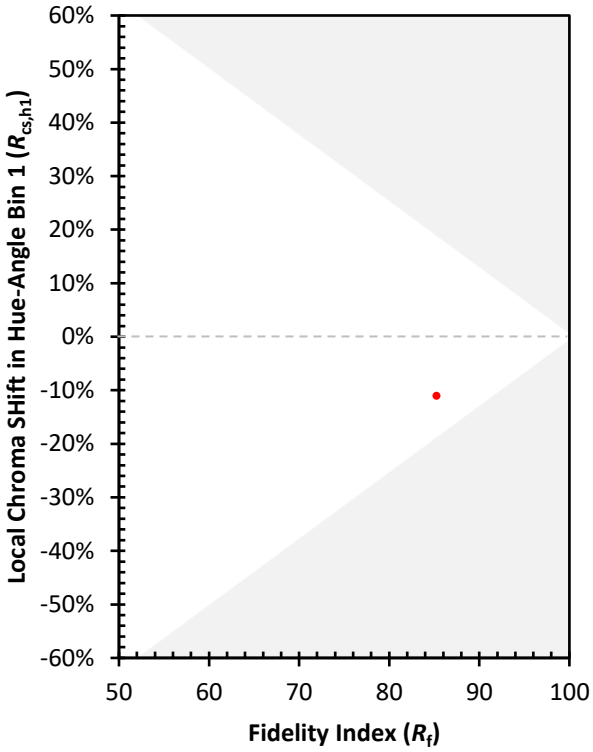
# TM-30-18

## Measure Comparisons

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