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: INVUE

Report Number: P880361

Luminaire Tested: **EMM2-HTN-VA4-727-U-MQ**

Issue Date: 10/01/2024

Report Generated By 670245763

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: | P880361 |
| Test Lab: | INNOVATION CENTER(G3) |
| Issue Date: | 10/01/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | INVUE |
| Catalog Number: | EMM2-HTN-VA4-727-U-MQ |
| Description: | EPIC MODERN TALL HOUSING 4W 70CRI 2700K VISUAL COMFORT FIXTURE w/ TYPE V MEDIUM DISTRIBUTION OPTIC |
| Light Source: | (1) 2700K CCT, 70 CRI LEDS |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 6596.4 lumens |
| Efficiency: | N/A |
| Efficacy: | 111.8 lumens/watt |
| Luminous Opening: | Circular (Dia: 1.12' x H: 0') |
| IES Classification: | Type V - Short |
| BUG Rating: | B3 - U0 - G2 |

| | |
|---|---|
| Input Watts (W): | 59 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | 0.99 |
| Total Harmonic Distortion (THDi): | 9% |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 24 FT |

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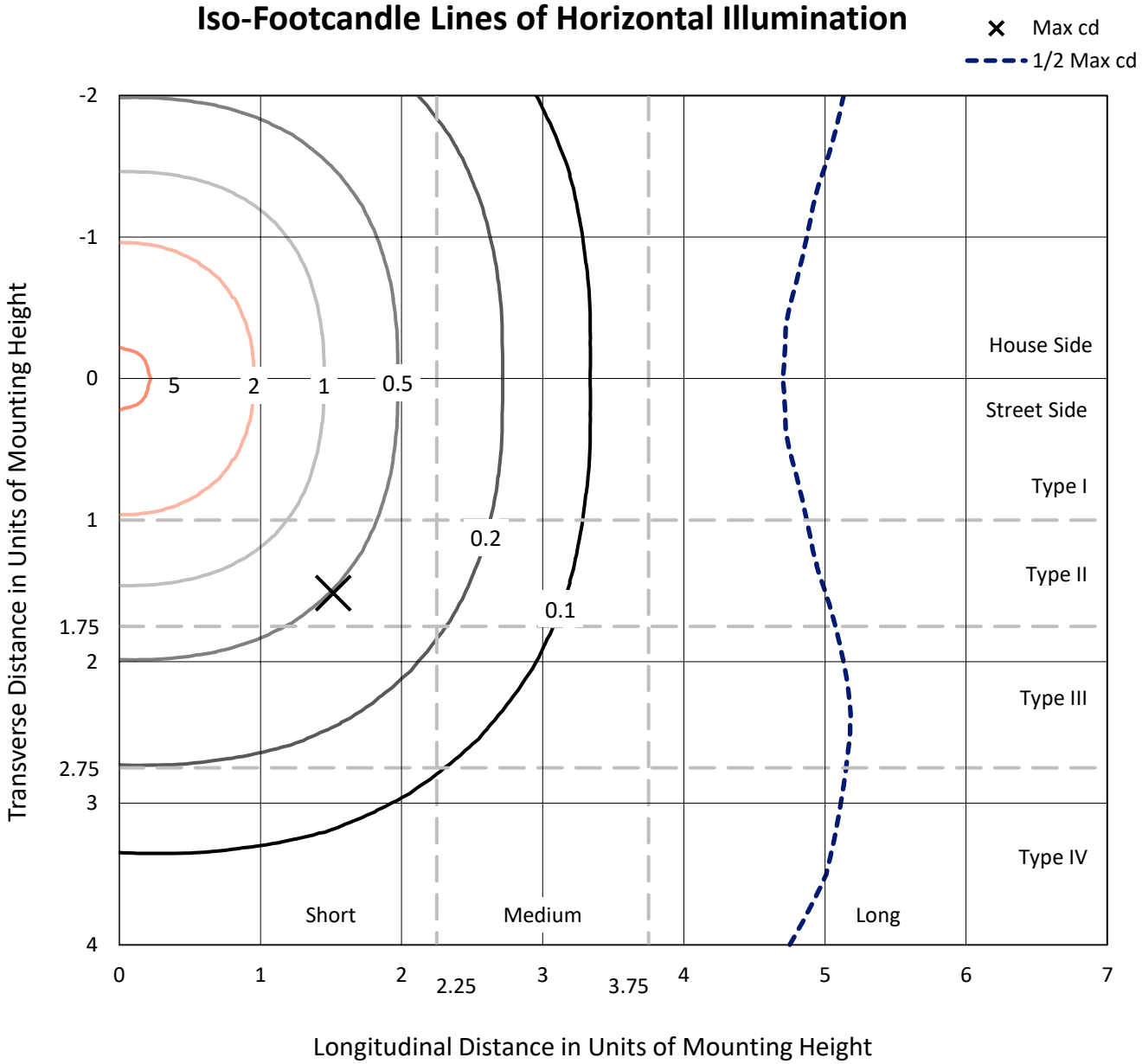
REPORT NUMBER: P880361
CATALOG NUMBER: EMM2-HTN-VA4-727-U-MQ

## Iso-Footcandle Lines of Horizontal Illumination




Based on 15 foot mounting height. Maximum calculated value = 5.4 fc
Type V - Short - N/A

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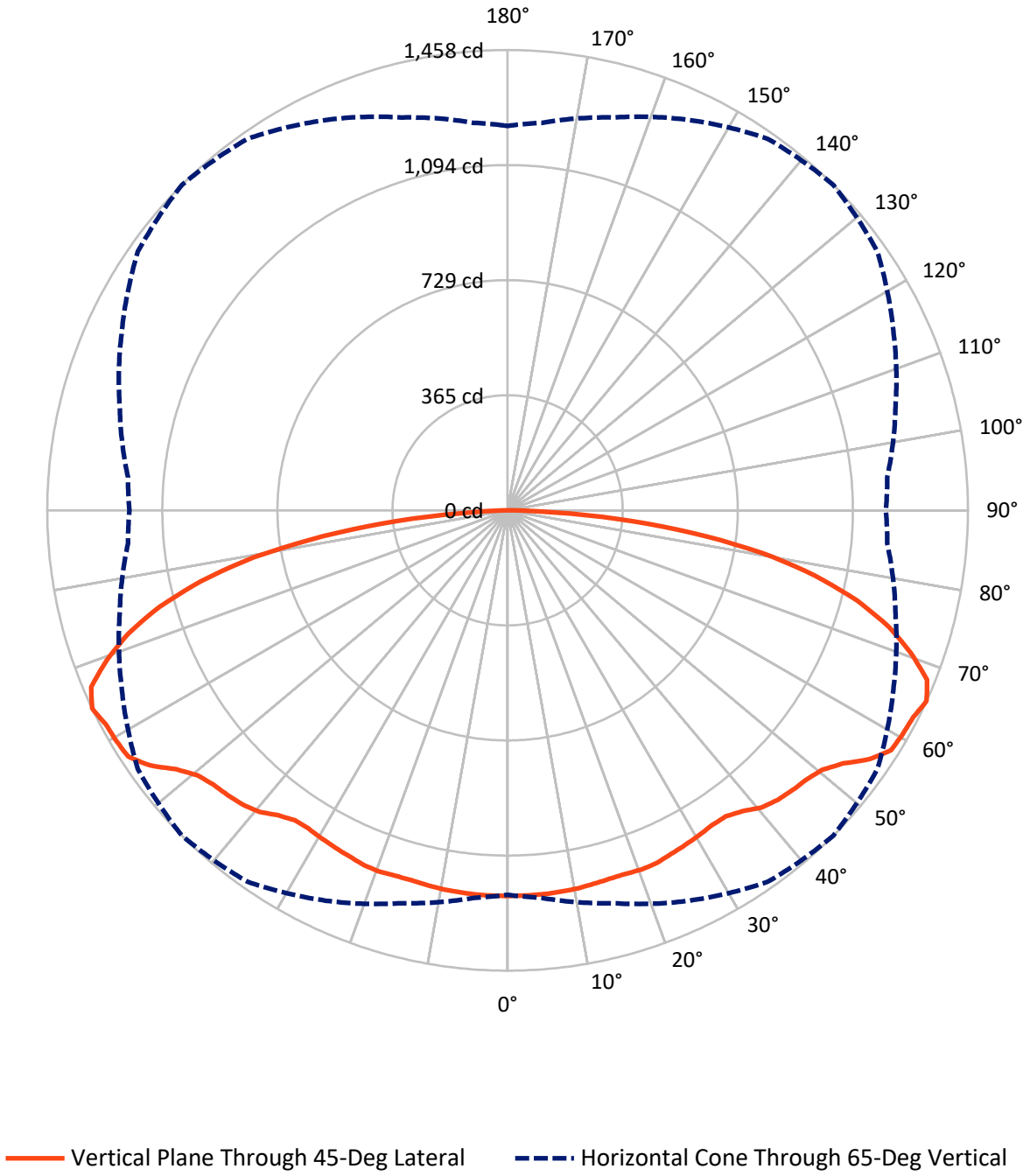
## Luminous Intensity Polar Plot



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Scaled Data Report

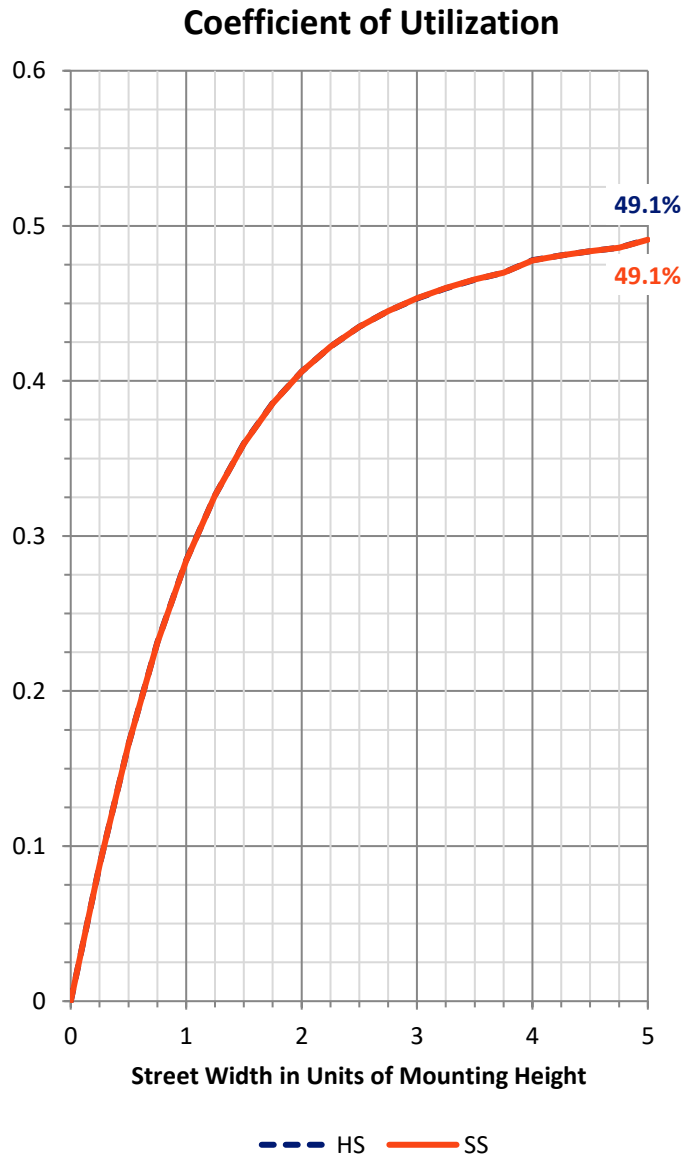
REPORT NUMBER: P880361
CATALOG NUMBER: EMM2-HTN-VA4-727-U-MQ

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 3298.2 | 0.0 | 3298.2 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Street Side** | Lumens | 3298.2 | 0.0 | 3298.2 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Total** | Lumens | 6596.4 | 0.0 | 6596.4 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 116.5 | 1.8 |
| 10°-20° | 343.4 | 5.2 |
| 20°-30° | 556.0 | 8.4 |
| 30°-40° | 747.2 | 11.3 |
| 40°-50° | 953.7 | 14.5 |
| 50°-60° | 1173.2 | 17.8 |
| 60°-70° | 1306.5 | 19.8 |
| 70°-80° | 1060.5 | 16.1 |
| 80°-90° | 339.5 | 5.1 |
| 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° | 6596.4 | 100.0 |
| 0°-180° | 6596.4 | 100.0 |



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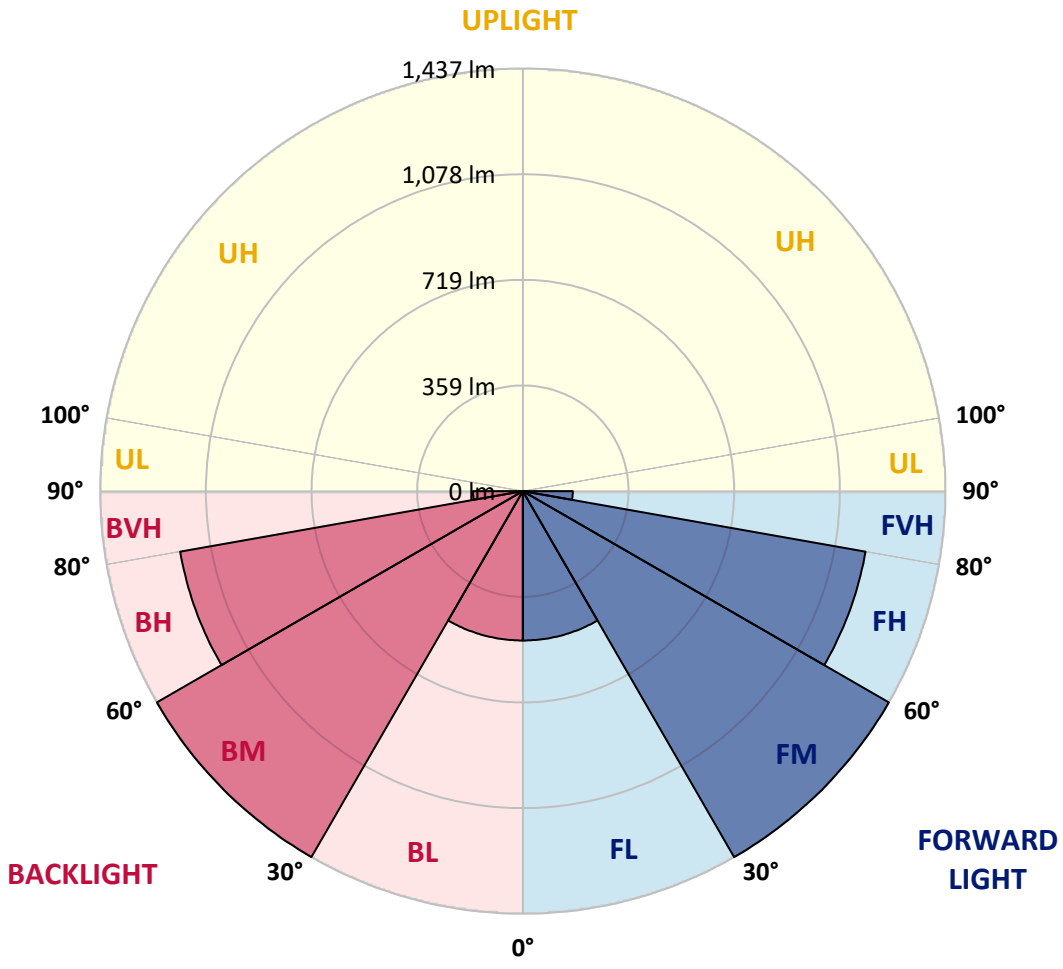
Scaled Data Report

REPORT NUMBER: P880361
CATALOG NUMBER: EMM2-HTN-VA4-727-U-MQ

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 508.0 | 7.7 | | | |
| FM | (30°-60°) | 1437.1 | 21.8 | | | |
| FH | (60°-80°) | 1183.5 | 17.9 | | | G1/1800 |
| FVH | (80°-90°) | 169.7 | 2.6 | | | G2/225 |
| BL | (0°-30°) | 508.0 | 7.7 | B2/1000 | | |
| BM | (30°-60°) | 1437.1 | 21.8 | B2/2500 | | |
| BH | (60°-80°) | 1183.5 | 17.9 | B3/2500 | | G1/1800 |
| BVH | (80°-90°) | 169.7 | 2.6 | | | G2/225 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B3-U0-G2**
Type V Short



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REPORT NUMBER: P880361
CATALOG NUMBER: EMM2-HTN-VA4-727-U-MQ

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 |
| 2.5° | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 |
| 5° | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1221.6 | 1219.8 | 1221.6 | 1221.6 |
| 7.5° | 1219.8 | 1219.8 | 1219.8 | 1219.8 | 1219.8 | 1219.8 | 1219.8 | 1219.8 | 1219.8 | 1219.8 | 1219.8 |
| 10° | 1218.0 | 1218.0 | 1218.0 | 1218.0 | 1218.0 | 1218.0 | 1218.0 | 1218.0 | 1218.0 | 1218.0 | 1218.0 |
| 12.5° | 1214.4 | 1214.4 | 1214.4 | 1214.4 | 1214.4 | 1214.4 | 1214.4 | 1214.4 | 1214.4 | 1214.4 | 1214.4 |
| 15° | 1209.0 | 1210.8 | 1210.8 | 1210.8 | 1210.8 | 1210.8 | 1210.8 | 1210.8 | 1210.8 | 1209.0 | 1209.0 |
| 17.5° | 1207.2 | 1207.2 | 1207.2 | 1209.0 | 1210.8 | 1210.8 | 1210.8 | 1209.0 | 1207.2 | 1205.4 | 1205.4 |
| 20° | 1209.0 | 1209.0 | 1209.0 | 1210.8 | 1212.6 | 1214.4 | 1212.6 | 1210.8 | 1207.2 | 1207.2 | 1207.2 |
| 22.5° | 1207.2 | 1209.0 | 1209.0 | 1210.8 | 1212.6 | 1212.6 | 1210.8 | 1209.0 | 1207.2 | 1205.4 | 1205.4 |
| 25° | 1201.8 | 1201.8 | 1203.6 | 1205.4 | 1205.4 | 1205.4 | 1205.4 | 1201.8 | 1200.0 | 1198.1 | 1198.1 |
| 27.5° | 1194.5 | 1196.3 | 1196.3 | 1198.1 | 1200.0 | 1200.0 | 1198.1 | 1194.5 | 1192.7 | 1190.9 | 1190.9 |
| 30° | 1185.5 | 1185.5 | 1187.3 | 1190.9 | 1192.7 | 1194.5 | 1190.9 | 1187.3 | 1181.9 | 1180.1 | 1180.1 |
| 32.5° | 1176.5 | 1178.3 | 1181.9 | 1185.5 | 1187.3 | 1189.1 | 1185.5 | 1181.9 | 1176.5 | 1172.8 | 1171.0 |
| 35° | 1172.8 | 1172.8 | 1178.3 | 1185.5 | 1190.9 | 1190.9 | 1187.3 | 1180.1 | 1172.8 | 1165.6 | 1165.6 |
| 37.5° | 1178.3 | 1180.1 | 1187.3 | 1200.0 | 1209.0 | 1209.0 | 1207.2 | 1194.5 | 1181.9 | 1171.0 | 1169.2 |
| 40° | 1190.9 | 1192.7 | 1205.4 | 1221.6 | 1236.1 | 1237.9 | 1230.7 | 1214.4 | 1196.3 | 1183.7 | 1180.1 |
| 42.5° | 1198.1 | 1201.8 | 1216.2 | 1236.1 | 1248.7 | 1254.2 | 1245.1 | 1228.9 | 1205.4 | 1189.1 | 1187.3 |
| 45° | 1201.8 | 1205.4 | 1221.6 | 1243.3 | 1259.6 | 1265.0 | 1256.0 | 1234.3 | 1209.0 | 1190.9 | 1189.1 |
| 47.5° | 1203.6 | 1207.2 | 1223.4 | 1250.6 | 1268.6 | 1274.0 | 1266.8 | 1241.5 | 1210.8 | 1192.7 | 1190.9 |
| 50° | 1205.4 | 1212.6 | 1232.5 | 1261.4 | 1288.5 | 1292.1 | 1281.3 | 1250.6 | 1218.0 | 1196.3 | 1190.9 |
| 52.5° | 1218.0 | 1223.4 | 1252.4 | 1293.9 | 1321.0 | 1331.9 | 1315.6 | 1284.9 | 1236.1 | 1203.6 | 1200.0 |
| 55° | 1248.7 | 1250.6 | 1284.9 | 1337.3 | 1377.1 | 1391.5 | 1366.2 | 1324.6 | 1265.0 | 1232.5 | 1230.7 |
| 57.5° | 1257.8 | 1268.6 | 1306.6 | 1366.2 | 1415.0 | 1433.1 | 1411.4 | 1348.1 | 1293.9 | 1250.6 | 1239.7 |
| 60° | 1248.7 | 1257.8 | 1303.0 | 1371.6 | 1424.0 | 1438.5 | 1422.2 | 1362.6 | 1283.1 | 1234.3 | 1225.3 |
| 62.5° | 1239.7 | 1250.6 | 1297.5 | 1375.2 | 1425.8 | 1442.1 | 1415.0 | 1364.4 | 1277.7 | 1228.9 | 1219.8 |
| 65° | 1218.0 | 1232.5 | 1288.5 | 1364.4 | 1436.7 | 1458.4 | 1429.5 | 1348.1 | 1272.2 | 1207.2 | 1198.1 |
| 67.5° | 1176.5 | 1183.7 | 1245.1 | 1333.7 | 1411.4 | 1433.1 | 1402.4 | 1317.4 | 1227.1 | 1163.8 | 1156.6 |
| 70° | 1098.8 | 1115.0 | 1172.8 | 1270.4 | 1344.5 | 1355.4 | 1331.9 | 1246.9 | 1158.4 | 1091.5 | 1082.5 |
| 72.5° | 995.7 | 1019.2 | 1082.5 | 1181.9 | 1241.5 | 1263.2 | 1232.5 | 1163.8 | 1071.6 | 995.7 | 983.1 |
| 75° | 887.3 | 900.0 | 965.0 | 1062.6 | 1124.1 | 1143.9 | 1116.8 | 1050.0 | 939.7 | 887.3 | 874.7 |
| 77.5° | 768.0 | 777.1 | 834.9 | 921.6 | 979.5 | 995.7 | 968.6 | 914.4 | 815.0 | 766.2 | 760.8 |
| 80° | 601.8 | 619.9 | 674.1 | 748.2 | 791.5 | 816.8 | 787.9 | 735.5 | 663.2 | 605.4 | 596.4 |
| 82.5° | 430.1 | 442.8 | 491.5 | 542.1 | 583.7 | 590.9 | 578.3 | 527.7 | 473.5 | 428.3 | 417.5 |
| 85° | 234.9 | 240.4 | 271.1 | 323.5 | 339.7 | 352.4 | 334.3 | 296.4 | 269.3 | 240.4 | 231.3 |
| 87.5° | 61.4 | 63.3 | 72.3 | 84.9 | 92.2 | 94.0 | 92.2 | 81.3 | 66.9 | 52.4 | 57.8 |
| 90° | 0.0 | 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
1121 Highway 74 South
Peachtree City, GA 30269

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

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-176-2

Test Date: 09/24/2024

Luminaire Tested: MEM2-HTN-VA-30-727-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-727-U-WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

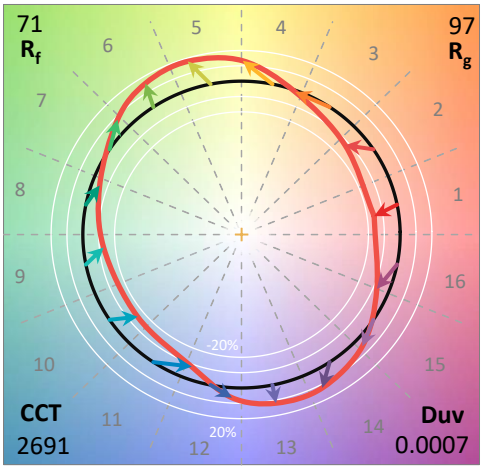
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2407-176-2 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 09/27/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | Streetworks |
| Catalog Number: | **MEM2-HTN-VA-30-727-U-WQ** |
| Description: | EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE |

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 2691 | CRI (Ra): | 70.6 | | |
| CIE u': | 0.2627 | R1: | 67.7 | R9: | -27.1 |
| CIE v': | 0.5285 | R2: | 79.8 | R10: | 53.1 |
| Duv: | 0.0007 | R3: | 90.6 | R11: | 61.9 |
| CIE x: | 0.4618 | R4: | 67.7 | R12: | 42.2 |
| CIE y: | 0.4129 | R5: | 65.3 | R13: | 69.4 |
| CIE z: | 0.1254 | R6: | 71.1 | R14: | 94.1 |
| Peak Wavelength (nm): | 601 | R7: | 78.1 | R15: | 60.4 |
| Dominant Wavelength (nm): | 584 | R8: | 44.7 | | |
| Purity: | 62.54863 | | | | |

| | |
|---|---|
| Rf: | 70.6 |
| Rg: | 97.2 |




## Test Conditions

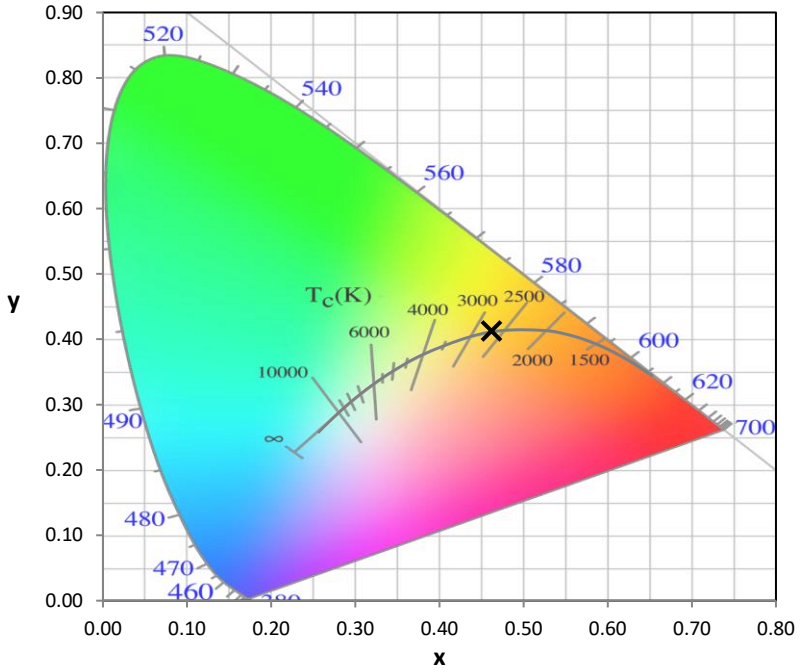
| | |
|---|---|
| Stabilization Time: | 28M |
| Operation Time: | 1H 28M |
| Sphere Temperature (°C): | 25.2 |

REPORT NUMBER: SP1-2407-176-2

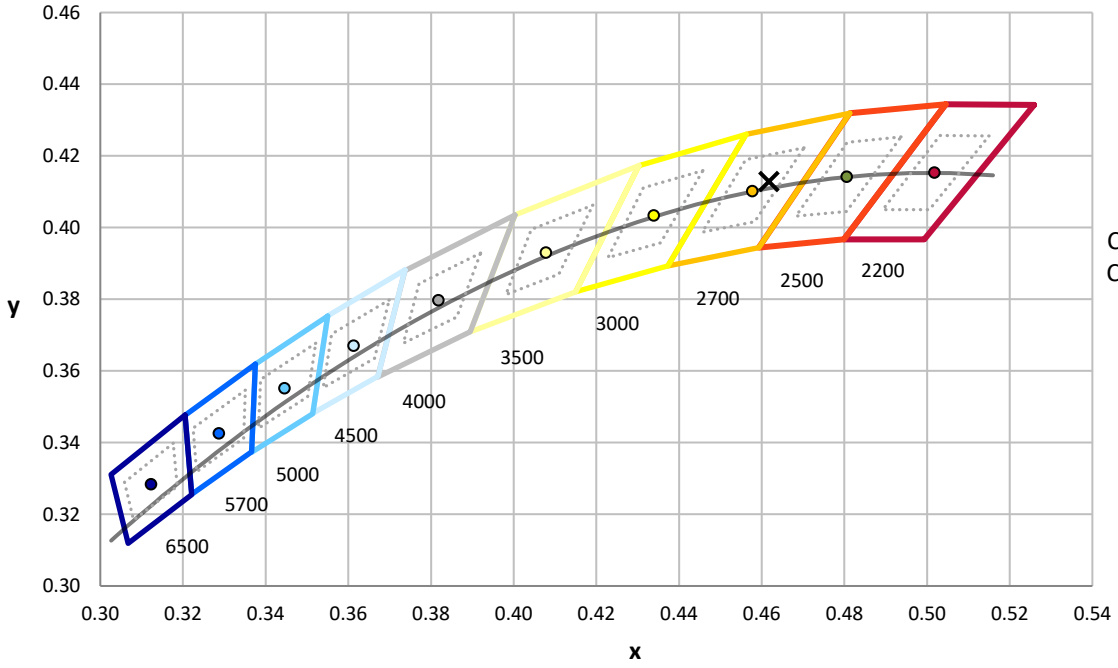
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC Power Source | IN0208 | 10/24/2023 | 10/24/2024 |
| Sphere Thermometer | IN0085 | 10/24/2023 | 10/24/2024 |
| Room Thermometer | IN0046 | 10/24/2023 | 10/24/2024 |

REPORT NUMBER: SP1-2407-176-2

## CIE 1931 Chromaticity Diagram




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

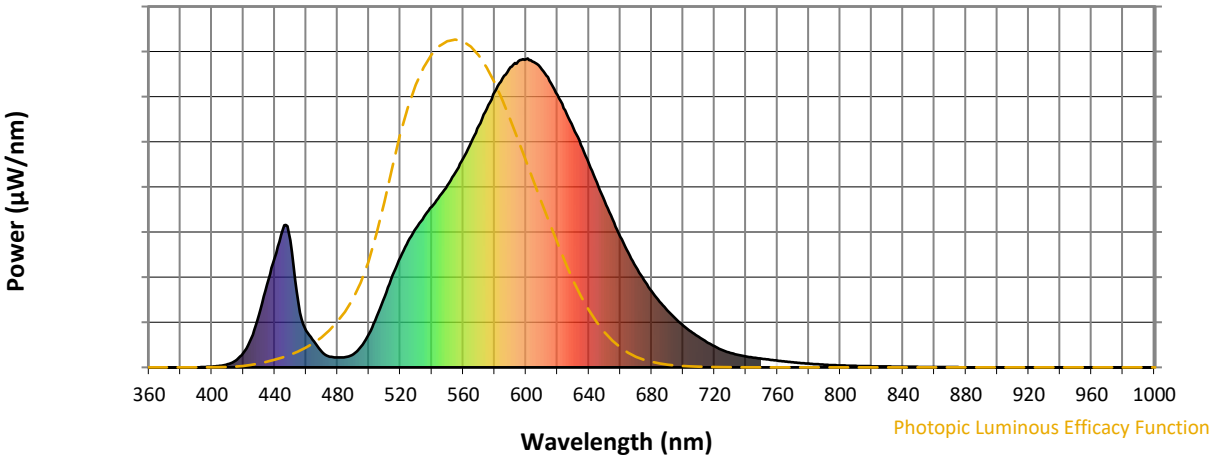



CCT = 2691K
CIE x = 0.4618
CIE y = 0.4129
Duv = 0.0007

Point lies inside the ANSI 2700K 4-step quadrangle

REPORT NUMBER: SP1-2407-176-2

## Photopic Flux vs. Wavelength

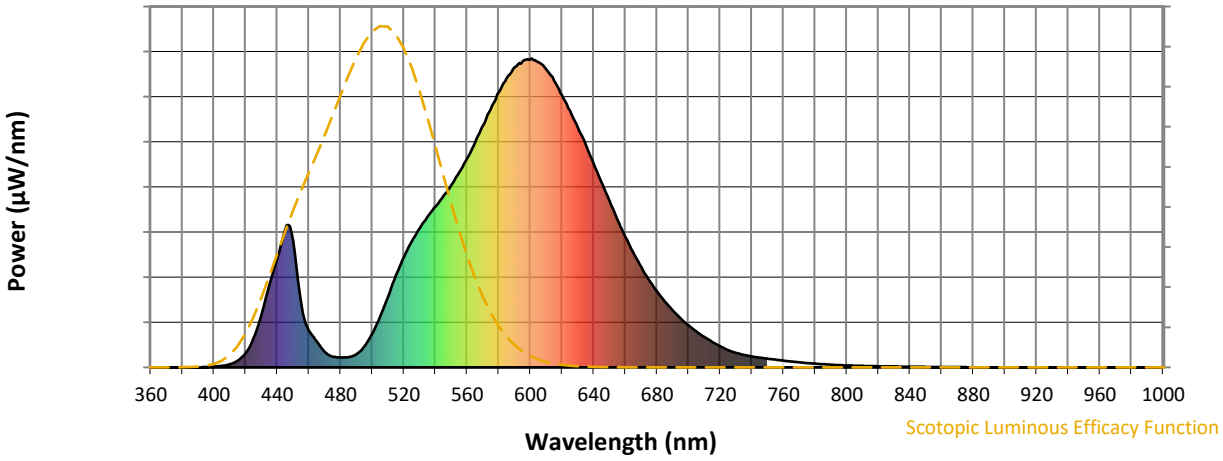



## Photopic Lumens: NR

| 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 | 43 | NR | 620 | 881 | NR | 750 | 28 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 67 | NR | 625 | 832 | NR | 755 | 25 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 108 | NR | 630 | 776 | NR | 760 | 22 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 165 | NR | 635 | 720 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 229 | NR | 640 | 660 | NR | 770 | 16 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 297 | NR | 645 | 599 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 357 | NR | 650 | 538 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 408 | NR | 655 | 480 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 451 | NR | 660 | 423 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 488 | NR | 665 | 372 | NR | 795 | 7 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 521 | NR | 670 | 325 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 555 | NR | 675 | 282 | NR | 805 | 5 | NR | 935 | 0 | NR |
| 420 | 46 | NR | 550 | 590 | NR | 680 | 246 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 94 | NR | 555 | 631 | NR | 685 | 213 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 169 | NR | 560 | 677 | NR | 690 | 185 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 268 | NR | 565 | 728 | NR | 695 | 158 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 354 | NR | 570 | 782 | NR | 700 | 136 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 445 | NR | 575 | 838 | NR | 705 | 116 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 411 | NR | 580 | 891 | NR | 710 | 98 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 210 | NR | 585 | 935 | NR | 715 | 82 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 119 | NR | 590 | 972 | NR | 720 | 68 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 84 | NR | 595 | 991 | NR | 725 | 56 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 50 | NR | 600 | 997 | NR | 730 | 47 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 35 | NR | 605 | 988 | NR | 735 | 40 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 32 | NR | 610 | 965 | NR | 740 | 35 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 33 | NR | 615 | 927 | NR | 745 | 31 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-176-2

## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.03**

| 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 | 43 | NR | 620 | 881 | NR | 750 | 28 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 67 | NR | 625 | 832 | NR | 755 | 25 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 108 | NR | 630 | 776 | NR | 760 | 22 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 165 | NR | 635 | 720 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 229 | NR | 640 | 660 | NR | 770 | 16 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 297 | NR | 645 | 599 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 357 | NR | 650 | 538 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 408 | NR | 655 | 480 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 451 | NR | 660 | 423 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 488 | NR | 665 | 372 | NR | 795 | 7 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 521 | NR | 670 | 325 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 555 | NR | 675 | 282 | NR | 805 | 5 | NR | 935 | 0 | NR |
| 420 | 46 | NR | 550 | 590 | NR | 680 | 246 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 94 | NR | 555 | 631 | NR | 685 | 213 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 169 | NR | 560 | 677 | NR | 690 | 185 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 268 | NR | 565 | 728 | NR | 695 | 158 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 354 | NR | 570 | 782 | NR | 700 | 136 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 445 | NR | 575 | 838 | NR | 705 | 116 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 411 | NR | 580 | 891 | NR | 710 | 98 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 210 | NR | 585 | 935 | NR | 715 | 82 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 119 | NR | 590 | 972 | NR | 720 | 68 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 84 | NR | 595 | 991 | NR | 725 | 56 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 50 | NR | 600 | 997 | NR | 730 | 47 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 35 | NR | 605 | 988 | NR | 735 | 40 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 32 | NR | 610 | 965 | NR | 740 | 35 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 33 | NR | 615 | 927 | NR | 745 | 31 | NR | 875 | 1 | NR | | | |

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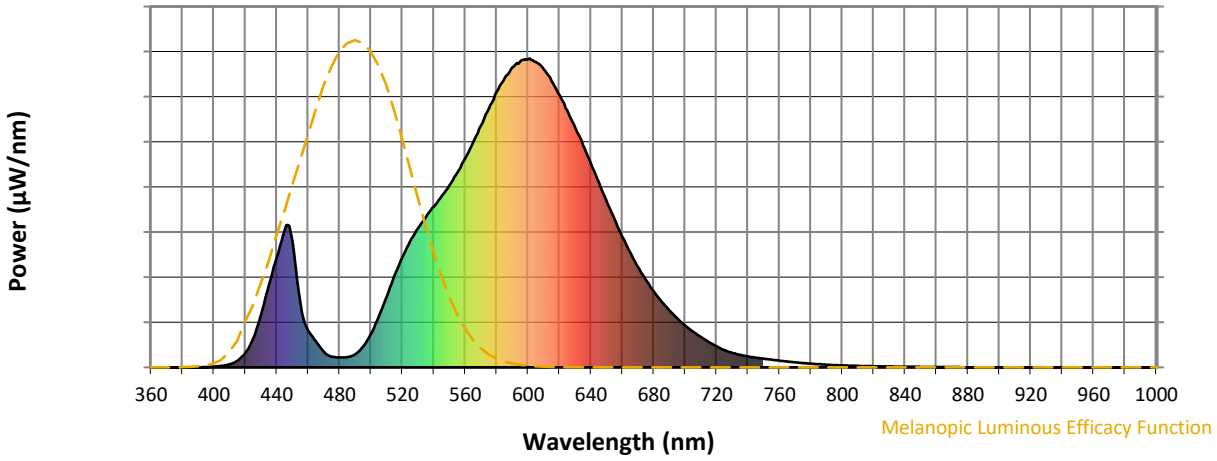
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 1.73**

| 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 | 43 | NR | 620 | 881 | NR | 750 | 28 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 67 | NR | 625 | 832 | NR | 755 | 25 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 108 | NR | 630 | 776 | NR | 760 | 22 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 165 | NR | 635 | 720 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 229 | NR | 640 | 660 | NR | 770 | 16 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 297 | NR | 645 | 599 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 357 | NR | 650 | 538 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 408 | NR | 655 | 480 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 451 | NR | 660 | 423 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 488 | NR | 665 | 372 | NR | 795 | 7 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 521 | NR | 670 | 325 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 555 | NR | 675 | 282 | NR | 805 | 5 | NR | 935 | 0 | NR |
| 420 | 46 | NR | 550 | 590 | NR | 680 | 246 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 94 | NR | 555 | 631 | NR | 685 | 213 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 169 | NR | 560 | 677 | NR | 690 | 185 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 268 | NR | 565 | 728 | NR | 695 | 158 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 354 | NR | 570 | 782 | NR | 700 | 136 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 445 | NR | 575 | 838 | NR | 705 | 116 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 411 | NR | 580 | 891 | NR | 710 | 98 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 210 | NR | 585 | 935 | NR | 715 | 82 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 119 | NR | 590 | 972 | NR | 720 | 68 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 84 | NR | 595 | 991 | NR | 725 | 56 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 50 | NR | 600 | 997 | NR | 730 | 47 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 35 | NR | 605 | 988 | NR | 735 | 40 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 32 | NR | 610 | 965 | NR | 740 | 35 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 33 | NR | 615 | 927 | NR | 745 | 31 | NR | 875 | 1 | NR | | | |

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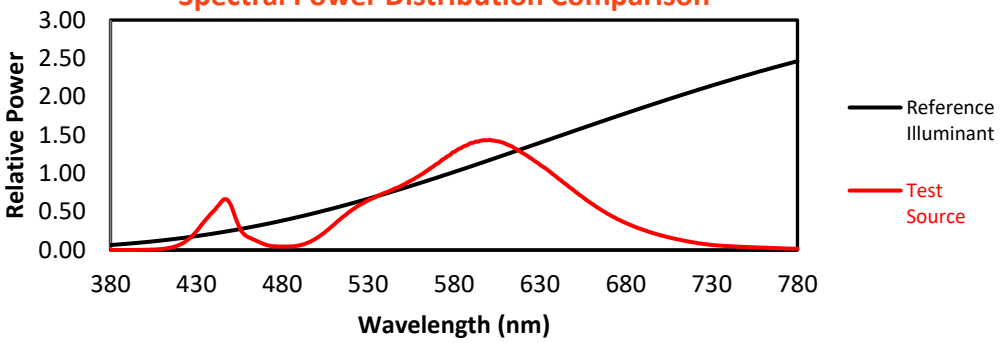
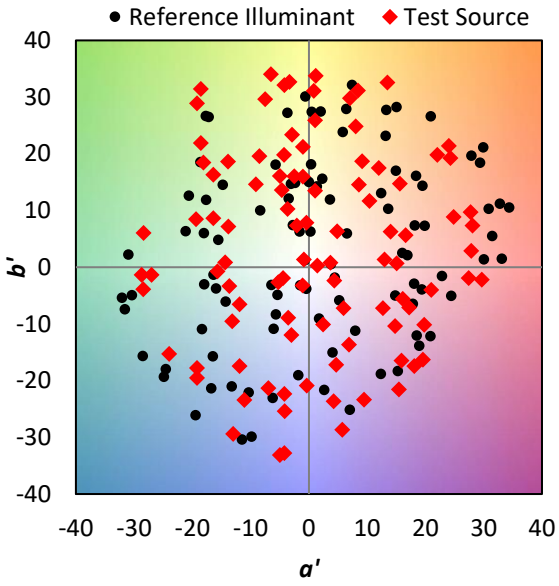
## Summary

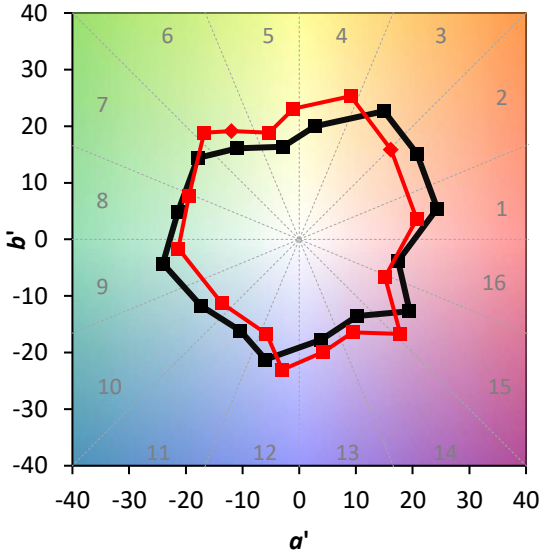
$R_f$ = 70.6
$R_g$ = 97.2
CIE $R_a$ = 70.6
$R_9$ = -27.1

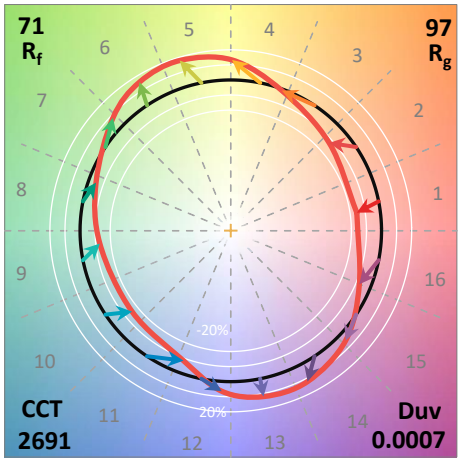
## Spectral Power Distribution Comparison

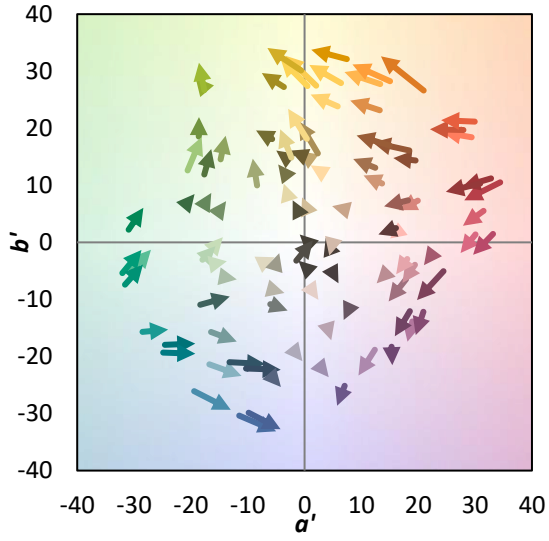



## Color Vector Graphics



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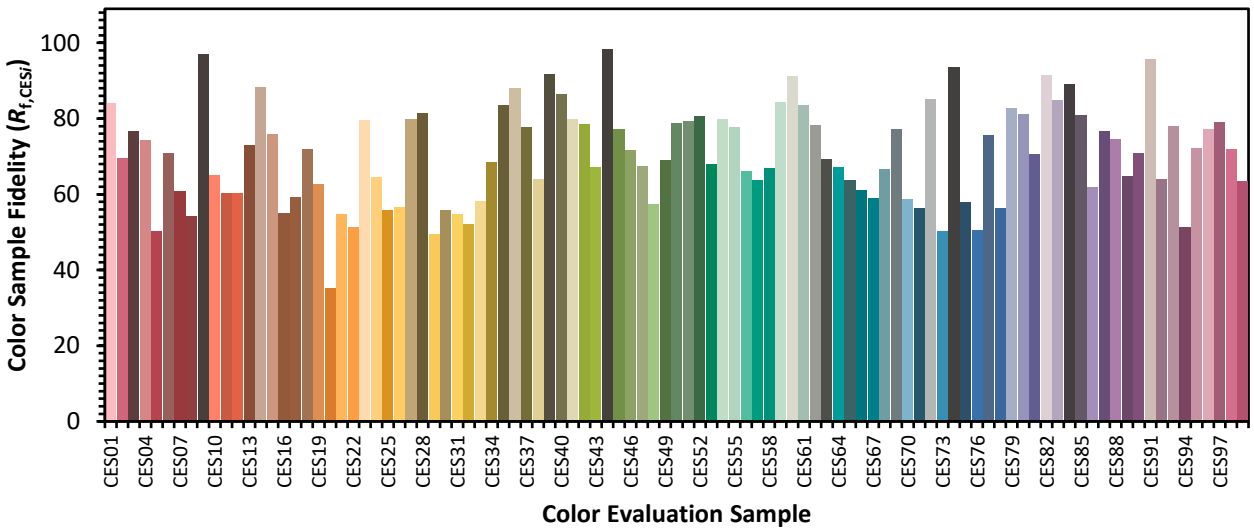
**Individual Sample Fidelity Index ($R_{f,i}$)**

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 57 | CES51 = 79 | CES76 = 50 |
| CES02 = 63 | CES27 = 80 | CES52 = 81 | CES77 = 76 |
| CES03 = 31 | CES28 = 81 | CES53 = 68 | CES78 = 56 |
| CES04 = 71 | CES29 = 49 | CES54 = 80 | CES79 = 83 |
| CES05 = 50 | CES30 = 56 | CES55 = 78 | CES80 = 81 |
| CES06 = 52 | CES31 = 55 | CES56 = 66 | CES81 = 71 |
| CES07 = 42 | CES32 = 52 | CES57 = 64 | CES82 = 92 |
| CES08 = 41 | CES33 = 58 | CES58 = 67 | CES83 = 85 |
| CES09 = 29 | CES34 = 69 | CES59 = 84 | CES84 = 89 |
| CES10 = 77 | CES35 = 84 | CES60 = 91 | CES85 = 81 |
| CES11 = 60 | CES36 = 88 | CES61 = 84 | CES86 = 62 |
| CES12 = 66 | CES37 = 78 | CES62 = 78 | CES87 = 77 |
| CES13 = 44 | CES38 = 64 | CES63 = 69 | CES88 = 75 |
| CES14 = 74 | CES39 = 92 | CES64 = 67 | CES89 = 65 |
| CES15 = 72 | CES40 = 86 | CES65 = 64 | CES90 = 71 |
| CES16 = 48 | CES41 = 80 | CES66 = 61 | CES91 = 96 |
| CES17 = 51 | CES42 = 79 | CES67 = 59 | CES92 = 64 |
| CES18 = 57 | CES43 = 67 | CES68 = 67 | CES93 = 78 |
| CES19 = 73 | CES44 = 98 | CES69 = 77 | CES94 = 51 |
| CES20 = 67 | CES45 = 77 | CES70 = 59 | CES95 = 72 |
| CES21 = 88 | CES46 = 72 | CES71 = 56 | CES96 = 77 |
| CES22 = 80 | CES47 = 67 | CES72 = 85 | CES97 = 79 |
| CES23 = 92 | CES48 = 57 | CES73 = 50 | CES98 = 72 |
| CES24 = 92 | CES49 = 69 | CES74 = 94 | CES99 = 63 |
| CES25 = 73 | CES50 = 79 | CES75 = 58 | |



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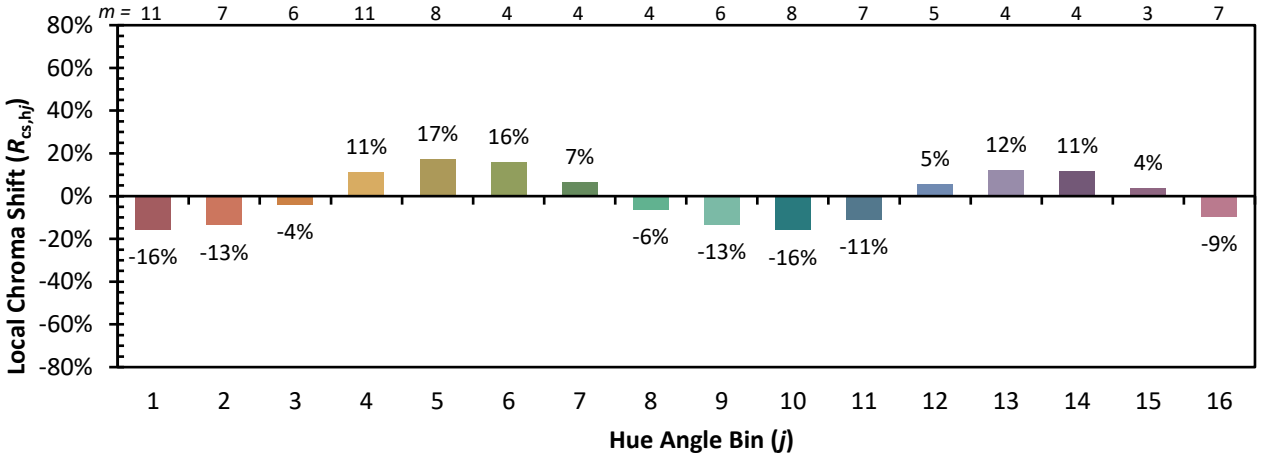
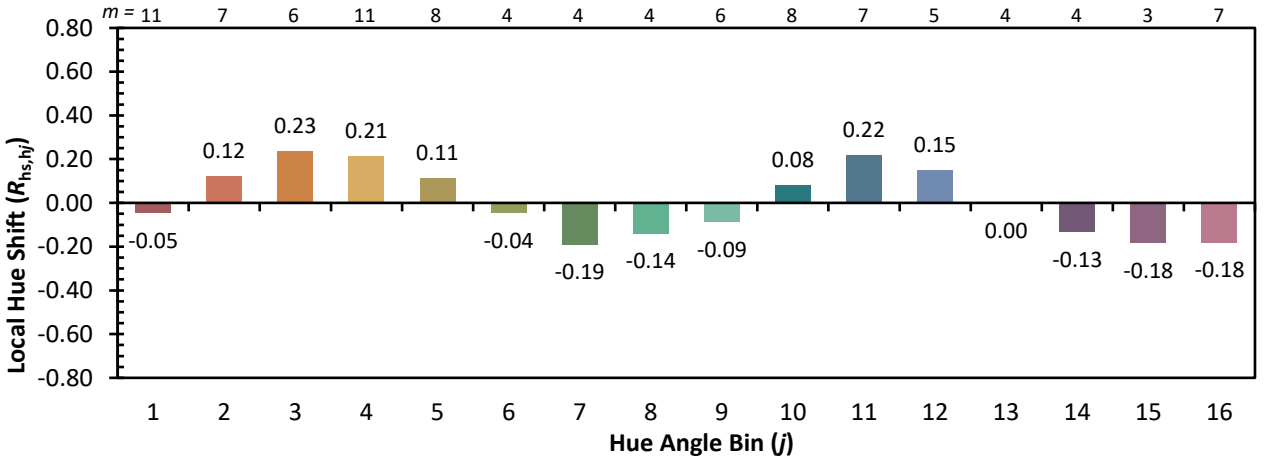
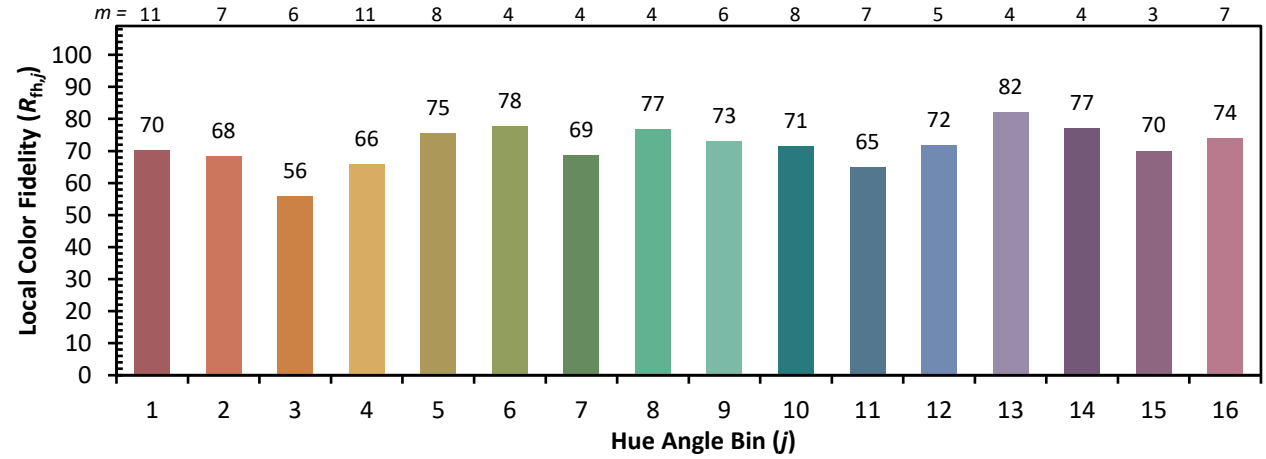
## Color Rendition by Hue-Angle Bin



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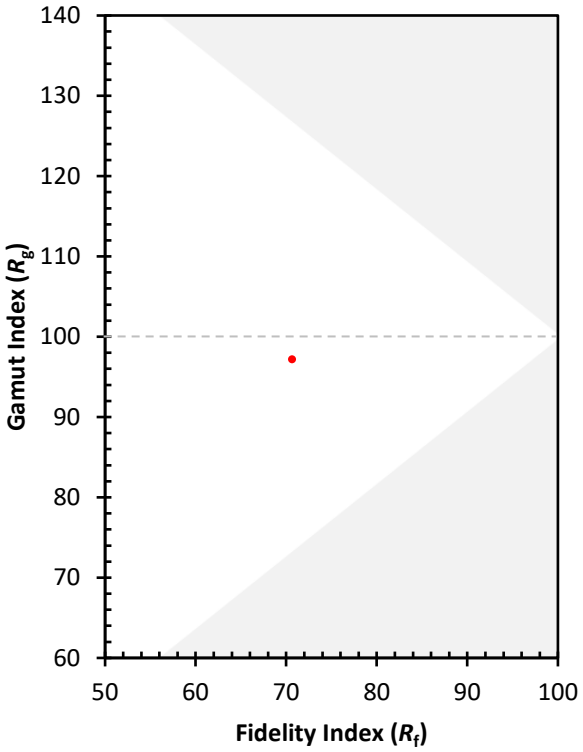
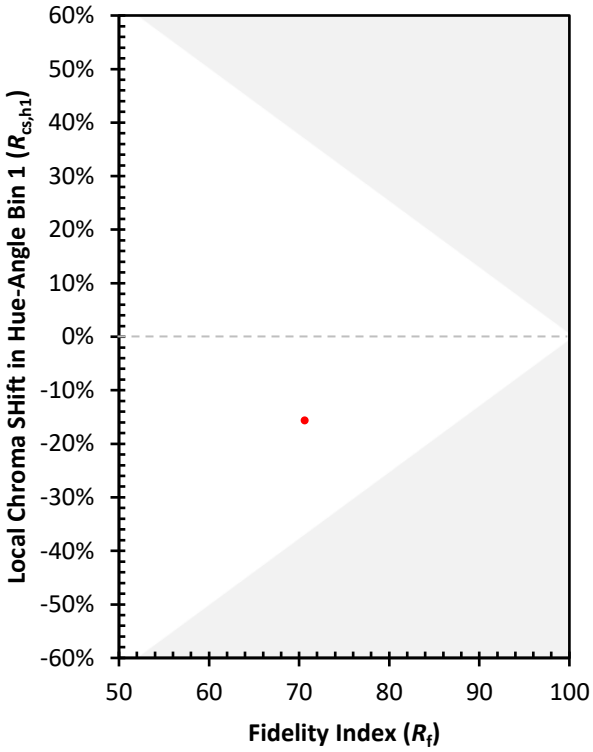
## Measure Comparisons




(END OF REPORT)