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: STREETWORKS

Report Number: P879528

Luminaire Tested: **MEM2-HTN-VA-160-740-U-WQ**

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: | P879528 |
| Test Lab: | INNOVATION CENTER(G3) |
| Issue Date: | 10/01/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | STREETWORKS |
| Catalog Number: | MEM2-HTN-VA-160-740-U-WQ |
| Description: | EPIC MODERN TALL HOUSING 160W 70CRI 4000K VISUAL COMFORT FIXTURE w/ TYPE V WIDE DISTRIBUTION OPTIC |
| Light Source: | (1) 4000K CCT, 70 CRI LEDS |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 18554.9 lumens |
| Efficiency: | N/A |
| Efficacy: | 118.9 lumens/watt |
| Luminous Opening: | Circular (Dia: 1.12' x H: 0') |
| IES Classification: | Type V - Short |
| BUG Rating: | B4 - U0 - G3 |

| | |
|---|---|
| Input Watts (W): | 156 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | 0.995 |
| Total Harmonic Distortion (THDi): | 6.6% |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 24 FT |

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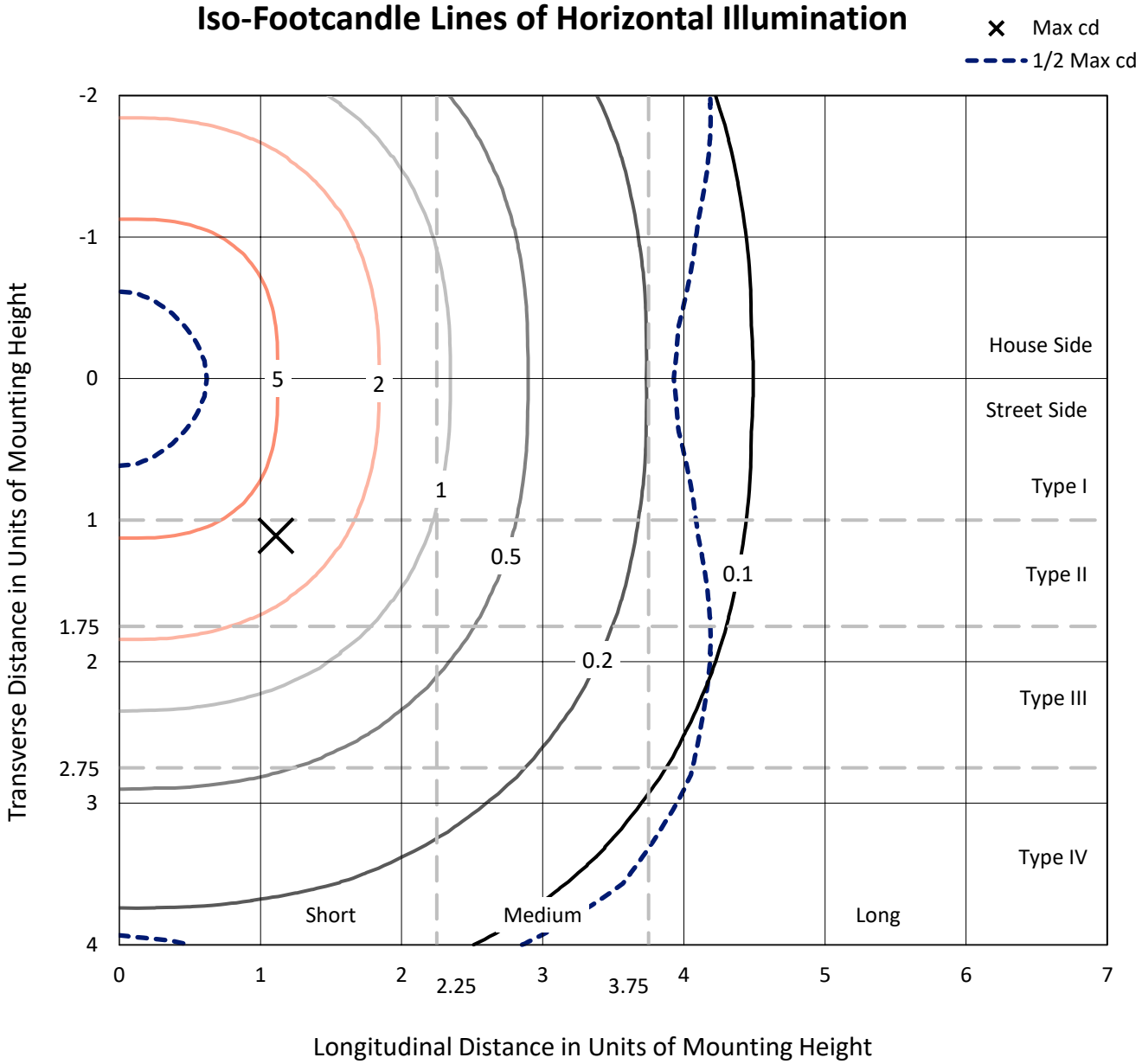
Scaled Data Report

REPORT NUMBER: P879528
CATALOG NUMBER: MEM2-HTN-VA-160-740-U-WQ

## Iso-Footcandle Lines of Horizontal Illumination




Based on 15 foot mounting height. Maximum calculated value = 7 fc
Type V - Short - N/A

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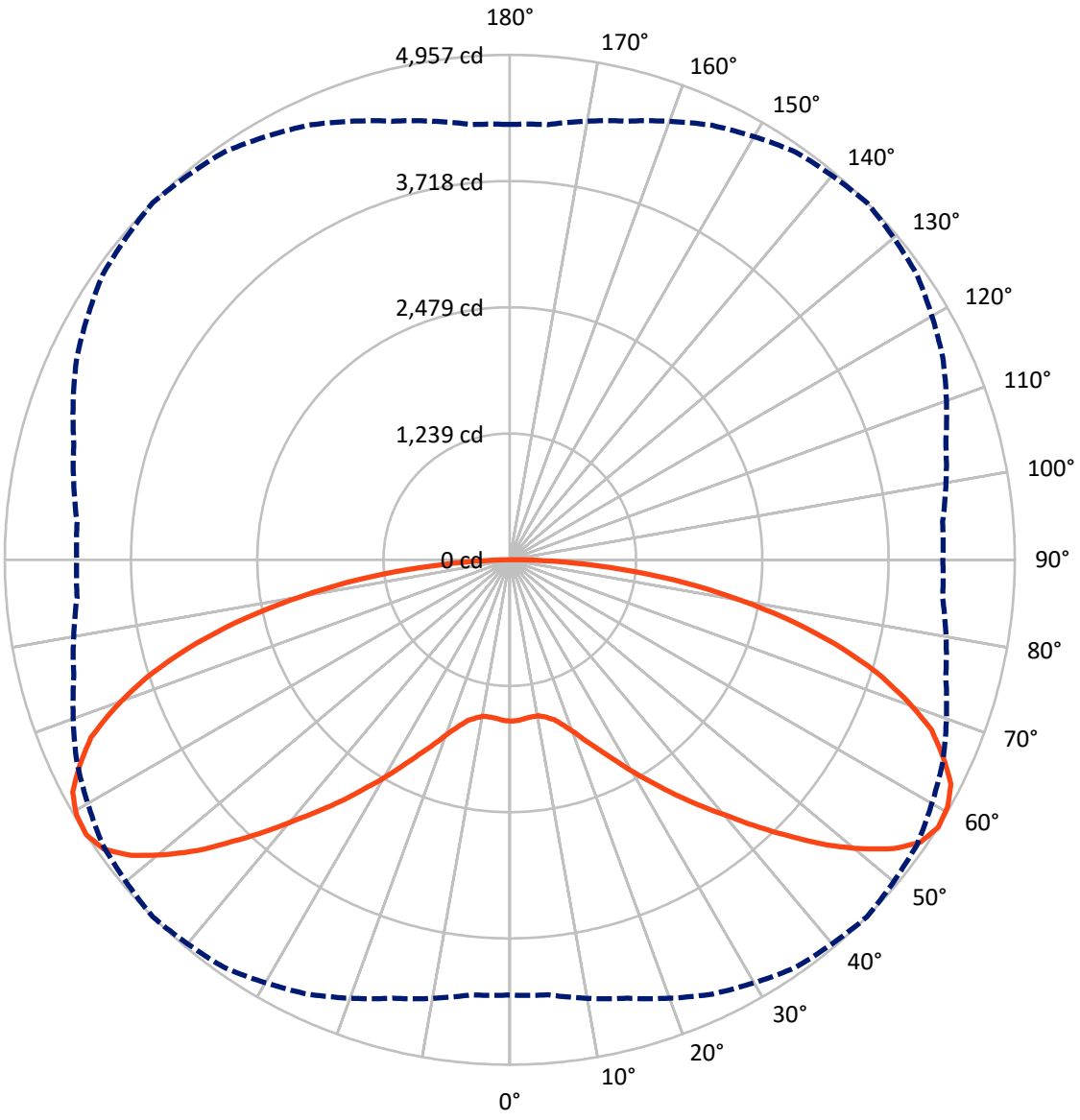
CATALOG NUMBER: MEM2-HTN-VA-160-740-U-WQ

## Luminous Intensity Polar Plot



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Scaled Data Report

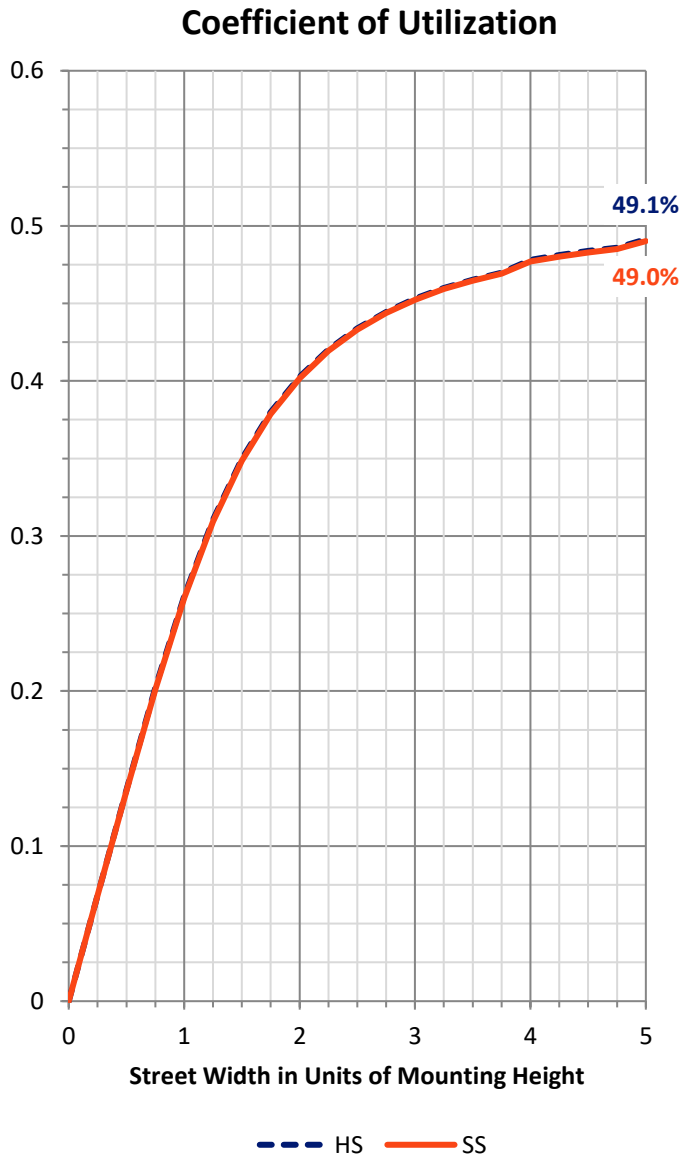
REPORT NUMBER: P879528
CATALOG NUMBER: MEM2-HTN-VA-160-740-U-WQ

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 9277.4 | 0.0 | 9277.4 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Street Side** | Lumens | 9277.4 | 0.0 | 9277.4 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Total** | Lumens | 18554.9 | 0.0 | 18554.9 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 149.2 | 0.8 |
| 10°-20° | 469.1 | 2.5 |
| 20°-30° | 964.1 | 5.2 |
| 30°-40° | 1759.2 | 9.5 |
| 40°-50° | 2884.9 | 15.5 |
| 50°-60° | 4042.5 | 21.8 |
| 60°-70° | 4229.0 | 22.8 |
| 70°-80° | 3089.8 | 16.7 |
| 80°-90° | 967.2 | 5.2 |
| 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° | 18554.9 | 100.0 |
| 0°-180° | 18554.9 | 100.0 |



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

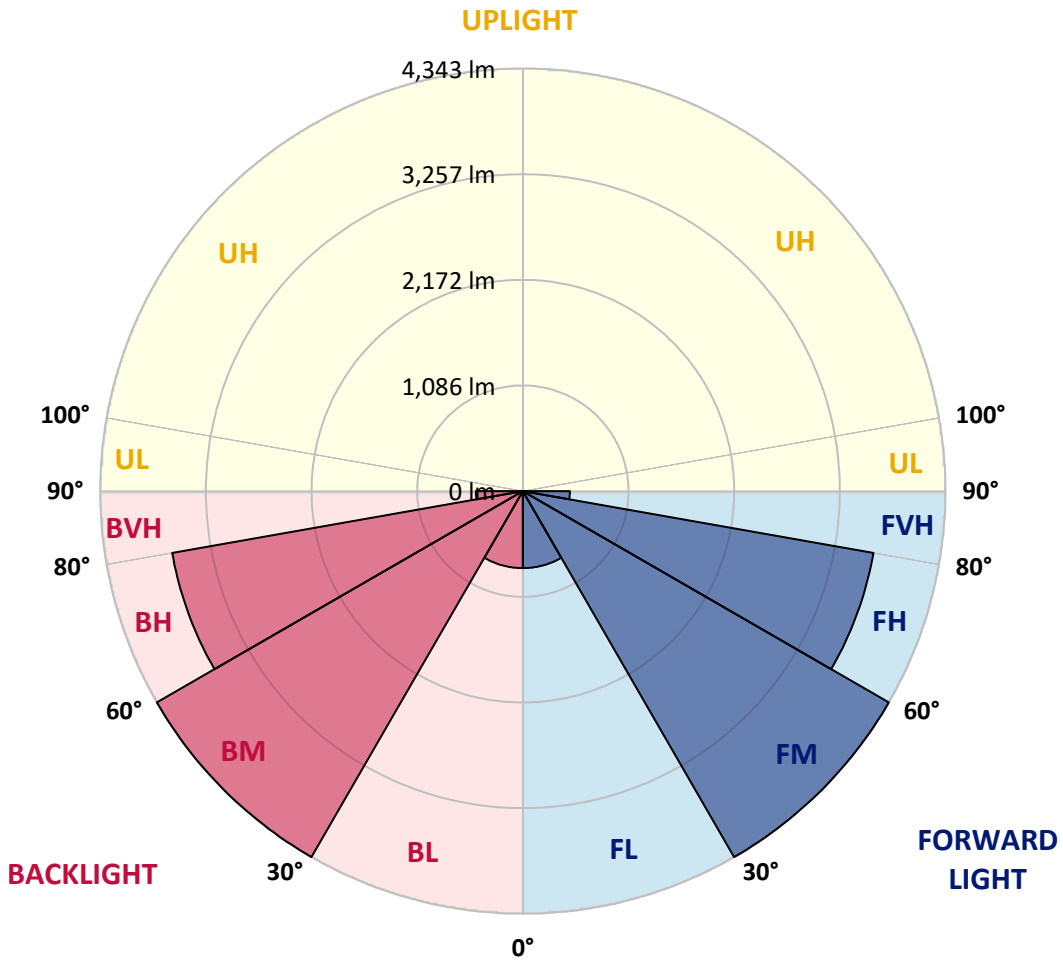
Scaled Data Report

REPORT NUMBER: P879528
CATALOG NUMBER: MEM2-HTN-VA-160-740-U-WQ

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 791.2 | 4.3 | | | |
| FM | (30°-60°) | 4343.3 | 23.4 | | | |
| FH | (60°-80°) | 3659.4 | 19.7 | | | G2/5000 |
| FVH | (80°-90°) | 483.6 | 2.6 | | | G3/500 |
| BL | (0°-30°) | 791.2 | 4.3 | B2/1000 | | |
| BM | (30°-60°) | 4343.3 | 23.4 | B3/5000 | | |
| BH | (60°-80°) | 3659.4 | 19.7 | B4/5000 | | G2/5000 |
| BVH | (80°-90°) | 483.6 | 2.6 | | | G3/500 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B4-U0-G3**
Type V Short



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Scaled Data Report

REPORT NUMBER: P879528
CATALOG NUMBER: MEM2-HTN-VA-160-740-U-WQ

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1584.2 | 1584.2 | 1584.2 | 1584.2 | 1584.2 | 1584.2 | 1584.2 | 1584.2 | 1584.2 | 1584.2 | 1584.2 |
| 2.5° | 1578.4 | 1580.7 | 1579.6 | 1579.6 | 1578.4 | 1579.6 | 1581.9 | 1583.1 | 1581.9 | 1583.1 | 1581.9 |
| 5° | 1567.9 | 1567.9 | 1566.8 | 1565.6 | 1565.6 | 1565.6 | 1565.6 | 1565.6 | 1566.8 | 1566.8 | 1567.9 |
| 7.5° | 1555.2 | 1555.2 | 1555.2 | 1557.5 | 1556.3 | 1557.5 | 1557.5 | 1556.3 | 1555.2 | 1555.2 | 1556.3 |
| 10° | 1557.5 | 1556.3 | 1555.2 | 1557.5 | 1556.3 | 1557.5 | 1557.5 | 1555.2 | 1556.3 | 1557.5 | 1558.6 |
| 12.5° | 1577.2 | 1574.9 | 1578.4 | 1581.9 | 1584.2 | 1586.5 | 1585.4 | 1584.2 | 1580.7 | 1577.2 | 1577.2 |
| 15° | 1620.2 | 1617.9 | 1621.4 | 1626.1 | 1627.2 | 1628.4 | 1631.9 | 1627.2 | 1626.1 | 1620.2 | 1619.1 |
| 17.5° | 1681.9 | 1680.7 | 1687.7 | 1697.0 | 1701.6 | 1707.4 | 1701.6 | 1697.0 | 1684.2 | 1681.9 | 1685.3 |
| 20° | 1770.2 | 1766.7 | 1780.6 | 1795.8 | 1800.4 | 1807.4 | 1802.7 | 1793.4 | 1780.6 | 1766.7 | 1766.7 |
| 22.5° | 1882.9 | 1891.1 | 1898.0 | 1909.7 | 1928.3 | 1939.9 | 1924.8 | 1908.5 | 1889.9 | 1881.8 | 1876.0 |
| 25° | 2029.4 | 2028.2 | 2035.2 | 2058.4 | 2070.1 | 2078.2 | 2075.9 | 2053.8 | 2037.5 | 2025.9 | 2024.7 |
| 27.5° | 2170.0 | 2184.0 | 2197.9 | 2213.0 | 2242.1 | 2245.6 | 2242.1 | 2215.3 | 2189.8 | 2180.5 | 2177.0 |
| 30° | 2357.1 | 2354.8 | 2367.6 | 2403.6 | 2432.7 | 2435.0 | 2425.7 | 2393.2 | 2364.1 | 2346.7 | 2349.0 |
| 32.5° | 2539.6 | 2521.0 | 2554.7 | 2579.1 | 2603.6 | 2629.1 | 2604.7 | 2579.1 | 2554.7 | 2517.5 | 2529.2 |
| 35° | 2705.8 | 2721.0 | 2739.5 | 2789.5 | 2839.5 | 2850.0 | 2833.7 | 2781.4 | 2733.7 | 2716.3 | 2696.5 |
| 37.5° | 2909.2 | 2909.2 | 2940.6 | 3013.9 | 3059.2 | 3075.5 | 3052.2 | 2999.9 | 2933.7 | 2908.1 | 2898.8 |
| 40° | 3113.8 | 3113.8 | 3161.5 | 3223.1 | 3290.5 | 3313.7 | 3288.2 | 3219.6 | 3165.0 | 3098.7 | 3109.2 |
| 42.5° | 3312.6 | 3328.8 | 3391.6 | 3467.1 | 3561.3 | 3592.7 | 3556.6 | 3464.8 | 3385.8 | 3323.0 | 3313.7 |
| 45° | 3532.2 | 3557.8 | 3626.4 | 3750.8 | 3830.9 | 3876.3 | 3826.3 | 3747.3 | 3607.8 | 3547.3 | 3514.8 |
| 47.5° | 3771.7 | 3789.1 | 3887.9 | 4006.5 | 4136.6 | 4184.3 | 4125.0 | 3996.0 | 3877.4 | 3770.5 | 3765.9 |
| 50° | 3979.7 | 3976.2 | 4102.9 | 4266.8 | 4414.4 | 4459.8 | 4412.1 | 4272.6 | 4079.7 | 3961.1 | 3972.8 |
| 52.5° | 4135.5 | 4155.2 | 4288.9 | 4491.1 | 4648.0 | 4714.3 | 4636.4 | 4469.1 | 4268.0 | 4144.8 | 4107.6 |
| 55° | 4236.6 | 4269.1 | 4424.9 | 4643.4 | 4822.4 | 4893.3 | 4816.6 | 4623.6 | 4404.0 | 4244.7 | 4222.6 |
| 57.5° | 4273.8 | 4287.7 | 4457.4 | 4705.0 | 4887.5 | 4957.2 | 4878.2 | 4689.9 | 4430.7 | 4264.5 | 4250.5 |
| 60° | 4216.8 | 4230.8 | 4414.4 | 4667.8 | 4877.0 | 4936.3 | 4873.5 | 4652.7 | 4388.9 | 4219.2 | 4195.9 |
| 62.5° | 4077.4 | 4115.7 | 4319.1 | 4570.2 | 4809.6 | 4859.6 | 4794.5 | 4552.7 | 4308.7 | 4104.1 | 4070.4 |
| 65° | 3910.0 | 3950.7 | 4123.8 | 4404.0 | 4621.3 | 4674.8 | 4623.6 | 4391.2 | 4125.0 | 3928.6 | 3896.0 |
| 67.5° | 3676.4 | 3683.3 | 3886.7 | 4170.3 | 4400.5 | 4465.6 | 4377.2 | 4165.7 | 3876.3 | 3690.3 | 3664.7 |
| 70° | 3384.6 | 3389.3 | 3605.5 | 3868.1 | 4079.7 | 4133.1 | 4075.0 | 3849.5 | 3590.4 | 3388.1 | 3370.7 |
| 72.5° | 3010.4 | 3053.4 | 3232.4 | 3492.7 | 3690.3 | 3753.1 | 3677.5 | 3485.7 | 3246.3 | 3046.4 | 3006.9 |
| 75° | 2612.9 | 2639.6 | 2795.3 | 3047.6 | 3217.3 | 3295.1 | 3233.5 | 3047.6 | 2795.3 | 2630.3 | 2595.4 |
| 77.5° | 2147.9 | 2184.0 | 2336.2 | 2548.9 | 2689.6 | 2773.3 | 2705.8 | 2540.8 | 2336.2 | 2185.1 | 2184.0 |
| 80° | 1697.0 | 1687.7 | 1826.0 | 2009.6 | 2149.1 | 2197.9 | 2156.1 | 1995.7 | 1812.0 | 1694.6 | 1678.4 |
| 82.5° | 1177.4 | 1175.1 | 1325.0 | 1448.2 | 1565.6 | 1621.4 | 1557.5 | 1454.0 | 1312.2 | 1207.6 | 1173.9 |
| 85° | 669.5 | 684.6 | 783.4 | 860.1 | 960.1 | 993.8 | 971.7 | 874.1 | 747.4 | 655.5 | 649.7 |
| 87.5° | 232.5 | 253.4 | 272.0 | 327.8 | 392.9 | 421.9 | 390.5 | 375.4 | 333.6 | 289.4 | 291.7 |
| 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: SP1-2407-176-9

Test Date: 09/25/2024

Luminaire Tested: MEM2-HTN-VA-130-740-U-RW

Data in this report applies to families of products including MEM2-HTN-VA-130-740-U-RW

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

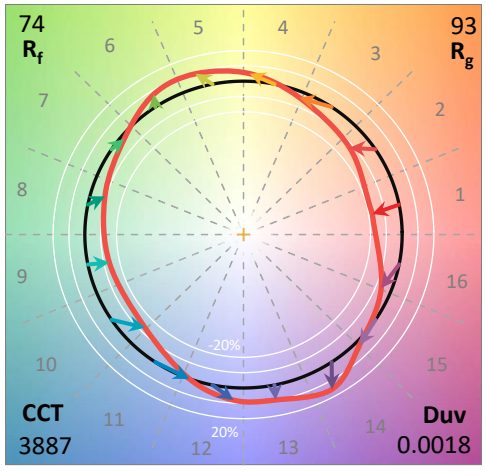
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2407-176-9 |
| 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-130-740-U-RW** |
| Description: | EPIC MODERN VISUAL COMFORT 130W WAVESTREAM RECTANGULAR WIDE |

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 3887 | CRI (Ra): | 71.4 | | |
| CIE u': | 0.2262 | R1: | 67.6 | R9: | -36.8 |
| CIE v': | 0.5060 | R2: | 78.8 | R10: | 50.4 |
| Duv: | 0.0018 | R3: | 88.2 | R11: | 65.0 |
| CIE x: | 0.3870 | R4: | 69.8 | R12: | 44.4 |
| CIE y: | 0.3847 | R5: | 67.7 | R13: | 69.4 |
| CIE z: | 0.2283 | R6: | 70.3 | R14: | 93.3 |
| Peak Wavelength (nm): | 583 | R7: | 80.1 | R15: | 59.9 |
| Dominant Wavelength (nm): | 578 | R8: | 49.0 | | |
| Purity: | 31.59626 | | | | |

| | |
|---|---|
| Rf: | 74.5 |
| Rg: | 93.5 |




## Test Conditions

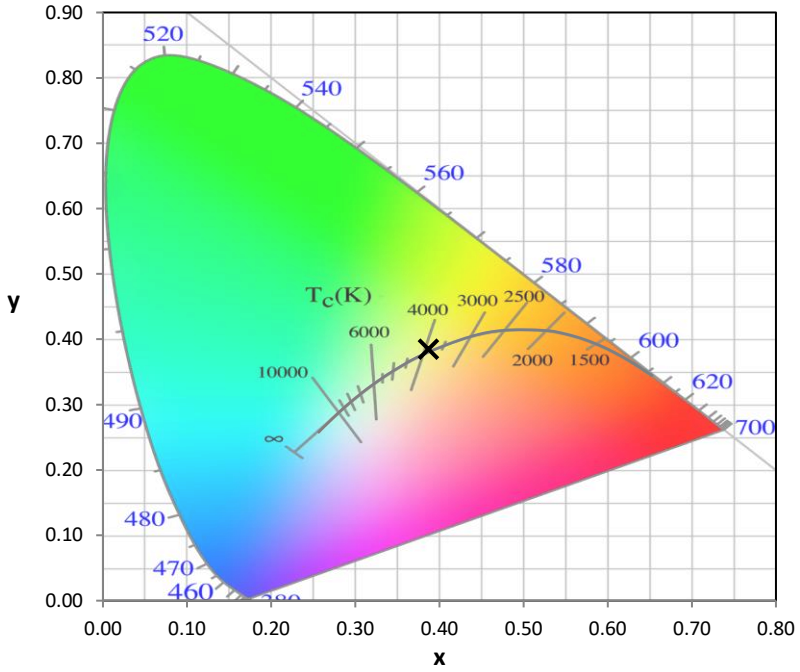
| | |
|---|---|
| Stabilization Time: | 50M |
| Operation Time: | 1H 50M |
| Sphere Temperature (°C): | 25.2 |

REPORT NUMBER: SP1-2407-176-9

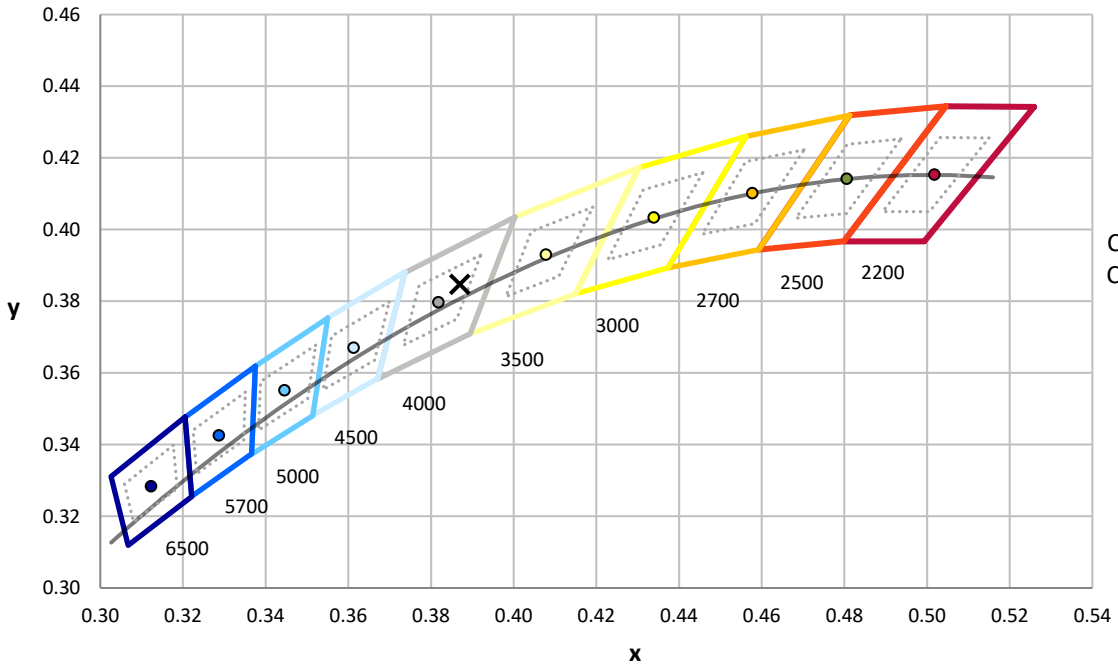
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC 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: SP1-2407-176-9

## CIE 1931 Chromaticity Diagram




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

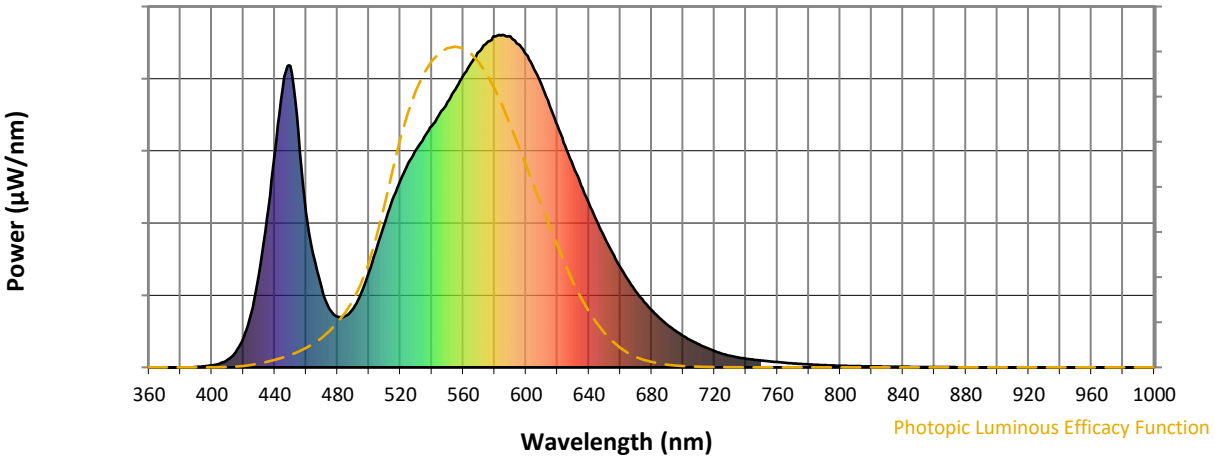



CCT = 3887K
CIE x = 0.3870
CIE y = 0.3847
Duv = 0.0018

Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP1-2407-176-9

## Photopic Flux vs. Wavelength

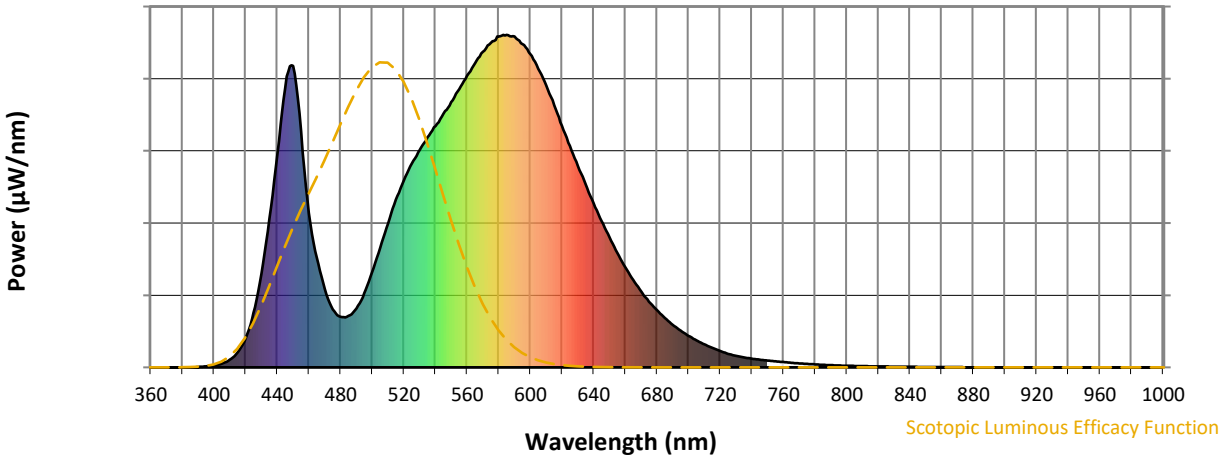



## Photopic Lumens: NR

| 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 | 177 | NR | 620 | 727 | NR | 750 | 21 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 222 | NR | 625 | 666 | NR | 755 | 18 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 286 | NR | 630 | 606 | NR | 760 | 16 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 359 | NR | 635 | 549 | NR | 765 | 14 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 433 | NR | 640 | 493 | NR | 770 | 12 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 505 | NR | 645 | 440 | NR | 775 | 10 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 562 | NR | 650 | 390 | NR | 780 | 9 | NR | 910 | 0 | NR |
| 395 | 3 | NR | 525 | 613 | NR | 655 | 344 | NR | 785 | 8 | NR | 915 | 0 | NR |
| 400 | 6 | NR | 530 | 654 | NR | 660 | 301 | NR | 790 | 7 | NR | 920 | 0 | NR |
| 405 | 11 | NR | 535 | 692 | NR | 665 | 263 | NR | 795 | 6 | NR | 925 | 0 | NR |
| 410 | 23 | NR | 540 | 726 | NR | 670 | 228 | NR | 800 | 5 | NR | 930 | 0 | NR |
| 415 | 45 | NR | 545 | 763 | NR | 675 | 198 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 88 | NR | 550 | 798 | NR | 680 | 172 | NR | 810 | 4 | NR | 940 | 0 | NR |
| 425 | 164 | NR | 555 | 837 | NR | 685 | 148 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 281 | NR | 560 | 878 | NR | 690 | 128 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 447 | NR | 565 | 915 | NR | 695 | 110 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 642 | NR | 570 | 948 | NR | 700 | 95 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 838 | NR | 575 | 976 | NR | 705 | 81 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 907 | NR | 580 | 995 | NR | 710 | 69 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 710 | NR | 585 | 1000 | NR | 715 | 58 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 465 | NR | 590 | 995 | NR | 720 | 49 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 330 | NR | 595 | 972 | NR | 725 | 41 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 236 | NR | 600 | 941 | NR | 730 | 35 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 174 | NR | 605 | 898 | NR | 735 | 30 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 152 | NR | 610 | 848 | NR | 740 | 26 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 155 | NR | 615 | 788 | NR | 745 | 23 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-176-9

## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.49**

| 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 | 177 | NR | 620 | 727 | NR | 750 | 21 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 222 | NR | 625 | 666 | NR | 755 | 18 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 286 | NR | 630 | 606 | NR | 760 | 16 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 359 | NR | 635 | 549 | NR | 765 | 14 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 433 | NR | 640 | 493 | NR | 770 | 12 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 505 | NR | 645 | 440 | NR | 775 | 10 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 562 | NR | 650 | 390 | NR | 780 | 9 | NR | 910 | 0 | NR |
| 395 | 3 | NR | 525 | 613 | NR | 655 | 344 | NR | 785 | 8 | NR | 915 | 0 | NR |
| 400 | 6 | NR | 530 | 654 | NR | 660 | 301 | NR | 790 | 7 | NR | 920 | 0 | NR |
| 405 | 11 | NR | 535 | 692 | NR | 665 | 263 | NR | 795 | 6 | NR | 925 | 0 | NR |
| 410 | 23 | NR | 540 | 726 | NR | 670 | 228 | NR | 800 | 5 | NR | 930 | 0 | NR |
| 415 | 45 | NR | 545 | 763 | NR | 675 | 198 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 88 | NR | 550 | 798 | NR | 680 | 172 | NR | 810 | 4 | NR | 940 | 0 | NR |
| 425 | 164 | NR | 555 | 837 | NR | 685 | 148 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 281 | NR | 560 | 878 | NR | 690 | 128 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 447 | NR | 565 | 915 | NR | 695 | 110 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 642 | NR | 570 | 948 | NR | 700 | 95 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 838 | NR | 575 | 976 | NR | 705 | 81 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 907 | NR | 580 | 995 | NR | 710 | 69 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 710 | NR | 585 | 1000 | NR | 715 | 58 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 465 | NR | 590 | 995 | NR | 720 | 49 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 330 | NR | 595 | 972 | NR | 725 | 41 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 236 | NR | 600 | 941 | NR | 730 | 35 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 174 | NR | 605 | 898 | NR | 735 | 30 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 152 | NR | 610 | 848 | NR | 740 | 26 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 155 | NR | 615 | 788 | NR | 745 | 23 | NR | 875 | 0 | NR | | | |

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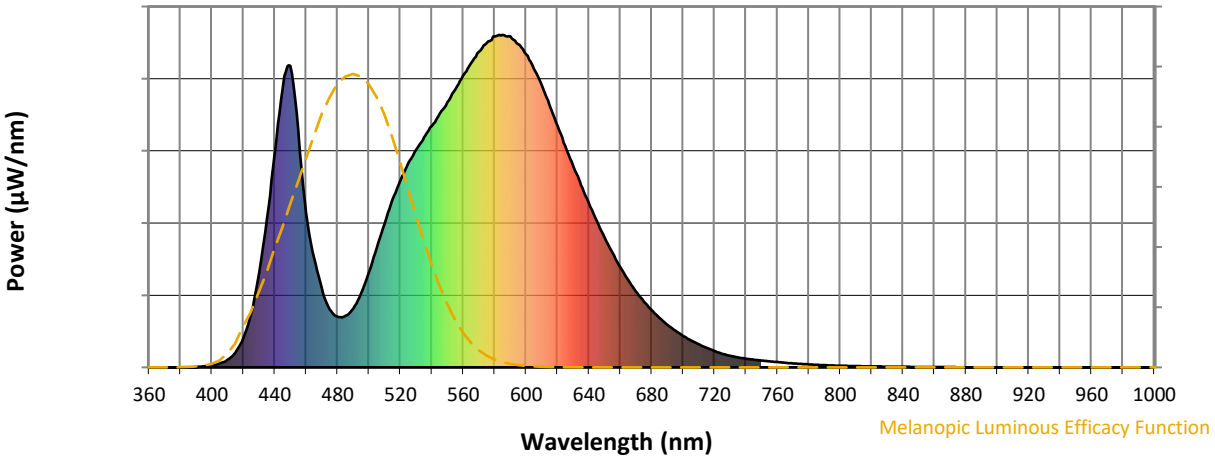
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.89**

| 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 | 177 | NR | 620 | 727 | NR | 750 | 21 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 222 | NR | 625 | 666 | NR | 755 | 18 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 286 | NR | 630 | 606 | NR | 760 | 16 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 359 | NR | 635 | 549 | NR | 765 | 14 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 433 | NR | 640 | 493 | NR | 770 | 12 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 505 | NR | 645 | 440 | NR | 775 | 10 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 562 | NR | 650 | 390 | NR | 780 | 9 | NR | 910 | 0 | NR |
| 395 | 3 | NR | 525 | 613 | NR | 655 | 344 | NR | 785 | 8 | NR | 915 | 0 | NR |
| 400 | 6 | NR | 530 | 654 | NR | 660 | 301 | NR | 790 | 7 | NR | 920 | 0 | NR |
| 405 | 11 | NR | 535 | 692 | NR | 665 | 263 | NR | 795 | 6 | NR | 925 | 0 | NR |
| 410 | 23 | NR | 540 | 726 | NR | 670 | 228 | NR | 800 | 5 | NR | 930 | 0 | NR |
| 415 | 45 | NR | 545 | 763 | NR | 675 | 198 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 88 | NR | 550 | 798 | NR | 680 | 172 | NR | 810 | 4 | NR | 940 | 0 | NR |
| 425 | 164 | NR | 555 | 837 | NR | 685 | 148 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 281 | NR | 560 | 878 | NR | 690 | 128 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 447 | NR | 565 | 915 | NR | 695 | 110 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 642 | NR | 570 | 948 | NR | 700 | 95 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 838 | NR | 575 | 976 | NR | 705 | 81 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 907 | NR | 580 | 995 | NR | 710 | 69 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 710 | NR | 585 | 1000 | NR | 715 | 58 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 465 | NR | 590 | 995 | NR | 720 | 49 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 330 | NR | 595 | 972 | NR | 725 | 41 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 236 | NR | 600 | 941 | NR | 730 | 35 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 174 | NR | 605 | 898 | NR | 735 | 30 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 152 | NR | 610 | 848 | NR | 740 | 26 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 155 | NR | 615 | 788 | NR | 745 | 23 | NR | 875 | 0 | NR | | | |

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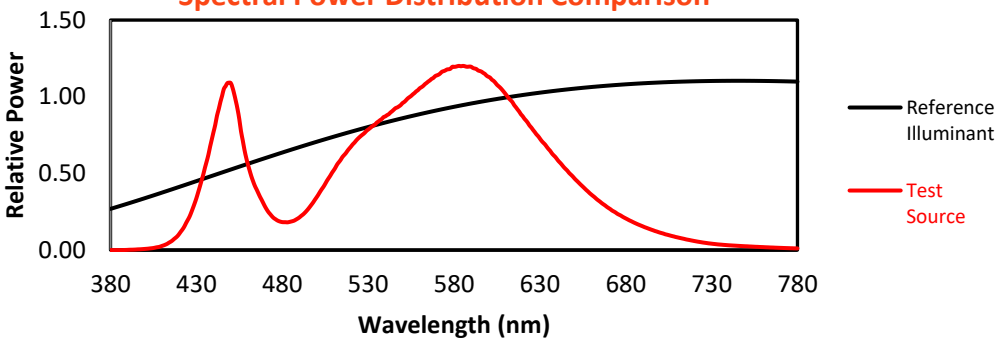
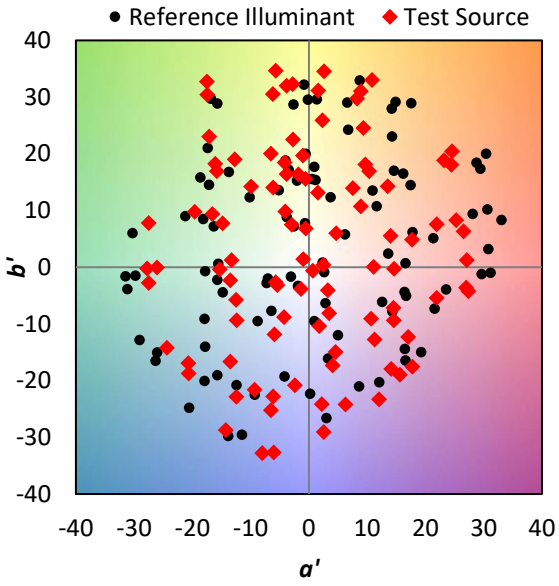
## Summary

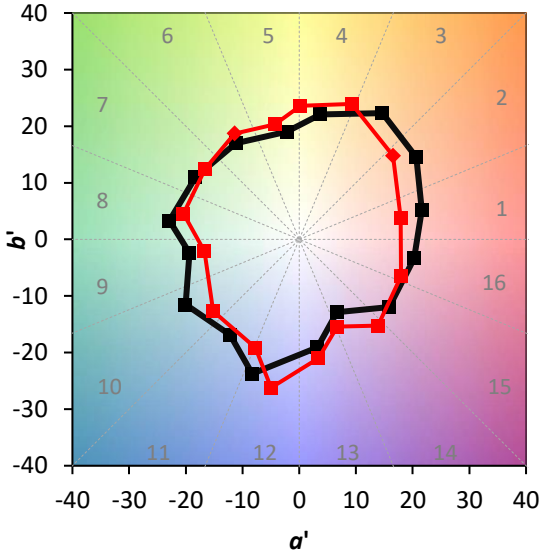
$R_f$ = 74.5
$R_g$ = 93.5
CIE $R_a$ = 71.4
$R_9$ = -36.8

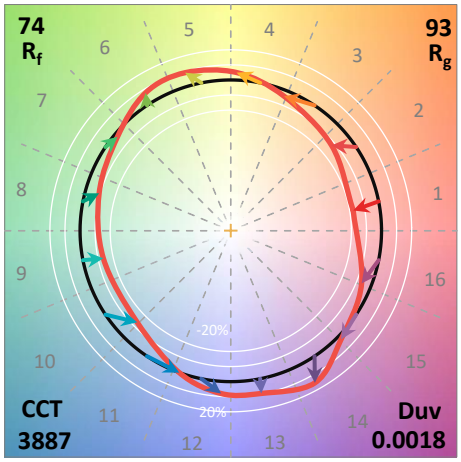
## Spectral Power Distribution Comparison

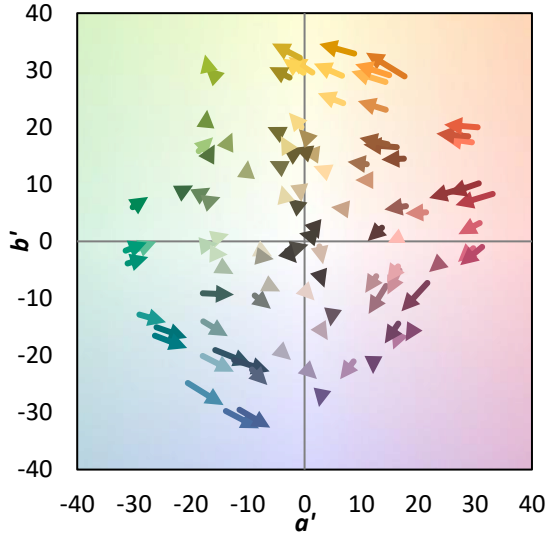



## Color Vector Graphics



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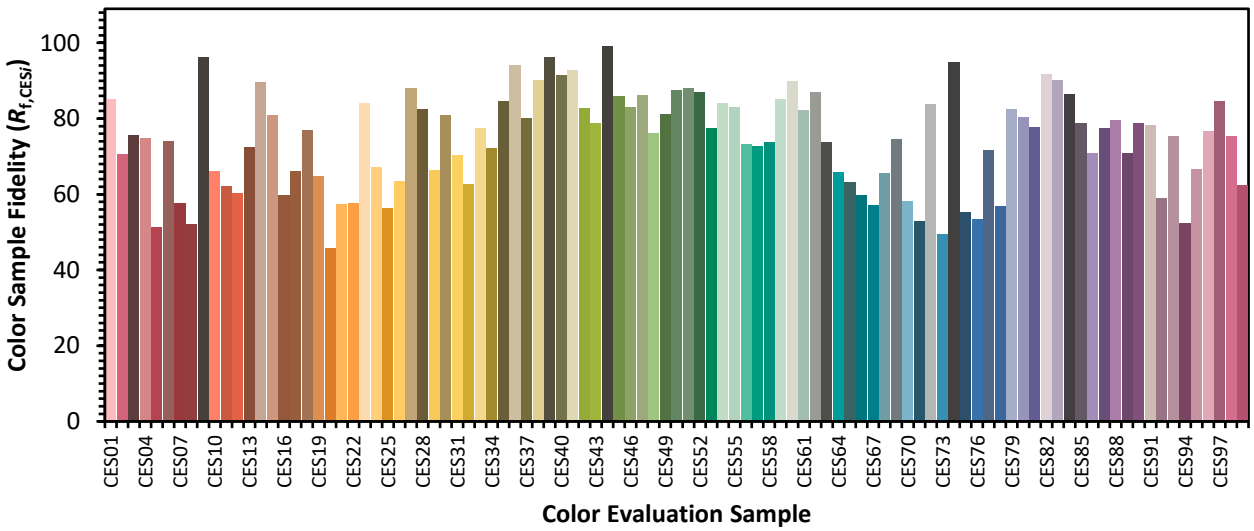
**Individual Sample Fidelity Index ($R_{f,i}$)**

| | | | |
|---|---|---|---|
| CES01 = 85 | CES26 = 63 | CES51 = 88 | CES76 = 54 |
| CES02 = 61 | CES27 = 88 | CES52 = 87 | CES77 = 72 |
| CES03 = 30 | CES28 = 82 | CES53 = 77 | CES78 = 57 |
| CES04 = 70 | CES29 = 66 | CES54 = 84 | CES79 = 83 |
| CES05 = 47 | CES30 = 81 | CES55 = 83 | CES80 = 80 |
| CES06 = 50 | CES31 = 70 | CES56 = 73 | CES81 = 78 |
| CES07 = 40 | CES32 = 63 | CES57 = 73 | CES82 = 92 |
| CES08 = 39 | CES33 = 77 | CES58 = 74 | CES83 = 90 |
| CES09 = 29 | CES34 = 72 | CES59 = 85 | CES84 = 87 |
| CES10 = 74 | CES35 = 85 | CES60 = 90 | CES85 = 79 |
| CES11 = 57 | CES36 = 94 | CES61 = 82 | CES86 = 71 |
| CES12 = 63 | CES37 = 80 | CES62 = 87 | CES87 = 77 |
| CES13 = 42 | CES38 = 90 | CES63 = 74 | CES88 = 80 |
| CES14 = 74 | CES39 = 96 | CES64 = 66 | CES89 = 71 |
| CES15 = 71 | CES40 = 92 | CES65 = 63 | CES90 = 79 |
| CES16 = 46 | CES41 = 93 | CES66 = 60 | CES91 = 78 |
| CES17 = 49 | CES42 = 83 | CES67 = 57 | CES92 = 59 |
| CES18 = 56 | CES43 = 79 | CES68 = 65 | CES93 = 75 |
| CES19 = 72 | CES44 = 99 | CES69 = 74 | CES94 = 52 |
| CES20 = 65 | CES45 = 86 | CES70 = 58 | CES95 = 67 |
| CES21 = 86 | CES46 = 83 | CES71 = 53 | CES96 = 77 |
| CES22 = 78 | CES47 = 86 | CES72 = 84 | CES97 = 85 |
| CES23 = 92 | CES48 = 76 | CES73 = 49 | CES98 = 75 |
| CES24 = 91 | CES49 = 81 | CES74 = 95 | CES99 = 62 |
| CES25 = 72 | CES50 = 88 | CES75 = 55 | |



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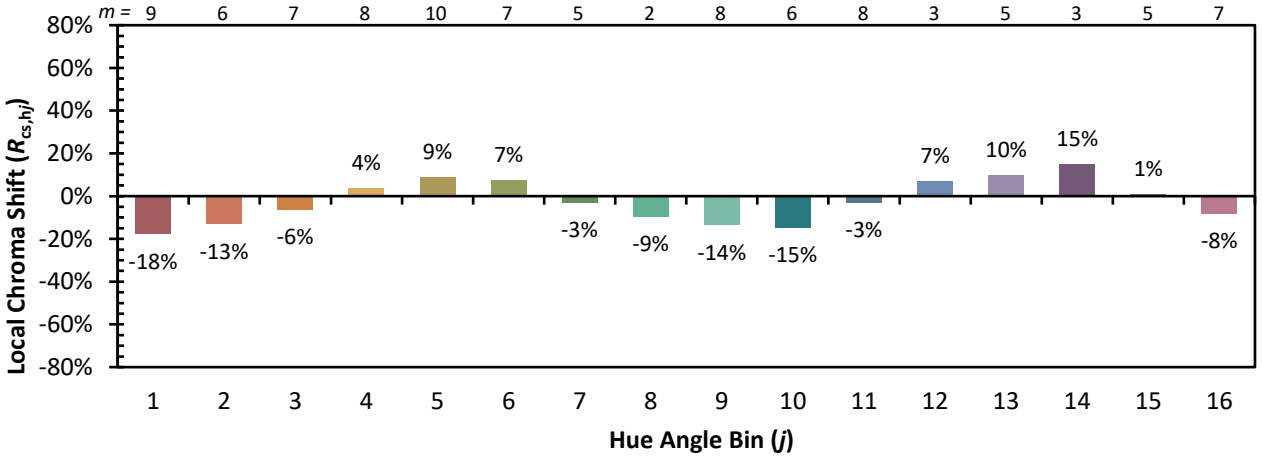
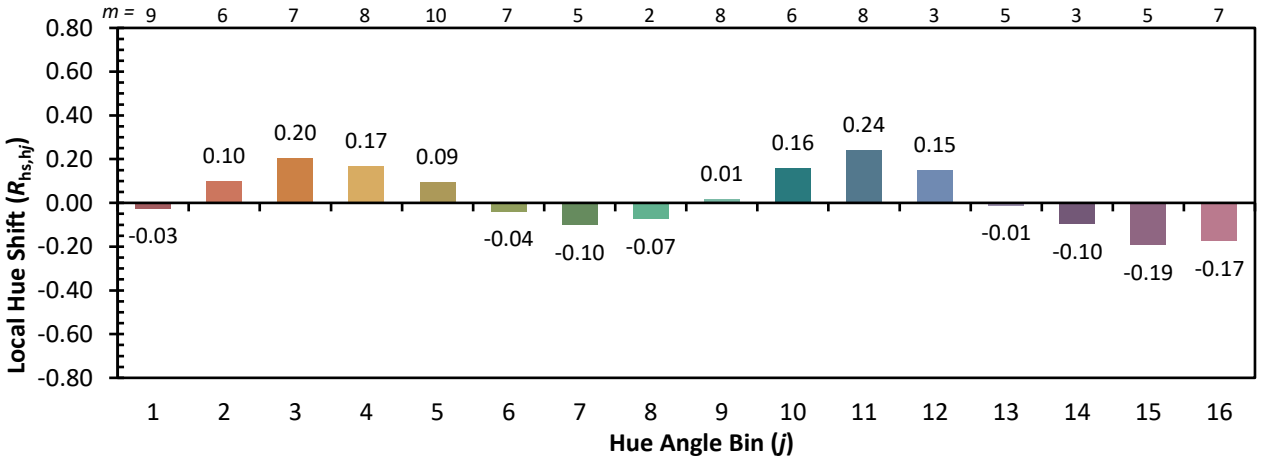
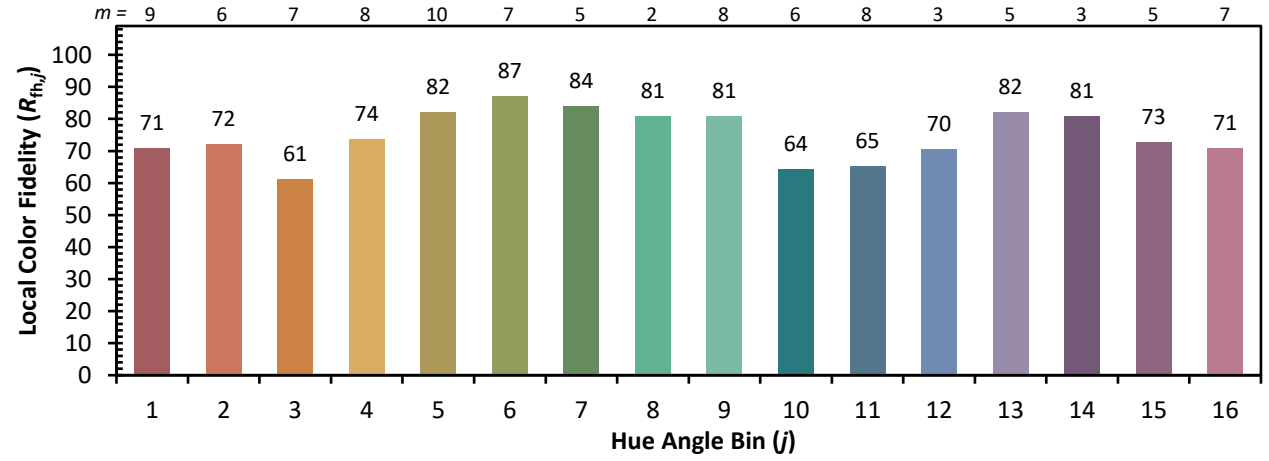
## Color Rendition by Hue-Angle Bin



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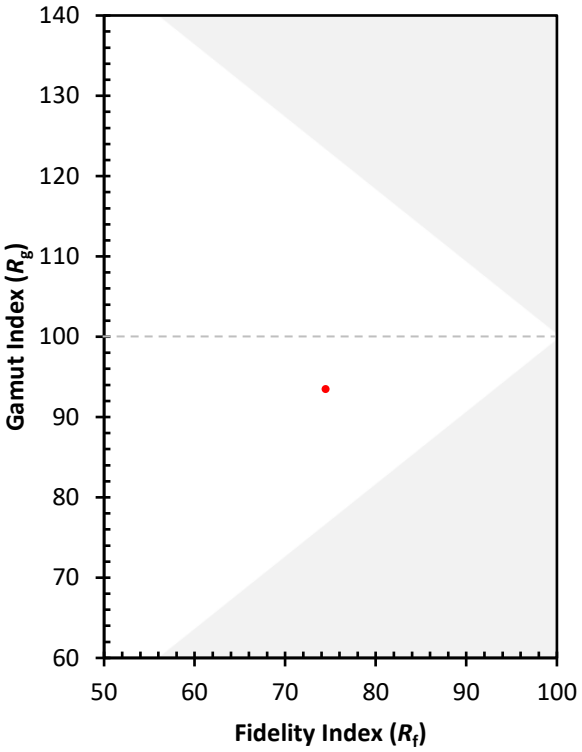
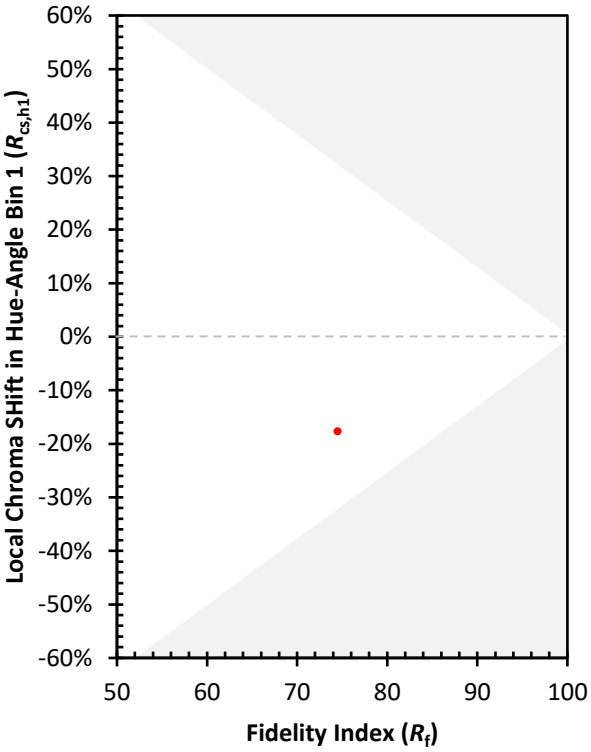
## Measure Comparisons




(END OF REPORT)