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: P879701

Luminaire Tested: **EMM2-HTN-VA7-830-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: | P879701 |
| Test Lab: | INNOVATION CENTER(G3) |
| Issue Date: | 10/01/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | INVUE |
| Catalog Number: | EMM2-HTN-VA7-830-U-MQ |
| Description: | EPIC MODERN TALL HOUSING 7W 80CRI 3000K WAVESTREAM FIXTURE w/ TYPE V MEDIUM DISTRIBUTION OPTIC |
| Light Source: | (1) 3000K CCT, 80 CRI LEDS |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 12292.6 lumens |
| Efficiency: | N/A |
| Efficacy: | 94.6 lumens/watt |
| Luminous Opening: | Circular (Dia: 1.12' x H: 0') |
| IES Classification: | Type V - Short |
| BUG Rating: | B3 - U0 - G3 |

| | |
|---|---|
| Input Watts (W): | 130 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | 0.995 |
| Total Harmonic Distortion (THDi): | 8.1% |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 24 FT |

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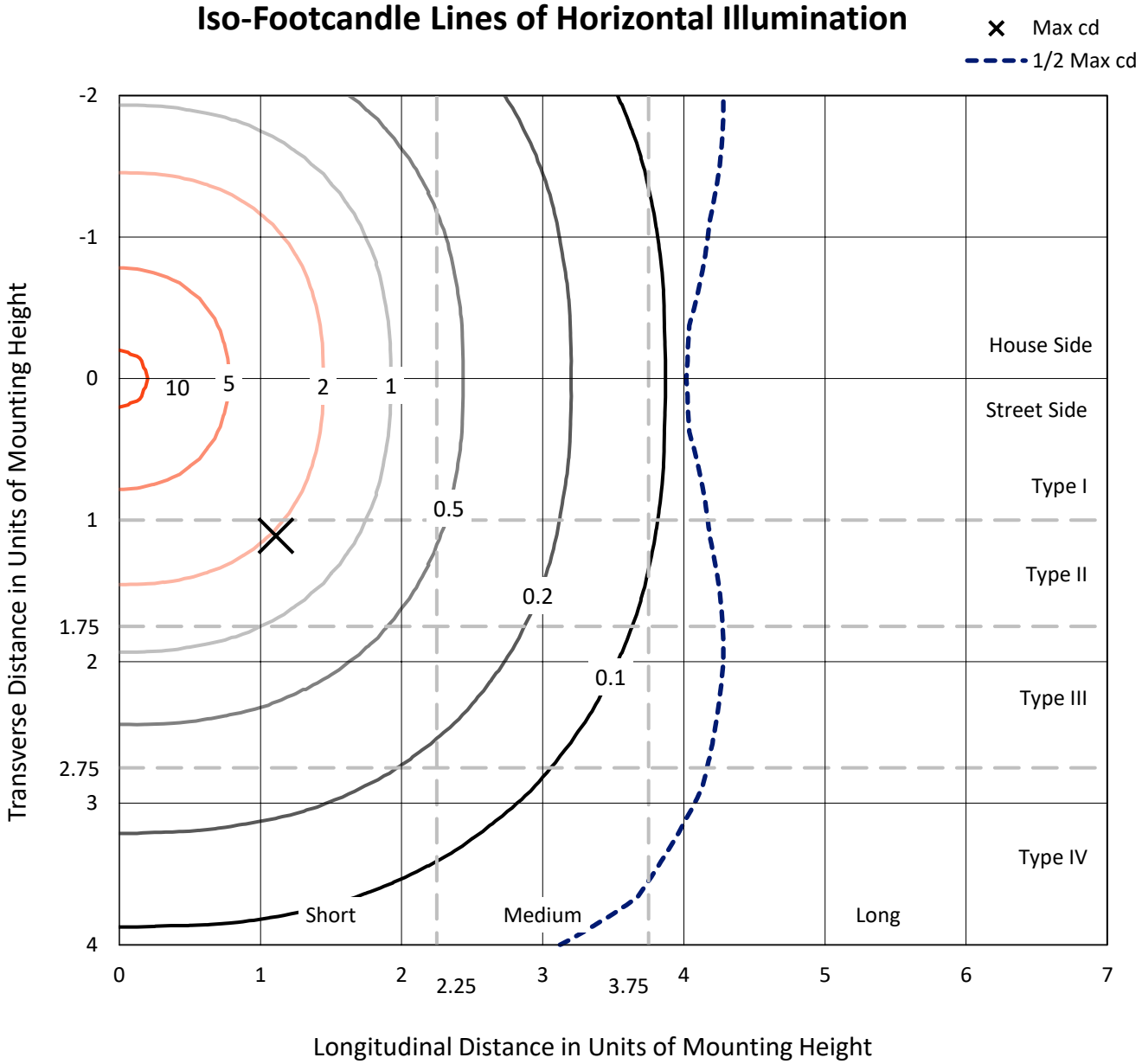
Scaled Data Report

REPORT NUMBER: P879701
CATALOG NUMBER: EMM2-HTN-VA7-830-U-MQ

## Iso-Footcandle Lines of Horizontal Illumination




Based on 15 foot mounting height. Maximum calculated value = 11.1 fc
Type V - Short - N/A

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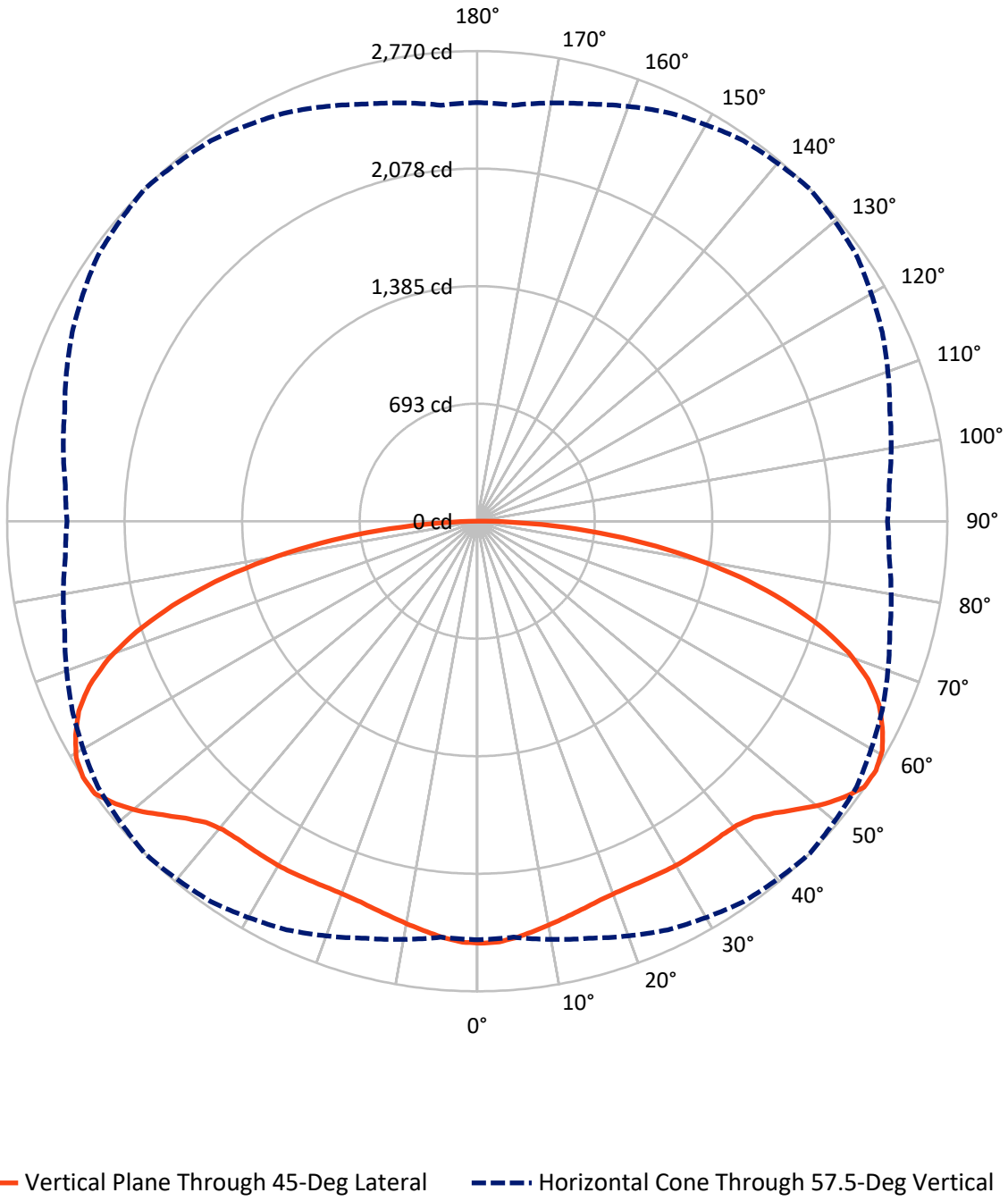
## Luminous Intensity Polar Plot



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Scaled Data Report

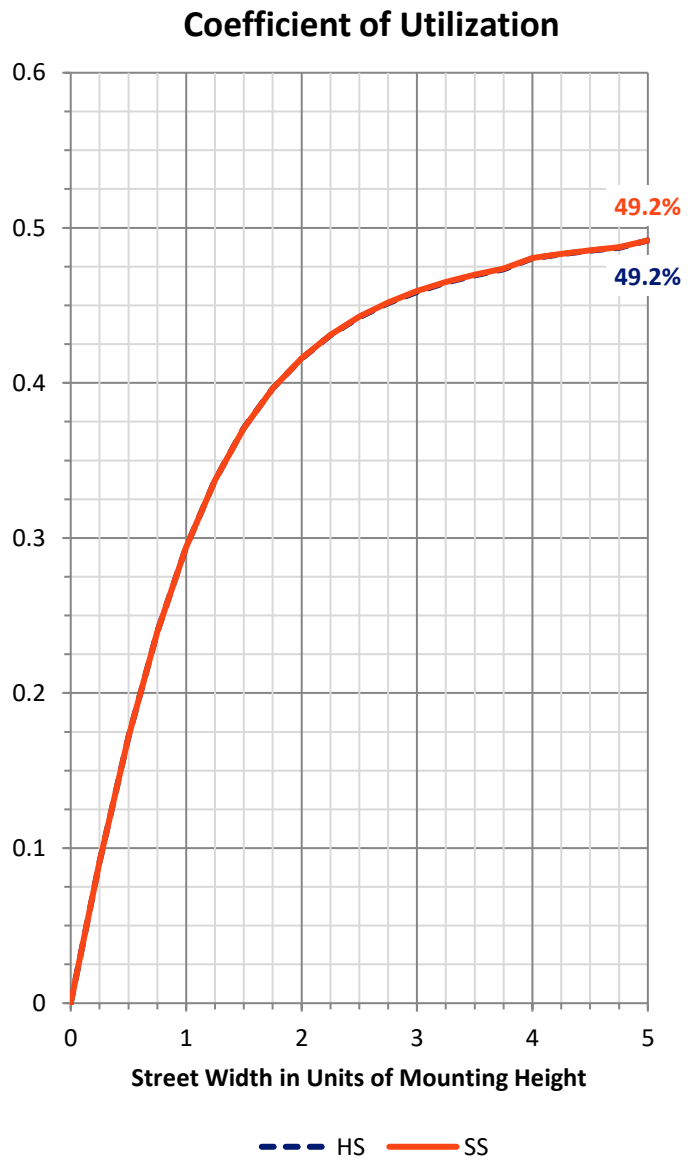
REPORT NUMBER: P879701
CATALOG NUMBER: EMM2-HTN-VA7-830-U-MQ

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 6146.3 | 0.0 | 6146.3 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Street Side** | Lumens | 6146.3 | 0.0 | 6146.3 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Total** | Lumens | 12292.6 | 0.0 | 12292.6 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 233.5 | 1.9 |
| 10°-20° | 669.1 | 5.4 |
| 20°-30° | 1075.3 | 8.7 |
| 30°-40° | 1457.6 | 11.9 |
| 40°-50° | 1861.6 | 15.1 |
| 50°-60° | 2320.4 | 18.9 |
| 60°-70° | 2364.4 | 19.2 |
| 70°-80° | 1751.9 | 14.3 |
| 80°-90° | 558.7 | 4.5 |
| 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° | 12292.6 | 100.0 |
| 0°-180° | 12292.6 | 100.0 |



Cooper Lighting Solutions Photometric Lab
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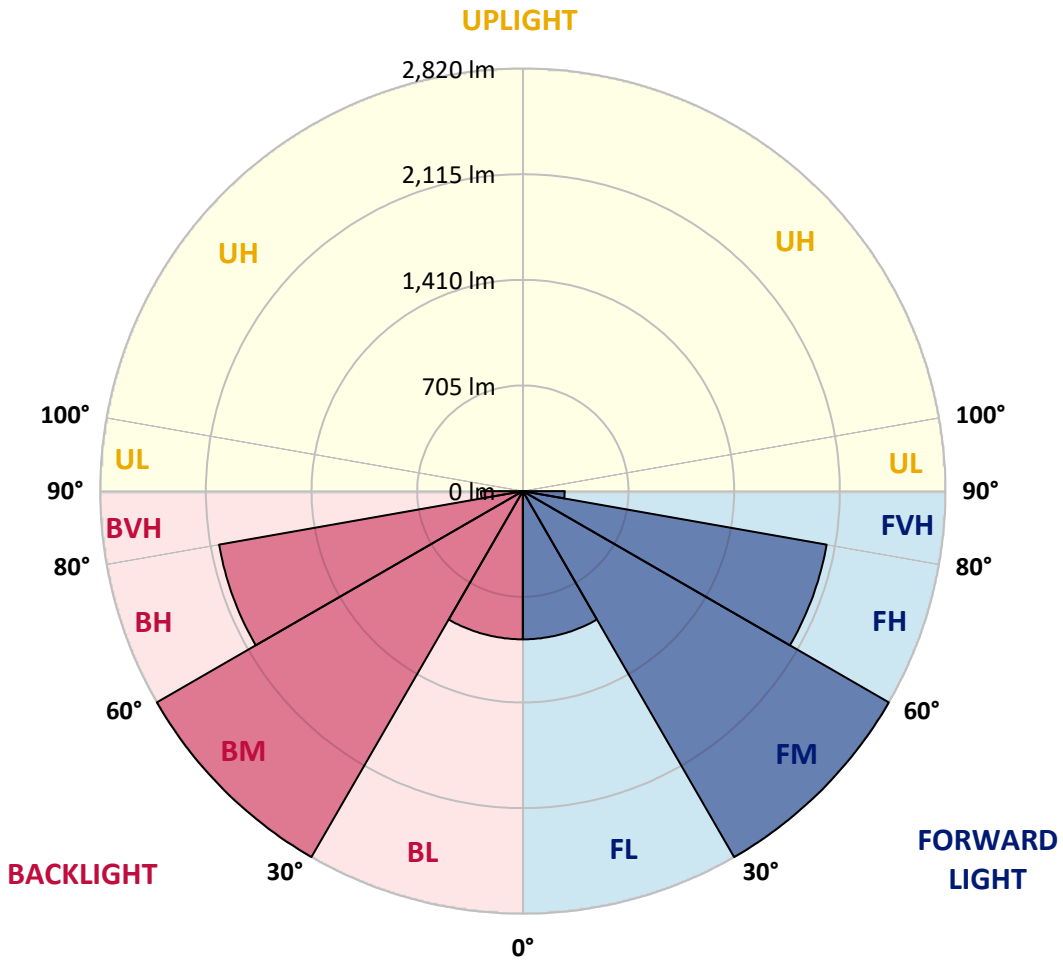
Scaled Data Report

REPORT NUMBER: P879701
CATALOG NUMBER: EMM2-HTN-VA7-830-U-MQ

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 989.0 | 8.0 | | | |
| FM | (30°-60°) | 2819.8 | 22.9 | | | |
| FH | (60°-80°) | 2058.2 | 16.7 | | | G2/5000 |
| FVH | (80°-90°) | 279.3 | 2.3 | | | G3/500 |
| BL | (0°-30°) | 989.0 | 8.0 | B2/1000 | | |
| BM | (30°-60°) | 2819.8 | 22.9 | B3/5000 | | |
| BH | (60°-80°) | 2058.2 | 16.7 | B3/2500 | | G2/5000 |
| BVH | (80°-90°) | 279.3 | 2.3 | | | G3/500 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B3-U0-G3**
Type V Short



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REPORT NUMBER: P879701
CATALOG NUMBER: EMM2-HTN-VA7-830-U-MQ

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 2486.7 | 2486.7 | 2486.7 | 2486.7 | 2486.7 | *2486.7* | 2486.7 | 2486.7 | 2486.7 | 2486.7 | 2486.7 |
| 2.5° | 2482.4 | 2482.4 | 2481.8 | 2481.8 | 2481.2 | *2481.8* | 2482.4 | 2482.4 | 2481.8 | 2481.2 | 2480.6 |
| 5° | 2464.7 | 2465.3 | 2465.3 | 2464.1 | 2462.9 | *2462.9* | 2462.9 | 2463.5 | 2462.2 | 2462.9 | 2462.2 |
| 7.5° | 2439.0 | 2437.2 | 2439.0 | 2438.4 | 2439.0 | *2437.2* | 2440.2 | 2439.0 | 2437.2 | 2438.4 | 2438.4 |
| 10° | 2410.2 | 2410.8 | 2411.5 | 2410.8 | 2412.7 | *2412.1* | 2411.5 | 2410.8 | 2409.6 | 2410.8 | 2409.0 |
| 12.5° | 2383.3 | 2383.9 | 2385.8 | 2386.4 | 2388.2 | *2387.6* | 2388.2 | 2387.0 | 2386.4 | 2383.9 | 2383.3 |
| 15° | 2357.6 | 2358.8 | 2361.3 | 2363.1 | 2364.9 | *2365.6* | 2364.3 | 2363.7 | 2360.7 | 2358.8 | 2357.6 |
| 17.5° | 2336.2 | 2336.2 | 2339.9 | 2342.9 | 2346.0 | *2346.6* | 2346.0 | 2342.9 | 2338.6 | 2334.4 | 2335.0 |
| 20° | 2321.5 | 2321.5 | 2325.8 | 2330.7 | 2335.0 | *2336.2* | 2334.4 | 2328.8 | 2322.1 | 2319.1 | 2318.4 |
| 22.5° | 2314.8 | 2315.4 | 2319.7 | 2325.2 | 2331.3 | *2332.5* | 2328.8 | 2322.1 | 2314.8 | 2309.3 | 2308.7 |
| 25° | 2315.4 | 2314.2 | 2317.8 | 2326.4 | 2333.1 | *2334.4* | 2331.3 | 2322.1 | 2313.5 | 2308.7 | 2306.8 |
| 27.5° | 2313.5 | 2314.2 | 2318.4 | 2327.0 | 2335.6 | *2338.0* | 2333.1 | 2322.1 | 2310.5 | 2306.2 | 2305.0 |
| 30° | 2312.9 | 2313.5 | 2314.8 | 2328.8 | 2338.6 | *2342.9* | 2335.6 | 2320.9 | 2311.1 | 2304.4 | 2303.8 |
| 32.5° | 2310.5 | 2307.4 | 2316.0 | 2324.6 | 2336.8 | *2342.3* | 2335.0 | 2321.5 | 2305.6 | 2300.7 | 2298.3 |
| 35° | 2300.7 | 2303.8 | 2311.1 | 2325.8 | 2339.9 | *2343.5* | 2335.0 | 2318.4 | 2304.4 | 2294.6 | 2294.0 |
| 37.5° | 2298.9 | 2298.9 | 2310.5 | 2325.8 | 2339.9 | *2345.4* | 2338.0 | 2319.7 | 2300.1 | 2287.9 | 2287.9 |
| 40° | 2296.4 | 2295.8 | 2311.1 | 2330.1 | 2348.4 | *2355.8* | 2346.0 | 2323.3 | 2299.5 | 2287.9 | 2281.7 |
| 42.5° | 2303.1 | 2306.8 | 2324.6 | 2352.1 | 2375.4 | *2387.6* | 2373.5 | 2348.4 | 2320.3 | 2298.3 | 2297.6 |
| 45° | 2335.0 | 2342.9 | 2361.3 | 2407.8 | 2439.0 | *2453.7* | 2437.2 | 2393.7 | 2349.7 | 2320.3 | 2318.4 |
| 47.5° | 2384.5 | 2382.1 | 2425.5 | 2474.5 | 2520.4 | *2536.3* | 2512.4 | 2461.6 | 2398.0 | 2362.5 | 2353.3 |
| 50° | 2418.8 | 2424.9 | 2469.6 | 2540.6 | 2609.1 | *2627.4* | 2592.6 | 2527.1 | 2458.0 | 2409.0 | 2400.4 |
| 52.5° | 2465.3 | 2466.5 | 2523.4 | 2613.4 | 2683.7 | *2703.9* | 2670.3 | 2588.9 | 2495.9 | 2434.7 | 2430.4 |
| 55° | 2470.8 | 2491.0 | 2560.1 | 2658.0 | 2742.5 | *2766.3* | 2724.7 | 2637.9 | 2529.5 | 2453.7 | 2446.3 |
| 57.5° | *2466.5* | *2460.4* | *2544.2* | *2656.8* | *2736.4* | *2770.0* | *2729.0* | *2633.0* | *2516.7* | *2436.5* | *2417.0* |
| 60° | 2378.4 | 2404.1 | 2496.5 | 2606.6 | 2708.8 | *2742.5* | 2694.8 | 2596.9 | 2469.6 | 2381.5 | 2373.5 |
| 62.5° | 2318.4 | 2329.5 | 2413.9 | 2562.0 | 2645.8 | *2679.5* | 2642.7 | 2527.7 | 2391.9 | 2300.1 | 2289.1 |
| 65° | 2224.8 | 2233.4 | 2332.5 | 2454.3 | 2571.2 | *2601.1* | 2554.0 | 2457.3 | 2311.7 | 2210.8 | 2190.6 |
| 67.5° | 2075.5 | 2098.8 | 2196.7 | 2351.5 | 2432.3 | *2483.7* | 2441.4 | 2305.6 | 2173.4 | 2074.3 | 2059.6 |
| 70° | 1901.7 | 1933.0 | 2033.9 | 2160.6 | 2295.2 | *2320.9* | 2262.8 | 2170.4 | 2022.3 | 1916.4 | 1890.7 |
| 72.5° | 1734.1 | 1736.5 | 1830.8 | 1979.5 | 2064.5 | *2112.2* | 2079.2 | 1957.4 | 1812.4 | 1722.5 | 1706.6 |
| 75° | 1499.7 | 1500.4 | 1603.8 | 1725.5 | 1833.2 | *1864.4* | 1811.8 | 1726.1 | 1597.0 | 1496.1 | 1486.3 |
| 77.5° | 1228.1 | 1244.6 | 1336.4 | 1453.8 | 1538.9 | *1584.2* | 1546.9 | 1450.2 | 1329.6 | 1243.4 | 1233.6 |
| 80° | 963.1 | 983.9 | 1048.8 | 1154.0 | 1227.4 | *1267.2* | 1226.8 | 1142.4 | 1050.6 | 966.2 | 967.4 |
| 82.5° | 679.8 | 695.1 | 756.3 | 827.9 | 899.5 | *928.8* | 911.7 | 849.3 | 765.5 | 691.4 | 671.2 |
| 85° | 379.4 | 399.0 | 439.9 | 503.0 | 550.7 | *588.6* | 567.2 | 518.3 | 445.5 | 399.0 | 397.7 |
| 87.5° | 111.4 | 120.5 | 137.1 | 179.3 | 224.6 | *241.1* | 236.2 | 224.0 | 196.4 | 176.2 | 163.4 |
| 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: SP1-2407-176-11

Test Date: 09/26/2024

Luminaire Tested: MEM2-HTN-VA-130-830-U-RW

Data in this report applies to families of products including MEM2-HTN-VA-130-830-U-RW

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

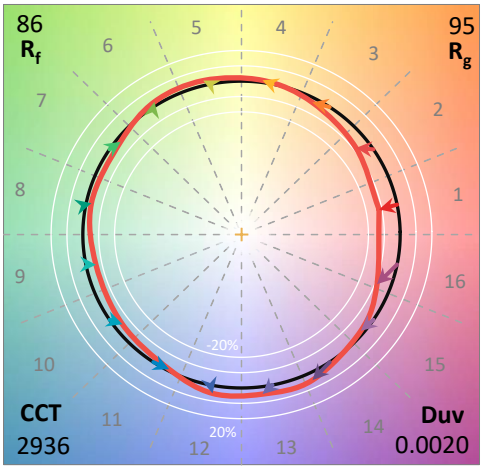
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2407-176-11 |
| 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-130-830-U-RW** |
| Description: | EPIC MODERN VISUAL COMFORT 130W WAVESTREAM RECTANGULAR WIDE |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 2936 |
| CIE u': | 0.2522 |
| CIE v': | 0.5255 |
| Duv: | 0.0020 |
| CIE x: | 0.4446 |
| CIE y: | 0.4117 |
| CIE z: | 0.1436 |
| Peak Wavelength (nm): | 601 |
| Dominant Wavelength (nm): | 582 |
| Purity: | 57.05514 |
| Rf: | 85.6 |
| Rg: | 95.3 |

| | |
|---|---|
| CRI (Ra): | 82.0 |
| R1: | 79.9 |
| R2: | 90.0 |
| R3: | 96.9 |
| R4: | 80.9 |
| R5: | 80.4 |
| R6: | 88.8 |
| R7: | 82.7 |
| R8: | 56.8 |
| R9: | 1.5 |
| R10: | 78.0 |
| R11: | 80.9 |
| R12: | 73.9 |
| R13: | 82.1 |
| R14: | 98.8 |
| R15: | 71.1 |




## Test Conditions

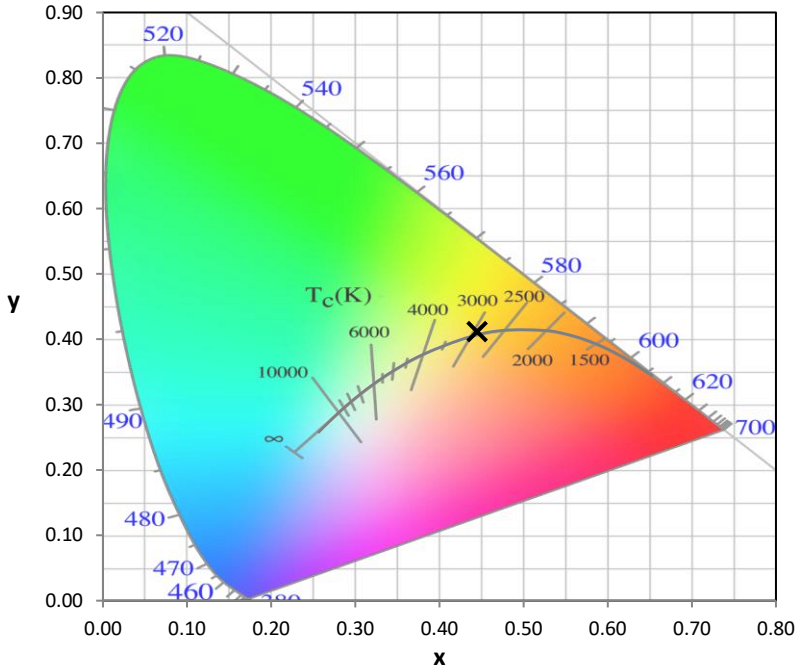
| | |
|---|---|
| Stabilization Time: | 54M |
| Operation Time: | 1H 54M |
| Sphere Temperature (°C): | 25.2 |

REPORT NUMBER: SP1-2407-176-11

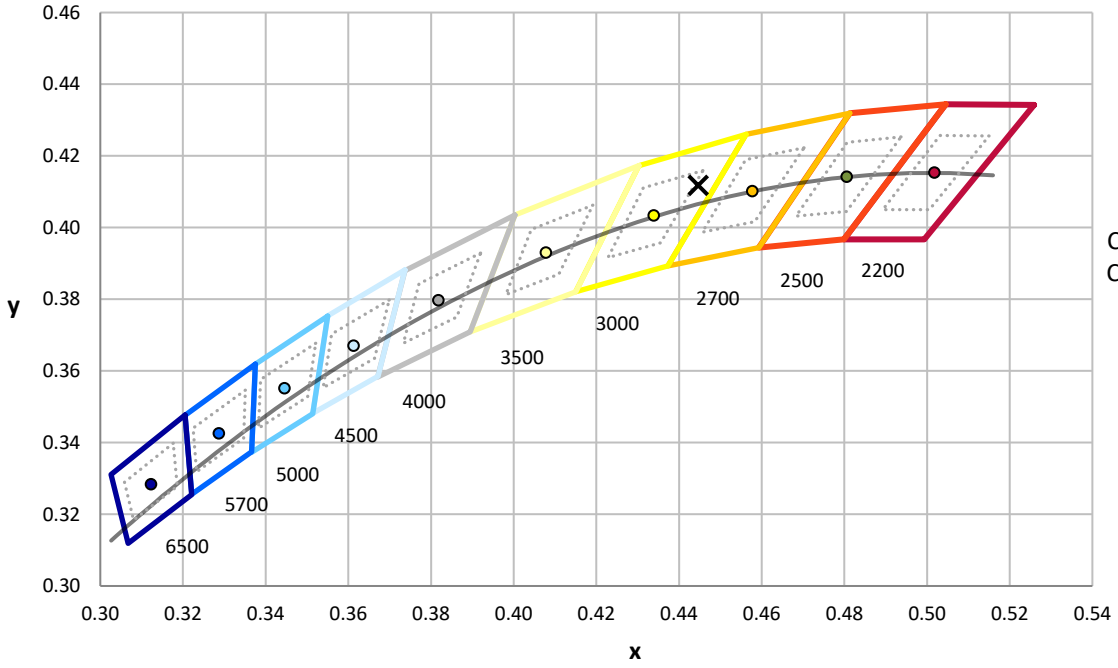
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC 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: SP1-2407-176-11

## CIE 1931 Chromaticity Diagram




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

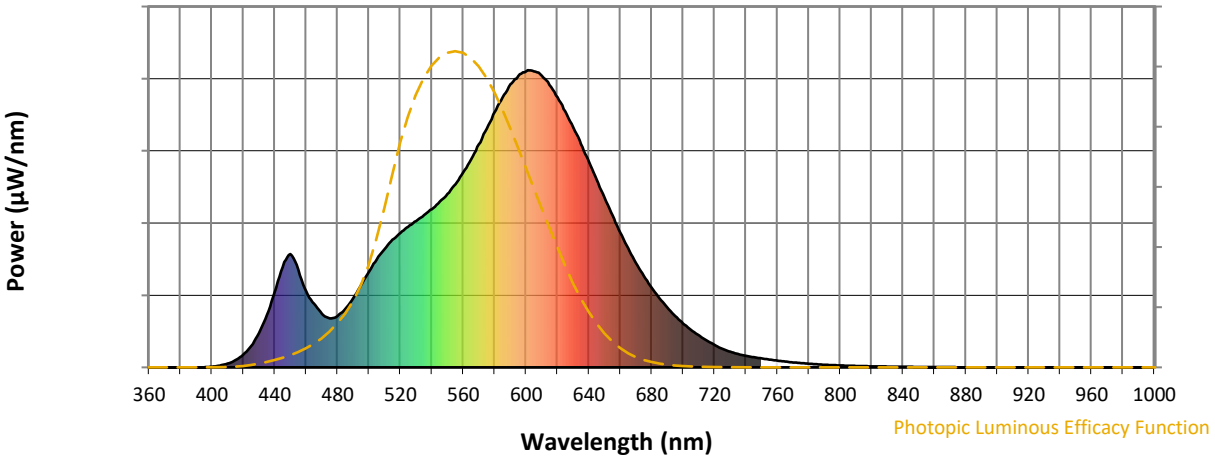



CCT = 2936K
CIE x = 0.4446
CIE y = 0.4117
Duv = 0.0020

Point lies inside the ANSI 3000K 7-step quadrangle

REPORT NUMBER: SP1-2407-176-11

## Photopic Flux vs. Wavelength

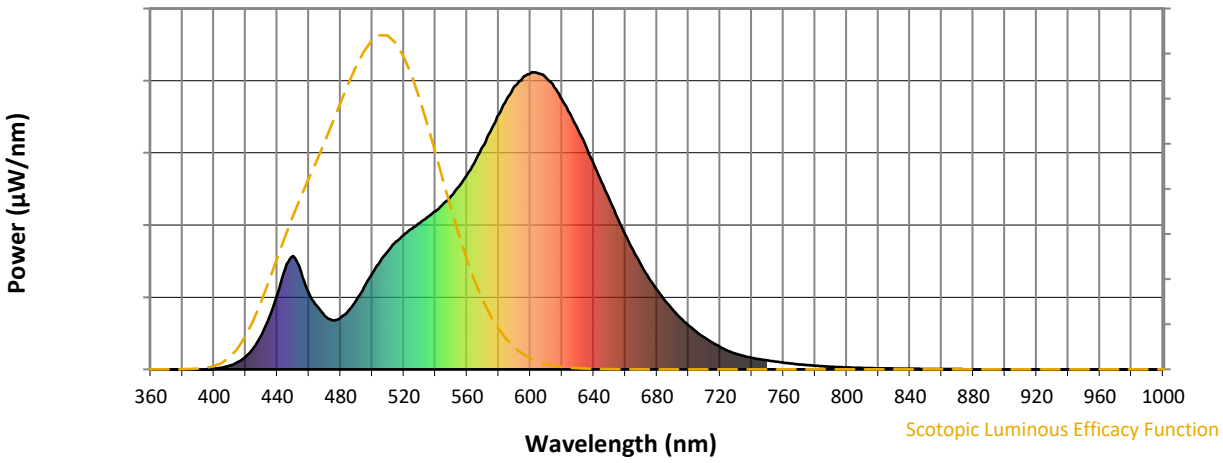



## Photopic Lumens: NR

| 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 | 234 | NR | 620 | 908 | NR | 750 | 30 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 276 | NR | 625 | 861 | NR | 755 | 26 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 322 | NR | 630 | 808 | NR | 760 | 23 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 363 | NR | 635 | 751 | NR | 765 | 20 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 398 | NR | 640 | 692 | NR | 770 | 17 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 429 | NR | 645 | 630 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 453 | NR | 650 | 570 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 473 | NR | 655 | 511 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 492 | NR | 660 | 453 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 6 | NR | 535 | 512 | NR | 665 | 401 | NR | 795 | 8 | NR | 925 | 0 | NR |
| 410 | 13 | NR | 540 | 532 | NR | 670 | 351 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 24 | NR | 545 | 557 | NR | 675 | 306 | NR | 805 | 5 | NR | 935 | 0 | NR |
| 420 | 43 | NR | 550 | 583 | NR | 680 | 268 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 73 | NR | 555 | 616 | NR | 685 | 232 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 115 | NR | 560 | 656 | NR | 690 | 201 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 176 | NR | 565 | 700 | NR | 695 | 173 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 254 | NR | 570 | 750 | NR | 700 | 148 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 337 | NR | 575 | 803 | NR | 705 | 126 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 381 | NR | 580 | 859 | NR | 710 | 107 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 328 | NR | 585 | 907 | NR | 715 | 90 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 257 | NR | 590 | 953 | NR | 720 | 76 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 214 | NR | 595 | 980 | NR | 725 | 62 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 180 | NR | 600 | 996 | NR | 730 | 53 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 165 | NR | 605 | 995 | NR | 735 | 45 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 173 | NR | 610 | 981 | NR | 740 | 39 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 197 | NR | 615 | 950 | NR | 745 | 34 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-176-11

## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.3**

| 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 | 234 | NR | 620 | 908 | NR | 750 | 30 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 276 | NR | 625 | 861 | NR | 755 | 26 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 322 | NR | 630 | 808 | NR | 760 | 23 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 363 | NR | 635 | 751 | NR | 765 | 20 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 398 | NR | 640 | 692 | NR | 770 | 17 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 429 | NR | 645 | 630 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 453 | NR | 650 | 570 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 473 | NR | 655 | 511 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 492 | NR | 660 | 453 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 6 | NR | 535 | 512 | NR | 665 | 401 | NR | 795 | 8 | NR | 925 | 0 | NR |
| 410 | 13 | NR | 540 | 532 | NR | 670 | 351 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 24 | NR | 545 | 557 | NR | 675 | 306 | NR | 805 | 5 | NR | 935 | 0 | NR |
| 420 | 43 | NR | 550 | 583 | NR | 680 | 268 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 73 | NR | 555 | 616 | NR | 685 | 232 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 115 | NR | 560 | 656 | NR | 690 | 201 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 176 | NR | 565 | 700 | NR | 695 | 173 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 254 | NR | 570 | 750 | NR | 700 | 148 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 337 | NR | 575 | 803 | NR | 705 | 126 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 381 | NR | 580 | 859 | NR | 710 | 107 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 328 | NR | 585 | 907 | NR | 715 | 90 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 257 | NR | 590 | 953 | NR | 720 | 76 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 214 | NR | 595 | 980 | NR | 725 | 62 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 180 | NR | 600 | 996 | NR | 730 | 53 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 165 | NR | 605 | 995 | NR | 735 | 45 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 173 | NR | 610 | 981 | NR | 740 | 39 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 197 | NR | 615 | 950 | NR | 745 | 34 | NR | 875 | 1 | NR | | | |

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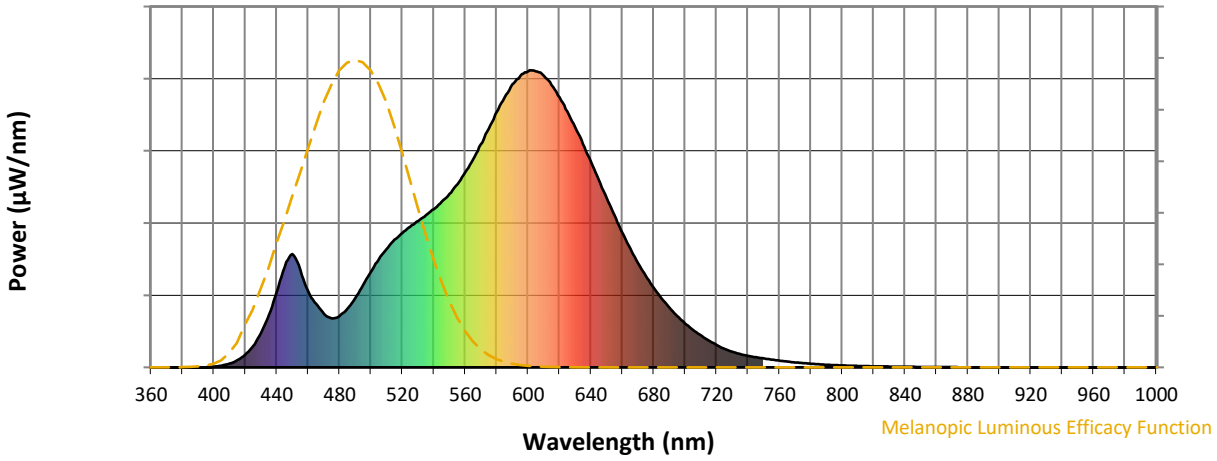
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.46**

| 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 | 234 | NR | 620 | 908 | NR | 750 | 30 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 276 | NR | 625 | 861 | NR | 755 | 26 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 322 | NR | 630 | 808 | NR | 760 | 23 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 363 | NR | 635 | 751 | NR | 765 | 20 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 398 | NR | 640 | 692 | NR | 770 | 17 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 429 | NR | 645 | 630 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 453 | NR | 650 | 570 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 473 | NR | 655 | 511 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 492 | NR | 660 | 453 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 6 | NR | 535 | 512 | NR | 665 | 401 | NR | 795 | 8 | NR | 925 | 0 | NR |
| 410 | 13 | NR | 540 | 532 | NR | 670 | 351 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 24 | NR | 545 | 557 | NR | 675 | 306 | NR | 805 | 5 | NR | 935 | 0 | NR |
| 420 | 43 | NR | 550 | 583 | NR | 680 | 268 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 73 | NR | 555 | 616 | NR | 685 | 232 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 115 | NR | 560 | 656 | NR | 690 | 201 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 176 | NR | 565 | 700 | NR | 695 | 173 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 254 | NR | 570 | 750 | NR | 700 | 148 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 337 | NR | 575 | 803 | NR | 705 | 126 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 381 | NR | 580 | 859 | NR | 710 | 107 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 328 | NR | 585 | 907 | NR | 715 | 90 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 257 | NR | 590 | 953 | NR | 720 | 76 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 214 | NR | 595 | 980 | NR | 725 | 62 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 180 | NR | 600 | 996 | NR | 730 | 53 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 165 | NR | 605 | 995 | NR | 735 | 45 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 173 | NR | 610 | 981 | NR | 740 | 39 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 197 | NR | 615 | 950 | NR | 745 | 34 | NR | 875 | 1 | NR | | | |

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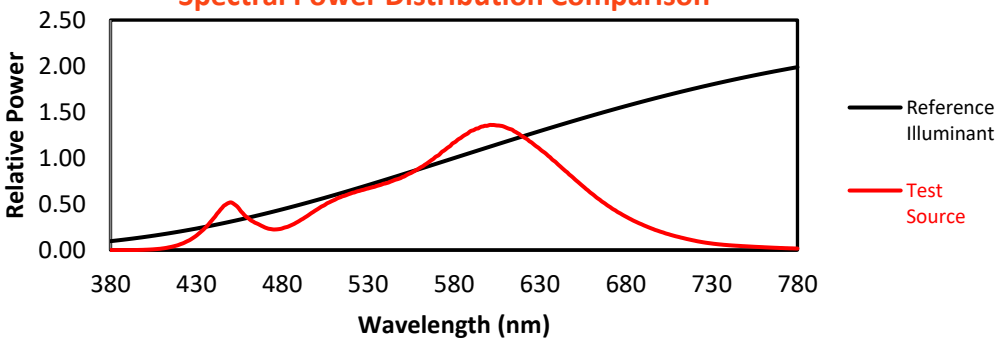
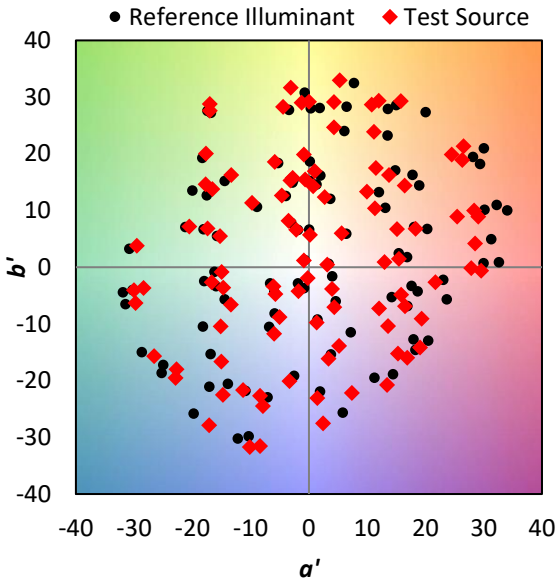
## Summary

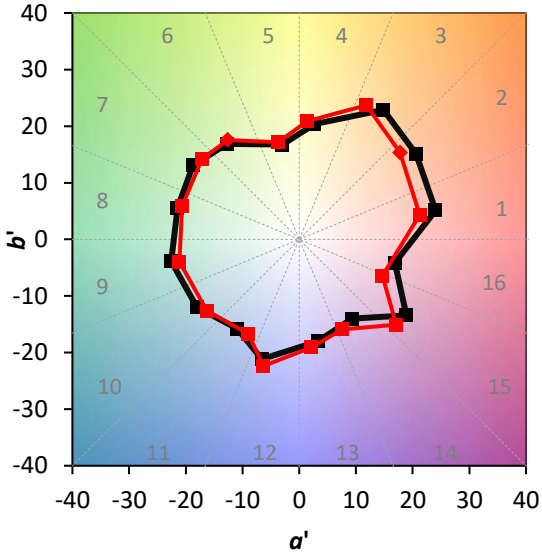
$R_f$ = 85.6
$R_g$ = 95.3
CIE $R_a$ = 82.0
$R_9$ = 1.5

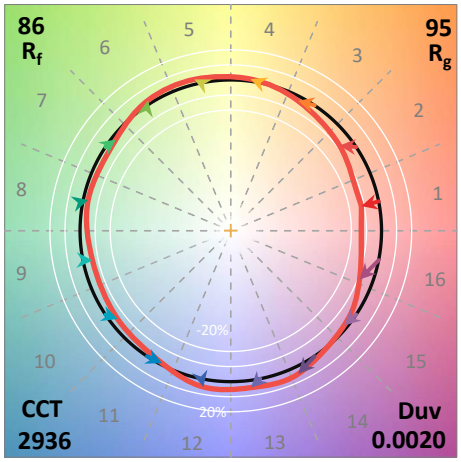
## Spectral Power Distribution Comparison

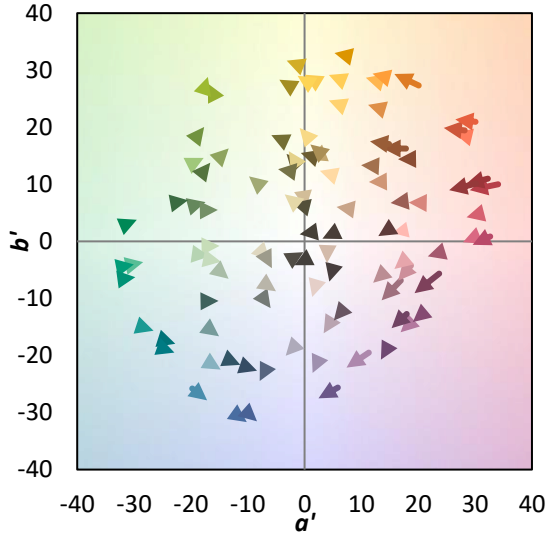



## Color Vector Graphics



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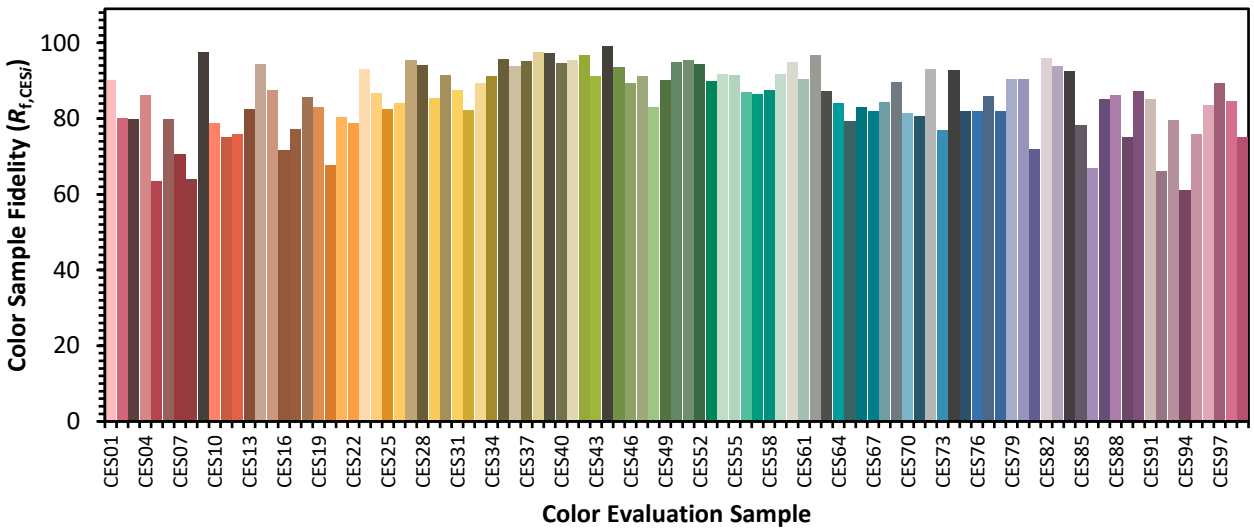
**Individual Sample Fidelity Index ($R_{f,i}$)**

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 84 | CES51 = 95 | CES76 = 82 |
| CES02 = 63 | CES27 = 95 | CES52 = 94 | CES77 = 86 |
| CES03 = 31 | CES28 = 94 | CES53 = 90 | CES78 = 82 |
| CES04 = 71 | CES29 = 85 | CES54 = 92 | CES79 = 90 |
| CES05 = 50 | CES30 = 91 | CES55 = 92 | CES80 = 90 |
| CES06 = 51 | CES31 = 87 | CES56 = 87 | CES81 = 72 |
| CES07 = 42 | CES32 = 82 | CES57 = 87 | CES82 = 96 |
| CES08 = 41 | CES33 = 89 | CES58 = 88 | CES83 = 94 |
| CES09 = 29 | CES34 = 91 | CES59 = 92 | CES84 = 93 |
| CES10 = 76 | CES35 = 96 | CES60 = 95 | CES85 = 78 |
| CES11 = 59 | CES36 = 94 | CES61 = 90 | CES86 = 67 |
| CES12 = 65 | CES37 = 95 | CES62 = 97 | CES87 = 85 |
| CES13 = 44 | CES38 = 98 | CES63 = 87 | CES88 = 86 |
| CES14 = 74 | CES39 = 97 | CES64 = 84 | CES89 = 75 |
| CES15 = 72 | CES40 = 95 | CES65 = 79 | CES90 = 87 |
| CES16 = 48 | CES41 = 95 | CES66 = 83 | CES91 = 85 |
| CES17 = 50 | CES42 = 97 | CES67 = 82 | CES92 = 66 |
| CES18 = 57 | CES43 = 91 | CES68 = 84 | CES93 = 80 |
| CES19 = 72 | CES44 = 99 | CES69 = 90 | CES94 = 61 |
| CES20 = 67 | CES45 = 93 | CES70 = 81 | CES95 = 76 |
| CES21 = 87 | CES46 = 89 | CES71 = 81 | CES96 = 84 |
| CES22 = 79 | CES47 = 91 | CES72 = 93 | CES97 = 89 |
| CES23 = 92 | CES48 = 83 | CES73 = 77 | CES98 = 85 |
| CES24 = 91 | CES49 = 90 | CES74 = 93 | CES99 = 75 |
| CES25 = 72 | CES50 = 95 | CES75 = 82 | |



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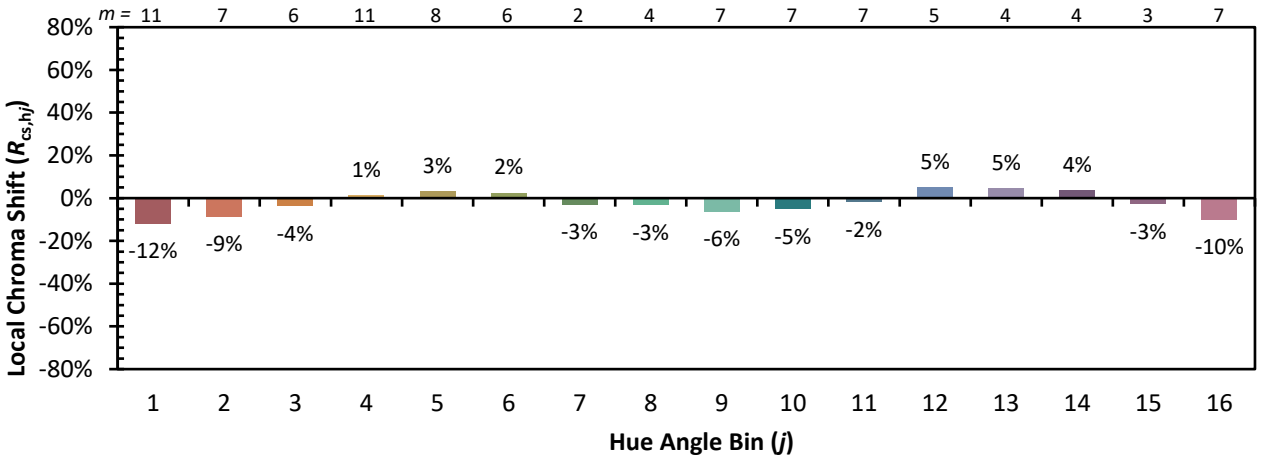
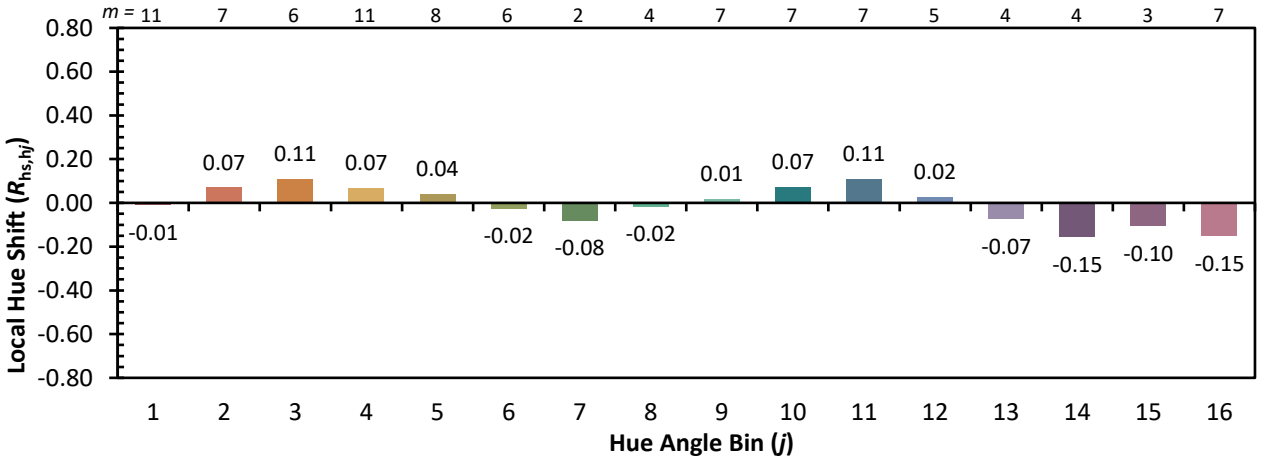
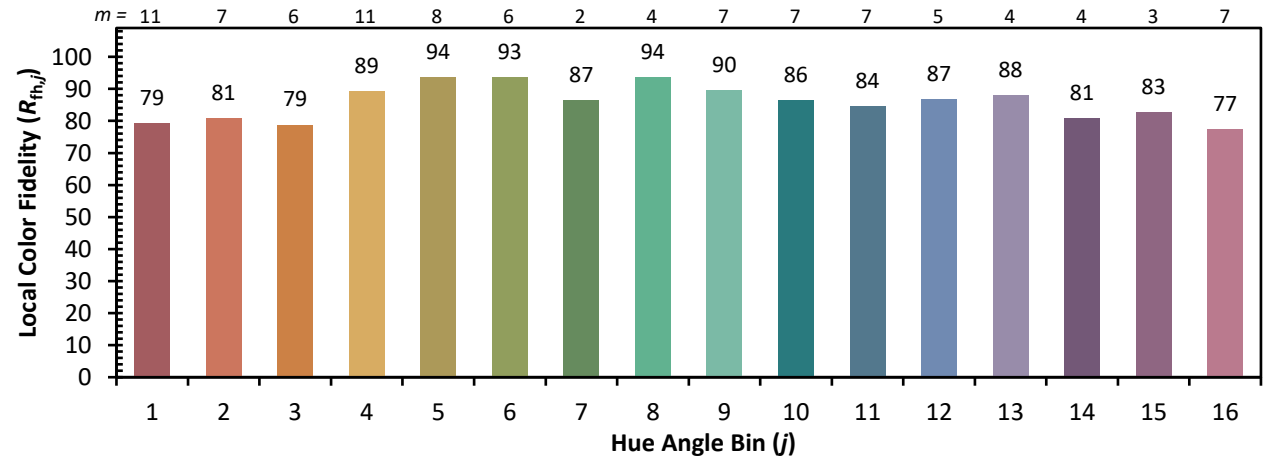
## Color Rendition by Hue-Angle Bin



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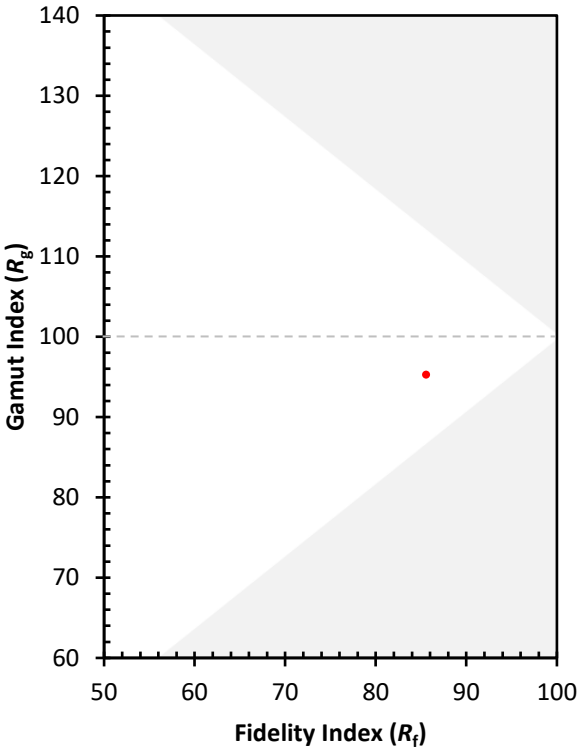
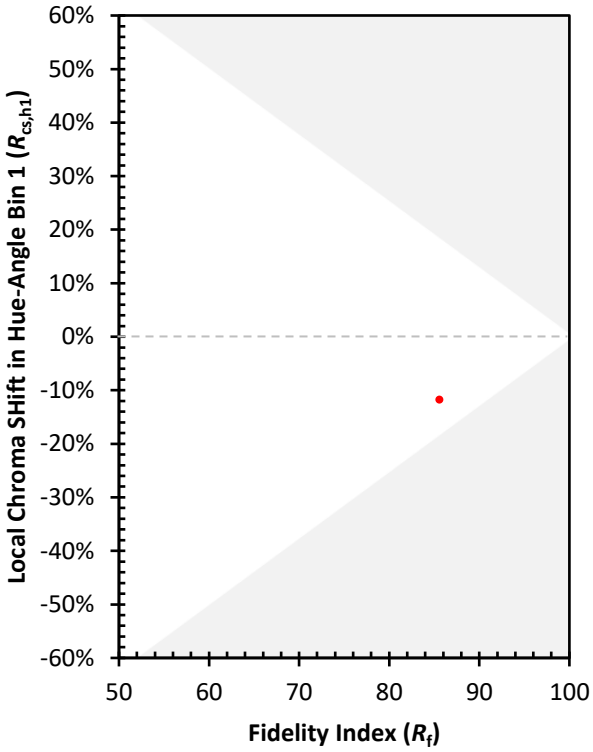
## Measure Comparisons




(END OF REPORT)