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: P880515

Luminaire Tested: **EMM2-HSN-VA4-AMB-U-MQ**

Issue Date: 10/02/2024

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: | P880515 |
| Test Lab: | INNOVATION CENTER(G3) |
| Issue Date: | 10/02/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | INVUE |
| Catalog Number: | EMM2-HSN-VA4-AMB-U-MQ |
| Description: | EPIC MODERN SHORT HOUSING 4W 0CRI 1554K VISUAL COMFORT FIXTURE w/ TYPE V MEDIUM DISTRIBUTION OPTIC |
| Light Source: | (1) 1554K CCT, 0 CRI LEDS |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 1992.2 lumens |
| Efficiency: | N/A |
| Efficacy: | 31.6 lumens/watt |
| Luminous Opening: | Circular (Dia: 1.12' x H: 0') |
| IES Classification: | Type V - Short |
| BUG Rating: | B1 - U0 - G1 |

| | |
|---|---|
| Input Watts (W): | 63 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | 0.98 |
| Total Harmonic Distortion (THDi): | 16% |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 24 FT |

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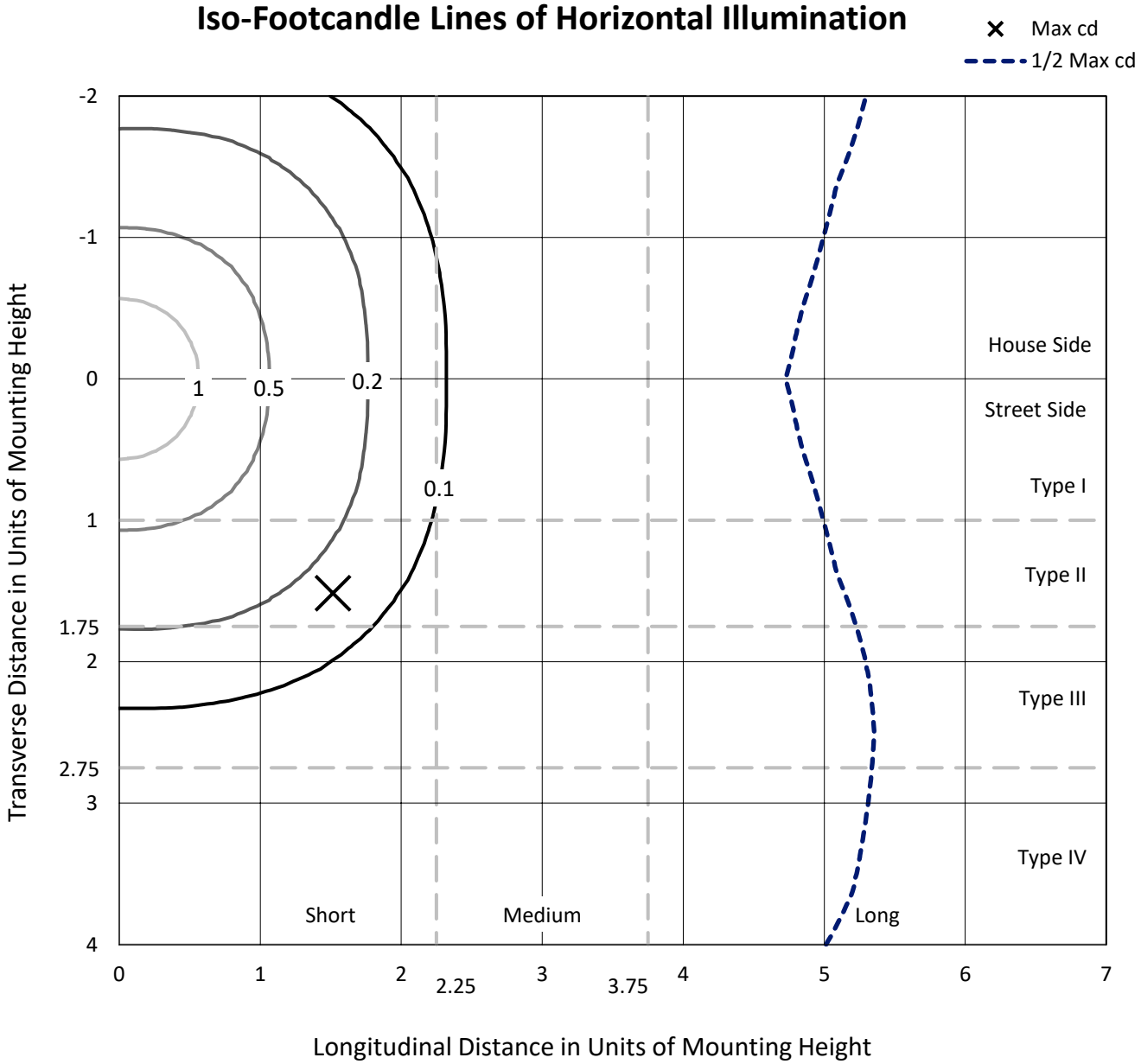
Scaled Data Report

REPORT NUMBER: P880515
CATALOG NUMBER: EMM2-HSN-VA4-AMB-U-MQ

## Iso-Footcandle Lines of Horizontal Illumination




Based on 15 foot mounting height. Maximum calculated value = 1.6 fc
Type V - Short - N/A

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REPORT NUMBER: P880515
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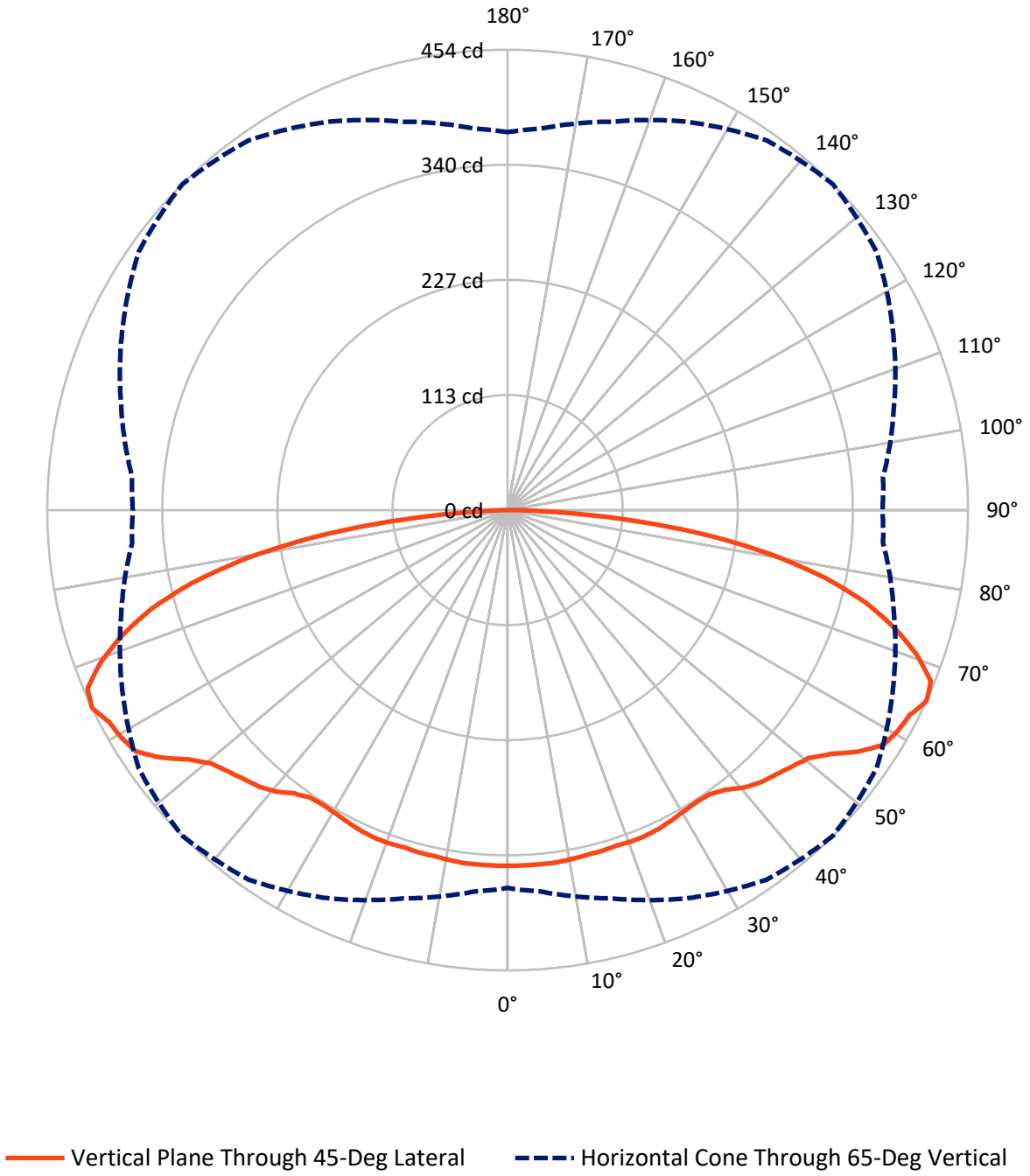
## Luminous Intensity Polar Plot



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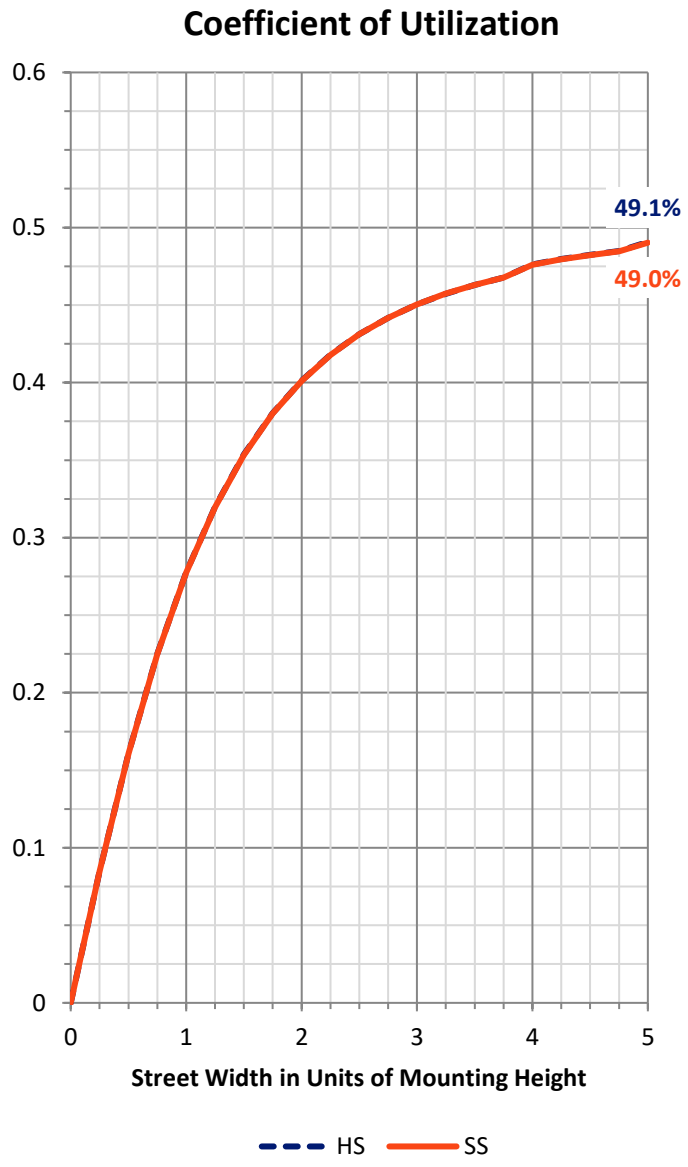
REPORT NUMBER: P880515
CATALOG NUMBER: EMM2-HSN-VA4-AMB-U-MQ

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 996.1 | 0.0 | 996.1 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Street Side** | Lumens | 996.1 | 0.0 | 996.1 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Total** | Lumens | 1992.2 | 0.0 | 1992.2 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 33.5 | 1.7 |
| 10°-20° | 98.7 | 5.0 |
| 20°-30° | 160.2 | 8.0 |
| 30°-40° | 215.9 | 10.8 |
| 40°-50° | 279.9 | 14.0 |
| 50°-60° | 353.1 | 17.7 |
| 60°-70° | 404.4 | 20.3 |
| 70°-80° | 336.2 | 16.9 |
| 80°-90° | 110.4 | 5.5 |
| 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° | 1992.2 | 100.0 |
| 0°-180° | 1992.2 | 100.0 |



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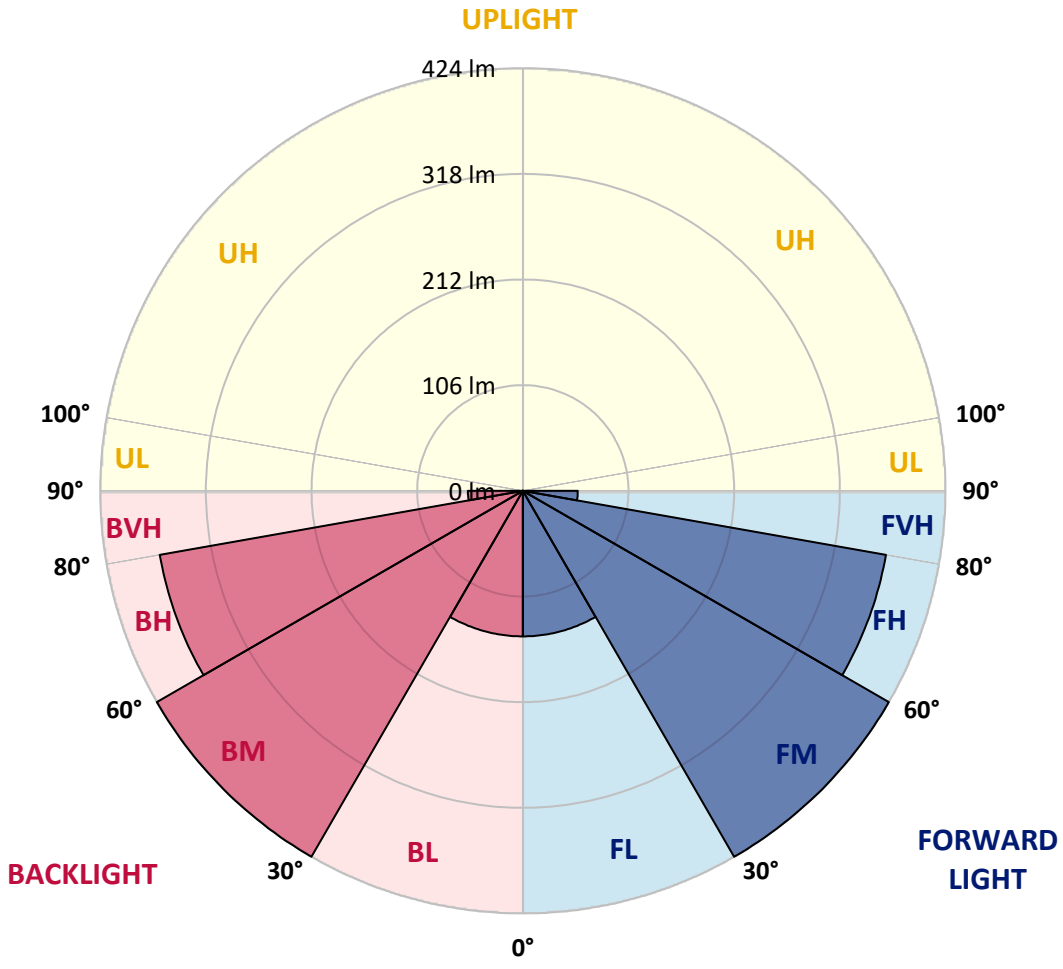
Scaled Data Report

REPORT NUMBER: P880515
CATALOG NUMBER: EMM2-HSN-VA4-AMB-U-MQ

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 146.2 | 7.3 | | | |
| FM | (30°-60°) | 424.4 | 21.3 | | | |
| FH | (60°-80°) | 370.3 | 18.6 | | | G0/660 |
| FVH | (80°-90°) | 55.2 | 2.8 | | | G1/100 |
| BL | (0°-30°) | 146.2 | 7.3 | B1/500 | | |
| BM | (30°-60°) | 424.4 | 21.3 | B1/1000 | | |
| BH | (60°-80°) | 370.3 | 18.6 | B1/500 | | G0/660 |
| BVH | (80°-90°) | 55.2 | 2.8 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

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



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CATALOG NUMBER: EMM2-HSN-VA4-AMB-U-MQ

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 |
| 2.5° | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 |
| 5° | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 |
| 7.5° | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 | 350.8 |
| 10° | 349.8 | 349.8 | 349.8 | 349.8 | 349.8 | 349.8 | 349.8 | 349.8 | 349.8 | 349.8 | 349.8 |
| 12.5° | 348.8 | 348.8 | 348.8 | 348.8 | 348.8 | 348.8 | 348.8 | 348.8 | 348.8 | 348.8 | 348.8 |
| 15° | 347.8 | 347.8 | 348.8 | 347.8 | 347.8 | 348.8 | 347.8 | 347.8 | 347.8 | 347.8 | 347.8 |
| 17.5° | 346.8 | 346.8 | 346.8 | 346.8 | 347.8 | 347.8 | 347.8 | 347.8 | 346.8 | 346.8 | 346.8 |
| 20° | 346.8 | 346.8 | 347.8 | 347.8 | 348.8 | 348.8 | 348.8 | 347.8 | 347.8 | 346.8 | 346.8 |
| 22.5° | 347.8 | 347.8 | 347.8 | 348.8 | 348.8 | 348.8 | 348.8 | 347.8 | 347.8 | 347.8 | 346.8 |
| 25° | 345.9 | 345.9 | 346.8 | 346.8 | 347.8 | 347.8 | 347.8 | 346.8 | 345.9 | 345.9 | 345.9 |
| 27.5° | 343.9 | 343.9 | 344.9 | 344.9 | 345.9 | 345.9 | 345.9 | 344.9 | 343.9 | 343.9 | 343.9 |
| 30° | 341.9 | 341.9 | 341.9 | 342.9 | 343.9 | 343.9 | 342.9 | 341.9 | 340.9 | 340.9 | 340.9 |
| 32.5° | 338.9 | 339.9 | 339.9 | 341.9 | 342.9 | 342.9 | 341.9 | 340.9 | 338.9 | 337.9 | 337.9 |
| 35° | 337.9 | 338.9 | 339.9 | 341.9 | 343.9 | 343.9 | 342.9 | 340.9 | 338.9 | 336.9 | 335.9 |
| 37.5° | 339.9 | 340.9 | 342.9 | 346.8 | 349.8 | 349.8 | 348.8 | 345.9 | 341.9 | 338.9 | 337.9 |
| 40° | 344.9 | 345.9 | 349.8 | 354.8 | 359.7 | 359.7 | 358.7 | 353.8 | 347.8 | 343.9 | 342.9 |
| 42.5° | 347.8 | 348.8 | 353.8 | 360.7 | 364.7 | 366.7 | 364.7 | 358.7 | 351.8 | 346.8 | 345.9 |
| 45° | 349.8 | 351.8 | 357.7 | 364.7 | 369.6 | 371.6 | 369.6 | 362.7 | 354.8 | 348.8 | 347.8 |
| 47.5° | 352.8 | 353.8 | 359.7 | 368.6 | 374.6 | 377.6 | 374.6 | 366.7 | 356.8 | 350.8 | 349.8 |
| 50° | 354.8 | 356.8 | 363.7 | 374.6 | 382.5 | 384.5 | 381.5 | 371.6 | 361.7 | 353.8 | 351.8 |
| 52.5° | 360.7 | 361.7 | 371.6 | 385.5 | 395.4 | 399.4 | 394.4 | 383.5 | 369.6 | 358.7 | 357.7 |
| 55° | 370.6 | 373.6 | 384.5 | 401.4 | 414.2 | 420.2 | 412.3 | 399.4 | 380.5 | 370.6 | 368.6 |
| 57.5° | 376.6 | 381.5 | 393.4 | 413.2 | 431.1 | 437.0 | 429.1 | 409.3 | 391.4 | 377.6 | 374.6 |
| 60° | 376.6 | 380.5 | 396.4 | 420.2 | 437.0 | 442.0 | 438.0 | 418.2 | 393.4 | 376.6 | 373.6 |
| 62.5° | 377.6 | 380.5 | 396.4 | 423.2 | 440.0 | 445.0 | 438.0 | 422.2 | 393.4 | 377.6 | 373.6 |
| 65° | 372.6 | 377.6 | 396.4 | 422.2 | 445.0 | 453.9 | 444.0 | 419.2 | 394.4 | 371.6 | 369.6 |
| 67.5° | 361.7 | 364.7 | 385.5 | 414.2 | 442.0 | 449.9 | 439.0 | 411.3 | 381.5 | 360.7 | 357.7 |
| 70° | 340.9 | 344.9 | 364.7 | 397.4 | 424.1 | 428.1 | 421.2 | 393.4 | 362.7 | 340.9 | 336.9 |
| 72.5° | 311.2 | 317.1 | 337.9 | 373.6 | 394.4 | 399.4 | 393.4 | 368.6 | 335.9 | 312.2 | 309.2 |
| 75° | 279.5 | 283.4 | 303.2 | 336.9 | 358.7 | 364.7 | 357.7 | 335.9 | 300.3 | 281.4 | 276.5 |
| 77.5° | 241.8 | 244.8 | 264.6 | 294.3 | 313.2 | 319.1 | 312.2 | 293.3 | 259.6 | 242.8 | 236.8 |
| 80° | 192.3 | 195.2 | 214.1 | 239.8 | 257.7 | 262.6 | 254.7 | 236.8 | 212.1 | 193.2 | 190.3 |
| 82.5° | 136.8 | 139.7 | 155.6 | 176.4 | 190.3 | 193.2 | 187.3 | 171.4 | 156.6 | 139.7 | 136.8 |
| 85° | 74.3 | 77.3 | 88.2 | 101.1 | 112.0 | 114.0 | 110.0 | 100.1 | 86.2 | 75.3 | 71.4 |
| 87.5° | 18.8 | 17.8 | 21.8 | 28.7 | 33.7 | 33.7 | 34.7 | 30.7 | 26.8 | 20.8 | 21.8 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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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: SP1-2407-176-1

Test Date: 09/23/2024

Luminaire Tested: MEM2-HTN-VA-60-AMB-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-60-AMB-U-WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

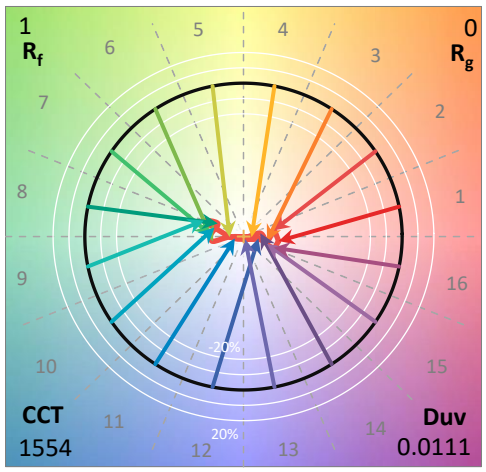
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2407-176-1 |
| 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-60-AMB-U-WQ** |
| Description: | EPIC MODERN VISUAL COMFORT 60W AMBER WAVESTREAM WIDE |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 1554 |
| CIE u': | 0.3509 |
| CIE v': | 0.5472 |
| Duv: | 0.0111 |
| CIE x: | 0.5903 |
| CIE y: | 0.4091 |
| CIE z: | 0.0006 |
| Peak Wavelength (nm): | 596 |
| Dominant Wavelength (nm): | 592 |
| Purity: | 99.98723 |
| Rf: | 1.1 |
| Rg: | 0 |

| | | | | | |
|---|---|---|---|---|---|
| CRI (Ra): | -22.5 | | | | |
| R1: | -35.4 | R9: | -390.1 | | |
| R2: | 51.6 | R10: | 27.7 | | |
| R3: | 17.0 | R11: | -96.9 | | |
| R4: | -69.3 | R12: | -12.7 | | |
| R5: | -41.7 | R13: | -16.6 | | |
| R6: | 40.2 | R14: | 45.8 | | |
| R7: | -7.3 | R15: | -68.6 | | |
| R8: | -135.2 | | | | |




## Test Conditions

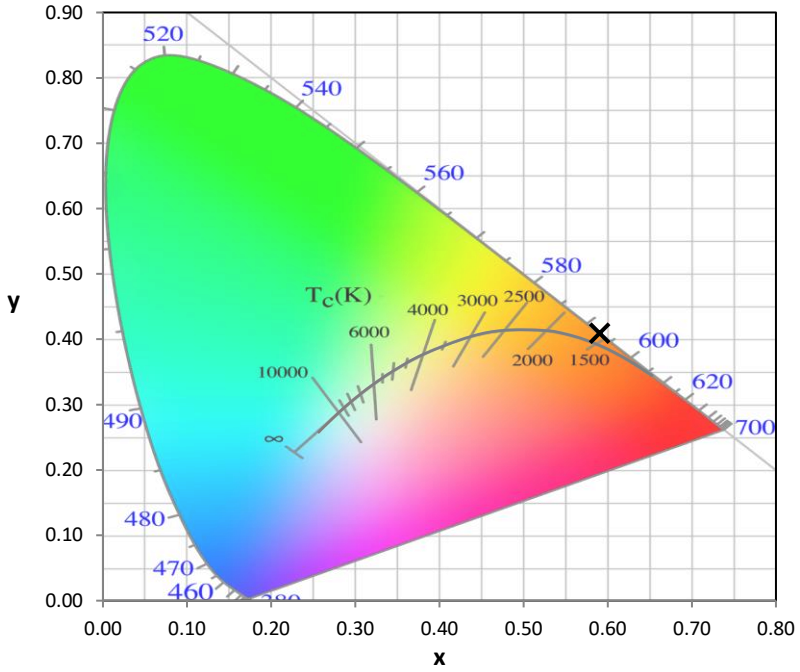
| | |
|---|---|
| Stabilization Time: | 98M |
| Operation Time: | 2H 38M |
| Sphere Temperature (°C): | 25.2 |

REPORT NUMBER: SP1-2407-176-1

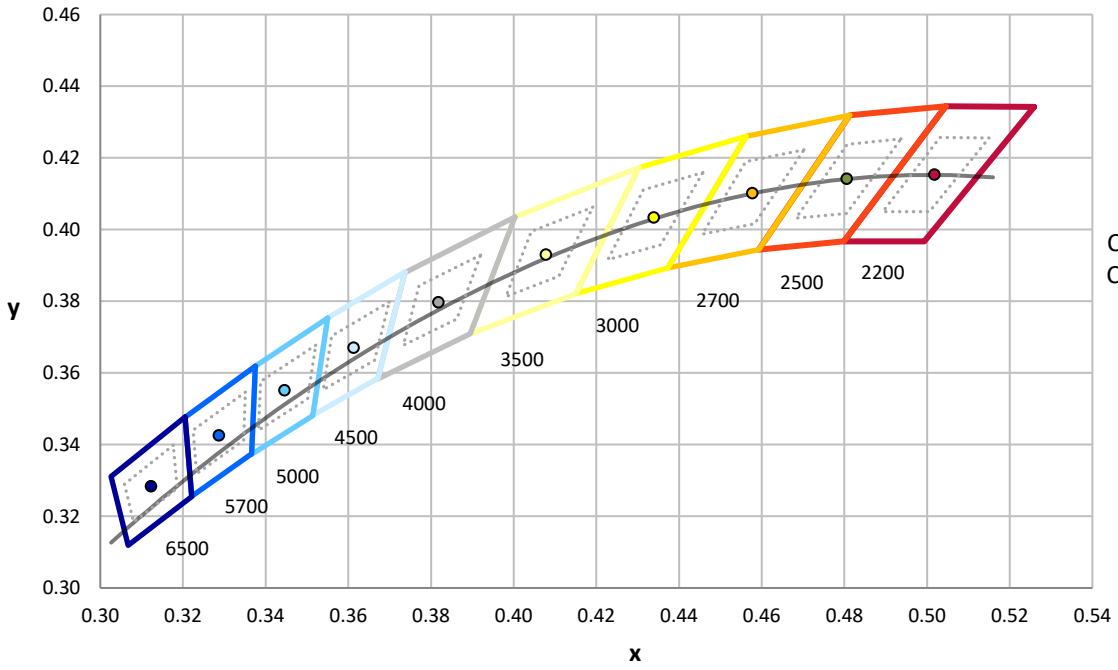
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC 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: SP1-2407-176-1

## CIE 1931 Chromaticity Diagram




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

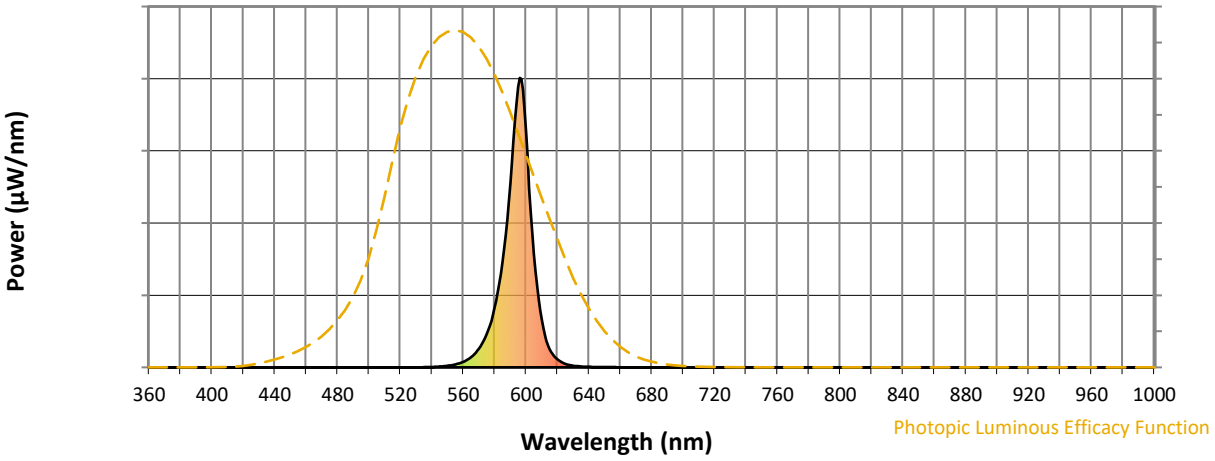



CCT = 1554K
CIE x = 0.5903
CIE y = 0.4091
Duv = 0.0111

Point lies outside the range

REPORT NUMBER: SP1-2407-176-1

## Photopic Flux vs. Wavelength

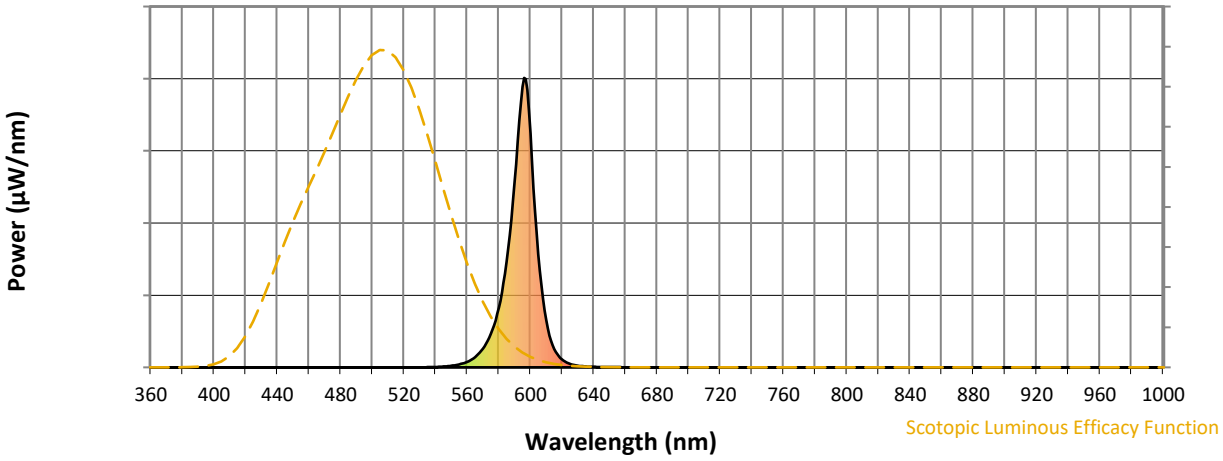



## Photopic Lumens: NR

| 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 | 0 | NR | 620 | 27 | NR | 750 | 0 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 0 | NR | 625 | 12 | NR | 755 | 0 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 0 | NR | 630 | 6 | NR | 760 | 0 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 0 | NR | 635 | 3 | NR | 765 | 0 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 0 | NR | 640 | 2 | NR | 770 | 0 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 0 | NR | 645 | 1 | NR | 775 | 0 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 0 | NR | 650 | 1 | NR | 780 | 0 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 0 | NR | 655 | 1 | NR | 785 | 0 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 0 | NR | 660 | 1 | NR | 790 | 0 | NR | 920 | 0 | NR |
| 405 | 0 | NR | 535 | 1 | NR | 665 | 0 | NR | 795 | 0 | NR | 925 | 0 | NR |
| 410 | 0 | NR | 540 | 1 | NR | 670 | 0 | NR | 800 | 0 | NR | 930 | 0 | NR |
| 415 | 0 | NR | 545 | 3 | NR | 675 | 0 | NR | 805 | 0 | NR | 935 | 0 | NR |
| 420 | 0 | NR | 550 | 5 | NR | 680 | 0 | NR | 810 | 0 | NR | 940 | 0 | NR |
| 425 | 0 | NR | 555 | 10 | NR | 685 | 0 | NR | 815 | 0 | NR | 945 | 0 | NR |
| 430 | 0 | NR | 560 | 19 | NR | 690 | 0 | NR | 820 | 0 | NR | 950 | 0 | NR |
| 435 | 0 | NR | 565 | 35 | NR | 695 | 0 | NR | 825 | 0 | NR | 955 | 0 | NR |
| 440 | 0 | NR | 570 | 64 | NR | 700 | 0 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 0 | NR | 575 | 116 | NR | 705 | 0 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 0 | NR | 580 | 206 | NR | 710 | 0 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 0 | NR | 585 | 364 | NR | 715 | 0 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 0 | NR | 590 | 639 | NR | 720 | 0 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 0 | NR | 595 | 970 | NR | 725 | 0 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 0 | NR | 600 | 808 | NR | 730 | 0 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 0 | NR | 605 | 391 | NR | 735 | 0 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 0 | NR | 610 | 164 | NR | 740 | 0 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 0 | NR | 615 | 63 | NR | 745 | 0 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-176-1

## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 0.22**

| 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 | 0 | NR | 620 | 27 | NR | 750 | 0 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 0 | NR | 625 | 12 | NR | 755 | 0 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 0 | NR | 630 | 6 | NR | 760 | 0 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 0 | NR | 635 | 3 | NR | 765 | 0 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 0 | NR | 640 | 2 | NR | 770 | 0 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 0 | NR | 645 | 1 | NR | 775 | 0 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 0 | NR | 650 | 1 | NR | 780 | 0 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 0 | NR | 655 | 1 | NR | 785 | 0 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 0 | NR | 660 | 1 | NR | 790 | 0 | NR | 920 | 0 | NR |
| 405 | 0 | NR | 535 | 1 | NR | 665 | 0 | NR | 795 | 0 | NR | 925 | 0 | NR |
| 410 | 0 | NR | 540 | 1 | NR | 670 | 0 | NR | 800 | 0 | NR | 930 | 0 | NR |
| 415 | 0 | NR | 545 | 3 | NR | 675 | 0 | NR | 805 | 0 | NR | 935 | 0 | NR |
| 420 | 0 | NR | 550 | 5 | NR | 680 | 0 | NR | 810 | 0 | NR | 940 | 0 | NR |
| 425 | 0 | NR | 555 | 10 | NR | 685 | 0 | NR | 815 | 0 | NR | 945 | 0 | NR |
| 430 | 0 | NR | 560 | 19 | NR | 690 | 0 | NR | 820 | 0 | NR | 950 | 0 | NR |
| 435 | 0 | NR | 565 | 35 | NR | 695 | 0 | NR | 825 | 0 | NR | 955 | 0 | NR |
| 440 | 0 | NR | 570 | 64 | NR | 700 | 0 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 0 | NR | 575 | 116 | NR | 705 | 0 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 0 | NR | 580 | 206 | NR | 710 | 0 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 0 | NR | 585 | 364 | NR | 715 | 0 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 0 | NR | 590 | 639 | NR | 720 | 0 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 0 | NR | 595 | 970 | NR | 725 | 0 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 0 | NR | 600 | 808 | NR | 730 | 0 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 0 | NR | 605 | 391 | NR | 735 | 0 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 0 | NR | 610 | 164 | NR | 740 | 0 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 0 | NR | 615 | 63 | NR | 745 | 0 | NR | 875 | 0 | NR | | | |

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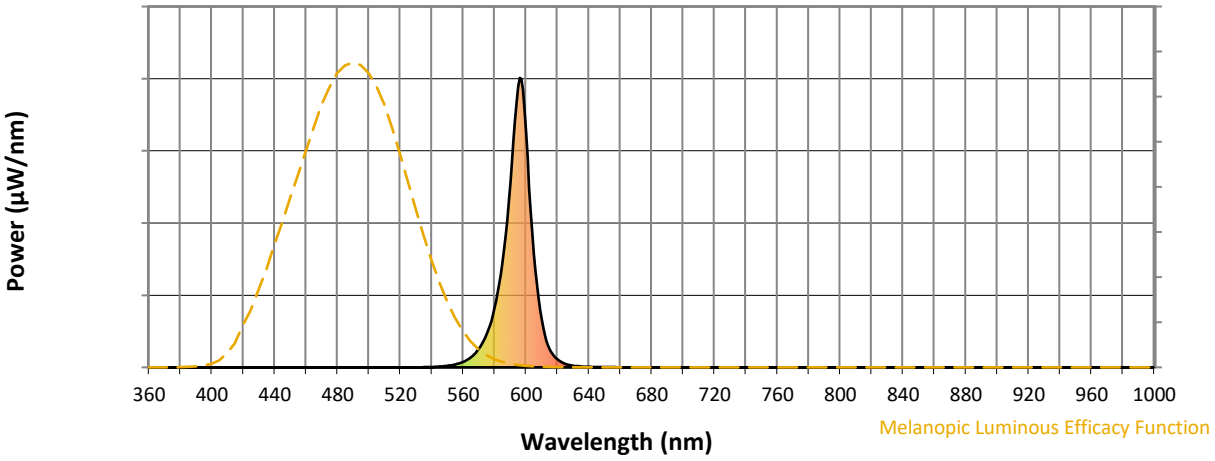
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 0.12**

| 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 | 0 | NR | 620 | 27 | NR | 750 | 0 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 0 | NR | 625 | 12 | NR | 755 | 0 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 0 | NR | 630 | 6 | NR | 760 | 0 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 0 | NR | 635 | 3 | NR | 765 | 0 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 0 | NR | 640 | 2 | NR | 770 | 0 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 0 | NR | 645 | 1 | NR | 775 | 0 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 0 | NR | 650 | 1 | NR | 780 | 0 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 0 | NR | 655 | 1 | NR | 785 | 0 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 0 | NR | 660 | 1 | NR | 790 | 0 | NR | 920 | 0 | NR |
| 405 | 0 | NR | 535 | 1 | NR | 665 | 0 | NR | 795 | 0 | NR | 925 | 0 | NR |
| 410 | 0 | NR | 540 | 1 | NR | 670 | 0 | NR | 800 | 0 | NR | 930 | 0 | NR |
| 415 | 0 | NR | 545 | 3 | NR | 675 | 0 | NR | 805 | 0 | NR | 935 | 0 | NR |
| 420 | 0 | NR | 550 | 5 | NR | 680 | 0 | NR | 810 | 0 | NR | 940 | 0 | NR |
| 425 | 0 | NR | 555 | 10 | NR | 685 | 0 | NR | 815 | 0 | NR | 945 | 0 | NR |
| 430 | 0 | NR | 560 | 19 | NR | 690 | 0 | NR | 820 | 0 | NR | 950 | 0 | NR |
| 435 | 0 | NR | 565 | 35 | NR | 695 | 0 | NR | 825 | 0 | NR | 955 | 0 | NR |
| 440 | 0 | NR | 570 | 64 | NR | 700 | 0 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 0 | NR | 575 | 116 | NR | 705 | 0 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 0 | NR | 580 | 206 | NR | 710 | 0 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 0 | NR | 585 | 364 | NR | 715 | 0 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 0 | NR | 590 | 639 | NR | 720 | 0 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 0 | NR | 595 | 970 | NR | 725 | 0 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 0 | NR | 600 | 808 | NR | 730 | 0 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 0 | NR | 605 | 391 | NR | 735 | 0 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 0 | NR | 610 | 164 | NR | 740 | 0 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 0 | NR | 615 | 63 | NR | 745 | 0 | NR | 875 | 0 | NR | | | |

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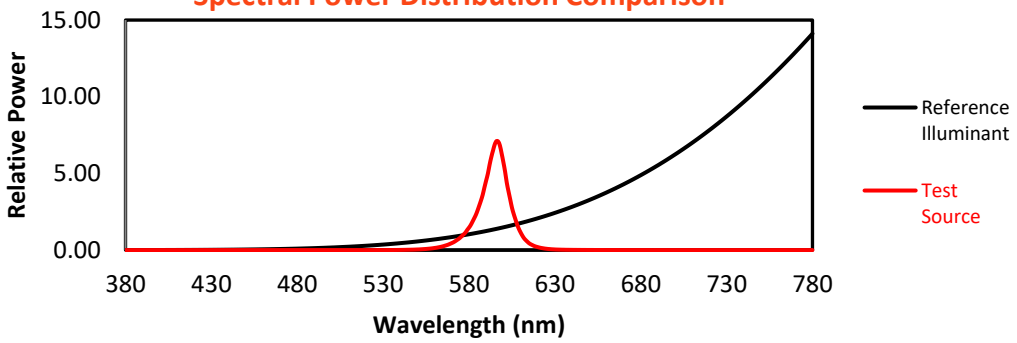
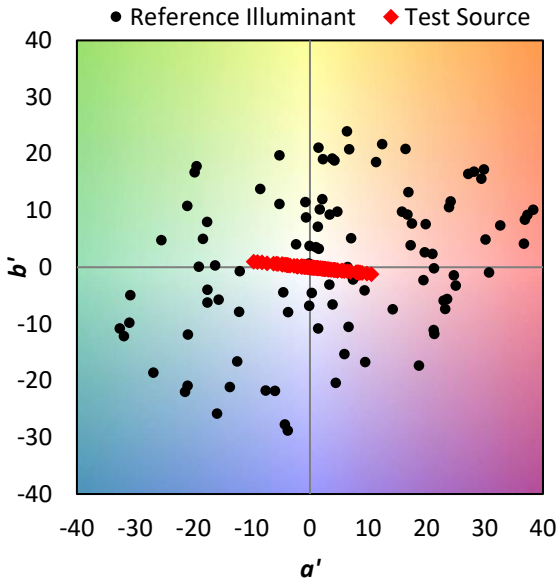
## Summary

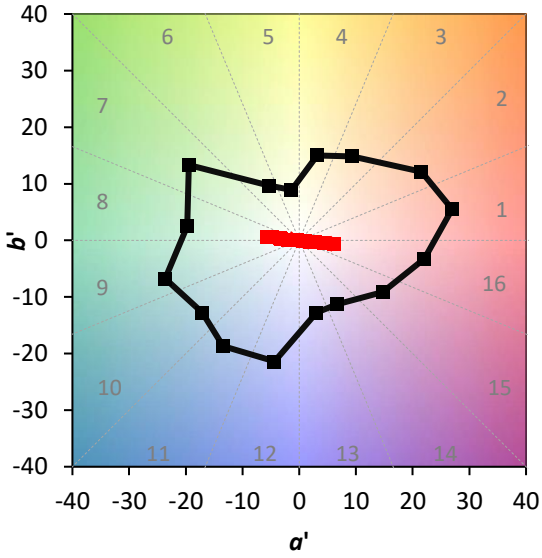
$R_f$ = 1.1
$R_g$ = 0
CIE $R_a$ = -22.5
$R_9$ = -390.1

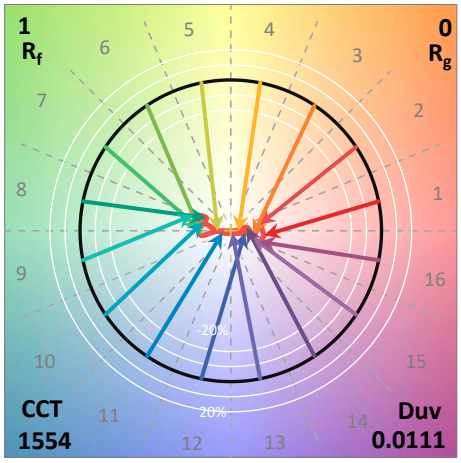
## Spectral Power Distribution Comparison

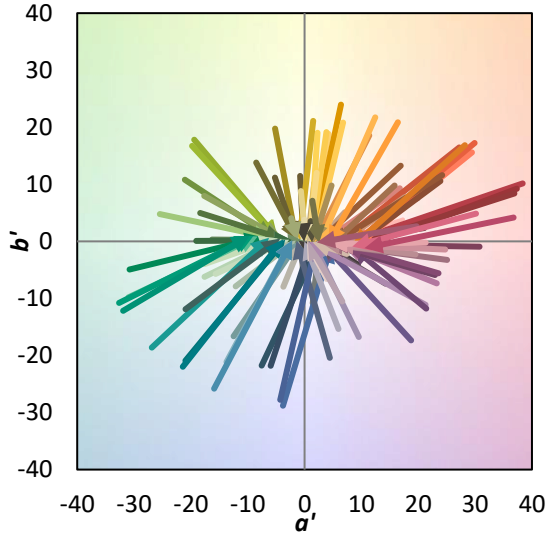



## Color Vector Graphics



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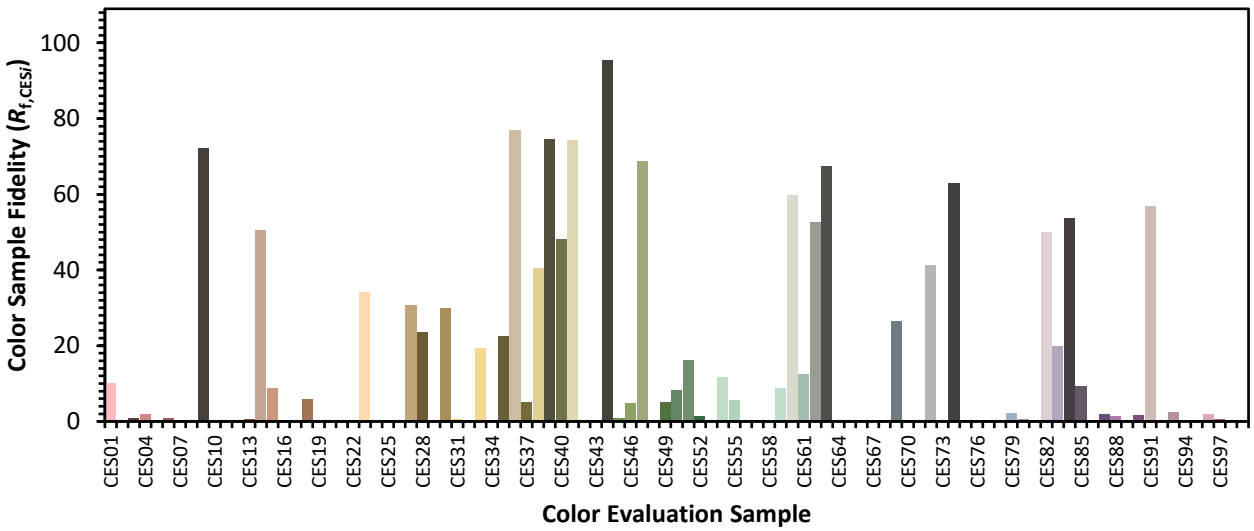
**Individual Sample Fidelity Index ($R_{f,i}$)**

| | | | |
|---|---|---|---|
| CES01 = 90 | CES26 = 0 | CES51 = 16 | CES76 = 0 |
| CES02 = 69 | CES27 = 31 | CES52 = 2 | CES77 = 0 |
| CES03 = 31 | CES28 = 24 | CES53 = 0 | CES78 = 0 |
| CES04 = 77 | CES29 = 0 | CES54 = 12 | CES79 = 2 |
| CES05 = 52 | CES30 = 30 | CES55 = 6 | CES80 = 1 |
| CES06 = 56 | CES31 = 1 | CES56 = 0 | CES81 = 0 |
| CES07 = 41 | CES32 = 0 | CES57 = 0 | CES82 = 50 |
| CES08 = 38 | CES33 = 19 | CES58 = 0 | CES83 = 20 |
| CES09 = 29 | CES34 = 0 | CES59 = 9 | CES84 = 54 |
| CES10 = 87 | CES35 = 22 | CES60 = 60 | CES85 = 9 |
| CES11 = 70 | CES36 = 77 | CES61 = 12 | CES86 = 0 |
| CES12 = 75 | CES37 = 5 | CES62 = 53 | CES87 = 2 |
| CES13 = 47 | CES38 = 40 | CES63 = 67 | CES88 = 1 |
| CES14 = 76 | CES39 = 75 | CES64 = 0 | CES89 = 0 |
| CES15 = 74 | CES40 = 48 | CES65 = 0 | CES90 = 2 |
| CES16 = 49 | CES41 = 74 | CES66 = 0 | CES91 = 57 |
| CES17 = 56 | CES42 = 0 | CES67 = 0 | CES92 = 0 |
| CES18 = 59 | CES43 = 0 | CES68 = 0 | CES93 = 2 |
| CES19 = 80 | CES44 = 95 | CES69 = 26 | CES94 = 0 |
| CES20 = 71 | CES45 = 1 | CES70 = 0 | CES95 = 0 |
| CES21 = 94 | CES46 = 5 | CES71 = 0 | CES96 = 2 |
| CES22 = 87 | CES47 = 69 | CES72 = 41 | CES97 = 1 |
| CES23 = 94 | CES48 = 0 | CES73 = 0 | CES98 = 0 |
| CES24 = 95 | CES49 = 5 | CES74 = 63 | CES99 = 0 |
| CES25 = 79 | CES50 = 8 | CES75 = 0 | |



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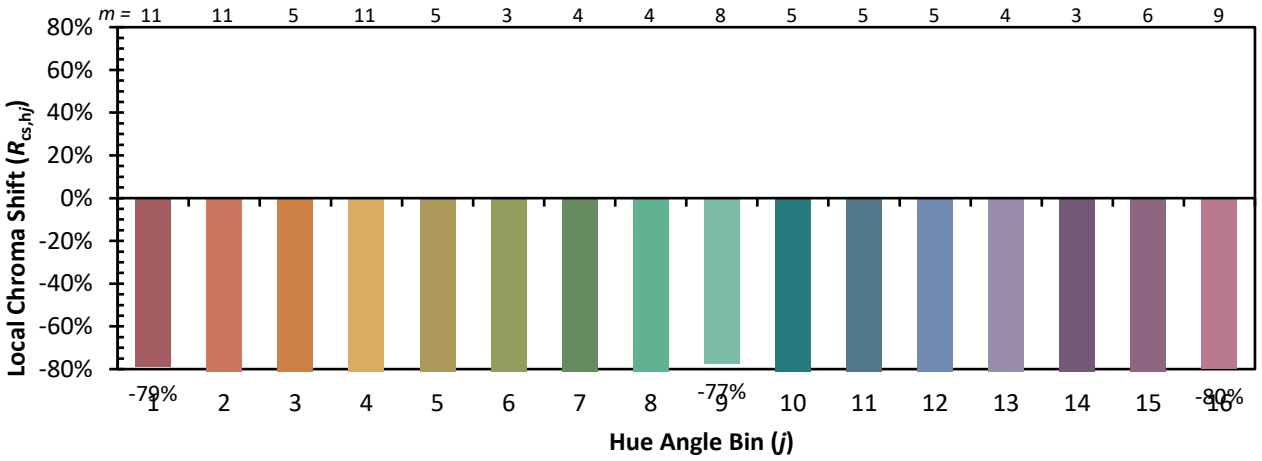
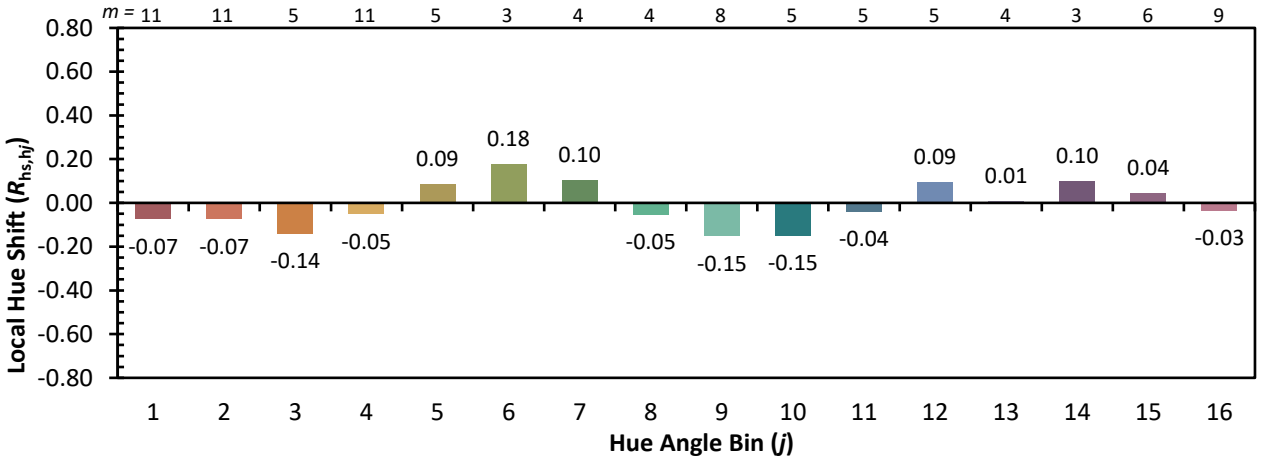
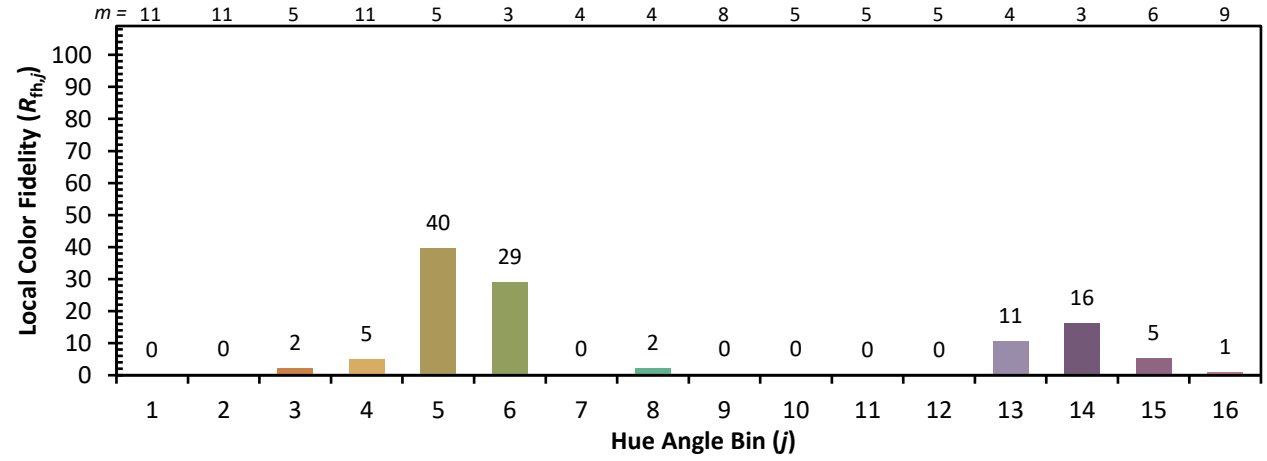
## Color Rendition by Hue-Angle Bin



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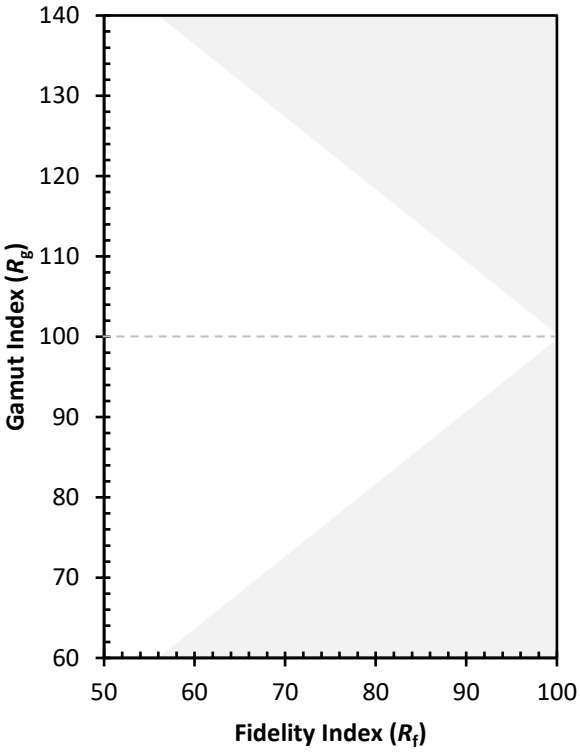
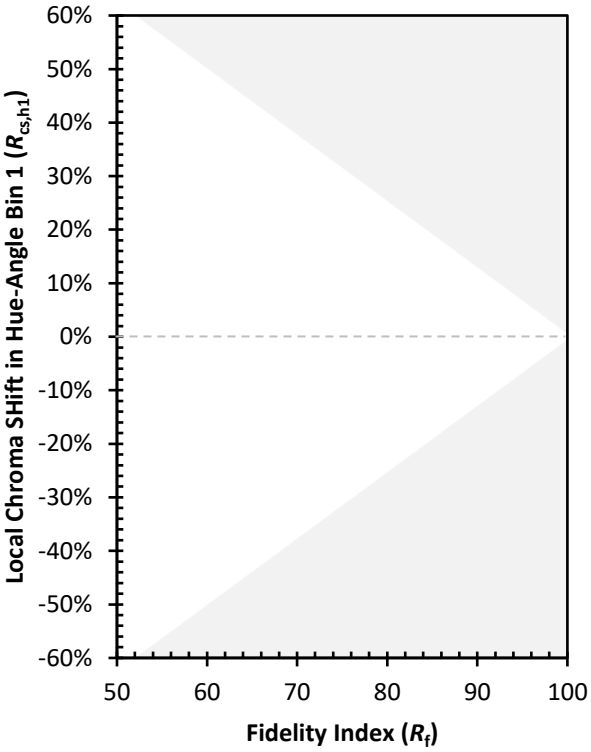
## Measure Comparisons




(END OF REPORT)