

Signify Classified - Internal  
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: P879620

Luminaire Tested: **MEM2-HSN-VA-130-750-U-CQ**

Issue Date: 10/01/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P879620  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 10/01/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: MEM2-HSN-VA-130-750-U-CQ  
Description: EPIC MODERN SHORT HOUSING 130W 70CRI 5000K VISUAL COMFORT FIXTURE  
w/ TYPE V CONCENTRATED DISTRIBUTION OPTIC  
Light Source: (1) 5000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

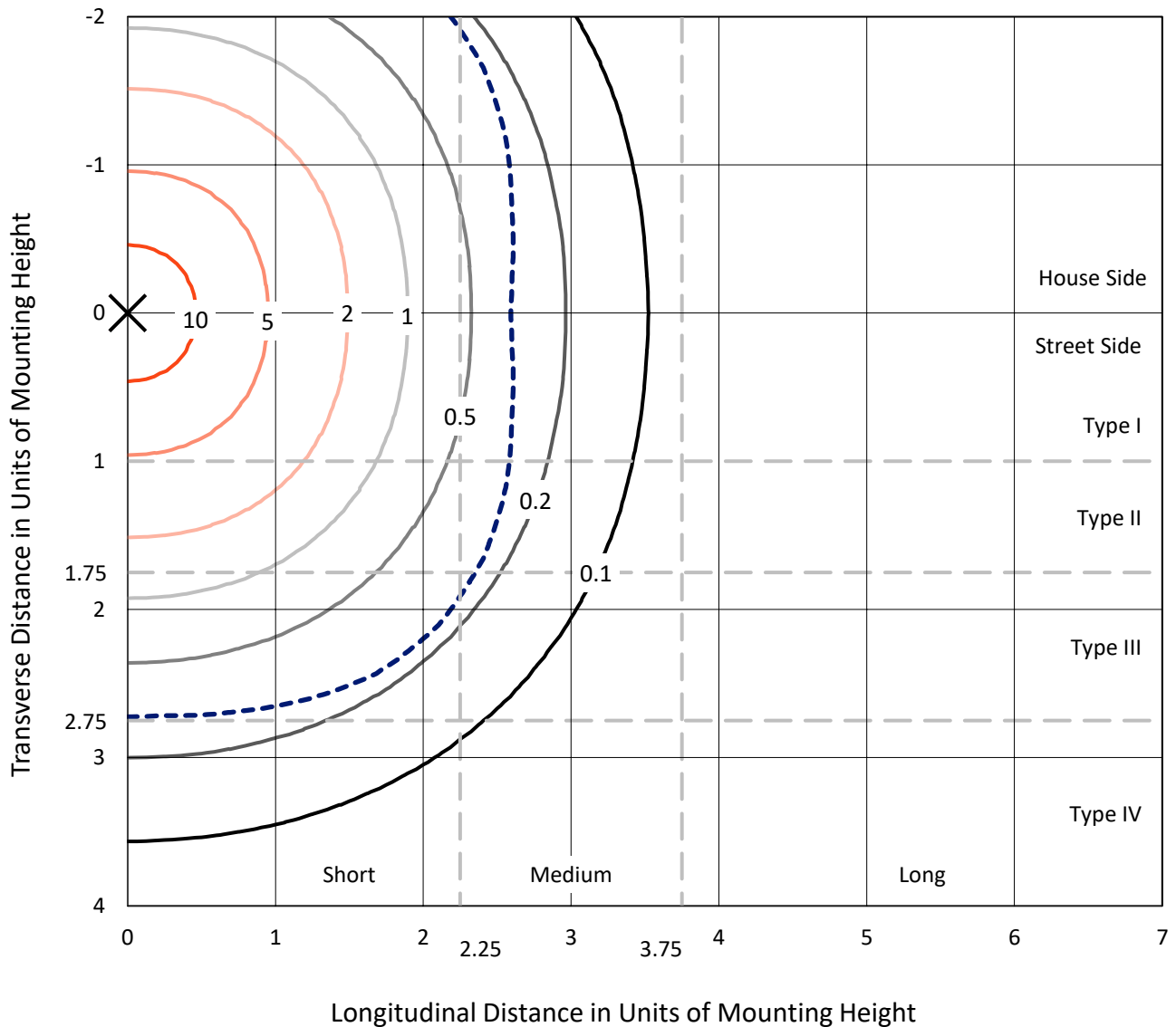
Lumens per Lamp: N/A  
Luminaire Lumens: 12880.4 lumens  
Efficiency: N/A  
Efficacy: 99.1 lumens/watt  
Luminous Opening: Circular (Dia: 1.12' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B3 - U0 - G2

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

REPORT NUMBER: P879620  
 CATALOG NUMBER: MEM2-HSN-VA-130-750-U-CQ

### Iso-Footcandle Lines of Horizontal Illumination

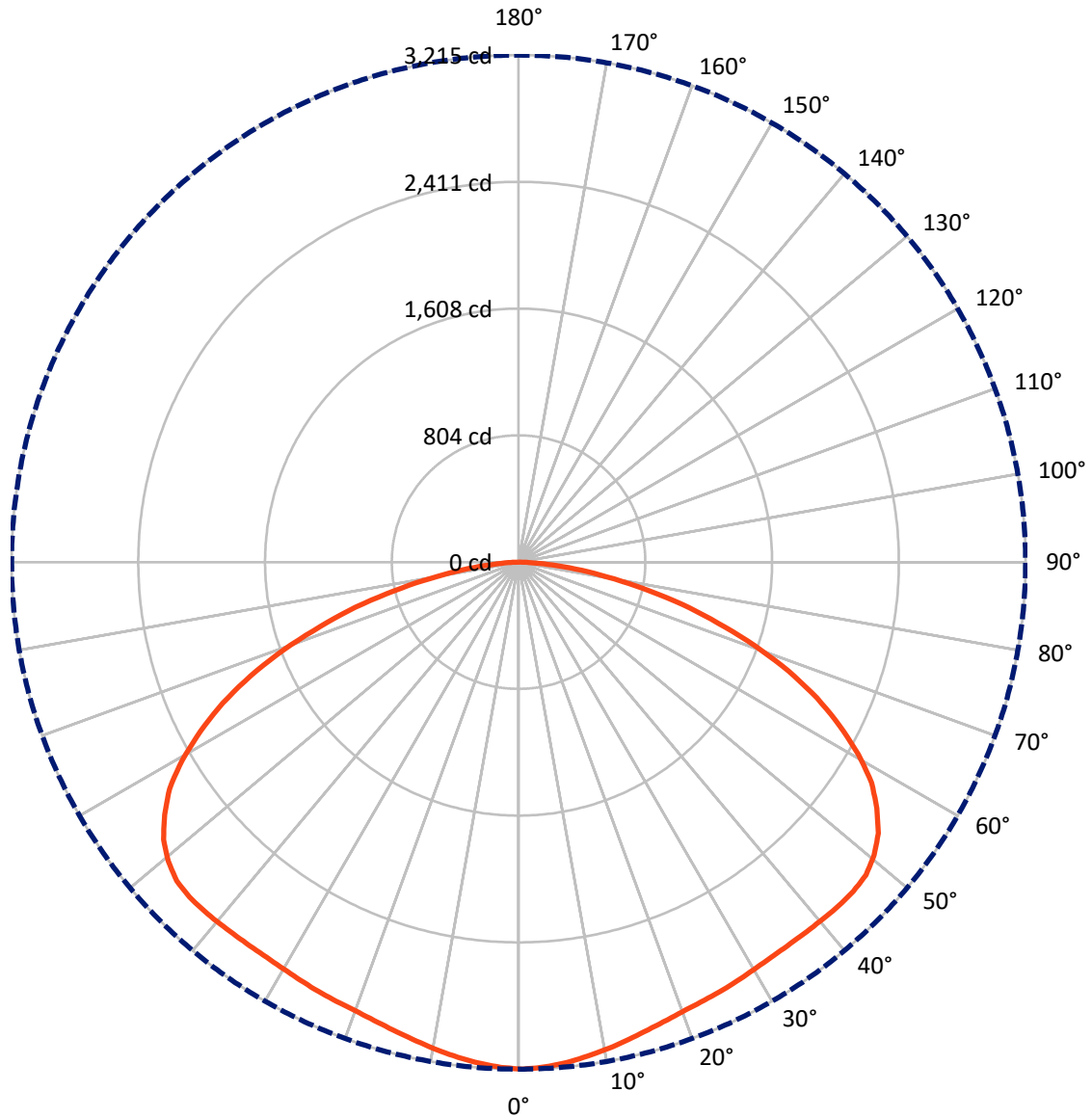
✕ Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 14.3 fc  
 Type V - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 0-Deg Lateral      - - - Horizontal Cone Through 0-Deg Vertical

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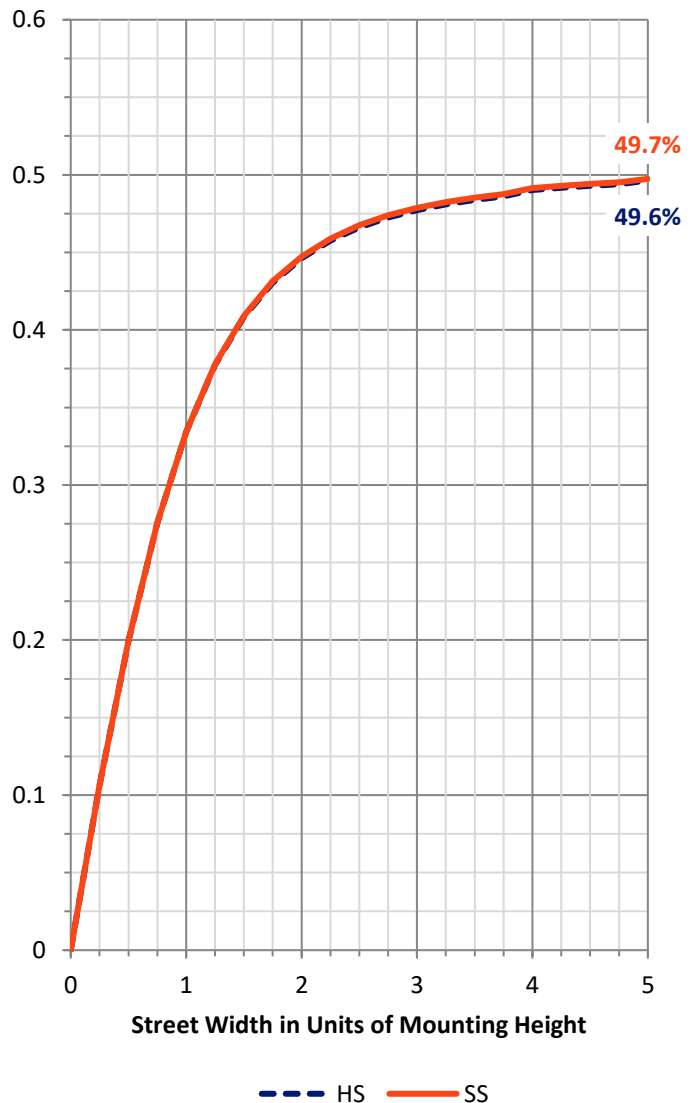
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 6440.2   | 0.0    | 6440.2  |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Street Side</b> | Lumens    | 6440.2   | 0.0    | 6440.2  |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Total</b>       | Lumens    | 12880.4  | 0.0    | 12880.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 303.0   | 2.4       |
| 10°-20°   | 874.2   | 6.8       |
| 20°-30°   | 1399.6  | 10.9      |
| 30°-40°   | 1896.0  | 14.7      |
| 40°-50°   | 2341.4  | 18.2      |
| 50°-60°   | 2515.6  | 19.5      |
| 60°-70°   | 2115.5  | 16.4      |
| 70°-80°   | 1181.3  | 9.2       |
| 80°-90°   | 253.8   | 2.0       |
| 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°    | 12880.4 | 100.0     |
| 0°-180°   | 12880.4 | 100.0     |



REPORT NUMBER: P879620

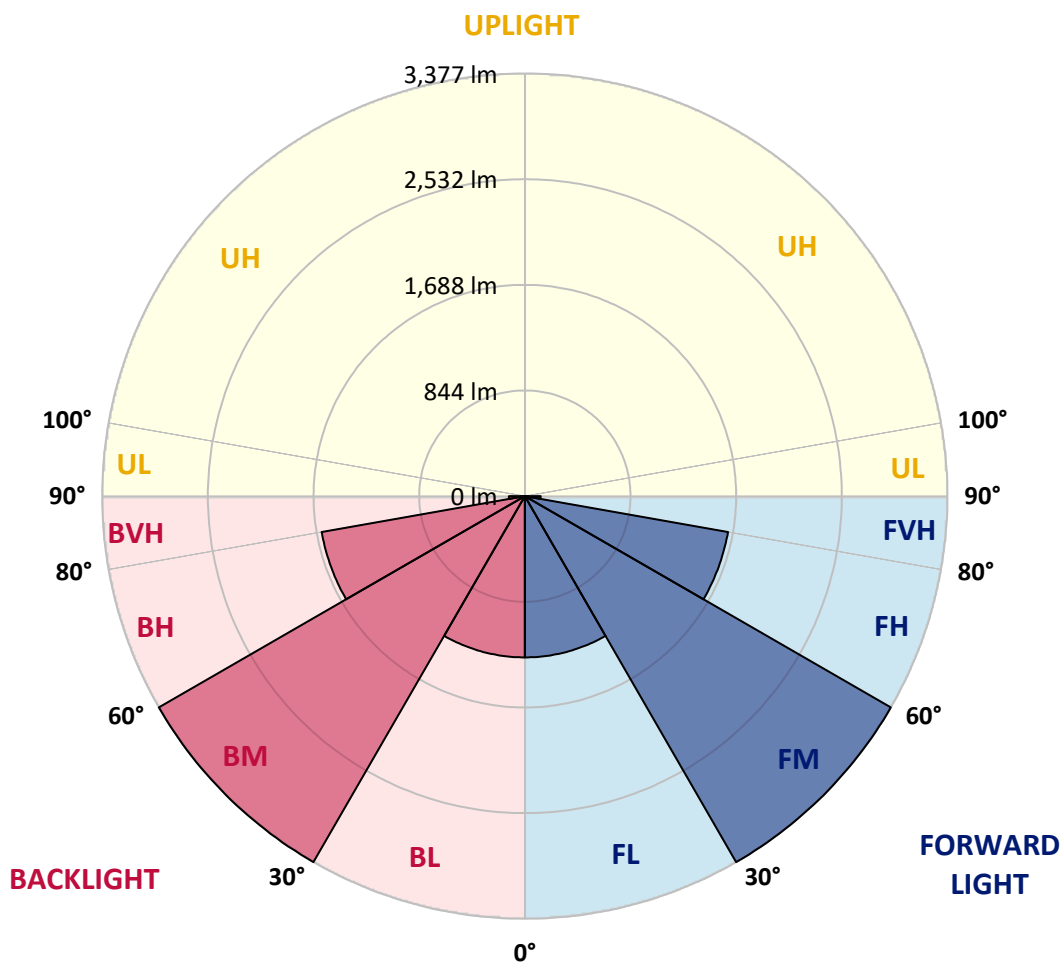
CATALOG NUMBER: MEM2-HSN-VA-130-750-U-CQ

**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1288.4 | 10.0      |                         |      |         |
| FM (30°-60°)   | 3376.5 | 26.2      |                         |      |         |
| FH (60°-80°)   | 1648.4 | 12.8      |                         |      | G1/1800 |
| FVH (80°-90°)  | 126.9  | 1.0       |                         |      | G2/225  |
| BL (0°-30°)    | 1288.4 | 10.0      | B3/2500                 |      |         |
| BM (30°-60°)   | 3376.5 | 26.2      | B3/5000                 |      |         |
| BH (60°-80°)   | 1648.4 | 12.8      | B3/2500                 |      | G1/1800 |
| BVH (80°-90°)  | 126.9  | 1.0       |                         |      | 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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CATALOG NUMBER: MEM2-HSN-VA-130-750-U-CQ

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    | 90°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3215.1 | 3215.1 | 3215.1 | 3215.1 | 3215.1 | 3215.1 | 3215.1 | 3215.1 | 3215.1 | 3215.1 | 3215.1 |
| 2.5°  | 3205.5 | 3208.7 | 3207.9 | 3207.9 | 3207.9 | 3209.5 | 3209.5 | 3209.5 | 3210.3 | 3210.3 | 3211.1 |
| 5°    | 3187.1 | 3189.5 | 3189.5 | 3189.5 | 3191.1 | 3191.9 | 3191.9 | 3192.7 | 3194.3 | 3193.5 | 3192.7 |
| 7.5°  | 3162.4 | 3164.8 | 3164.8 | 3164.8 | 3166.4 | 3168.0 | 3168.0 | 3167.2 | 3169.6 | 3169.6 | 3168.8 |
| 10°   | 3136.0 | 3136.8 | 3137.6 | 3139.2 | 3141.6 | 3142.4 | 3141.6 | 3141.6 | 3140.8 | 3141.6 | 3141.6 |
| 12.5° | 3104.9 | 3108.9 | 3109.7 | 3111.3 | 3115.3 | 3116.1 | 3116.1 | 3115.3 | 3114.5 | 3114.5 | 3113.7 |
| 15°   | 3076.9 | 3078.5 | 3080.9 | 3084.1 | 3088.9 | 3090.5 | 3091.3 | 3088.9 | 3086.5 | 3085.7 | 3086.5 |
| 17.5° | 3051.4 | 3053.8 | 3057.0 | 3060.2 | 3066.6 | 3069.8 | 3069.8 | 3066.6 | 3063.4 | 3061.8 | 3061.8 |
| 20°   | 3030.6 | 3033.0 | 3037.0 | 3041.8 | 3050.6 | 3054.6 | 3053.0 | 3049.8 | 3044.2 | 3041.8 | 3042.6 |
| 22.5° | 3017.0 | 3020.2 | 3023.4 | 3030.6 | 3040.2 | 3045.0 | 3043.4 | 3037.8 | 3031.4 | 3027.4 | 3027.4 |
| 25°   | 3005.9 | 3008.3 | 3013.1 | 3022.6 | 3033.0 | 3038.6 | 3036.2 | 3029.0 | 3020.2 | 3015.4 | 3014.6 |
| 27.5° | 2993.1 | 2996.3 | 3002.7 | 3015.4 | 3028.2 | 3033.0 | 3031.4 | 3021.0 | 3010.7 | 3004.3 | 3002.7 |
| 30°   | 2981.1 | 2984.3 | 2993.1 | 3007.5 | 3023.4 | 3030.6 | 3026.6 | 3015.4 | 3002.7 | 2994.7 | 2993.9 |
| 32.5° | 2973.1 | 2977.1 | 2987.5 | 3005.9 | 3025.0 | 3035.4 | 3031.4 | 3017.8 | 3001.1 | 2990.7 | 2989.9 |
| 35°   | 2969.9 | 2973.9 | 2989.1 | 3011.5 | 3035.4 | 3049.8 | 3044.2 | 3027.4 | 3006.7 | 2993.9 | 2992.3 |
| 37.5° | 2970.7 | 2975.5 | 2994.7 | 3024.2 | 3054.6 | 3069.8 | 3062.6 | 3041.0 | 3014.6 | 2997.1 | 2994.7 |
| 40°   | 2973.9 | 2979.5 | 3004.3 | 3041.0 | 3076.9 | 3091.3 | 3080.1 | 3048.2 | 3012.3 | 2987.5 | 2982.7 |
| 42.5° | 2977.9 | 2986.7 | 3017.0 | 3060.2 | 3097.7 | 3109.7 | 3089.7 | 3042.6 | 2992.3 | 2960.3 | 2956.4 |
| 45°   | 2977.1 | 2984.3 | 3019.4 | 3070.6 | 3110.5 | 3116.9 | 3084.1 | 3025.0 | 2965.9 | 2924.4 | 2921.2 |
| 47.5° | 2963.5 | 2970.7 | 3010.7 | 3067.4 | 3106.5 | 3108.1 | 3069.0 | 3001.1 | 2931.6 | 2883.7 | 2878.9 |
| 50°   | 2921.2 | 2930.8 | 2975.5 | 3037.8 | 3081.7 | 3082.5 | 3039.4 | 2964.3 | 2883.7 | 2827.8 | 2819.8 |
| 52.5° | 2856.5 | 2863.7 | 2915.6 | 2982.7 | 3032.2 | 3038.6 | 2991.5 | 2904.4 | 2812.6 | 2752.7 | 2747.1 |
| 55°   | 2755.9 | 2770.3 | 2825.4 | 2895.7 | 2950.0 | 2957.2 | 2910.0 | 2815.8 | 2721.6 | 2652.9 | 2646.5 |
| 57.5° | 2639.3 | 2641.7 | 2700.0 | 2776.7 | 2833.4 | 2841.4 | 2790.2 | 2694.4 | 2596.2 | 2532.3 | 2516.3 |
| 60°   | 2474.8 | 2484.4 | 2539.5 | 2614.6 | 2674.5 | 2684.8 | 2636.1 | 2543.5 | 2441.3 | 2368.6 | 2367.8 |
| 62.5° | 2284.7 | 2295.9 | 2351.8 | 2431.7 | 2492.4 | 2502.8 | 2450.8 | 2360.6 | 2258.4 | 2196.1 | 2173.7 |
| 65°   | 2078.7 | 2081.9 | 2137.8 | 2216.9 | 2272.0 | 2277.6 | 2236.8 | 2151.4 | 2046.0 | 1982.1 | 1967.7 |
| 67.5° | 1847.1 | 1850.3 | 1893.4 | 1967.7 | 2026.8 | 2034.8 | 1993.3 | 1915.0 | 1820.0 | 1752.9 | 1745.7 |
| 70°   | 1590.8 | 1591.6 | 1633.9 | 1694.6 | 1753.7 | 1770.5 | 1732.9 | 1657.9 | 1566.8 | 1513.3 | 1498.9 |
| 72.5° | 1320.9 | 1328.0 | 1365.6 | 1428.7 | 1479.0 | 1483.0 | 1452.6 | 1387.9 | 1313.7 | 1269.7 | 1261.8 |
| 75°   | 1074.1 | 1069.3 | 1101.2 | 1139.6 | 1178.7 | 1191.5 | 1166.7 | 1122.8 | 1054.1 | 1015.8 | 1023.8 |
| 77.5° | 806.6  | 808.2  | 832.9  | 868.1  | 892.8  | 915.2  | 887.2  | 866.5  | 811.4  | 767.4  | 769.0  |
| 80°   | 570.2  | 568.6  | 591.7  | 608.5  | 636.5  | 639.7  | 624.5  | 596.5  | 561.4  | 543.0  | 541.4  |
| 82.5° | 361.0  | 353.8  | 371.3  | 392.9  | 404.9  | 399.3  | 402.5  | 384.1  | 356.2  | 346.6  | 337.8  |
| 85°   | 184.5  | 182.9  | 192.5  | 200.4  | 209.2  | 209.2  | 204.4  | 190.1  | 184.5  | 173.3  | 170.1  |
| 87.5° | 63.1   | 65.5   | 68.7   | 66.3   | 70.3   | 68.7   | 67.1   | 56.7   | 50.3   | 47.1   | 43.9   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-176-10

Test Date: 09/25/2024

Luminaire Tested: MEM2-HTN-VA-130-750-U-RW

Data in this report applies to families of products including MEM2-HTN-VA-130-750-U-RW



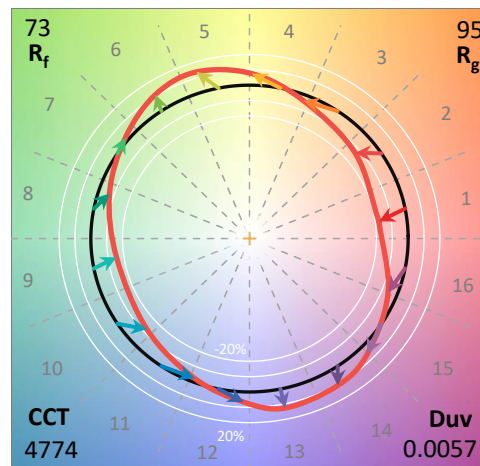
**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-176-10  
 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-130-750-U-RW**  
 Description: EPIC MODERN VISUAL COMFORT 130W WAVESTREAM RECTANGULAR WIDE

**Spectral Parameters**

CCT (K): 4774  
 CIE u': 0.2100  
 CIE v': 0.4945  
 Duv: 0.0057  
 CIE x: 0.3535  
 CIE y: 0.3699  
 CIE z: 0.2766  
 Peak Wavelength (nm): 444  
 Dominant Wavelength (nm): 571  
 Purity: 17.0787  
 Rf: 73.1  
 Rg: 94.9

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 70.8 |      |       |
| R1:       | 67.0 | R9:  | -40.0 |
| R2:       | 75.4 | R10: | 43.4  |
| R3:       | 83.5 | R11: | 69.3  |
| R4:       | 71.8 | R12: | 45.5  |
| R5:       | 68.4 | R13: | 67.9  |
| R6:       | 67.5 | R14: | 90.8  |
| R7:       | 80.0 | R15: | 58.2  |
| R8:       | 53.1 |      |       |



**Test Conditions**

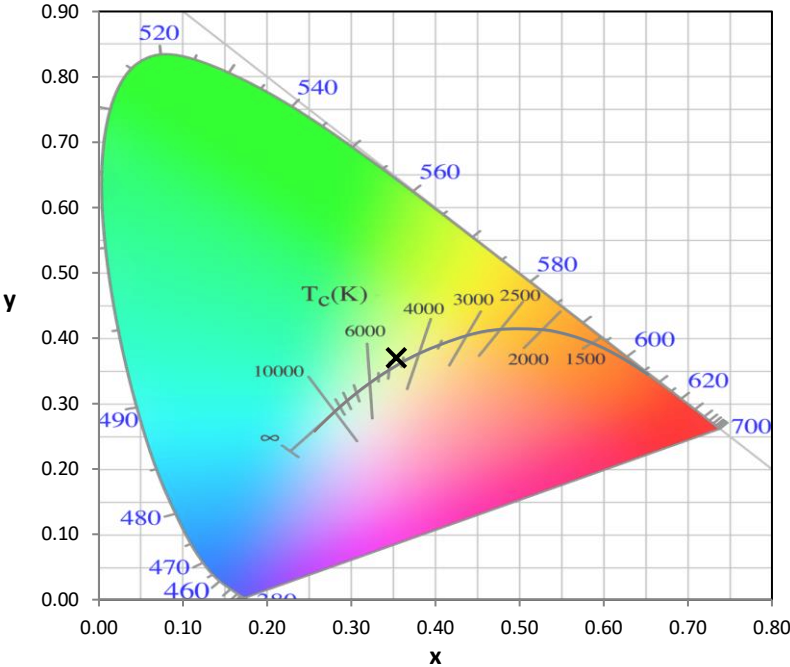
Stabilization Time: 37M  
 Operation Time: 1H 37M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-176-10

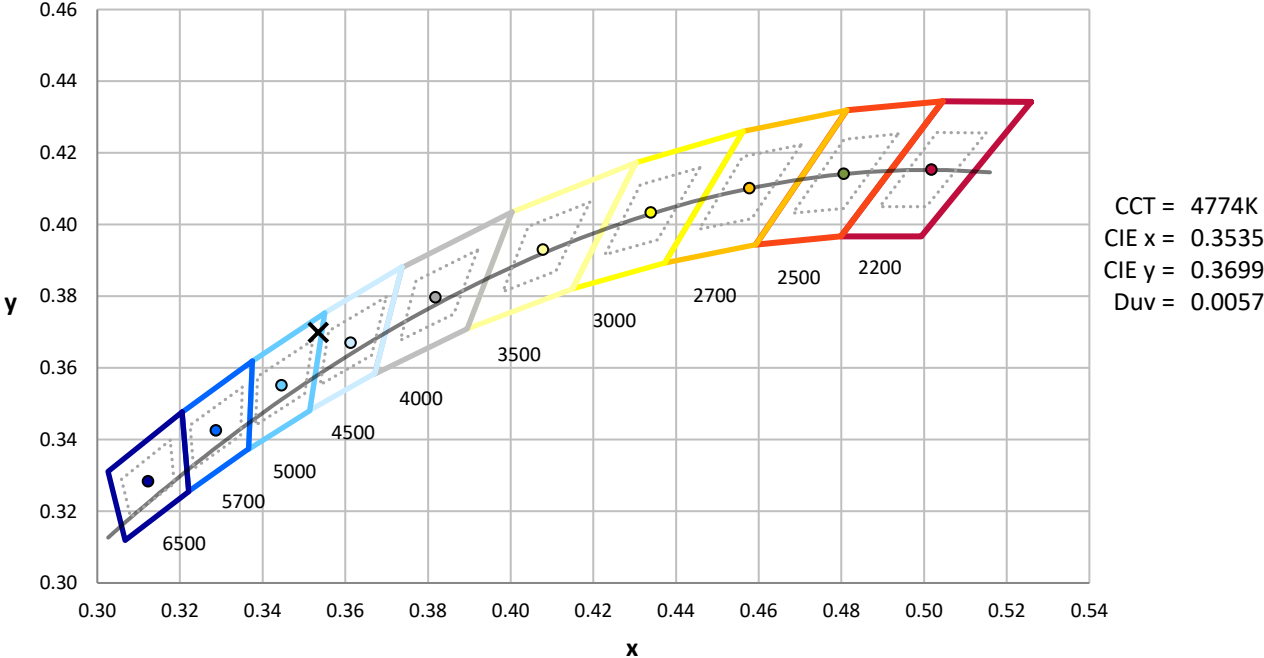
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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: SP1-2407-176-10

**CIE 1931 Chromaticity Diagram**



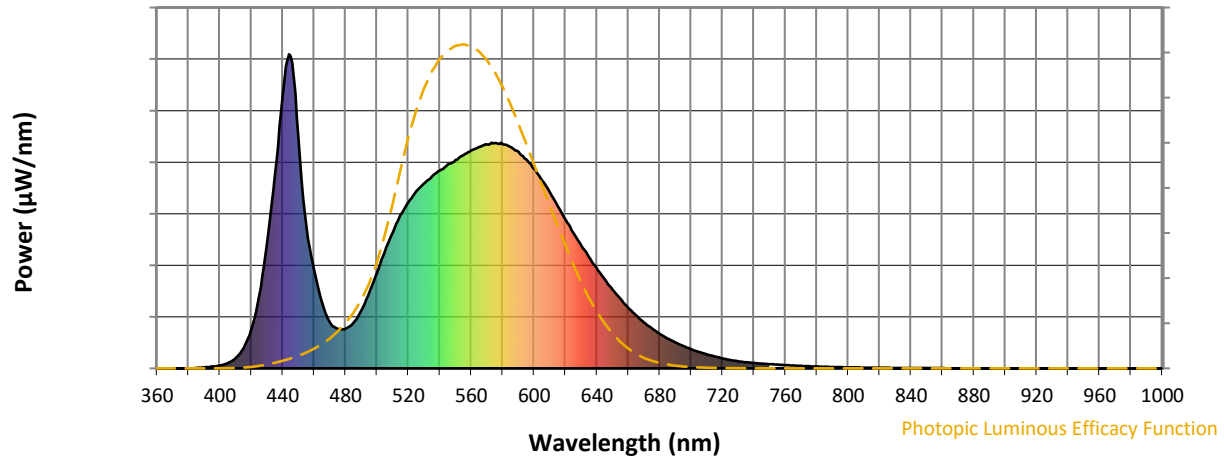
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 7-step quadrangle

REPORT NUMBER: SP1-2407-176-10

**Photopic Flux vs. Wavelength**

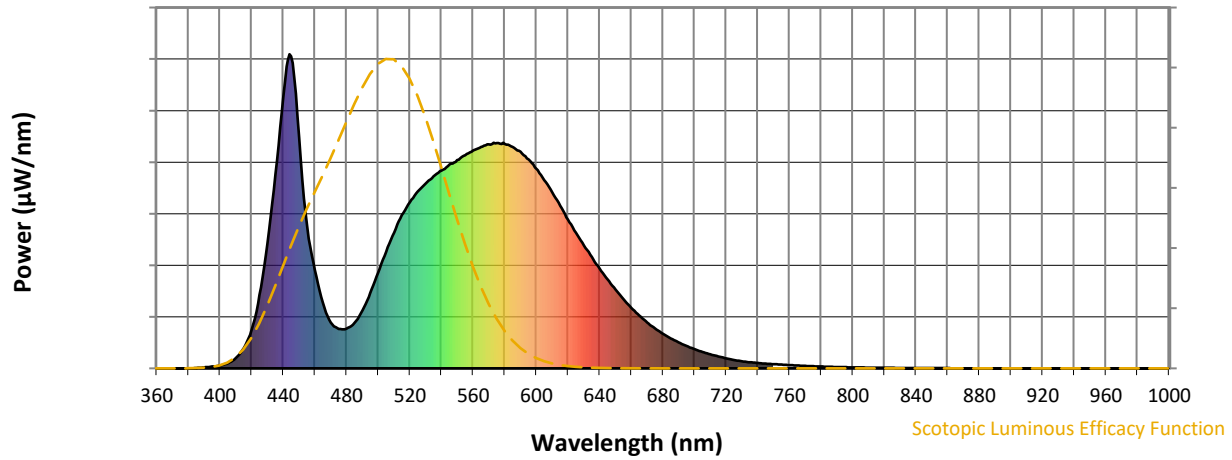


**Photopic Lumens: NR**

| $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360               | 0                           | NR                      | 490               | 184                         | NR                      | 620               | 474                         | NR                      | 750               | 13                          | NR                      | 880               | 0                           | NR                      |
| 365               | 0                           | NR                      | 495               | 239                         | NR                      | 625               | 432                         | NR                      | 755               | 12                          | NR                      | 885               | 0                           | NR                      |
| 370               | 0                           | NR                      | 500               | 305                         | NR                      | 630               | 392                         | NR                      | 760               | 10                          | NR                      | 890               | 0                           | NR                      |
| 375               | 0                           | NR                      | 505               | 371                         | NR                      | 635               | 354                         | NR                      | 765               | 9                           | NR                      | 895               | 0                           | NR                      |
| 380               | 0                           | NR                      | 510               | 432                         | NR                      | 640               | 318                         | NR                      | 770               | 8                           | NR                      | 900               | 0                           | NR                      |
| 385               | 1                           | NR                      | 515               | 488                         | NR                      | 645               | 283                         | NR                      | 775               | 7                           | NR                      | 905               | 0                           | NR                      |
| 390               | 3                           | NR                      | 520               | 529                         | NR                      | 650               | 251                         | NR                      | 780               | 6                           | NR                      | 910               | 0                           | NR                      |
| 395               | 6                           | NR                      | 525               | 563                         | NR                      | 655               | 221                         | NR                      | 785               | 5                           | NR                      | 915               | 0                           | NR                      |
| 400               | 9                           | NR                      | 530               | 589                         | NR                      | 660               | 193                         | NR                      | 790               | 4                           | NR                      | 920               | 0                           | NR                      |
| 405               | 16                          | NR                      | 535               | 611                         | NR                      | 665               | 169                         | NR                      | 795               | 4                           | NR                      | 925               | 0                           | NR                      |
| 410               | 33                          | NR                      | 540               | 629                         | NR                      | 670               | 146                         | NR                      | 800               | 3                           | NR                      | 930               | 0                           | NR                      |
| 415               | 64                          | NR                      | 545               | 649                         | NR                      | 675               | 127                         | NR                      | 805               | 3                           | NR                      | 935               | 0                           | NR                      |
| 420               | 124                         | NR                      | 550               | 663                         | NR                      | 680               | 110                         | NR                      | 810               | 2                           | NR                      | 940               | 0                           | NR                      |
| 425               | 233                         | NR                      | 555               | 678                         | NR                      | 685               | 95                          | NR                      | 815               | 2                           | NR                      | 945               | 0                           | NR                      |
| 430               | 397                         | NR                      | 560               | 693                         | NR                      | 690               | 83                          | NR                      | 820               | 2                           | NR                      | 950               | 0                           | NR                      |
| 435               | 617                         | NR                      | 565               | 705                         | NR                      | 695               | 71                          | NR                      | 825               | 2                           | NR                      | 955               | 0                           | NR                      |
| 440               | 868                         | NR                      | 570               | 713                         | NR                      | 700               | 61                          | NR                      | 830               | 1                           | NR                      | 960               | 0                           | NR                      |
| 445               | 994                         | NR                      | 575               | 717                         | NR                      | 705               | 52                          | NR                      | 835               | 1                           | NR                      | 965               | 0                           | NR                      |
| 450               | 736                         | NR                      | 580               | 715                         | NR                      | 710               | 45                          | NR                      | 840               | 1                           | NR                      | 970               | 0                           | NR                      |
| 455               | 454                         | NR                      | 585               | 705                         | NR                      | 715               | 38                          | NR                      | 845               | 1                           | NR                      | 975               | 0                           | NR                      |
| 460               | 314                         | NR                      | 590               | 689                         | NR                      | 720               | 32                          | NR                      | 850               | 1                           | NR                      | 980               | 0                           | NR                      |
| 465               | 210                         | NR                      | 595               | 665                         | NR                      | 725               | 27                          | NR                      | 855               | 1                           | NR                      | 985               | 0                           | NR                      |
| 470               | 146                         | NR                      | 600               | 635                         | NR                      | 730               | 23                          | NR                      | 860               | 1                           | NR                      | 990               | 0                           | NR                      |
| 475               | 126                         | NR                      | 605               | 599                         | NR                      | 735               | 19                          | NR                      | 865               | 0                           | NR                      | 995               | 0                           | NR                      |
| 480               | 126                         | NR                      | 610               | 561                         | NR                      | 740               | 17                          | NR                      | 870               | 0                           | NR                      | 1000              | 0                           | NR                      |
| 485               | 144                         | NR                      | 615               | 517                         | NR                      | 745               | 15                          | NR                      | 875               | 0                           | NR                      |                   |                             |                         |

REPORT NUMBER: SP1-2407-176-10

**Scotopic Flux vs. Wavelength**



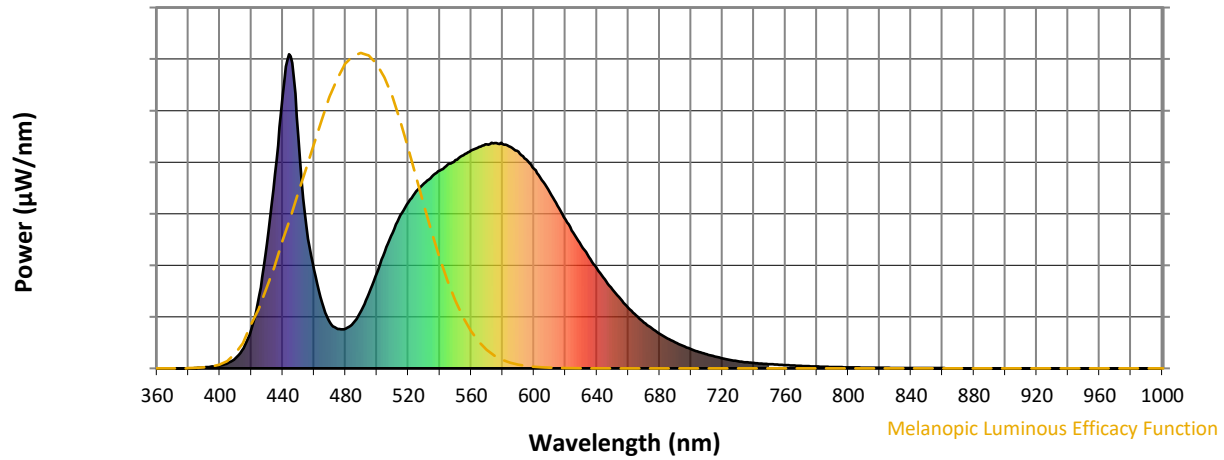
**Scotopic Lumens: NR**

**S/P: 1.71**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 184                      | NR            | 620    | 474                      | NR            | 750    | 13                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 239                      | NR            | 625    | 432                      | NR            | 755    | 12                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 305                      | NR            | 630    | 392                      | NR            | 760    | 10                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 371                      | NR            | 635    | 354                      | NR            | 765    | 9                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 432                      | NR            | 640    | 318                      | NR            | 770    | 8                        | NR            | 900    | 0                        | NR            |
| 385    | 1                        | NR            | 515    | 488                      | NR            | 645    | 283                      | NR            | 775    | 7                        | NR            | 905    | 0                        | NR            |
| 390    | 3                        | NR            | 520    | 529                      | NR            | 650    | 251                      | NR            | 780    | 6                        | NR            | 910    | 0                        | NR            |
| 395    | 6                        | NR            | 525    | 563                      | NR            | 655    | 221                      | NR            | 785    | 5                        | NR            | 915    | 0                        | NR            |
| 400    | 9                        | NR            | 530    | 589                      | NR            | 660    | 193                      | NR            | 790    | 4                        | NR            | 920    | 0                        | NR            |
| 405    | 16                       | NR            | 535    | 611                      | NR            | 665    | 169                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 33                       | NR            | 540    | 629                      | NR            | 670    | 146                      | NR            | 800    | 3                        | NR            | 930    | 0                        | NR            |
| 415    | 64                       | NR            | 545    | 649                      | NR            | 675    | 127                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 124                      | NR            | 550    | 663                      | NR            | 680    | 110                      | NR            | 810    | 2                        | NR            | 940    | 0                        | NR            |
| 425    | 233                      | NR            | 555    | 678                      | NR            | 685    | 95                       | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 397                      | NR            | 560    | 693                      | NR            | 690    | 83                       | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 617                      | NR            | 565    | 705                      | NR            | 695    | 71                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 868                      | NR            | 570    | 713                      | NR            | 700    | 61                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 994                      | NR            | 575    | 717                      | NR            | 705    | 52                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 736                      | NR            | 580    | 715                      | NR            | 710    | 45                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 454                      | NR            | 585    | 705                      | NR            | 715    | 38                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 314                      | NR            | 590    | 689                      | NR            | 720    | 32                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 210                      | NR            | 595    | 665                      | NR            | 725    | 27                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 146                      | NR            | 600    | 635                      | NR            | 730    | 23                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 126                      | NR            | 605    | 599                      | NR            | 735    | 19                       | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 126                      | NR            | 610    | 561                      | NR            | 740    | 17                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 144                      | NR            | 615    | 517                      | NR            | 745    | 15                       | NR            | 875    | 0                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2407-176-10

**Melanopic Flux vs. Wavelength**



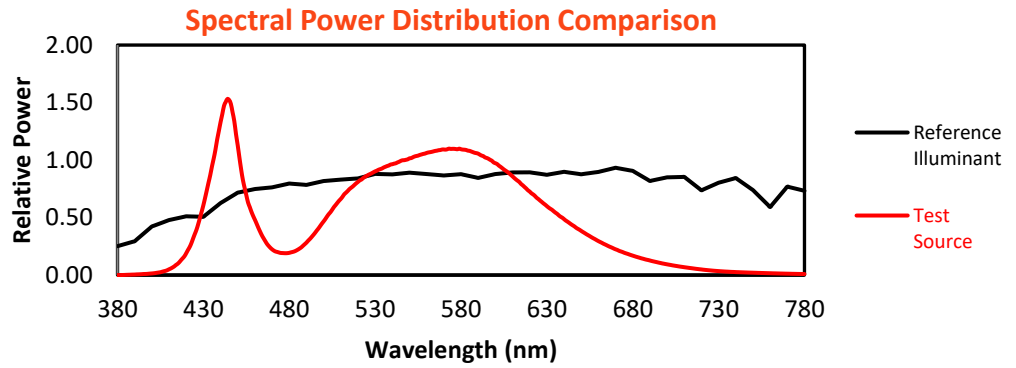
**Melanopic Lumens: NR**

**M/P: 3.39**

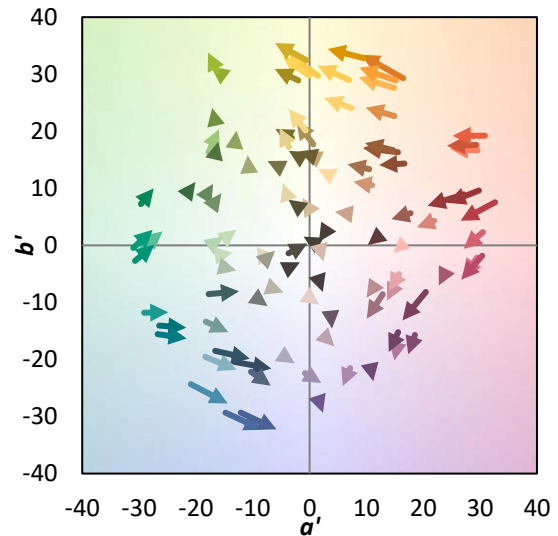
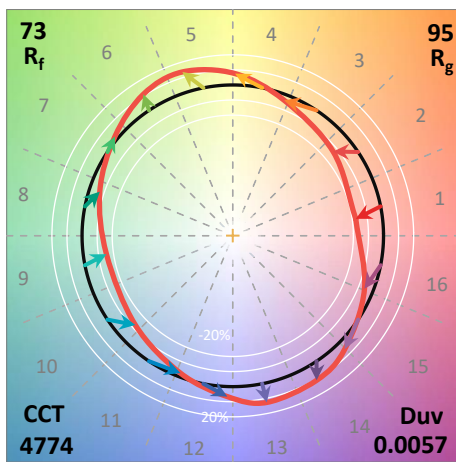
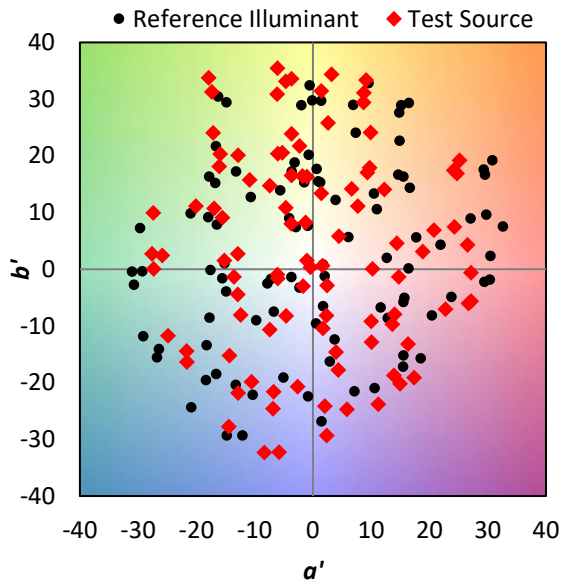
| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 184                      | NR            | 620    | 474                      | NR            | 750    | 13                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 239                      | NR            | 625    | 432                      | NR            | 755    | 12                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 305                      | NR            | 630    | 392                      | NR            | 760    | 10                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 371                      | NR            | 635    | 354                      | NR            | 765    | 9                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 432                      | NR            | 640    | 318                      | NR            | 770    | 8                        | NR            | 900    | 0                        | NR            |
| 385    | 1                        | NR            | 515    | 488                      | NR            | 645    | 283                      | NR            | 775    | 7                        | NR            | 905    | 0                        | NR            |
| 390    | 3                        | NR            | 520    | 529                      | NR            | 650    | 251                      | NR            | 780    | 6                        | NR            | 910    | 0                        | NR            |
| 395    | 6                        | NR            | 525    | 563                      | NR            | 655    | 221                      | NR            | 785    | 5                        | NR            | 915    | 0                        | NR            |
| 400    | 9                        | NR            | 530    | 589                      | NR            | 660    | 193                      | NR            | 790    | 4                        | NR            | 920    | 0                        | NR            |
| 405    | 16                       | NR            | 535    | 611                      | NR            | 665    | 169                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 33                       | NR            | 540    | 629                      | NR            | 670    | 146                      | NR            | 800    | 3                        | NR            | 930    | 0                        | NR            |
| 415    | 64                       | NR            | 545    | 649                      | NR            | 675    | 127                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 124                      | NR            | 550    | 663                      | NR            | 680    | 110                      | NR            | 810    | 2                        | NR            | 940    | 0                        | NR            |
| 425    | 233                      | NR            | 555    | 678                      | NR            | 685    | 95                       | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 397                      | NR            | 560    | 693                      | NR            | 690    | 83                       | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 617                      | NR            | 565    | 705                      | NR            | 695    | 71                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 868                      | NR            | 570    | 713                      | NR            | 700    | 61                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 994                      | NR            | 575    | 717                      | NR            | 705    | 52                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 736                      | NR            | 580    | 715                      | NR            | 710    | 45                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 454                      | NR            | 585    | 705                      | NR            | 715    | 38                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 314                      | NR            | 590    | 689                      | NR            | 720    | 32                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 210                      | NR            | 595    | 665                      | NR            | 725    | 27                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 146                      | NR            | 600    | 635                      | NR            | 730    | 23                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 126                      | NR            | 605    | 599                      | NR            | 735    | 19                       | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 126                      | NR            | 610    | 561                      | NR            | 740    | 17                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 144                      | NR            | 615    | 517                      | NR            | 745    | 15                       | NR            | 875    | 0                        | NR            |        |                          |               |

**Summary**

$R_f = 73.1$   
 $R_g = 94.9$   
 $CIE R_a = 70.8$   
 $R_9 = -40.0$

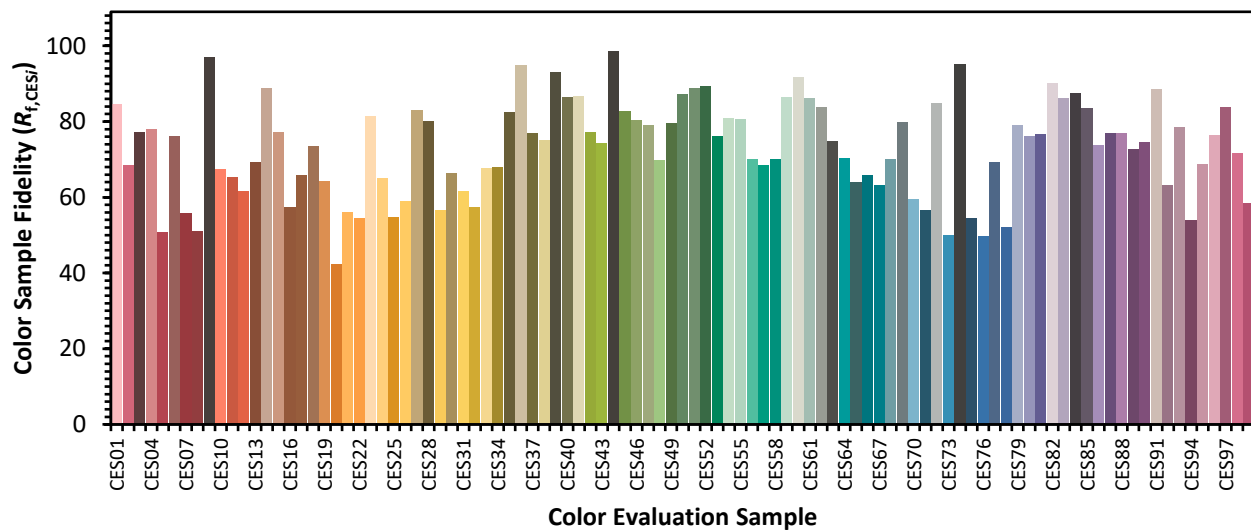


**Color Vector Graphics**



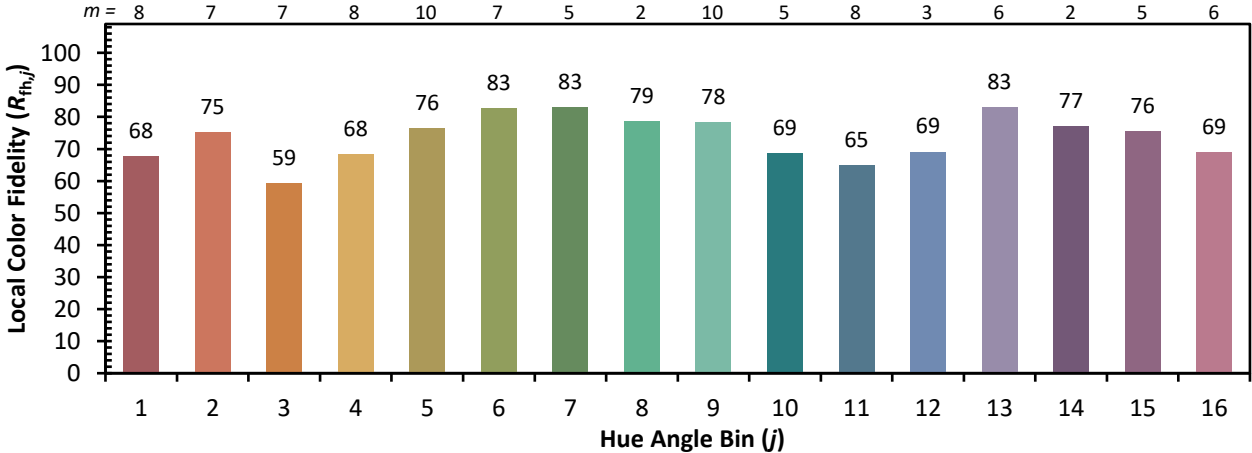
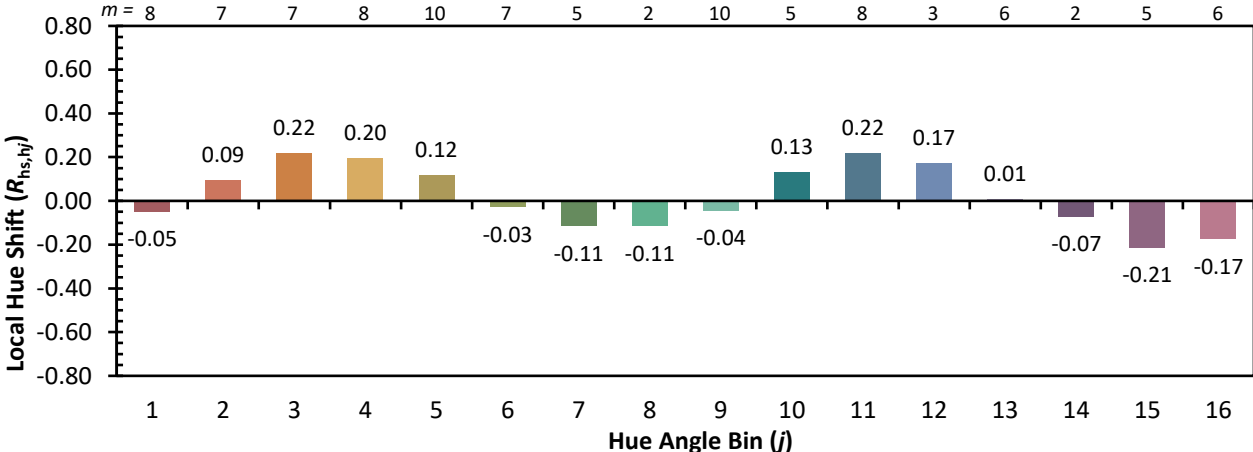
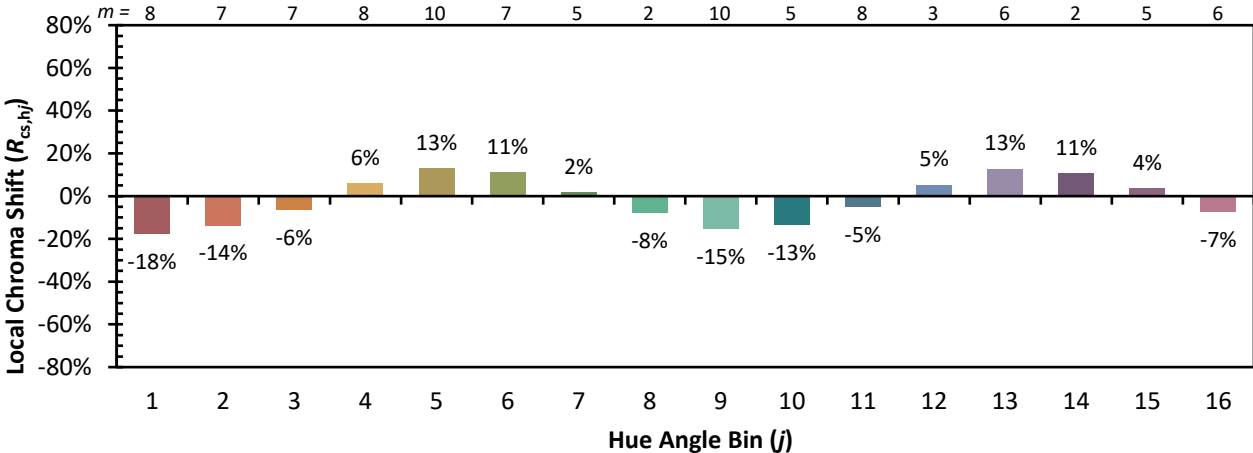
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 59 | CES51 = 89 | CES76 = 50 |
| CES02 = 59 | CES27 = 83 | CES52 = 89 | CES77 = 69 |
| CES03 = 30 | CES28 = 80 | CES53 = 76 | CES78 = 52 |
| CES04 = 69 | CES29 = 57 | CES54 = 81 | CES79 = 79 |
| CES05 = 46 | CES30 = 66 | CES55 = 81 | CES80 = 76 |
| CES06 = 50 | CES31 = 62 | CES56 = 70 | CES81 = 77 |
| CES07 = 39 | CES32 = 57 | CES57 = 69 | CES82 = 90 |
| CES08 = 38 | CES33 = 68 | CES58 = 70 | CES83 = 86 |
| CES09 = 29 | CES34 = 68 | CES59 = 86 | CES84 = 88 |
| CES10 = 73 | CES35 = 83 | CES60 = 92 | CES85 = 84 |
| CES11 = 56 | CES36 = 95 | CES61 = 86 | CES86 = 74 |
| CES12 = 61 | CES37 = 77 | CES62 = 84 | CES87 = 77 |
| CES13 = 41 | CES38 = 75 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 93 | CES64 = 70 | CES89 = 73 |
| CES15 = 70 | CES40 = 86 | CES65 = 64 | CES90 = 75 |
| CES16 = 46 | CES41 = 87 | CES66 = 66 | CES91 = 89 |
| CES17 = 49 | CES42 = 77 | CES67 = 63 | CES92 = 63 |
| CES18 = 55 | CES43 = 74 | CES68 = 70 | CES93 = 78 |
| CES19 = 71 | CES44 = 99 | CES69 = 80 | CES94 = 54 |
| CES20 = 64 | CES45 = 83 | CES70 = 60 | CES95 = 69 |
| CES21 = 85 | CES46 = 80 | CES71 = 57 | CES96 = 76 |
| CES22 = 77 | CES47 = 79 | CES72 = 85 | CES97 = 84 |
| CES23 = 91 | CES48 = 70 | CES73 = 50 | CES98 = 72 |
| CES24 = 90 | CES49 = 80 | CES74 = 95 | CES99 = 58 |
| CES25 = 71 | CES50 = 87 | CES75 = 55 |            |

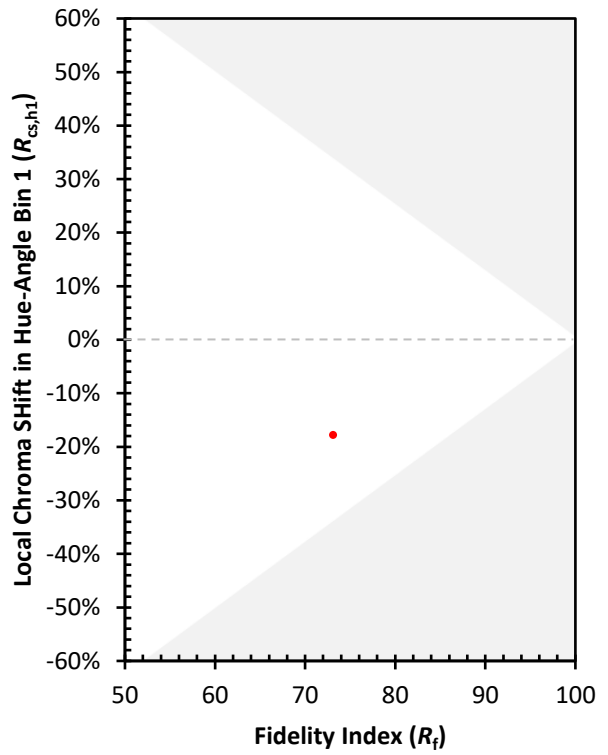
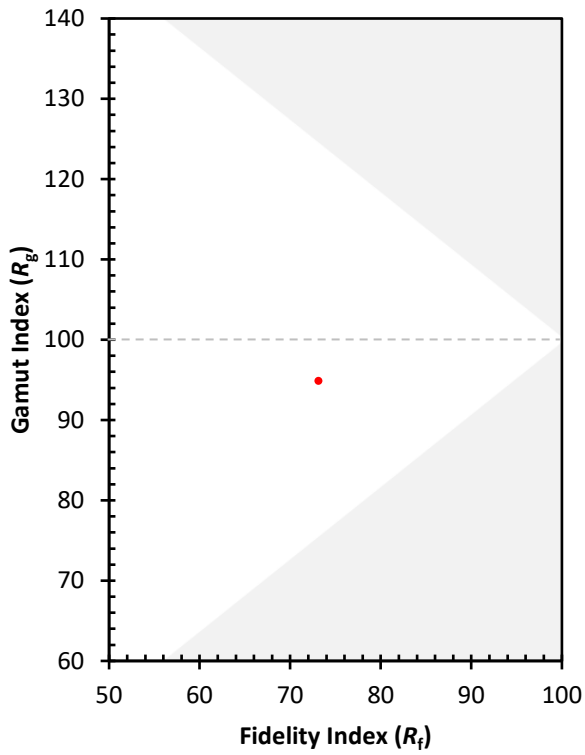




Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)