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: McGRAW-EDISON

Report Number: P821499

Luminaire Tested: **TT-D2-735-12VDC-WQ**

Issue Date: 5/19/2020

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: | P821499 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1908-473-14) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 5/19/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | TT-D2-735-12VDC-WQ |
| Description: | TOPTIER LED PARKING GARAGE LUMINAIRE |
| | 3500K, 70 CRI LEDS AND WIDE DISTRIBUTION |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 4984 lumens |
| Efficiency: | N/A |
| Efficacy: | 131.2 lumens/watt |
| Luminous Opening: | Circular (Dia: 1.12' x H: 0') |
| IES Classification: | Type V - Short |
| BUG Rating: | B3 - U0 - G2 |

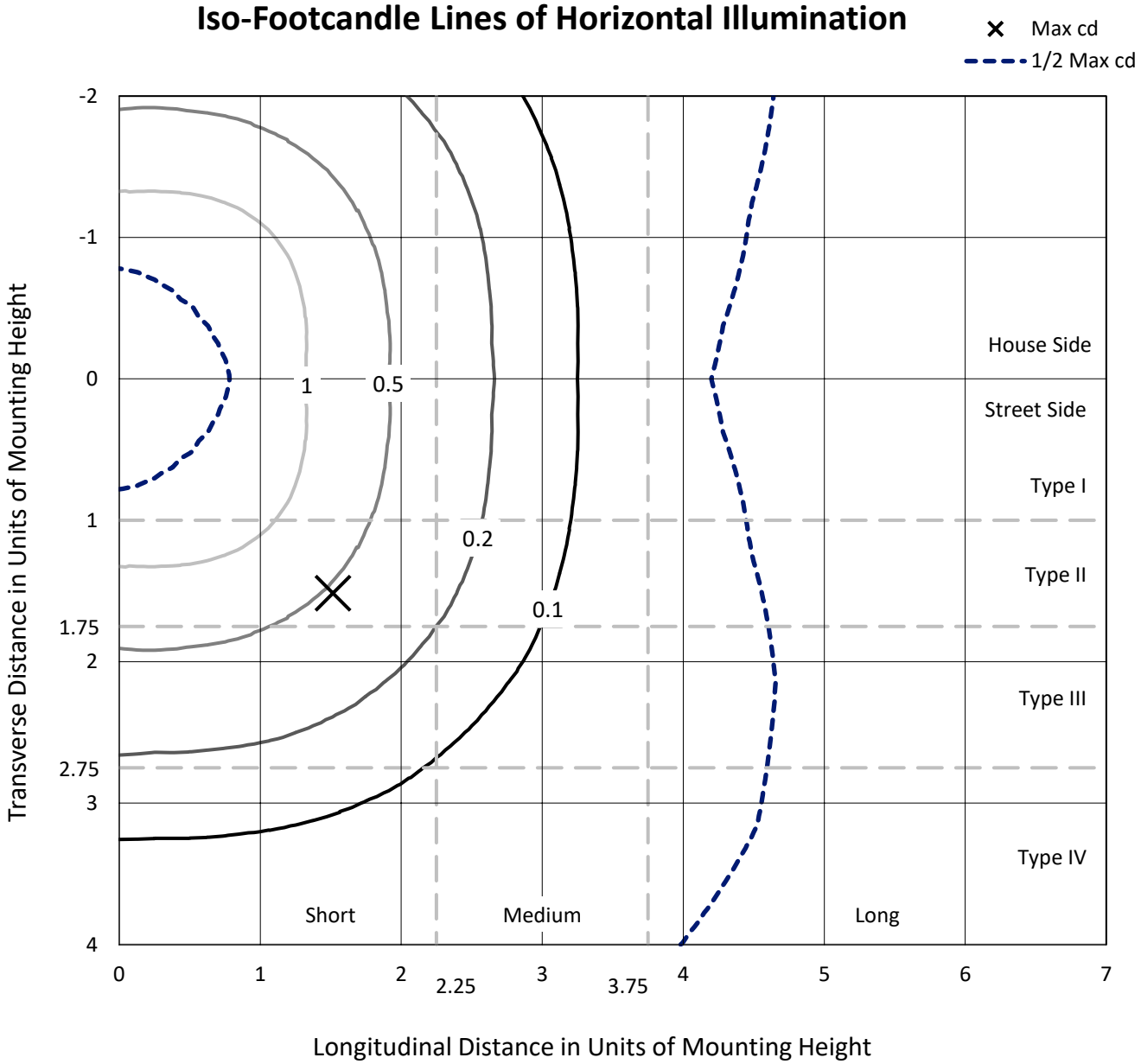
| | |
|---|---|
| Input Watts (W): | 38 |
| Input Voltage (V): | NR |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 25 FT |

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Scaled Data Report

REPORT NUMBER: P821499
CATALOG NUMBER: TT-D2-735-12VDC-WQ

## Iso-Footcandle Lines of Horizontal Illumination



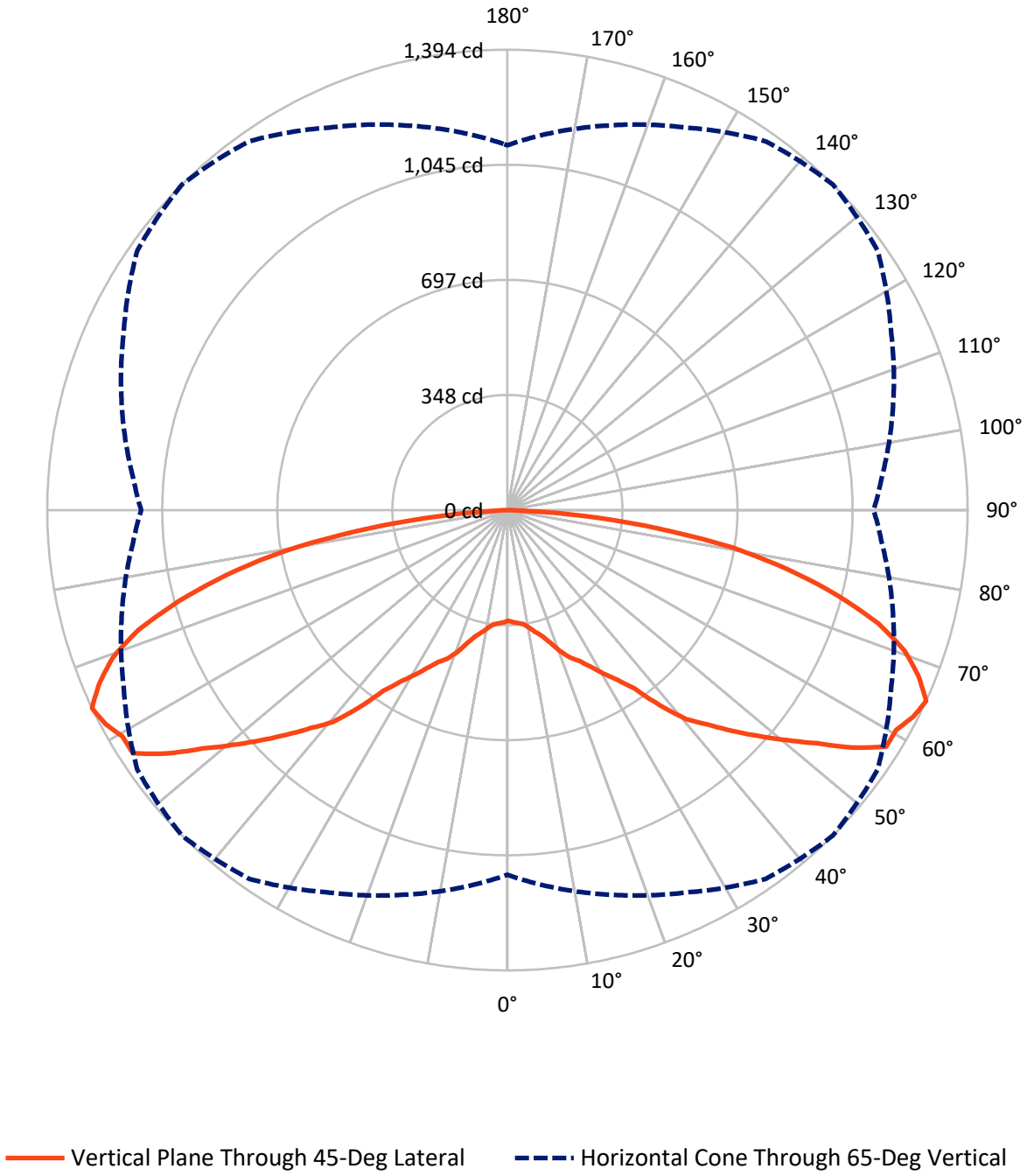

Based on 15 foot mounting height. Maximum calculated value = 1.7 fc
Type V - Short - N/A

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Scaled Data Report

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## Luminous Intensity Polar Plot



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Scaled Data Report

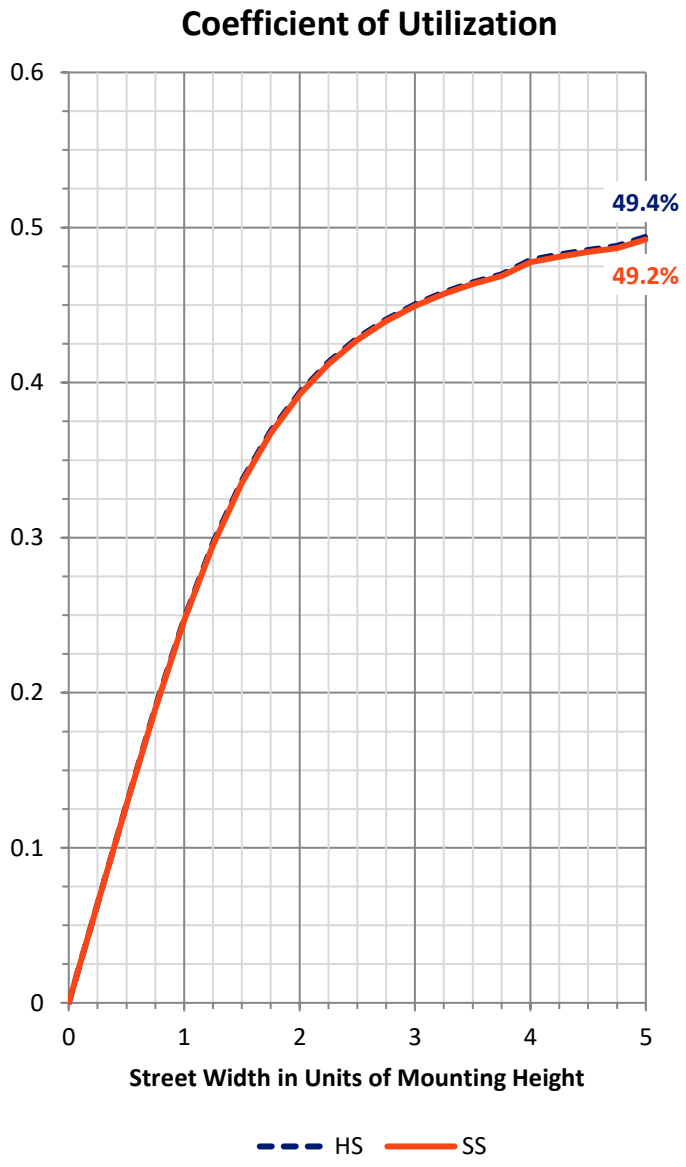
REPORT NUMBER: P821499
CATALOG NUMBER: TT-D2-735-12VDC-WQ

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 2492.0 | 0.0 | 2492.0 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Street Side** | Lumens | 2492.0 | 0.0 | 2492.0 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Total** | Lumens | 4984.0 | 0.0 | 4984.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 33.4 | 0.7 |
| 10°-20° | 115.0 | 2.3 |
| 20°-30° | 236.2 | 4.7 |
| 30°-40° | 419.7 | 8.4 |
| 40°-50° | 707.5 | 14.2 |
| 50°-60° | 1043.6 | 20.9 |
| 60°-70° | 1224.8 | 24.6 |
| 70°-80° | 954.2 | 19.1 |
| 80°-90° | 249.5 | 5.0 |
| 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° | 4984.0 | 100.0 |
| 0°-180° | 4984.0 | 100.0 |



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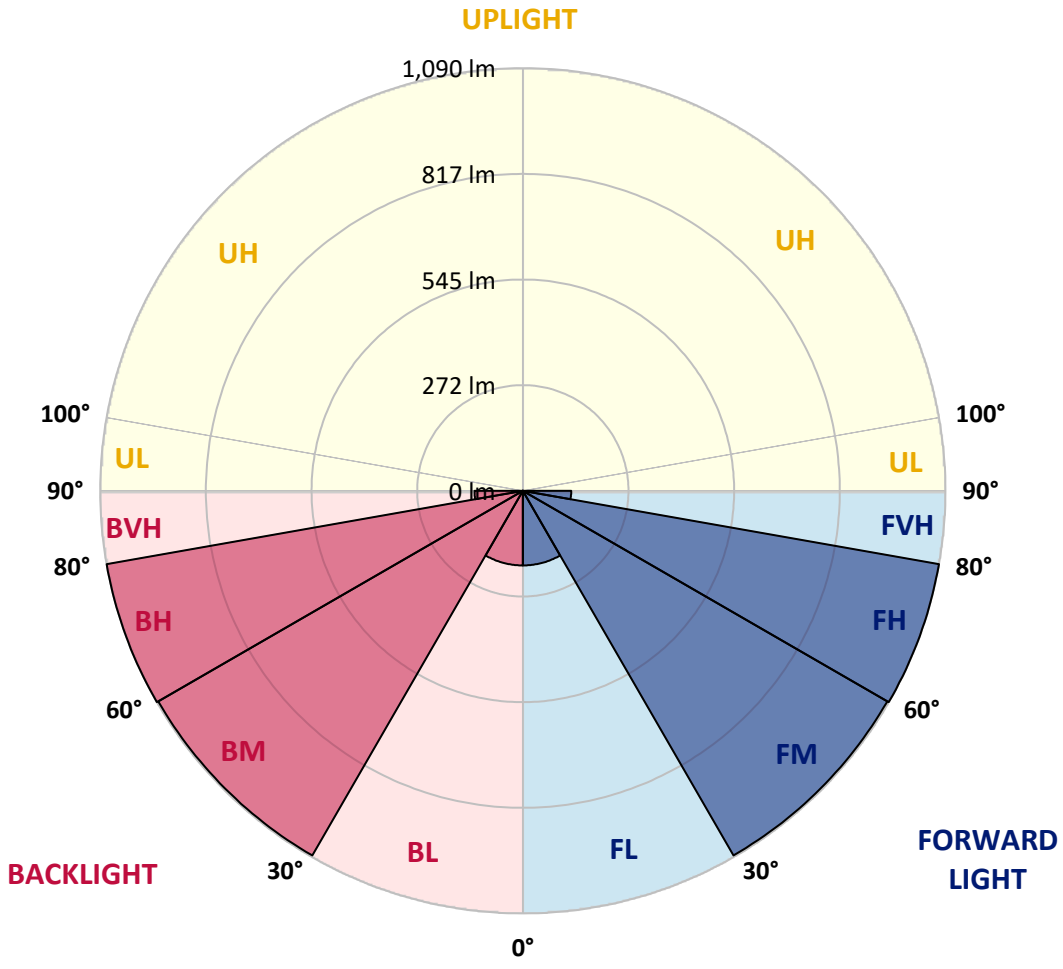
Scaled Data Report

REPORT NUMBER: P821499
CATALOG NUMBER: TT-D2-735-12VDC-WQ

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 192.4 | 3.9 | | | |
| FM | (30°-60°) | 1085.4 | 21.8 | | | |
| FH | (60°-80°) | 1089.5 | 21.9 | | | G1/1800 |
| FVH | (80°-90°) | 124.7 | 2.5 | | | G2/225 |
| BL | (0°-30°) | 192.4 | 3.9 | B1/500 | | |
| BM | (30°-60°) | 1085.4 | 21.8 | B2/2500 | | |
| BH | (60°-80°) | 1089.5 | 21.9 | B3/2500 | | G1/1800 |
| BVH | (80°-90°) | 124.7 | 2.5 | | | G2/225 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

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



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REPORT NUMBER: P821499
CATALOG NUMBER: TT-D2-735-12VDC-WQ

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 335.4 | 335.4 | 335.4 | 335.4 | 335.4 | *335.4* | 335.4 | 335.4 | 335.4 | 335.4 | 335.4 |
| 2.5° | 340.9 | 340.9 | 340.9 | 340.1 | 340.1 | *340.1* | 340.1 | 340.9 | 340.9 | 340.9 | 340.9 |
| 5° | 348.8 | 348.8 | 347.2 | 345.6 | 344.1 | *344.1* | 344.8 | 345.6 | 346.4 | 348.0 | 348.0 |
| 7.5° | 353.5 | 353.5 | 352.7 | 351.1 | 348.8 | *348.8* | 349.5 | 351.1 | 351.9 | 351.9 | 351.1 |
| 10° | 359.7 | 360.5 | 362.9 | 363.7 | 362.1 | *362.1* | 362.9 | 363.7 | 362.1 | 359.7 | 359.7 |
| 12.5° | 374.6 | 375.4 | 378.5 | 380.9 | 380.9 | *379.3* | 380.1 | 381.7 | 377.8 | 373.8 | 374.6 |
| 15° | 395.8 | 395.8 | 396.6 | 398.9 | 397.4 | *395.8* | 397.4 | 398.1 | 395.8 | 395.0 | 396.6 |
| 17.5° | 424.0 | 424.0 | 419.3 | 423.2 | 424.0 | *423.2* | 424.8 | 420.9 | 418.5 | 421.6 | 423.2 |
| 20° | 454.6 | 451.4 | 449.1 | 452.2 | 458.5 | *456.1* | 459.3 | 450.6 | 448.3 | 449.9 | 450.6 |
| 22.5° | 474.2 | 476.5 | 478.1 | 479.6 | 488.3 | *485.1* | 488.3 | 478.9 | 477.3 | 474.2 | 471.8 |
| 25° | 497.7 | 500.0 | 509.4 | 504.7 | 510.2 | *505.5* | 509.4 | 503.9 | 507.1 | 497.7 | 497.7 |
| 27.5° | 524.3 | 529.0 | 534.5 | 532.2 | 539.2 | *536.9* | 539.2 | 531.4 | 532.2 | 528.2 | 526.7 |
| 30° | 560.4 | 560.4 | 558.8 | 563.5 | 576.0 | *574.5* | 575.3 | 565.1 | 558.0 | 558.8 | 561.9 |
| 32.5° | 596.4 | 591.7 | 594.1 | 608.2 | 616.0 | *612.9* | 614.4 | 609.7 | 594.1 | 590.9 | 593.3 |
| 35° | 630.1 | 637.2 | 642.7 | 654.4 | 665.4 | *663.8* | 663.0 | 655.2 | 645.0 | 632.5 | 628.6 |
| 37.5° | 682.6 | 690.5 | 705.4 | 726.5 | 746.1 | *750.0* | 739.8 | 729.7 | 706.1 | 688.1 | 678.7 |
| 40° | 751.6 | 752.4 | 769.6 | 810.4 | 828.4 | *831.5* | 826.1 | 808.8 | 772.8 | 752.4 | 751.6 |
| 42.5° | 811.9 | 806.5 | 834.7 | 869.2 | 885.6 | *887.2* | 883.3 | 869.2 | 834.7 | 805.7 | 811.2 |
| 45° | 859.0 | 859.0 | 892.7 | 920.1 | 946.8 | *953.0* | 946.0 | 916.2 | 893.5 | 859.8 | 857.4 |
| 47.5° | 902.1 | 913.8 | 942.0 | 975.8 | 1013.4 | *1022.0* | 1013.4 | 978.1 | 939.7 | 914.6 | 901.3 |
| 50° | 953.8 | 967.9 | 988.3 | 1040.8 | 1083.1 | *1094.9* | 1082.3 | 1043.9 | 988.3 | 967.1 | 959.3 |
| 52.5° | 1014.2 | 1025.9 | 1058.0 | 1123.9 | 1155.2 | *1172.5* | 1162.3 | 1125.4 | 1059.6 | 1027.5 | 1021.2 |
| 55° | 1086.3 | 1075.3 | 1125.4 | 1188.9 | 1246.9 | *1269.7* | 1249.3 | 1190.5 | 1133.3 | 1075.3 | 1086.3 |
| 57.5° | 1123.1 | 1110.6 | 1181.1 | 1241.4 | 1322.2 | *1351.9* | 1326.9 | 1246.1 | 1181.1 | 1114.5 | 1122.3 |
| 60° | 1126.2 | 1131.7 | 1185.0 | 1283.8 | 1339.4 | *1351.9* | 1344.1 | 1290.8 | 1187.4 | 1136.4 | 1121.5 |
| 62.5° | 1116.8 | 1150.5 | 1196.0 | 1297.9 | 1348.0 | *1378.6* | 1351.9 | 1299.4 | 1200.7 | 1156.0 | 1117.6 |
| 65° | *1104.3* | *1138.0* | *1205.4* | *1277.5* | *1362.9* | *1393.5* | *1368.4* | *1281.4* | *1208.5* | *1138.0* | *1109.0* |
| 67.5° | 1082.3 | 1070.6 | 1153.7 | 1250.1 | 1324.5 | *1342.5* | 1326.9 | 1251.6 | 1152.9 | 1069.0 | 1084.7 |
| 70° | 1012.6 | 1002.4 | 1073.7 | 1179.5 | 1250.8 | *1275.9* | 1257.1 | 1181.1 | 1075.3 | 1004.7 | 1014.2 |
| 72.5° | 909.1 | 912.3 | 981.2 | 1082.3 | 1159.1 | *1174.8* | 1164.6 | 1081.6 | 985.2 | 916.2 | 903.6 |
| 75° | 788.4 | 796.3 | 862.1 | 953.8 | 1023.6 | *1033.0* | 1022.8 | 957.7 | 861.3 | 801.0 | 784.5 |
| 77.5° | 648.1 | 659.9 | 713.2 | 804.9 | 851.1 | *872.3* | 855.8 | 807.2 | 717.1 | 663.0 | 646.6 |
| 80° | 502.4 | 506.3 | 543.9 | 617.6 | 678.7 | *692.8* | 677.1 | 619.9 | 548.6 | 507.9 | 496.1 |
| 82.5° | 329.2 | 335.4 | 369.1 | 425.6 | 465.5 | *461.6* | 465.5 | 420.9 | 373.1 | 333.9 | 314.3 |
| 85° | 146.6 | 159.1 | 181.8 | 208.5 | 234.3 | *241.4* | 234.3 | 211.6 | 181.8 | 156.0 | 152.8 |
| 87.5° | 10.2 | 11.8 | 14.1 | 14.9 | 16.5 | *12.5* | 12.5 | 12.5 | 11.0 | 12.5 | 10.2 |
| 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: SP1-2407-176-4

Test Date: 09/24/2024

Luminaire Tested: MEM2-HTN-VA-30-735-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-735-U-WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

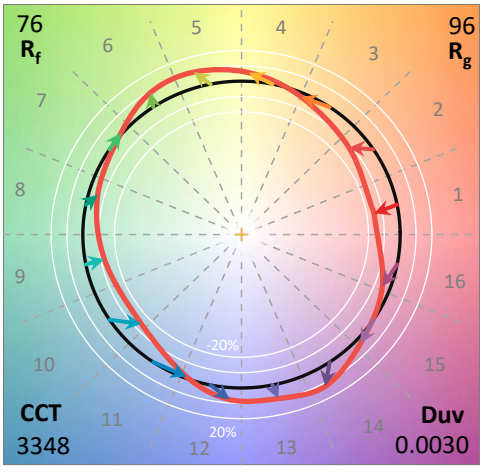
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2407-176-4 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 09/27/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | Streetworks |
| Catalog Number: | **MEM2-HTN-VA-30-735-U-WQ** |
| Description: | EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 3348 |
| CIE u': | 0.2384 |
| CIE v': | 0.5184 |
| Duv: | 0.0030 |
| CIE x: | 0.4177 |
| CIE y: | 0.4036 |
| CIE z: | 0.1787 |
| Peak Wavelength (nm): | 593 |
| Dominant Wavelength (nm): | 580 |
| Purity: | 46.5223 |
| Rf: | 75.8 |
| Rg: | 95.8 |

| | |
|---|---|
| CRI (Ra): | 73.4 |
| R1: | 70.8 |
| R2: | 79.9 |
| R3: | 87.6 |
| R4: | 72.6 |
| R5: | 69.3 |
| R6: | 71.3 |
| R7: | 82.1 |
| R8: | 53.3 |
| R9: | -19.2 |
| R10: | 52.5 |
| R11: | 68.0 |
| R12: | 42.6 |
| R13: | 72.0 |
| R14: | 92.6 |
| R15: | 63.8 |




## Test Conditions

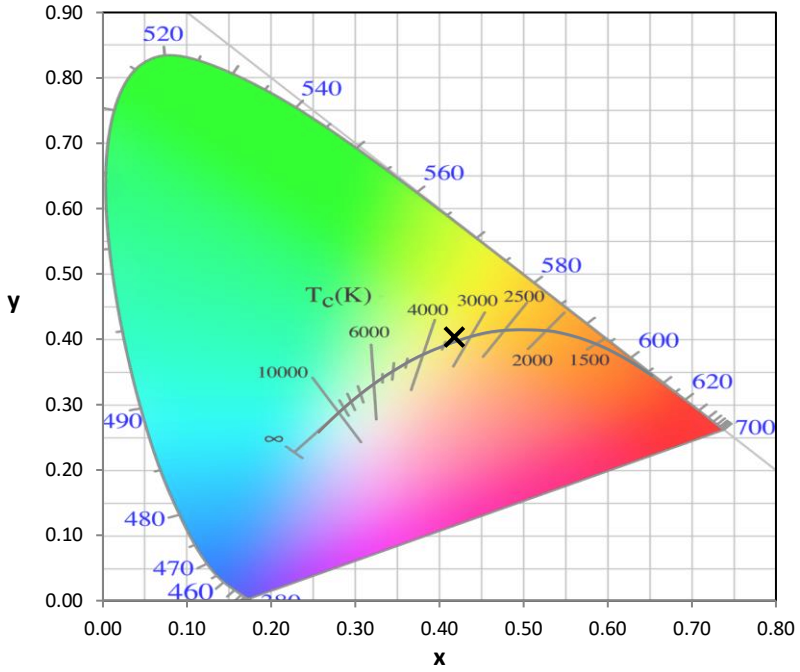
| | |
|---|---|
| Stabilization Time: | 30M |
| Operation Time: | 1H 30M |
| Sphere Temperature (°C): | 25.2 |

REPORT NUMBER: SP1-2407-176-4

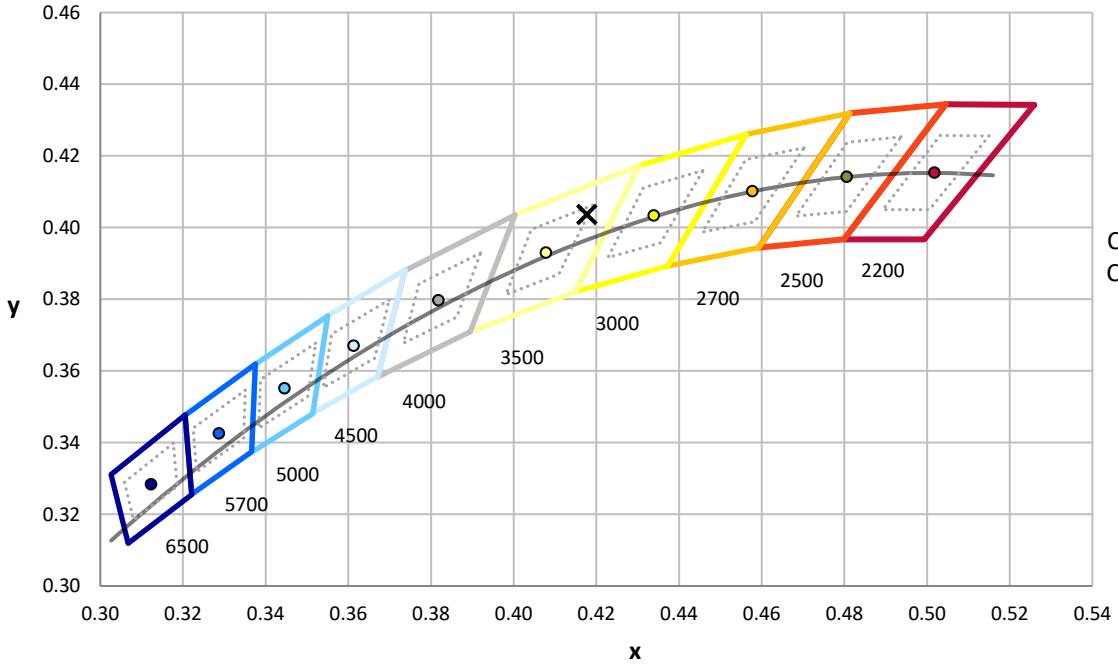
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC 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: SP1-2407-176-4

## CIE 1931 Chromaticity Diagram




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

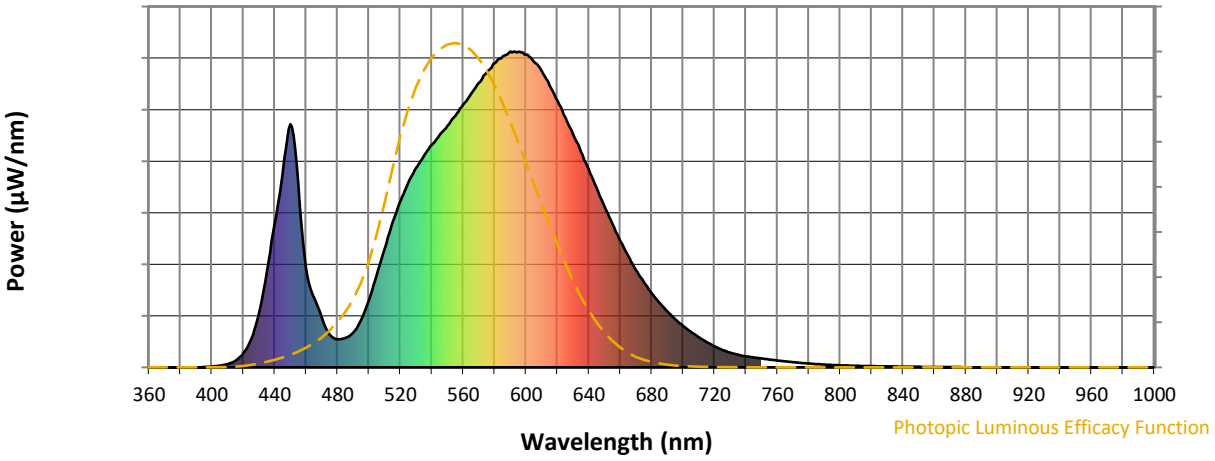



CCT = 3348K
CIE x = 0.4177
CIE y = 0.4036
Duv = 0.0030

Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2407-176-4

## Photopic Flux vs. Wavelength

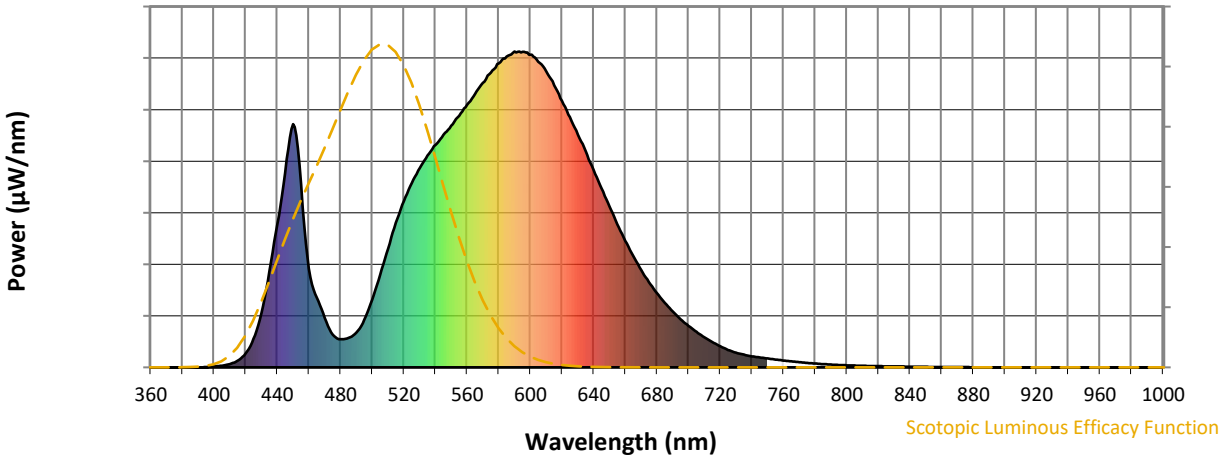



## Photopic Lumens: NR

| 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 | 110 | NR | 620 | 844 | NR | 750 | 28 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 150 | NR | 625 | 792 | NR | 755 | 25 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 214 | NR | 630 | 737 | NR | 760 | 22 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 293 | NR | 635 | 683 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 376 | NR | 640 | 625 | NR | 770 | 16 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 458 | NR | 645 | 566 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 526 | NR | 650 | 509 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 584 | NR | 655 | 453 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 631 | NR | 660 | 401 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 671 | NR | 665 | 353 | NR | 795 | 8 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 704 | NR | 670 | 308 | NR | 800 | 7 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 737 | NR | 675 | 269 | NR | 805 | 6 | NR | 935 | 0 | NR |
| 420 | 44 | NR | 550 | 766 | NR | 680 | 235 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 90 | NR | 555 | 797 | NR | 685 | 204 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 171 | NR | 560 | 832 | NR | 690 | 177 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 305 | NR | 565 | 866 | NR | 695 | 152 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 455 | NR | 570 | 901 | NR | 700 | 131 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 615 | NR | 575 | 933 | NR | 705 | 112 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 771 | NR | 580 | 963 | NR | 710 | 96 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 579 | NR | 585 | 984 | NR | 715 | 80 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 313 | NR | 590 | 1000 | NR | 720 | 67 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 221 | NR | 595 | 999 | NR | 725 | 55 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 156 | NR | 600 | 990 | NR | 730 | 46 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 103 | NR | 605 | 968 | NR | 735 | 40 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 89 | NR | 610 | 937 | NR | 740 | 35 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 93 | NR | 615 | 893 | NR | 745 | 31 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-176-4

## Scotopic Flux vs. Wavelength

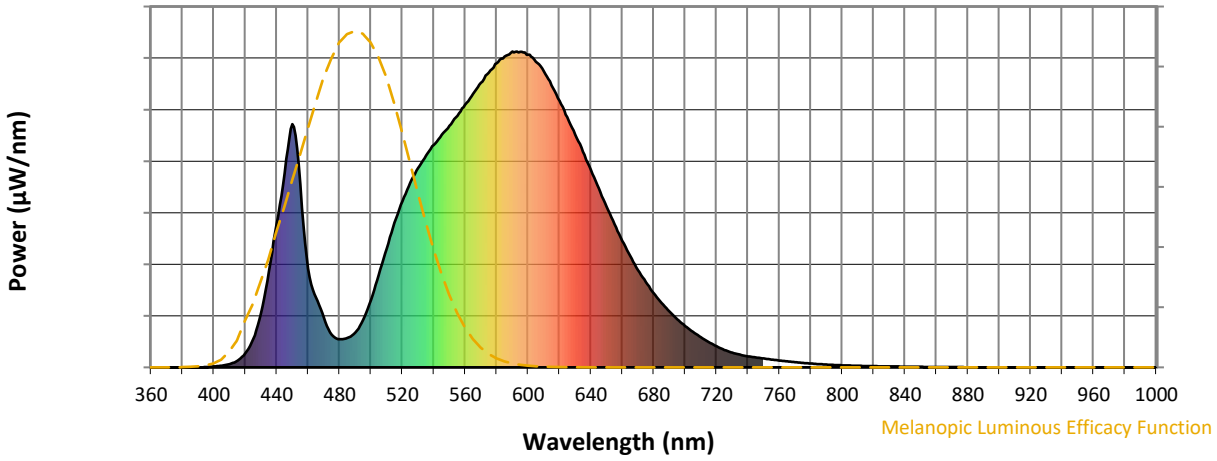



**Scotopic Lumens: NR** **S/P: 1.31**

| 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 | 110 | NR | 620 | 844 | NR | 750 | 28 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 150 | NR | 625 | 792 | NR | 755 | 25 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 214 | NR | 630 | 737 | NR | 760 | 22 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 293 | NR | 635 | 683 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 376 | NR | 640 | 625 | NR | 770 | 16 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 458 | NR | 645 | 566 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 526 | NR | 650 | 509 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 584 | NR | 655 | 453 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 631 | NR | 660 | 401 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 671 | NR | 665 | 353 | NR | 795 | 8 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 704 | NR | 670 | 308 | NR | 800 | 7 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 737 | NR | 675 | 269 | NR | 805 | 6 | NR | 935 | 0 | NR |
| 420 | 44 | NR | 550 | 766 | NR | 680 | 235 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 90 | NR | 555 | 797 | NR | 685 | 204 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 171 | NR | 560 | 832 | NR | 690 | 177 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 305 | NR | 565 | 866 | NR | 695 | 152 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 455 | NR | 570 | 901 | NR | 700 | 131 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 615 | NR | 575 | 933 | NR | 705 | 112 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 771 | NR | 580 | 963 | NR | 710 | 96 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 579 | NR | 585 | 984 | NR | 715 | 80 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 313 | NR | 590 | 1000 | NR | 720 | 67 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 221 | NR | 595 | 999 | NR | 725 | 55 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 156 | NR | 600 | 990 | NR | 730 | 46 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 103 | NR | 605 | 968 | NR | 735 | 40 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 89 | NR | 610 | 937 | NR | 740 | 35 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 93 | NR | 615 | 893 | NR | 745 | 31 | NR | 875 | 1 | NR | | | |

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## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.4**

| 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 | 110 | NR | 620 | 844 | NR | 750 | 28 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 150 | NR | 625 | 792 | NR | 755 | 25 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 214 | NR | 630 | 737 | NR | 760 | 22 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 293 | NR | 635 | 683 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 376 | NR | 640 | 625 | NR | 770 | 16 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 458 | NR | 645 | 566 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 526 | NR | 650 | 509 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 584 | NR | 655 | 453 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 631 | NR | 660 | 401 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 671 | NR | 665 | 353 | NR | 795 | 8 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 704 | NR | 670 | 308 | NR | 800 | 7 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 737 | NR | 675 | 269 | NR | 805 | 6 | NR | 935 | 0 | NR |
| 420 | 44 | NR | 550 | 766 | NR | 680 | 235 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 90 | NR | 555 | 797 | NR | 685 | 204 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 171 | NR | 560 | 832 | NR | 690 | 177 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 305 | NR | 565 | 866 | NR | 695 | 152 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 455 | NR | 570 | 901 | NR | 700 | 131 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 615 | NR | 575 | 933 | NR | 705 | 112 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 771 | NR | 580 | 963 | NR | 710 | 96 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 579 | NR | 585 | 984 | NR | 715 | 80 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 313 | NR | 590 | 1000 | NR | 720 | 67 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 221 | NR | 595 | 999 | NR | 725 | 55 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 156 | NR | 600 | 990 | NR | 730 | 46 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 103 | NR | 605 | 968 | NR | 735 | 40 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 89 | NR | 610 | 937 | NR | 740 | 35 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 93 | NR | 615 | 893 | NR | 745 | 31 | NR | 875 | 1 | NR | | | |

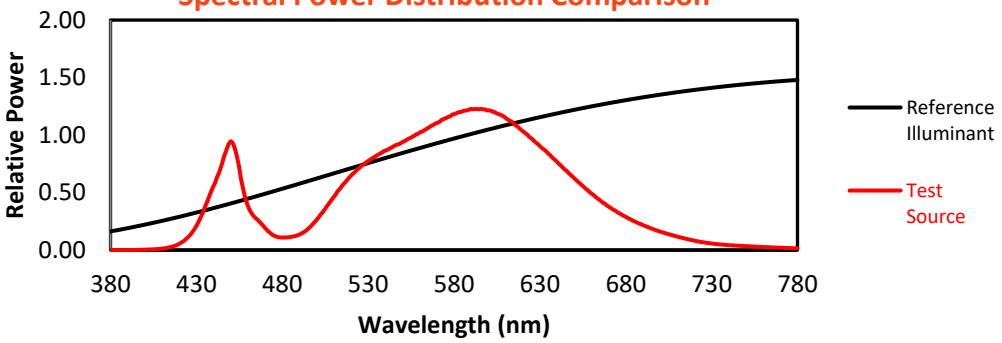
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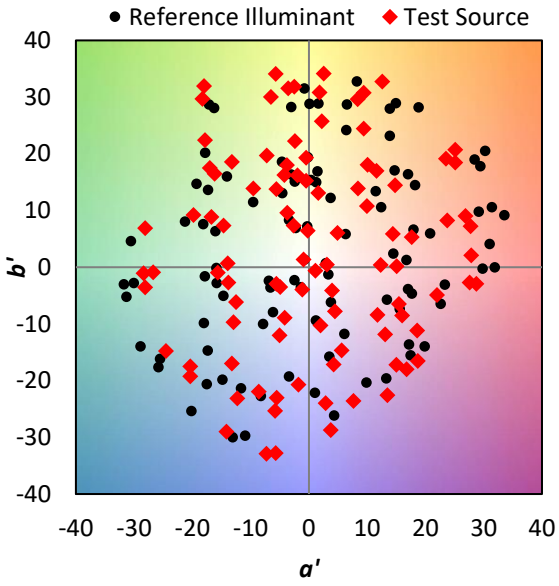
## Summary

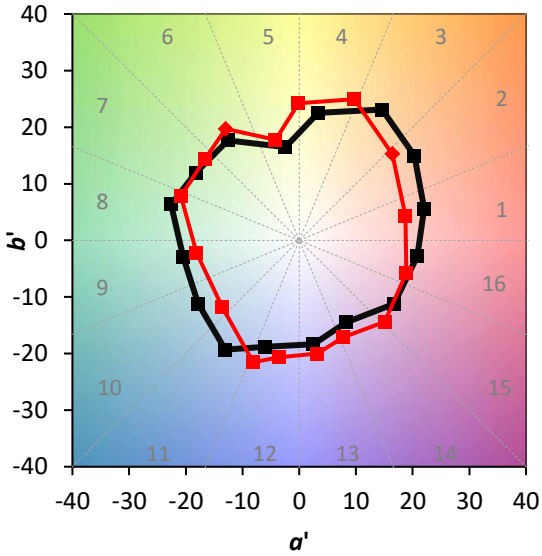
$R_f$ = 75.8
$R_g$ = 95.8
CIE $R_a$ = 73.4
$R_9$ = -19.2

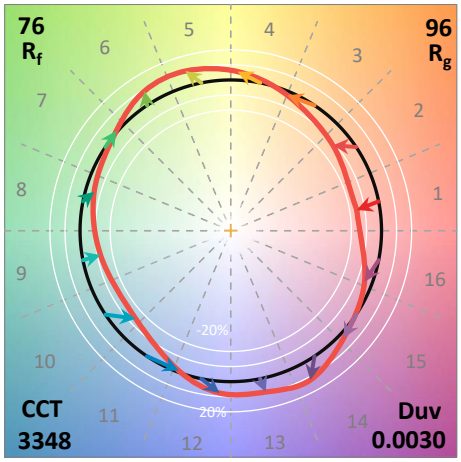
## Spectral Power Distribution Comparison

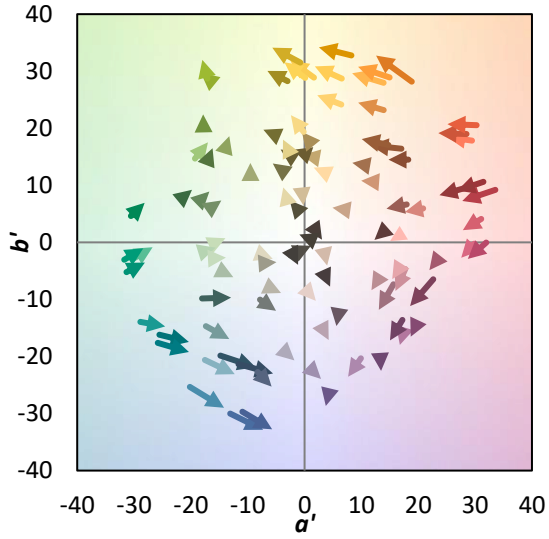



## Color Vector Graphics



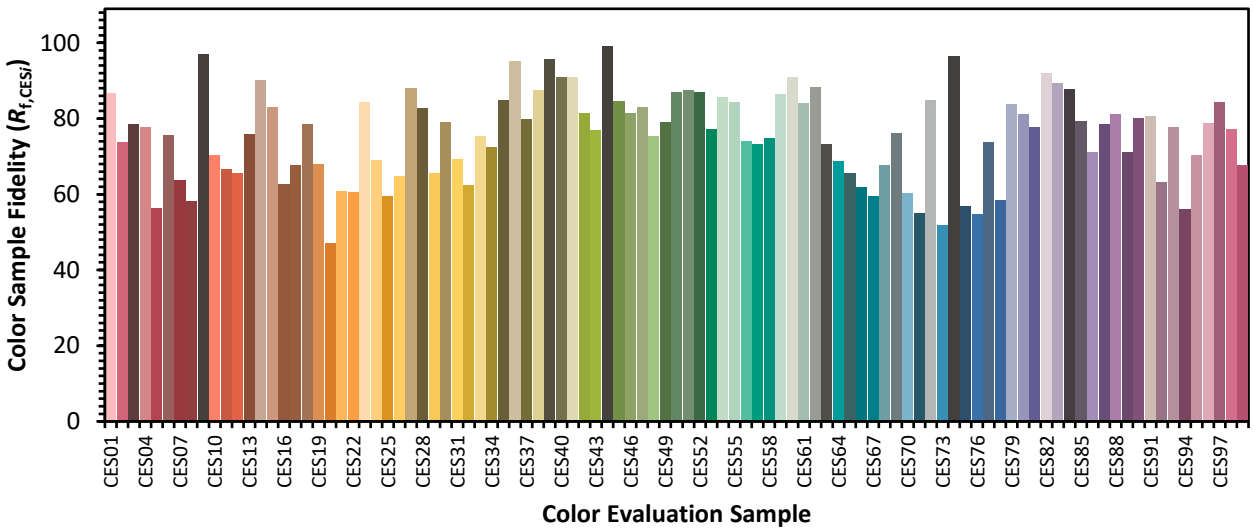



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**Individual Sample Fidelity Index ($R_{f,i}$)**

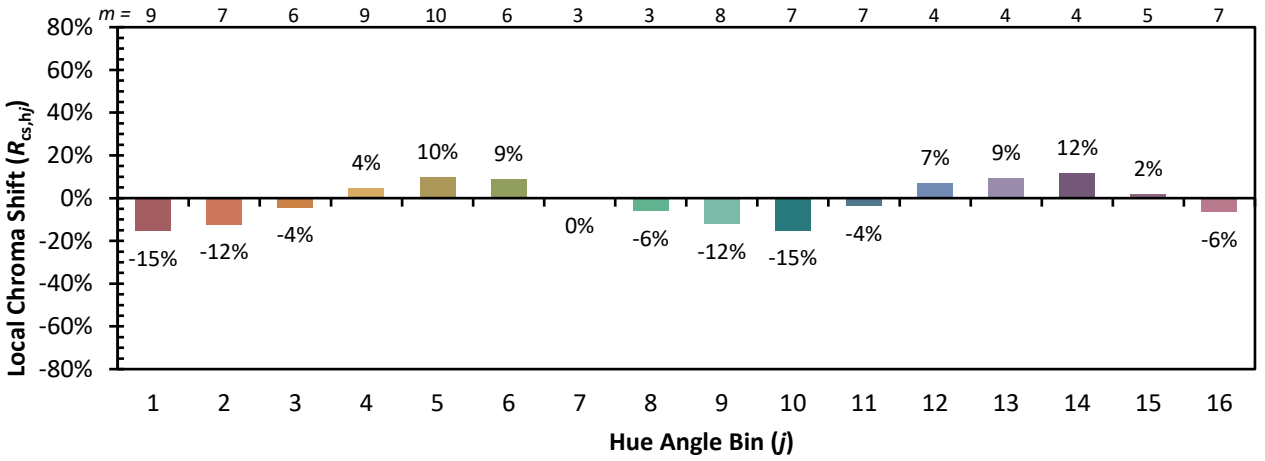
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 65 | CES51 = 88 | CES76 = 55 |
| CES02 = 62 | CES27 = 88 | CES52 = 87 | CES77 = 74 |
| CES03 = 31 | CES28 = 83 | CES53 = 77 | CES78 = 58 |
| CES04 = 70 | CES29 = 66 | CES54 = 86 | CES79 = 84 |
| CES05 = 48 | CES30 = 79 | CES55 = 84 | CES80 = 81 |
| CES06 = 51 | CES31 = 69 | CES56 = 74 | CES81 = 78 |
| CES07 = 41 | CES32 = 62 | CES57 = 73 | CES82 = 92 |
| CES08 = 40 | CES33 = 75 | CES58 = 75 | CES83 = 89 |
| CES09 = 29 | CES34 = 73 | CES59 = 87 | CES84 = 88 |
| CES10 = 75 | CES35 = 85 | CES60 = 91 | CES85 = 79 |
| CES11 = 58 | CES36 = 95 | CES61 = 84 | CES86 = 71 |
| CES12 = 64 | CES37 = 80 | CES62 = 88 | CES87 = 79 |
| CES13 = 43 | CES38 = 88 | CES63 = 73 | CES88 = 81 |
| CES14 = 74 | CES39 = 96 | CES64 = 69 | CES89 = 71 |
| CES15 = 71 | CES40 = 91 | CES65 = 66 | CES90 = 80 |
| CES16 = 47 | CES41 = 91 | CES66 = 62 | CES91 = 81 |
| CES17 = 50 | CES42 = 81 | CES67 = 60 | CES92 = 63 |
| CES18 = 56 | CES43 = 77 | CES68 = 68 | CES93 = 78 |
| CES19 = 72 | CES44 = 99 | CES69 = 76 | CES94 = 56 |
| CES20 = 65 | CES45 = 85 | CES70 = 60 | CES95 = 70 |
| CES21 = 87 | CES46 = 82 | CES71 = 55 | CES96 = 79 |
| CES22 = 79 | CES47 = 83 | CES72 = 85 | CES97 = 84 |
| CES23 = 92 | CES48 = 75 | CES73 = 52 | CES98 = 77 |
| CES24 = 91 | CES49 = 79 | CES74 = 96 | CES99 = 68 |
| CES25 = 72 | CES50 = 87 | CES75 = 57 | |

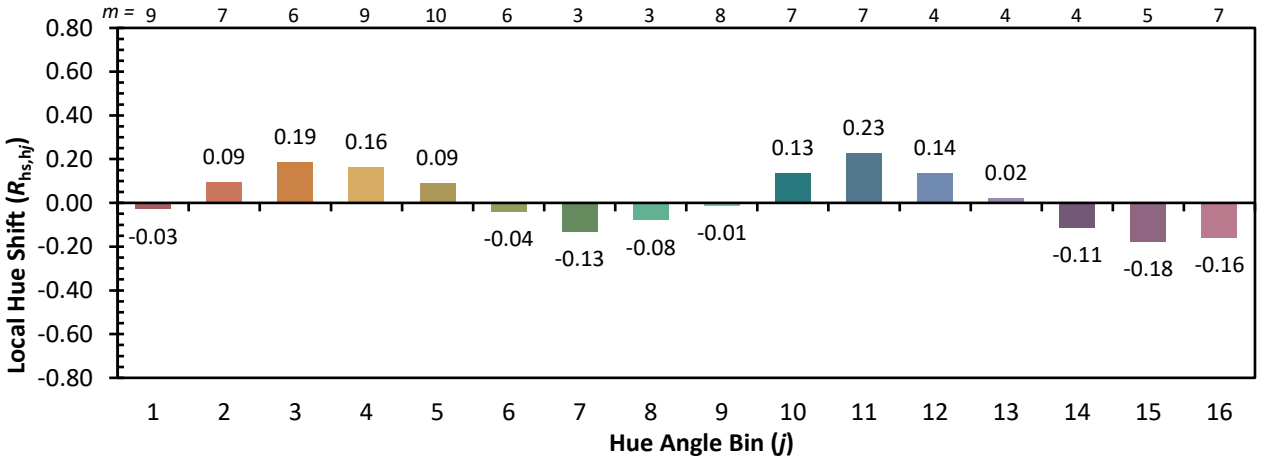


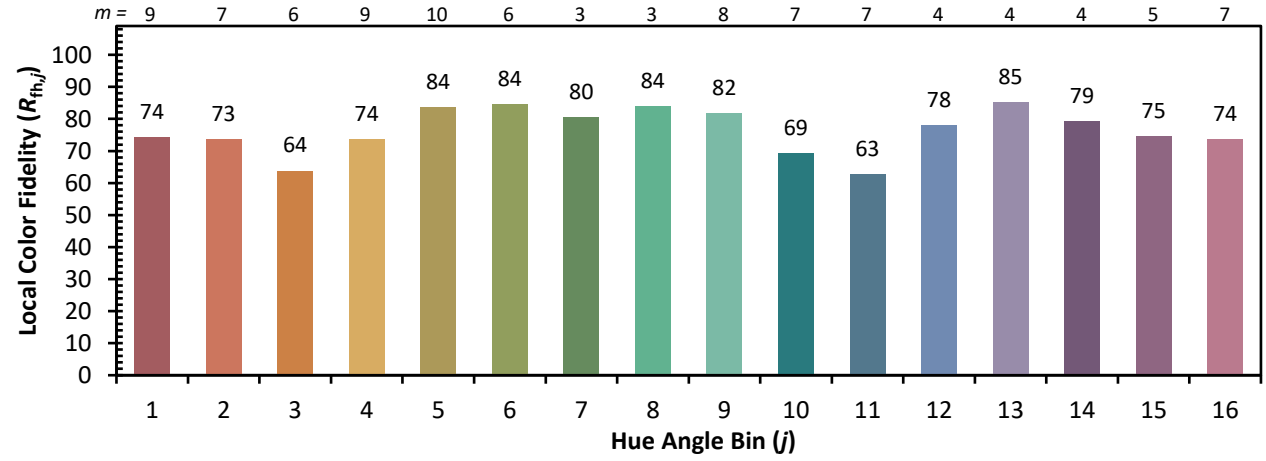
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## Color Rendition by Hue-Angle Bin



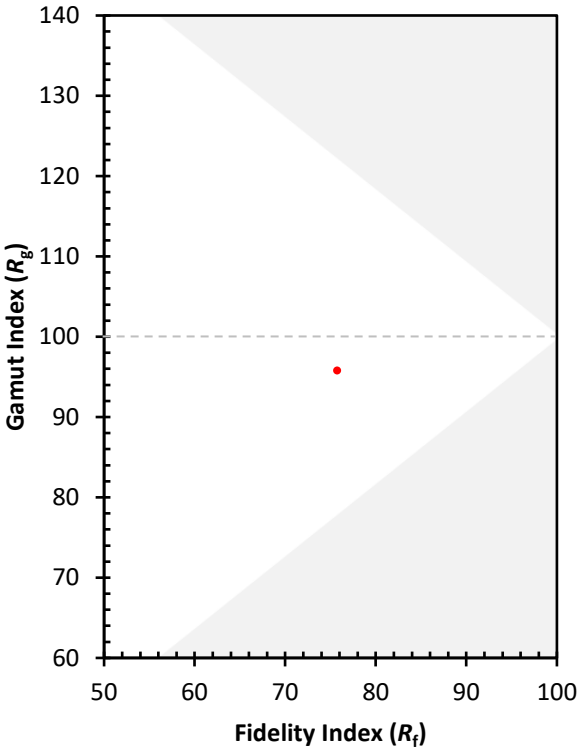



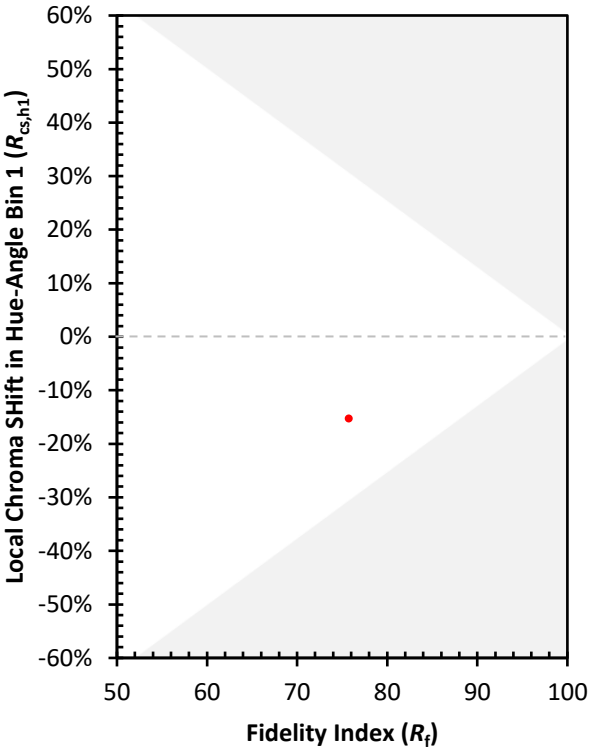



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## Measure Comparisons




(END OF REPORT)