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: P821469

Luminaire Tested: **TT-D5-830-12VDC-WQ**

Issue Date: 2/18/2020

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: | P821469 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1908-473-14) |
| Test Lab: | INNOVATIONS CENTER |
| Issue Date: | 2/18/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | TT-D5-830-12VDC-WQ |
| Description: | TOPTIER LED PARKING GARAGE LUMINAIRE |
| | 3000K, 80 CRI LEDS AND WIDE DISTRIBUTION |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 8483 lumens |
| Efficiency: | N/A |
| Efficacy: | 116.2 lumens/watt |
| Luminous Opening: | Circular (Dia: 1.12' x H: 0') |
| IES Classification: | Type V - Short |
| BUG Rating: | B3 - U0 - G2 |

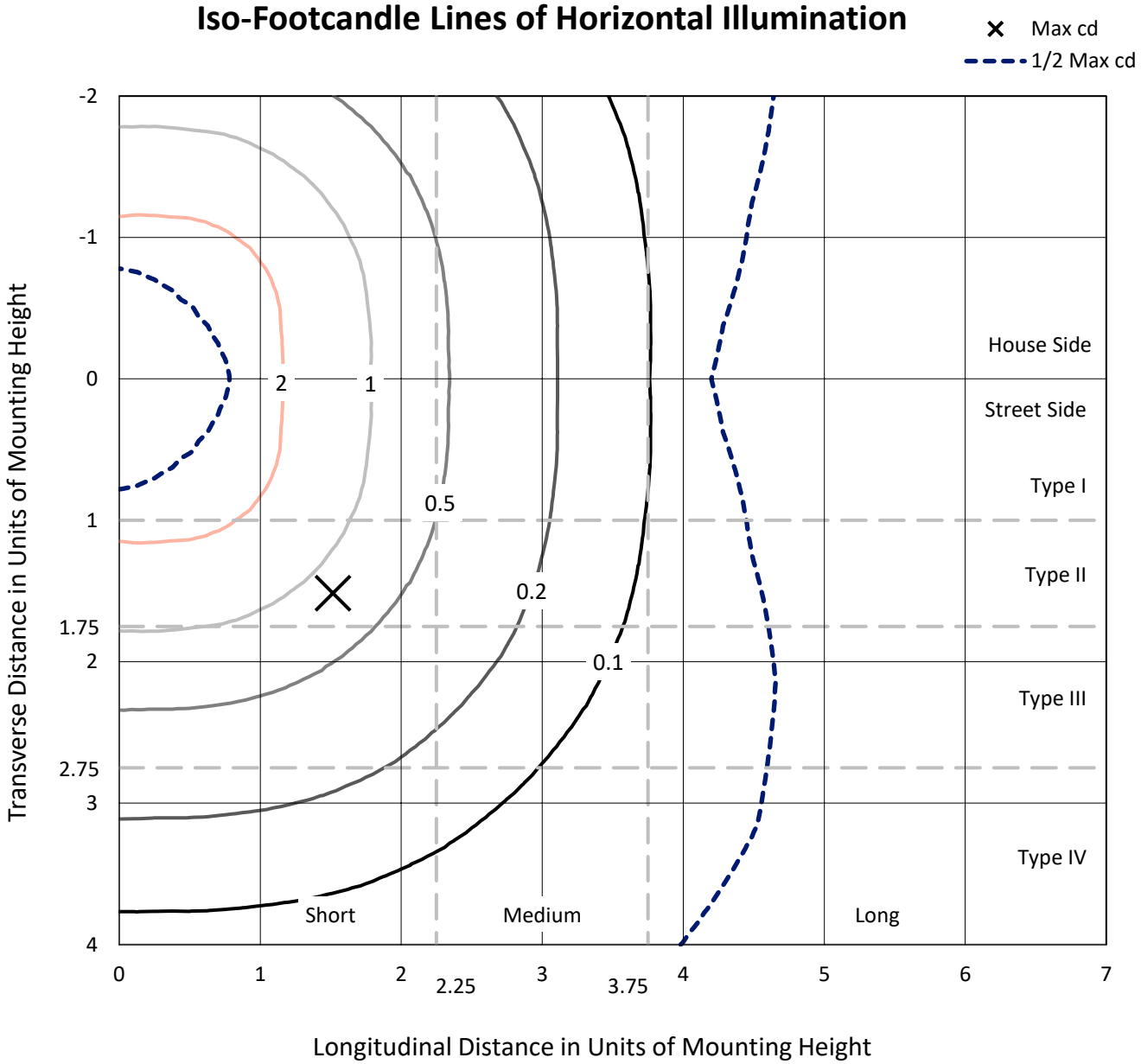
| | |
|---|---|
| Input Watts (W): | 73 |
| Input Voltage (V): | NR |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 25 FT |

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Scaled Data Report

REPORT NUMBER: P821469
CATALOG NUMBER: TT-D5-830-12VDC-WQ

## Iso-Footcandle Lines of Horizontal Illumination



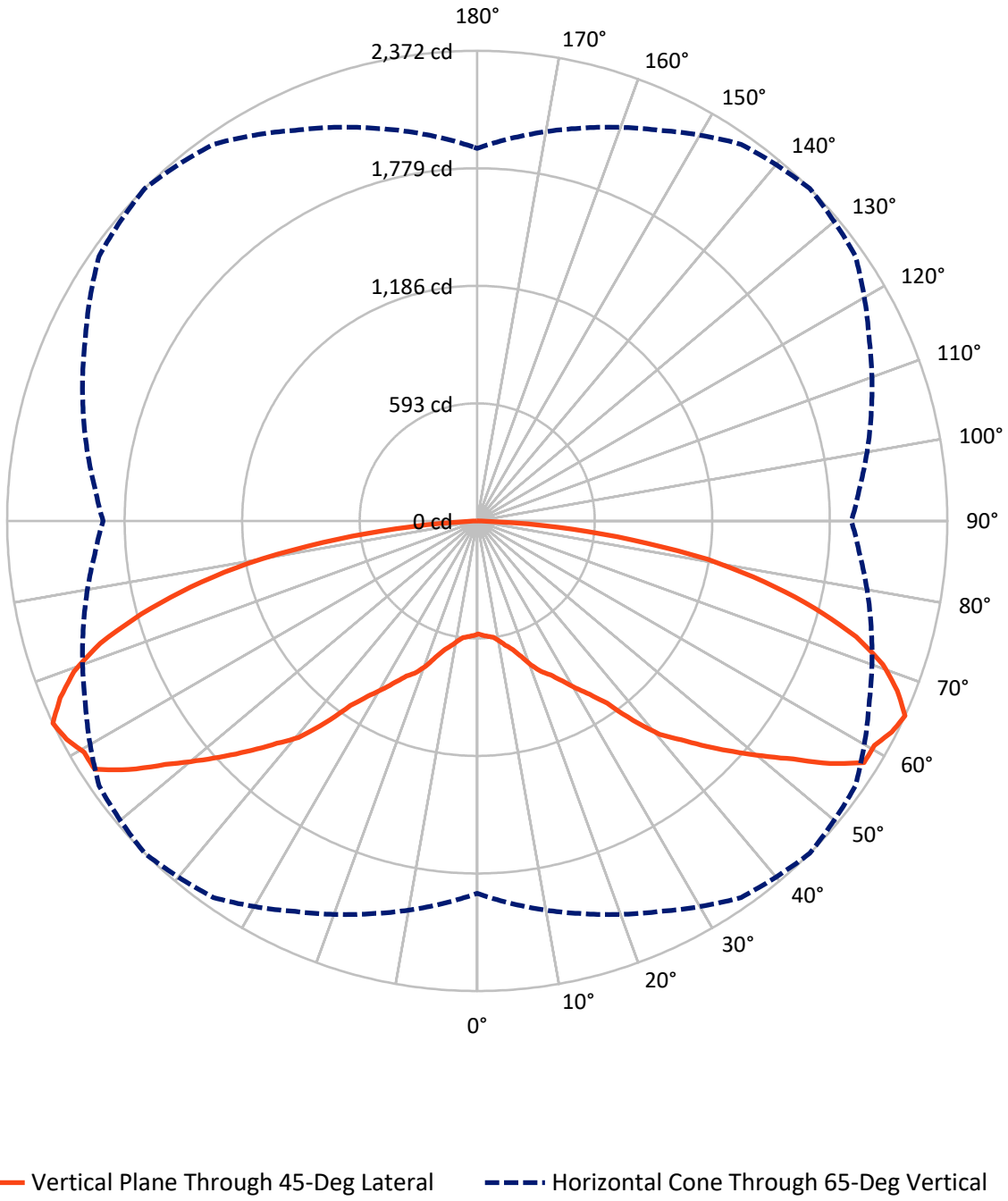

Based on 15 foot mounting height. Maximum calculated value = 2.9 fc
Type V - Short - N/A

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## Luminous Intensity Polar Plot



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Scaled Data Report

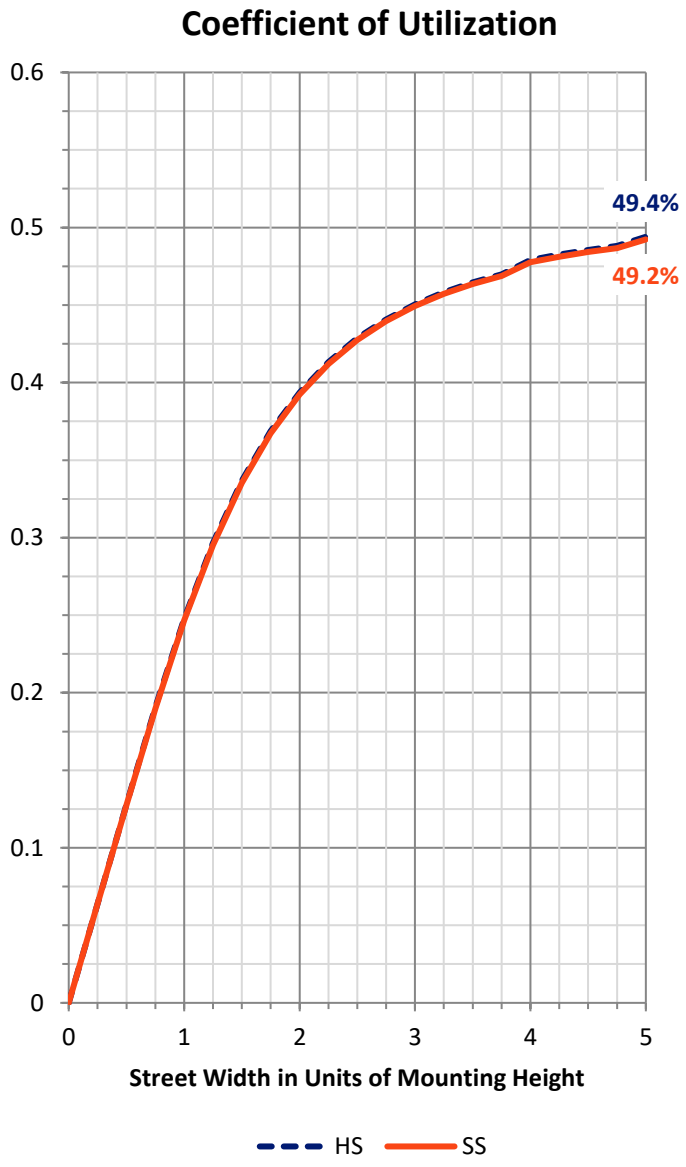
REPORT NUMBER: P821469
CATALOG NUMBER: TT-D5-830-12VDC-WQ

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 4241.5 | 0.0 | 4241.5 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Street Side** | Lumens | 4241.5 | 0.0 | 4241.5 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Total** | Lumens | 8483.0 | 0.0 | 8483.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 56.9 | 0.7 |
| 10°-20° | 195.8 | 2.3 |
| 20°-30° | 402.1 | 4.7 |
| 30°-40° | 714.3 | 8.4 |
| 40°-50° | 1204.1 | 14.2 |
| 50°-60° | 1776.3 | 20.9 |
| 60°-70° | 2084.7 | 24.6 |
| 70°-80° | 1624.1 | 19.1 |
| 80°-90° | 424.6 | 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° | 8483.0 | 100.0 |
| 0°-180° | 8483.0 | 100.0 |



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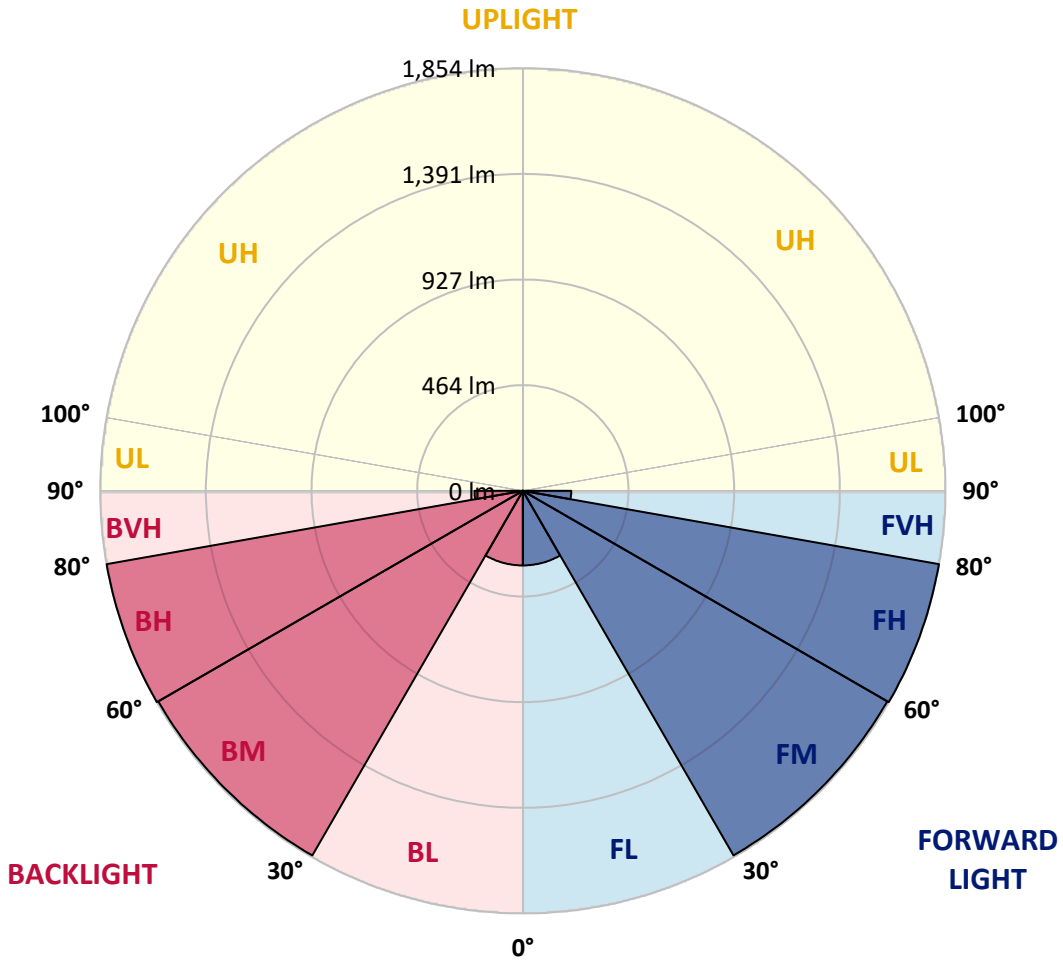
Scaled Data Report

REPORT NUMBER: P821469
CATALOG NUMBER: TT-D5-830-12VDC-WQ

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 327.4 | 3.9 | | | |
| FM | (30°-60°) | 1847.4 | 21.8 | | | |
| FH | (60°-80°) | 1854.4 | 21.9 | | | G2/5000 |
| FVH | (80°-90°) | 212.3 | 2.5 | | | G2/225 |
| BL | (0°-30°) | 327.4 | 3.9 | B1/500 | | |
| BM | (30°-60°) | 1847.4 | 21.8 | B2/2500 | | |
| BH | (60°-80°) | 1854.4 | 21.9 | B3/2500 | | G2/5000 |
| BVH | (80°-90°) | 212.3 | 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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CATALOG NUMBER: TT-D5-830-12VDC-WQ

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 570.9 | 570.9 | 570.9 | 570.9 | 570.9 | 570.9 | 570.9 | 570.9 | 570.9 | 570.9 | 570.9 |
| 2.5° | 580.3 | 580.3 | 580.3 | 578.9 | 578.9 | 578.9 | 578.9 | 580.3 | 580.3 | 580.3 | 580.3 |
| 5° | 593.6 | 593.6 | 590.9 | 588.3 | 585.6 | 585.6 | 586.9 | 588.3 | 589.6 | 592.3 | 592.3 |
| 7.5° | 601.6 | 601.6 | 600.3 | 597.6 | 593.6 | 593.6 | 594.9 | 597.6 | 598.9 | 598.9 | 597.6 |
| 10° | 612.3 | 613.6 | 617.6 | 619.0 | 616.3 | 616.3 | 617.6 | 619.0 | 616.3 | 612.3 | 612.3 |
| 12.5° | 637.6 | 639.0 | 644.3 | 648.3 | 648.3 | 645.6 | 647.0 | 649.6 | 643.0 | 636.3 | 637.6 |
| 15° | 673.6 | 673.6 | 675.0 | 679.0 | 676.3 | 673.6 | 676.3 | 677.6 | 673.6 | 672.3 | 675.0 |
| 17.5° | 721.7 | 721.7 | 713.7 | 720.3 | 721.7 | 720.3 | 723.0 | 716.3 | 712.3 | 717.7 | 720.3 |
| 20° | 773.7 | 768.4 | 764.4 | 769.7 | 780.4 | 776.4 | 781.7 | 767.0 | 763.0 | 765.7 | 767.0 |
| 22.5° | 807.0 | 811.0 | 813.7 | 816.4 | 831.1 | 825.7 | 831.1 | 815.0 | 812.4 | 807.0 | 803.0 |
| 25° | 847.1 | 851.1 | 867.1 | 859.1 | 868.4 | 860.4 | 867.1 | 857.7 | 863.1 | 847.1 | 847.1 |
| 27.5° | 892.4 | 900.4 | 909.8 | 905.8 | 917.8 | 913.8 | 917.8 | 904.4 | 905.8 | 899.1 | 896.4 |
| 30° | 953.8 | 953.8 | 951.1 | 959.1 | 980.5 | 977.8 | 979.1 | 961.8 | 949.8 | 951.1 | 956.4 |
| 32.5° | 1015.1 | 1007.1 | 1011.1 | 1035.1 | 1048.5 | 1043.2 | 1045.8 | 1037.8 | 1011.1 | 1005.8 | 1009.8 |
| 35° | 1072.5 | 1084.5 | 1093.8 | 1113.9 | 1132.5 | 1129.9 | 1128.5 | 1115.2 | 1097.8 | 1076.5 | 1069.8 |
| 37.5° | 1161.9 | 1175.2 | 1200.6 | 1236.6 | 1269.9 | 1276.6 | 1259.3 | 1241.9 | 1201.9 | 1171.2 | 1155.2 |
| 40° | 1279.3 | 1280.6 | 1309.9 | 1379.3 | 1410.0 | 1415.3 | 1406.0 | 1376.6 | 1315.3 | 1280.6 | 1279.3 |
| 42.5° | 1382.0 | 1372.6 | 1420.7 | 1479.4 | 1507.4 | 1510.0 | 1503.4 | 1479.4 | 1420.7 | 1371.3 | 1380.6 |
| 45° | 1462.0 | 1462.0 | 1519.4 | 1566.1 | 1611.4 | 1622.1 | 1610.1 | 1559.4 | 1520.7 | 1463.3 | 1459.3 |
| 47.5° | 1535.4 | 1555.4 | 1603.4 | 1660.8 | 1724.8 | 1739.5 | 1724.8 | 1664.8 | 1599.4 | 1556.7 | 1534.0 |
| 50° | 1623.4 | 1647.4 | 1682.1 | 1771.5 | 1843.5 | 1863.5 | 1842.2 | 1776.8 | 1682.1 | 1646.1 | 1632.8 |
| 52.5° | 1726.1 | 1746.1 | 1800.8 | 1912.9 | 1966.2 | 1995.6 | 1978.3 | 1915.6 | 1803.5 | 1748.8 | 1738.1 |
| 55° | 1848.9 | 1830.2 | 1915.6 | 2023.6 | 2122.3 | 2161.0 | 2126.3 | 2026.3 | 1928.9 | 1830.2 | 1848.9 |
| 57.5° | 1911.6 | 1890.2 | 2010.3 | 2113.0 | 2250.4 | 2301.1 | 2258.4 | 2121.0 | 2010.3 | 1896.9 | 1910.2 |
| 60° | 1916.9 | 1926.2 | 2016.9 | 2185.0 | 2279.7 | 2301.1 | 2287.7 | 2197.0 | 2020.9 | 1934.2 | 1908.9 |
| 62.5° | 1900.9 | 1958.2 | 2035.6 | 2209.0 | 2294.4 | 2346.4 | 2301.1 | 2211.7 | 2043.6 | 1967.6 | 1902.2 |
| 65° | 1879.5 | 1936.9 | 2051.6 | 2174.3 | 2319.7 | 2371.8 | 2329.1 | 2181.0 | 2057.0 | 1936.9 | 1887.5 |
| 67.5° | 1842.2 | 1822.2 | 1963.6 | 2127.7 | 2254.4 | 2285.1 | 2258.4 | 2130.3 | 1962.2 | 1819.5 | 1846.2 |
| 70° | 1723.5 | 1706.1 | 1827.5 | 2007.6 | 2129.0 | 2171.7 | 2139.7 | 2010.3 | 1830.2 | 1710.1 | 1726.1 |
| 72.5° | 1547.4 | 1552.7 | 1670.1 | 1842.2 | 1972.9 | 1999.6 | 1982.3 | 1840.9 | 1676.8 | 1559.4 | 1538.0 |
| 75° | 1342.0 | 1355.3 | 1467.3 | 1623.4 | 1742.1 | 1758.2 | 1740.8 | 1630.1 | 1466.0 | 1363.3 | 1335.3 |
| 77.5° | 1103.2 | 1123.2 | 1213.9 | 1370.0 | 1448.7 | 1484.7 | 1456.7 | 1374.0 | 1220.6 | 1128.5 | 1100.5 |
| 80° | 855.1 | 861.7 | 925.8 | 1051.2 | 1155.2 | 1179.2 | 1152.5 | 1055.2 | 933.8 | 864.4 | 844.4 |
| 82.5° | 560.3 | 570.9 | 628.3 | 724.3 | 792.4 | 785.7 | 792.4 | 716.3 | 635.0 | 568.3 | 534.9 |
| 85° | 249.4 | 270.8 | 309.5 | 354.8 | 398.9 | 410.9 | 398.9 | 360.2 | 309.5 | 265.5 | 260.1 |
| 87.5° | 17.3 | 20.0 | 24.0 | 25.3 | 28.0 | 21.3 | 21.3 | 21.3 | 18.7 | 21.3 | 17.3 |
| 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: SP1-2407-176-7

Test Date: 09/27/2024

Luminaire Tested: MEM2-HTN-VA-30-830-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-830-U-WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

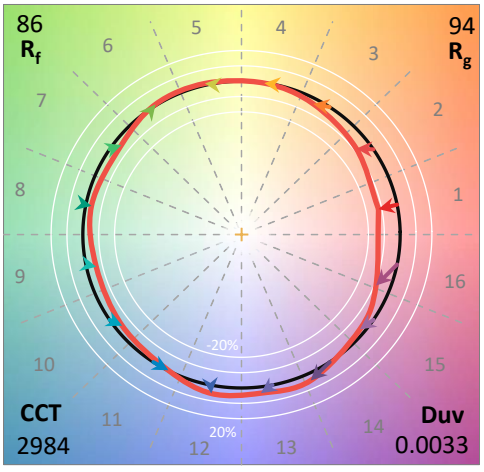
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2407-176-7 |
| 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-30-830-U-WQ** |
| Description: | EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE |

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 2984 | CRI (Ra): | 81.8 | | |
| CIE u': | 0.2500 | R1: | 79.4 | R9: | -1.1 |
| CIE v': | 0.5264 | R2: | 89.9 | R10: | 78.4 |
| Duv: | 0.0033 | R3: | 96.6 | R11: | 80.8 |
| CIE x: | 0.4431 | R4: | 80.6 | R12: | 72.8 |
| CIE y: | 0.4147 | R5: | 80.1 | R13: | 81.7 |
| CIE z: | 0.1422 | R6: | 88.9 | R14: | 98.5 |
| Peak Wavelength (nm): | 601 | R7: | 82.6 | R15: | 70.2 |
| Dominant Wavelength (nm): | 581 | R8: | 56.0 | | |
| Purity: | 57.4798 | | | | |

| | |
|---|---|
| Rf: | 85.8 |
| Rg: | 94.1 |




## Test Conditions

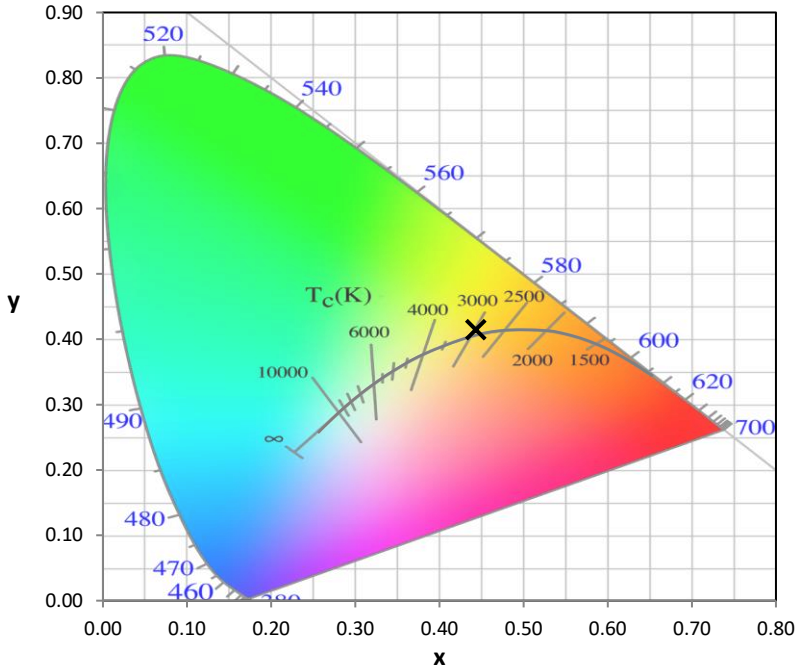
| | |
|---|---|
| Stabilization Time: | 29M |
| Operation Time: | 1H 29M |
| Sphere Temperature (°C): | 25.2 |

REPORT NUMBER: SP1-2407-176-7

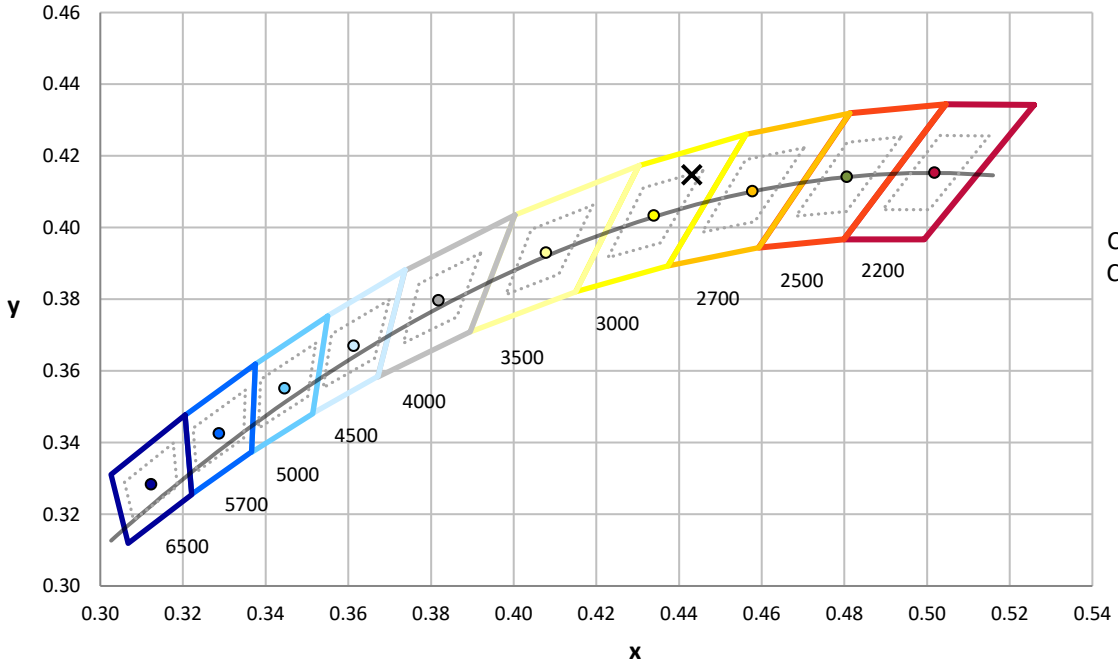
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC 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: SP1-2407-176-7

## CIE 1931 Chromaticity Diagram




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

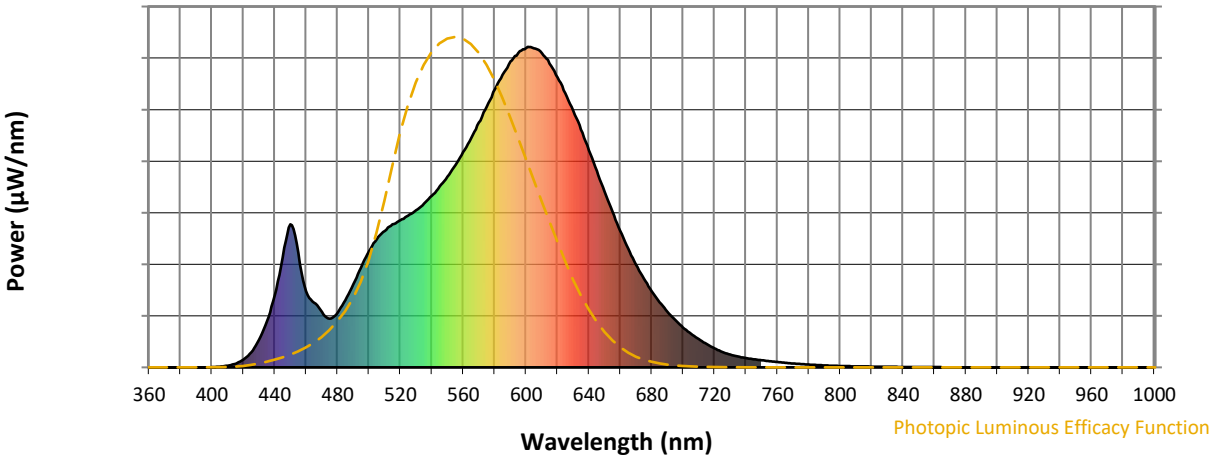



CCT = 2984K
CIE x = 0.4431
CIE y = 0.4147
Duv = 0.0033

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-176-7

## Photopic Flux vs. Wavelength

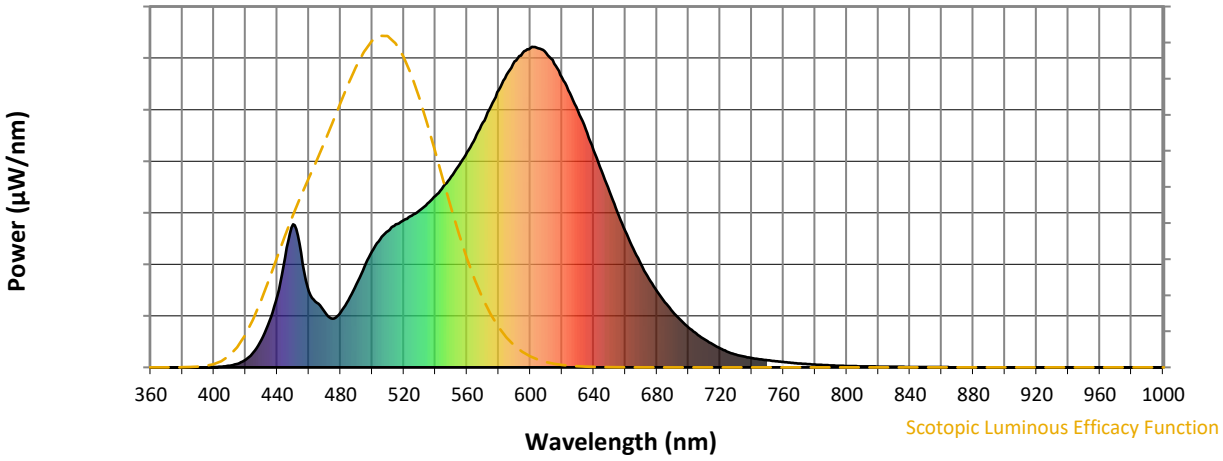



## Photopic Lumens: NR

| 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 | 260 | NR | 620 | 905 | NR | 750 | 22 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 312 | NR | 625 | 856 | NR | 755 | 19 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 362 | NR | 630 | 801 | NR | 760 | 17 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 399 | NR | 635 | 742 | NR | 765 | 14 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 425 | NR | 640 | 677 | NR | 770 | 12 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 446 | NR | 645 | 613 | NR | 775 | 10 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 459 | NR | 650 | 549 | NR | 780 | 9 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 473 | NR | 655 | 485 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 490 | NR | 660 | 425 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 511 | NR | 665 | 371 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 5 | NR | 540 | 535 | NR | 670 | 321 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 11 | NR | 545 | 565 | NR | 675 | 276 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 24 | NR | 550 | 595 | NR | 680 | 238 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 47 | NR | 555 | 631 | NR | 685 | 203 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 86 | NR | 560 | 672 | NR | 690 | 174 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 144 | NR | 565 | 715 | NR | 695 | 148 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 224 | NR | 570 | 763 | NR | 700 | 124 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 342 | NR | 575 | 814 | NR | 705 | 105 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 446 | NR | 580 | 866 | NR | 710 | 88 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 357 | NR | 585 | 912 | NR | 715 | 73 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 237 | NR | 590 | 954 | NR | 720 | 59 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 202 | NR | 595 | 981 | NR | 725 | 48 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 172 | NR | 600 | 996 | NR | 730 | 40 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 152 | NR | 605 | 996 | NR | 735 | 34 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 171 | NR | 610 | 980 | NR | 740 | 29 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 210 | NR | 615 | 947 | NR | 745 | 25 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-176-7

## Scotopic Flux vs. Wavelength

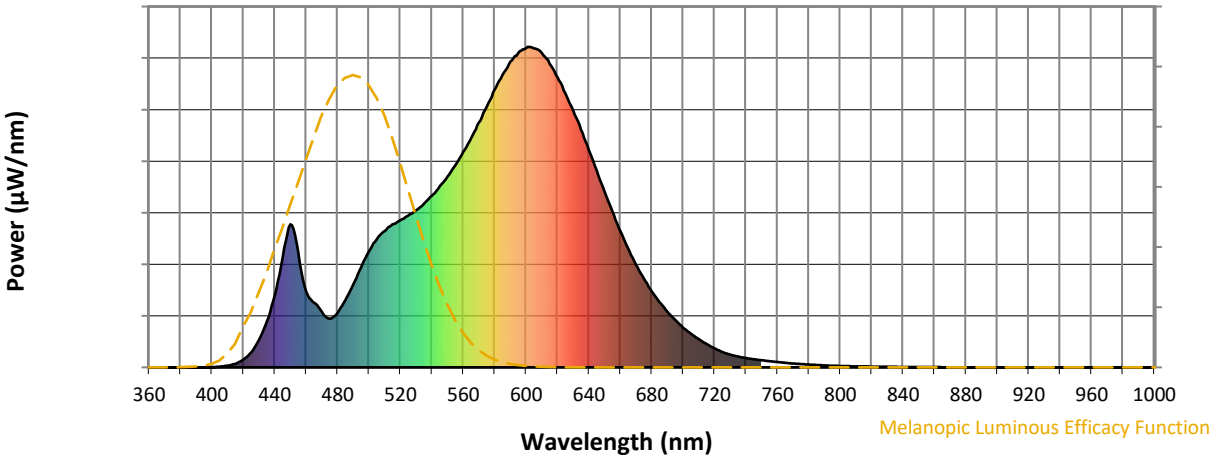



**Scotopic Lumens: NR** **S/P: 1.32**

| 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 | 260 | NR | 620 | 905 | NR | 750 | 22 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 312 | NR | 625 | 856 | NR | 755 | 19 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 362 | NR | 630 | 801 | NR | 760 | 17 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 399 | NR | 635 | 742 | NR | 765 | 14 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 425 | NR | 640 | 677 | NR | 770 | 12 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 446 | NR | 645 | 613 | NR | 775 | 10 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 459 | NR | 650 | 549 | NR | 780 | 9 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 473 | NR | 655 | 485 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 490 | NR | 660 | 425 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 511 | NR | 665 | 371 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 5 | NR | 540 | 535 | NR | 670 | 321 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 11 | NR | 545 | 565 | NR | 675 | 276 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 24 | NR | 550 | 595 | NR | 680 | 238 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 47 | NR | 555 | 631 | NR | 685 | 203 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 86 | NR | 560 | 672 | NR | 690 | 174 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 144 | NR | 565 | 715 | NR | 695 | 148 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 224 | NR | 570 | 763 | NR | 700 | 124 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 342 | NR | 575 | 814 | NR | 705 | 105 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 446 | NR | 580 | 866 | NR | 710 | 88 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 357 | NR | 585 | 912 | NR | 715 | 73 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 237 | NR | 590 | 954 | NR | 720 | 59 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 202 | NR | 595 | 981 | NR | 725 | 48 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 172 | NR | 600 | 996 | NR | 730 | 40 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 152 | NR | 605 | 996 | NR | 735 | 34 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 171 | NR | 610 | 980 | NR | 740 | 29 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 210 | NR | 615 | 947 | NR | 745 | 25 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-176-7

## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.51**

| 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 | 260 | NR | 620 | 905 | NR | 750 | 22 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 312 | NR | 625 | 856 | NR | 755 | 19 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 362 | NR | 630 | 801 | NR | 760 | 17 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 399 | NR | 635 | 742 | NR | 765 | 14 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 425 | NR | 640 | 677 | NR | 770 | 12 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 446 | NR | 645 | 613 | NR | 775 | 10 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 459 | NR | 650 | 549 | NR | 780 | 9 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 473 | NR | 655 | 485 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 490 | NR | 660 | 425 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 511 | NR | 665 | 371 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 5 | NR | 540 | 535 | NR | 670 | 321 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 11 | NR | 545 | 565 | NR | 675 | 276 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 24 | NR | 550 | 595 | NR | 680 | 238 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 47 | NR | 555 | 631 | NR | 685 | 203 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 86 | NR | 560 | 672 | NR | 690 | 174 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 144 | NR | 565 | 715 | NR | 695 | 148 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 224 | NR | 570 | 763 | NR | 700 | 124 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 342 | NR | 575 | 814 | NR | 705 | 105 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 446 | NR | 580 | 866 | NR | 710 | 88 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 357 | NR | 585 | 912 | NR | 715 | 73 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 237 | NR | 590 | 954 | NR | 720 | 59 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 202 | NR | 595 | 981 | NR | 725 | 48 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 172 | NR | 600 | 996 | NR | 730 | 40 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 152 | NR | 605 | 996 | NR | 735 | 34 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 171 | NR | 610 | 980 | NR | 740 | 29 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 210 | NR | 615 | 947 | NR | 745 | 25 | NR | 875 | 0 | NR | | | |

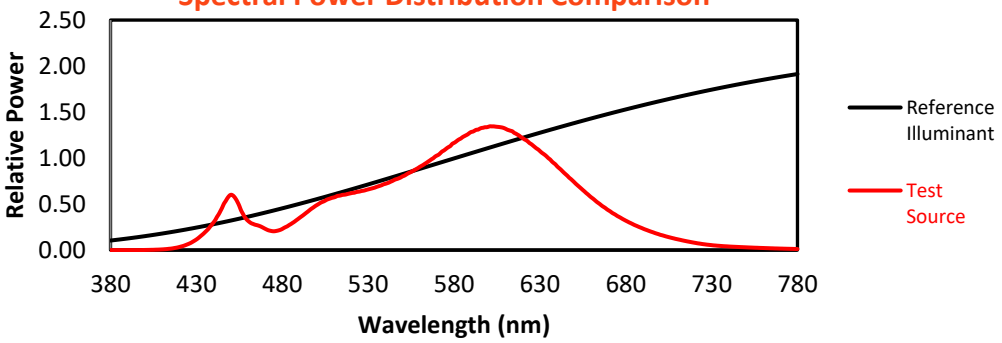
REPORT NUMBER: SP1-2407-176-7

# TM-30-18

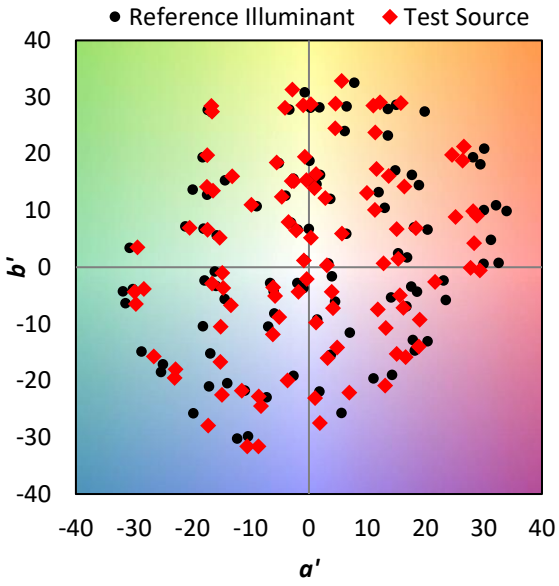
## Summary

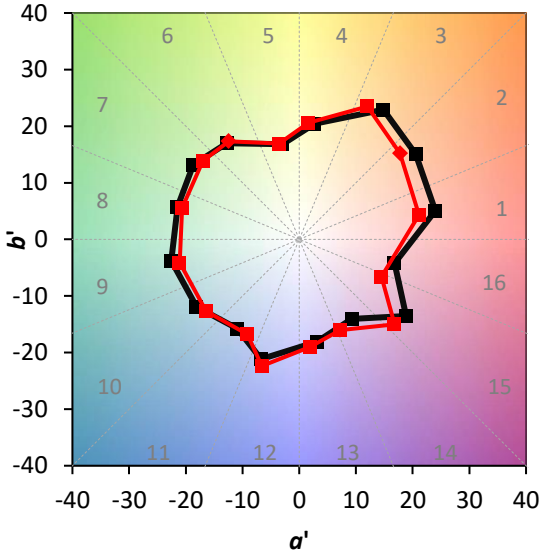
$R_f$ = 85.8
$R_g$ = 94.1
CIE $R_a$ = 81.8
$R_9$ = -1.1

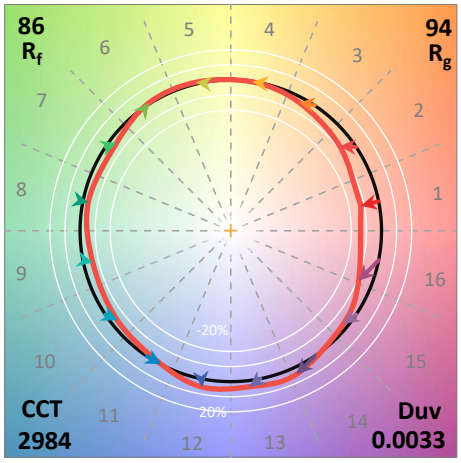
## Spectral Power Distribution Comparison

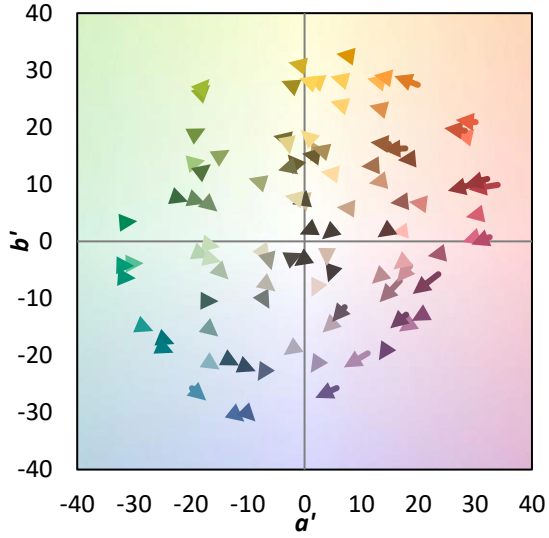



## Color Vector Graphics



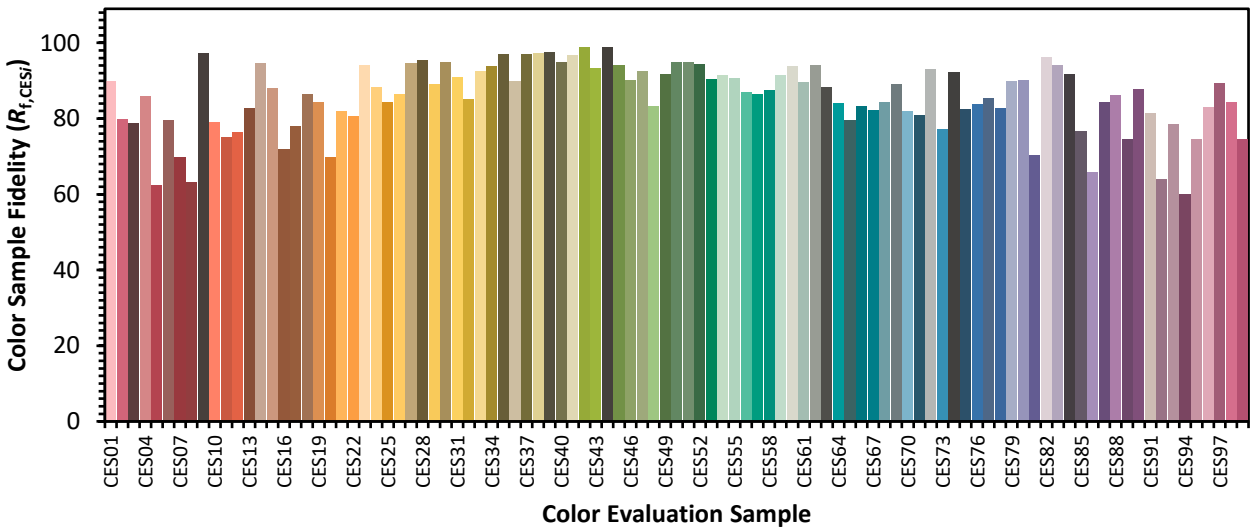



REPORT NUMBER: SP1-2407-176-7

# TM-30-18

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

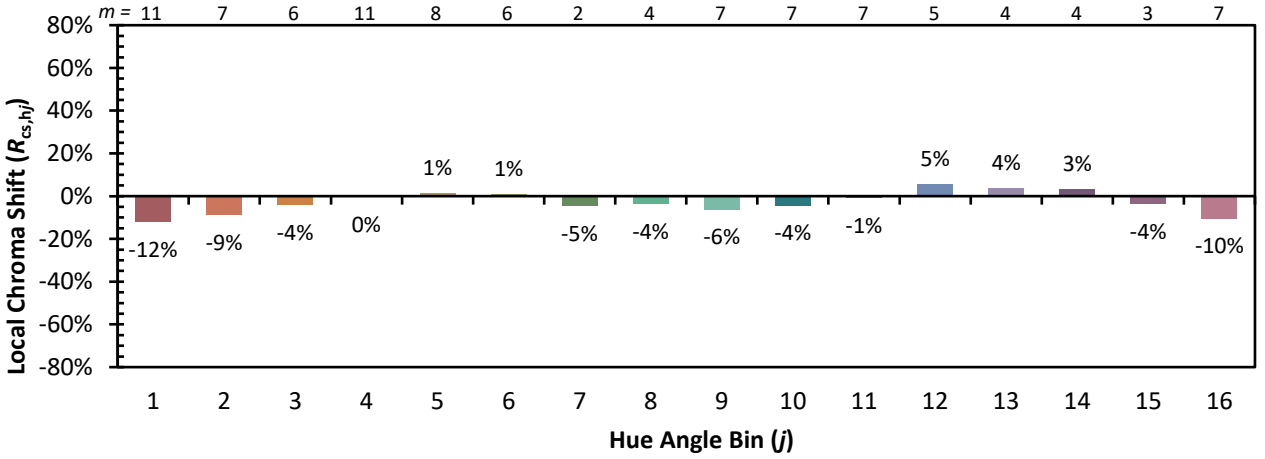
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 86 | CES51 = 95 | CES76 = 84 |
| CES02 = 63 | CES27 = 95 | CES52 = 94 | CES77 = 86 |
| CES03 = 31 | CES28 = 95 | CES53 = 90 | CES78 = 83 |
| CES04 = 70 | CES29 = 89 | CES54 = 91 | CES79 = 90 |
| CES05 = 50 | CES30 = 95 | CES55 = 91 | CES80 = 90 |
| CES06 = 51 | CES31 = 91 | CES56 = 87 | CES81 = 70 |
| CES07 = 42 | CES32 = 85 | CES57 = 86 | CES82 = 96 |
| CES08 = 41 | CES33 = 93 | CES58 = 87 | CES83 = 94 |
| CES09 = 29 | CES34 = 94 | CES59 = 92 | CES84 = 92 |
| CES10 = 76 | CES35 = 97 | CES60 = 94 | CES85 = 77 |
| CES11 = 59 | CES36 = 90 | CES61 = 90 | CES86 = 66 |
| CES12 = 65 | CES37 = 97 | CES62 = 94 | CES87 = 84 |
| CES13 = 43 | CES38 = 97 | CES63 = 88 | CES88 = 86 |
| CES14 = 74 | CES39 = 98 | CES64 = 84 | CES89 = 75 |
| CES15 = 72 | CES40 = 95 | CES65 = 80 | CES90 = 88 |
| CES16 = 47 | CES41 = 97 | CES66 = 83 | CES91 = 81 |
| CES17 = 50 | CES42 = 99 | CES67 = 82 | CES92 = 64 |
| CES18 = 56 | CES43 = 93 | CES68 = 84 | CES93 = 79 |
| CES19 = 72 | CES44 = 99 | CES69 = 89 | CES94 = 60 |
| CES20 = 67 | CES45 = 94 | CES70 = 82 | CES95 = 74 |
| CES21 = 87 | CES46 = 90 | CES71 = 81 | CES96 = 83 |
| CES22 = 79 | CES47 = 93 | CES72 = 93 | CES97 = 89 |
| CES23 = 92 | CES48 = 83 | CES73 = 77 | CES98 = 84 |
| CES24 = 91 | CES49 = 92 | CES74 = 92 | CES99 = 75 |
| CES25 = 72 | CES50 = 95 | CES75 = 83 | |

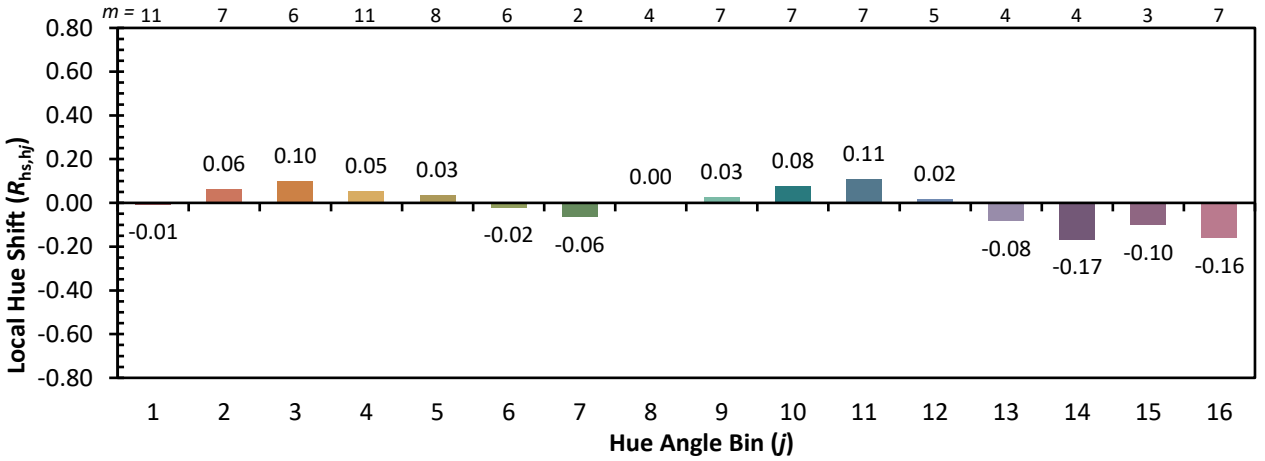


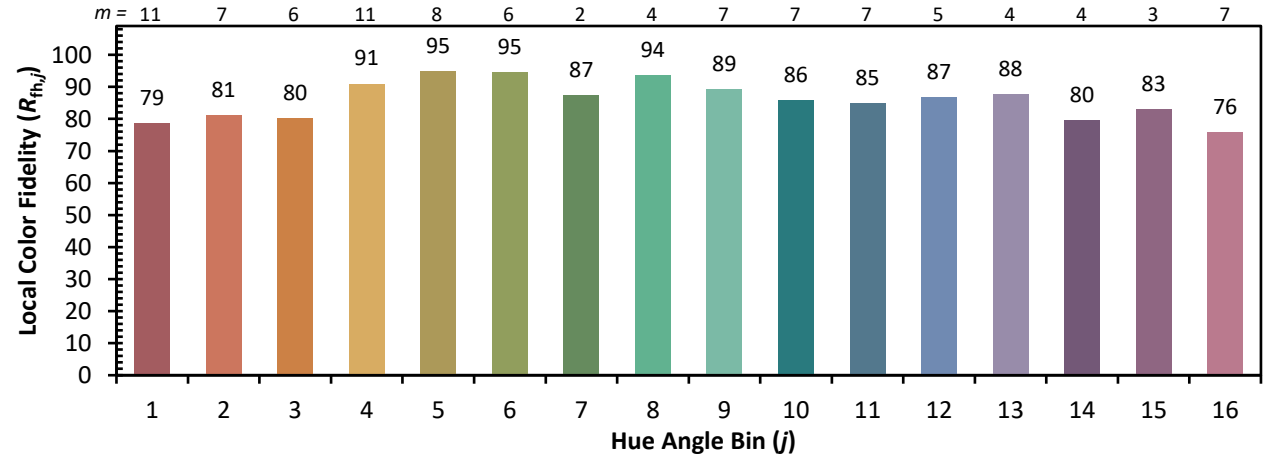
REPORT NUMBER: SP1-2407-176-7

**TM-30-18**

## Color Rendition by Hue-Angle Bin



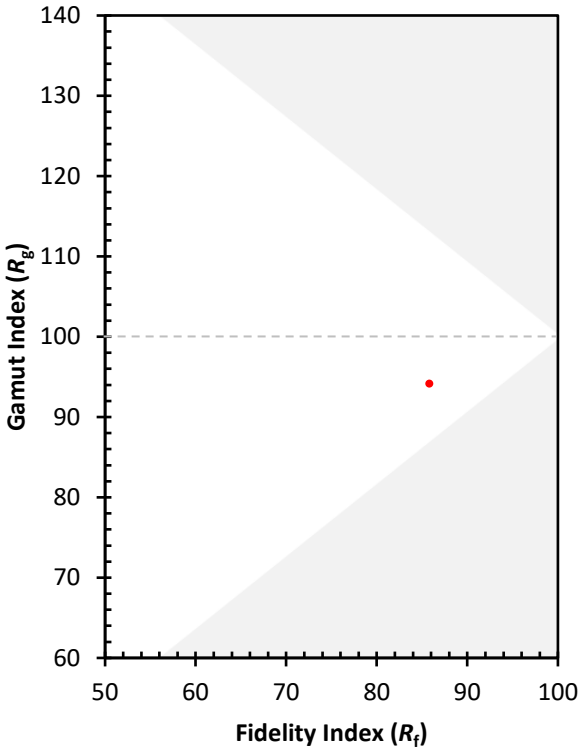



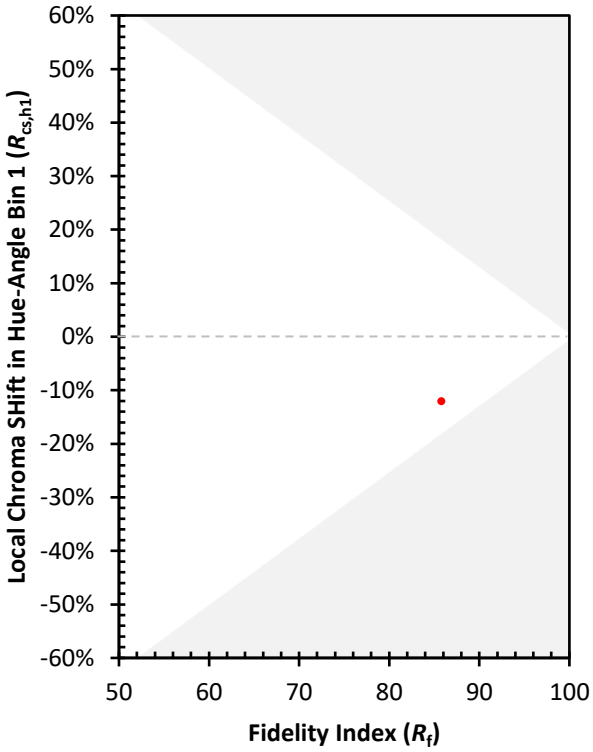



REPORT NUMBER: SP1-2407-176-7

# TM-30-18

## Measure Comparisons




(END OF REPORT)