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: P543165

Luminaire Tested: **TT-D8-735-U-MQ**

Issue Date: 6/22/2021

Report Generated By 670246001

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: | P543165 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2012-100-9) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 6/22/2021 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | TT-D8-735-U-MQ |
| Description: | TOPTIER LED PARKING GARAGE LUMINAIRE |
| | 3500K, 70 CRI LEDS AND MEDIUM DISTRIBUTION |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 18279 lumens |
| Efficiency: | N/A |
| Efficacy: | 122.9 lumens/watt |
| Luminous Opening: | Circular (Dia: 1.12' x H: 0') |
| IES Classification: | Type V - Short |
| BUG Rating: | B4 - U0 - G3 |

| | |
|---|---|
| Input Watts (W): | 148.7 |
| 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: | 28.75 FT |

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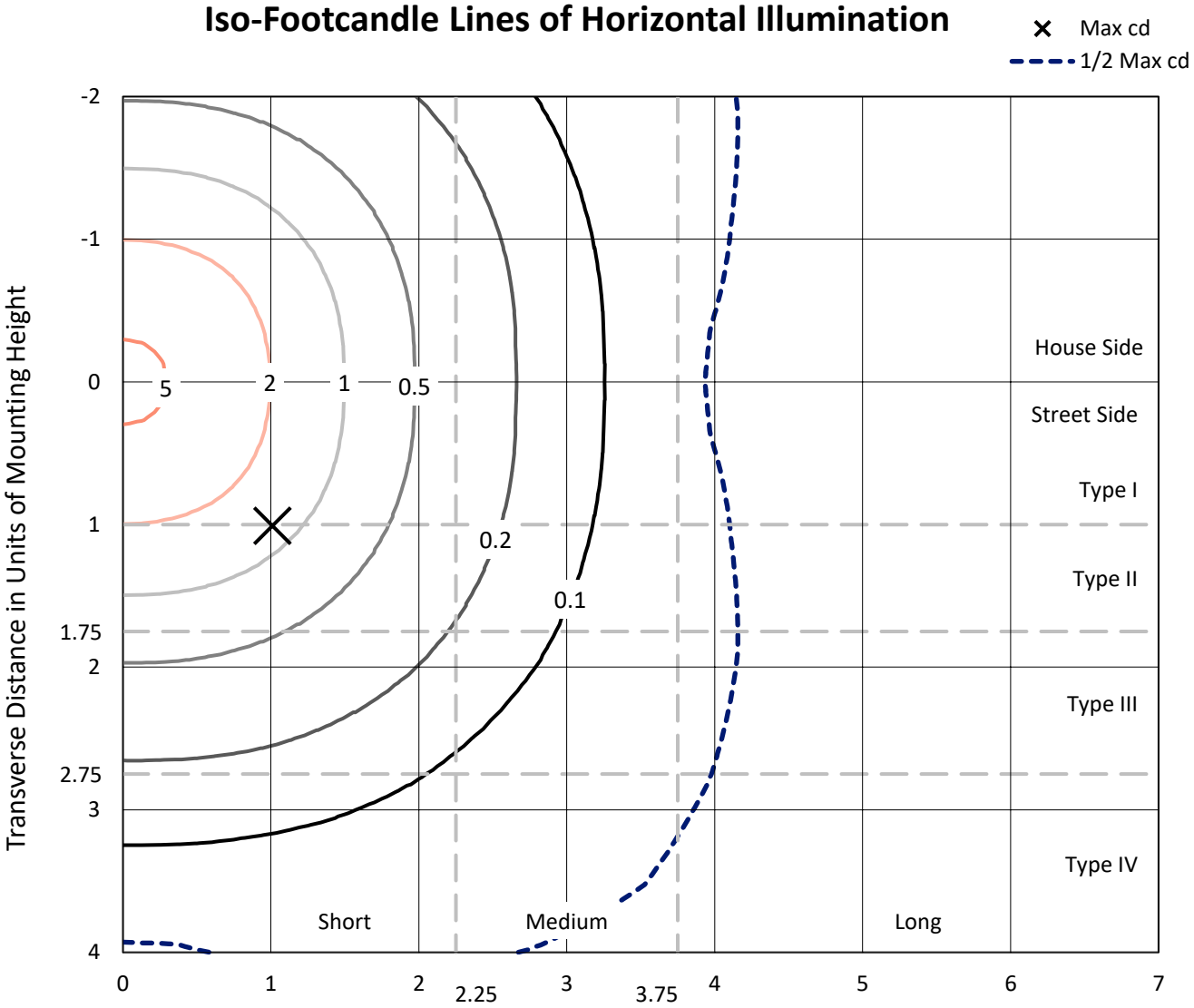
Scaled Data Report

REPORT NUMBER: P543165
CATALOG NUMBER: TT-D8-735-U-MQ

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 6.1 fc
Type V - Short - N/A

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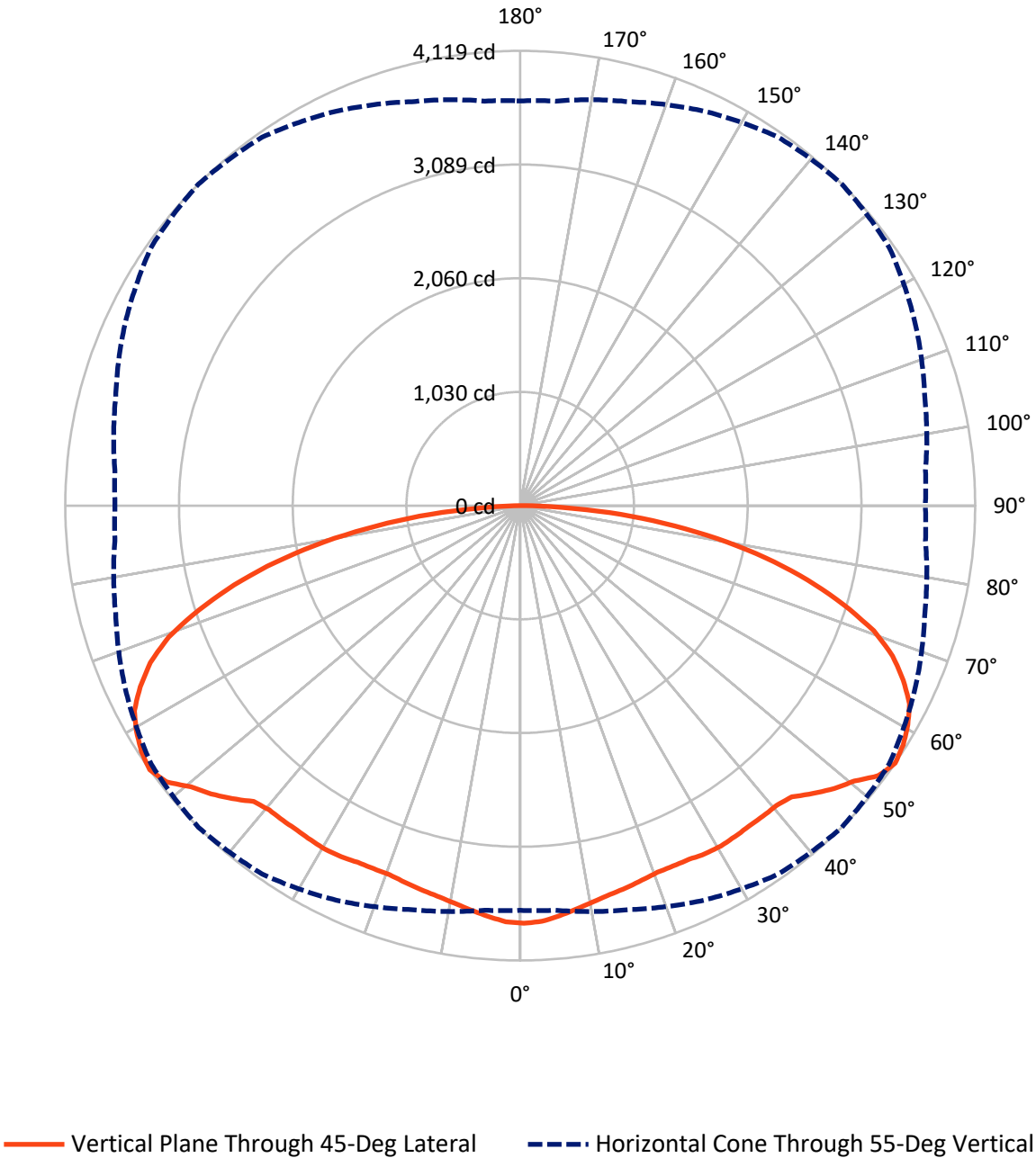
REPORT NUMBER: P543165
CATALOG NUMBER: TT-D8-735-U-MQ

## Luminous Intensity Polar Plot



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Scaled Data Report

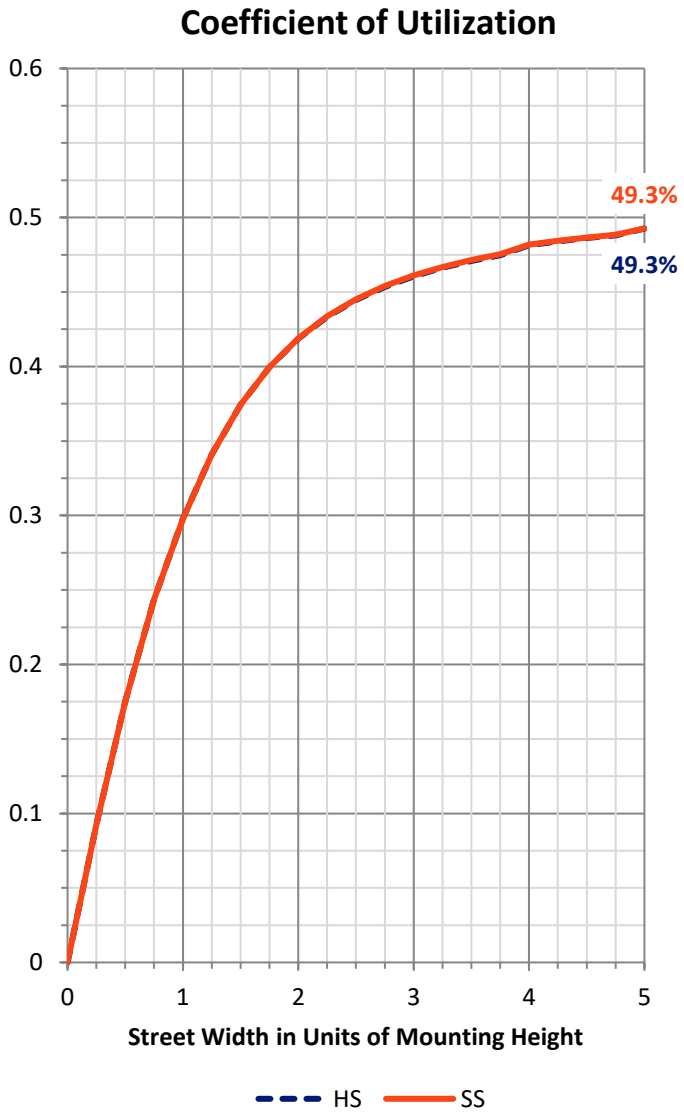
REPORT NUMBER: P543165
CATALOG NUMBER: TT-D8-735-U-MQ

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 9139.5 | 0.0 | 9139.5 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Street Side** | Lumens | 9139.5 | 0.0 | 9139.5 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| **Total** | Lumens | 18279.0 | 0.0 | 18279.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 353.1 | 1.9 |
| 10°-20° | 1014.1 | 5.5 |
| 20°-30° | 1634.2 | 8.9 |
| 30°-40° | 2214.6 | 12.1 |
| 40°-50° | 2807.3 | 15.4 |
| 50°-60° | 3453.7 | 18.9 |
| 60°-70° | 3478.7 | 19.0 |
| 70°-80° | 2546.0 | 13.9 |
| 80°-90° | 777.2 | 4.3 |
| 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° | 18279.0 | 100.0 |
| 0°-180° | 18279.0 | 100.0 |



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1121 Highway 74 South
Peachtree City, GA 30269

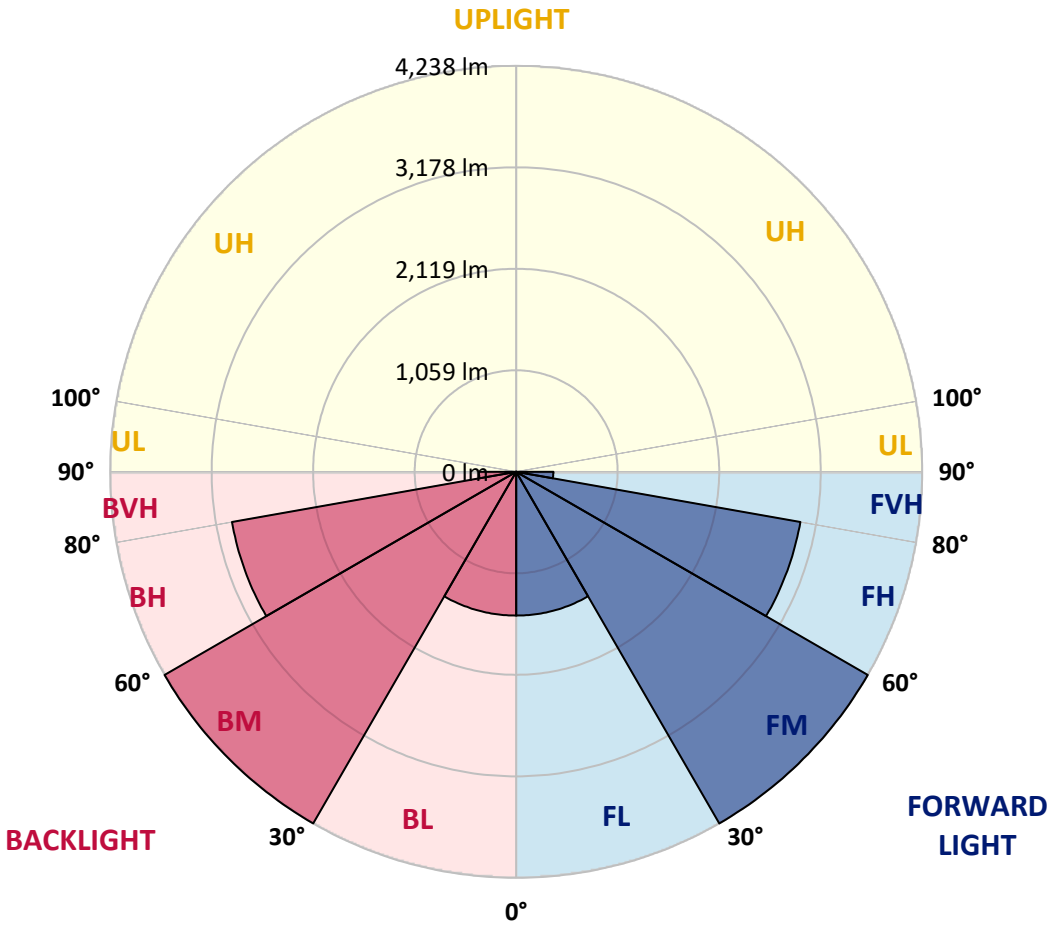
Scaled Data Report

REPORT NUMBER: P543165
CATALOG NUMBER: TT-D8-735-U-MQ

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 1500.7 | 8.2 | | | |
| FM | (30°-60°) | 4237.8 | 23.2 | | | |
| FH | (60°-80°) | 3012.3 | 16.5 | | | G2/5000 |
| FVH | (80°-90°) | 388.6 | 2.1 | | | G3/500 |
| BL | (0°-30°) | 1500.7 | 8.2 | B3/2500 | | |
| BM | (30°-60°) | 4237.8 | 23.2 | B3/5000 | | |
| BH | (60°-80°) | 3012.3 | 16.5 | B4/5000 | | G2/5000 |
| BVH | (80°-90°) | 388.6 | 2.1 | | | G3/500 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B4-U0-G3**
Type V Short



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Scaled Data Report

REPORT NUMBER: P543165
CATALOG NUMBER: TT-D8-735-U-MQ

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 |
| 2.5° | 3765.3 | 3767.7 | 3766.9 | 3768.5 | 3768.5 | 3770.1 | 3768.5 | 3770.1 | 3767.7 | 3768.5 | 3768.5 |
| 5° | 3724.4 | 3727.6 | 3725.2 | 3729.2 | 3730.0 | 3730.8 | 3728.4 | 3728.4 | 3726.0 | 3726.0 | 3726.8 |
| 7.5° | 3680.4 | 3682.0 | 3682.0 | 3686.0 | 3688.4 | 3688.4 | 3686.0 | 3682.8 | 3681.2 | 3678.8 | 3678.8 |
| 10° | 3638.0 | 3640.4 | 3639.6 | 3643.6 | 3646.8 | 3647.6 | 3644.4 | 3638.8 | 3636.4 | 3634.8 | 3634.8 |
| 12.5° | 3601.1 | 3603.5 | 3605.1 | 3609.9 | 3614.8 | 3614.8 | 3613.2 | 3606.7 | 3602.7 | 3600.3 | 3599.5 |
| 15° | 3573.9 | 3576.3 | 3577.1 | 3584.3 | 3589.1 | 3591.5 | 3588.3 | 3581.9 | 3577.1 | 3573.9 | 3572.3 |
| 17.5° | 3546.7 | 3548.3 | 3552.3 | 3558.7 | 3563.5 | 3566.7 | 3563.5 | 3557.1 | 3550.7 | 3545.1 | 3543.5 |
| 20° | 3520.3 | 3521.1 | 3526.7 | 3535.5 | 3541.9 | 3545.1 | 3541.9 | 3532.3 | 3522.7 | 3517.9 | 3517.1 |
| 22.5° | 3508.3 | 3509.9 | 3517.1 | 3529.9 | 3538.7 | 3545.1 | 3537.1 | 3525.1 | 3513.9 | 3505.9 | 3505.1 |
| 25° | 3500.3 | 3501.1 | 3510.7 | 3528.3 | 3544.3 | 3549.1 | 3543.5 | 3526.7 | 3509.1 | 3498.7 | 3497.9 |
| 27.5° | 3507.5 | 3510.7 | 3523.5 | 3541.1 | 3561.9 | 3569.9 | 3564.3 | 3540.3 | 3521.1 | 3509.1 | 3506.7 |
| 30° | 3505.9 | 3508.3 | 3522.7 | 3542.7 | 3561.9 | 3577.9 | 3566.7 | 3541.1 | 3518.7 | 3506.7 | 3505.1 |
| 32.5° | 3501.1 | 3504.3 | 3517.1 | 3533.9 | 3561.1 | 3572.3 | 3561.9 | 3532.3 | 3513.1 | 3504.3 | 3501.1 |
| 35° | 3481.0 | 3486.7 | 3505.1 | 3529.9 | 3554.7 | 3565.9 | 3553.9 | 3529.1 | 3502.7 | 3488.3 | 3486.7 |
| 37.5° | 3473.0 | 3477.0 | 3495.5 | 3524.3 | 3557.1 | 3569.1 | 3553.1 | 3523.5 | 3493.9 | 3477.8 | 3473.8 |
| 40° | 3460.2 | 3466.6 | 3489.1 | 3522.7 | 3560.3 | 3571.5 | 3558.7 | 3524.3 | 3490.7 | 3464.2 | 3457.0 |
| 42.5° | 3460.2 | 3465.8 | 3497.1 | 3543.5 | 3585.1 | 3605.1 | 3585.1 | 3545.9 | 3498.7 | 3461.8 | 3456.2 |
| 45° | 3515.5 | 3522.7 | 3561.9 | 3630.8 | 3695.6 | 3719.6 | 3694.8 | 3634.8 | 3563.5 | 3521.1 | 3509.9 |
| 47.5° | 3562.7 | 3573.1 | 3632.4 | 3719.6 | 3800.5 | 3827.7 | 3798.1 | 3721.2 | 3633.2 | 3573.1 | 3562.7 |
| 50° | 3597.9 | 3609.9 | 3686.8 | 3797.3 | 3883.8 | 3920.6 | 3887.0 | 3799.7 | 3688.4 | 3611.5 | 3599.5 |
| 52.5° | 3661.2 | 3679.6 | 3770.9 | 3895.8 | 4016.7 | 4063.1 | 4016.7 | 3899.8 | 3770.9 | 3682.0 | 3661.2 |
| 55° | 3666.0 | 3678.0 | 3787.7 | 3942.2 | 4073.5 | 4119.1 | 4079.1 | 3943.0 | 3791.7 | 3683.6 | 3668.4 |
| 57.5° | 3610.7 | 3624.4 | 3740.4 | 3918.2 | 4048.7 | 4088.7 | 4049.5 | 3920.6 | 3750.9 | 3632.4 | 3618.8 |
| 60° | 3511.5 | 3525.1 | 3646.0 | 3830.9 | 3971.0 | 4031.9 | 3974.2 | 3834.9 | 3658.0 | 3534.7 | 3519.5 |
| 62.5° | 3403.4 | 3429.0 | 3568.3 | 3752.5 | 3891.8 | 3955.8 | 3898.2 | 3755.7 | 3576.3 | 3438.6 | 3415.4 |
| 65° | 3232.9 | 3244.1 | 3393.8 | 3593.1 | 3764.5 | 3810.9 | 3765.3 | 3598.7 | 3419.4 | 3253.7 | 3244.9 |
| 67.5° | 3059.9 | 3080.7 | 3204.8 | 3427.4 | 3593.1 | 3637.2 | 3592.3 | 3426.6 | 3220.9 | 3087.1 | 3071.9 |
| 70° | 2772.5 | 2796.5 | 2971.1 | 3162.4 | 3319.3 | 3396.2 | 3324.1 | 3164.8 | 2998.3 | 2806.1 | 2793.3 |
| 72.5° | 2506.7 | 2531.5 | 2651.6 | 2867.0 | 3026.3 | 3059.1 | 3036.7 | 2871.0 | 2676.4 | 2549.1 | 2531.5 |
| 75° | 2159.2 | 2168.1 | 2322.6 | 2505.1 | 2652.4 | 2687.6 | 2659.6 | 2502.7 | 2351.4 | 2188.1 | 2162.4 |
| 77.5° | 1798.2 | 1815.8 | 1924.7 | 2080.8 | 2208.1 | 2271.3 | 2206.5 | 2089.6 | 1935.9 | 1816.6 | 1799.0 |
| 80° | 1385.1 | 1404.3 | 1517.2 | 1658.9 | 1757.3 | 1807.8 | 1759.7 | 1654.9 | 1527.6 | 1405.9 | 1397.1 |
| 82.5° | 976.7 | 977.5 | 1089.6 | 1182.5 | 1281.0 | 1309.8 | 1282.6 | 1201.7 | 1097.6 | 986.4 | 988.0 |
| 85° | 553.2 | 558.8 | 635.7 | 720.5 | 777.4 | 815.8 | 785.4 | 725.4 | 643.7 | 566.0 | 558.8 |
| 87.5° | 125.7 | 124.9 | 164.9 | 213.8 | 277.0 | 276.2 | 270.6 | 221.0 | 169.7 | 123.3 | 121.7 |
| 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

MCGRAW EDISON

Report Number: SP1-2411-284-1

Test Date: 11/15/2024

Luminaire Tested: TTN-D0-735-U-WQ

Data in this report applies to families of products including TT-xx-735 and TTN-xx-735

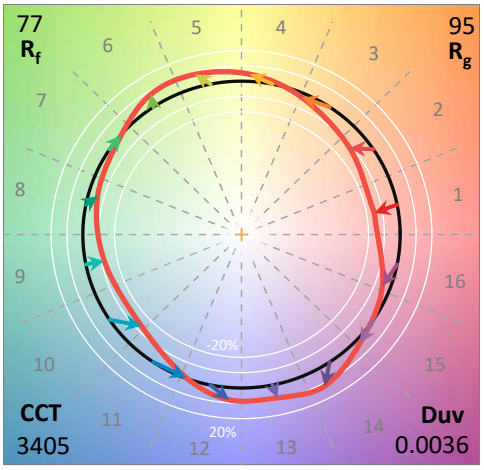
Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2411-284-1 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 11/15/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | MCGRAW EDISON |
| Catalog Number: | **TTN-D0-735-U-WQ** |
| Description: | TOPTIER NANO LED PARKING GARAGE LUMINAIRE. 3500K, 70 CRI LEDS AND WIDE DISTRIBUTION |

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 3405 | CRI (Ra): | 73.9 | | |
| CIE u': | 0.2365 | R1: | 71.3 | R9: | -18.0 |
| CIE v': | 0.5180 | R2: | 80.3 | R10: | 53.1 |
| Duv: | 0.0036 | R3: | 87.8 | R11: | 68.6 |
| CIE x: | 0.4148 | R4: | 73.2 | R12: | 42.6 |
| CIE y: | 0.4038 | R5: | 69.8 | R13: | 72.5 |
| CIE z: | 0.1814 | R6: | 71.8 | R14: | 92.7 |
| Peak Wavelength (nm): | 596 | R7: | 82.8 | R15: | 64.3 |
| Dominant Wavelength (nm): | 579 | R8: | 54.1 | | |
| Purity: | 45.70672 | | | | |
| Rf: | 76.6 | | | | |
| Rg: | 95.4 | | | | |




## Test Conditions

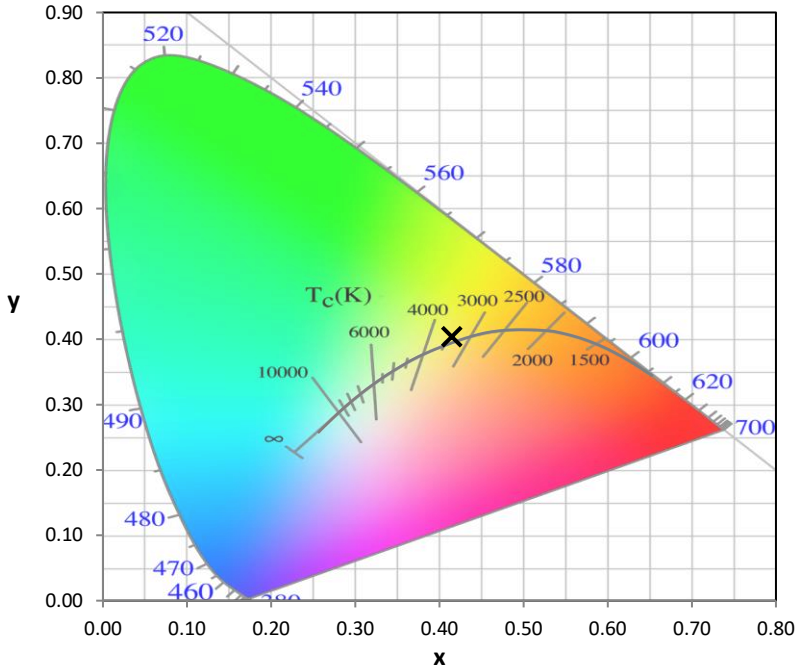
| | |
|---|---|
| Stabilization Time: | 38M |
| Operation Time: | 1H 38M |
| Sphere Temperature (°C): | 24.9 |

REPORT NUMBER: SP1-2411-284-1

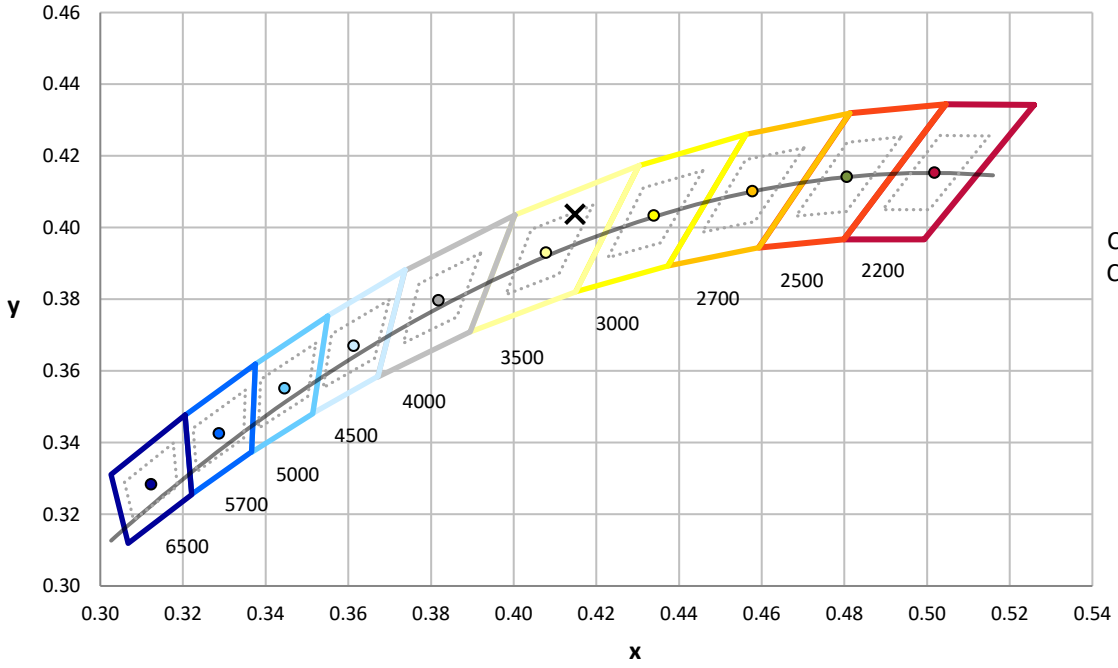
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/22/2024 | 10/22/2025 |
| DC Power Source | IN0208 | 10/22/2024 | 10/22/2025 |
| Sphere Thermometer | IN0085 | 10/22/2024 | 10/22/2025 |
| Room Thermometer | IN0046 | 10/22/2024 | 10/22/2025 |

REPORT NUMBER: SP1-2411-284-1

## CIE 1931 Chromaticity Diagram




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

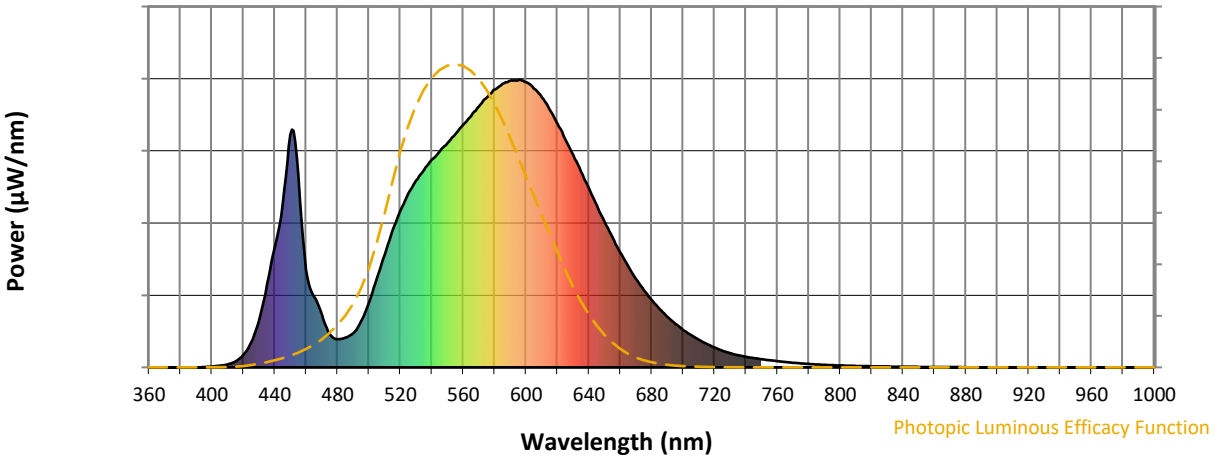



CCT = 3405K
CIE x = 0.4148
CIE y = 0.4038
Duv = 0.0036

Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2411-284-1

## Photopic Flux vs. Wavelength

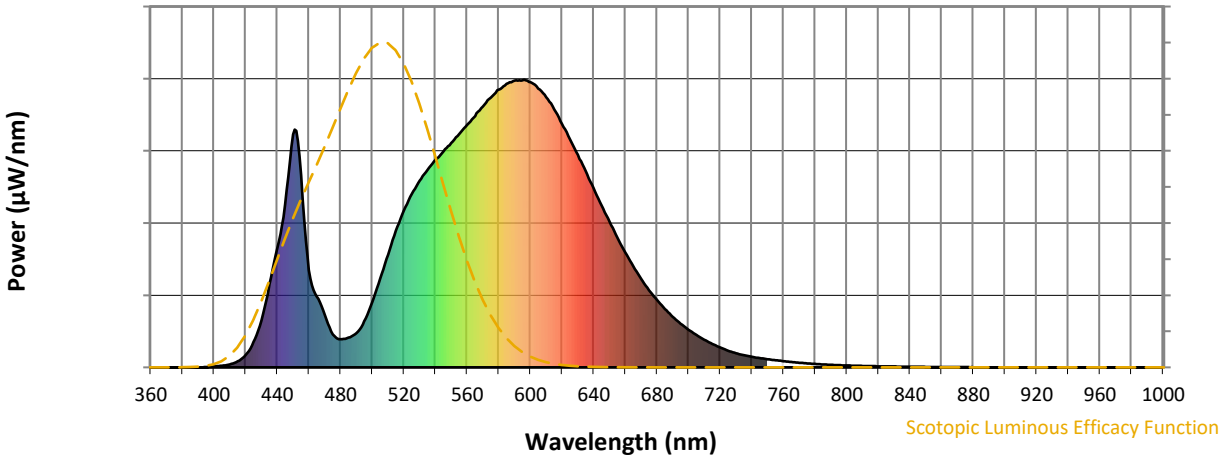



## Photopic Lumens: NR

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 119 | NR | 620 | 846 | NR | 750 | 28 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 160 | NR | 625 | 793 | NR | 755 | 25 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 225 | NR | 630 | 739 | NR | 760 | 22 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 308 | NR | 635 | 681 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 392 | NR | 640 | 623 | NR | 770 | 16 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 474 | NR | 645 | 563 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 545 | NR | 650 | 506 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 603 | NR | 655 | 451 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 649 | NR | 660 | 399 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 687 | NR | 665 | 352 | NR | 795 | 8 | NR | 925 | 0 | NR |
| 410 | 11 | NR | 540 | 721 | NR | 670 | 307 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 751 | NR | 675 | 268 | NR | 805 | 6 | NR | 935 | 0 | NR |
| 420 | 43 | NR | 550 | 779 | NR | 680 | 234 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 88 | NR | 555 | 811 | NR | 685 | 203 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 163 | NR | 560 | 843 | NR | 690 | 176 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 288 | NR | 565 | 873 | NR | 695 | 152 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 416 | NR | 570 | 907 | NR | 700 | 131 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 566 | NR | 575 | 938 | NR | 705 | 112 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 810 | NR | 580 | 965 | NR | 710 | 96 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 669 | NR | 585 | 986 | NR | 715 | 81 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 338 | NR | 590 | 997 | NR | 720 | 69 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 246 | NR | 595 | 997 | NR | 725 | 58 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 182 | NR | 600 | 991 | NR | 730 | 49 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 115 | NR | 605 | 968 | NR | 735 | 42 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 97 | NR | 610 | 939 | NR | 740 | 37 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 103 | NR | 615 | 896 | NR | 745 | 32 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2411-284-1

## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.33**

| 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 | 119 | NR | 620 | 846 | NR | 750 | 28 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 160 | NR | 625 | 793 | NR | 755 | 25 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 225 | NR | 630 | 739 | NR | 760 | 22 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 308 | NR | 635 | 681 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 392 | NR | 640 | 623 | NR | 770 | 16 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 474 | NR | 645 | 563 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 545 | NR | 650 | 506 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 603 | NR | 655 | 451 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 649 | NR | 660 | 399 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 687 | NR | 665 | 352 | NR | 795 | 8 | NR | 925 | 0 | NR |
| 410 | 11 | NR | 540 | 721 | NR | 670 | 307 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 751 | NR | 675 | 268 | NR | 805 | 6 | NR | 935 | 0 | NR |
| 420 | 43 | NR | 550 | 779 | NR | 680 | 234 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 88 | NR | 555 | 811 | NR | 685 | 203 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 163 | NR | 560 | 843 | NR | 690 | 176 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 288 | NR | 565 | 873 | NR | 695 | 152 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 416 | NR | 570 | 907 | NR | 700 | 131 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 566 | NR | 575 | 938 | NR | 705 | 112 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 810 | NR | 580 | 965 | NR | 710 | 96 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 669 | NR | 585 | 986 | NR | 715 | 81 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 338 | NR | 590 | 997 | NR | 720 | 69 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 246 | NR | 595 | 997 | NR | 725 | 58 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 182 | NR | 600 | 991 | NR | 730 | 49 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 115 | NR | 605 | 968 | NR | 735 | 42 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 97 | NR | 610 | 939 | NR | 740 | 37 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 103 | NR | 615 | 896 | NR | 745 | 32 | NR | 875 | 1 | NR | | | |

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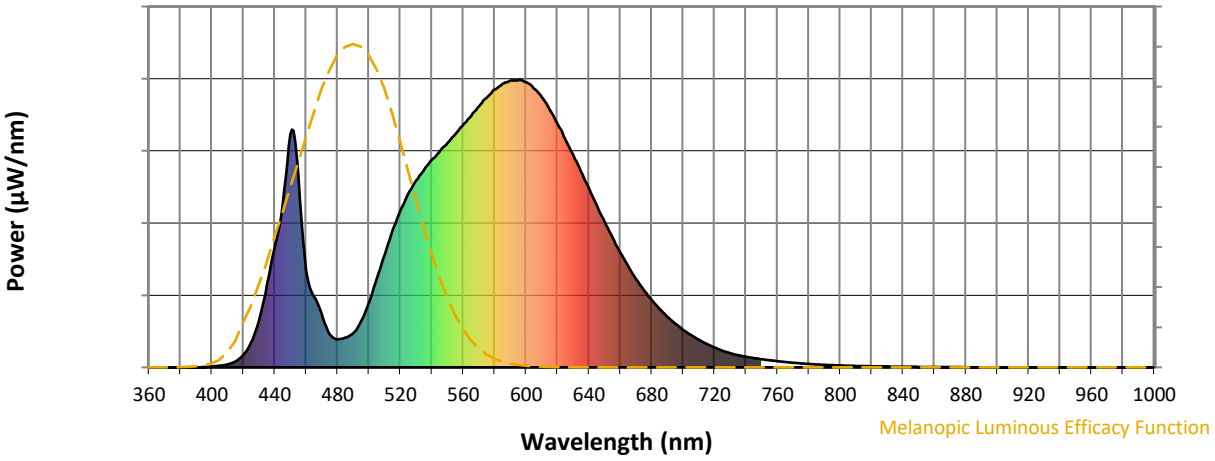
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.47**

| 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 | 119 | NR | 620 | 846 | NR | 750 | 28 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 160 | NR | 625 | 793 | NR | 755 | 25 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 225 | NR | 630 | 739 | NR | 760 | 22 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 308 | NR | 635 | 681 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 392 | NR | 640 | 623 | NR | 770 | 16 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 474 | NR | 645 | 563 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 545 | NR | 650 | 506 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 603 | NR | 655 | 451 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 649 | NR | 660 | 399 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 687 | NR | 665 | 352 | NR | 795 | 8 | NR | 925 | 0 | NR |
| 410 | 11 | NR | 540 | 721 | NR | 670 | 307 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 751 | NR | 675 | 268 | NR | 805 | 6 | NR | 935 | 0 | NR |
| 420 | 43 | NR | 550 | 779 | NR | 680 | 234 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 88 | NR | 555 | 811 | NR | 685 | 203 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 163 | NR | 560 | 843 | NR | 690 | 176 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 288 | NR | 565 | 873 | NR | 695 | 152 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 416 | NR | 570 | 907 | NR | 700 | 131 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 566 | NR | 575 | 938 | NR | 705 | 112 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 810 | NR | 580 | 965 | NR | 710 | 96 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 669 | NR | 585 | 986 | NR | 715 | 81 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 338 | NR | 590 | 997 | NR | 720 | 69 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 246 | NR | 595 | 997 | NR | 725 | 58 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 182 | NR | 600 | 991 | NR | 730 | 49 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 115 | NR | 605 | 968 | NR | 735 | 42 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 97 | NR | 610 | 939 | NR | 740 | 37 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 103 | NR | 615 | 896 | NR | 745 | 32 | NR | 875 | 1 | NR | | | |

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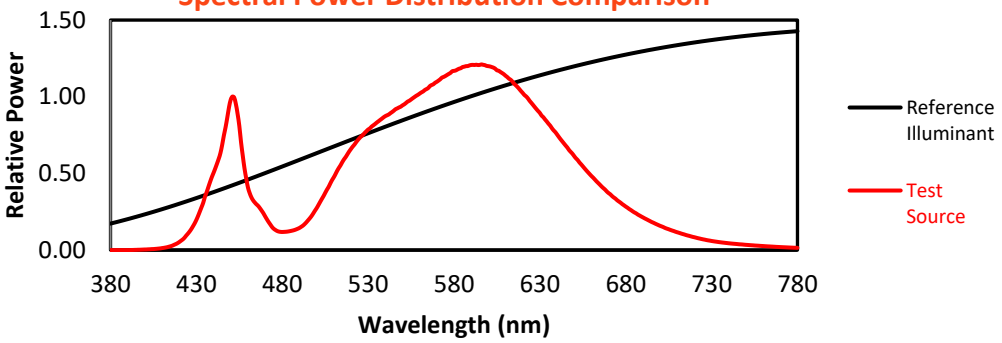
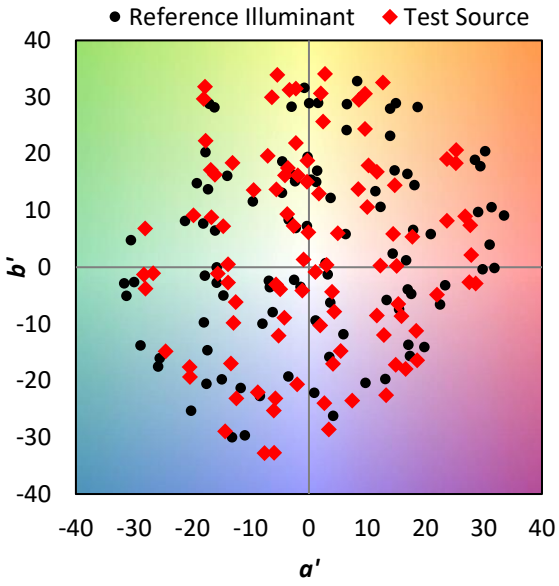
## Summary

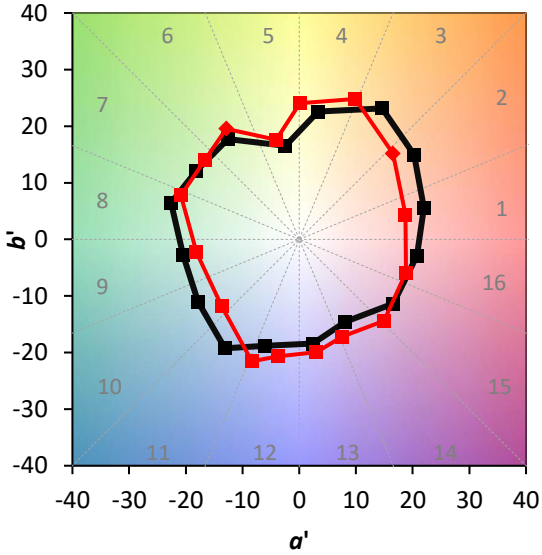
$R_f$ = 76.6
$R_g$ = 95.4
CIE $R_a$ = 73.9
$R_9$ = -18.0

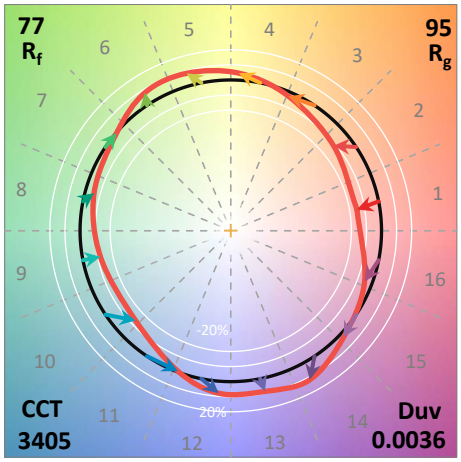
## Spectral Power Distribution Comparison

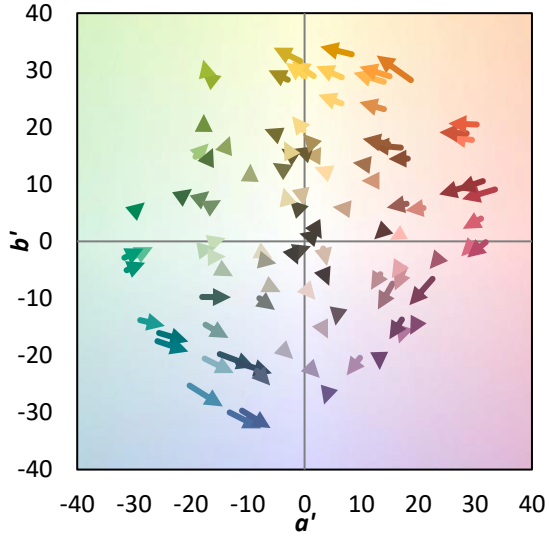



## Color Vector Graphics



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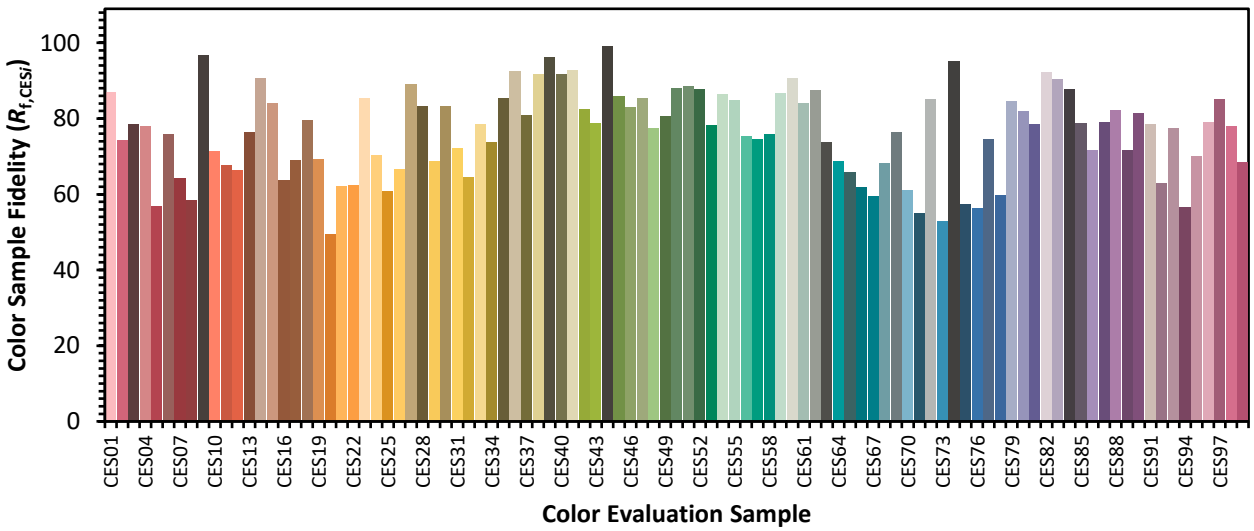
## Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 67 | CES51 = 88 | CES76 = 56 |
| CES02 = 62 | CES27 = 89 | CES52 = 88 | CES77 = 75 |
| CES03 = 31 | CES28 = 83 | CES53 = 78 | CES78 = 60 |
| CES04 = 70 | CES29 = 69 | CES54 = 86 | CES79 = 85 |
| CES05 = 48 | CES30 = 83 | CES55 = 85 | CES80 = 82 |
| CES06 = 51 | CES31 = 72 | CES56 = 75 | CES81 = 78 |
| CES07 = 41 | CES32 = 65 | CES57 = 75 | CES82 = 92 |
| CES08 = 40 | CES33 = 78 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 74 | CES59 = 87 | CES84 = 88 |
| CES10 = 75 | CES35 = 86 | CES60 = 91 | CES85 = 79 |
| CES11 = 58 | CES36 = 93 | CES61 = 84 | CES86 = 72 |
| CES12 = 64 | CES37 = 81 | CES62 = 88 | CES87 = 79 |
| CES13 = 43 | CES38 = 92 | CES63 = 74 | CES88 = 82 |
| CES14 = 74 | CES39 = 96 | CES64 = 69 | CES89 = 72 |
| CES15 = 71 | CES40 = 92 | CES65 = 66 | CES90 = 82 |
| CES16 = 47 | CES41 = 93 | CES66 = 62 | CES91 = 79 |
| CES17 = 50 | CES42 = 83 | CES67 = 60 | CES92 = 63 |
| CES18 = 56 | CES43 = 79 | CES68 = 68 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 76 | CES94 = 56 |
| CES20 = 65 | CES45 = 86 | CES70 = 61 | CES95 = 70 |
| CES21 = 86 | CES46 = 83 | CES71 = 55 | CES96 = 79 |
| CES22 = 79 | CES47 = 85 | CES72 = 85 | CES97 = 85 |
| CES23 = 92 | CES48 = 78 | CES73 = 53 | CES98 = 78 |
| CES24 = 91 | CES49 = 81 | CES74 = 95 | CES99 = 68 |
| CES25 = 72 | CES50 = 88 | CES75 = 57 | |



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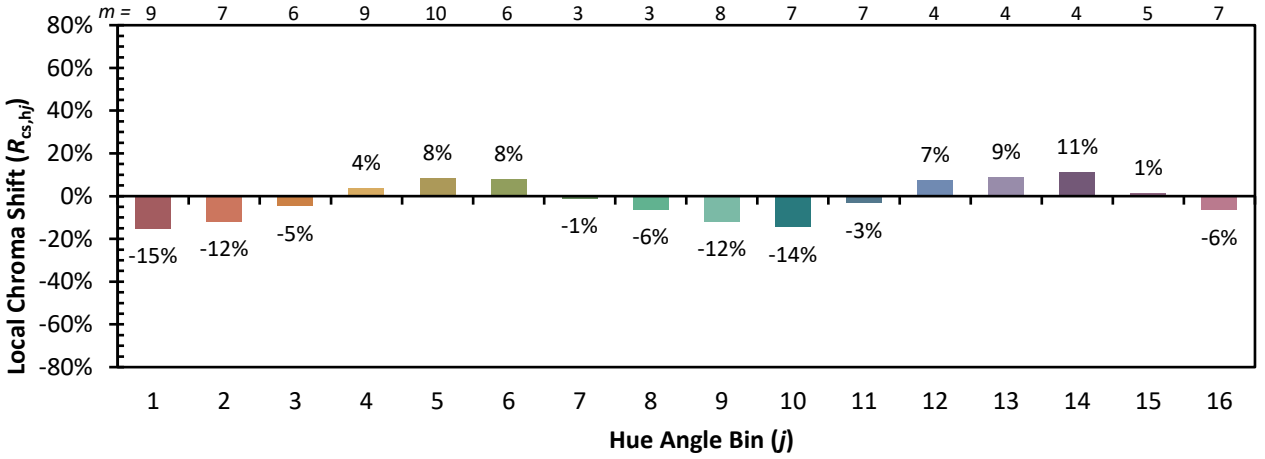
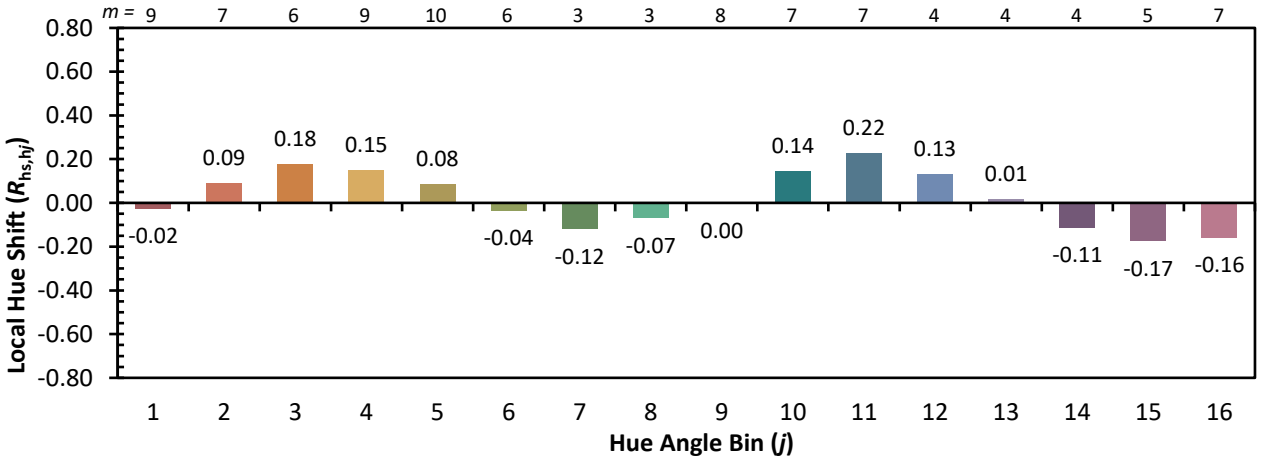
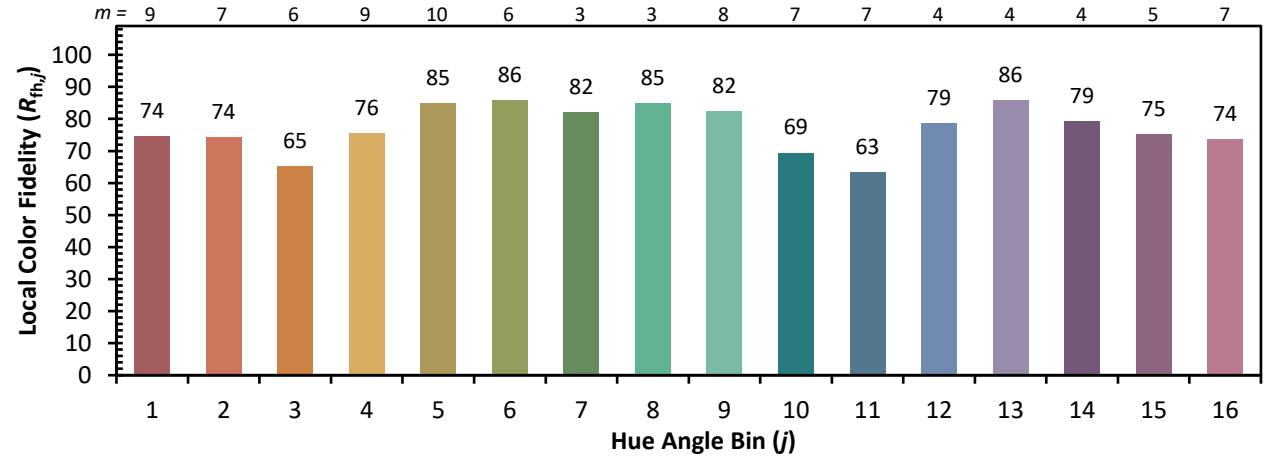
## Color Rendition by Hue-Angle Bin



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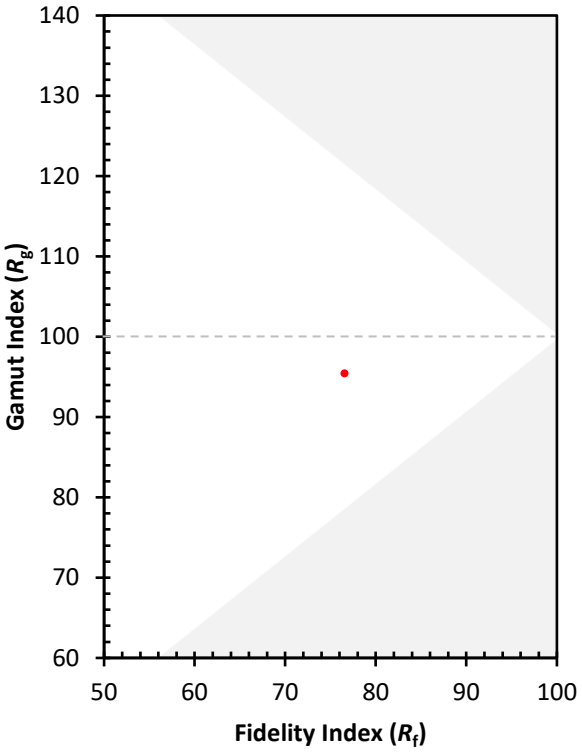
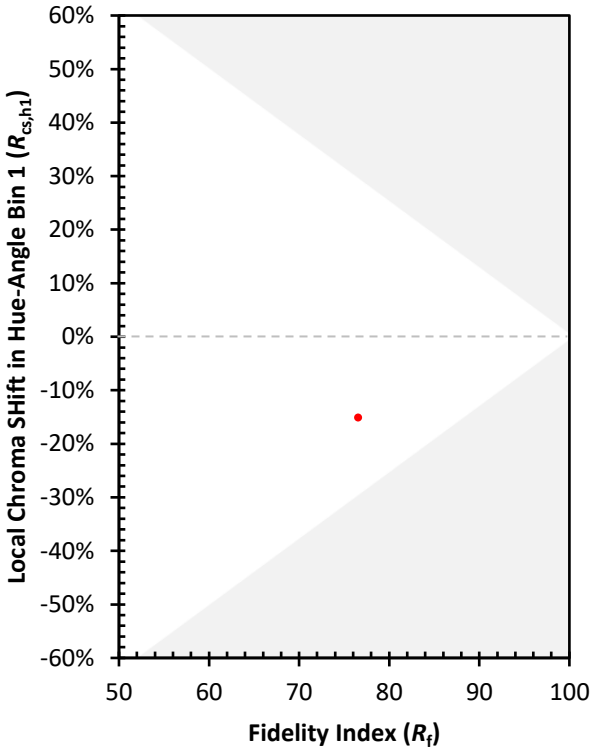
## Measure Comparisons




(END OF REPORT)