

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled data based on original data using
LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions

Brand: INVUE

Report Number: P868702

Luminaire Tested: EMM2-HTN-SA3A-727-U-5MQ

Issue Date: 08/22/2024

Test Information

Test Method: LM-79-2024
Report Number: P868702
Test Lab: INNOVATION CENTER(G3)
Issue Date: 5/19/2026
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: INVUE
Catalog Number: EMM2-HTN-SA3A-727-U-5MQ
Description: EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 130W 70CRI 2700K FIXTURE w/ TYPE V SQUARE MEDIUM DISTRIBUTION OPTIC
Light Source: (30) 2700K CCT, 70 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 16174.7 lumens
Efficiency: N/A
Efficacy: 143.1 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')
IES Classification: Type V - Short
BUG Rating: B4 - U0 - G2

Input Watts (W): 113
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 7.77%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT

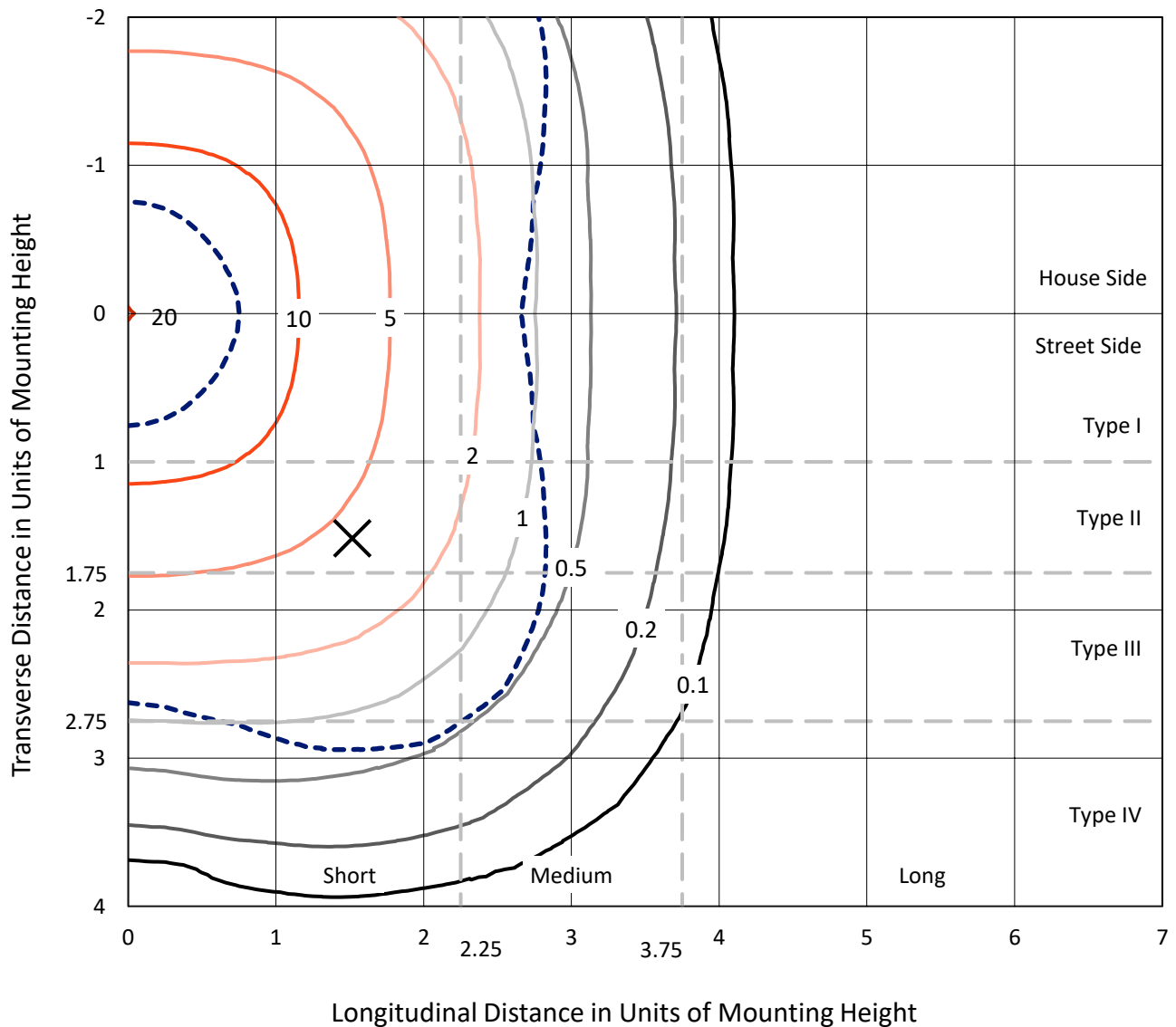


REPORT NUMBER: P868702

CATALOG NUMBER: EMM2-HTN-SA3A-727-U-5MQ

Iso-Footcandle Lines of Horizontal Illumination

× Max cd
 - - - 1/2 Max cd

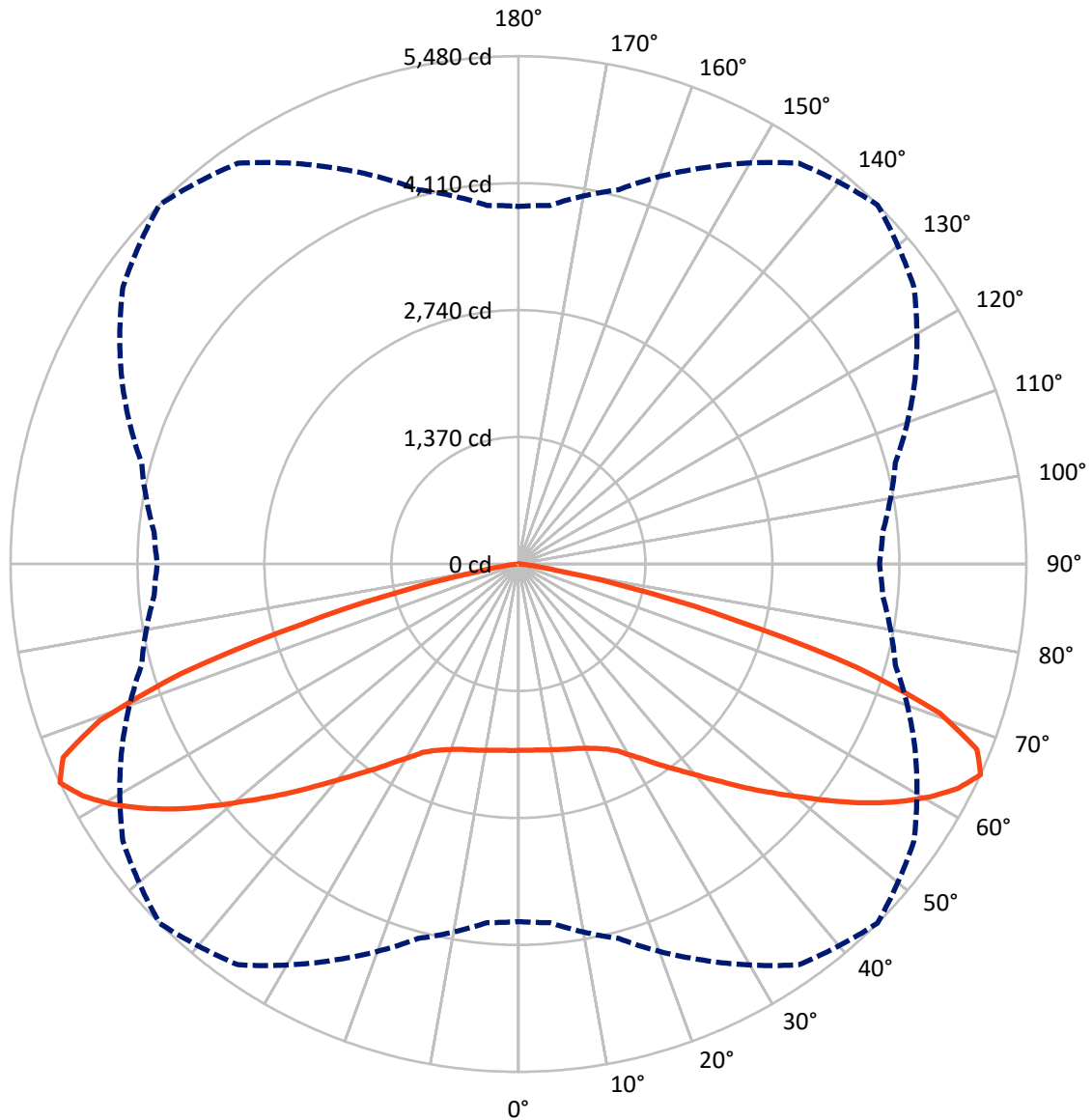


Based on 10 foot mounting height. Maximum calculated value = 20.1 fc
 Type V - Short - N/A

REPORT NUMBER: P868702

CATALOG NUMBER: EMM2-HTN-SA3A-727-U-5MQ

Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

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CATALOG NUMBER: EMM2-HTN-SA3A-727-U-5MQ

FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 8087.4 | 0.0 | 8087.4 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| Street Side | Lumens | 8087.4 | 0.0 | 8087.4 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| Total | Lumens | 16174.7 | 0.0 | 16174.7 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 193.2 | 1.2 |
| 10°-20° | 588.3 | 3.6 |
| 20°-30° | 1034.7 | 6.4 |
| 30°-40° | 1673.4 | 10.3 |
| 40°-50° | 2606.6 | 16.1 |
| 50°-60° | 3811.4 | 23.6 |
| 60°-70° | 4389.0 | 27.1 |
| 70°-80° | 1792.5 | 11.1 |
| 80°-90° | 85.8 | 0.5 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 16174.7 | 100.0 |
| 0°-180° | 16174.7 | 100.0 |



REPORT NUMBER: P868702

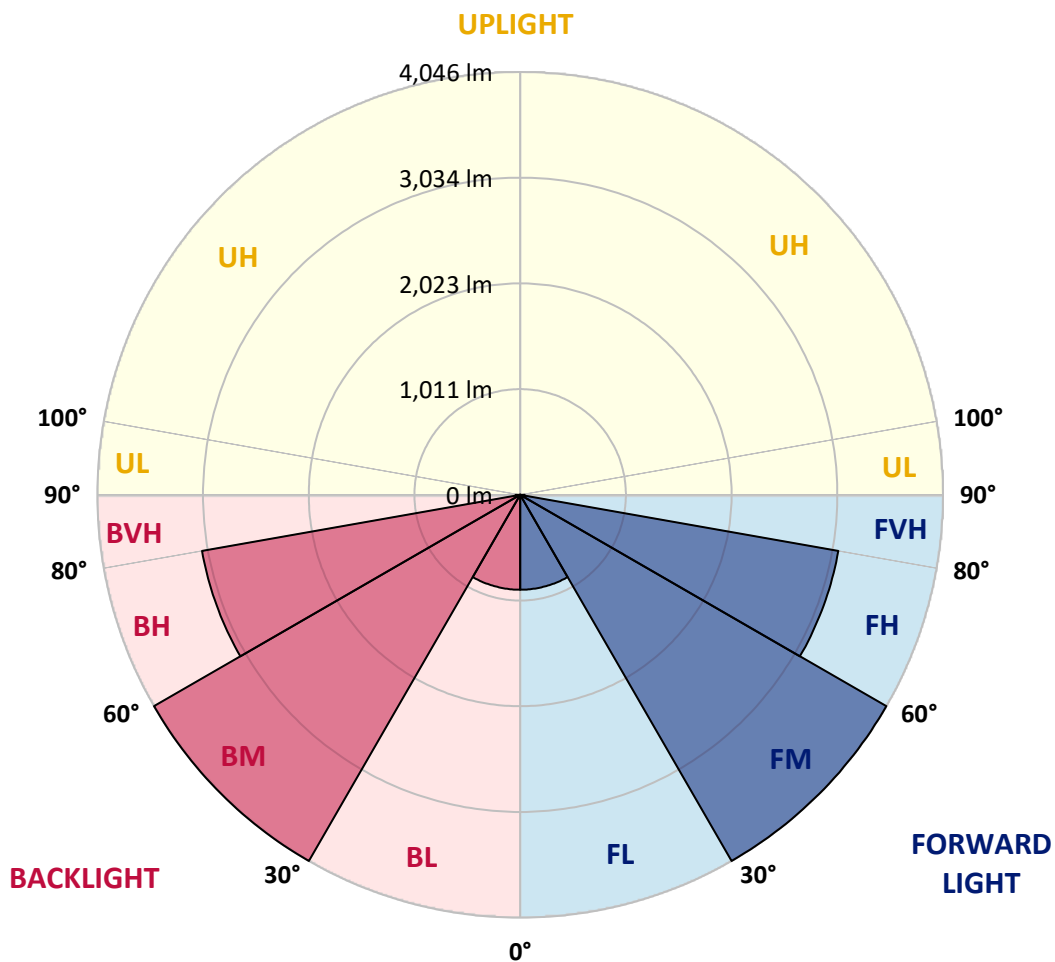
CATALOG NUMBER: EMM2-HTN-SA3A-727-U-5MQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|------|-------------|--------|-----------|-------------------------|------|---------|
| | | | | B | U | G |
| FL | (0°-30°) | 908.1 | 5.6 | | | |
| FM | (30°-60°) | 4045.7 | 25.0 | | | |
| FH | (60°-80°) | 3090.7 | 19.1 | | | G2/5000 |
| FVH | (80°-90°) | 42.9 | 0.3 | | | G1/100 |
| BL | (0°-30°) | 908.1 | 5.6 | B2/1000 | | |
| BM | (30°-60°) | 4045.7 | 25.0 | B3/5000 | | |
| BH | (60°-80°) | 3090.7 | 19.1 | B4/5000 | | G2/5000 |
| BVH | (80°-90°) | 42.9 | 0.3 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B4-U0-G2

Type V Short





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CATALOG NUMBER: EMM2-HTN-SA3A-727-U-5MQ

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2009.8 | 2009.8 | 2009.8 | 2009.8 | 2009.8 | 2009.8 | 2009.8 | 2009.8 | 2009.8 | 2009.8 | 2009.8 |
| 2.5° | 2016.0 | 2016.0 | 2012.9 | 2012.9 | 2006.7 | 2012.9 | 2009.8 | 2012.9 | 2009.8 | 2009.8 | 2012.9 |
| 5° | 2022.2 | 2022.2 | 2016.0 | 2019.1 | 2012.9 | 2016.0 | 2012.9 | 2019.1 | 2016.0 | 2012.9 | 2019.1 |
| 7.5° | 2031.5 | 2031.5 | 2025.3 | 2028.4 | 2022.2 | 2025.3 | 2022.2 | 2028.4 | 2025.3 | 2025.3 | 2028.4 |
| 10° | 2040.9 | 2044.0 | 2037.8 | 2034.7 | 2034.7 | 2037.8 | 2040.9 | 2044.0 | 2040.9 | 2040.9 | 2047.1 |
| 12.5° | 2056.4 | 2059.5 | 2053.3 | 2050.2 | 2050.2 | 2053.3 | 2056.4 | 2062.6 | 2053.3 | 2053.3 | 2053.3 |
| 15° | 2071.9 | 2071.9 | 2068.8 | 2065.7 | 2068.8 | 2071.9 | 2071.9 | 2078.1 | 2071.9 | 2065.7 | 2065.7 |
| 17.5° | 2078.1 | 2081.2 | 2078.1 | 2084.4 | 2087.5 | 2090.6 | 2093.7 | 2093.7 | 2084.4 | 2081.2 | 2081.2 |
| 20° | 2099.9 | 2103.0 | 2096.8 | 2099.9 | 2109.2 | 2121.6 | 2121.6 | 2121.6 | 2121.6 | 2112.3 | 2112.3 |
| 22.5° | 2137.2 | 2140.3 | 2137.2 | 2137.2 | 2149.6 | 2162.0 | 2162.0 | 2171.3 | 2158.9 | 2152.7 | 2152.7 |
| 25° | 2199.3 | 2199.3 | 2196.2 | 2199.3 | 2205.5 | 2211.7 | 2224.1 | 2230.4 | 2230.4 | 2227.2 | 2230.4 |
| 27.5° | 2273.8 | 2276.9 | 2273.8 | 2273.8 | 2270.7 | 2283.2 | 2301.8 | 2311.1 | 2314.2 | 2317.3 | 2317.3 |
| 30° | 2373.2 | 2379.5 | 2376.4 | 2379.5 | 2385.7 | 2395.0 | 2401.2 | 2404.3 | 2404.3 | 2398.1 | 2398.1 |
| 32.5° | 2482.0 | 2488.2 | 2482.0 | 2497.5 | 2519.2 | 2519.2 | 2513.0 | 2525.5 | 2516.1 | 2509.9 | 2503.7 |
| 35° | 2609.3 | 2609.3 | 2615.5 | 2621.8 | 2652.8 | 2668.3 | 2668.3 | 2662.1 | 2643.5 | 2634.2 | 2640.4 |
| 37.5° | 2755.3 | 2758.4 | 2764.6 | 2767.8 | 2795.7 | 2823.7 | 2820.6 | 2805.0 | 2783.3 | 2758.4 | 2758.4 |
| 40° | 2929.3 | 2923.1 | 2926.2 | 2947.9 | 2969.7 | 3003.8 | 3006.9 | 2985.2 | 2947.9 | 2923.1 | 2923.1 |
| 42.5° | 3087.7 | 3090.8 | 3103.2 | 3131.2 | 3180.9 | 3208.9 | 3193.3 | 3156.0 | 3115.7 | 3084.6 | 3081.5 |
| 45° | 3255.4 | 3252.3 | 3286.5 | 3345.5 | 3410.8 | 3444.9 | 3420.1 | 3367.3 | 3305.1 | 3264.8 | 3264.8 |
| 47.5° | 3426.3 | 3423.2 | 3479.1 | 3575.4 | 3659.3 | 3687.2 | 3662.4 | 3594.0 | 3510.2 | 3451.1 | 3441.8 |
| 50° | 3603.4 | 3615.8 | 3674.8 | 3811.5 | 3920.2 | 3951.3 | 3920.2 | 3830.1 | 3718.3 | 3640.6 | 3628.2 |
| 52.5° | 3805.3 | 3814.6 | 3892.2 | 4041.4 | 4174.9 | 4246.4 | 4199.8 | 4066.2 | 3923.3 | 3830.1 | 3817.7 |
| 55° | 3991.6 | 3997.9 | 4109.7 | 4289.9 | 4454.5 | 4550.8 | 4476.2 | 4305.4 | 4125.2 | 4007.2 | 3994.8 |
| 57.5° | 4122.1 | 4137.6 | 4280.5 | 4513.5 | 4724.7 | 4836.6 | 4724.7 | 4541.5 | 4302.3 | 4156.3 | 4147.0 |
| 60° | 4206.0 | 4230.8 | 4395.5 | 4687.5 | 4979.5 | 5100.6 | 4985.7 | 4731.0 | 4435.9 | 4246.4 | 4237.0 |
| 62.5° | 4162.5 | 4196.7 | 4407.9 | 4790.0 | 5196.9 | 5327.4 | 5178.3 | 4821.0 | 4420.3 | 4181.1 | 4156.3 |
| 65° | 3858.1 | 3882.9 | 4181.1 | 4715.4 | 5277.7 | 5479.6 | 5209.3 | 4721.6 | 4209.1 | 3945.1 | 3895.4 |
| 67.5° | 3227.5 | 3271.0 | 3665.5 | 4355.1 | 5103.7 | 5336.7 | 4995.0 | 4364.4 | 3746.2 | 3423.2 | 3367.3 |
| 70° | 2478.9 | 2556.5 | 2988.3 | 3736.9 | 4560.1 | 4824.1 | 4448.3 | 3684.1 | 2957.2 | 2628.0 | 2525.5 |
| 72.5° | 1432.0 | 1553.2 | 2186.9 | 2916.9 | 3628.2 | 3827.0 | 3298.9 | 2575.2 | 1963.2 | 1730.2 | 1702.3 |
| 75° | 475.3 | 518.8 | 1040.6 | 1680.5 | 2314.2 | 2413.6 | 2062.6 | 1624.6 | 1292.2 | 1105.9 | 1115.2 |
| 77.5° | 233.0 | 233.0 | 313.7 | 615.1 | 1053.0 | 1242.5 | 1127.6 | 785.9 | 565.4 | 428.7 | 416.2 |
| 80° | 186.4 | 186.4 | 217.4 | 301.3 | 354.1 | 416.2 | 354.1 | 257.8 | 211.2 | 192.6 | 201.9 |
| 82.5° | 90.1 | 87.0 | 102.5 | 146.0 | 149.1 | 142.9 | 133.6 | 133.6 | 127.4 | 118.0 | 114.9 |
| 85° | 6.2 | 6.2 | 12.4 | 28.0 | 46.6 | 62.1 | 71.4 | 68.3 | 65.2 | 55.9 | 62.1 |
| 87.5° | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 6.2 | 6.2 | 6.2 | 6.2 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-1-R4

Test Date: 08/20/2019

Luminaire Tested: SA1C-727-U-5WQ

Data in this report applies to products using SA and SB light squares

Test Information

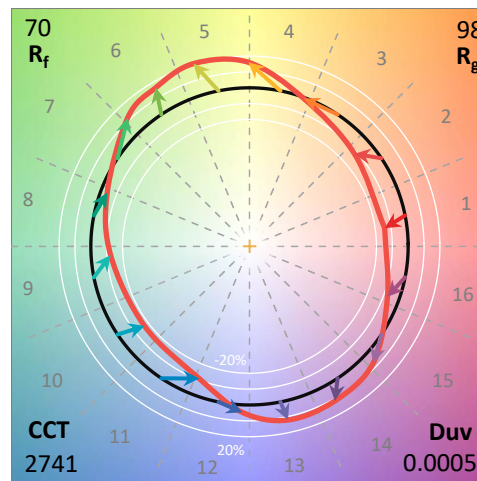
Test Method: LM-79-2008
 Report Number: SP1-1908-441-1-R4
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/28/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: MCGRAW-EDISON
 Catalog Number: **SA1C-727-U-5WQ**
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-1-R3. TO UPDATE THE CATALOG NUMBER.TESTED IN
 SITU. (1) 70 CRI, 2700K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

CCT (K): 2741
 CIE u': 0.2605
 CIE v': 0.5272
 Duv: 0.0005
 CIE x: 0.4573
 CIE y: 0.4113
 CIE z: 0.1313
 Peak Wavelength (nm): 602
 Dominant Wavelength (nm): 583
 Purity: 61.2
 Rf: 69.9
 Rg: 98.3

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.5 | | |
| R1: | 69.2 | R9: | -16.1 |
| R2: | 79.4 | R10: | 51.4 |
| R3: | 87.8 | R11: | 63.1 |
| R4: | 69.4 | R12: | 42.0 |
| R5: | 66.4 | R13: | 70.2 |
| R6: | 69.8 | R14: | 92.4 |
| R7: | 79.8 | | |
| R8: | 50.1 | | |



Test Conditions

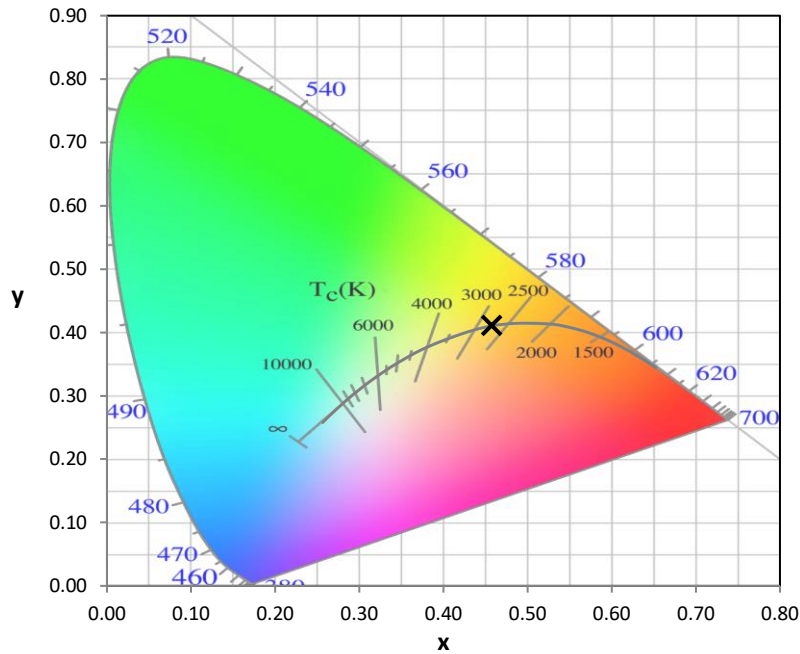
Stabilization Time: 56M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.3./42%
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-1-R4

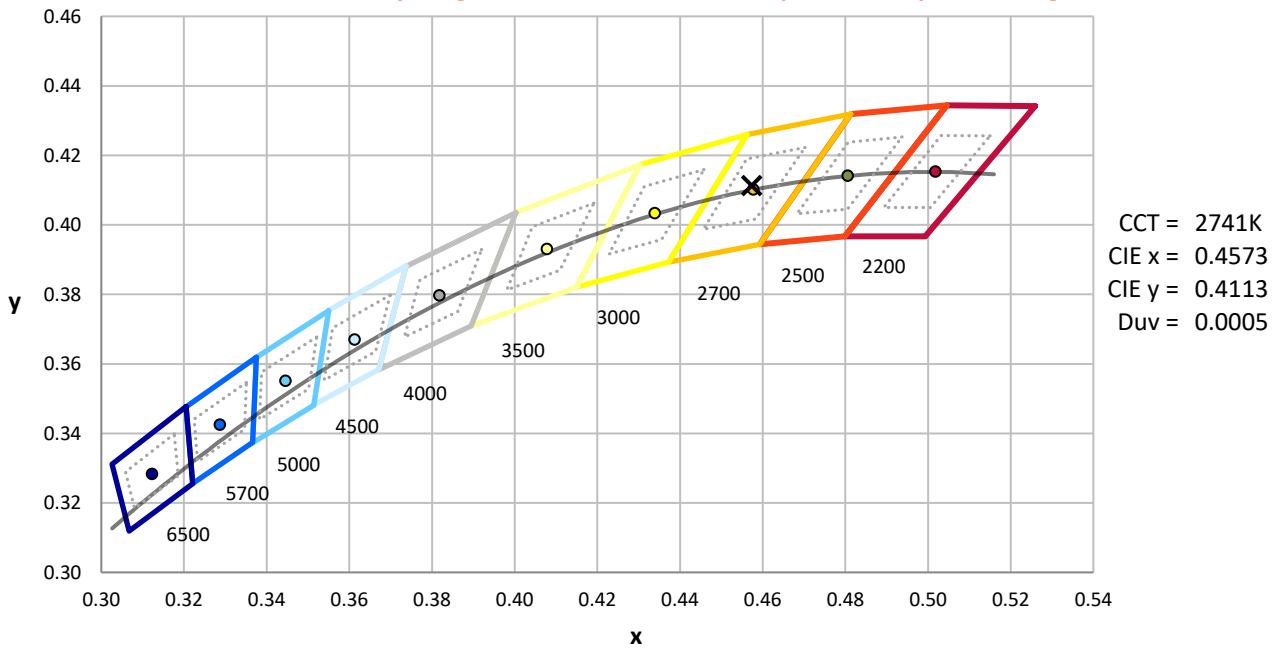
| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/28/2019 | 12/28/2019 |
| Power Meter | IN0071 | 12/5/2018 | 12/5/2019 |
| AC Power Source | IN0063 | 12/5/2018 | 12/5/2019 |
| DC Power Source | IN0208 | 12/5/2018 | 12/5/2019 |
| Sphere Thermometer | IN0085 | 12/5/2018 | 12/5/2019 |
| Room Thermometer | IN0046 | 12/5/2018 | 12/5/2019 |

REPORT NUMBER: SP1-1908-441-1-R4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 2700K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-1-R4

Photopic Flux vs. Wavelength

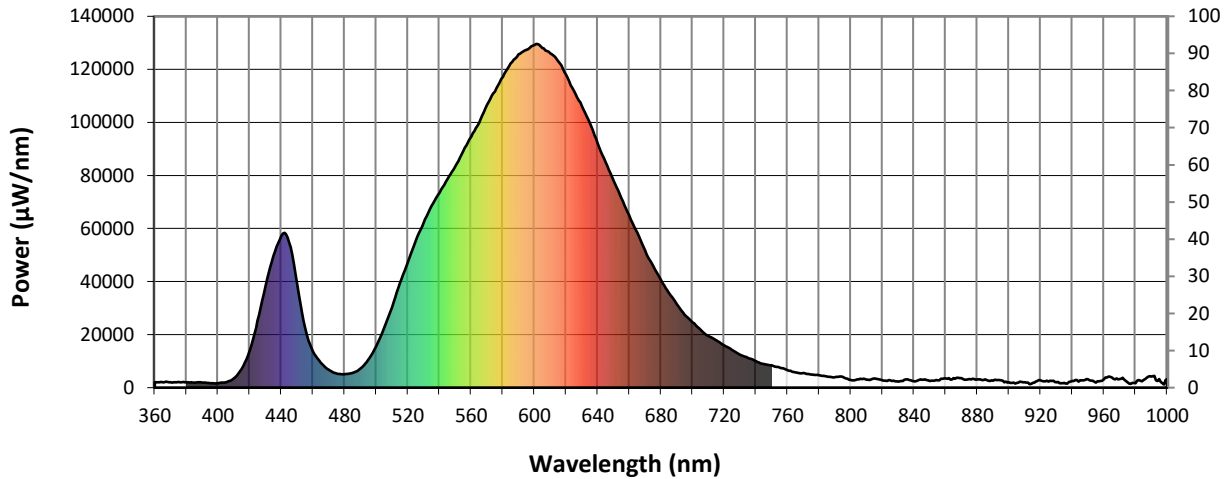


#####

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360 | 2044 | NR | 490 | 7179 | NR | 620 | 118034 | NR | 750 | 8362 | NR | 880 | 3128 | NR |
| 365 | 2016 | NR | 495 | 10476 | NR | 625 | 111884 | NR | 755 | 7635 | NR | 885 | 3110 | NR |
| 370 | 2020 | NR | 500 | 15549 | NR | 630 | 106119 | NR | 760 | 6582 | NR | 890 | 2632 | NR |
| 375 | 2137 | NR | 505 | 22477 | NR | 635 | 99706 | NR | 765 | 5777 | NR | 895 | 2709 | NR |
| 380 | 2046 | NR | 510 | 30417 | NR | 640 | 92142 | NR | 770 | 5474 | NR | 900 | 2016 | NR |
| 385 | 1925 | NR | 515 | 39274 | NR | 645 | 84987 | NR | 775 | 4977 | NR | 905 | 1748 | NR |
| 390 | 1893 | NR | 520 | 47282 | NR | 650 | 78016 | NR | 780 | 4723 | NR | 910 | 2046 | NR |
| 395 | 1695 | NR | 525 | 55413 | NR | 655 | 71541 | NR | 785 | 4219 | NR | 915 | 1844 | NR |
| 400 | 1633 | NR | 530 | 62377 | NR | 660 | 64863 | NR | 790 | 3969 | NR | 920 | 2734 | NR |
| 405 | 2065 | NR | 535 | 68520 | NR | 665 | 58485 | NR | 795 | 4122 | NR | 925 | 2307 | NR |
| 410 | 3449 | NR | 540 | 73435 | NR | 670 | 51641 | NR | 800 | 2864 | NR | 930 | 2039 | NR |
| 415 | 7117 | NR | 545 | 78677 | NR | 675 | 46030 | NR | 805 | 3151 | NR | 935 | 1784 | NR |
| 420 | 13992 | NR | 550 | 83331 | NR | 680 | 40590 | NR | 810 | 3022 | NR | 940 | 2464 | NR |
| 425 | 25176 | NR | 555 | 89120 | NR | 685 | 35691 | NR | 815 | 3471 | NR | 945 | 2794 | NR |
| 430 | 38151 | NR | 560 | 94613 | NR | 690 | 31631 | NR | 820 | 2749 | NR | 950 | 3090 | NR |
| 435 | 49673 | NR | 565 | 99818 | NR | 695 | 27437 | NR | 825 | 2729 | NR | 955 | 1866 | NR |
| 440 | 57273 | NR | 570 | 106526 | NR | 700 | 24589 | NR | 830 | 2282 | NR | 960 | 3110 | NR |
| 445 | 54802 | NR | 575 | 111610 | NR | 705 | 21832 | NR | 835 | 3140 | NR | 965 | 3880 | NR |
| 450 | 39184 | NR | 580 | 117163 | NR | 710 | 19500 | NR | 840 | 2365 | NR | 970 | 3243 | NR |
| 455 | 22506 | NR | 585 | 122201 | NR | 715 | 17870 | NR | 845 | 3024 | NR | 975 | 2014 | NR |
| 460 | 13692 | NR | 590 | 125662 | NR | 720 | 15924 | NR | 850 | 2510 | NR | 980 | 1688 | NR |
| 465 | 9446 | NR | 595 | 127415 | NR | 725 | 14268 | NR | 855 | 2739 | NR | 985 | 2827 | NR |
| 470 | 6698 | NR | 600 | 129155 | NR | 730 | 12438 | NR | 860 | 3515 | NR | 990 | 4172 | NR |
| 475 | 5328 | NR | 605 | 128057 | NR | 735 | 11255 | NR | 865 | 3600 | NR | 995 | 3177 | NR |
| 480 | 5081 | NR | 610 | 126031 | NR | 740 | 9951 | NR | 870 | 3609 | NR | 1000 | 3241 | NR |
| 485 | 5579 | NR | 615 | 123059 | NR | 745 | 8870 | NR | 875 | 3208 | NR | | | |

REPORT NUMBER: SP1-1908-441-1-R4

Scotopic Flux vs. Wavelength

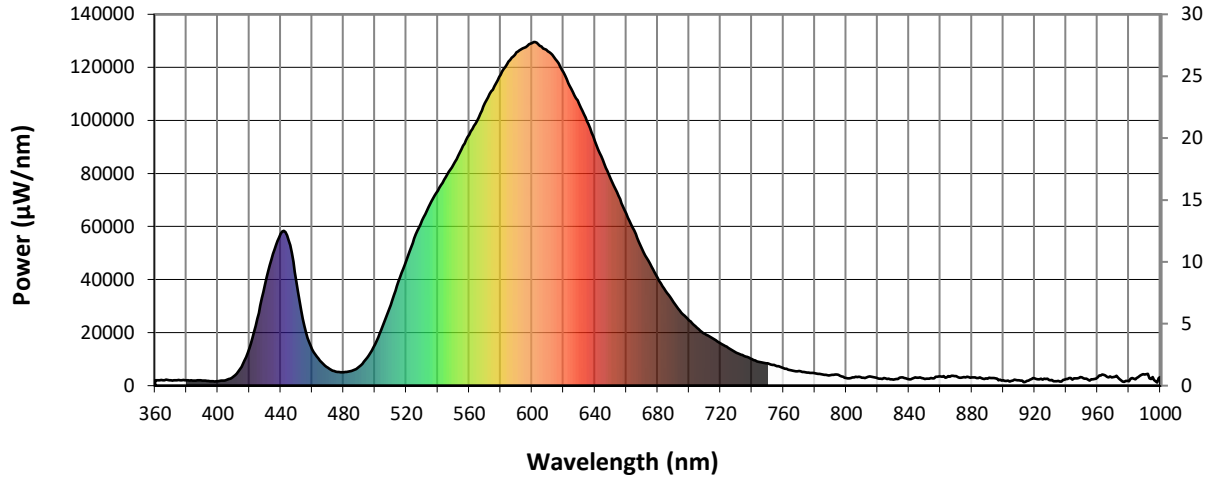


Scotopic Lumens: 6474.3 S/P: 1.04

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 2044 | NR | 490 | 7179 | NR | 620 | 118034 | NR | 750 | 8362 | NR | 880 | 3128 | NR |
| 365 | 2016 | NR | 495 | 10476 | NR | 625 | 111884 | NR | 755 | 7635 | NR | 885 | 3110 | NR |
| 370 | 2020 | NR | 500 | 15549 | NR | 630 | 106119 | NR | 760 | 6582 | NR | 890 | 2632 | NR |
| 375 | 2137 | NR | 505 | 22477 | NR | 635 | 99706 | NR | 765 | 5777 | NR | 895 | 2709 | NR |
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| 390 | 1893 | NR | 520 | 47282 | NR | 650 | 78016 | NR | 780 | 4723 | NR | 910 | 2046 | NR |
| 395 | 1695 | NR | 525 | 55413 | NR | 655 | 71541 | NR | 785 | 4219 | NR | 915 | 1844 | NR |
| 400 | 1633 | NR | 530 | 62377 | NR | 660 | 64863 | NR | 790 | 3969 | NR | 920 | 2734 | NR |
| 405 | 2065 | NR | 535 | 68520 | NR | 665 | 58485 | NR | 795 | 4122 | NR | 925 | 2307 | NR |
| 410 | 3449 | NR | 540 | 73435 | NR | 670 | 51641 | NR | 800 | 2864 | NR | 930 | 2039 | NR |
| 415 | 7117 | NR | 545 | 78677 | NR | 675 | 46030 | NR | 805 | 3151 | NR | 935 | 1784 | NR |
| 420 | 13992 | NR | 550 | 83331 | NR | 680 | 40590 | NR | 810 | 3022 | NR | 940 | 2464 | NR |
| 425 | 25176 | NR | 555 | 89120 | NR | 685 | 35691 | NR | 815 | 3471 | NR | 945 | 2794 | NR |
| 430 | 38151 | NR | 560 | 94613 | NR | 690 | 31631 | NR | 820 | 2749 | NR | 950 | 3090 | NR |
| 435 | 49673 | NR | 565 | 99818 | NR | 695 | 27437 | NR | 825 | 2729 | NR | 955 | 1866 | NR |
| 440 | 57273 | NR | 570 | 106526 | NR | 700 | 24589 | NR | 830 | 2282 | NR | 960 | 3110 | NR |
| 445 | 54802 | NR | 575 | 111610 | NR | 705 | 21832 | NR | 835 | 3140 | NR | 965 | 3880 | NR |
| 450 | 39184 | NR | 580 | 117163 | NR | 710 | 19500 | NR | 840 | 2365 | NR | 970 | 3243 | NR |
| 455 | 22506 | NR | 585 | 122201 | NR | 715 | 17870 | NR | 845 | 3024 | NR | 975 | 2014 | NR |
| 460 | 13692 | NR | 590 | 125662 | NR | 720 | 15924 | NR | 850 | 2510 | NR | 980 | 1688 | NR |
| 465 | 9446 | NR | 595 | 127415 | NR | 725 | 14268 | NR | 855 | 2739 | NR | 985 | 2827 | NR |
| 470 | 6698 | NR | 600 | 129155 | NR | 730 | 12438 | NR | 860 | 3515 | NR | 990 | 4172 | NR |
| 475 | 5328 | NR | 605 | 128057 | NR | 735 | 11255 | NR | 865 | 3600 | NR | 995 | 3177 | NR |
| 480 | 5081 | NR | 610 | 126031 | NR | 740 | 9951 | NR | 870 | 3609 | NR | 1000 | 3241 | NR |
| 485 | 5579 | NR | 615 | 123059 | NR | 745 | 8870 | NR | 875 | 3208 | NR | | | |

REPORT NUMBER: SP1-1908-441-1-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 2145.7 M/P: 0.35

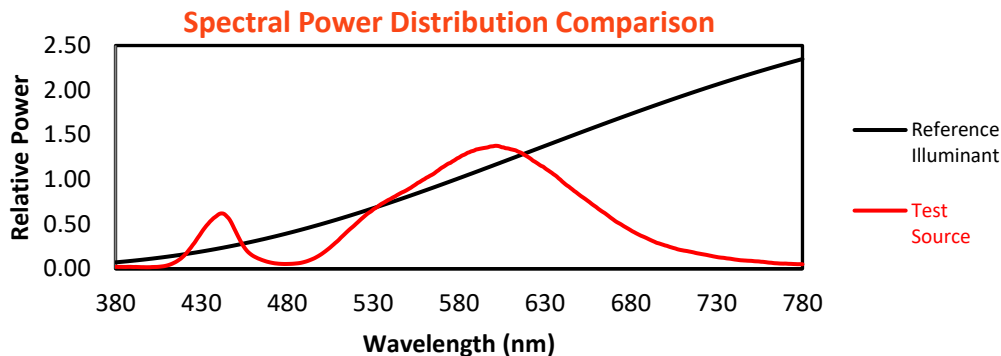
| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 2044 | NR | 490 | 7179 | NR | 620 | 118034 | NR | 750 | 8362 | NR | 880 | 3128 | NR |
| 365 | 2016 | NR | 495 | 10476 | NR | 625 | 111884 | NR | 755 | 7635 | NR | 885 | 3110 | NR |
| 370 | 2020 | NR | 500 | 15549 | NR | 630 | 106119 | NR | 760 | 6582 | NR | 890 | 2632 | NR |
| 375 | 2137 | NR | 505 | 22477 | NR | 635 | 99706 | NR | 765 | 5777 | NR | 895 | 2709 | NR |
| 380 | 2046 | NR | 510 | 30417 | NR | 640 | 92142 | NR | 770 | 5474 | NR | 900 | 2016 | NR |
| 385 | 1925 | NR | 515 | 39274 | NR | 645 | 84987 | NR | 775 | 4977 | NR | 905 | 1748 | NR |
| 390 | 1893 | NR | 520 | 47282 | NR | 650 | 78016 | NR | 780 | 4723 | NR | 910 | 2046 | NR |
| 395 | 1695 | NR | 525 | 55413 | NR | 655 | 71541 | NR | 785 | 4219 | NR | 915 | 1844 | NR |
| 400 | 1633 | NR | 530 | 62377 | NR | 660 | 64863 | NR | 790 | 3969 | NR | 920 | 2734 | NR |
| 405 | 2065 | NR | 535 | 68520 | NR | 665 | 58485 | NR | 795 | 4122 | NR | 925 | 2307 | NR |
| 410 | 3449 | NR | 540 | 73435 | NR | 670 | 51641 | NR | 800 | 2864 | NR | 930 | 2039 | NR |
| 415 | 7117 | NR | 545 | 78677 | NR | 675 | 46030 | NR | 805 | 3151 | NR | 935 | 1784 | NR |
| 420 | 13992 | NR | 550 | 83331 | NR | 680 | 40590 | NR | 810 | 3022 | NR | 940 | 2464 | NR |
| 425 | 25176 | NR | 555 | 89120 | NR | 685 | 35691 | NR | 815 | 3471 | NR | 945 | 2794 | NR |
| 430 | 38151 | NR | 560 | 94613 | NR | 690 | 31631 | NR | 820 | 2749 | NR | 950 | 3090 | NR |
| 435 | 49673 | NR | 565 | 99818 | NR | 695 | 27437 | NR | 825 | 2729 | NR | 955 | 1866 | NR |
| 440 | 57273 | NR | 570 | 106526 | NR | 700 | 24589 | NR | 830 | 2282 | NR | 960 | 3110 | NR |
| 445 | 54802 | NR | 575 | 111610 | NR | 705 | 21832 | NR | 835 | 3140 | NR | 965 | 3880 | NR |
| 450 | 39184 | NR | 580 | 117163 | NR | 710 | 19500 | NR | 840 | 2365 | NR | 970 | 3243 | NR |
| 455 | 22506 | NR | 585 | 122201 | NR | 715 | 17870 | NR | 845 | 3024 | NR | 975 | 2014 | NR |
| 460 | 13692 | NR | 590 | 125662 | NR | 720 | 15924 | NR | 850 | 2510 | NR | 980 | 1688 | NR |
| 465 | 9446 | NR | 595 | 127415 | NR | 725 | 14268 | NR | 855 | 2739 | NR | 985 | 2827 | NR |
| 470 | 6698 | NR | 600 | 129155 | NR | 730 | 12438 | NR | 860 | 3515 | NR | 990 | 4172 | NR |
| 475 | 5328 | NR | 605 | 128057 | NR | 735 | 11255 | NR | 865 | 3600 | NR | 995 | 3177 | NR |
| 480 | 5081 | NR | 610 | 126031 | NR | 740 | 9951 | NR | 870 | 3609 | NR | 1000 | 3241 | NR |
| 485 | 5579 | NR | 615 | 123059 | NR | 745 | 8870 | NR | 875 | 3208 | NR | | | |

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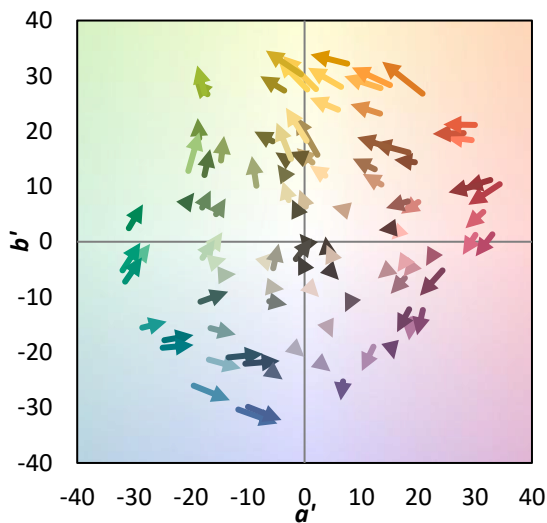
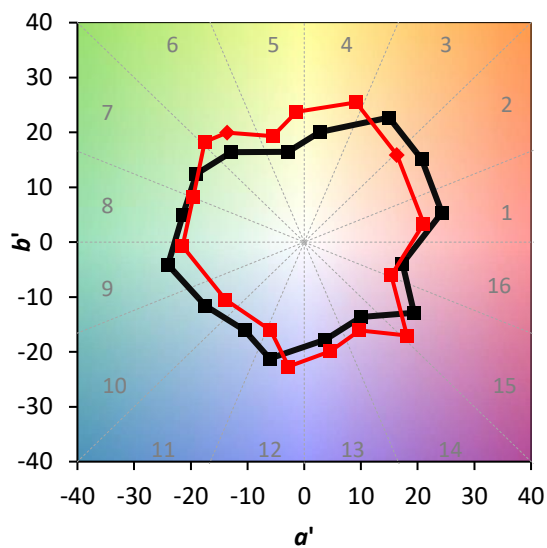
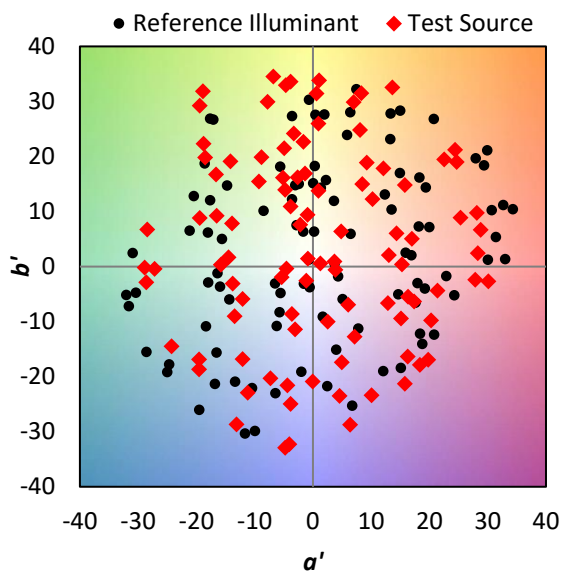
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Summary

$R_f = 69.9$
 $R_g = 98.3$
 $CIE R_a = 71.5$
 $R_9 = -16.1$



Color Vector Graphics

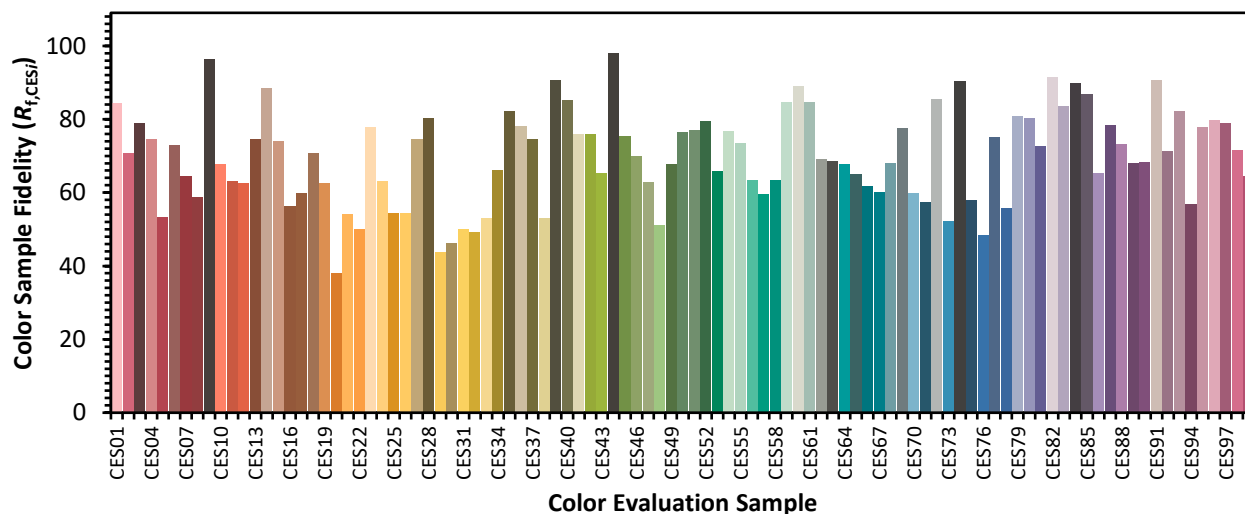


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Individual Sample Fidelity Index ($R_{f,i}$)

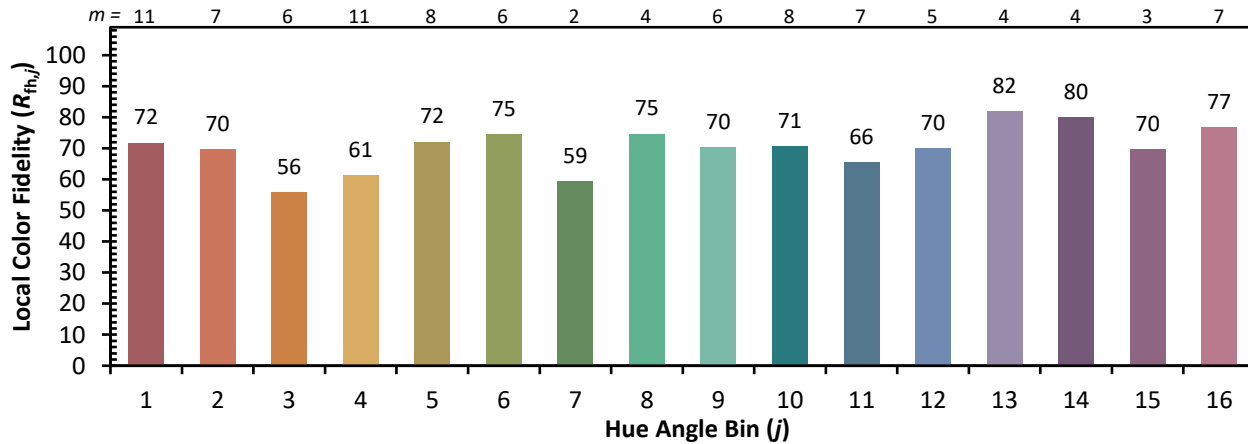
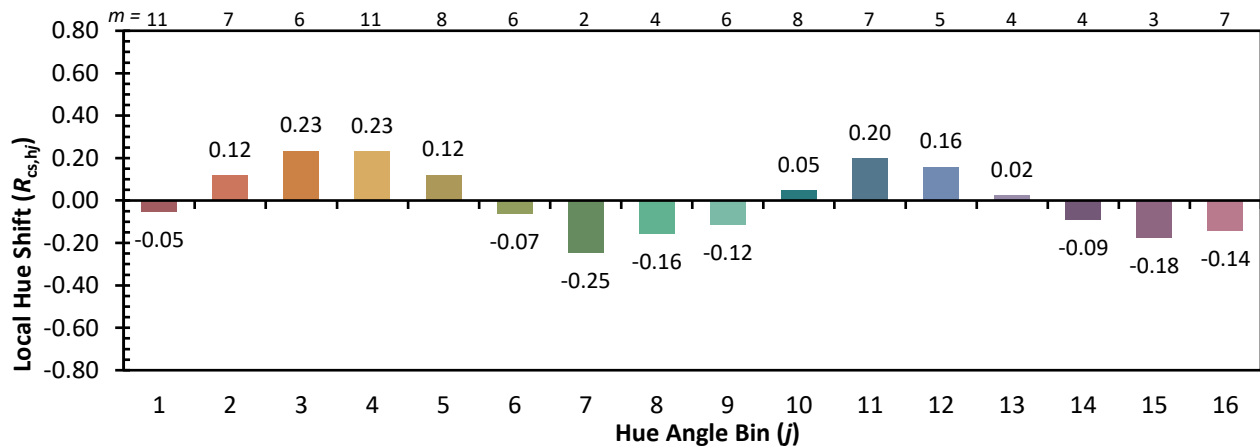
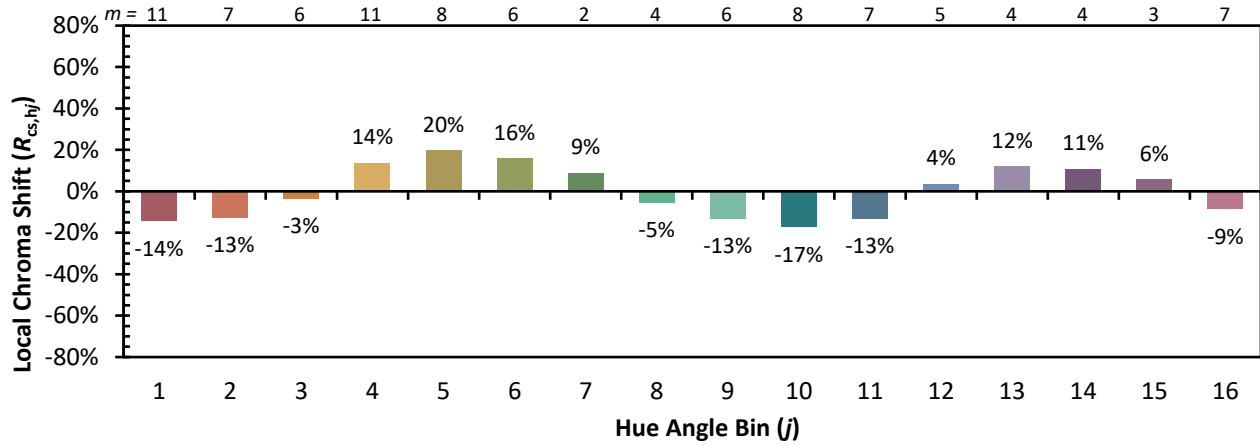
| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 54 | CES51 = 77 | CES76 = 48 |
| CES02 = 63 | CES27 = 74 | CES52 = 80 | CES77 = 75 |
| CES03 = 31 | CES28 = 80 | CES53 = 66 | CES78 = 56 |
| CES04 = 71 | CES29 = 44 | CES54 = 77 | CES79 = 81 |
| CES05 = 50 | CES30 = 46 | CES55 = 74 | CES80 = 80 |
| CES06 = 52 | CES31 = 50 | CES56 = 63 | CES81 = 73 |
| CES07 = 42 | CES32 = 49 | CES57 = 60 | CES82 = 91 |
| CES08 = 41 | CES33 = 53 | CES58 = 63 | CES83 = 84 |
| CES09 = 29 | CES34 = 66 | CES59 = 85 | CES84 = 90 |
| CES10 = 77 | CES35 = 82 | CES60 = 89 | CES85 = 87 |
| CES11 = 60 | CES36 = 78 | CES61 = 85 | CES86 = 65 |
| CES12 = 66 | CES37 = 75 | CES62 = 69 | CES87 = 78 |
| CES13 = 43 | CES38 = 53 | CES63 = 68 | CES88 = 73 |
| CES14 = 74 | CES39 = 91 | CES64 = 68 | CES89 = 68 |
| CES15 = 71 | CES40 = 85 | CES65 = 65 | CES90 = 68 |
| CES16 = 48 | CES41 = 76 | CES66 = 62 | CES91 = 91 |
| CES17 = 50 | CES42 = 76 | CES67 = 60 | CES92 = 71 |
| CES18 = 57 | CES43 = 65 | CES68 = 68 | CES93 = 82 |
| CES19 = 73 | CES44 = 98 | CES69 = 77 | CES94 = 57 |
| CES20 = 67 | CES45 = 75 | CES70 = 60 | CES95 = 78 |
| CES21 = 88 | CES46 = 70 | CES71 = 57 | CES96 = 80 |
| CES22 = 80 | CES47 = 63 | CES72 = 86 | CES97 = 79 |
| CES23 = 92 | CES48 = 51 | CES73 = 52 | CES98 = 71 |
| CES24 = 91 | CES49 = 68 | CES74 = 90 | CES99 = 64 |
| CES25 = 73 | CES50 = 77 | CES75 = 58 | |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)