

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P386631

Luminaire Tested: **GWC-SA2B-750-U-5NQ**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P386631  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-5)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GWC-SA2B-750-U-5NQ  
Description: GALLEON WALL LUMINAIRE  
(2) 70 CRI, 5000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE V NARROW OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12302 lumens  
Efficiency: N/A  
Efficacy: 143.0 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B3 - U0 - G1

Input Watts (W): 86  
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

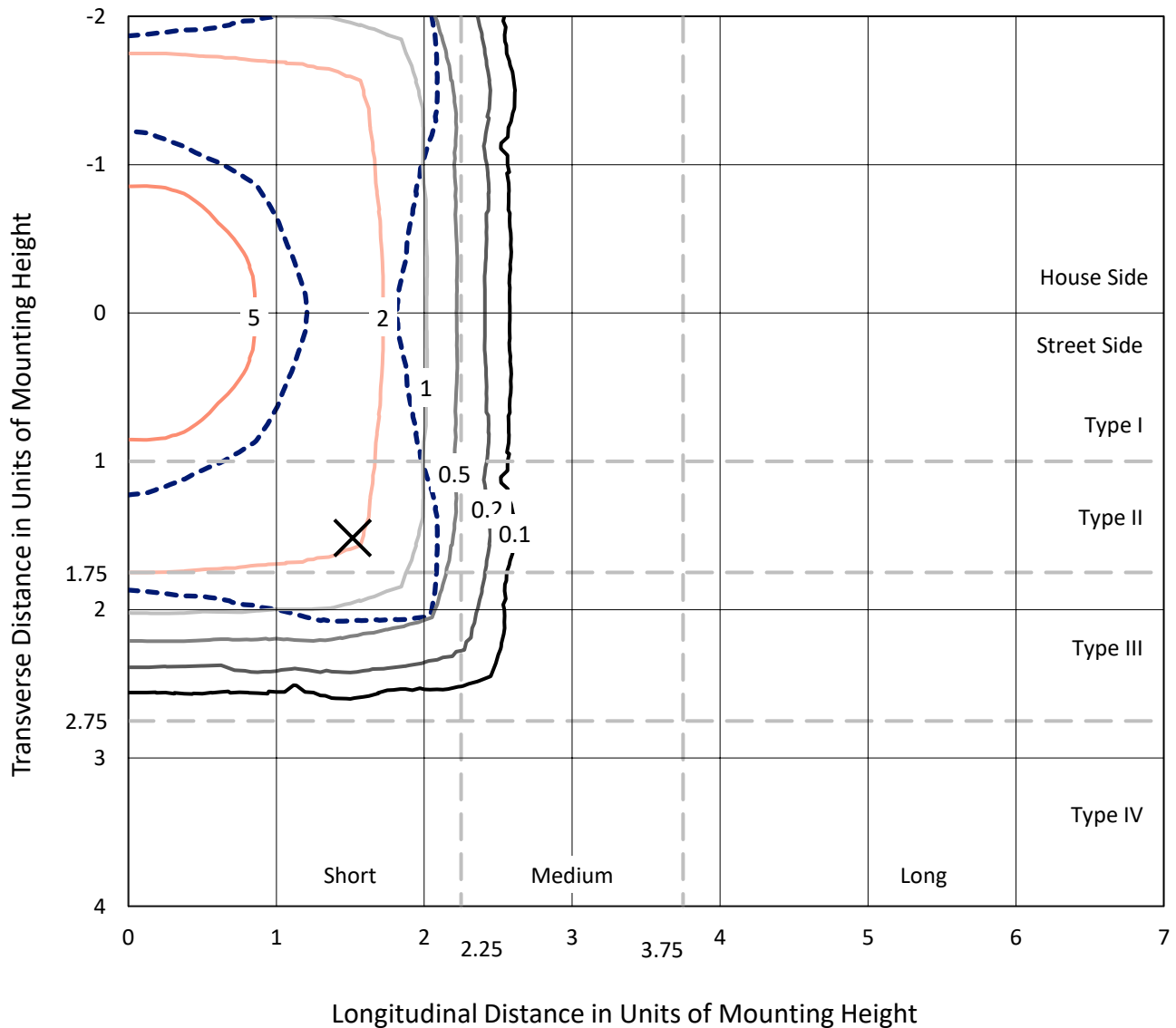


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CATALOG NUMBER: GWC-SA2B-750-U-5NQ

## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd  
 - - - 1/2 Max cd

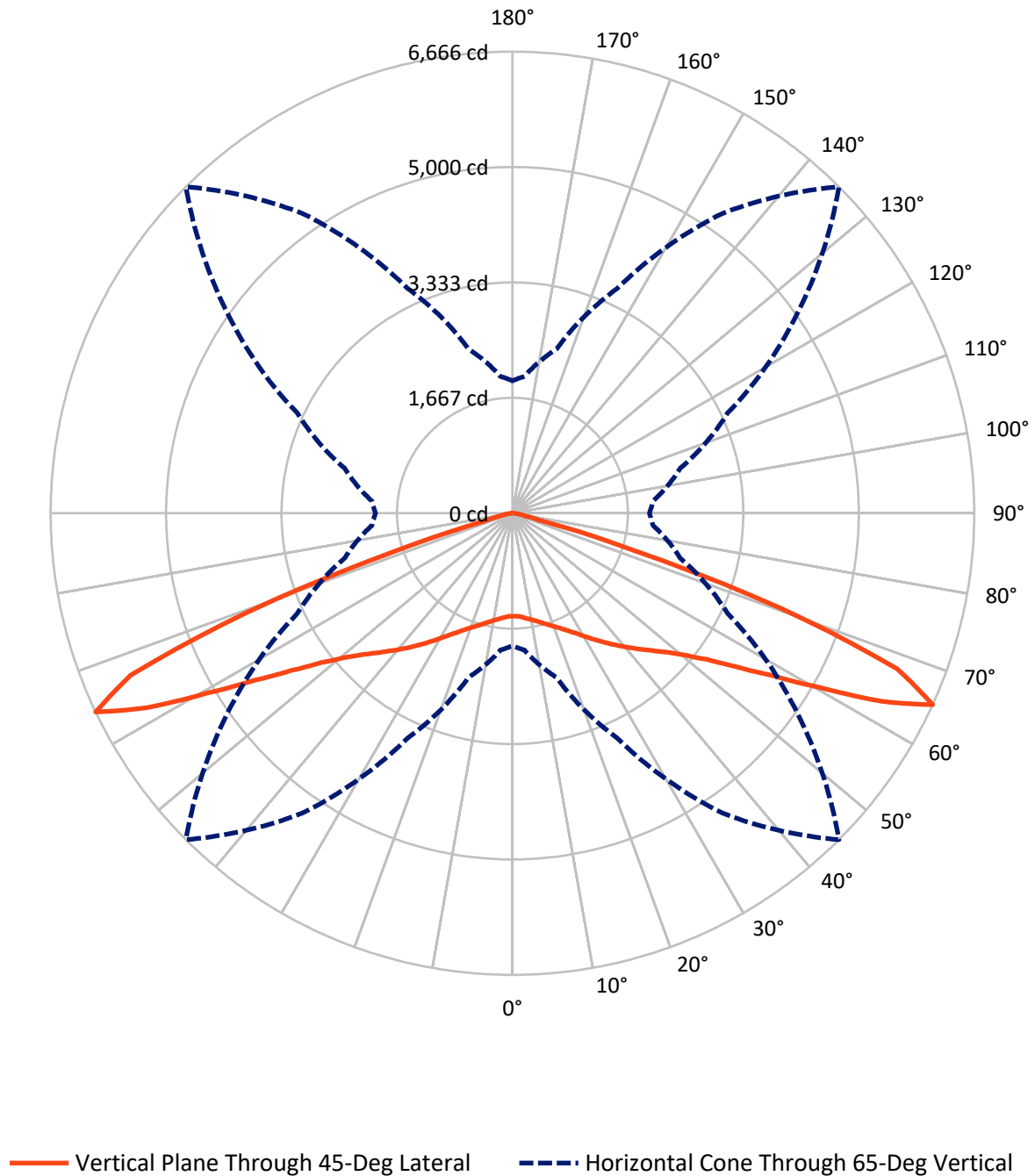


Based on 15 foot mounting height. Maximum calculated value = 6.6 fc  
 Type V - Short - N/A

REPORT NUMBER: P386631

CATALOG NUMBER: GWC-SA2B-750-U-5NQ

## Luminous Intensity Polar Plot



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CATALOG NUMBER: GWC-SA2B-750-U-5NQ

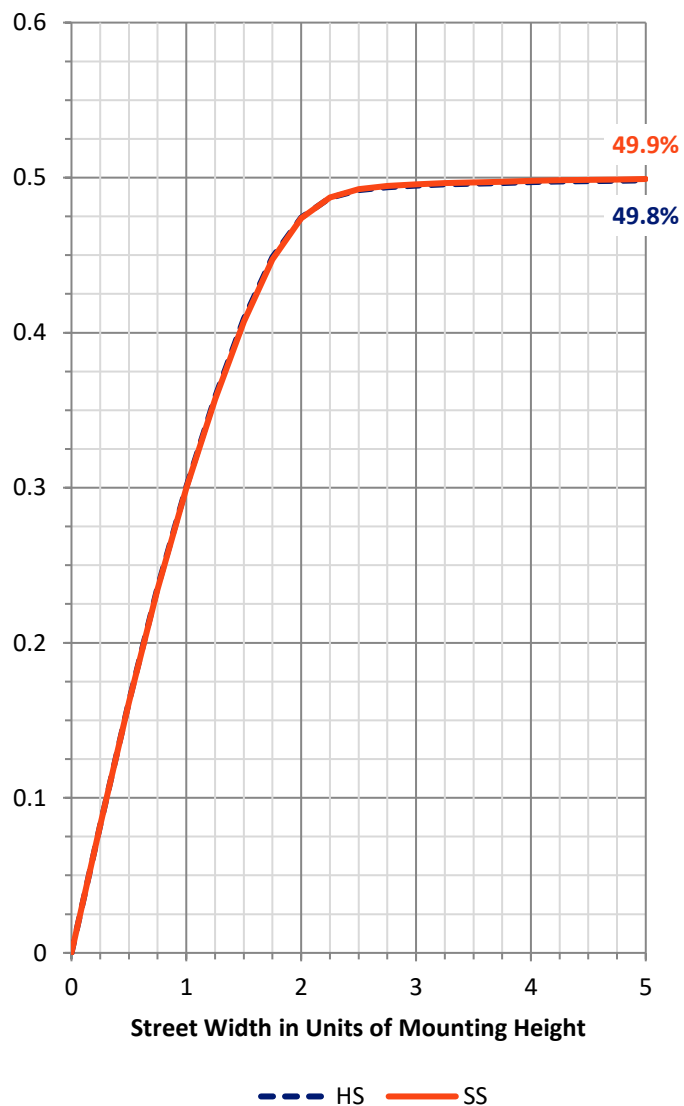
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 6151.0   | 0.0    | 6151.0  |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Street Side</b> | Lumens    | 6151.0   | 0.0    | 6151.0  |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Total</b>       | Lumens    | 12302.0  | 0.0    | 12302.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 145.8   | 1.2       |
| 10°-20°   | 468.5   | 3.8       |
| 20°-30°   | 879.0   | 7.1       |
| 30°-40°   | 1453.7  | 11.8      |
| 40°-50°   | 2251.6  | 18.3      |
| 50°-60°   | 3453.3  | 28.1      |
| 60°-70°   | 3222.4  | 26.2      |
| 70°-80°   | 375.0   | 3.0       |
| 80°-90°   | 52.7    | 0.4       |
| 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°    | 12302.0 | 100.0     |
| 0°-180°   | 12302.0 | 100.0     |

**Coefficient of Utilization**



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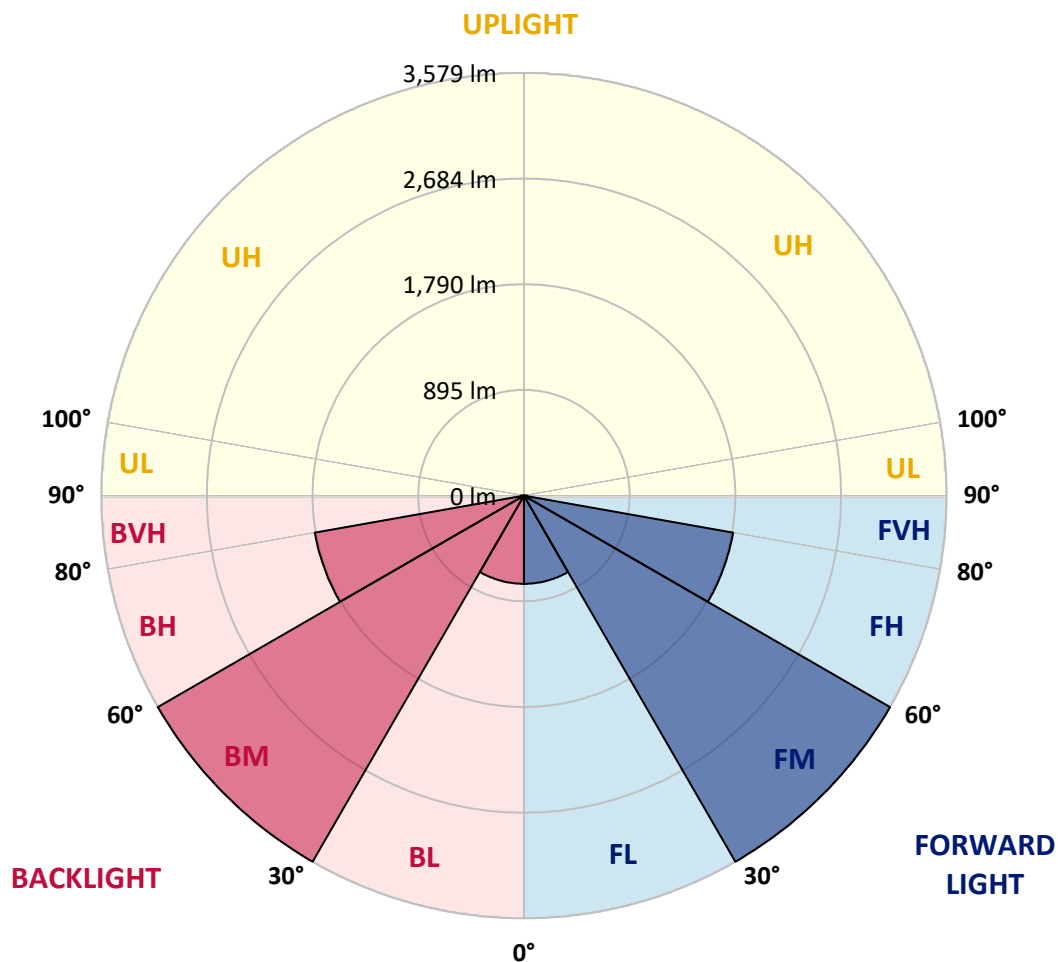
CATALOG NUMBER: GWC-SA2B-750-U-5NQ

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 746.6  | 6.1       |                         |      |         |
| FM   | (30°-60°)   | 3579.3 | 29.1      |                         |      |         |
| FH   | (60°-80°)   | 1798.7 | 14.6      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 26.3   | 0.2       |                         |      | G1/100  |
| BL   | (0°-30°)    | 746.6  | 6.1       | B2/1000                 |      |         |
| BM   | (30°-60°)   | 3579.3 | 29.1      | B3/5000                 |      |         |
| BH   | (60°-80°)   | 1798.7 | 14.6      | B3/2500                 |      | G1/1800 |
| BVH  | (80°-90°)   | 26.3   | 0.2       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G1**

Type V Short



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CATALOG NUMBER: GWC-SA2B-750-U-5NQ

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    | 90°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1485.6 | 1485.6 | 1485.6 | 1485.6 | 1485.6 | 1485.6 | 1485.6 | 1485.6 | 1485.6 | 1485.6 | 1485.6 |
| 2.5°  | 1490.5 | 1489.7 | 1490.5 | 1490.9 | 1488.5 | 1489.7 | 1489.3 | 1491.3 | 1492.2 | 1491.3 | 1491.3 |
| 5°    | 1507.7 | 1506.4 | 1508.1 | 1510.1 | 1506.9 | 1507.7 | 1506.4 | 1508.9 | 1509.7 | 1508.1 | 1509.3 |
| 7.5°  | 1531.4 | 1531.8 | 1533.4 | 1537.1 | 1535.0 | 1536.7 | 1534.2 | 1534.6 | 1534.2 | 1531.8 | 1532.2 |
| 10°   | 1557.1 | 1557.5 | 1560.4 | 1565.3 | 1566.1 | 1566.1 | 1564.4 | 1563.2 | 1561.6 | 1559.9 | 1560.4 |
| 12.5° | 1588.1 | 1590.2 | 1592.2 | 1598.3 | 1598.3 | 1601.6 | 1600.8 | 1597.5 | 1594.7 | 1592.2 | 1592.2 |
| 15°   | 1630.2 | 1629.8 | 1632.2 | 1638.3 | 1641.2 | 1646.5 | 1646.5 | 1642.0 | 1638.3 | 1635.9 | 1635.1 |
| 17.5° | 1674.3 | 1675.5 | 1677.1 | 1684.5 | 1689.0 | 1695.1 | 1695.9 | 1692.3 | 1689.8 | 1686.5 | 1684.5 |
| 20°   | 1725.7 | 1727.8 | 1734.3 | 1737.2 | 1741.3 | 1747.0 | 1749.0 | 1748.2 | 1745.7 | 1744.1 | 1744.5 |
| 22.5° | 1785.8 | 1791.1 | 1795.2 | 1799.2 | 1804.1 | 1808.2 | 1810.3 | 1813.1 | 1810.7 | 1809.5 | 1808.6 |
| 25°   | 1858.5 | 1862.1 | 1870.3 | 1877.7 | 1880.9 | 1882.1 | 1884.6 | 1888.7 | 1888.3 | 1885.4 | 1885.4 |
| 27.5° | 1940.9 | 1947.9 | 1958.1 | 1968.7 | 1968.7 | 1964.6 | 1972.8 | 1979.7 | 1977.3 | 1973.6 | 1968.7 |
| 30°   | 2041.0 | 2047.5 | 2059.4 | 2074.1 | 2066.7 | 2063.9 | 2074.9 | 2087.5 | 2083.9 | 2077.7 | 2076.9 |
| 32.5° | 2148.8 | 2154.9 | 2170.4 | 2186.4 | 2177.0 | 2172.9 | 2184.7 | 2203.1 | 2196.6 | 2184.3 | 2177.0 |
| 35°   | 2265.6 | 2271.7 | 2293.8 | 2313.0 | 2297.0 | 2290.1 | 2299.9 | 2319.9 | 2308.5 | 2285.6 | 2279.9 |
| 37.5° | 2392.6 | 2395.9 | 2424.4 | 2444.0 | 2433.0 | 2414.6 | 2426.9 | 2441.6 | 2431.8 | 2404.0 | 2393.0 |
| 40°   | 2524.5 | 2536.3 | 2569.4 | 2592.3 | 2573.1 | 2544.1 | 2564.5 | 2584.9 | 2570.2 | 2534.7 | 2515.9 |
| 42.5° | 2678.4 | 2687.4 | 2731.5 | 2752.0 | 2720.9 | 2680.1 | 2707.9 | 2735.6 | 2720.9 | 2686.6 | 2670.3 |
| 45°   | 2838.5 | 2852.4 | 2905.1 | 2925.5 | 2880.6 | 2828.7 | 2862.6 | 2911.2 | 2910.0 | 2860.6 | 2843.4 |
| 47.5° | 3012.9 | 3026.8 | 3089.7 | 3116.6 | 3068.0 | 2998.6 | 3046.4 | 3115.0 | 3110.1 | 3055.8 | 3041.9 |
| 50°   | 3214.2 | 3228.9 | 3307.3 | 3341.2 | 3295.9 | 3215.0 | 3286.9 | 3347.3 | 3338.4 | 3271.4 | 3272.6 |
| 52.5° | 3467.0 | 3466.2 | 3563.8 | 3622.6 | 3576.0 | 3504.6 | 3570.7 | 3629.5 | 3592.4 | 3499.7 | 3496.8 |
| 55°   | 3688.3 | 3701.8 | 3822.7 | 3934.2 | 3931.3 | 3903.9 | 3930.5 | 3932.9 | 3826.8 | 3703.4 | 3688.3 |
| 57.5° | 3833.7 | 3859.4 | 4029.7 | 4231.5 | 4382.5 | 4418.9 | 4367.4 | 4211.4 | 3962.7 | 3765.5 | 3741.4 |
| 60°   | 3744.3 | 3783.5 | 4051.0 | 4462.2 | 4907.3 | 5120.9 | 4830.5 | 4346.6 | 3857.0 | 3582.2 | 3549.5 |
| 62.5° | 3140.7 | 3206.9 | 3598.5 | 4350.7 | 5358.9 | 5983.3 | 5166.2 | 4129.8 | 3436.4 | 3057.8 | 3001.9 |
| 65°   | 1912.8 | 1982.6 | 2454.7 | 3580.9 | 5285.8 | 6666.1 | 5013.1 | 3427.8 | 2508.2 | 2037.3 | 1976.9 |
| 67.5° | 637.5  | 657.9  | 936.0  | 1979.3 | 4154.3 | 5989.5 | 4161.2 | 2052.0 | 1091.6 | 723.6  | 702.4  |
| 70°   | 249.5  | 251.6  | 296.9  | 573.7  | 1961.8 | 4113.8 | 2164.7 | 584.0  | 310.4  | 245.4  | 250.7  |
| 72.5° | 183.4  | 184.2  | 196.8  | 239.7  | 511.3  | 1812.3 | 529.6  | 240.9  | 191.5  | 171.9  | 171.9  |
| 75°   | 147.4  | 147.4  | 156.4  | 174.8  | 229.1  | 415.7  | 232.4  | 172.7  | 149.9  | 137.2  | 135.6  |
| 77.5° | 116.4  | 118.8  | 125.8  | 137.6  | 155.2  | 200.1  | 160.9  | 136.8  | 120.9  | 109.0  | 106.6  |
| 80°   | 86.6   | 89.0   | 100.5  | 106.2  | 111.5  | 138.8  | 118.8  | 107.0  | 95.6   | 81.7   | 79.2   |
| 82.5° | 56.8   | 59.2   | 73.5   | 76.8   | 75.5   | 90.7   | 80.0   | 78.8   | 70.2   | 52.7   | 50.2   |
| 85°   | 37.2   | 38.0   | 49.0   | 51.0   | 47.0   | 41.2   | 51.0   | 53.9   | 49.0   | 34.3   | 33.1   |
| 87.5° | 17.6   | 17.6   | 24.9   | 23.3   | 21.2   | 17.2   | 23.3   | 27.4   | 27.8   | 16.7   | 16.3   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

INVUE

Report Number: SP1-2104-224-4

Luminaire Tested: CCW-SA-2A-750-U-SL4

Test Date: 05/04/2021

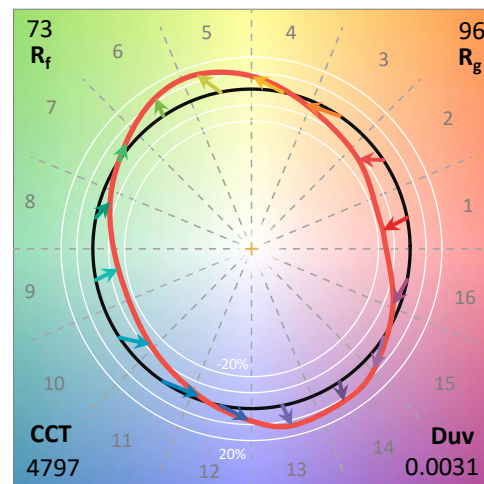


### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2104-224-4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 05/04/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: INVUE  
 Catalog Number: **CCW-SA-2A-750-U-SL4**  
 Description: INVUE WALL PACK ClearCurve Light Square

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 4797   | CRI (Ra): | 71.8 |      |       |
| CIE u':                   | 0.2115 | R1:       | 69.5 | R9:  | -28.1 |
| CIE v':                   | 0.4912 | R2:       | 75.8 | R10: | 43.3  |
| Duv:                      | 0.0031 | R3:       | 81.2 | R11: | 71.1  |
| CIE x:                    | 0.3518 | R4:       | 73.2 | R12: | 43.8  |
| CIE y:                    | 0.3631 | R5:       | 70.2 | R13: | 69.8  |
| CIE z:                    | 0.2851 | R6:       | 67.5 | R14: | 89.4  |
| Peak Wavelength (nm):     | 445    | R7:       | 80.3 |      |       |
| Dominant Wavelength (nm): | 572    | R8:       | 57.0 |      |       |
| Purity:                   | 14.6   |           |      |      |       |
| Rf:                       | 72.7   |           |      |      |       |
| Rg:                       | 96.4   |           |      |      |       |



### Test Conditions

Stabilization Time: 91M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.8/44%  
 Sphere Temperature (°C): 24.5

REPORT NUMBER: SP1-2104-224-4

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 1/31/2021        | 7/31/2021            |
| Power Meter                    | IN0071                | 12/1/2020        | 12/1/2021            |
| AC Power Source                | IN0063                | 12/1/2020        | 12/1/2021            |
| DC Power Source                | IN0208                | 12/1/2020        | 12/1/2021            |
| Sphere Thermometer             | IN0085                | 12/1/2020        | 12/1/2021            |
| Room Thermometer               | IN0046                | 12/1/2020        | 12/1/2021            |

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**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 5000K 7-step quadrangle

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### Photopic Flux vs. Wavelength

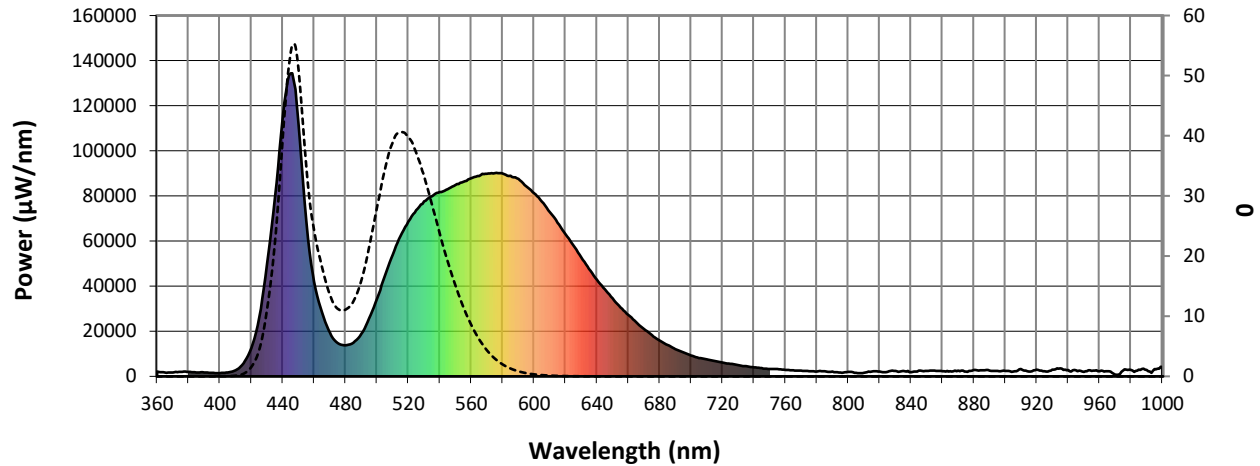


#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2166             | 0.0              | 490       | 18819            | 2.7              | 620       | 63002            | 16.4             | 750       | 3328             | 0.0              | 880       | 2830             | 0.0              |
| 365       | 1672             | 0.0              | 495       | 25621            | 4.6              | 625       | 58119            | 12.8             | 755       | 3244             | 0.0              | 885       | 2751             | 0.0              |
| 370       | 1688             | 0.0              | 500       | 34501            | 7.6              | 630       | 52745            | 9.5              | 760       | 2856             | 0.0              | 890       | 2579             | 0.0              |
| 375       | 2041             | 0.0              | 505       | 44365            | 12.4             | 635       | 47707            | 7.2              | 765       | 2696             | 0.0              | 895       | 2461             | 0.0              |
| 380       | 1996             | 0.0              | 510       | 53923            | 18.5             | 640       | 42815            | 5.1              | 770       | 2495             | 0.0              | 900       | 2372             | 0.0              |
| 385       | 1720             | 0.0              | 515       | 62101            | 25.7             | 645       | 38643            | 3.7              | 775       | 2247             | 0.0              | 905       | 2190             | 0.0              |
| 390       | 1706             | 0.0              | 520       | 68661            | 33.3             | 650       | 34557            | 2.5              | 780       | 2133             | 0.0              | 910       | 3204             | 0.0              |
| 395       | 1550             | 0.0              | 525       | 73606            | 39.5             | 655       | 30447            | 1.7              | 785       | 2276             | 0.0              | 915       | 2069             | 0.0              |
| 400       | 1444             | 0.0              | 530       | 77628            | 45.7             | 660       | 27287            | 1.1              | 790       | 2093             | 0.0              | 920       | 2977             | 0.0              |
| 405       | 1761             | 0.0              | 535       | 79955            | 49.6             | 665       | 24046            | 0.8              | 795       | 1681             | 0.0              | 925       | 2332             | 0.0              |
| 410       | 2694             | 0.0              | 540       | 81715            | 53.2             | 670       | 20995            | 0.5              | 800       | 2044             | 0.0              | 930       | 2929             | 0.0              |
| 415       | 5767             | 0.0              | 545       | 83067            | 55.3             | 675       | 18242            | 0.3              | 805       | 1519             | 0.0              | 935       | 3495             | 0.0              |
| 420       | 12476            | 0.0              | 550       | 84799            | 57.6             | 680       | 15871            | 0.2              | 810       | 1549             | 0.0              | 940       | 2810             | 0.0              |
| 425       | 26189            | 0.1              | 555       | 86279            | 58.9             | 685       | 13910            | 0.1              | 815       | 2097             | 0.0              | 945       | 2657             | 0.0              |
| 430       | 49608            | 0.4              | 560       | 87792            | 59.7             | 690       | 12111            | 0.1              | 820       | 2098             | 0.0              | 950       | 1935             | 0.0              |
| 435       | 79442            | 0.9              | 565       | 88893            | 59.1             | 695       | 10644            | 0.0              | 825       | 2049             | 0.0              | 955       | 2408             | 0.0              |
| 440       | 114477           | 1.8              | 570       | 89760            | 58.4             | 700       | 9267             | 0.0              | 830       | 2352             | 0.0              | 960       | 2331             | 0.0              |
| 445       | 134358           | 2.8              | 575       | 90097            | 56.1             | 705       | 8161             | 0.0              | 835       | 2358             | 0.0              | 965       | 2231             | 0.0              |
| 450       | 112862           | 2.9              | 580       | 90008            | 53.5             | 710       | 7567             | 0.0              | 840       | 1853             | 0.0              | 970       | 688              | 0.0              |
| 455       | 68630            | 2.3              | 585       | 88925            | 49.4             | 715       | 6794             | 0.0              | 845       | 2553             | 0.0              | 975       | 2537             | 0.0              |
| 460       | 41987            | 1.7              | 590       | 87580            | 45.3             | 720       | 6069             | 0.0              | 850       | 2413             | 0.0              | 980       | 2826             | 0.0              |
| 465       | 28353            | 1.5              | 595       | 84246            | 39.9             | 725       | 5588             | 0.0              | 855       | 2597             | 0.0              | 985       | 3000             | 0.0              |
| 470       | 19290            | 1.2              | 600       | 81176            | 35.0             | 730       | 4999             | 0.0              | 860       | 2269             | 0.0              | 990       | 2880             | 0.0              |
| 475       | 14790            | 1.2              | 605       | 77529            | 30.0             | 735       | 4495             | 0.0              | 865       | 2210             | 0.0              | 995       | 3332             | 0.0              |
| 480       | 13767            | 1.3              | 610       | 72750            | 25.0             | 740       | 4033             | 0.0              | 870       | 2564             | 0.0              | 1000      | 4187             | 0.0              |
| 485       | 14964            | 1.8              | 615       | 68174            | 20.6             | 745       | 3625             | 0.0              | 875       | 2169             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2104-224-4

### Scotopic Flux vs. Wavelength



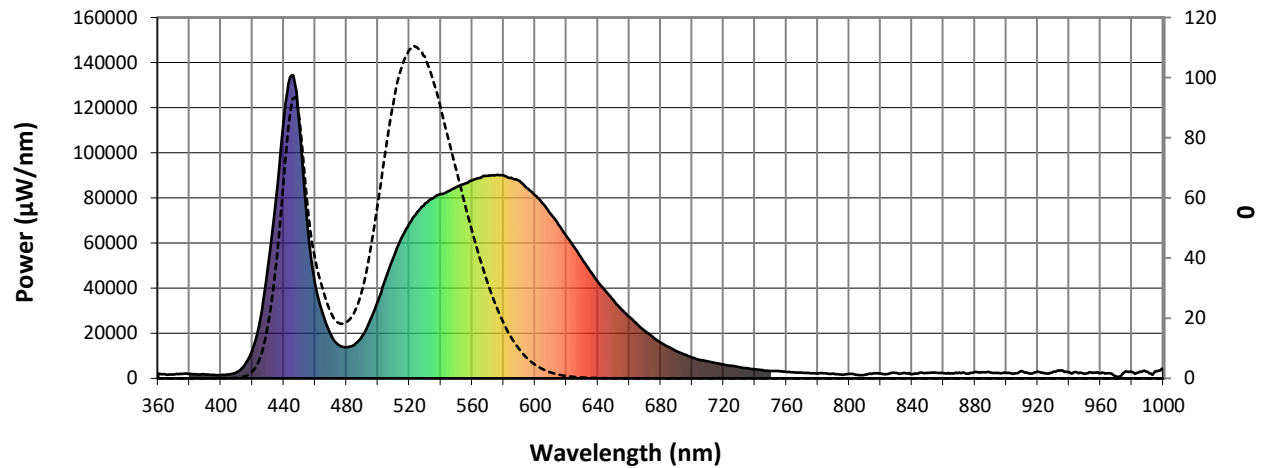
Scotopic Lumens: 9214.6

S/P: 1.71

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2166             | 0.0              | 490       | 18819            | 29.0             | 620       | 63002            | 0.8              | 750       | 3328             | 0.0              | 880       | 2830             | 0.0              |
| 365       | 1672             | 0.0              | 495       | 25621            | 41.4             | 625       | 58119            | 0.5              | 755       | 3244             | 0.0              | 885       | 2751             | 0.0              |
| 370       | 1688             | 0.0              | 500       | 34501            | 57.7             | 630       | 52745            | 0.3              | 760       | 2856             | 0.0              | 890       | 2579             | 0.0              |
| 375       | 2041             | 0.0              | 505       | 44365            | 75.4             | 635       | 47707            | 0.2              | 765       | 2696             | 0.0              | 895       | 2461             | 0.0              |
| 380       | 1996             | 0.0              | 510       | 53923            | 91.4             | 640       | 42815            | 0.1              | 770       | 2495             | 0.0              | 900       | 2372             | 0.0              |
| 385       | 1720             | 0.0              | 515       | 62101            | 102.9            | 645       | 38643            | 0.1              | 775       | 2247             | 0.0              | 905       | 2190             | 0.0              |
| 390       | 1706             | 0.0              | 520       | 68661            | 109.1            | 650       | 34557            | 0.0              | 780       | 2133             | 0.0              | 910       | 3204             | 0.0              |
| 395       | 1550             | 0.0              | 525       | 73606            | 110.1            | 655       | 30447            | 0.0              | 785       | 2276             | 0.0              | 915       | 2069             | 0.0              |
| 400       | 1444             | 0.0              | 530       | 77628            | 107.0            | 660       | 27287            | 0.0              | 790       | 2093             | 0.0              | 920       | 2977             | 0.0              |
| 405       | 1761             | 0.1              | 535       | 79955            | 99.6             | 665       | 24046            | 0.0              | 795       | 1681             | 0.0              | 925       | 2332             | 0.0              |
| 410       | 2694             | 0.2              | 540       | 81715            | 90.3             | 670       | 20995            | 0.0              | 800       | 2044             | 0.0              | 930       | 2929             | 0.0              |
| 415       | 5767             | 0.6              | 545       | 83067            | 79.6             | 675       | 18242            | 0.0              | 805       | 1519             | 0.0              | 935       | 3495             | 0.0              |
| 420       | 12476            | 2.1              | 550       | 84799            | 69.3             | 680       | 15871            | 0.0              | 810       | 1549             | 0.0              | 940       | 2810             | 0.0              |
| 425       | 26189            | 6.4              | 555       | 86279            | 59.0             | 685       | 13910            | 0.0              | 815       | 2097             | 0.0              | 945       | 2657             | 0.0              |
| 430       | 49608            | 16.9             | 560       | 87792            | 49.1             | 690       | 12111            | 0.0              | 820       | 2098             | 0.0              | 950       | 1935             | 0.0              |
| 435       | 79442            | 35.5             | 565       | 88893            | 39.9             | 695       | 10644            | 0.0              | 825       | 2049             | 0.0              | 955       | 2408             | 0.0              |
| 440       | 114477           | 64.0             | 570       | 89760            | 31.7             | 700       | 9267             | 0.0              | 830       | 2352             | 0.0              | 960       | 2331             | 0.0              |
| 445       | 134358           | 90.0             | 575       | 90097            | 24.5             | 705       | 8161             | 0.0              | 835       | 2358             | 0.0              | 965       | 2231             | 0.0              |
| 450       | 112862           | 87.5             | 580       | 90008            | 18.5             | 710       | 7567             | 0.0              | 840       | 1853             | 0.0              | 970       | 688              | 0.0              |
| 455       | 68630            | 60.0             | 585       | 88925            | 13.6             | 715       | 6794             | 0.0              | 845       | 2553             | 0.0              | 975       | 2537             | 0.0              |
| 460       | 41987            | 40.6             | 590       | 87580            | 9.8              | 720       | 6069             | 0.0              | 850       | 2413             | 0.0              | 980       | 2826             | 0.0              |
| 465       | 28353            | 29.9             | 595       | 84246            | 6.7              | 725       | 5588             | 0.0              | 855       | 2597             | 0.0              | 985       | 3000             | 0.0              |
| 470       | 19290            | 22.2             | 600       | 81176            | 4.6              | 730       | 4999             | 0.0              | 860       | 2269             | 0.0              | 990       | 2880             | 0.0              |
| 475       | 14790            | 18.5             | 605       | 77529            | 3.0              | 735       | 4495             | 0.0              | 865       | 2210             | 0.0              | 995       | 3332             | 0.0              |
| 480       | 13767            | 18.6             | 610       | 72750            | 2.0              | 740       | 4033             | 0.0              | 870       | 2564             | 0.0              | 1000      | 4187             | 0.0              |
| 485       | 14964            | 21.7             | 615       | 68174            | 1.3              | 745       | 3625             | 0.0              | 875       | 2169             | 0.0              |           |                  |                  |

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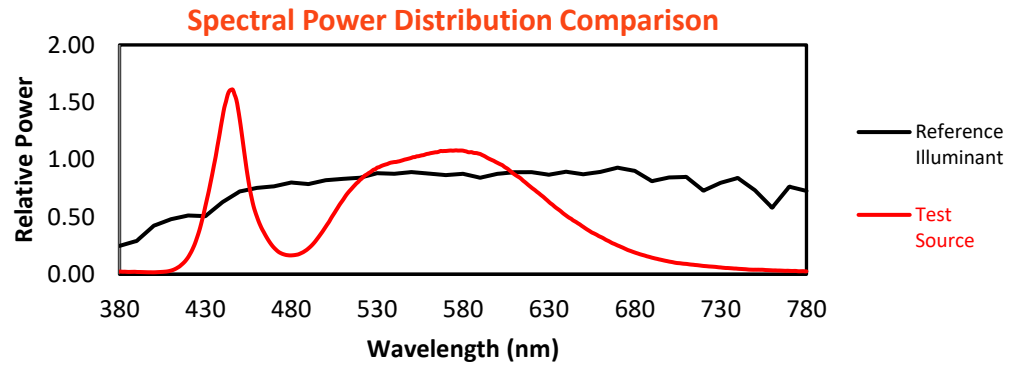
### Melanopic Flux vs. Wavelength


**Melanopic Lumens: 3619.9**
**M/P: 0.67**

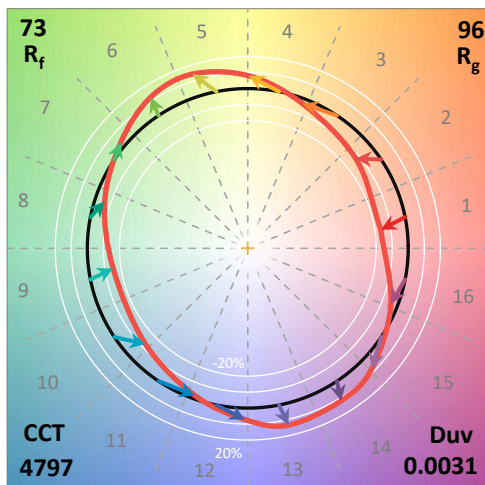
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2166             | 0.0              | 490       | 18819            | 15.7             | 620       | 63002            | 0.0              | 750       | 3328             | 0.0              | 880       | 2830             | 0.0              |
| 365       | 1672             | 0.0              | 495       | 25621            | 21.2             | 625       | 58119            | 0.0              | 755       | 3244             | 0.0              | 885       | 2751             | 0.0              |
| 370       | 1688             | 0.0              | 500       | 34501            | 27.7             | 630       | 52745            | 0.0              | 760       | 2856             | 0.0              | 890       | 2579             | 0.0              |
| 375       | 2041             | 0.0              | 505       | 44365            | 34.0             | 635       | 47707            | 0.0              | 765       | 2696             | 0.0              | 895       | 2461             | 0.0              |
| 380       | 1996             | 0.0              | 510       | 53923            | 38.7             | 640       | 42815            | 0.0              | 770       | 2495             | 0.0              | 900       | 2372             | 0.0              |
| 385       | 1720             | 0.0              | 515       | 62101            | 40.6             | 645       | 38643            | 0.0              | 775       | 2247             | 0.0              | 905       | 2190             | 0.0              |
| 390       | 1706             | 0.0              | 520       | 68661            | 40.0             | 650       | 34557            | 0.0              | 780       | 2133             | 0.0              | 910       | 3204             | 0.0              |
| 395       | 1550             | 0.0              | 525       | 73606            | 37.3             | 655       | 30447            | 0.0              | 785       | 2276             | 0.0              | 915       | 2069             | 0.0              |
| 400       | 1444             | 0.0              | 530       | 77628            | 33.5             | 660       | 27287            | 0.0              | 790       | 2093             | 0.0              | 920       | 2977             | 0.0              |
| 405       | 1761             | 0.0              | 535       | 79955            | 28.8             | 665       | 24046            | 0.0              | 795       | 1681             | 0.0              | 925       | 2332             | 0.0              |
| 410       | 2694             | 0.1              | 540       | 81715            | 23.9             | 670       | 20995            | 0.0              | 800       | 2044             | 0.0              | 930       | 2929             | 0.0              |
| 415       | 5767             | 0.4              | 545       | 83067            | 19.3             | 675       | 18242            | 0.0              | 805       | 1519             | 0.0              | 935       | 3495             | 0.0              |
| 420       | 12476            | 1.4              | 550       | 84799            | 15.2             | 680       | 15871            | 0.0              | 810       | 1549             | 0.0              | 940       | 2810             | 0.0              |
| 425       | 26189            | 4.1              | 555       | 86279            | 11.6             | 685       | 13910            | 0.0              | 815       | 2097             | 0.0              | 945       | 2657             | 0.0              |
| 430       | 49608            | 10.5             | 560       | 87792            | 8.7              | 690       | 12111            | 0.0              | 820       | 2098             | 0.0              | 950       | 1935             | 0.0              |
| 435       | 79442            | 21.2             | 565       | 88893            | 6.2              | 695       | 10644            | 0.0              | 825       | 2049             | 0.0              | 955       | 2408             | 0.0              |
| 440       | 114477           | 38.3             | 570       | 89760            | 4.4              | 700       | 9267             | 0.0              | 830       | 2352             | 0.0              | 960       | 2331             | 0.0              |
| 445       | 134358           | 53.0             | 575       | 90097            | 3.0              | 705       | 8161             | 0.0              | 835       | 2358             | 0.0              | 965       | 2231             | 0.0              |
| 450       | 112862           | 52.0             | 580       | 90008            | 2.0              | 710       | 7567             | 0.0              | 840       | 1853             | 0.0              | 970       | 688              | 0.0              |
| 455       | 68630            | 36.0             | 585       | 88925            | 1.3              | 715       | 6794             | 0.0              | 845       | 2553             | 0.0              | 975       | 2537             | 0.0              |
| 460       | 41987            | 24.7             | 590       | 87580            | 0.9              | 720       | 6069             | 0.0              | 850       | 2413             | 0.0              | 980       | 2826             | 0.0              |
| 465       | 28353            | 18.5             | 595       | 84246            | 0.5              | 725       | 5588             | 0.0              | 855       | 2597             | 0.0              | 985       | 3000             | 0.0              |
| 470       | 19290            | 13.8             | 600       | 81176            | 0.3              | 730       | 4999             | 0.0              | 860       | 2269             | 0.0              | 990       | 2880             | 0.0              |
| 475       | 14790            | 11.3             | 605       | 77529            | 0.2              | 735       | 4495             | 0.0              | 865       | 2210             | 0.0              | 995       | 3332             | 0.0              |
| 480       | 13767            | 11.1             | 610       | 72750            | 0.1              | 740       | 4033             | 0.0              | 870       | 2564             | 0.0              | 1000      | 4187             | 0.0              |
| 485       | 14964            | 12.3             | 615       | 68174            | 0.1              | 745       | 3625             | 0.0              | 875       | 2169             | 0.0              |           |                  |                  |

### Summary

$R_f = 72.7$   
 $R_g = 96.4$   
 $CIE R_a = 71.8$   
 $R_g = -28.1$



### Color Vector Graphics



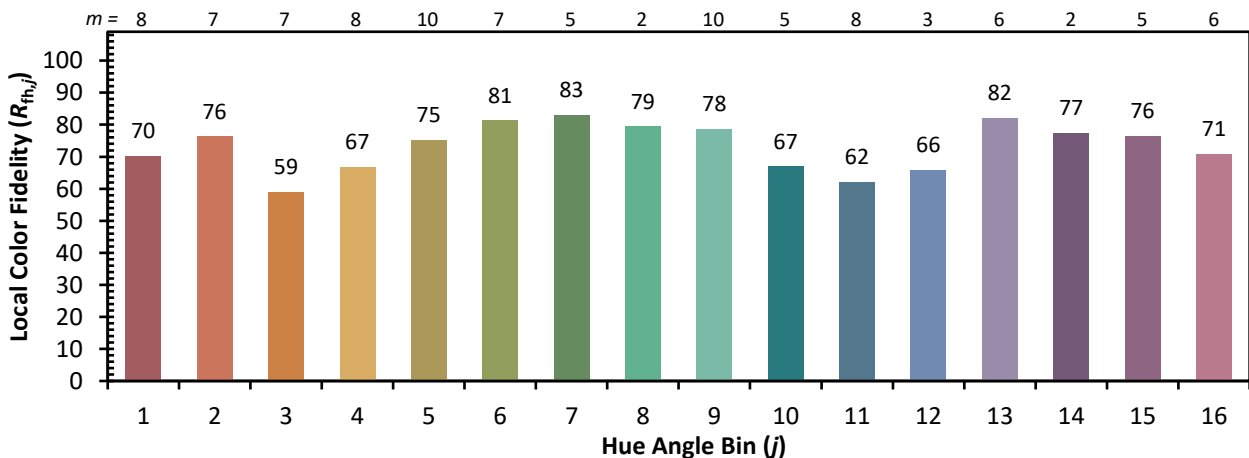
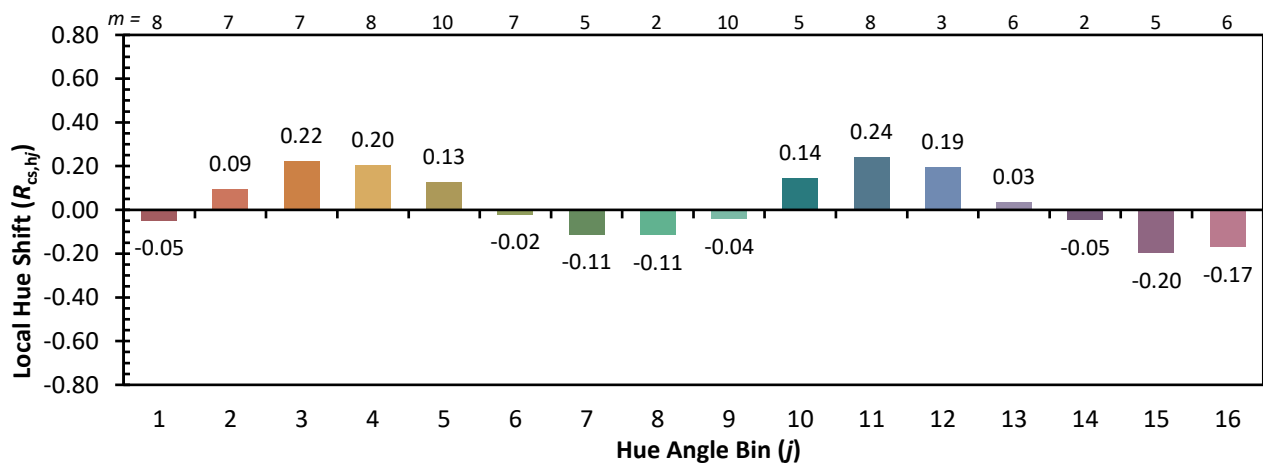
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 57 | CES51 = 89 | CES76 = 45 |
| CES02 = 60 | CES27 = 82 | CES52 = 89 | CES77 = 66 |
| CES03 = 30 | CES28 = 78 | CES53 = 76 | CES78 = 48 |
| CES04 = 69 | CES29 = 55 | CES54 = 82 | CES79 = 76 |
| CES05 = 46 | CES30 = 66 | CES55 = 82 | CES80 = 73 |
| CES06 = 50 | CES31 = 60 | CES56 = 71 | CES81 = 75 |
| CES07 = 39 | CES32 = 54 | CES57 = 69 | CES82 = 89 |
| CES08 = 38 | CES33 = 67 | CES58 = 71 | CES83 = 85 |
| CES09 = 29 | CES34 = 65 | CES59 = 87 | CES84 = 87 |
| CES10 = 73 | CES35 = 80 | CES60 = 92 | CES85 = 82 |
| CES11 = 56 | CES36 = 97 | CES61 = 86 | CES86 = 75 |
| CES12 = 62 | CES37 = 74 | CES62 = 84 | CES87 = 76 |
| CES13 = 42 | CES38 = 76 | CES63 = 73 | CES88 = 78 |
| CES14 = 74 | CES39 = 93 | CES64 = 70 | CES89 = 74 |
| CES15 = 70 | CES40 = 86 | CES65 = 64 | CES90 = 76 |
| CES16 = 46 | CES41 = 87 | CES66 = 64 | CES91 = 86 |
| CES17 = 49 | CES42 = 73 | CES67 = 61 | CES92 = 66 |
| CES18 = 55 | CES43 = 71 | CES68 = 68 | CES93 = 80 |
| CES19 = 71 | CES44 = 98 | CES69 = 78 | CES94 = 57 |
| CES20 = 64 | CES45 = 81 | CES70 = 57 | CES95 = 70 |
| CES21 = 85 | CES46 = 80 | CES71 = 53 | CES96 = 78 |
| CES22 = 77 | CES47 = 78 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 71 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 79 | CES74 = 95 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 |            |





Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)