

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: STREETWORKS

Report Number: P870555

Luminaire Tested: **MEM2-HSN-SA-120-830-U-5MQ**

Issue Date: 09/05/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P870555  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 09/05/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: MEM2-HSN-SA-120-830-U-5MQ  
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 120W 80CRI 3000K  
FITURE w/ TYPE V SQUARE MEDIUM DISTRIBUTION OPTIC  
Light Source: (20) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

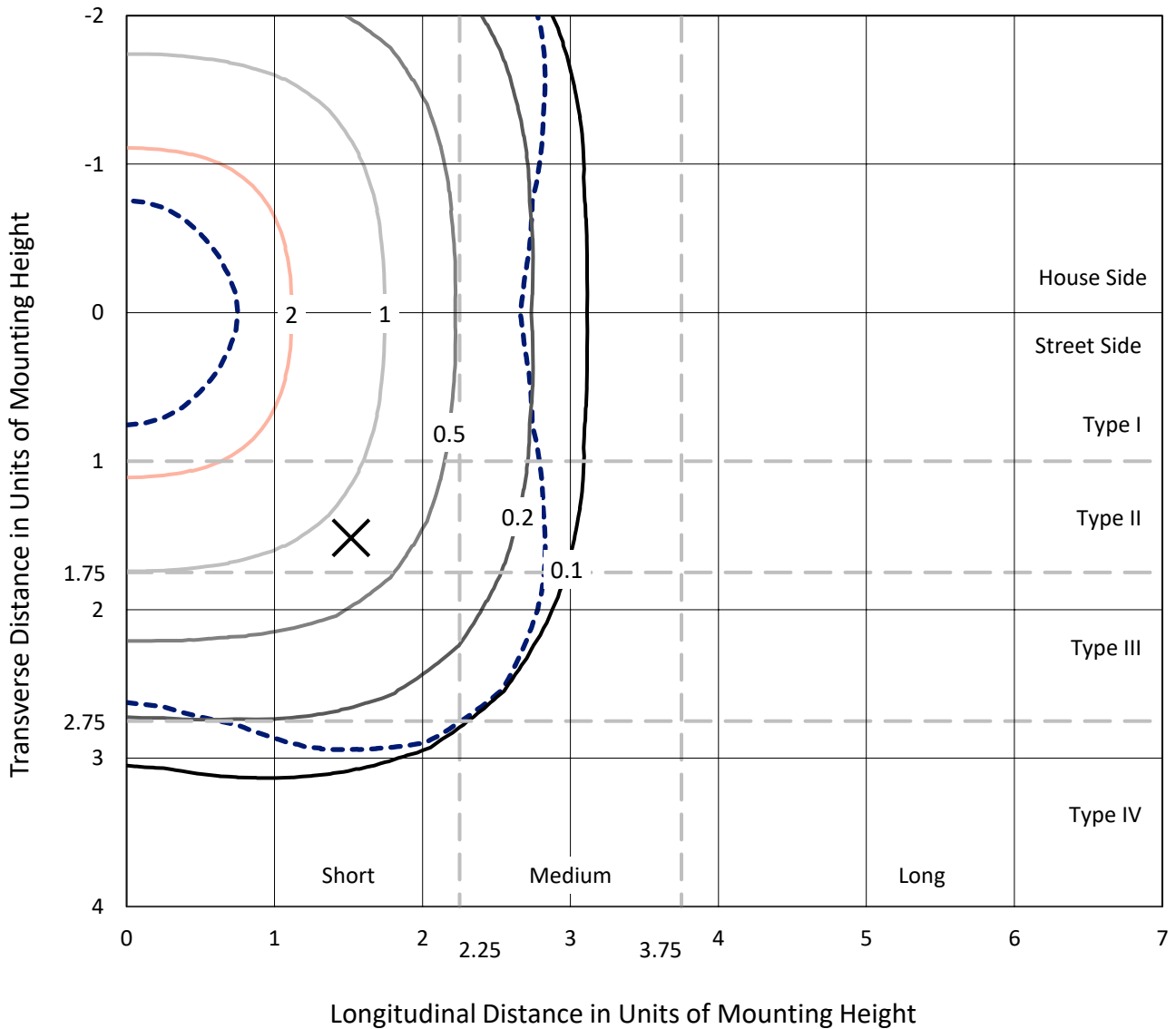
Lumens per Lamp: N/A  
Luminaire Lumens: 12471.4 lumens  
Efficiency: N/A  
Efficacy: 123.5 lumens/watt  
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B3 - U0 - G2

Input Watts (W): 101  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.99  
Total Harmonic Distortion (THDi): 9.45%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

REPORT NUMBER: P870555  
 CATALOG NUMBER: MEM2-HSN-SA-120-830-U-5MQ

### Iso-Footcandle Lines of Horizontal Illumination

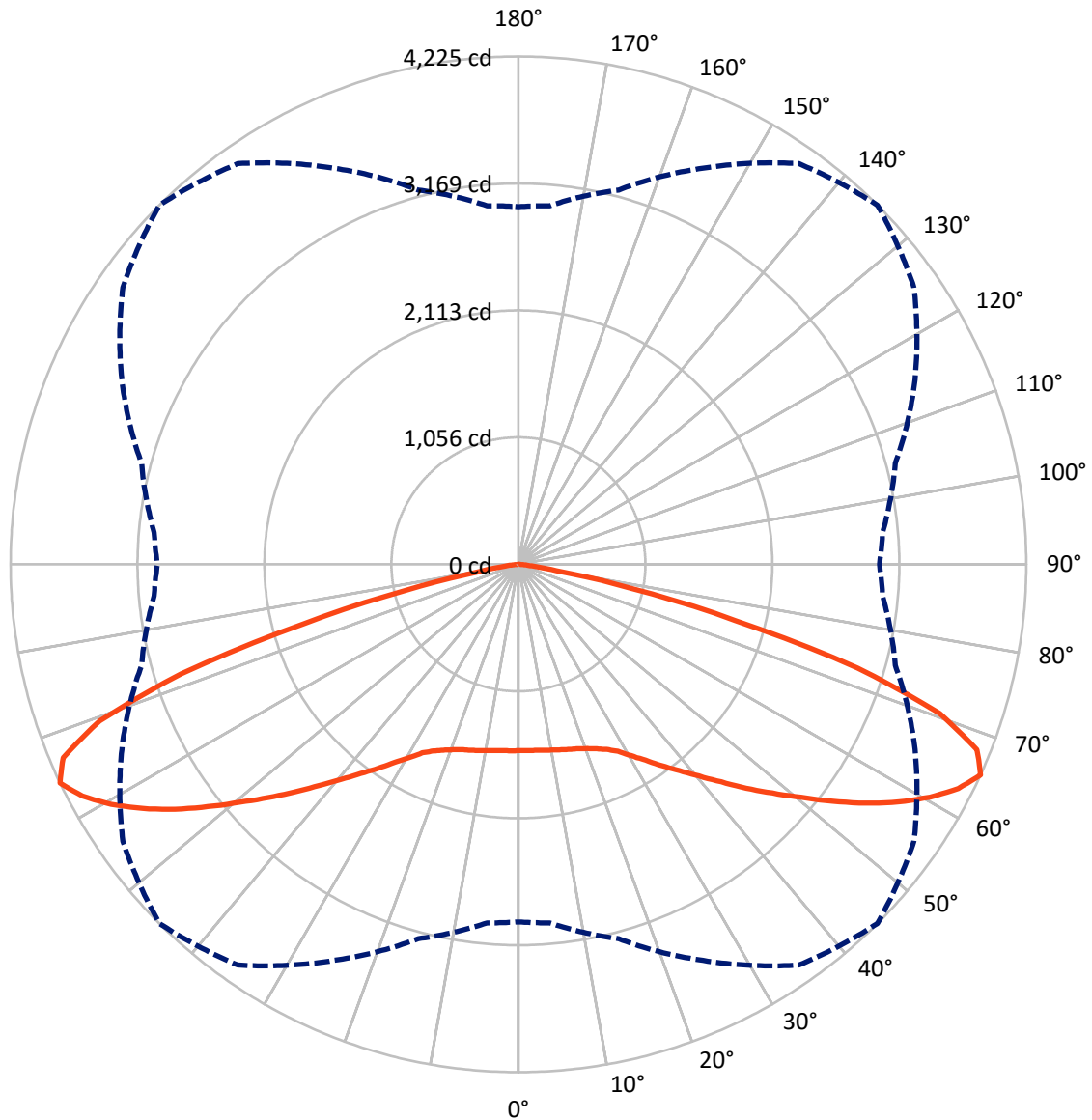
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 3.9 fc  
 Type V - Short - N/A

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### Luminous Intensity Polar Plot



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

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 6235.7   | 0.0    | 6235.7  |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Street Side</b> | Lumens    | 6235.7   | 0.0    | 6235.7  |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Total</b>       | Lumens    | 12471.4  | 0.0    | 12471.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 149.0   | 1.2       |
| 10°-20°   | 453.6   | 3.6       |
| 20°-30°   | 797.8   | 6.4       |
| 30°-40°   | 1290.2  | 10.3      |
| 40°-50°   | 2009.8  | 16.1      |
| 50°-60°   | 2938.7  | 23.6      |
| 60°-70°   | 3384.1  | 27.1      |
| 70°-80°   | 1382.1  | 11.1      |
| 80°-90°   | 66.1    | 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°    | 12471.4 | 100.0     |
| 0°-180°   | 12471.4 | 100.0     |



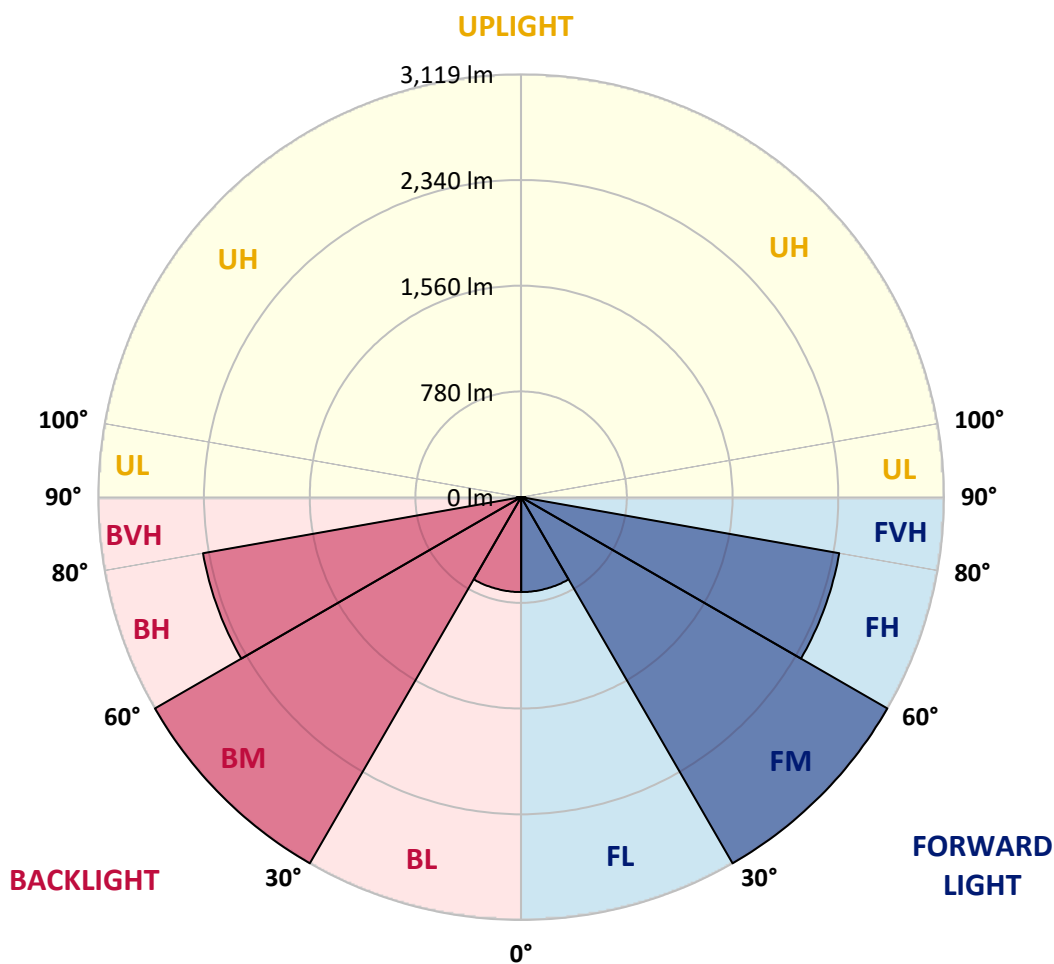
REPORT NUMBER: P870555  
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 700.2  | 5.6       |                         |      |         |
| FM (30°-60°)   | 3119.4 | 25.0      |                         |      |         |
| FH (60°-80°)   | 2383.1 | 19.1      |                         |      | G2/5000 |
| FVH (80°-90°)  | 33.1   | 0.3       |                         |      | G1/100  |
| BL (0°-30°)    | 700.2  | 5.6       | B2/1000                 |      |         |
| BM (30°-60°)   | 3119.4 | 25.0      | B3/5000                 |      |         |
| BH (60°-80°)   | 2383.1 | 19.1      | B3/2500                 |      | G2/5000 |
| BVH (80°-90°)  | 33.1   | 0.3       |                         |      | G1/100  |
| 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





REPORT NUMBER: P870555

CATALOG NUMBER: MEM2-HSN-SA-120-830-U-5MQ

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    | 90°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1549.6 | 1549.6 | 1549.6 | 1549.6 | 1549.6 | 1549.6 | 1549.6 | 1549.6 | 1549.6 | 1549.6 | 1549.6 |
| 2.5°  | 1554.4 | 1554.4 | 1552.0 | 1552.0 | 1547.2 | 1552.0 | 1549.6 | 1552.0 | 1549.6 | 1549.6 | 1552.0 |
| 5°    | 1559.2 | 1559.2 | 1554.4 | 1556.8 | 1552.0 | 1554.4 | 1552.0 | 1556.8 | 1554.4 | 1552.0 | 1556.8 |
| 7.5°  | 1566.4 | 1566.4 | 1561.6 | 1564.0 | 1559.2 | 1561.6 | 1559.2 | 1564.0 | 1561.6 | 1561.6 | 1564.0 |
| 10°   | 1573.6 | 1576.0 | 1571.2 | 1568.8 | 1568.8 | 1571.2 | 1573.6 | 1576.0 | 1573.6 | 1573.6 | 1578.4 |
| 12.5° | 1585.6 | 1588.0 | 1583.2 | 1580.8 | 1580.8 | 1583.2 | 1585.6 | 1590.3 | 1583.2 | 1583.2 | 1583.2 |
| 15°   | 1597.5 | 1597.5 | 1595.1 | 1592.7 | 1595.1 | 1597.5 | 1597.5 | 1602.3 | 1597.5 | 1592.7 | 1592.7 |
| 17.5° | 1602.3 | 1604.7 | 1602.3 | 1607.1 | 1609.5 | 1611.9 | 1614.3 | 1614.3 | 1607.1 | 1604.7 | 1604.7 |
| 20°   | 1619.1 | 1621.5 | 1616.7 | 1619.1 | 1626.3 | 1635.9 | 1635.9 | 1635.9 | 1635.9 | 1628.7 | 1628.7 |
| 22.5° | 1647.8 | 1650.2 | 1647.8 | 1647.8 | 1657.4 | 1667.0 | 1667.0 | 1674.2 | 1664.6 | 1659.8 | 1659.8 |
| 25°   | 1695.7 | 1695.7 | 1693.3 | 1695.7 | 1700.5 | 1705.3 | 1714.9 | 1719.7 | 1719.7 | 1717.3 | 1719.7 |
| 27.5° | 1753.2 | 1755.6 | 1753.2 | 1753.2 | 1750.8 | 1760.4 | 1774.8 | 1782.0 | 1784.4 | 1786.7 | 1786.7 |
| 30°   | 1829.9 | 1834.7 | 1832.3 | 1834.7 | 1839.4 | 1846.6 | 1851.4 | 1853.8 | 1853.8 | 1849.0 | 1849.0 |
| 32.5° | 1913.7 | 1918.5 | 1913.7 | 1925.7 | 1942.4 | 1942.4 | 1937.6 | 1947.2 | 1940.0 | 1935.2 | 1930.5 |
| 35°   | 2011.9 | 2011.9 | 2016.7 | 2021.5 | 2045.4 | 2057.4 | 2057.4 | 2052.6 | 2038.2 | 2031.0 | 2035.8 |
| 37.5° | 2124.5 | 2126.9 | 2131.6 | 2134.0 | 2155.6 | 2177.2 | 2174.8 | 2162.8 | 2146.0 | 2126.9 | 2126.9 |
| 40°   | 2258.6 | 2253.8 | 2256.2 | 2273.0 | 2289.7 | 2316.1 | 2318.5 | 2301.7 | 2273.0 | 2253.8 | 2253.8 |
| 42.5° | 2380.7 | 2383.1 | 2392.7 | 2414.3 | 2452.6 | 2474.1 | 2462.2 | 2433.4 | 2402.3 | 2378.3 | 2375.9 |
| 45°   | 2510.1 | 2507.7 | 2534.0 | 2579.5 | 2629.8 | 2656.2 | 2637.0 | 2596.3 | 2548.4 | 2517.3 | 2517.3 |
| 47.5° | 2641.8 | 2639.4 | 2682.5 | 2756.8 | 2821.4 | 2843.0 | 2823.8 | 2771.1 | 2706.5 | 2661.0 | 2653.8 |
| 50°   | 2778.3 | 2787.9 | 2833.4 | 2938.8 | 3022.6 | 3046.6 | 3022.6 | 2953.2 | 2866.9 | 2807.1 | 2797.5 |
| 52.5° | 2934.0 | 2941.2 | 3001.1 | 3116.0 | 3219.0 | 3274.1 | 3238.2 | 3135.2 | 3025.0 | 2953.2 | 2943.6 |
| 55°   | 3077.7 | 3082.5 | 3168.7 | 3307.6 | 3434.6 | 3508.8 | 3451.3 | 3319.6 | 3180.7 | 3089.7 | 3080.1 |
| 57.5° | 3178.3 | 3190.3 | 3300.5 | 3480.1 | 3643.0 | 3729.2 | 3643.0 | 3501.6 | 3317.2 | 3204.7 | 3197.5 |
| 60°   | 3243.0 | 3262.1 | 3389.1 | 3614.2 | 3839.4 | 3932.8 | 3844.1 | 3647.7 | 3420.2 | 3274.1 | 3266.9 |
| 62.5° | 3209.4 | 3235.8 | 3398.7 | 3693.3 | 4007.0 | 4107.6 | 3992.6 | 3717.2 | 3408.2 | 3223.8 | 3204.7 |
| 65°   | 2974.7 | 2993.9 | 3223.8 | 3635.8 | 4069.3 | 4225.0 | 4016.6 | 3640.6 | 3245.4 | 3041.8 | 3003.5 |
| 67.5° | 2488.5 | 2522.0 | 2826.2 | 3357.9 | 3935.2 | 4114.8 | 3851.3 | 3365.1 | 2888.5 | 2639.4 | 2596.3 |
| 70°   | 1911.3 | 1971.2 | 2304.1 | 2881.3 | 3516.0 | 3719.6 | 3429.8 | 2840.6 | 2280.1 | 2026.3 | 1947.2 |
| 72.5° | 1104.1 | 1197.6 | 1686.2 | 2249.0 | 2797.5 | 2950.8 | 2543.6 | 1985.5 | 1513.7 | 1334.1 | 1312.5 |
| 75°   | 366.5  | 400.0  | 802.4  | 1295.8 | 1784.4 | 1861.0 | 1590.3 | 1252.6 | 996.4  | 852.7  | 859.8  |
| 77.5° | 179.6  | 179.6  | 241.9  | 474.2  | 811.9  | 958.0  | 869.4  | 606.0  | 435.9  | 330.5  | 320.9  |
| 80°   | 143.7  | 143.7  | 167.7  | 232.3  | 273.0  | 320.9  | 273.0  | 198.8  | 162.9  | 148.5  | 155.7  |
| 82.5° | 69.5   | 67.1   | 79.0   | 112.6  | 115.0  | 110.2  | 103.0  | 103.0  | 98.2   | 91.0   | 88.6   |
| 85°   | 4.8    | 4.8    | 9.6    | 21.6   | 35.9   | 47.9   | 55.1   | 52.7   | 50.3   | 43.1   | 47.9   |
| 87.5° | 2.4    | 2.4    | 2.4    | 2.4    | 2.4    | 2.4    | 2.4    | 4.8    | 4.8    | 4.8    | 4.8    |
| 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: SP1-2407-157-7

Test Date: 09/05/2024

Luminaire Tested: MEM2-HTN-SA-40-830-U-5WQ

Data in this report applies to families of products including MEM2-HTN-SA-40-830-U-5WQ



**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-157-7  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 09/05/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Streetworks  
 Catalog Number: **MEM2-HTN-SA-40-830-U-5WQ**  
 Description: Epic Modern Light Square 40W 5WQ Optic

**Spectral Parameters**

CCT (K): 3126  
 CIE u': 0.2465  
 CIE v': 0.5182  
 Duv: -0.0004  
 CIE x: 0.4277  
 CIE y: 0.3997  
 CIE z: 0.1727  
 Peak Wavelength (nm): 601  
 Dominant Wavelength (nm): 582  
 Purity: 48.31913  
 Rf: 84.4  
 Rg: 94.7

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 82.6 |      |      |
| R1:       | 81.4 | R9:  | 5.1  |
| R2:       | 92.2 | R10: | 82.2 |
| R3:       | 94.9 | R11: | 79.8 |
| R4:       | 80.1 | R12: | 70.4 |
| R5:       | 81.8 | R13: | 84.2 |
| R6:       | 90.5 | R14: | 97.9 |
| R7:       | 81.8 | R15: | 73.6 |
| R8:       | 58.0 |      |      |



**Test Conditions**

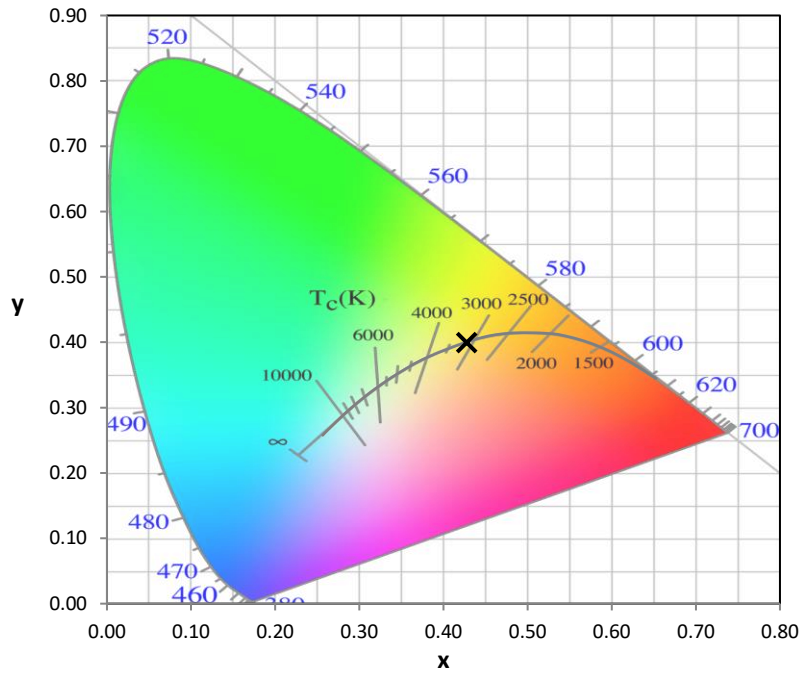
Stabilization Time: 22M  
 Operation Time: 1H 22M  
 Sphere Temperature (°C): 24.3

REPORT NUMBER: SP1-2407-157-7

| 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           |

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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 3000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) |
|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|
| 360            | 0                        | NR                   | 490            | 258                      | NR                   | 620            | 908                      | NR                   | 750            | 26                       | NR                   | 880            | 1                        | NR                   |
| 365            | 0                        | NR                   | 495            | 297                      | NR                   | 625            | 857                      | NR                   | 755            | 22                       | NR                   | 885            | 0                        | NR                   |
| 370            | 0                        | NR                   | 500            | 345                      | NR                   | 630            | 801                      | NR                   | 760            | 19                       | NR                   | 890            | 0                        | NR                   |
| 375            | 0                        | NR                   | 505            | 391                      | NR                   | 635            | 738                      | NR                   | 765            | 16                       | NR                   | 895            | 0                        | NR                   |
| 380            | 0                        | NR                   | 510            | 426                      | NR                   | 640            | 675                      | NR                   | 770            | 14                       | NR                   | 900            | 0                        | NR                   |
| 385            | 0                        | NR                   | 515            | 456                      | NR                   | 645            | 610                      | NR                   | 775            | 12                       | NR                   | 905            | 0                        | NR                   |
| 390            | 0                        | NR                   | 520            | 480                      | NR                   | 650            | 547                      | NR                   | 780            | 10                       | NR                   | 910            | 0                        | NR                   |
| 395            | 0                        | NR                   | 525            | 500                      | NR                   | 655            | 488                      | NR                   | 785            | 9                        | NR                   | 915            | 0                        | NR                   |
| 400            | 0                        | NR                   | 530            | 517                      | NR                   | 660            | 429                      | NR                   | 790            | 7                        | NR                   | 920            | 0                        | NR                   |
| 405            | 2                        | NR                   | 535            | 538                      | NR                   | 665            | 378                      | NR                   | 795            | 6                        | NR                   | 925            | 0                        | NR                   |
| 410            | 4                        | NR                   | 540            | 558                      | NR                   | 670            | 328                      | NR                   | 800            | 5                        | NR                   | 930            | 0                        | NR                   |
| 415            | 9                        | NR                   | 545            | 584                      | NR                   | 675            | 285                      | NR                   | 805            | 5                        | NR                   | 935            | 0                        | NR                   |
| 420            | 16                       | NR                   | 550            | 611                      | NR                   | 680            | 247                      | NR                   | 810            | 4                        | NR                   | 940            | 0                        | NR                   |
| 425            | 31                       | NR                   | 555            | 646                      | NR                   | 685            | 212                      | NR                   | 815            | 3                        | NR                   | 945            | 0                        | NR                   |
| 430            | 56                       | NR                   | 560            | 687                      | NR                   | 690            | 183                      | NR                   | 820            | 3                        | NR                   | 950            | 0                        | NR                   |
| 435            | 101                      | NR                   | 565            | 731                      | NR                   | 695            | 156                      | NR                   | 825            | 3                        | NR                   | 955            | 0                        | NR                   |
| 440            | 178                      | NR                   | 570            | 780                      | NR                   | 700            | 133                      | NR                   | 830            | 2                        | NR                   | 960            | 0                        | NR                   |
| 445            | 323                      | NR                   | 575            | 832                      | NR                   | 705            | 114                      | NR                   | 835            | 2                        | NR                   | 965            | 0                        | NR                   |
| 450            | 566                      | NR                   | 580            | 883                      | NR                   | 710            | 96                       | NR                   | 840            | 2                        | NR                   | 970            | 0                        | NR                   |
| 455            | 645                      | NR                   | 585            | 927                      | NR                   | 715            | 82                       | NR                   | 845            | 1                        | NR                   | 975            | 0                        | NR                   |
| 460            | 457                      | NR                   | 590            | 963                      | NR                   | 720            | 70                       | NR                   | 850            | 1                        | NR                   | 980            | 0                        | NR                   |
| 465            | 365                      | NR                   | 595            | 985                      | NR                   | 725            | 59                       | NR                   | 855            | 1                        | NR                   | 985            | 0                        | NR                   |
| 470            | 317                      | NR                   | 600            | 998                      | NR                   | 730            | 50                       | NR                   | 860            | 1                        | NR                   | 990            | 0                        | NR                   |
| 475            | 244                      | NR                   | 605            | 994                      | NR                   | 735            | 43                       | NR                   | 865            | 1                        | NR                   | 995            | 0                        | NR                   |
| 480            | 218                      | NR                   | 610            | 978                      | NR                   | 740            | 36                       | NR                   | 870            | 1                        | NR                   | 1000           | 0                        | NR                   |
| 485            | 233                      | NR                   | 615            | 947                      | NR                   | 745            | 31                       | NR                   | 875            | 1                        | NR                   |                |                          |                      |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.42**

| $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) |
|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|
| 360            | 0                        | NR                   | 490            | 258                      | NR                   | 620            | 908                      | NR                   | 750            | 26                       | NR                   | 880            | 1                        | NR                   |
| 365            | 0                        | NR                   | 495            | 297                      | NR                   | 625            | 857                      | NR                   | 755            | 22                       | NR                   | 885            | 0                        | NR                   |
| 370            | 0                        | NR                   | 500            | 345                      | NR                   | 630            | 801                      | NR                   | 760            | 19                       | NR                   | 890            | 0                        | NR                   |
| 375            | 0                        | NR                   | 505            | 391                      | NR                   | 635            | 738                      | NR                   | 765            | 16                       | NR                   | 895            | 0                        | NR                   |
| 380            | 0                        | NR                   | 510            | 426                      | NR                   | 640            | 675                      | NR                   | 770            | 14                       | NR                   | 900            | 0                        | NR                   |
| 385            | 0                        | NR                   | 515            | 456                      | NR                   | 645            | 610                      | NR                   | 775            | 12                       | NR                   | 905            | 0                        | NR                   |
| 390            | 0                        | NR                   | 520            | 480                      | NR                   | 650            | 547                      | NR                   | 780            | 10                       | NR                   | 910            | 0                        | NR                   |
| 395            | 0                        | NR                   | 525            | 500                      | NR                   | 655            | 488                      | NR                   | 785            | 9                        | NR                   | 915            | 0                        | NR                   |
| 400            | 0                        | NR                   | 530            | 517                      | NR                   | 660            | 429                      | NR                   | 790            | 7                        | NR                   | 920            | 0                        | NR                   |
| 405            | 2                        | NR                   | 535            | 538                      | NR                   | 665            | 378                      | NR                   | 795            | 6                        | NR                   | 925            | 0                        | NR                   |
| 410            | 4                        | NR                   | 540            | 558                      | NR                   | 670            | 328                      | NR                   | 800            | 5                        | NR                   | 930            | 0                        | NR                   |
| 415            | 9                        | NR                   | 545            | 584                      | NR                   | 675            | 285                      | NR                   | 805            | 5                        | NR                   | 935            | 0                        | NR                   |
| 420            | 16                       | NR                   | 550            | 611                      | NR                   | 680            | 247                      | NR                   | 810            | 4                        | NR                   | 940            | 0                        | NR                   |
| 425            | 31                       | NR                   | 555            | 646                      | NR                   | 685            | 212                      | NR                   | 815            | 3                        | NR                   | 945            | 0                        | NR                   |
| 430            | 56                       | NR                   | 560            | 687                      | NR                   | 690            | 183                      | NR                   | 820            | 3                        | NR                   | 950            | 0                        | NR                   |
| 435            | 101                      | NR                   | 565            | 731                      | NR                   | 695            | 156                      | NR                   | 825            | 3                        | NR                   | 955            | 0                        | NR                   |
| 440            | 178                      | NR                   | 570            | 780                      | NR                   | 700            | 133                      | NR                   | 830            | 2                        | NR                   | 960            | 0                        | NR                   |
| 445            | 323                      | NR                   | 575            | 832                      | NR                   | 705            | 114                      | NR                   | 835            | 2                        | NR                   | 965            | 0                        | NR                   |
| 450            | 566                      | NR                   | 580            | 883                      | NR                   | 710            | 96                       | NR                   | 840            | 2                        | NR                   | 970            | 0                        | NR                   |
| 455            | 645                      | NR                   | 585            | 927                      | NR                   | 715            | 82                       | NR                   | 845            | 1                        | NR                   | 975            | 0                        | NR                   |
| 460            | 457                      | NR                   | 590            | 963                      | NR                   | 720            | 70                       | NR                   | 850            | 1                        | NR                   | 980            | 0                        | NR                   |
| 465            | 365                      | NR                   | 595            | 985                      | NR                   | 725            | 59                       | NR                   | 855            | 1                        | NR                   | 985            | 0                        | NR                   |
| 470            | 317                      | NR                   | 600            | 998                      | NR                   | 730            | 50                       | NR                   | 860            | 1                        | NR                   | 990            | 0                        | NR                   |
| 475            | 244                      | NR                   | 605            | 994                      | NR                   | 735            | 43                       | NR                   | 865            | 1                        | NR                   | 995            | 0                        | NR                   |
| 480            | 218                      | NR                   | 610            | 978                      | NR                   | 740            | 36                       | NR                   | 870            | 1                        | NR                   | 1000           | 0                        | NR                   |
| 485            | 233                      | NR                   | 615            | 947                      | NR                   | 745            | 31                       | NR                   | 875            | 1                        | NR                   |                |                          |                      |

REPORT NUMBER: SP1-2407-157-7

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.79

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 258                      | NR            | 620    | 908                      | NR            | 750    | 26                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 297                      | NR            | 625    | 857                      | NR            | 755    | 22                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 345                      | NR            | 630    | 801                      | NR            | 760    | 19                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 391                      | NR            | 635    | 738                      | NR            | 765    | 16                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 426                      | NR            | 640    | 675                      | NR            | 770    | 14                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 456                      | NR            | 645    | 610                      | NR            | 775    | 12                       | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 480                      | NR            | 650    | 547                      | NR            | 780    | 10                       | NR            | 910    | 0                        | NR            |
| 395    | 0                        | NR            | 525    | 500                      | NR            | 655    | 488                      | NR            | 785    | 9                        | NR            | 915    | 0                        | NR            |
| 400    | 0                        | NR            | 530    | 517                      | NR            | 660    | 429                      | NR            | 790    | 7                        | NR            | 920    | 0                        | NR            |
| 405    | 2                        | NR            | 535    | 538                      | NR            | 665    | 378                      | NR            | 795    | 6                        | NR            | 925    | 0                        | NR            |
| 410    | 4                        | NR            | 540    | 558                      | NR            | 670    | 328                      | NR            | 800    | 5                        | NR            | 930    | 0                        | NR            |
| 415    | 9                        | NR            | 545    | 584                      | NR            | 675    | 285                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 16                       | NR            | 550    | 611                      | NR            | 680    | 247                      | NR            | 810    | 4                        | NR            | 940    | 0                        | NR            |
| 425    | 31                       | NR            | 555    | 646                      | NR            | 685    | 212                      | NR            | 815    | 3                        | NR            | 945    | 0                        | NR            |
| 430    | 56                       | NR            | 560    | 687                      | NR            | 690    | 183                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 101                      | NR            | 565    | 731                      | NR            | 695    | 156                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 178                      | NR            | 570    | 780                      | NR            | 700    | 133                      | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 323                      | NR            | 575    | 832                      | NR            | 705    | 114                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 566                      | NR            | 580    | 883                      | NR            | 710    | 96                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 645                      | NR            | 585    | 927                      | NR            | 715    | 82                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 457                      | NR            | 590    | 963                      | NR            | 720    | 70                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 365                      | NR            | 595    | 985                      | NR            | 725    | 59                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 317                      | NR            | 600    | 998                      | NR            | 730    | 50                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 244                      | NR            | 605    | 994                      | NR            | 735    | 43                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 218                      | NR            | 610    | 978                      | NR            | 740    | 36                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 233                      | NR            | 615    | 947                      | NR            | 745    | 31                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 84.4$   
 $R_g = 94.7$   
 $CIE R_a = 82.6$   
 $R_9 = 5.1$

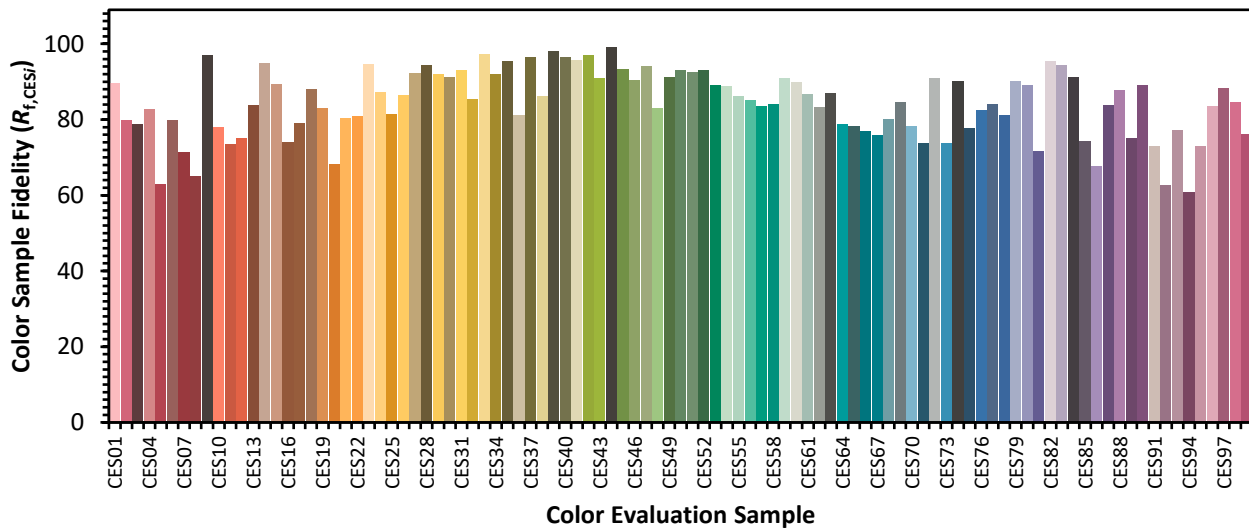


**Color Vector Graphics**



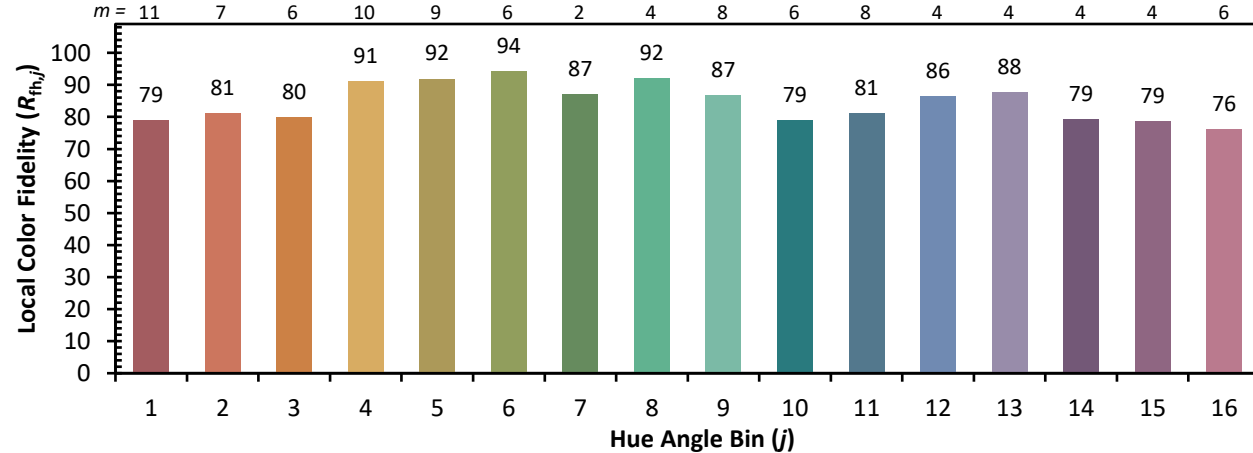
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 86 | CES51 = 93 | CES76 = 82 |
| CES02 = 63 | CES27 = 92 | CES52 = 93 | CES77 = 84 |
| CES03 = 31 | CES28 = 94 | CES53 = 89 | CES78 = 81 |
| CES04 = 70 | CES29 = 92 | CES54 = 89 | CES79 = 90 |
| CES05 = 49 | CES30 = 91 | CES55 = 86 | CES80 = 89 |
| CES06 = 51 | CES31 = 93 | CES56 = 85 | CES81 = 72 |
| CES07 = 42 | CES32 = 85 | CES57 = 83 | CES82 = 95 |
| CES08 = 41 | CES33 = 97 | CES58 = 84 | CES83 = 94 |
| CES09 = 29 | CES34 = 92 | CES59 = 91 | CES84 = 91 |
| CES10 = 76 | CES35 = 96 | CES60 = 90 | CES85 = 74 |
| CES11 = 59 | CES36 = 81 | CES61 = 87 | CES86 = 68 |
| CES12 = 65 | CES37 = 96 | CES62 = 83 | CES87 = 84 |
| CES13 = 43 | CES38 = 86 | CES63 = 87 | CES88 = 88 |
| CES14 = 74 | CES39 = 98 | CES64 = 79 | CES89 = 75 |
| CES15 = 71 | CES40 = 96 | CES65 = 78 | CES90 = 89 |
| CES16 = 47 | CES41 = 96 | CES66 = 77 | CES91 = 73 |
| CES17 = 50 | CES42 = 97 | CES67 = 76 | CES92 = 63 |
| CES18 = 56 | CES43 = 91 | CES68 = 80 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 85 | CES94 = 61 |
| CES20 = 66 | CES45 = 93 | CES70 = 78 | CES95 = 73 |
| CES21 = 87 | CES46 = 90 | CES71 = 74 | CES96 = 84 |
| CES22 = 79 | CES47 = 94 | CES72 = 91 | CES97 = 88 |
| CES23 = 92 | CES48 = 83 | CES73 = 74 | CES98 = 85 |
| CES24 = 91 | CES49 = 91 | CES74 = 90 | CES99 = 76 |
| CES25 = 72 | CES50 = 93 | CES75 = 78 |            |

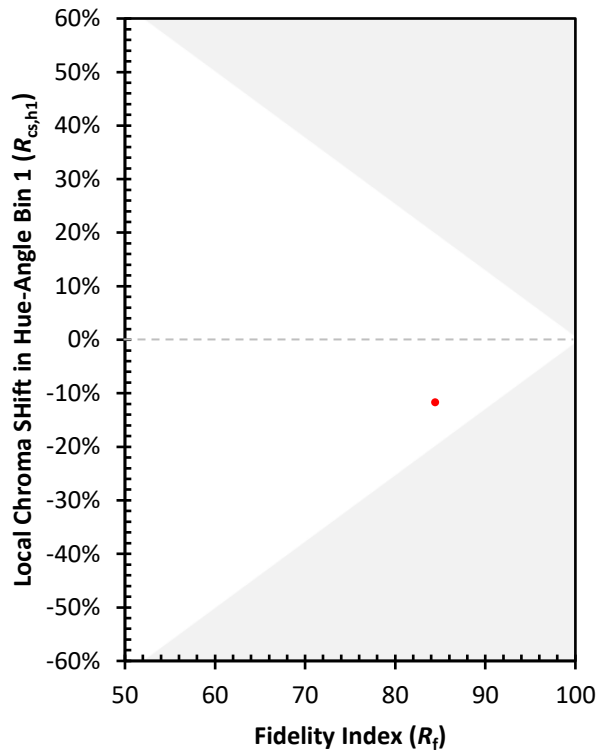




Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)