

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: P868166

Luminaire Tested: **MEM2-HSN-SA-100-722-U-T5R**

Issue Date: 08/21/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P868166  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: MEM2-HSN-SA-100-722-U-T5R  
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 100W 70CRI 2200K  
FIXTURE w/ TYPE V ROUND DISTRIBUTION OPTIC  
Light Source: (20) 2200K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

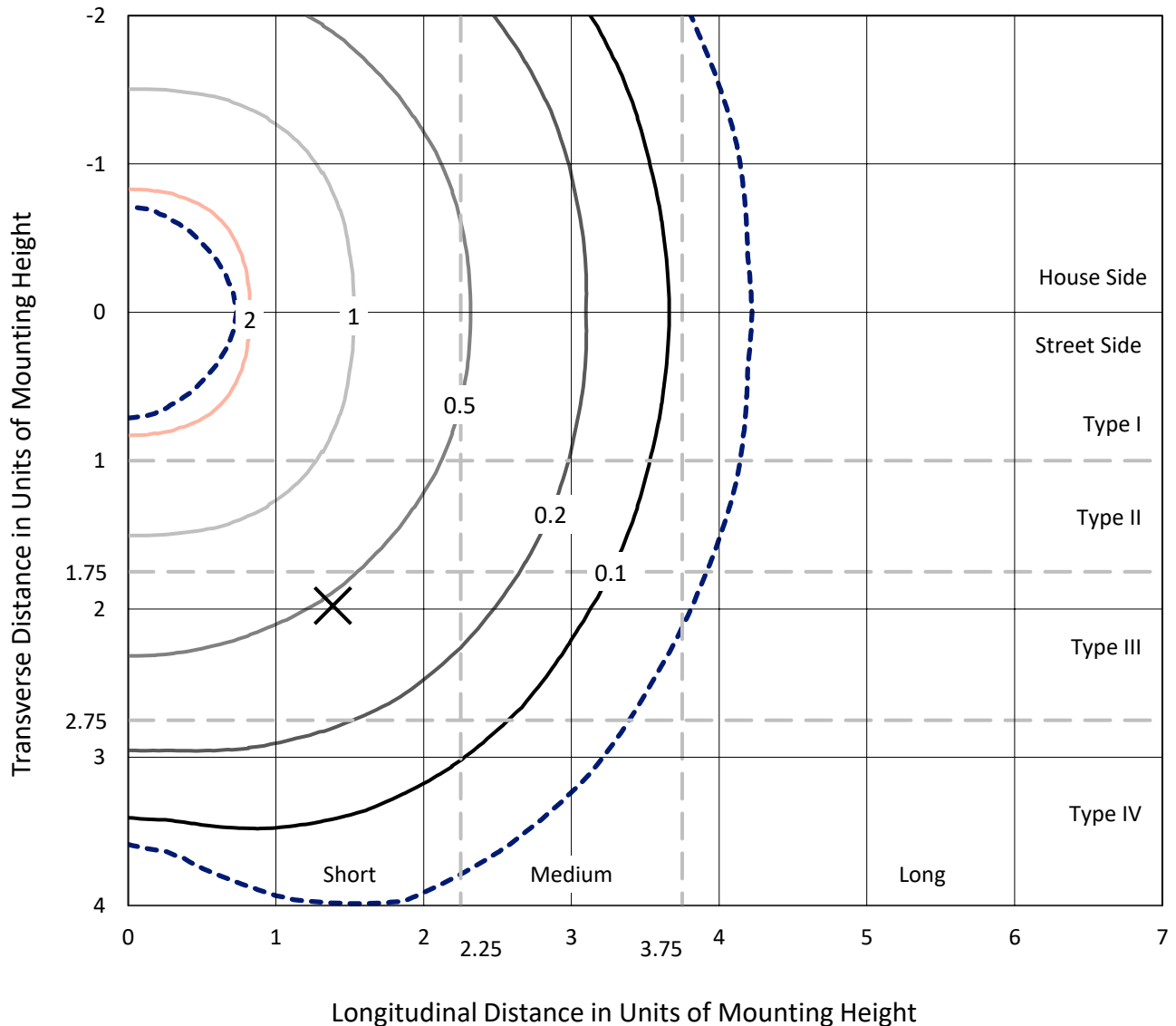
Lumens per Lamp: N/A  
Luminaire Lumens: 11315.8 lumens  
Efficiency: N/A  
Efficacy: 125.7 lumens/watt  
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B4 - U0 - G2

Input Watts (W): 90  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.99  
Total Harmonic Distortion (THDi): 6.20%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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### Iso-Footcandle Lines of Horizontal Illumination

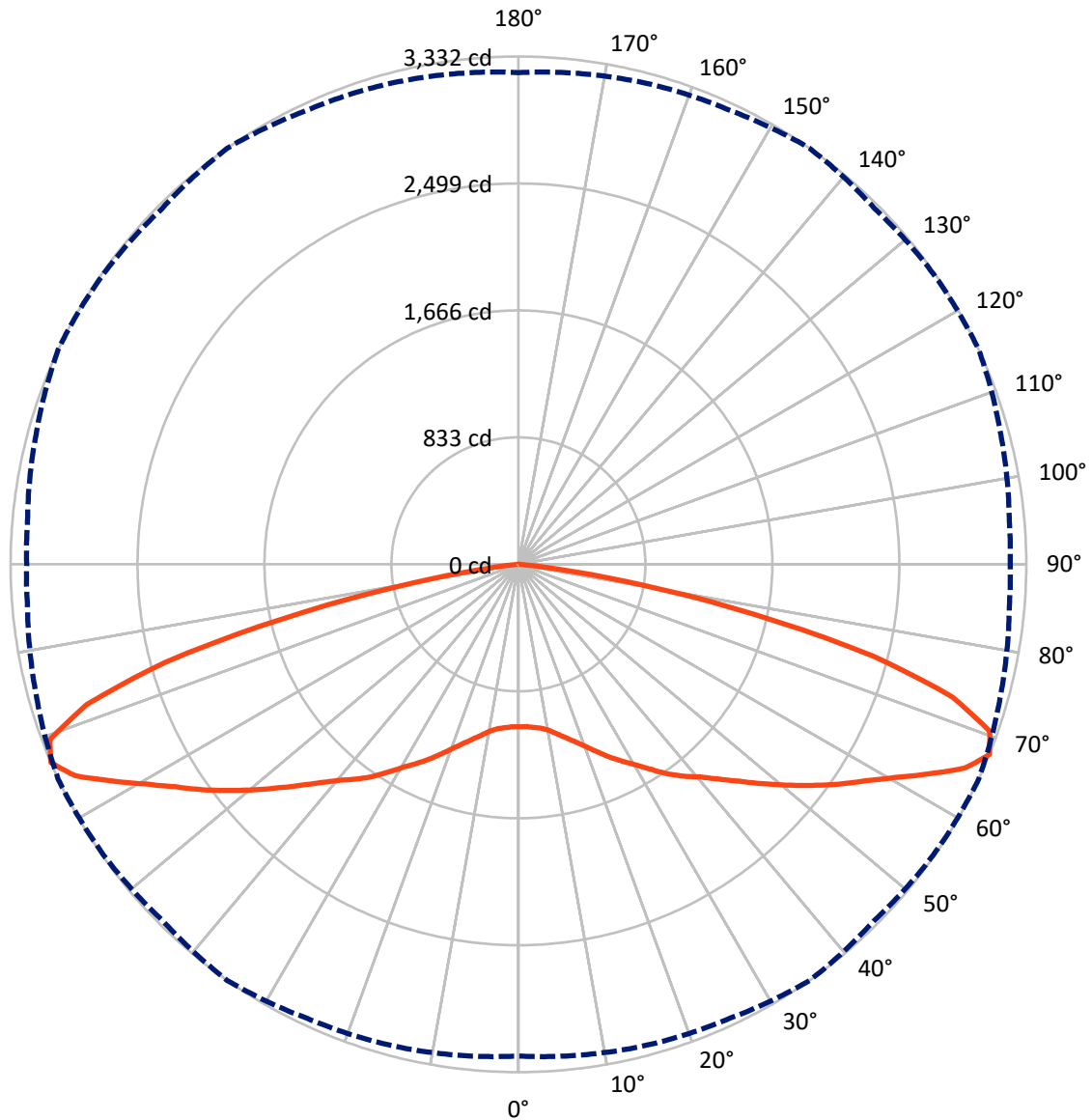
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 2.7 fc  
 Type V - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 35-Deg Lateral    - - - Horizontal Cone Through 67.5-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 5657.9   | 0.0    | 5657.9  |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Street Side</b> | Lumens    | 5657.9   | 0.0    | 5657.9  |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Total</b>       | Lumens    | 11315.8  | 0.0    | 11315.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 103.6   | 0.9       |
| 10°-20°   | 339.7   | 3.0       |
| 20°-30°   | 649.3   | 5.7       |
| 30°-40°   | 1049.3  | 9.3       |
| 40°-50°   | 1535.7  | 13.6      |
| 50°-60°   | 2202.2  | 19.5      |
| 60°-70°   | 3086.6  | 27.3      |
| 70°-80°   | 2177.9  | 19.2      |
| 80°-90°   | 171.5   | 1.5       |
| 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°    | 11315.8 | 100.0     |
| 0°-180°   | 11315.8 | 100.0     |



REPORT NUMBER: P868166

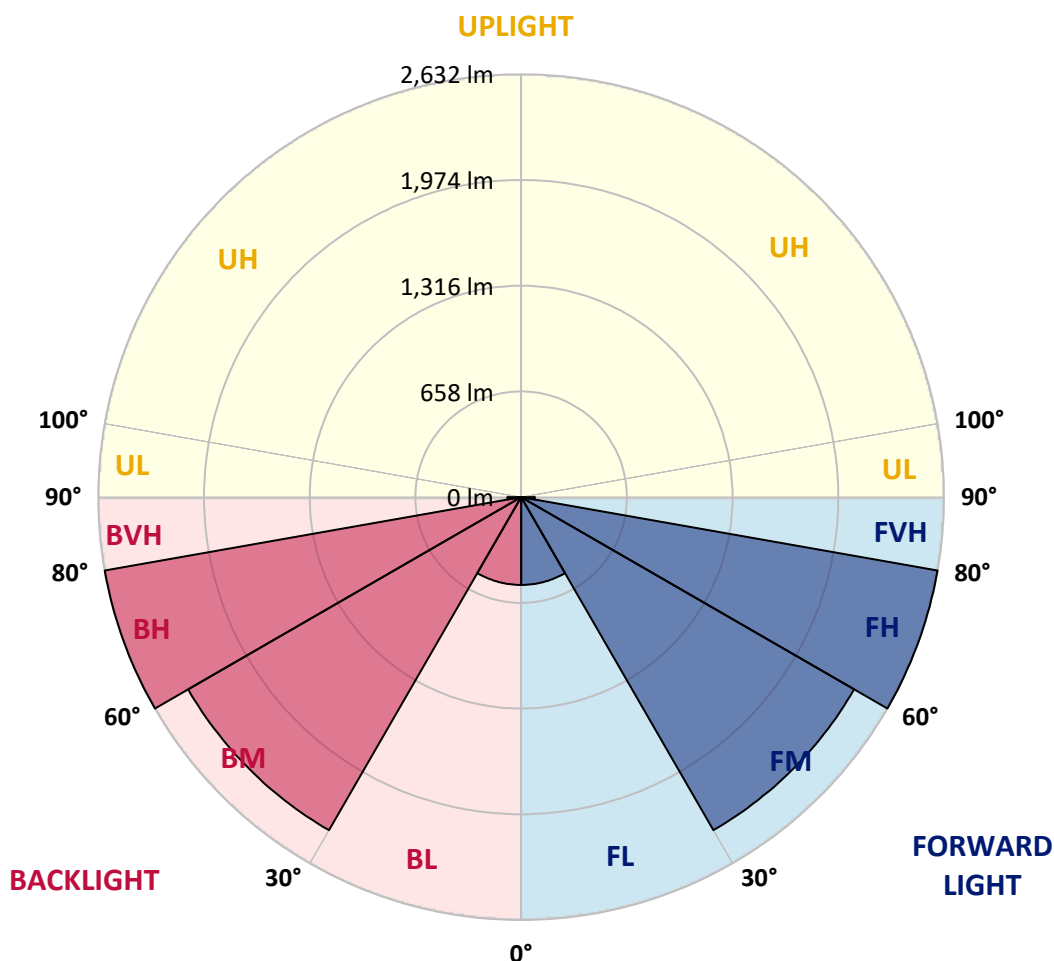
CATALOG NUMBER: MEM2-HSN-SA-100-722-U-T5R

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 546.3  | 4.8       |                         |      |         |
| FM (30°-60°)   | 2393.6 | 21.2      |                         |      |         |
| FH (60°-80°)   | 2632.2 | 23.3      |                         |      | G2/5000 |
| FVH (80°-90°)  | 85.7   | 0.8       |                         |      | G1/100  |
| BL (0°-30°)    | 546.3  | 4.8       | B2/1000                 |      |         |
| BM (30°-60°)   | 2393.6 | 21.2      | B2/2500                 |      |         |
| BH (60°-80°)   | 2632.2 | 23.3      | B4/5000                 |      | G2/5000 |
| BVH (80°-90°)  | 85.7   | 0.8       |                         |      | 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





REPORT NUMBER: P868166

CATALOG NUMBER: MEM2-HSN-SA-100-722-U-T5R

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    | 90°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1065.9 | 1065.9 | 1065.9 | 1065.9 | 1065.9 | 1065.9 | 1065.9 | 1065.9 | 1065.9 | 1065.9 | 1065.9 |
| 2.5°  | 1072.5 | 1070.3 | 1068.1 | 1068.1 | 1065.9 | 1068.1 | 1065.9 | 1068.1 | 1065.9 | 1065.9 | 1065.9 |
| 5°    | 1079.1 | 1076.9 | 1076.9 | 1076.9 | 1074.7 | 1074.7 | 1074.7 | 1074.7 | 1072.5 | 1070.3 | 1072.5 |
| 7.5°  | 1085.7 | 1085.7 | 1083.5 | 1087.9 | 1085.7 | 1087.9 | 1087.9 | 1090.1 | 1085.7 | 1083.5 | 1085.7 |
| 10°   | 1103.4 | 1103.4 | 1103.4 | 1107.8 | 1107.8 | 1114.4 | 1114.4 | 1116.6 | 1114.4 | 1110.0 | 1110.0 |
| 12.5° | 1140.8 | 1138.6 | 1138.6 | 1138.6 | 1143.0 | 1147.4 | 1151.8 | 1151.8 | 1149.6 | 1143.0 | 1143.0 |
| 15°   | 1182.6 | 1187.0 | 1182.6 | 1180.4 | 1182.6 | 1187.0 | 1191.4 | 1191.4 | 1189.2 | 1187.0 | 1187.0 |
| 17.5° | 1233.3 | 1235.5 | 1231.1 | 1226.7 | 1226.7 | 1233.3 | 1235.5 | 1235.5 | 1233.3 | 1228.9 | 1228.9 |
| 20°   | 1277.3 | 1279.5 | 1279.5 | 1277.3 | 1279.5 | 1283.9 | 1286.1 | 1288.3 | 1281.7 | 1275.1 | 1275.1 |
| 22.5° | 1314.8 | 1317.0 | 1321.4 | 1330.2 | 1339.0 | 1343.4 | 1341.2 | 1341.2 | 1330.2 | 1323.6 | 1321.4 |
| 25°   | 1361.0 | 1367.6 | 1376.4 | 1387.5 | 1402.9 | 1413.9 | 1409.5 | 1400.7 | 1391.9 | 1378.6 | 1376.4 |
| 27.5° | 1451.3 | 1451.3 | 1442.5 | 1446.9 | 1464.5 | 1475.5 | 1471.1 | 1464.5 | 1446.9 | 1438.1 | 1435.9 |
| 30°   | 1521.8 | 1521.8 | 1521.8 | 1517.4 | 1528.4 | 1541.6 | 1537.2 | 1526.2 | 1517.4 | 1513.0 | 1513.0 |
| 32.5° | 1590.1 | 1585.7 | 1592.3 | 1601.1 | 1605.5 | 1609.9 | 1609.9 | 1601.1 | 1585.7 | 1579.1 | 1579.1 |
| 35°   | 1653.9 | 1658.3 | 1664.9 | 1678.2 | 1689.2 | 1682.6 | 1671.6 | 1664.9 | 1649.5 | 1636.3 | 1636.3 |
| 37.5° | 1715.6 | 1720.0 | 1726.6 | 1746.4 | 1764.0 | 1761.8 | 1748.6 | 1731.0 | 1711.2 | 1700.2 | 1693.6 |
| 40°   | 1759.6 | 1761.8 | 1779.5 | 1810.3 | 1834.5 | 1843.3 | 1832.3 | 1808.1 | 1777.3 | 1755.2 | 1757.4 |
| 42.5° | 1812.5 | 1816.9 | 1845.5 | 1889.6 | 1924.8 | 1938.0 | 1922.6 | 1889.6 | 1845.5 | 1816.9 | 1816.9 |
| 45°   | 1889.6 | 1891.8 | 1929.2 | 1984.3 | 2030.5 | 2052.6 | 2030.5 | 1984.3 | 1927.0 | 1898.4 | 1896.2 |
| 47.5° | 1966.7 | 1973.3 | 2015.1 | 2081.2 | 2149.5 | 2175.9 | 2151.7 | 2092.2 | 2023.9 | 1988.7 | 1984.3 |
| 50°   | 2054.8 | 2059.2 | 2109.8 | 2200.1 | 2277.2 | 2312.4 | 2281.6 | 2206.7 | 2131.8 | 2087.8 | 2090.0 |
| 52.5° | 2140.6 | 2153.9 | 2222.1 | 2316.8 | 2409.3 | 2449.0 | 2404.9 | 2323.4 | 2244.2 | 2202.3 | 2200.1 |
| 55°   | 2268.4 | 2283.8 | 2343.3 | 2449.0 | 2545.9 | 2589.9 | 2548.1 | 2457.8 | 2371.9 | 2325.6 | 2316.8 |
| 57.5° | 2429.1 | 2438.0 | 2490.8 | 2598.7 | 2680.2 | 2722.1 | 2697.8 | 2614.1 | 2532.7 | 2475.4 | 2464.4 |
| 60°   | 2611.9 | 2620.7 | 2662.6 | 2772.7 | 2838.8 | 2869.6 | 2860.8 | 2812.3 | 2757.3 | 2730.9 | 2724.3 |
| 62.5° | 2871.8 | 2874.0 | 2896.0 | 2959.9 | 3026.0 | 3039.2 | 3017.2 | 3006.1 | 3023.8 | 2995.1 | 3001.7 |
| 65°   | 3169.1 | 3169.1 | 3162.5 | 3171.3 | 3222.0 | 3206.6 | 3191.1 | 3239.6 | 3230.8 | 3182.3 | 3173.5 |
| 67.5° | 3226.4 | 3239.6 | 3266.0 | 3285.8 | 3332.1 | 3303.5 | 3323.3 | 3332.1 | 3277.0 | 3233.0 | 3226.4 |
| 70°   | 2887.2 | 2902.6 | 3050.2 | 3140.5 | 3281.4 | 3307.9 | 3244.0 | 3211.0 | 3149.3 | 3067.8 | 3045.8 |
| 72.5° | 1968.9 | 2045.9 | 2471.0 | 2761.7 | 2977.5 | 3010.6 | 2975.3 | 2933.5 | 2810.1 | 2746.3 | 2702.2 |
| 75°   | 1572.4 | 1614.3 | 1993.1 | 2279.4 | 2407.1 | 2404.9 | 2264.0 | 2217.7 | 2120.8 | 2112.0 | 2120.8 |
| 77.5° | 960.2  | 969.0  | 1341.2 | 1565.8 | 1581.3 | 1572.4 | 1515.2 | 1480.0 | 1493.2 | 1427.1 | 1438.1 |
| 80°   | 292.9  | 319.3  | 506.5  | 764.2  | 821.5  | 795.0  | 784.0  | 797.2  | 810.4  | 830.3  | 861.1  |
| 82.5° | 59.5   | 74.9   | 101.3  | 220.2  | 251.1  | 248.9  | 246.7  | 273.1  | 297.3  | 308.3  | 374.4  |
| 85°   | 6.6    | 6.6    | 8.8    | 17.6   | 37.4   | 59.5   | 61.7   | 55.1   | 83.7   | 81.5   | 57.3   |
| 87.5° | 2.2    | 2.2    | 2.2    | 2.2    | 2.2    | 4.4    | 4.4    | 4.4    | 4.4    | 4.4    | 4.4    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-157-2

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-722-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-722-U-5WQ-2



**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-157-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 08/20/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Streetworks  
 Catalog Number: **MEM2-HTN-SA-40-722-U-5WQ-2**  
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

**Spectral Parameters**

CCT (K): 2253  
 CIE u': 0.2868  
 CIE v': 0.5332  
 Duv: -0.0014  
 CIE x: 0.4974  
 CIE y: 0.4110  
 CIE z: 0.0915  
 Peak Wavelength (nm): 603  
 Dominant Wavelength (nm): 587  
 Purity: 72.69432  
 Rf: 76.9  
 Rg: 92.7

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 70.6 |      |       |
| R1:       | 68.4 | R9:  | -36.0 |
| R2:       | 88.7 | R10: | 78.2  |
| R3:       | 85.4 | R11: | 61.0  |
| R4:       | 63.5 | R12: | 74.2  |
| R5:       | 69.0 | R13: | 72.8  |
| R6:       | 88.9 | R14: | 92.2  |
| R7:       | 68.5 | R15: | 58.0  |
| R8:       | 32.0 |      |       |



**Test Conditions**

Stabilization Time: 29M  
 Operation Time: 1H 29M  
 Sphere Temperature (°C): 24.1

REPORT NUMBER: SP1-2407-157-2

| 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 2200K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| 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    | 117                      | NR            | 620    | 896                      | NR            | 750    | 20                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 137                      | NR            | 625    | 838                      | NR            | 755    | 17                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 160                      | NR            | 630    | 774                      | NR            | 760    | 14                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 183                      | NR            | 635    | 704                      | NR            | 765    | 12                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 202                      | NR            | 640    | 635                      | NR            | 770    | 10                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 219                      | NR            | 645    | 565                      | NR            | 775    | 9                        | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 235                      | NR            | 650    | 501                      | NR            | 780    | 7                        | NR            | 910    | 0                        | NR            |
| 395    | 0                        | NR            | 525    | 249                      | NR            | 655    | 440                      | NR            | 785    | 6                        | NR            | 915    | 0                        | NR            |
| 400    | 0                        | NR            | 530    | 263                      | NR            | 660    | 383                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 0                        | NR            | 535    | 281                      | NR            | 665    | 332                      | NR            | 795    | 5                        | NR            | 925    | 0                        | NR            |
| 410    | 1                        | NR            | 540    | 302                      | NR            | 670    | 286                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 3                        | NR            | 545    | 331                      | NR            | 675    | 245                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 6                        | NR            | 550    | 366                      | NR            | 680    | 210                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 12                       | NR            | 555    | 411                      | NR            | 685    | 178                      | NR            | 815    | 3                        | NR            | 945    | 0                        | NR            |
| 430    | 21                       | NR            | 560    | 469                      | NR            | 690    | 152                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 38                       | NR            | 565    | 536                      | NR            | 695    | 129                      | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 66                       | NR            | 570    | 614                      | NR            | 700    | 109                      | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 122                      | NR            | 575    | 701                      | NR            | 705    | 92                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 215                      | NR            | 580    | 785                      | NR            | 710    | 77                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 236                      | NR            | 585    | 863                      | NR            | 715    | 66                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 170                      | NR            | 590    | 928                      | NR            | 720    | 55                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 148                      | NR            | 595    | 971                      | NR            | 725    | 47                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 132                      | NR            | 600    | 994                      | NR            | 730    | 40                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 104                      | NR            | 605    | 996                      | NR            | 735    | 33                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 97                       | NR            | 610    | 979                      | NR            | 740    | 28                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 105                      | NR            | 615    | 943                      | NR            | 745    | 24                       | NR            | 875    | 0                        | NR            |        |                          |               |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR S/P: 0.96**

| 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    | 117                      | NR            | 620    | 896                      | NR            | 750    | 20                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 137                      | NR            | 625    | 838                      | NR            | 755    | 17                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 160                      | NR            | 630    | 774                      | NR            | 760    | 14                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 183                      | NR            | 635    | 704                      | NR            | 765    | 12                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 202                      | NR            | 640    | 635                      | NR            | 770    | 10                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 219                      | NR            | 645    | 565                      | NR            | 775    | 9                        | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 235                      | NR            | 650    | 501                      | NR            | 780    | 7                        | NR            | 910    | 0                        | NR            |
| 395    | 0                        | NR            | 525    | 249                      | NR            | 655    | 440                      | NR            | 785    | 6                        | NR            | 915    | 0                        | NR            |
| 400    | 0                        | NR            | 530    | 263                      | NR            | 660    | 383                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 0                        | NR            | 535    | 281                      | NR            | 665    | 332                      | NR            | 795    | 5                        | NR            | 925    | 0                        | NR            |
| 410    | 1                        | NR            | 540    | 302                      | NR            | 670    | 286                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 3                        | NR            | 545    | 331                      | NR            | 675    | 245                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 6                        | NR            | 550    | 366                      | NR            | 680    | 210                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 12                       | NR            | 555    | 411                      | NR            | 685    | 178                      | NR            | 815    | 3                        | NR            | 945    | 0                        | NR            |
| 430    | 21                       | NR            | 560    | 469                      | NR            | 690    | 152                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 38                       | NR            | 565    | 536                      | NR            | 695    | 129                      | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 66                       | NR            | 570    | 614                      | NR            | 700    | 109                      | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 122                      | NR            | 575    | 701                      | NR            | 705    | 92                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 215                      | NR            | 580    | 785                      | NR            | 710    | 77                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 236                      | NR            | 585    | 863                      | NR            | 715    | 66                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 170                      | NR            | 590    | 928                      | NR            | 720    | 55                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 148                      | NR            | 595    | 971                      | NR            | 725    | 47                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 132                      | NR            | 600    | 994                      | NR            | 730    | 40                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 104                      | NR            | 605    | 996                      | NR            | 735    | 33                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 97                       | NR            | 610    | 979                      | NR            | 740    | 28                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 105                      | NR            | 615    | 943                      | NR            | 745    | 24                       | NR            | 875    | 0                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2407-157-2

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.71

| λ (nm) | Power W <sup>2</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>2</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>2</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>2</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>2</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 117                      | NR            | 620    | 896                      | NR            | 750    | 20                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 137                      | NR            | 625    | 838                      | NR            | 755    | 17                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 160                      | NR            | 630    | 774                      | NR            | 760    | 14                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 183                      | NR            | 635    | 704                      | NR            | 765    | 12                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 202                      | NR            | 640    | 635                      | NR            | 770    | 10                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 219                      | NR            | 645    | 565                      | NR            | 775    | 9                        | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 235                      | NR            | 650    | 501                      | NR            | 780    | 7                        | NR            | 910    | 0                        | NR            |
| 395    | 0                        | NR            | 525    | 249                      | NR            | 655    | 440                      | NR            | 785    | 6                        | NR            | 915    | 0                        | NR            |
| 400    | 0                        | NR            | 530    | 263                      | NR            | 660    | 383                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 0                        | NR            | 535    | 281                      | NR            | 665    | 332                      | NR            | 795    | 5                        | NR            | 925    | 0                        | NR            |
| 410    | 1                        | NR            | 540    | 302                      | NR            | 670    | 286                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 3                        | NR            | 545    | 331                      | NR            | 675    | 245                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 6                        | NR            | 550    | 366                      | NR            | 680    | 210                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 12                       | NR            | 555    | 411                      | NR            | 685    | 178                      | NR            | 815    | 3                        | NR            | 945    | 0                        | NR            |
| 430    | 21                       | NR            | 560    | 469                      | NR            | 690    | 152                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 38                       | NR            | 565    | 536                      | NR            | 695    | 129                      | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 66                       | NR            | 570    | 614                      | NR            | 700    | 109                      | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 122                      | NR            | 575    | 701                      | NR            | 705    | 92                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 215                      | NR            | 580    | 785                      | NR            | 710    | 77                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 236                      | NR            | 585    | 863                      | NR            | 715    | 66                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 170                      | NR            | 590    | 928                      | NR            | 720    | 55                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 148                      | NR            | 595    | 971                      | NR            | 725    | 47                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 132                      | NR            | 600    | 994                      | NR            | 730    | 40                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 104                      | NR            | 605    | 996                      | NR            | 735    | 33                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 97                       | NR            | 610    | 979                      | NR            | 740    | 28                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 105                      | NR            | 615    | 943                      | NR            | 745    | 24                       | NR            | 875    | 0                        | NR            |        |                          |               |

**Summary**

$R_f = 76.9$   
 $R_g = 92.7$   
 $CIE R_a = 70.6$   
 $R_9 = -36.0$

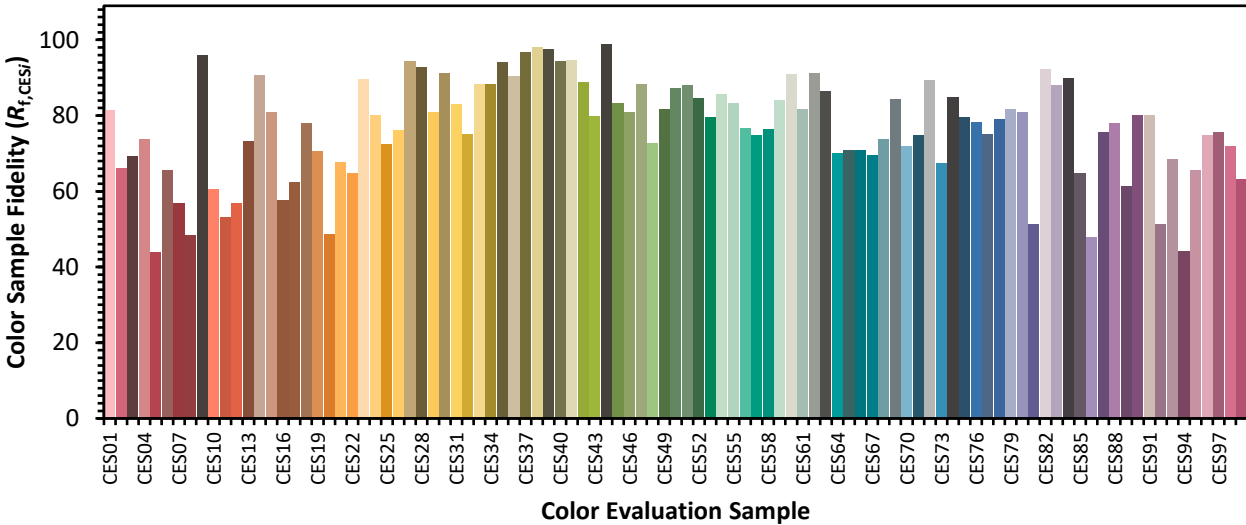


**Color Vector Graphics**



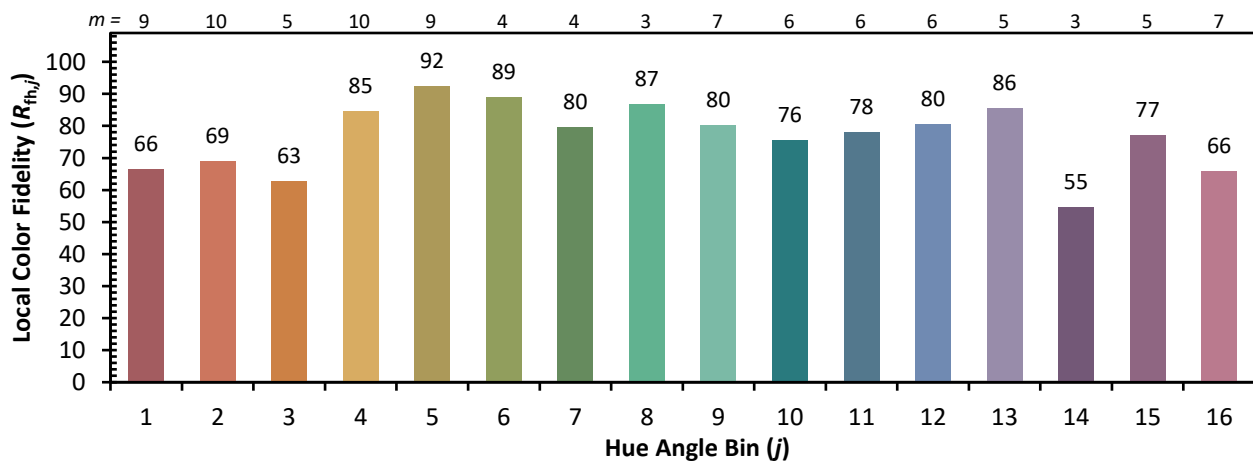
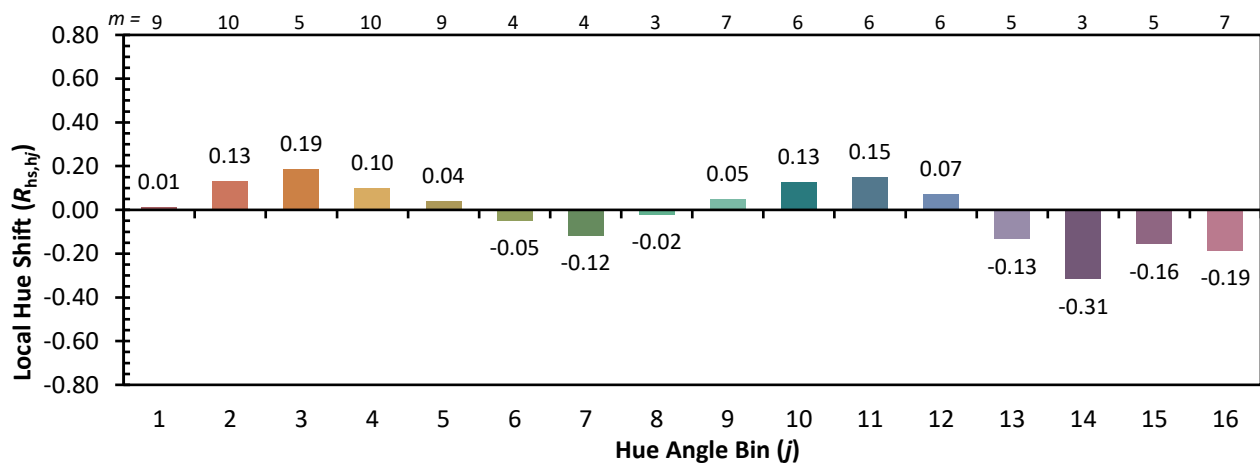
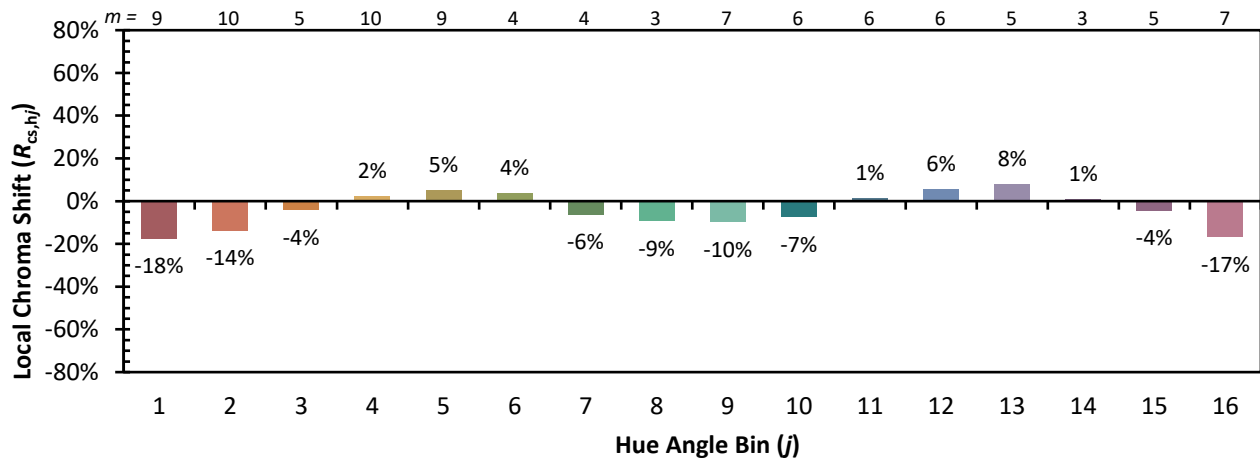
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 76 | CES51 = 88 | CES76 = 78 |
| CES02 = 65 | CES27 = 94 | CES52 = 85 | CES77 = 75 |
| CES03 = 32 | CES28 = 93 | CES53 = 80 | CES78 = 79 |
| CES04 = 72 | CES29 = 81 | CES54 = 86 | CES79 = 82 |
| CES05 = 51 | CES30 = 91 | CES55 = 83 | CES80 = 81 |
| CES06 = 52 | CES31 = 83 | CES56 = 77 | CES81 = 51 |
| CES07 = 44 | CES32 = 75 | CES57 = 75 | CES82 = 92 |
| CES08 = 42 | CES33 = 88 | CES58 = 76 | CES83 = 88 |
| CES09 = 29 | CES34 = 88 | CES59 = 84 | CES84 = 90 |
| CES10 = 79 | CES35 = 94 | CES60 = 91 | CES85 = 65 |
| CES11 = 62 | CES36 = 90 | CES61 = 82 | CES86 = 48 |
| CES12 = 68 | CES37 = 97 | CES62 = 91 | CES87 = 76 |
| CES13 = 45 | CES38 = 98 | CES63 = 86 | CES88 = 78 |
| CES14 = 75 | CES39 = 97 | CES64 = 70 | CES89 = 61 |
| CES15 = 72 | CES40 = 94 | CES65 = 71 | CES90 = 80 |
| CES16 = 48 | CES41 = 95 | CES66 = 71 | CES91 = 80 |
| CES17 = 51 | CES42 = 89 | CES67 = 70 | CES92 = 51 |
| CES18 = 57 | CES43 = 80 | CES68 = 74 | CES93 = 68 |
| CES19 = 74 | CES44 = 99 | CES69 = 84 | CES94 = 44 |
| CES20 = 68 | CES45 = 83 | CES70 = 72 | CES95 = 66 |
| CES21 = 88 | CES46 = 81 | CES71 = 75 | CES96 = 75 |
| CES22 = 81 | CES47 = 88 | CES72 = 89 | CES97 = 76 |
| CES23 = 92 | CES48 = 73 | CES73 = 68 | CES98 = 72 |
| CES24 = 92 | CES49 = 82 | CES74 = 85 | CES99 = 63 |
| CES25 = 73 | CES50 = 87 | CES75 = 80 |            |





Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)