

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: P867570

Luminaire Tested: **MEM2-HTN-SA-70-722-U-T2U-HSS**

Issue Date: 08/21/2024



Test Information

Test Method: LM-79-08
Report Number: P867570
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: STREETWORKS
Catalog Number: MEM2-HTN-SA-70-722-U-T2U-HSS
Description: EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 70W 70CRI 2200K
FIXTURE w/ TYPE II URBAN DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD
Light Source: (20) 2200K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

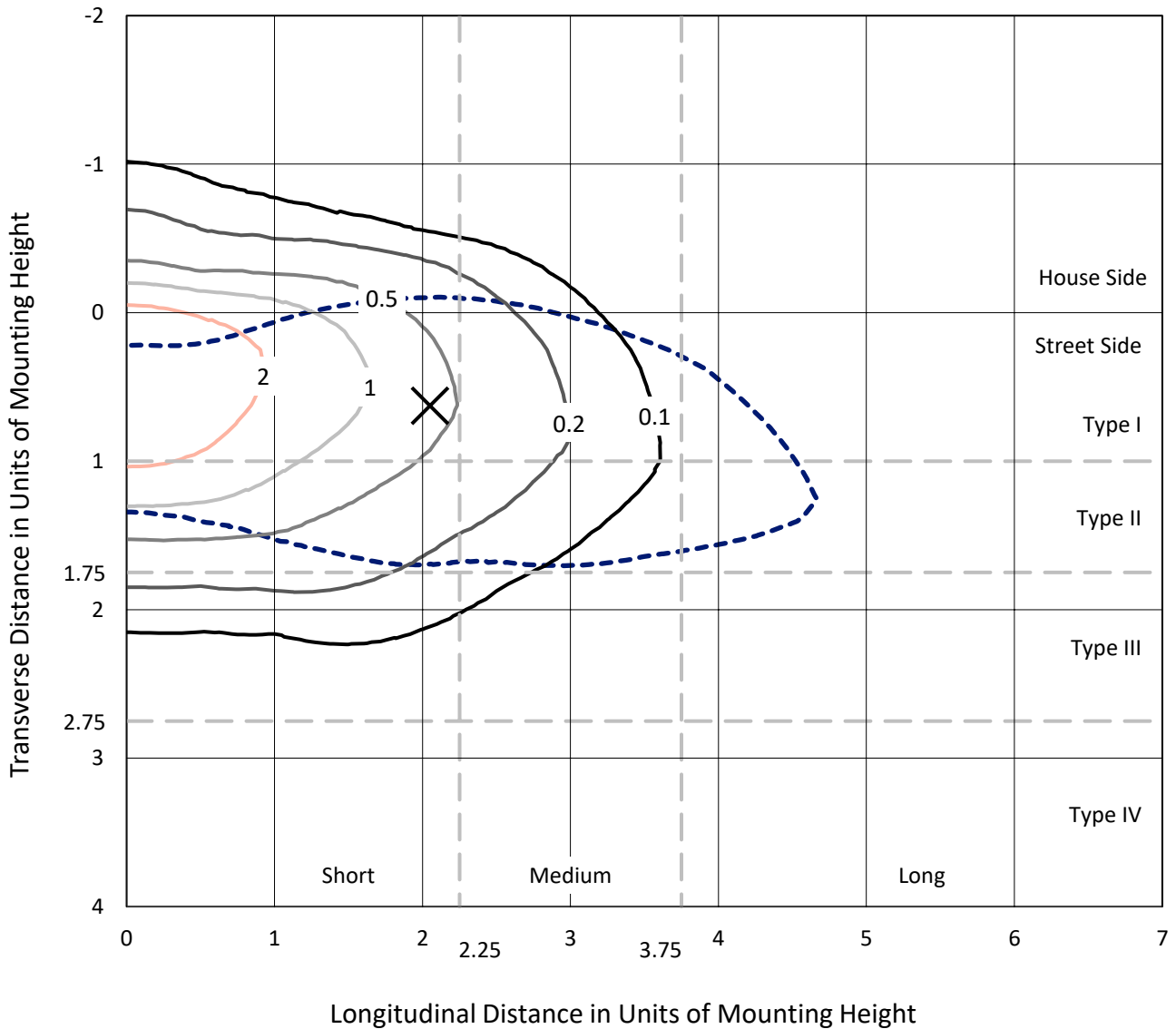
Lumens per Lamp: N/A
Luminaire Lumens: 5446.4 lumens
Efficiency: N/A
Efficacy: 89.3 lumens/watt
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification: Type II - Short
BUG Rating: B1 - U0 - G1

Input Watts (W): 61
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 9.89%
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

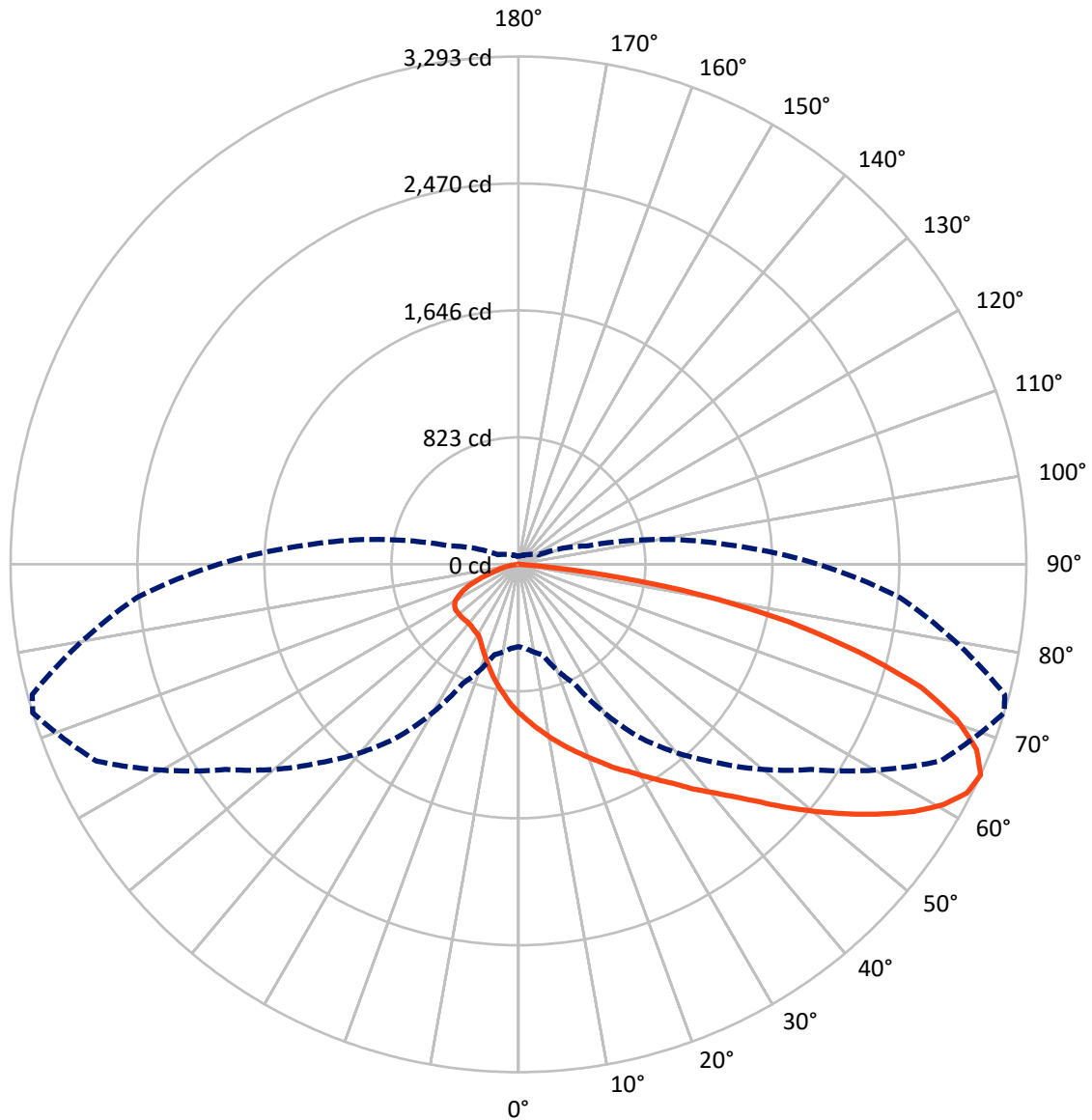
× Max cd
 - - - 1/2 Max cd



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

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Luminous Intensity Polar Plot



— Vertical Plane Through 73-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

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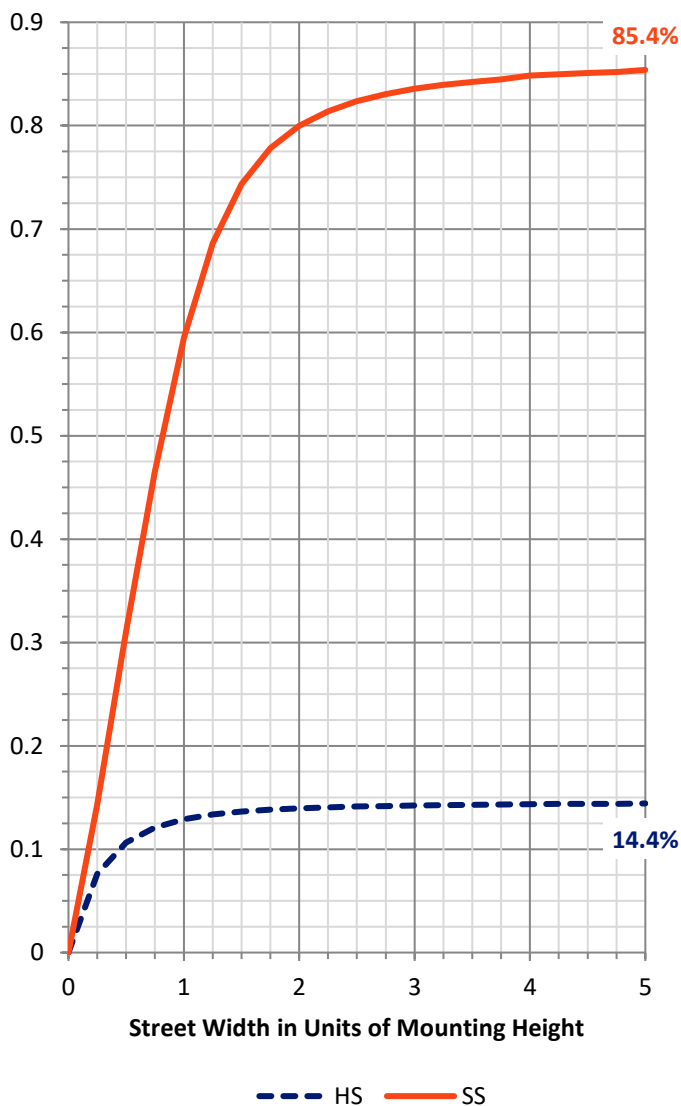
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 792.0 | 0.0 | 792.0 |
| | % Fixture | 14.5 | 0.0 | 14.5 |
| Street Side | Lumens | 4654.4 | 0.0 | 4654.4 |
| | % Fixture | 85.5 | 0.0 | 85.5 |
| Total | Lumens | 5446.4 | 0.0 | 5446.4 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 93.3 | 1.7 |
| 10°-20° | 283.4 | 5.2 |
| 20°-30° | 474.7 | 8.7 |
| 30°-40° | 716.1 | 13.1 |
| 40°-50° | 1011.8 | 18.6 |
| 50°-60° | 1138.5 | 20.9 |
| 60°-70° | 1020.9 | 18.7 |
| 70°-80° | 620.9 | 11.4 |
| 80°-90° | 86.9 | 1.6 |
| 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° | 5446.4 | 100.0 |
| 0°-180° | 5446.4 | 100.0 |

Coefficient of Utilization



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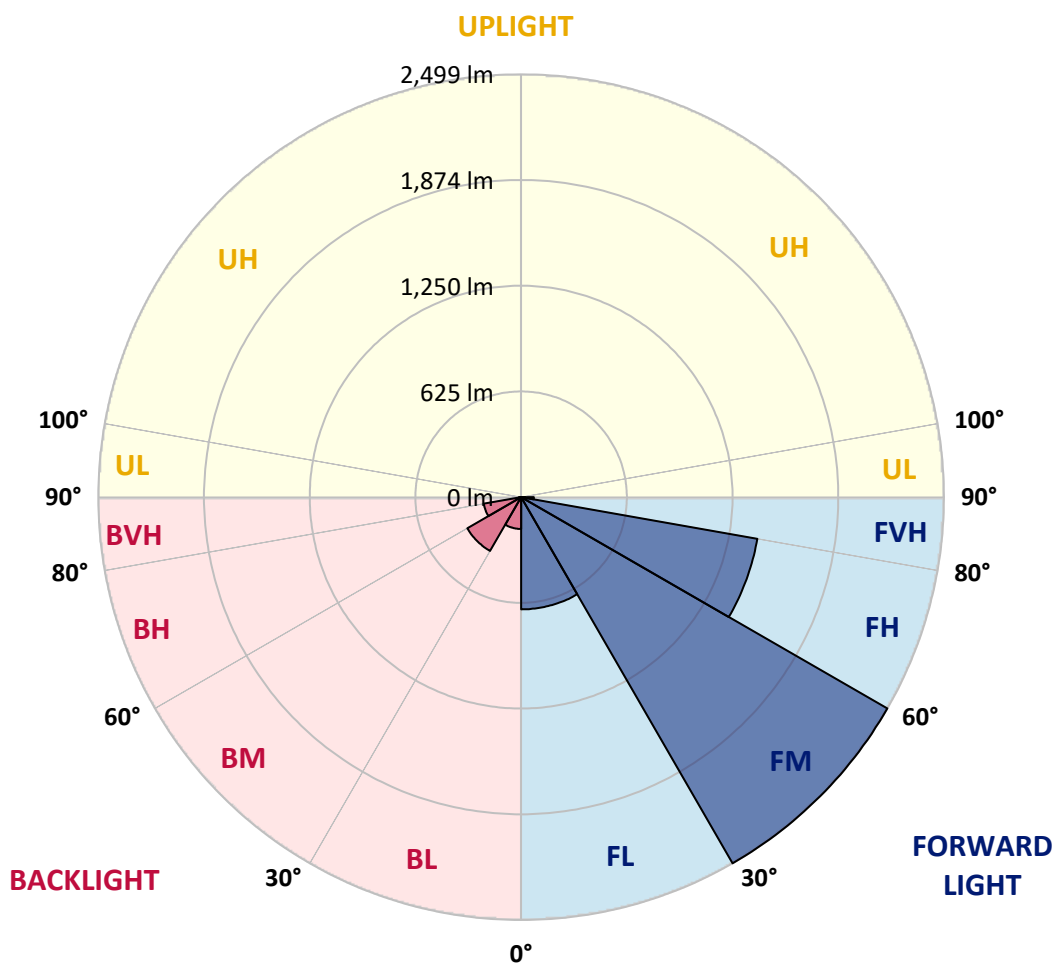
CATALOG NUMBER: MEM2-HTN-SA-70-722-U-T2U-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 663.3 | 12.2 | | | |
| FM (30°-60°) | 2499.1 | 45.9 | | | |
| FH (60°-80°) | 1417.5 | 26.0 | | | G1/1800 |
| FVH (80°-90°) | 74.6 | 1.4 | | | G1/100 |
| BL (0°-30°) | 188.1 | 3.5 | B1/500 | | |
| BM (30°-60°) | 367.2 | 6.7 | B1/1000 | | |
| BH (60°-80°) | 224.3 | 4.1 | B1/500 | | G1/500 |
| BVH (80°-90°) | 12.2 | 0.2 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G1

Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 73° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 |
| 2.5° | 1115.2 | 1108.8 | 1099.2 | 1091.2 | 1076.8 | 1057.5 | 1041.5 | 1020.7 | 1006.3 | 1001.5 | 980.6 |
| 5° | 1277.1 | 1269.0 | 1257.8 | 1238.6 | 1200.1 | 1177.7 | 1136.0 | 1088.0 | 1049.5 | 1041.5 | 993.4 |
| 7.5° | 1443.7 | 1440.5 | 1414.9 | 1386.0 | 1339.5 | 1289.9 | 1225.8 | 1150.5 | 1094.4 | 1081.6 | 1007.9 |
| 10° | 1584.7 | 1570.3 | 1555.9 | 1528.6 | 1478.9 | 1408.4 | 1325.1 | 1221.0 | 1142.5 | 1121.6 | 1022.3 |
| 12.5° | 1669.6 | 1664.8 | 1652.0 | 1620.0 | 1571.9 | 1511.0 | 1411.6 | 1289.9 | 1188.9 | 1160.1 | 1036.7 |
| 15° | 1732.1 | 1736.9 | 1724.1 | 1703.3 | 1653.6 | 1595.9 | 1499.8 | 1362.0 | 1238.6 | 1204.9 | 1052.7 |
| 17.5° | 1791.4 | 1788.2 | 1786.6 | 1762.6 | 1717.7 | 1660.0 | 1562.3 | 1421.3 | 1288.3 | 1251.4 | 1068.8 |
| 20° | 1825.1 | 1826.7 | 1823.4 | 1813.8 | 1770.6 | 1714.5 | 1623.2 | 1491.8 | 1342.7 | 1301.1 | 1089.6 |
| 22.5° | 1842.7 | 1849.1 | 1855.5 | 1853.9 | 1818.6 | 1775.4 | 1680.8 | 1547.8 | 1398.8 | 1355.6 | 1115.2 |
| 25° | 1853.9 | 1858.7 | 1873.1 | 1892.3 | 1860.3 | 1825.1 | 1744.9 | 1615.1 | 1464.5 | 1414.9 | 1145.7 |
| 27.5° | 1863.5 | 1869.9 | 1887.5 | 1916.4 | 1890.7 | 1869.9 | 1801.0 | 1672.8 | 1520.6 | 1475.7 | 1180.9 |
| 30° | 1926.0 | 1934.0 | 1934.0 | 1948.4 | 1919.6 | 1914.8 | 1863.5 | 1741.7 | 1591.1 | 1543.0 | 1225.8 |
| 32.5° | 2091.0 | 2075.0 | 2046.2 | 2031.8 | 1962.9 | 1964.5 | 1924.4 | 1810.6 | 1666.4 | 1618.4 | 1281.9 |
| 35° | 2233.6 | 2233.6 | 2198.4 | 2151.9 | 2041.4 | 2018.9 | 1994.9 | 1902.0 | 1748.1 | 1701.7 | 1355.6 |
| 37.5° | 2371.4 | 2373.0 | 2336.2 | 2296.1 | 2169.6 | 2089.4 | 2076.6 | 1990.1 | 1849.1 | 1794.6 | 1432.5 |
| 40° | 2458.0 | 2467.6 | 2458.0 | 2427.5 | 2305.7 | 2212.8 | 2156.7 | 2089.4 | 1945.2 | 1903.6 | 1520.6 |
| 42.5° | 2472.4 | 2491.6 | 2526.9 | 2536.5 | 2405.1 | 2323.4 | 2259.3 | 2192.0 | 2060.6 | 2014.1 | 1621.6 |
| 45° | 2435.5 | 2441.9 | 2520.5 | 2531.7 | 2478.8 | 2411.5 | 2368.2 | 2312.2 | 2198.4 | 2158.3 | 1733.7 |
| 47.5° | 2334.6 | 2321.8 | 2349.0 | 2446.8 | 2467.6 | 2464.4 | 2475.6 | 2448.4 | 2358.6 | 2307.4 | 1857.1 |
| 50° | 2118.3 | 2123.1 | 2211.2 | 2329.8 | 2401.9 | 2483.6 | 2555.7 | 2586.2 | 2520.5 | 2469.2 | 1990.1 |
| 52.5° | 1724.1 | 1746.5 | 1914.8 | 2195.2 | 2320.2 | 2470.8 | 2613.4 | 2715.9 | 2688.7 | 2639.0 | 2121.5 |
| 55° | 1416.5 | 1450.1 | 1618.4 | 1978.9 | 2208.0 | 2408.3 | 2647.0 | 2852.1 | 2856.9 | 2818.5 | 2241.7 |
| 57.5° | 1108.8 | 1136.0 | 1313.9 | 1644.0 | 2047.8 | 2310.6 | 2651.9 | 2969.1 | 3023.6 | 2978.7 | 2347.4 |
| 60° | 868.5 | 887.7 | 991.8 | 1370.0 | 1850.7 | 2171.2 | 2616.6 | 3062.0 | 3164.6 | 3130.9 | 2438.7 |
| 62.5° | 658.6 | 673.0 | 765.9 | 1083.2 | 1608.7 | 2007.7 | 2498.0 | 3095.7 | 3263.9 | 3231.9 | 2490.0 |
| 65° | 533.6 | 546.4 | 607.3 | 850.8 | 1370.0 | 1818.6 | 2318.6 | 3018.8 | 3292.8 | 3263.9 | 2483.6 |
| 67.5° | 435.8 | 440.6 | 490.3 | 663.4 | 1158.5 | 1605.5 | 2055.8 | 2818.5 | 3204.7 | 3203.1 | 2409.9 |
| 70° | 352.5 | 365.3 | 407.0 | 528.8 | 963.0 | 1360.4 | 1749.7 | 2504.4 | 3014.0 | 3030.0 | 2262.5 |
| 72.5° | 299.6 | 302.8 | 339.7 | 437.4 | 785.1 | 1104.0 | 1448.5 | 2142.3 | 2733.6 | 2746.4 | 2031.8 |
| 75° | 253.2 | 258.0 | 285.2 | 354.1 | 637.7 | 876.5 | 1164.9 | 1730.5 | 2288.1 | 2342.6 | 1711.3 |
| 77.5° | 217.9 | 219.5 | 238.7 | 291.6 | 453.5 | 658.6 | 854.0 | 1297.9 | 1791.4 | 1829.9 | 1344.4 |
| 80° | 171.4 | 174.7 | 195.5 | 230.7 | 315.7 | 427.8 | 589.7 | 887.7 | 1196.9 | 1240.2 | 931.0 |
| 82.5° | 80.1 | 89.7 | 94.5 | 126.6 | 165.0 | 211.5 | 278.8 | 370.1 | 541.6 | 540.0 | 434.2 |
| 85° | 8.0 | 6.4 | 6.4 | 9.6 | 14.4 | 14.4 | 17.6 | 20.8 | 41.7 | 49.7 | 38.5 |
| 87.5° | 0.0 | 0.0 | 0.0 | 1.6 | 3.2 | 3.2 | 3.2 | 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 |



REPORT NUMBER: P867570

CATALOG NUMBER: MEM2-HTN-SA-70-722-U-T2U-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 | 966.2 |
| 2.5° | 971.0 | 956.6 | 931.0 | 906.9 | 890.9 | 878.1 | 857.2 | 844.4 | 834.8 | 822.0 | 820.4 |
| 5° | 967.8 | 942.2 | 890.9 | 847.6 | 806.0 | 770.7 | 733.9 | 711.4 | 687.4 | 676.2 | 685.8 |
| 7.5° | 971.0 | 929.3 | 849.2 | 783.5 | 721.0 | 665.0 | 616.9 | 586.5 | 564.0 | 552.8 | 554.4 |
| 10° | 972.6 | 918.1 | 814.0 | 722.6 | 642.5 | 576.8 | 522.4 | 480.7 | 453.5 | 447.0 | 439.0 |
| 12.5° | 969.4 | 903.7 | 778.7 | 663.4 | 567.2 | 495.1 | 431.0 | 399.0 | 371.7 | 358.9 | 358.9 |
| 15° | 972.6 | 892.5 | 741.9 | 608.9 | 499.9 | 416.6 | 362.1 | 326.9 | 310.9 | 299.6 | 301.2 |
| 17.5° | 972.6 | 882.9 | 706.6 | 556.0 | 434.2 | 357.3 | 307.6 | 278.8 | 262.8 | 256.4 | 254.8 |
| 20° | 983.8 | 874.9 | 673.0 | 506.3 | 376.5 | 304.4 | 264.4 | 242.0 | 229.1 | 222.7 | 219.5 |
| 22.5° | 991.8 | 868.5 | 642.5 | 458.3 | 328.5 | 266.0 | 232.3 | 211.5 | 201.9 | 198.7 | 198.7 |
| 25° | 1006.3 | 866.9 | 615.3 | 411.8 | 290.0 | 237.1 | 206.7 | 190.7 | 182.7 | 179.5 | 179.5 |
| 27.5° | 1027.1 | 870.1 | 589.7 | 371.7 | 261.2 | 208.3 | 185.9 | 173.1 | 168.2 | 166.6 | 165.0 |
| 30° | 1057.5 | 884.5 | 573.6 | 341.3 | 233.9 | 190.7 | 169.8 | 161.8 | 158.6 | 157.0 | 157.0 |
| 32.5° | 1097.6 | 910.1 | 567.2 | 325.3 | 217.9 | 176.3 | 158.6 | 152.2 | 149.0 | 149.0 | 147.4 |
| 35° | 1147.3 | 939.0 | 562.4 | 310.9 | 206.7 | 166.6 | 150.6 | 144.2 | 142.6 | 142.6 | 142.6 |
| 37.5° | 1206.6 | 969.4 | 554.4 | 301.2 | 200.3 | 158.6 | 144.2 | 137.8 | 137.8 | 137.8 | 137.8 |
| 40° | 1272.2 | 1014.3 | 552.8 | 294.8 | 195.5 | 153.8 | 137.8 | 131.4 | 131.4 | 131.4 | 131.4 |
| 42.5° | 1346.0 | 1062.3 | 551.2 | 290.0 | 192.3 | 150.6 | 131.4 | 125.0 | 125.0 | 125.0 | 125.0 |
| 45° | 1435.7 | 1123.2 | 554.4 | 286.8 | 192.3 | 147.4 | 126.6 | 118.6 | 117.0 | 117.0 | 117.0 |
| 47.5° | 1523.8 | 1180.9 | 557.6 | 283.6 | 189.1 | 142.6 | 120.2 | 112.2 | 110.6 | 109.0 | 109.0 |
| 50° | 1618.4 | 1240.2 | 557.6 | 280.4 | 185.9 | 137.8 | 115.4 | 104.2 | 102.5 | 100.9 | 100.9 |
| 52.5° | 1711.3 | 1289.9 | 559.2 | 275.6 | 177.9 | 129.8 | 107.4 | 97.7 | 94.5 | 92.9 | 91.3 |
| 55° | 1801.0 | 1342.7 | 560.8 | 267.6 | 168.2 | 121.8 | 102.5 | 91.3 | 86.5 | 83.3 | 83.3 |
| 57.5° | 1868.3 | 1386.0 | 552.8 | 251.6 | 155.4 | 113.8 | 94.5 | 83.3 | 76.9 | 73.7 | 73.7 |
| 60° | 1932.4 | 1413.3 | 538.4 | 227.5 | 142.6 | 105.8 | 88.1 | 75.3 | 68.9 | 65.7 | 65.7 |
| 62.5° | 1958.0 | 1418.1 | 504.7 | 185.9 | 126.6 | 97.7 | 80.1 | 68.9 | 64.1 | 62.5 | 62.5 |
| 65° | 1943.6 | 1397.2 | 459.9 | 147.4 | 112.2 | 88.1 | 73.7 | 64.1 | 57.7 | 52.9 | 52.9 |
| 67.5° | 1865.1 | 1325.1 | 399.0 | 117.0 | 97.7 | 80.1 | 67.3 | 57.7 | 51.3 | 46.5 | 46.5 |
| 70° | 1716.1 | 1209.8 | 310.9 | 92.9 | 84.9 | 70.5 | 60.9 | 52.9 | 46.5 | 41.7 | 41.7 |
| 72.5° | 1496.6 | 1049.5 | 225.9 | 78.5 | 73.7 | 62.5 | 54.5 | 48.1 | 41.7 | 38.5 | 38.5 |
| 75° | 1233.8 | 809.2 | 160.2 | 67.3 | 65.7 | 56.1 | 49.7 | 43.3 | 38.5 | 35.3 | 35.3 |
| 77.5° | 926.1 | 564.0 | 125.0 | 59.3 | 57.7 | 51.3 | 44.9 | 40.1 | 35.3 | 33.6 | 32.0 |
| 80° | 616.9 | 349.3 | 94.5 | 44.9 | 43.3 | 40.1 | 36.9 | 33.6 | 28.8 | 25.6 | 25.6 |
| 82.5° | 275.6 | 147.4 | 48.1 | 25.6 | 22.4 | 19.2 | 16.0 | 11.2 | 11.2 | 9.6 | 9.6 |
| 85° | 28.8 | 19.2 | 9.6 | 6.4 | 6.4 | 4.8 | 4.8 | 4.8 | 3.2 | 3.2 | 3.2 |
| 87.5° | 4.8 | 4.8 | 3.2 | 3.2 | 3.2 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |
| 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 |

REPORT NUMBER: SP1-2407-157-2

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

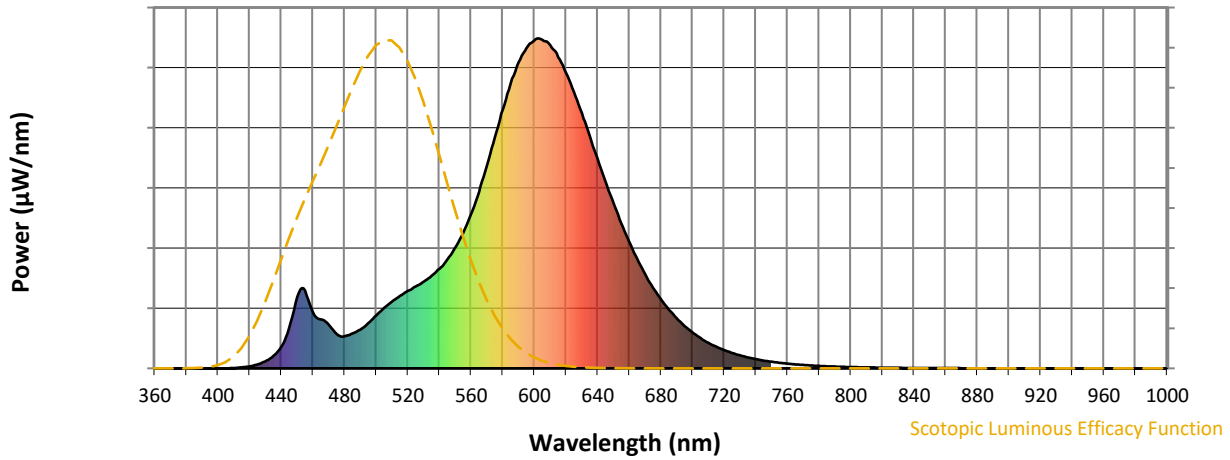


Photopic Lumens: NR

| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|----------------|--------------------------|---------------|----------------|--------------------------|---------------|----------------|--------------------------|---------------|----------------|--------------------------|---------------|----------------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 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

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 0.96

| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 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



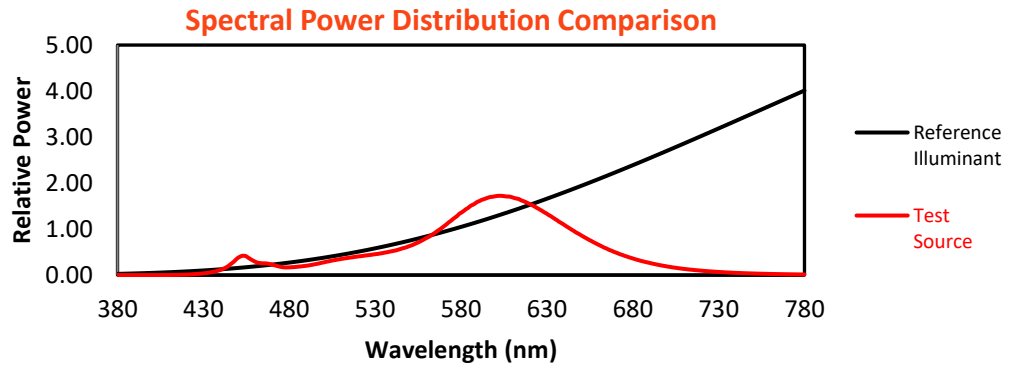
Melanopic Lumens: NR

M/P: 1.71

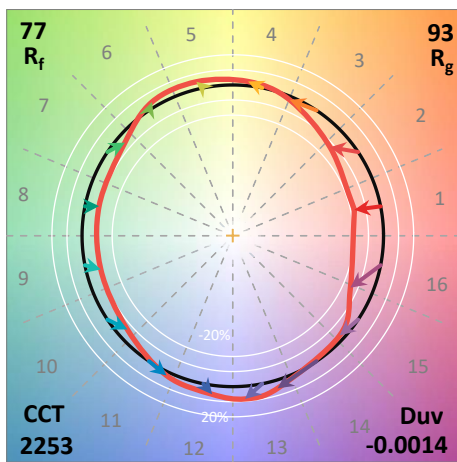
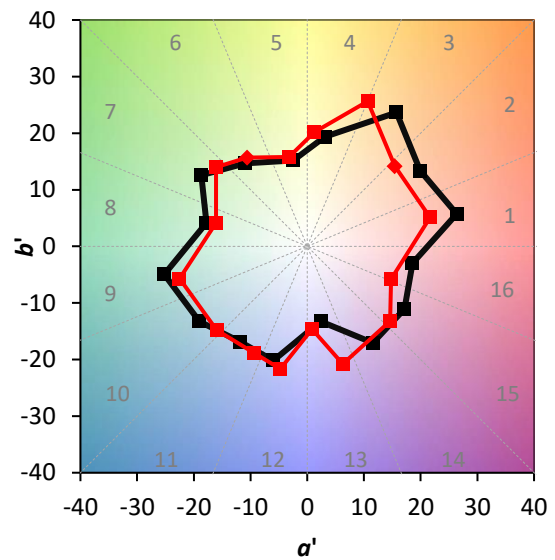
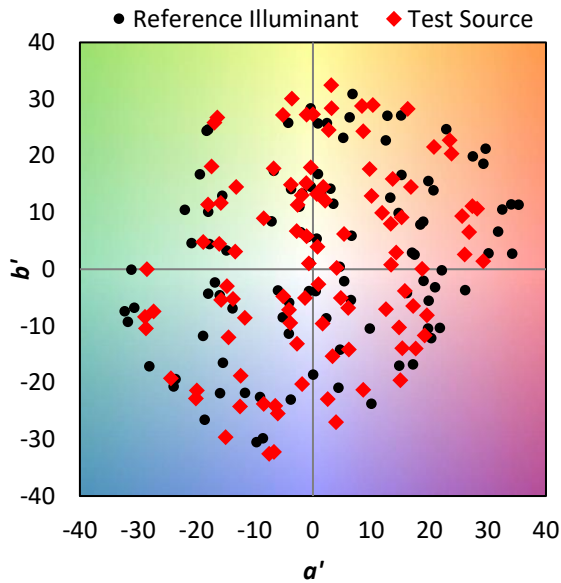
| λ (nm) | Power W ² /nm | Lumens (φ/nm) | λ (nm) | Power W ² /nm | Lumens (φ/nm) | λ (nm) | Power W ² /nm | Lumens (φ/nm) | λ (nm) | Power W ² /nm | Lumens (φ/nm) | λ (nm) | Power W ² /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 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 $R_a = 70.6$
 $R_9 = -36.0$

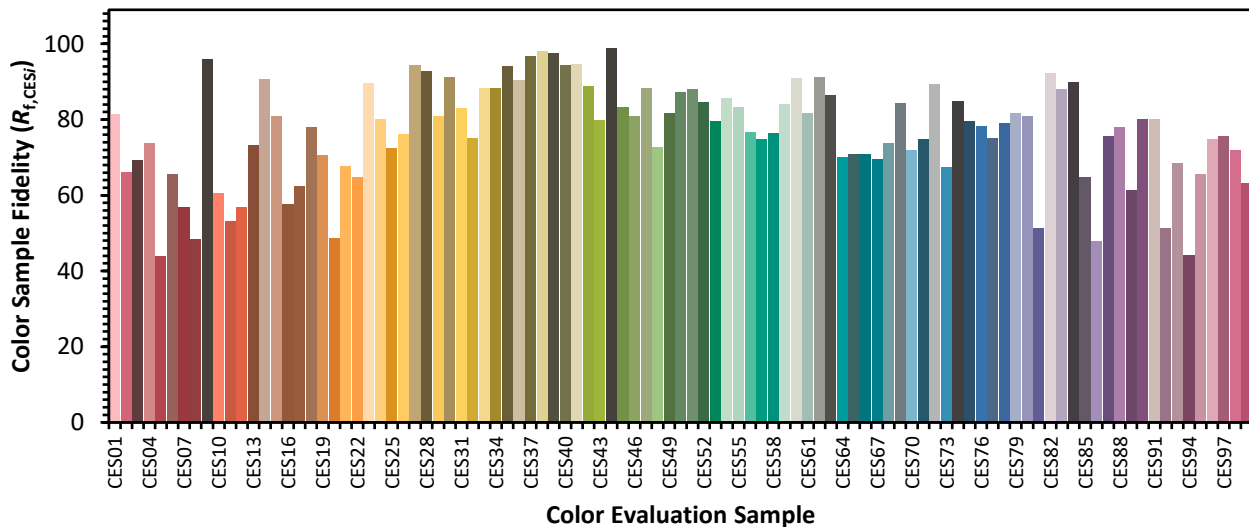


Color Vector Graphics

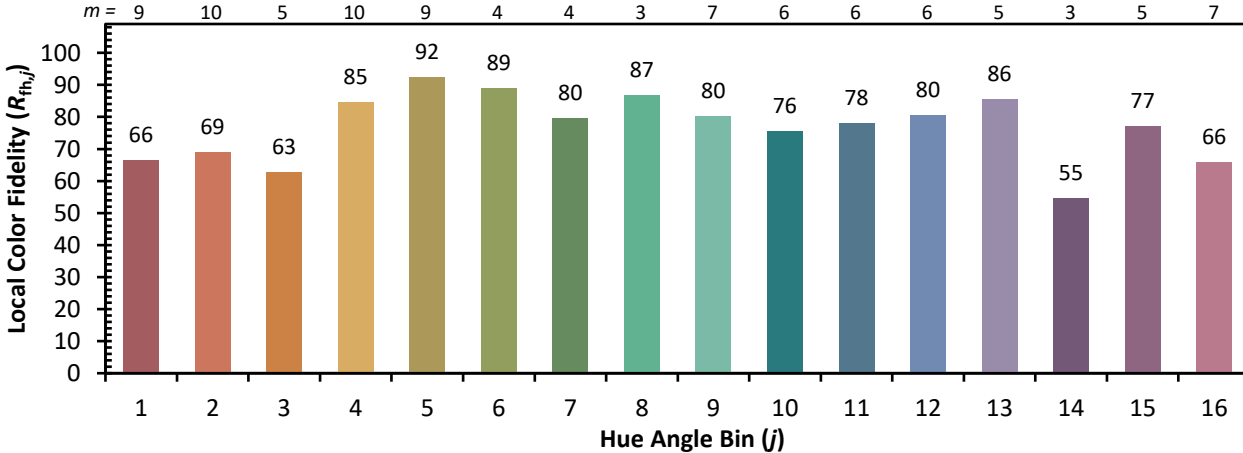


Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|------------|------------|------------|------------|
| 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)