

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: P870209

Luminaire Tested: **MEM2-HSN-SA-40-840-U-T1**

Issue Date: 09/05/2024



Test Information

Test Method: LM-79-08
Report Number: P870209
Test Lab: INNOVATION CENTER(G3)
Issue Date: 09/05/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: STREETWORKS
Catalog Number: MEM2-HSN-SA-40-840-U-T1
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 40W 80CRI 4000K
FITXURE w/ TYPE 1 DISTRIBUTION OPTIC
Light Source: (10) 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

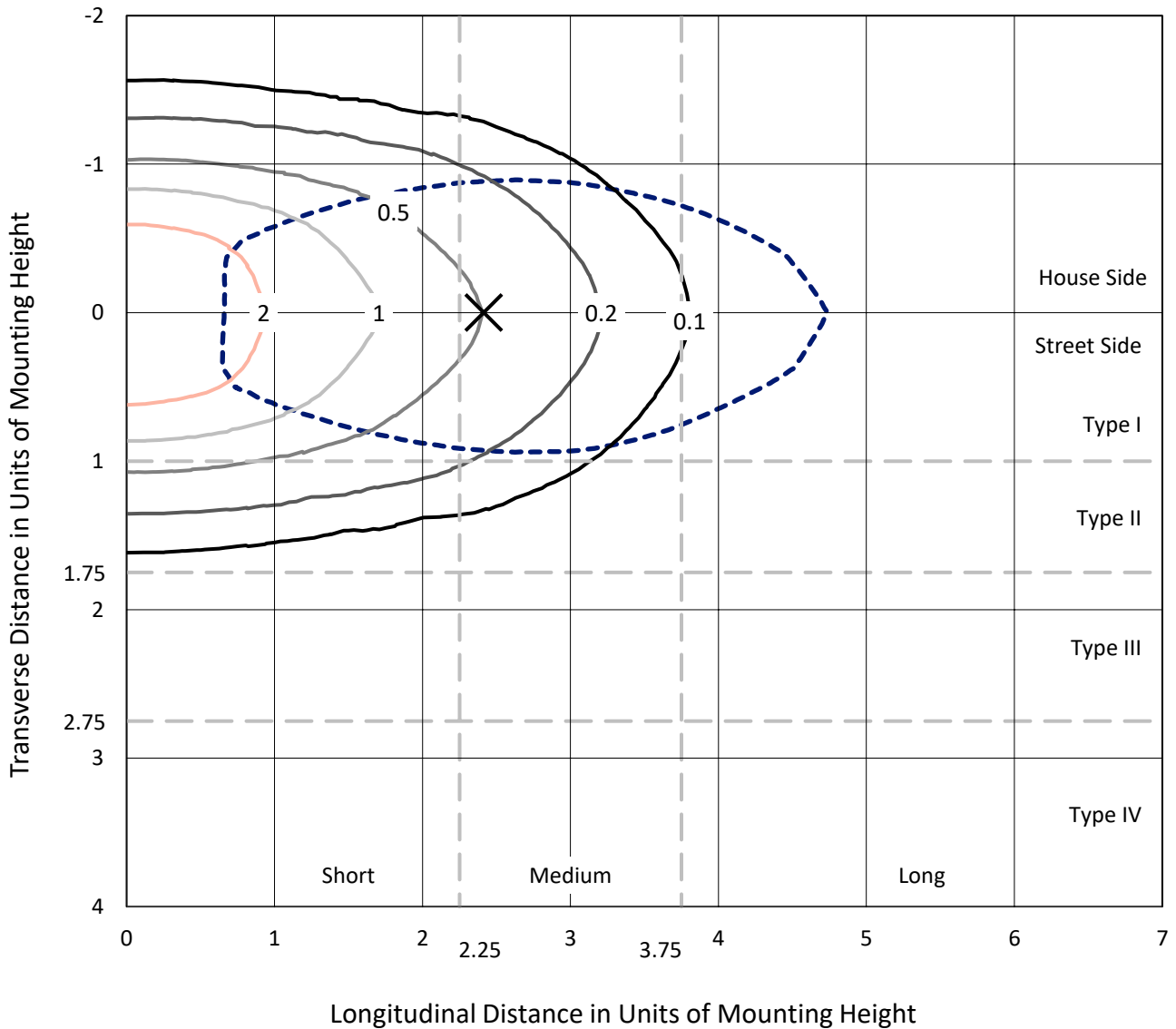
Lumens per Lamp: N/A
Luminaire Lumens: 6166.4 lumens
Efficiency: N/A
Efficacy: 140.1 lumens/watt
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
IES Classification: Type I - Short
BUG Rating: B2 - U0 - G2

Input Watts (W): 44
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 6.91%
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

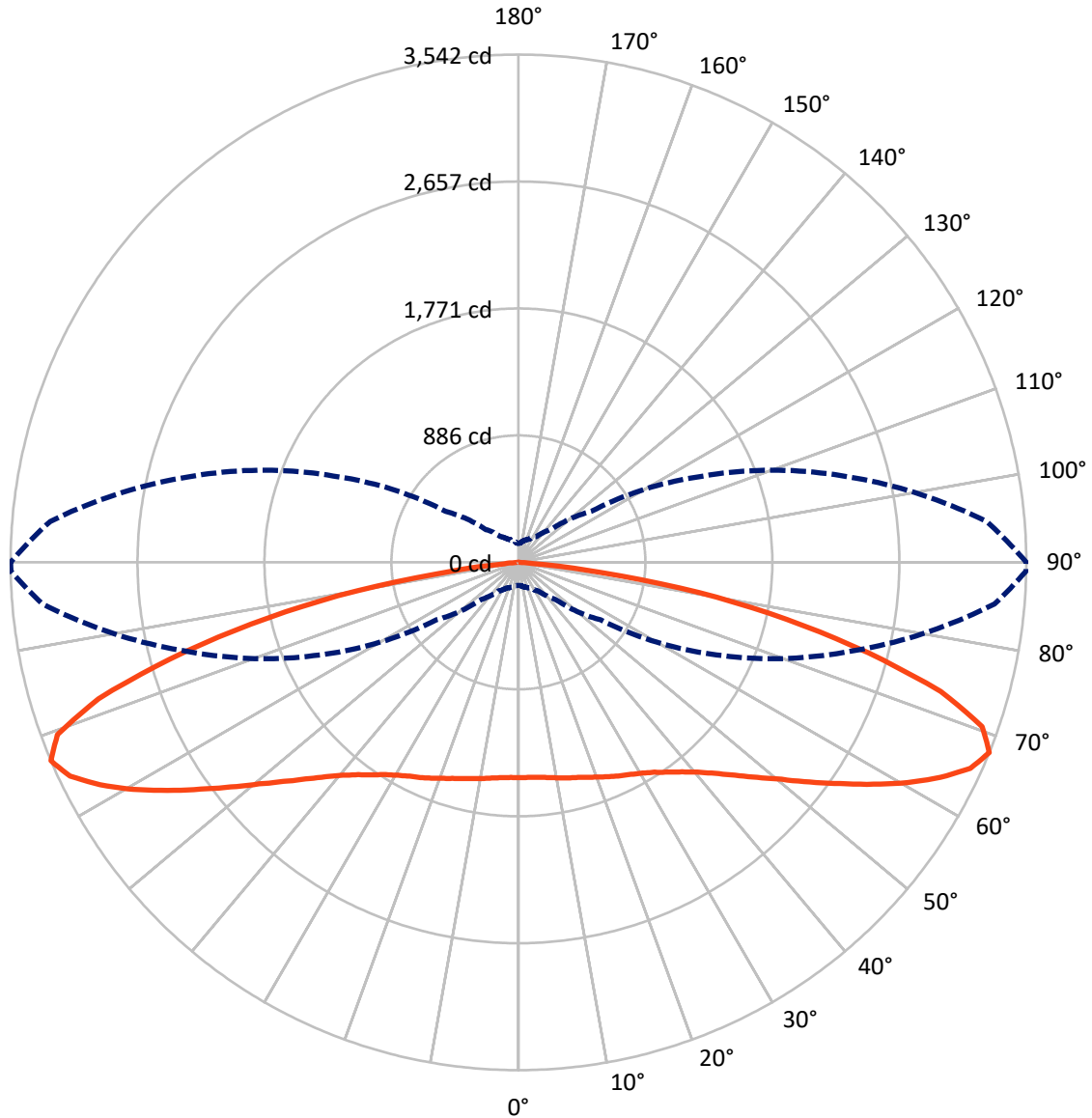
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 3.8 fc
 Type I - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 90-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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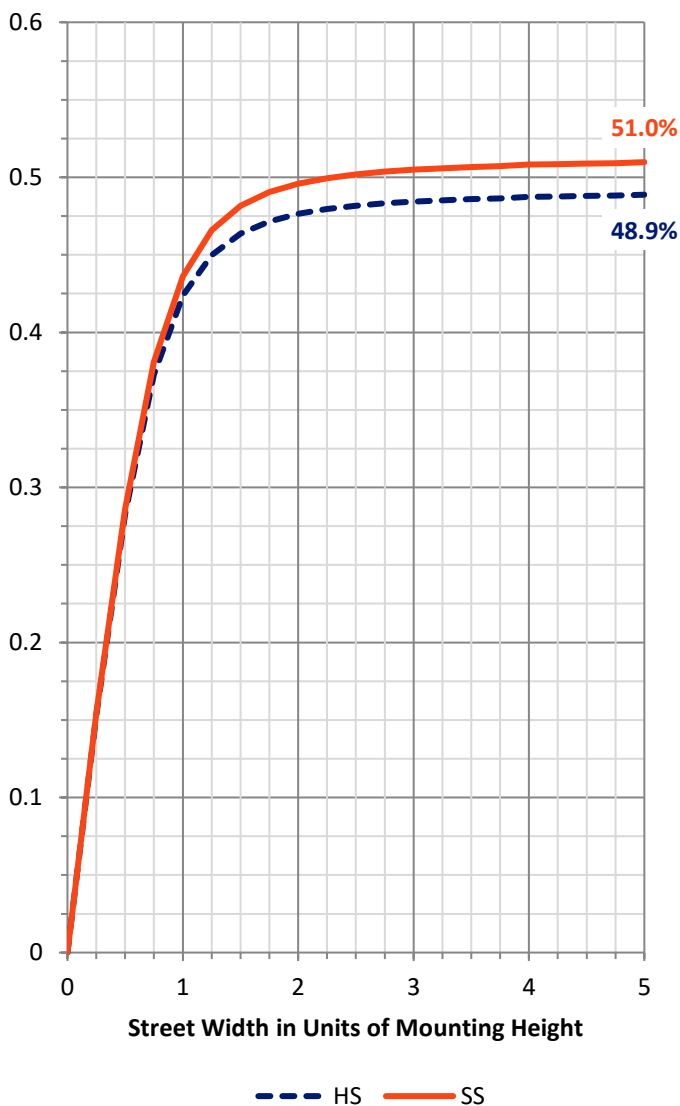
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 3028.4 | 0.0 | 3028.4 |
| | % Fixture | 49.1 | 0.0 | 49.1 |
| Street Side | Lumens | 3137.9 | 0.0 | 3137.9 |
| | % Fixture | 50.9 | 0.0 | 50.9 |
| Total | Lumens | 6166.4 | 0.0 | 6166.4 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 144.0 | 2.3 |
| 10°-20° | 432.7 | 7.0 |
| 20°-30° | 716.1 | 11.6 |
| 30°-40° | 949.5 | 15.4 |
| 40°-50° | 1070.6 | 17.4 |
| 50°-60° | 1097.5 | 17.8 |
| 60°-70° | 1036.6 | 16.8 |
| 70°-80° | 636.1 | 10.3 |
| 80°-90° | 83.2 | 1.3 |
| 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° | 6166.4 | 100.0 |
| 0°-180° | 6166.4 | 100.0 |

Coefficient of Utilization

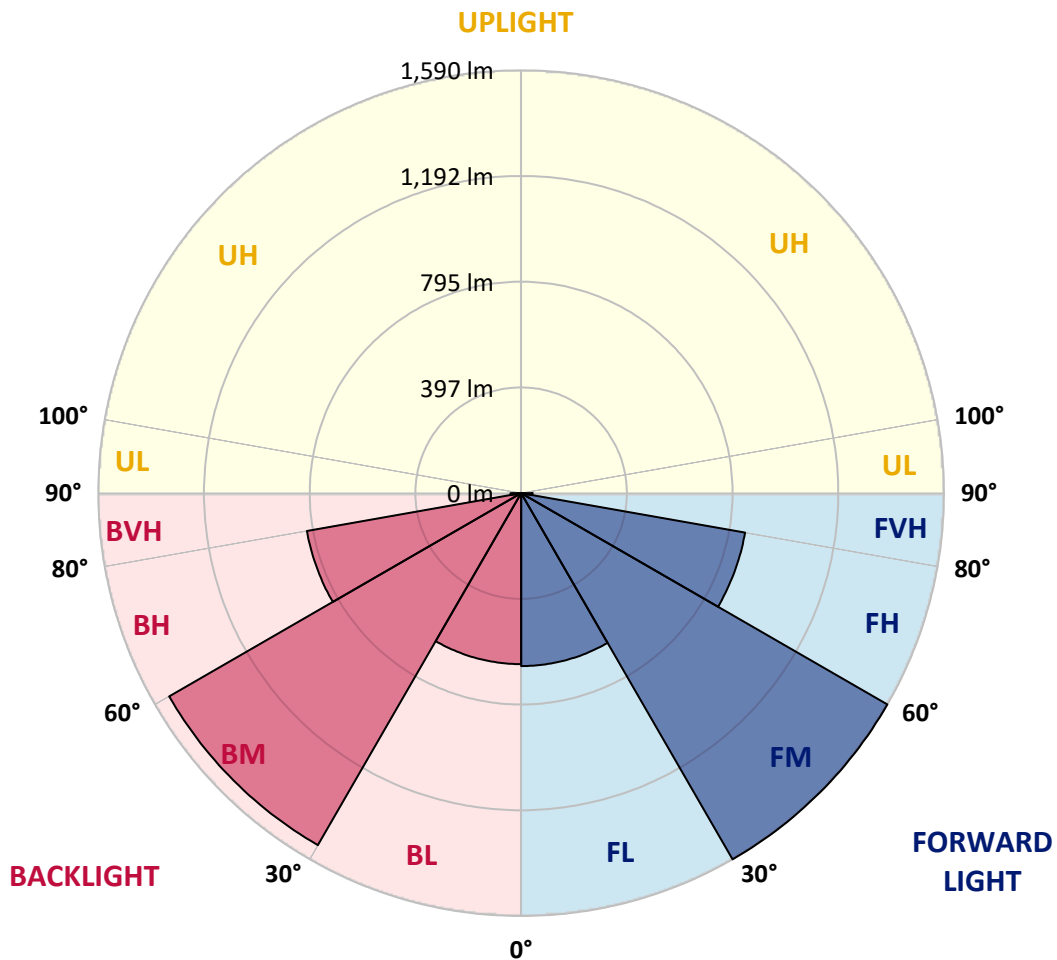


REPORT NUMBER: P870209
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 650.1 | 10.5 | | | |
| FM (30°-60°) | 1589.6 | 25.8 | | | |
| FH (60°-80°) | 854.9 | 13.9 | | | G1/1800 |
| FVH (80°-90°) | 43.4 | 0.7 | | | G1/100 |
| BL (0°-30°) | 642.7 | 10.4 | B2/1000 | | |
| BM (30°-60°) | 1528.1 | 24.8 | B2/2500 | | |
| BH (60°-80°) | 817.8 | 13.3 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 39.9 | 0.6 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G2
 Type I Short





REPORT NUMBER: P870209

CATALOG NUMBER: MEM2-HSN-SA-40-840-U-T1

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 89° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 |
| 2.5° | 1508.3 | 1508.3 | 1504.8 | 1498.9 | 1497.7 | 1498.9 | 1506.0 | 1502.4 | 1502.4 | 1503.6 | 1502.4 |
| 5° | 1508.3 | 1508.3 | 1506.0 | 1500.1 | 1500.1 | 1500.1 | 1508.3 | 1504.8 | 1506.0 | 1507.2 | 1507.2 |
| 7.5° | 1510.7 | 1510.7 | 1508.3 | 1503.6 | 1503.6 | 1503.6 | 1515.4 | 1513.1 | 1513.1 | 1516.6 | 1514.3 |
| 10° | 1516.6 | 1514.3 | 1511.9 | 1513.1 | 1509.5 | 1515.4 | 1521.4 | 1522.5 | 1527.3 | 1529.7 | 1528.5 |
| 12.5° | 1516.6 | 1514.3 | 1508.3 | 1515.4 | 1515.4 | 1523.7 | 1532.0 | 1536.8 | 1542.7 | 1542.7 | 1542.7 |
| 15° | 1509.5 | 1507.2 | 1502.4 | 1514.3 | 1519.0 | 1529.7 | 1541.5 | 1548.6 | 1559.3 | 1559.3 | 1558.1 |
| 17.5° | 1501.2 | 1497.7 | 1495.3 | 1513.1 | 1523.7 | 1537.9 | 1555.7 | 1565.2 | 1577.0 | 1578.2 | 1575.8 |
| 20° | 1485.8 | 1484.7 | 1485.8 | 1509.5 | 1528.5 | 1548.6 | 1569.9 | 1582.9 | 1598.3 | 1603.1 | 1599.5 |
| 22.5° | 1469.3 | 1469.3 | 1474.0 | 1506.0 | 1535.6 | 1562.8 | 1591.2 | 1607.8 | 1623.2 | 1627.9 | 1623.2 |
| 25° | 1446.8 | 1446.8 | 1456.2 | 1494.1 | 1537.9 | 1578.2 | 1611.3 | 1633.8 | 1648.0 | 1652.8 | 1650.4 |
| 27.5° | 1412.4 | 1412.4 | 1423.1 | 1470.5 | 1530.8 | 1590.0 | 1632.7 | 1658.7 | 1674.1 | 1678.8 | 1676.5 |
| 30° | 1363.9 | 1361.5 | 1375.7 | 1434.9 | 1517.8 | 1603.1 | 1657.5 | 1684.7 | 1704.9 | 1708.4 | 1704.9 |
| 32.5° | 1286.9 | 1290.5 | 1311.8 | 1386.4 | 1496.5 | 1611.3 | 1687.1 | 1719.1 | 1741.6 | 1748.7 | 1746.3 |
| 35° | 1193.4 | 1199.3 | 1228.9 | 1324.8 | 1456.2 | 1610.2 | 1717.9 | 1757.0 | 1786.6 | 1796.0 | 1794.9 |
| 37.5° | 1082.1 | 1090.4 | 1127.1 | 1239.6 | 1395.9 | 1592.4 | 1746.3 | 1799.6 | 1838.7 | 1850.5 | 1852.9 |
| 40° | 960.2 | 968.5 | 1015.8 | 1140.1 | 1314.2 | 1551.0 | 1762.9 | 1848.1 | 1900.2 | 1923.9 | 1927.5 |
| 42.5° | 831.1 | 845.3 | 902.2 | 1022.9 | 1215.9 | 1484.7 | 1762.9 | 1895.5 | 1959.4 | 2003.2 | 2006.8 |
| 45° | 706.8 | 718.7 | 787.3 | 905.7 | 1110.5 | 1399.4 | 1742.8 | 1942.8 | 2039.9 | 2115.7 | 2113.3 |
| 47.5° | 599.1 | 602.6 | 665.4 | 785.0 | 993.3 | 1302.3 | 1701.3 | 1985.5 | 2125.2 | 2225.8 | 2247.1 |
| 50° | 487.8 | 496.1 | 549.3 | 667.7 | 873.7 | 1195.8 | 1631.5 | 2012.7 | 2212.8 | 2365.5 | 2392.7 |
| 52.5° | 409.6 | 410.8 | 451.1 | 560.0 | 749.4 | 1066.7 | 1547.4 | 2019.8 | 2296.8 | 2517.1 | 2550.2 |
| 55° | 333.9 | 339.8 | 374.1 | 455.8 | 629.9 | 940.1 | 1438.5 | 2009.1 | 2373.8 | 2663.9 | 2725.4 |
| 57.5° | 286.5 | 287.7 | 312.6 | 377.7 | 531.6 | 805.1 | 1317.7 | 1973.6 | 2437.7 | 2826.1 | 2904.2 |
| 60° | 246.3 | 246.3 | 265.2 | 314.9 | 429.8 | 673.7 | 1175.7 | 1910.9 | 2473.3 | 3000.1 | 3113.8 |
| 62.5° | 214.3 | 215.5 | 232.1 | 268.8 | 357.6 | 556.5 | 1019.4 | 1812.6 | 2486.3 | 3168.2 | 3298.5 |
| 65° | 194.2 | 195.4 | 204.8 | 229.7 | 294.8 | 452.3 | 859.5 | 1693.0 | 2468.5 | 3293.7 | 3463.0 |
| 67.5° | 161.0 | 162.2 | 178.8 | 197.7 | 245.1 | 363.5 | 698.5 | 1527.3 | 2396.3 | 3332.8 | 3540.0 |
| 70° | 123.1 | 126.7 | 149.2 | 169.3 | 203.6 | 290.1 | 536.3 | 1308.3 | 2223.4 | 3200.2 | 3413.3 |
| 72.5° | 103.0 | 104.2 | 120.8 | 143.3 | 170.5 | 227.3 | 407.3 | 1030.0 | 1960.6 | 2858.0 | 3094.8 |
| 75° | 90.0 | 91.2 | 100.6 | 120.8 | 142.1 | 182.3 | 283.0 | 711.5 | 1564.0 | 2311.1 | 2527.7 |
| 77.5° | 81.7 | 82.9 | 85.2 | 101.8 | 119.6 | 140.9 | 200.1 | 422.7 | 1103.4 | 1766.4 | 1880.1 |
| 80° | 78.1 | 78.1 | 72.2 | 84.1 | 98.3 | 110.1 | 133.8 | 242.7 | 708.0 | 1191.0 | 1282.2 |
| 82.5° | 55.6 | 54.5 | 49.7 | 52.1 | 60.4 | 60.4 | 68.7 | 100.6 | 271.1 | 503.2 | 545.8 |
| 85° | 3.6 | 3.6 | 5.9 | 7.1 | 10.7 | 14.2 | 17.8 | 23.7 | 68.7 | 93.5 | 97.1 |
| 87.5° | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 2.4 | 2.4 | 2.4 | 3.6 | 4.7 | 4.7 |
| 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: P870209

CATALOG NUMBER: MEM2-HSN-SA-40-840-U-T1

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 | 1502.4 |
| 2.5° | 1501.2 | 1502.4 | 1502.4 | 1504.8 | 1507.2 | 1506.0 | 1504.8 | 1507.2 | 1503.6 | 1496.5 | 1495.3 |
| 5° | 1506.0 | 1506.0 | 1504.8 | 1507.2 | 1509.5 | 1507.2 | 1504.8 | 1504.8 | 1502.4 | 1495.3 | 1494.1 |
| 7.5° | 1515.4 | 1514.3 | 1514.3 | 1514.3 | 1514.3 | 1510.7 | 1507.2 | 1504.8 | 1501.2 | 1494.1 | 1490.6 |
| 10° | 1528.5 | 1527.3 | 1526.1 | 1524.9 | 1519.0 | 1515.4 | 1509.5 | 1506.0 | 1501.2 | 1493.0 | 1490.6 |
| 12.5° | 1542.7 | 1540.3 | 1537.9 | 1539.1 | 1527.3 | 1516.6 | 1510.7 | 1502.4 | 1498.9 | 1479.9 | 1476.4 |
| 15° | 1556.9 | 1553.3 | 1552.1 | 1547.4 | 1535.6 | 1520.2 | 1508.3 | 1496.5 | 1484.7 | 1466.9 | 1461.0 |
| 17.5° | 1575.8 | 1573.5 | 1566.4 | 1561.6 | 1545.0 | 1523.7 | 1506.0 | 1489.4 | 1474.0 | 1452.7 | 1449.1 |
| 20° | 1598.3 | 1596.0 | 1588.9 | 1579.4 | 1558.1 | 1532.0 | 1507.2 | 1481.1 | 1462.2 | 1437.3 | 1431.4 |
| 22.5° | 1623.2 | 1619.6 | 1613.7 | 1603.1 | 1575.8 | 1545.0 | 1510.7 | 1476.4 | 1448.0 | 1419.5 | 1416.0 |
| 25° | 1649.2 | 1646.9 | 1640.9 | 1625.6 | 1596.0 | 1558.1 | 1510.7 | 1459.8 | 1424.3 | 1399.4 | 1388.8 |
| 27.5° | 1674.1 | 1672.9 | 1665.8 | 1648.0 | 1617.3 | 1567.5 | 1500.1 | 1432.6 | 1385.2 | 1352.1 | 1345.0 |
| 30° | 1706.1 | 1703.7 | 1695.4 | 1675.3 | 1640.9 | 1573.5 | 1478.7 | 1386.4 | 1327.2 | 1290.5 | 1279.8 |
| 32.5° | 1745.1 | 1742.8 | 1730.9 | 1706.1 | 1669.4 | 1574.6 | 1448.0 | 1327.2 | 1249.1 | 1210.0 | 1197.0 |
| 35° | 1797.2 | 1792.5 | 1777.1 | 1747.5 | 1696.6 | 1562.8 | 1393.5 | 1251.4 | 1155.5 | 1104.6 | 1086.9 |
| 37.5° | 1854.1 | 1848.1 | 1828.0 | 1791.3 | 1715.5 | 1530.8 | 1316.5 | 1149.6 | 1040.7 | 980.3 | 967.3 |
| 40° | 1923.9 | 1915.6 | 1884.8 | 1833.9 | 1722.6 | 1475.2 | 1230.1 | 1045.4 | 929.4 | 863.1 | 847.7 |
| 42.5° | 2011.5 | 1997.3 | 1947.6 | 1881.3 | 1708.4 | 1399.4 | 1127.1 | 937.7 | 805.1 | 743.5 | 740.0 |
| 45° | 2116.9 | 2094.4 | 2019.8 | 1927.5 | 1677.6 | 1304.7 | 1018.2 | 816.9 | 690.2 | 629.9 | 614.5 |
| 47.5° | 2241.2 | 2214.0 | 2103.9 | 1963.0 | 1617.3 | 1207.6 | 901.0 | 699.7 | 583.7 | 522.1 | 510.3 |
| 50° | 2378.5 | 2352.5 | 2192.7 | 1983.1 | 1552.1 | 1094.0 | 786.1 | 595.5 | 479.5 | 428.6 | 428.6 |
| 52.5° | 2545.5 | 2486.3 | 2277.9 | 1985.5 | 1452.7 | 968.5 | 676.0 | 493.7 | 402.5 | 357.6 | 348.1 |
| 55° | 2723.1 | 2653.2 | 2354.9 | 1964.2 | 1349.7 | 853.6 | 557.6 | 410.8 | 330.3 | 298.4 | 290.1 |
| 57.5° | 2920.8 | 2814.2 | 2410.5 | 1921.5 | 1219.5 | 728.1 | 465.3 | 338.6 | 278.2 | 252.2 | 248.6 |
| 60° | 3119.7 | 2982.4 | 2443.7 | 1849.3 | 1080.9 | 612.1 | 387.1 | 283.0 | 239.2 | 220.2 | 216.7 |
| 62.5° | 3304.4 | 3119.7 | 2446.0 | 1743.9 | 946.0 | 510.3 | 317.3 | 243.9 | 211.9 | 197.7 | 197.7 |
| 65° | 3464.2 | 3234.5 | 2405.8 | 1609.0 | 774.3 | 409.6 | 261.7 | 206.0 | 184.7 | 169.3 | 165.8 |
| 67.5° | 3542.4 | 3278.3 | 2334.7 | 1424.3 | 620.4 | 324.4 | 220.2 | 178.8 | 158.6 | 135.0 | 132.6 |
| 70° | 3432.2 | 3151.7 | 2152.4 | 1187.5 | 479.5 | 258.1 | 183.5 | 152.7 | 132.6 | 112.5 | 110.1 |
| 72.5° | 3080.6 | 2814.2 | 1857.6 | 919.9 | 361.1 | 208.4 | 152.7 | 130.2 | 108.9 | 98.3 | 95.9 |
| 75° | 2520.6 | 2340.7 | 1468.1 | 633.4 | 252.2 | 163.4 | 127.9 | 110.1 | 92.3 | 87.6 | 86.4 |
| 77.5° | 1913.3 | 1740.4 | 1072.7 | 396.6 | 172.9 | 127.9 | 108.9 | 93.5 | 80.5 | 84.1 | 81.7 |
| 80° | 1277.5 | 1198.1 | 712.7 | 224.9 | 116.0 | 93.5 | 82.9 | 68.7 | 61.6 | 71.0 | 68.7 |
| 82.5° | 580.1 | 549.3 | 335.1 | 98.3 | 52.1 | 40.3 | 28.4 | 21.3 | 16.6 | 15.4 | 17.8 |
| 85° | 97.1 | 85.2 | 23.7 | 10.7 | 5.9 | 3.6 | 2.4 | 2.4 | 1.2 | 1.2 | 1.2 |
| 87.5° | 4.7 | 3.6 | 3.6 | 2.4 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 0.0 | 0.0 |
| 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: SP1-2407-157-8

Test Date: 09/05/2024

Luminaire Tested: MEM2-HTN-SA-30-840-U-5WQ

Data in this report applies to families of products including MEM2-HTN-SA-30-840-U-5WQ

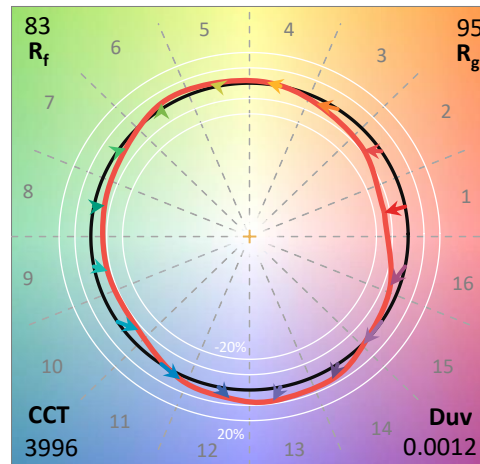
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-8
 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-30-840-U-5WQ**
 Description: Epic Modern Light Square 30W 5WQ Optic

Spectral Parameters

CCT (K): 3996
 CIE u': 0.2245
 CIE v': 0.5031
 Duv: 0.0012
 CIE x: 0.3815
 CIE y: 0.3799
 CIE z: 0.2386
 Peak Wavelength (nm): 449
 Dominant Wavelength (nm): 578
 Purity: 28.49233
 Rf: 82.6
 Rg: 95.1

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 80.6 | | |
| R1: | 78.1 | R9: | -5.8 |
| R2: | 87.1 | R10: | 70.3 |
| R3: | 94.5 | R11: | 78.7 |
| R4: | 79.7 | R12: | 60.5 |
| R5: | 78.7 | R13: | 80.2 |
| R6: | 82.7 | R14: | 97.2 |
| R7: | 84.3 | R15: | 70.6 |
| R8: | 59.5 | | |



Test Conditions

Stabilization Time: 29M
 Operation Time: 1H 29M
 Sphere Temperature (°C): 24.3

REPORT NUMBER: SP1-2407-157-8

| 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



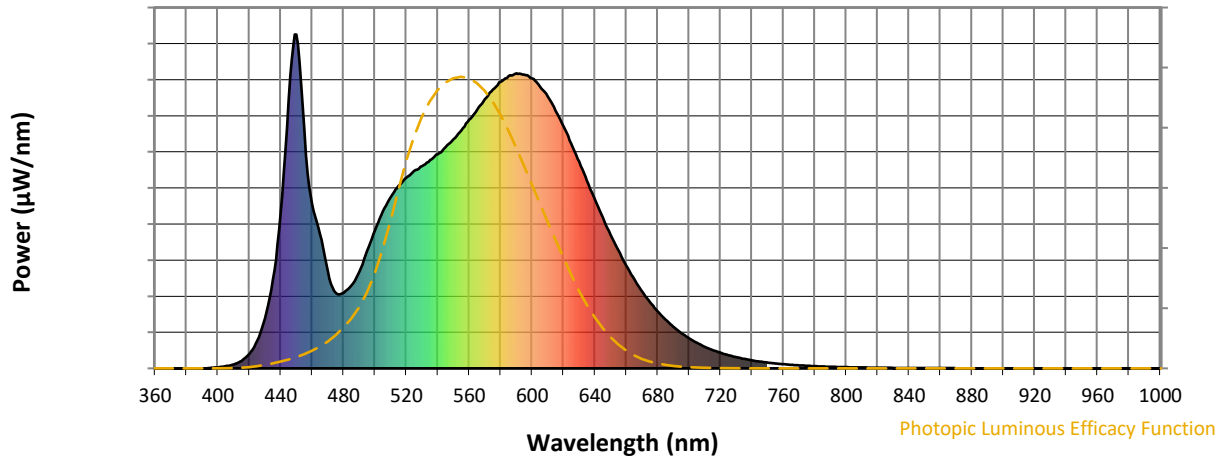
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP1-2407-157-8

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 | 289 | NR | 620 | 725 | NR | 750 | 17 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 351 | NR | 625 | 673 | NR | 755 | 15 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 414 | NR | 630 | 619 | NR | 760 | 13 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 470 | NR | 635 | 562 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 513 | NR | 640 | 506 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 546 | NR | 645 | 452 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 571 | NR | 650 | 400 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 592 | NR | 655 | 352 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 606 | NR | 660 | 307 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 6 | NR | 535 | 624 | NR | 665 | 267 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 642 | NR | 670 | 231 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 22 | NR | 545 | 663 | NR | 675 | 199 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 44 | NR | 550 | 686 | NR | 680 | 171 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 83 | NR | 555 | 713 | NR | 685 | 146 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 150 | NR | 560 | 745 | NR | 690 | 125 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 267 | NR | 565 | 774 | NR | 695 | 106 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 466 | NR | 570 | 806 | NR | 700 | 90 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 804 | NR | 575 | 835 | NR | 705 | 76 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 1000 | NR | 580 | 858 | NR | 710 | 65 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 715 | NR | 585 | 875 | NR | 715 | 55 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 492 | NR | 590 | 884 | NR | 720 | 47 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 402 | NR | 595 | 880 | NR | 725 | 40 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 288 | NR | 600 | 868 | NR | 730 | 34 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 226 | NR | 605 | 844 | NR | 735 | 28 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 227 | NR | 610 | 814 | NR | 740 | 24 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 248 | NR | 615 | 771 | NR | 745 | 20 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-8

Scotopic Flux vs. Wavelength



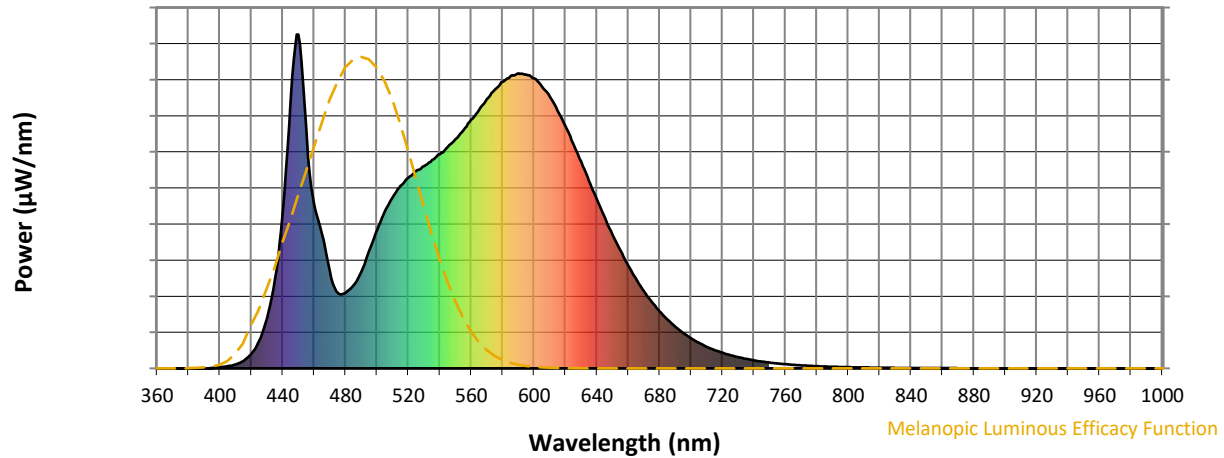
Scotopic Lumens: NR

S/P: 1.66

| 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 | 289 | NR | 620 | 725 | NR | 750 | 17 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 351 | NR | 625 | 673 | NR | 755 | 15 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 414 | NR | 630 | 619 | NR | 760 | 13 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 470 | NR | 635 | 562 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 513 | NR | 640 | 506 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 546 | NR | 645 | 452 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 571 | NR | 650 | 400 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 592 | NR | 655 | 352 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 606 | NR | 660 | 307 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 6 | NR | 535 | 624 | NR | 665 | 267 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 642 | NR | 670 | 231 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 22 | NR | 545 | 663 | NR | 675 | 199 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 44 | NR | 550 | 686 | NR | 680 | 171 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 83 | NR | 555 | 713 | NR | 685 | 146 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 150 | NR | 560 | 745 | NR | 690 | 125 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 267 | NR | 565 | 774 | NR | 695 | 106 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 466 | NR | 570 | 806 | NR | 700 | 90 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 804 | NR | 575 | 835 | NR | 705 | 76 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 1000 | NR | 580 | 858 | NR | 710 | 65 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 715 | NR | 585 | 875 | NR | 715 | 55 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 492 | NR | 590 | 884 | NR | 720 | 47 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 402 | NR | 595 | 880 | NR | 725 | 40 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 288 | NR | 600 | 868 | NR | 730 | 34 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 226 | NR | 605 | 844 | NR | 735 | 28 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 227 | NR | 610 | 814 | NR | 740 | 24 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 248 | NR | 615 | 771 | NR | 745 | 20 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-8

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.37

| 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 | 289 | NR | 620 | 725 | NR | 750 | 17 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 351 | NR | 625 | 673 | NR | 755 | 15 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 414 | NR | 630 | 619 | NR | 760 | 13 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 470 | NR | 635 | 562 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 513 | NR | 640 | 506 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 546 | NR | 645 | 452 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 571 | NR | 650 | 400 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 592 | NR | 655 | 352 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 606 | NR | 660 | 307 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 6 | NR | 535 | 624 | NR | 665 | 267 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 642 | NR | 670 | 231 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 22 | NR | 545 | 663 | NR | 675 | 199 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 44 | NR | 550 | 686 | NR | 680 | 171 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 83 | NR | 555 | 713 | NR | 685 | 146 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 150 | NR | 560 | 745 | NR | 690 | 125 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 267 | NR | 565 | 774 | NR | 695 | 106 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 466 | NR | 570 | 806 | NR | 700 | 90 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 804 | NR | 575 | 835 | NR | 705 | 76 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 1000 | NR | 580 | 858 | NR | 710 | 65 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 715 | NR | 585 | 875 | NR | 715 | 55 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 492 | NR | 590 | 884 | NR | 720 | 47 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 402 | NR | 595 | 880 | NR | 725 | 40 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 288 | NR | 600 | 868 | NR | 730 | 34 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 226 | NR | 605 | 844 | NR | 735 | 28 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 227 | NR | 610 | 814 | NR | 740 | 24 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 248 | NR | 615 | 771 | NR | 745 | 20 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 82.6$
 $R_g = 95.1$
 CIE $R_a = 80.6$
 $R_9 = -5.8$



Color Vector Graphics

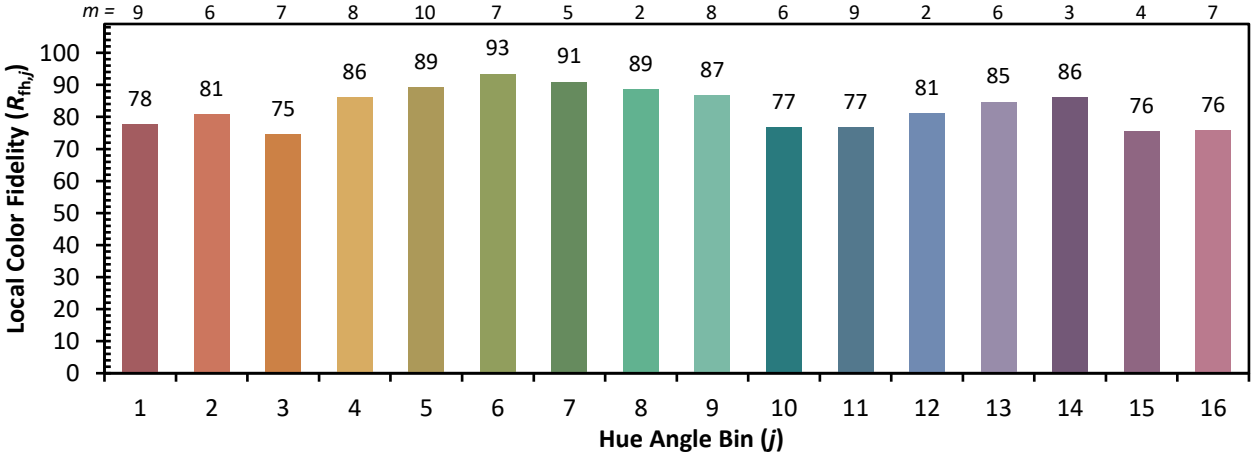


Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 79 | CES51 = 94 | CES76 = 72 |
| CES02 = 61 | CES27 = 93 | CES52 = 94 | CES77 = 82 |
| CES03 = 31 | CES28 = 90 | CES53 = 88 | CES78 = 71 |
| CES04 = 69 | CES29 = 83 | CES54 = 89 | CES79 = 91 |
| CES05 = 48 | CES30 = 95 | CES55 = 88 | CES80 = 88 |
| CES06 = 50 | CES31 = 86 | CES56 = 84 | CES81 = 80 |
| CES07 = 40 | CES32 = 78 | CES57 = 84 | CES82 = 95 |
| CES08 = 39 | CES33 = 90 | CES58 = 84 | CES83 = 95 |
| CES09 = 29 | CES34 = 85 | CES59 = 90 | CES84 = 90 |
| CES10 = 74 | CES35 = 92 | CES60 = 91 | CES85 = 78 |
| CES11 = 57 | CES36 = 85 | CES61 = 87 | CES86 = 73 |
| CES12 = 63 | CES37 = 91 | CES62 = 87 | CES87 = 83 |
| CES13 = 42 | CES38 = 95 | CES63 = 84 | CES88 = 86 |
| CES14 = 74 | CES39 = 98 | CES64 = 78 | CES89 = 76 |
| CES15 = 71 | CES40 = 94 | CES65 = 75 | CES90 = 87 |
| CES16 = 46 | CES41 = 98 | CES66 = 75 | CES91 = 72 |
| CES17 = 49 | CES42 = 92 | CES67 = 73 | CES92 = 62 |
| CES18 = 56 | CES43 = 88 | CES68 = 77 | CES93 = 78 |
| CES19 = 71 | CES44 = 99 | CES69 = 82 | CES94 = 60 |
| CES20 = 65 | CES45 = 93 | CES70 = 72 | CES95 = 70 |
| CES21 = 86 | CES46 = 90 | CES71 = 67 | CES96 = 82 |
| CES22 = 78 | CES47 = 95 | CES72 = 89 | CES97 = 90 |
| CES23 = 91 | CES48 = 84 | CES73 = 65 | CES98 = 84 |
| CES24 = 90 | CES49 = 89 | CES74 = 93 | CES99 = 73 |
| CES25 = 71 | CES50 = 94 | CES75 = 69 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)