

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: P868114

Luminaire Tested: **MEM2-HSN-SA-40-740-U-T4W**

Issue Date: 08/21/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P868114  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: MEM2-HSN-SA-40-740-U-T4W  
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 40W 70CRI 4000K  
FITXURE w/ TYPE IV WIDE DISTRIBUTION OPTIC  
Light Source: (10) 4000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

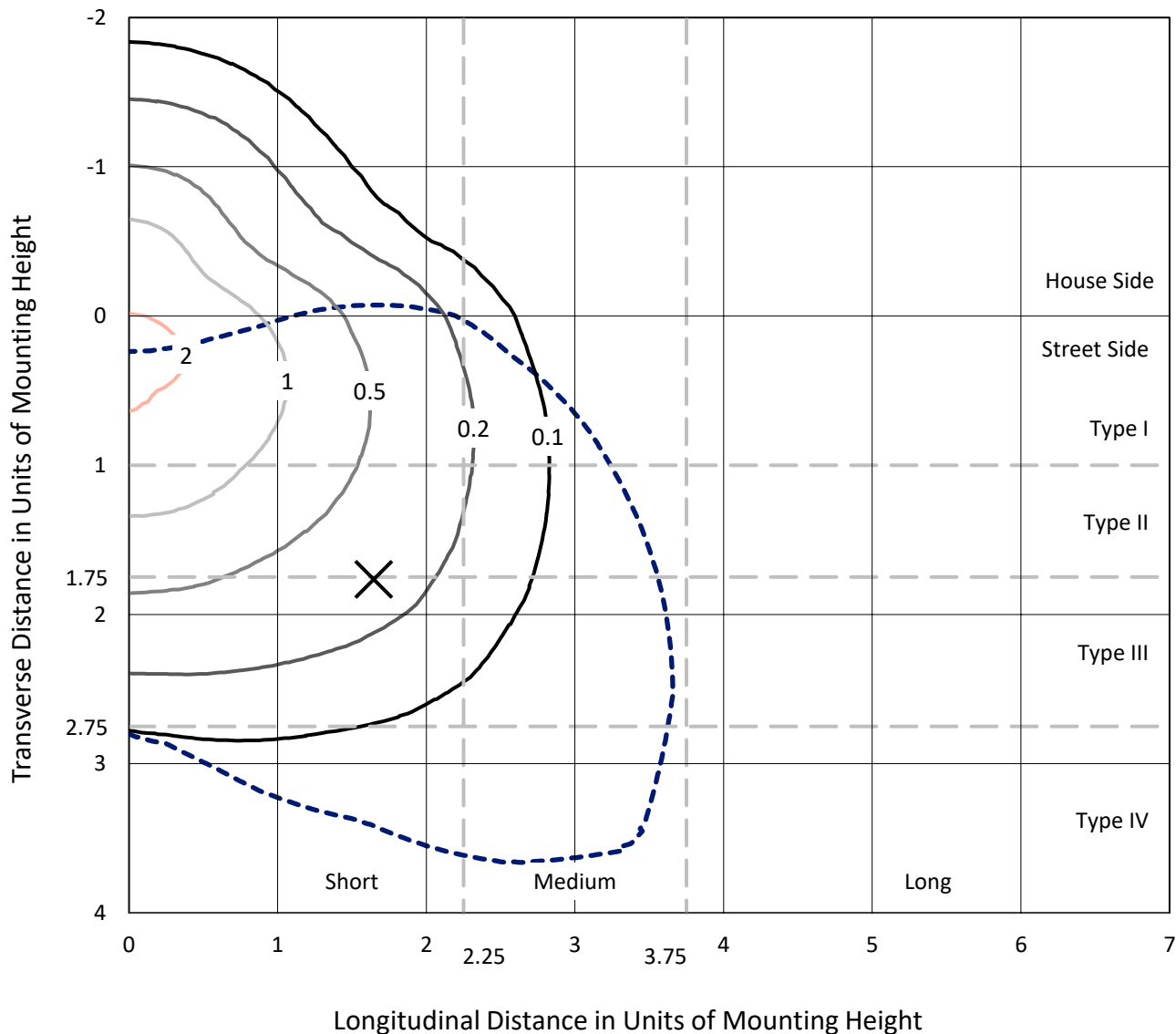
Lumens per Lamp: N/A  
Luminaire Lumens: 4883.2 lumens  
Efficiency: N/A  
Efficacy: 148.9 lumens/watt  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G1

Input Watts (W): 32.8  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.99  
Total Harmonic Distortion (THDi): 9.76%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

REPORT NUMBER: P868114  
 CATALOG NUMBER: MEM2-HSN-SA-40-740-U-T4W

### Iso-Footcandle Lines of Horizontal Illumination

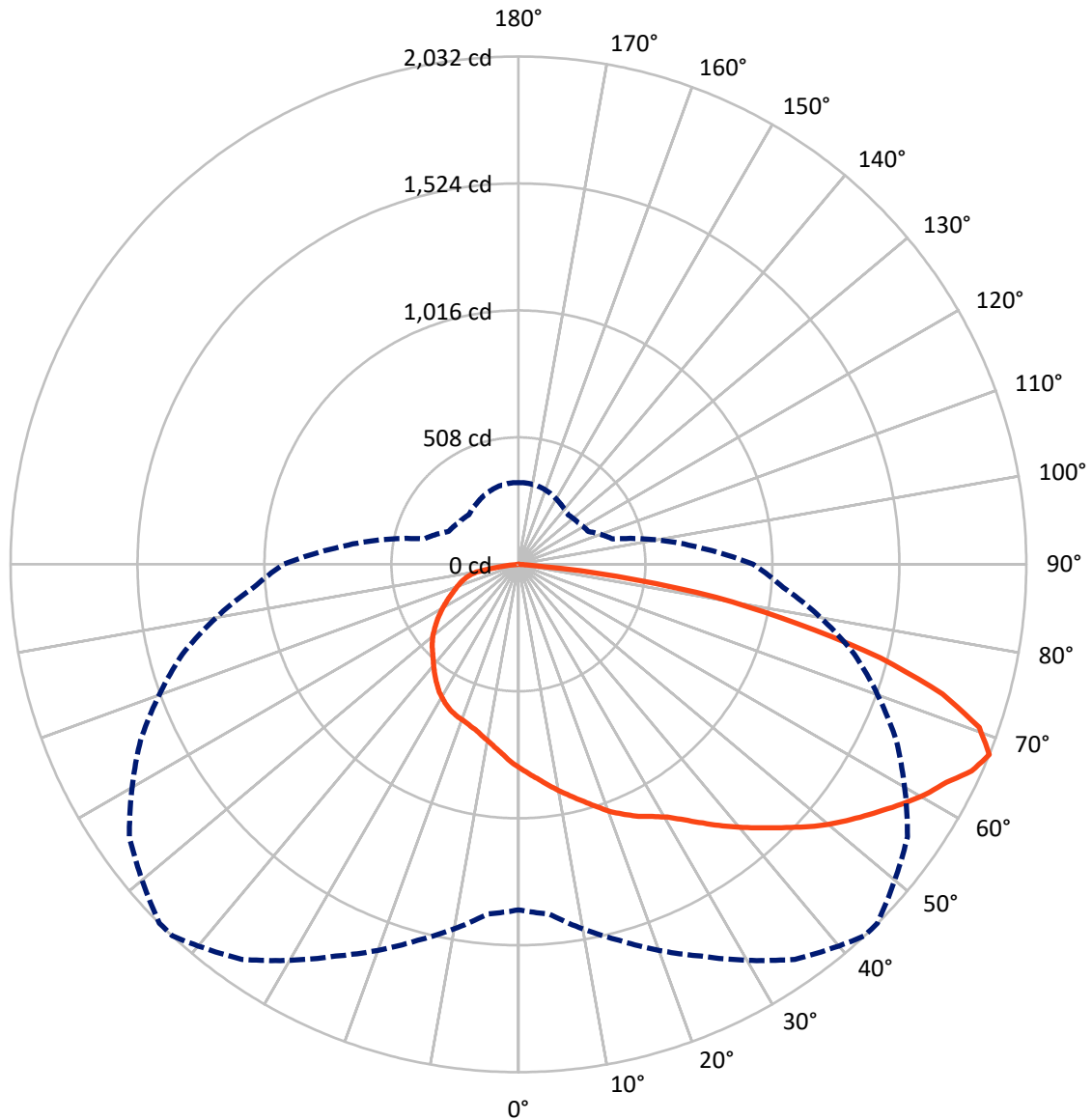
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 2.3 fc  
 Type IV - Short - N/A

REPORT NUMBER: P868114  
CATALOG NUMBER: MEM2-HSN-SA-40-740-U-T4W

### Luminous Intensity Polar Plot



— Vertical Plane Through 43-Deg Lateral    - - - Horizontal Cone Through 67.5-Deg Vertical

REPORT NUMBER: P868114

CATALOG NUMBER: MEM2-HSN-SA-40-740-U-T4W

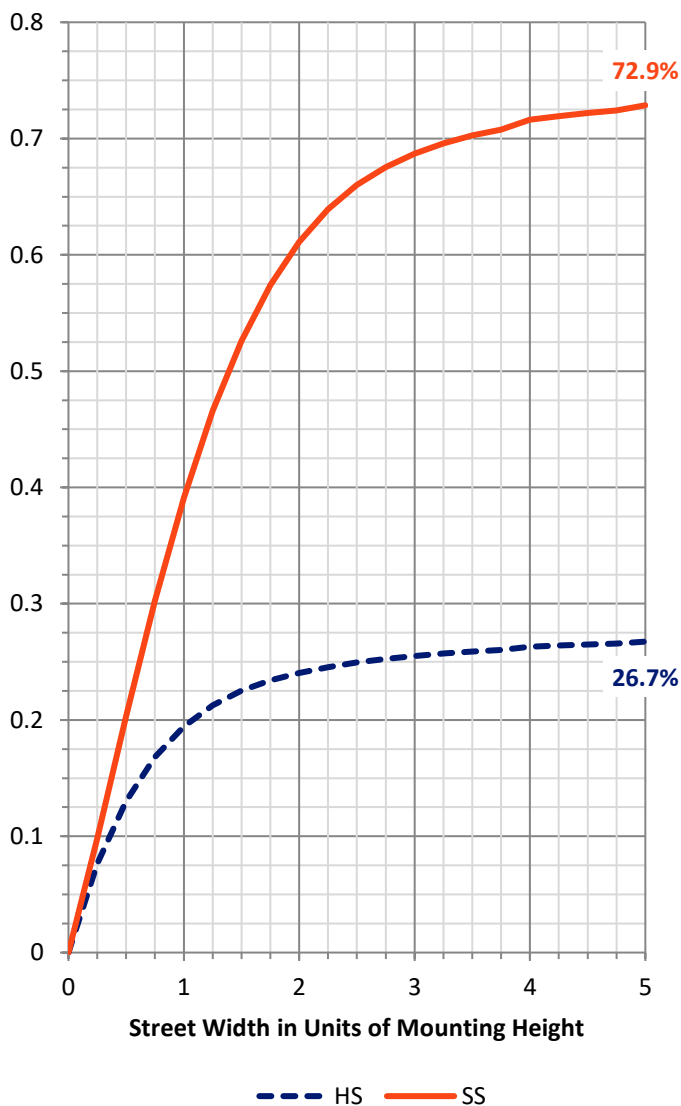
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1313.6   | 0.0    | 1313.6 |
|                    | % Fixture | 26.9     | 0.0    | 26.9   |
| <b>Street Side</b> | Lumens    | 3569.6   | 0.0    | 3569.6 |
|                    | % Fixture | 73.1     | 0.0    | 73.1   |
| <b>Total</b>       | Lumens    | 4883.2   | 0.0    | 4883.2 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 78.0   | 1.6       |
| 10°-20°   | 238.2  | 4.9       |
| 20°-30°   | 406.5  | 8.3       |
| 30°-40°   | 592.8  | 12.1      |
| 40°-50°   | 796.4  | 16.3      |
| 50°-60°   | 974.9  | 20.0      |
| 60°-70°   | 1026.0 | 21.0      |
| 70°-80°   | 669.9  | 13.7      |
| 80°-90°   | 100.5  | 2.1       |
| 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°    | 4883.2 | 100.0     |
| 0°-180°   | 4883.2 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P868114

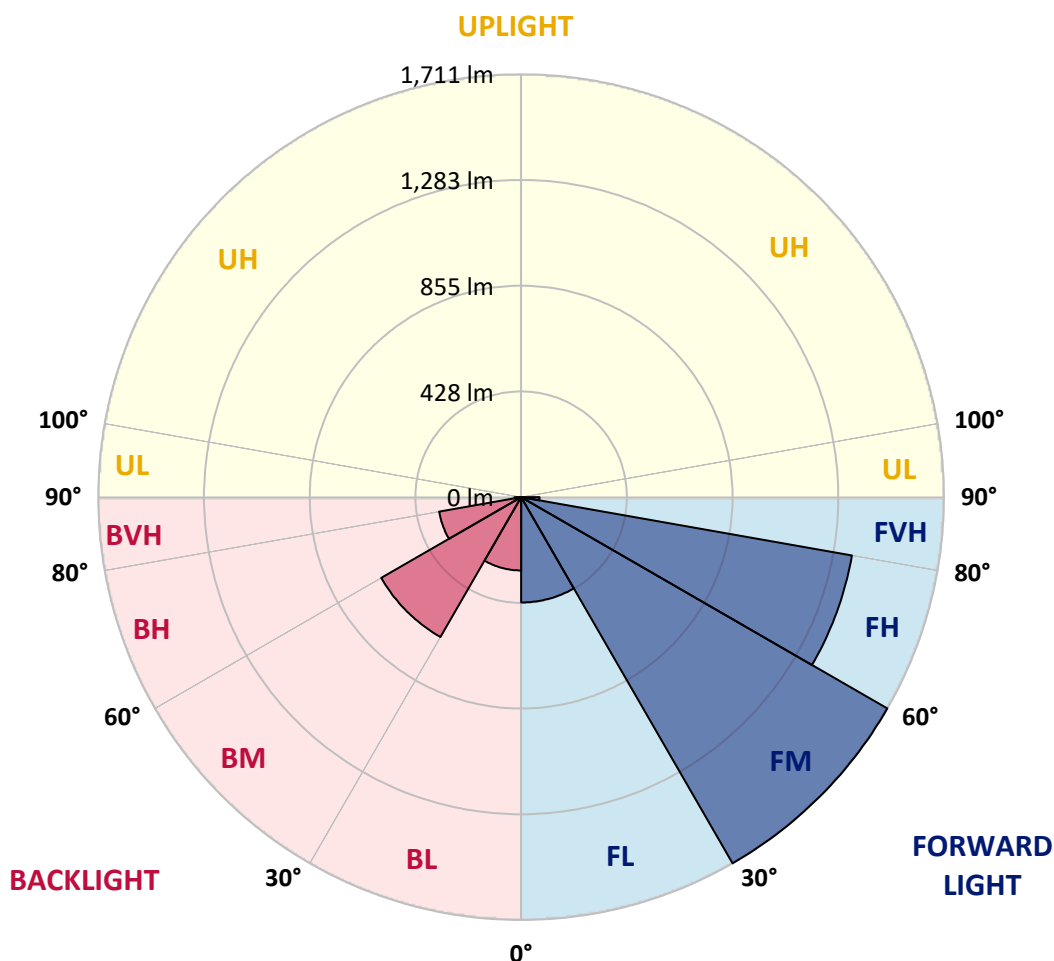
CATALOG NUMBER: MEM2-HSN-SA-40-740-U-T4W

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 426.2  | 8.7       |                         |      |         |
| FM   | (30°-60°)   | 1710.5 | 35.0      |                         |      |         |
| FH   | (60°-80°)   | 1358.8 | 27.8      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 74.1   | 1.5       |                         |      | G1/100  |
| BL   | (0°-30°)    | 296.6  | 6.1       | B1/500                  |      |         |
| BM   | (30°-60°)   | 653.6  | 13.4      | B1/1000                 |      |         |
| BH   | (60°-80°)   | 337.1  | 6.9       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 26.4   | 0.5       |                         |      | 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 IV Short





REPORT NUMBER: P868114

CATALOG NUMBER: MEM2-HSN-SA-40-740-U-T4W

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 43°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 815.2  | 815.2  | 815.2  | 815.2  | 815.2  | 815.2  | 815.2  | 815.2  | 815.2  | 815.2  | 815.2  |
| 2.5°  | 852.7  | 851.7  | 848.7  | 846.8  | 840.8  | 839.9  | 839.9  | 833.9  | 827.0  | 823.1  | 819.1  |
| 5°    | 891.2  | 886.3  | 884.3  | 880.4  | 870.5  | 864.6  | 866.5  | 855.7  | 841.8  | 832.0  | 821.1  |
| 7.5°  | 925.8  | 923.8  | 916.9  | 912.0  | 900.1  | 894.2  | 892.2  | 875.4  | 857.6  | 842.8  | 825.0  |
| 10°   | 967.3  | 962.4  | 958.4  | 948.5  | 932.7  | 923.8  | 920.9  | 899.1  | 876.4  | 856.7  | 832.9  |
| 12.5° | 1004.9 | 998.9  | 994.0  | 984.1  | 968.3  | 953.5  | 949.5  | 924.8  | 896.2  | 869.5  | 839.9  |
| 15°   | 1033.5 | 1034.5 | 1029.6 | 1020.7 | 1002.9 | 985.1  | 982.1  | 949.5  | 914.9  | 882.3  | 846.8  |
| 17.5° | 1060.2 | 1064.1 | 1061.2 | 1055.3 | 1037.5 | 1019.7 | 1016.7 | 980.2  | 938.7  | 897.2  | 854.7  |
| 20°   | 1085.9 | 1085.9 | 1084.9 | 1080.9 | 1068.1 | 1056.2 | 1050.3 | 1013.8 | 961.4  | 913.0  | 865.5  |
| 22.5° | 1100.7 | 1104.7 | 1104.7 | 1104.7 | 1096.8 | 1086.9 | 1084.9 | 1049.3 | 992.0  | 932.7  | 875.4  |
| 25°   | 1123.4 | 1128.4 | 1128.4 | 1126.4 | 1119.5 | 1116.5 | 1113.5 | 1080.0 | 1021.7 | 955.5  | 886.3  |
| 27.5° | 1171.8 | 1170.9 | 1163.0 | 1153.1 | 1143.2 | 1142.2 | 1138.3 | 1114.5 | 1056.2 | 980.2  | 901.1  |
| 30°   | 1239.0 | 1241.0 | 1231.1 | 1200.5 | 1177.8 | 1172.8 | 1173.8 | 1153.1 | 1096.8 | 1008.8 | 917.9  |
| 32.5° | 1341.8 | 1341.8 | 1303.3 | 1263.7 | 1231.1 | 1218.3 | 1215.3 | 1197.5 | 1138.3 | 1040.4 | 936.7  |
| 35°   | 1418.9 | 1415.9 | 1394.2 | 1347.7 | 1307.2 | 1270.7 | 1265.7 | 1242.0 | 1184.7 | 1076.0 | 957.4  |
| 37.5° | 1477.2 | 1483.1 | 1466.3 | 1430.7 | 1391.2 | 1328.0 | 1318.1 | 1284.5 | 1227.2 | 1110.6 | 978.2  |
| 40°   | 1589.8 | 1575.0 | 1534.5 | 1501.9 | 1454.4 | 1384.3 | 1375.4 | 1333.9 | 1270.7 | 1149.1 | 1003.9 |
| 42.5° | 1671.8 | 1651.1 | 1604.6 | 1561.1 | 1501.9 | 1440.6 | 1432.7 | 1387.2 | 1321.0 | 1192.6 | 1030.6 |
| 45°   | 1789.4 | 1742.9 | 1678.7 | 1640.2 | 1556.2 | 1501.9 | 1492.0 | 1442.6 | 1373.4 | 1239.0 | 1064.1 |
| 47.5° | 1903.0 | 1822.0 | 1753.8 | 1736.0 | 1615.5 | 1568.1 | 1560.2 | 1502.8 | 1429.7 | 1289.4 | 1096.8 |
| 50°   | 1888.2 | 1834.8 | 1812.1 | 1795.3 | 1666.9 | 1630.3 | 1622.4 | 1564.1 | 1487.0 | 1342.8 | 1129.4 |
| 52.5° | 1850.6 | 1855.6 | 1856.6 | 1816.1 | 1715.3 | 1688.6 | 1680.7 | 1630.3 | 1546.3 | 1389.2 | 1161.0 |
| 55°   | 1890.2 | 1896.1 | 1895.1 | 1833.8 | 1771.6 | 1746.9 | 1742.0 | 1697.5 | 1603.6 | 1432.7 | 1183.7 |
| 57.5° | 1950.4 | 1930.7 | 1927.7 | 1878.3 | 1831.9 | 1809.1 | 1803.2 | 1764.7 | 1652.0 | 1464.3 | 1201.5 |
| 60°   | 1961.3 | 1921.8 | 1934.6 | 1888.2 | 1877.3 | 1870.4 | 1868.4 | 1823.0 | 1697.5 | 1490.0 | 1208.4 |
| 62.5° | 1839.8 | 1832.9 | 1883.3 | 1864.5 | 1901.0 | 1920.8 | 1921.8 | 1864.5 | 1722.2 | 1499.9 | 1201.5 |
| 65°   | 1632.3 | 1659.9 | 1768.6 | 1823.0 | 1936.6 | 1992.9 | 1990.9 | 1889.2 | 1719.2 | 1471.2 | 1159.0 |
| 67.5° | 1382.3 | 1404.0 | 1557.2 | 1729.1 | 1928.7 | 2031.5 | 2030.5 | 1900.0 | 1667.9 | 1392.2 | 1063.2 |
| 70°   | 1048.3 | 1116.5 | 1333.9 | 1560.2 | 1822.0 | 1955.4 | 1972.2 | 1838.8 | 1550.3 | 1247.9 | 917.9  |
| 72.5° | 797.4  | 808.2  | 1071.1 | 1308.2 | 1631.3 | 1774.6 | 1771.6 | 1643.2 | 1353.6 | 1051.3 | 764.8  |
| 75°   | 566.2  | 589.9  | 806.3  | 1013.8 | 1336.9 | 1495.9 | 1489.0 | 1347.7 | 1080.0 | 818.1  | 584.9  |
| 77.5° | 421.9  | 430.8  | 589.9  | 751.9  | 999.9  | 1143.2 | 1140.2 | 996.0  | 794.4  | 600.7  | 435.7  |
| 80°   | 308.3  | 323.1  | 424.9  | 524.7  | 677.8  | 801.3  | 797.4  | 661.0  | 509.8  | 419.9  | 318.2  |
| 82.5° | 172.9  | 183.8  | 247.0  | 317.2  | 357.7  | 396.2  | 379.4  | 317.2  | 232.2  | 180.8  | 156.1  |
| 85°   | 4.9    | 5.9    | 8.9    | 10.9   | 18.8   | 31.6   | 34.6   | 30.6   | 36.6   | 22.7   | 24.7   |
| 87.5° | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    | 3.0    | 3.0    | 3.0    | 3.0    | 3.0    | 3.0    |
| 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: P868114

CATALOG NUMBER: MEM2-HSN-SA-40-740-U-T4W

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 815.2  | 815.2 | 815.2 | 815.2 | 815.2 | 815.2 | 815.2 | 815.2 | 815.2 | 815.2 | 815.2 |
| 2.5°  | 817.1  | 813.2 | 805.3 | 800.3 | 797.4 | 793.4 | 787.5 | 783.5 | 780.6 | 784.5 | 783.5 |
| 5°    | 816.1  | 808.2 | 794.4 | 784.5 | 774.6 | 766.7 | 757.8 | 750.9 | 747.0 | 749.0 | 748.0 |
| 7.5°  | 816.1  | 806.3 | 784.5 | 768.7 | 753.9 | 742.0 | 732.2 | 723.3 | 719.3 | 720.3 | 719.3 |
| 10°   | 820.1  | 806.3 | 777.6 | 754.9 | 735.1 | 721.3 | 710.4 | 702.5 | 699.5 | 702.5 | 703.5 |
| 12.5° | 824.0  | 806.3 | 771.7 | 743.0 | 717.3 | 702.5 | 692.6 | 687.7 | 689.7 | 690.7 | 691.6 |
| 15°   | 826.0  | 805.3 | 765.7 | 729.2 | 700.5 | 684.7 | 678.8 | 677.8 | 682.8 | 687.7 | 688.7 |
| 17.5° | 831.0  | 804.3 | 756.9 | 715.4 | 685.7 | 672.9 | 669.9 | 673.9 | 683.7 | 690.7 | 692.6 |
| 20°   | 836.9  | 806.3 | 747.0 | 698.6 | 670.9 | 661.0 | 666.0 | 674.8 | 686.7 | 696.6 | 698.6 |
| 22.5° | 842.8  | 807.2 | 738.1 | 683.7 | 655.1 | 653.1 | 664.0 | 676.8 | 690.7 | 700.5 | 702.5 |
| 25°   | 849.7  | 807.2 | 726.2 | 665.0 | 639.3 | 642.2 | 659.0 | 675.8 | 688.7 | 701.5 | 703.5 |
| 27.5° | 856.7  | 809.2 | 713.4 | 644.2 | 619.5 | 628.4 | 649.2 | 669.9 | 683.7 | 696.6 | 699.5 |
| 30°   | 868.5  | 813.2 | 702.5 | 626.4 | 599.8 | 611.6 | 636.3 | 660.0 | 674.8 | 688.7 | 691.6 |
| 32.5° | 880.4  | 819.1 | 693.6 | 607.7 | 580.0 | 593.8 | 621.5 | 648.2 | 664.0 | 676.8 | 678.8 |
| 35°   | 896.2  | 827.0 | 686.7 | 588.9 | 560.2 | 571.1 | 600.7 | 630.4 | 648.2 | 658.1 | 663.0 |
| 37.5° | 913.0  | 837.9 | 680.8 | 572.1 | 538.5 | 548.4 | 580.0 | 611.6 | 630.4 | 640.3 | 642.2 |
| 40°   | 933.7  | 852.7 | 676.8 | 556.3 | 517.7 | 525.7 | 557.3 | 591.9 | 609.6 | 616.6 | 620.5 |
| 42.5° | 956.4  | 868.5 | 673.9 | 540.5 | 495.0 | 502.9 | 536.5 | 570.1 | 587.9 | 593.8 | 596.8 |
| 45°   | 985.1  | 889.3 | 671.9 | 523.7 | 476.2 | 483.2 | 516.8 | 550.4 | 565.2 | 573.1 | 576.0 |
| 47.5° | 1011.8 | 910.0 | 666.0 | 503.9 | 455.5 | 465.4 | 496.0 | 525.7 | 542.4 | 547.4 | 550.4 |
| 50°   | 1038.5 | 927.8 | 654.1 | 482.2 | 436.7 | 445.6 | 473.3 | 495.0 | 507.9 | 513.8 | 515.8 |
| 52.5° | 1064.1 | 940.6 | 635.3 | 459.4 | 417.0 | 422.9 | 445.6 | 466.4 | 475.3 | 477.2 | 483.2 |
| 55°   | 1080.9 | 947.6 | 608.6 | 432.8 | 397.2 | 399.2 | 416.0 | 434.7 | 439.7 | 440.7 | 440.7 |
| 57.5° | 1092.8 | 943.6 | 577.0 | 406.1 | 377.4 | 377.4 | 387.3 | 402.1 | 404.1 | 405.1 | 407.1 |
| 60°   | 1094.8 | 929.8 | 536.5 | 381.4 | 355.7 | 352.7 | 362.6 | 371.5 | 372.5 | 374.5 | 376.5 |
| 62.5° | 1080.0 | 899.1 | 493.0 | 357.7 | 335.0 | 328.0 | 336.9 | 345.8 | 350.8 | 353.7 | 355.7 |
| 65°   | 1034.5 | 836.9 | 443.6 | 334.0 | 315.2 | 303.3 | 314.2 | 329.0 | 338.9 | 339.9 | 339.9 |
| 67.5° | 939.6  | 736.1 | 391.3 | 309.3 | 291.5 | 280.6 | 294.4 | 310.3 | 322.1 | 327.0 | 326.1 |
| 70°   | 796.4  | 624.5 | 342.9 | 283.6 | 267.8 | 260.8 | 275.7 | 293.5 | 303.3 | 307.3 | 309.3 |
| 72.5° | 641.3  | 500.0 | 300.4 | 257.9 | 247.0 | 243.1 | 257.9 | 275.7 | 289.5 | 295.4 | 296.4 |
| 75°   | 499.0  | 393.2 | 264.8 | 231.2 | 222.3 | 223.3 | 239.1 | 256.9 | 271.7 | 274.7 | 265.8 |
| 77.5° | 387.3  | 313.2 | 231.2 | 199.6 | 194.6 | 201.6 | 217.4 | 236.1 | 245.0 | 248.0 | 242.1 |
| 80°   | 279.6  | 240.1 | 186.7 | 157.1 | 157.1 | 168.0 | 181.8 | 203.5 | 206.5 | 202.6 | 204.5 |
| 82.5° | 132.4  | 116.6 | 91.9  | 76.1  | 71.1  | 79.0  | 84.0  | 90.9  | 98.8  | 100.8 | 95.8  |
| 85°   | 17.8   | 11.9  | 8.9   | 9.9   | 8.9   | 5.9   | 4.0   | 4.0   | 4.0   | 3.0   | 3.0   |
| 87.5° | 3.0    | 3.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 1.0   | 1.0   | 1.0   |
| 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: SP1-2407-157-5

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-740-U-5WQ-2

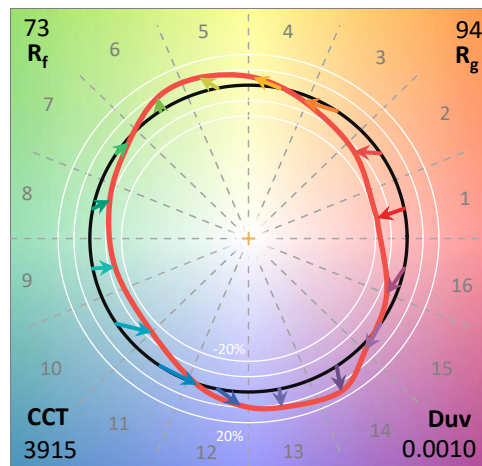
Data in this report applies to families of products including MEM2-HTN-SA-40-740-U-5WQ-2

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-157-5  
 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-40-740-U-5WQ-2**  
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

**Spectral Parameters**

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 3915     | CRI (Ra): | 71.0 | R9:  | -38.4 |
| CIE u':                   | 0.2262   | R1:       | 67.6 | R10: | 48.9  |
| CIE v':                   | 0.5044   | R2:       | 78.3 | R11: | 65.3  |
| Duv:                      | 0.0010   | R3:       | 87.1 | R12: | 40.4  |
| CIE x:                    | 0.3850   | R4:       | 69.7 | R13: | 69.3  |
| CIE y:                    | 0.3816   | R5:       | 67.4 | R14: | 92.6  |
| CIE z:                    | 0.2334   | R6:       | 69.3 | R15: | 59.9  |
| Peak Wavelength (nm):     | 449      | R7:       | 79.7 |      |       |
| Dominant Wavelength (nm): | 578      | R8:       | 48.7 |      |       |
| Purity:                   | 30.05482 |           |      |      |       |
| Rf:                       | 73.2     |           |      |      |       |
| Rg:                       | 93.9     |           |      |      |       |



**Test Conditions**

Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 24.2

REPORT NUMBER: SP1-2407-157-5

| 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: SP1-2407-157-5

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: SP1-2407-157-5

**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            | 112                      | NR                   | 620            | 618                      | NR                   | 750            | 15                       | NR                   | 880            | 0                        | NR                   |
| 365            | 0                        | NR                   | 495            | 153                      | NR                   | 625            | 563                      | NR                   | 755            | 13                       | NR                   | 885            | 0                        | NR                   |
| 370            | 0                        | NR                   | 500            | 216                      | NR                   | 630            | 510                      | NR                   | 760            | 11                       | NR                   | 890            | 0                        | NR                   |
| 375            | 0                        | NR                   | 505            | 291                      | NR                   | 635            | 456                      | NR                   | 765            | 9                        | NR                   | 895            | 0                        | NR                   |
| 380            | 0                        | NR                   | 510            | 366                      | NR                   | 640            | 407                      | NR                   | 770            | 8                        | NR                   | 900            | 0                        | NR                   |
| 385            | 0                        | NR                   | 515            | 436                      | NR                   | 645            | 359                      | NR                   | 775            | 7                        | NR                   | 905            | 0                        | NR                   |
| 390            | 0                        | NR                   | 520            | 492                      | NR                   | 650            | 316                      | NR                   | 780            | 6                        | NR                   | 910            | 0                        | NR                   |
| 395            | 2                        | NR                   | 525            | 536                      | NR                   | 655            | 277                      | NR                   | 785            | 5                        | NR                   | 915            | 0                        | NR                   |
| 400            | 4                        | NR                   | 530            | 567                      | NR                   | 660            | 240                      | NR                   | 790            | 4                        | NR                   | 920            | 0                        | NR                   |
| 405            | 7                        | NR                   | 535            | 596                      | NR                   | 665            | 208                      | NR                   | 795            | 4                        | NR                   | 925            | 0                        | NR                   |
| 410            | 12                       | NR                   | 540            | 619                      | NR                   | 670            | 179                      | NR                   | 800            | 3                        | NR                   | 930            | 0                        | NR                   |
| 415            | 25                       | NR                   | 545            | 644                      | NR                   | 675            | 154                      | NR                   | 805            | 3                        | NR                   | 935            | 0                        | NR                   |
| 420            | 51                       | NR                   | 550            | 671                      | NR                   | 680            | 133                      | NR                   | 810            | 3                        | NR                   | 940            | 0                        | NR                   |
| 425            | 100                      | NR                   | 555            | 701                      | NR                   | 685            | 114                      | NR                   | 815            | 2                        | NR                   | 945            | 0                        | NR                   |
| 430            | 180                      | NR                   | 560            | 735                      | NR                   | 690            | 98                       | NR                   | 820            | 2                        | NR                   | 950            | 0                        | NR                   |
| 435            | 315                      | NR                   | 565            | 768                      | NR                   | 695            | 83                       | NR                   | 825            | 2                        | NR                   | 955            | 0                        | NR                   |
| 440            | 514                      | NR                   | 570            | 798                      | NR                   | 700            | 71                       | NR                   | 830            | 1                        | NR                   | 960            | 0                        | NR                   |
| 445            | 828                      | NR                   | 575            | 825                      | NR                   | 705            | 61                       | NR                   | 835            | 1                        | NR                   | 965            | 0                        | NR                   |
| 450            | 992                      | NR                   | 580            | 843                      | NR                   | 710            | 52                       | NR                   | 840            | 1                        | NR                   | 970            | 0                        | NR                   |
| 455            | 652                      | NR                   | 585            | 848                      | NR                   | 715            | 44                       | NR                   | 845            | 1                        | NR                   | 975            | 0                        | NR                   |
| 460            | 382                      | NR                   | 590            | 844                      | NR                   | 720            | 38                       | NR                   | 850            | 1                        | NR                   | 980            | 0                        | NR                   |
| 465            | 282                      | NR                   | 595            | 826                      | NR                   | 725            | 32                       | NR                   | 855            | 1                        | NR                   | 985            | 0                        | NR                   |
| 470            | 180                      | NR                   | 600            | 800                      | NR                   | 730            | 28                       | NR                   | 860            | 1                        | NR                   | 990            | 0                        | NR                   |
| 475            | 119                      | NR                   | 605            | 762                      | NR                   | 735            | 24                       | NR                   | 865            | 1                        | NR                   | 995            | 0                        | NR                   |
| 480            | 101                      | NR                   | 610            | 719                      | NR                   | 740            | 20                       | NR                   | 870            | 1                        | NR                   | 1000           | 0                        | NR                   |
| 485            | 98                       | NR                   | 615            | 669                      | NR                   | 745            | 17                       | NR                   | 875            | 0                        | NR                   |                |                          |                      |

REPORT NUMBER: SP1-2407-157-5

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.49**

| 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    | 112                      | NR            | 620    | 618                      | NR            | 750    | 15                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 153                      | NR            | 625    | 563                      | NR            | 755    | 13                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 216                      | NR            | 630    | 510                      | NR            | 760    | 11                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 291                      | NR            | 635    | 456                      | NR            | 765    | 9                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 366                      | NR            | 640    | 407                      | NR            | 770    | 8                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 436                      | NR            | 645    | 359                      | NR            | 775    | 7                        | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 492                      | NR            | 650    | 316                      | NR            | 780    | 6                        | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 536                      | NR            | 655    | 277                      | NR            | 785    | 5                        | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 567                      | NR            | 660    | 240                      | NR            | 790    | 4                        | NR            | 920    | 0                        | NR            |
| 405    | 7                        | NR            | 535    | 596                      | NR            | 665    | 208                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 12                       | NR            | 540    | 619                      | NR            | 670    | 179                      | NR            | 800    | 3                        | NR            | 930    | 0                        | NR            |
| 415    | 25                       | NR            | 545    | 644                      | NR            | 675    | 154                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 51                       | NR            | 550    | 671                      | NR            | 680    | 133                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 100                      | NR            | 555    | 701                      | NR            | 685    | 114                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 180                      | NR            | 560    | 735                      | NR            | 690    | 98                       | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 315                      | NR            | 565    | 768                      | NR            | 695    | 83                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 514                      | NR            | 570    | 798                      | NR            | 700    | 71                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 828                      | NR            | 575    | 825                      | NR            | 705    | 61                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 992                      | NR            | 580    | 843                      | NR            | 710    | 52                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 652                      | NR            | 585    | 848                      | NR            | 715    | 44                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 382                      | NR            | 590    | 844                      | NR            | 720    | 38                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 282                      | NR            | 595    | 826                      | NR            | 725    | 32                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 180                      | NR            | 600    | 800                      | NR            | 730    | 28                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 119                      | NR            | 605    | 762                      | NR            | 735    | 24                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 101                      | NR            | 610    | 719                      | NR            | 740    | 20                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 98                       | NR            | 615    | 669                      | NR            | 745    | 17                       | NR            | 875    | 0                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2407-157-5

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: NR**

**M/P: 2.88**

| 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    | 112                      | NR            | 620    | 618                      | NR            | 750    | 15                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 153                      | NR            | 625    | 563                      | NR            | 755    | 13                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 216                      | NR            | 630    | 510                      | NR            | 760    | 11                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 291                      | NR            | 635    | 456                      | NR            | 765    | 9                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 366                      | NR            | 640    | 407                      | NR            | 770    | 8                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 436                      | NR            | 645    | 359                      | NR            | 775    | 7                        | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 492                      | NR            | 650    | 316                      | NR            | 780    | 6                        | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 536                      | NR            | 655    | 277                      | NR            | 785    | 5                        | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 567                      | NR            | 660    | 240                      | NR            | 790    | 4                        | NR            | 920    | 0                        | NR            |
| 405    | 7                        | NR            | 535    | 596                      | NR            | 665    | 208                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 12                       | NR            | 540    | 619                      | NR            | 670    | 179                      | NR            | 800    | 3                        | NR            | 930    | 0                        | NR            |
| 415    | 25                       | NR            | 545    | 644                      | NR            | 675    | 154                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 51                       | NR            | 550    | 671                      | NR            | 680    | 133                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 100                      | NR            | 555    | 701                      | NR            | 685    | 114                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 180                      | NR            | 560    | 735                      | NR            | 690    | 98                       | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 315                      | NR            | 565    | 768                      | NR            | 695    | 83                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 514                      | NR            | 570    | 798                      | NR            | 700    | 71                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 828                      | NR            | 575    | 825                      | NR            | 705    | 61                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 992                      | NR            | 580    | 843                      | NR            | 710    | 52                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 652                      | NR            | 585    | 848                      | NR            | 715    | 44                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 382                      | NR            | 590    | 844                      | NR            | 720    | 38                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 282                      | NR            | 595    | 826                      | NR            | 725    | 32                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 180                      | NR            | 600    | 800                      | NR            | 730    | 28                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 119                      | NR            | 605    | 762                      | NR            | 735    | 24                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 101                      | NR            | 610    | 719                      | NR            | 740    | 20                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 98                       | NR            | 615    | 669                      | NR            | 745    | 17                       | NR            | 875    | 0                        | NR            |        |                          |               |

**Summary**

$R_f = 73.2$   
 $R_g = 93.9$   
 $CIE R_a = 71.0$   
 $R_g = -38.4$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 88 | CES76 = 50 |
| CES02 = 61 | CES27 = 88 | CES52 = 87 | CES77 = 69 |
| CES03 = 30 | CES28 = 81 | CES53 = 77 | CES78 = 53 |
| CES04 = 70 | CES29 = 65 | CES54 = 84 | CES79 = 81 |
| CES05 = 47 | CES30 = 81 | CES55 = 83 | CES80 = 78 |
| CES06 = 50 | CES31 = 69 | CES56 = 73 | CES81 = 77 |
| CES07 = 40 | CES32 = 60 | CES57 = 72 | CES82 = 91 |
| CES08 = 39 | CES33 = 76 | CES58 = 73 | CES83 = 89 |
| CES09 = 29 | CES34 = 70 | CES59 = 85 | CES84 = 86 |
| CES10 = 74 | CES35 = 83 | CES60 = 89 | CES85 = 77 |
| CES11 = 57 | CES36 = 91 | CES61 = 81 | CES86 = 71 |
| CES12 = 63 | CES37 = 79 | CES62 = 85 | CES87 = 76 |
| CES13 = 42 | CES38 = 92 | CES63 = 72 | CES88 = 80 |
| CES14 = 74 | CES39 = 96 | CES64 = 64 | CES89 = 70 |
| CES15 = 71 | CES40 = 91 | CES65 = 61 | CES90 = 79 |
| CES16 = 46 | CES41 = 93 | CES66 = 57 | CES91 = 74 |
| CES17 = 49 | CES42 = 80 | CES67 = 54 | CES92 = 57 |
| CES18 = 56 | CES43 = 76 | CES68 = 63 | CES93 = 74 |
| CES19 = 72 | CES44 = 99 | CES69 = 73 | CES94 = 51 |
| CES20 = 65 | CES45 = 85 | CES70 = 55 | CES95 = 65 |
| CES21 = 86 | CES46 = 82 | CES71 = 48 | CES96 = 76 |
| CES22 = 78 | CES47 = 86 | CES72 = 83 | CES97 = 84 |
| CES23 = 92 | CES48 = 77 | CES73 = 45 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 93 | CES99 = 62 |
| CES25 = 72 | CES50 = 88 | CES75 = 51 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)