

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: P867639

Luminaire Tested: **MEM2-HTN-SA-40-722-U-T3-HSS**

Issue Date: 08/21/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P867639  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: MEM2-HTN-SA-40-722-U-T3-HSS  
Description: EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 40W 70CRI 2200K  
FIXTURE w/ TYPE III DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD  
Light Source: (10) 2200K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

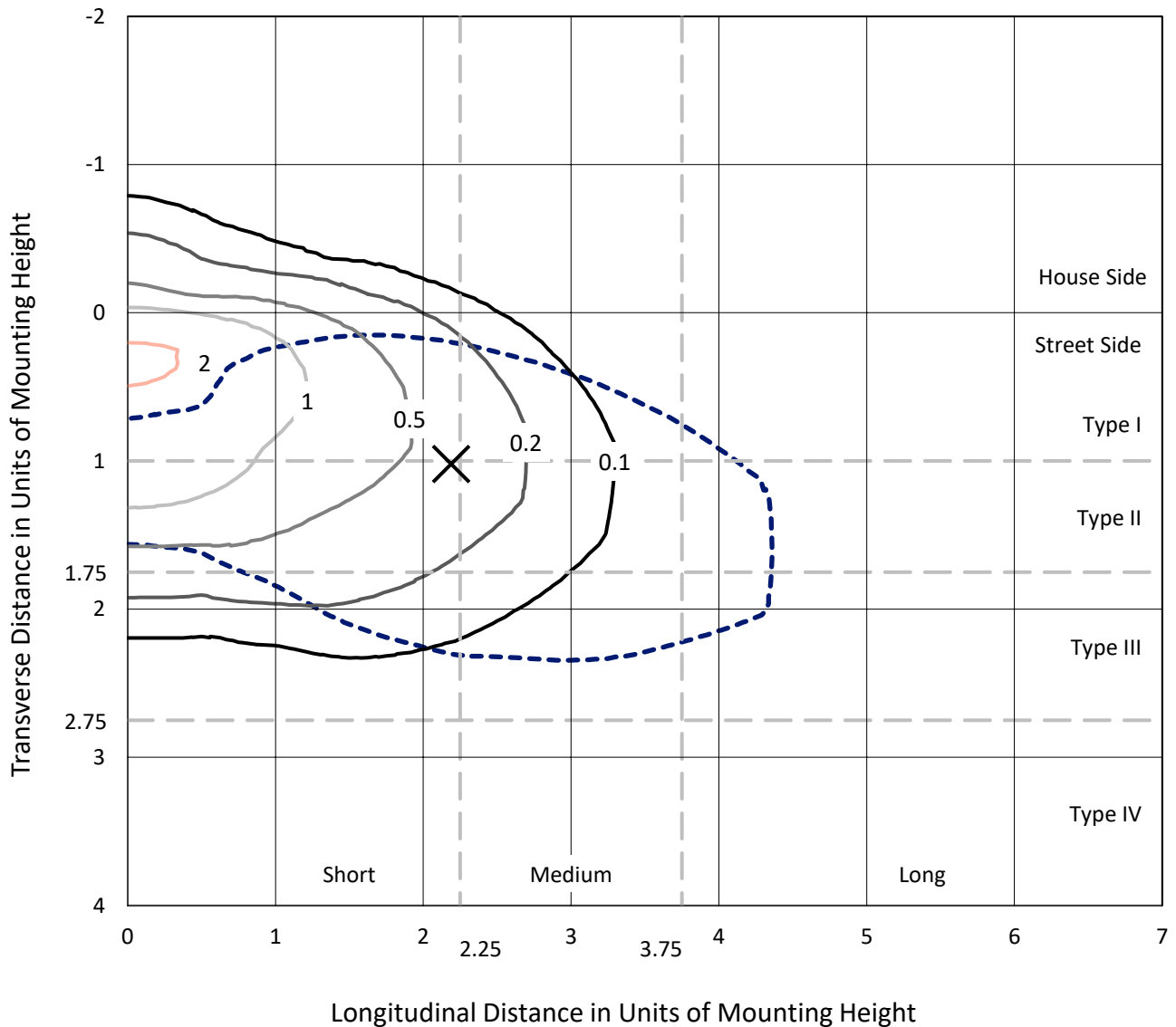
Lumens per Lamp: N/A  
Luminaire Lumens: 3759.3 lumens  
Efficiency: N/A  
Efficacy: 85.4 lumens/watt  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B0 - U0 - G1

Input Watts (W): 44  
Input Voltage (V): 120  
Input Current (Ain): 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

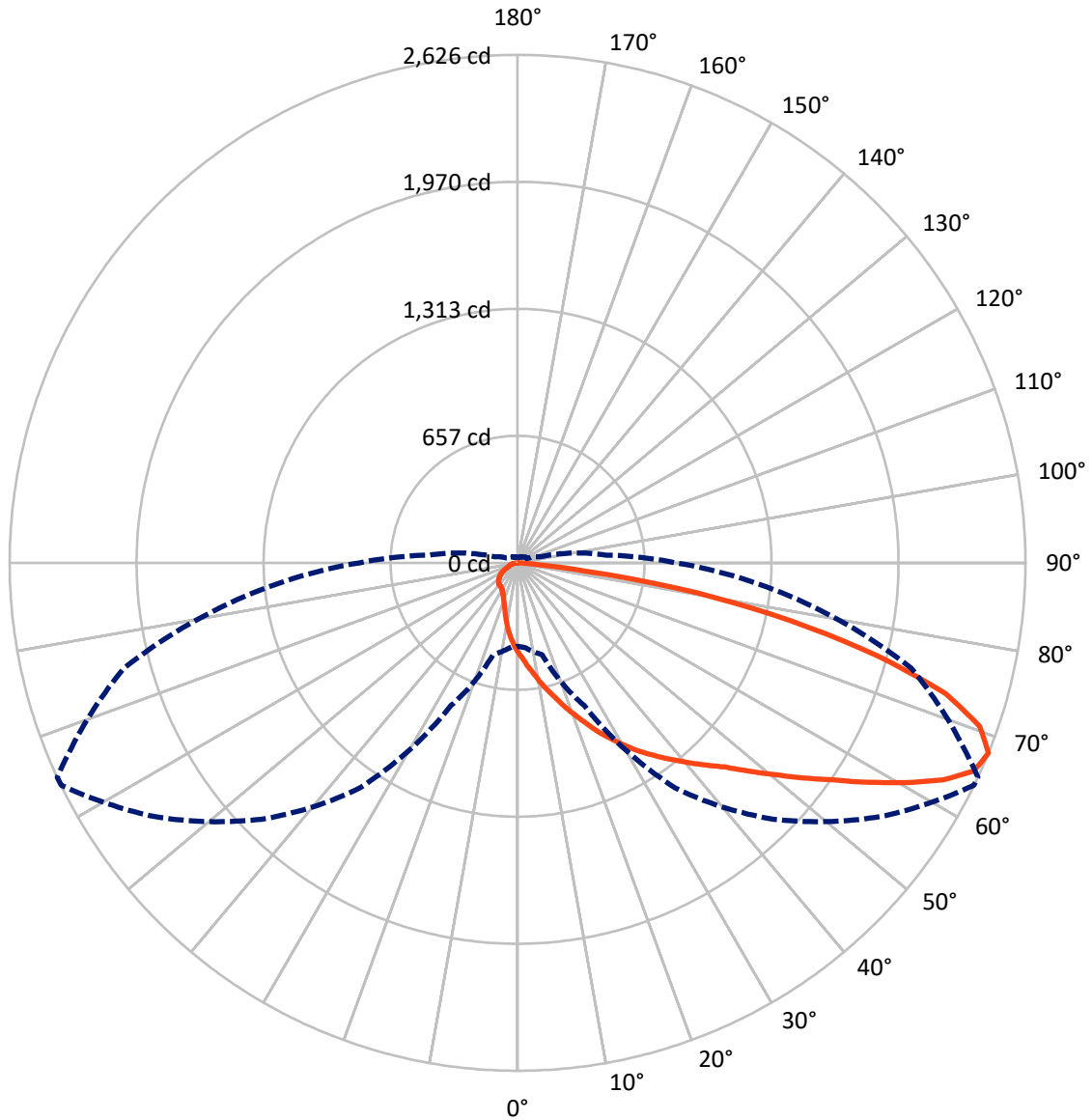
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 2.1 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 65-Deg Lateral    - - - Horizontal Cone Through 67.5-Deg Vertical

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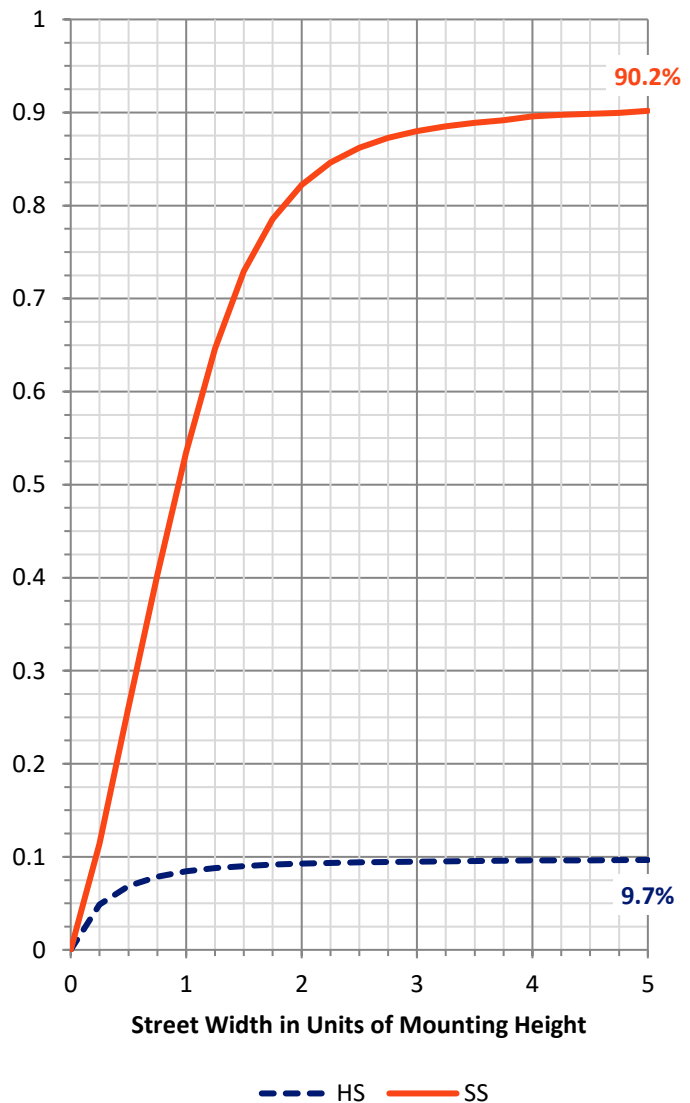
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 365.9    | 0.0    | 365.9  |
|                    | % Fixture | 9.7      | 0.0    | 9.7    |
| <b>Street Side</b> | Lumens    | 3393.4   | 0.0    | 3393.4 |
|                    | % Fixture | 90.3     | 0.0    | 90.3   |
| <b>Total</b>       | Lumens    | 3759.3   | 0.0    | 3759.3 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 45.5   | 1.2       |
| 10°-20°   | 150.9  | 4.0       |
| 20°-30°   | 274.5  | 7.3       |
| 30°-40°   | 424.9  | 11.3      |
| 40°-50°   | 642.3  | 17.1      |
| 50°-60°   | 835.6  | 22.2      |
| 60°-70°   | 824.3  | 21.9      |
| 70°-80°   | 501.8  | 13.3      |
| 80°-90°   | 59.6   | 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°    | 3759.3 | 100.0     |
| 0°-180°   | 3759.3 | 100.0     |



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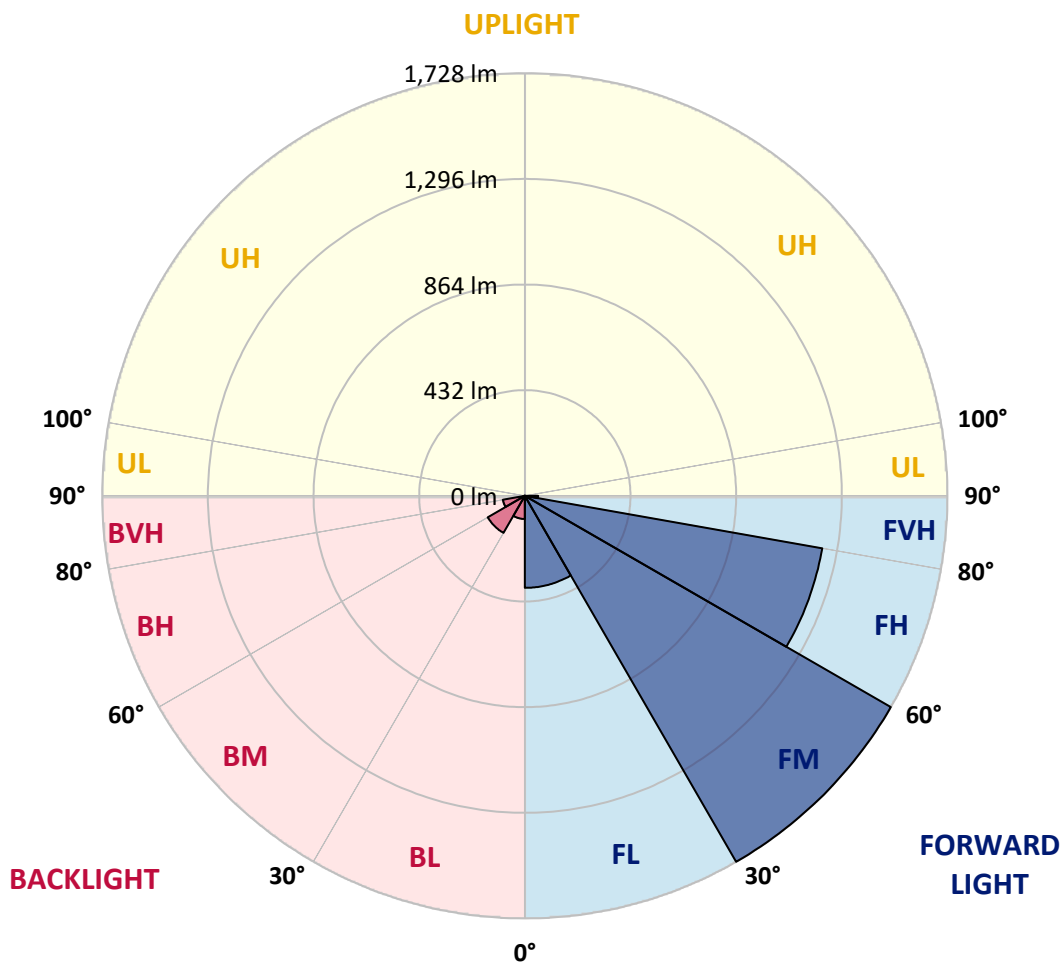
CATALOG NUMBER: MEM2-HTN-SA-40-722-U-T3-HSS

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 376.2  | 10.0      |                         |      |         |
| FM (30°-60°)   | 1727.8 | 46.0      |                         |      |         |
| FH (60°-80°)   | 1235.0 | 32.9      |                         |      | G1/1800 |
| FVH (80°-90°)  | 54.5   | 1.5       |                         |      | G1/100  |
| BL (0°-30°)    | 94.7   | 2.5       | B0/110                  |      |         |
| BM (30°-60°)   | 175.0  | 4.7       | B0/220                  |      |         |
| BH (60°-80°)   | 91.1   | 2.4       | B0/110                  |      | G0/110  |
| BVH (80°-90°)  | 5.1    | 0.1       |                         |      | G0/10   |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G1**

Type III Short





REPORT NUMBER: P867639

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 64°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 464.5  | 464.5  | 464.5  | 464.5  | 464.5  | 464.5  | 464.5  | 464.5  | 464.5  | 464.5  | 464.5  |
| 2.5°  | 542.8  | 538.6  | 541.8  | 534.3  | 525.7  | 519.2  | 506.4  | 495.6  | 494.6  | 483.8  | 472.0  |
| 5°    | 646.9  | 633.0  | 634.0  | 619.0  | 600.8  | 581.5  | 561.1  | 534.3  | 534.3  | 508.5  | 481.7  |
| 7.5°  | 740.2  | 738.1  | 728.4  | 704.8  | 683.4  | 653.3  | 615.8  | 581.5  | 574.0  | 534.3  | 492.4  |
| 10°   | 830.4  | 827.1  | 818.6  | 800.3  | 763.8  | 730.6  | 683.4  | 631.9  | 622.2  | 565.4  | 505.3  |
| 12.5° | 902.2  | 903.3  | 893.7  | 878.6  | 846.5  | 806.8  | 744.5  | 680.2  | 671.6  | 595.4  | 518.2  |
| 15°   | 965.5  | 964.5  | 962.3  | 949.4  | 918.3  | 881.9  | 808.9  | 733.8  | 719.9  | 627.6  | 531.0  |
| 17.5° | 1013.8 | 1011.7 | 1007.4 | 996.6  | 981.6  | 946.2  | 876.5  | 790.7  | 778.9  | 665.1  | 546.1  |
| 20°   | 1027.8 | 1026.7 | 1026.7 | 1034.2 | 1027.8 | 1006.3 | 944.1  | 849.7  | 836.8  | 704.8  | 566.4  |
| 22.5° | 1053.5 | 1052.4 | 1051.4 | 1058.9 | 1063.2 | 1061.0 | 1007.4 | 909.7  | 897.9  | 751.0  | 592.2  |
| 25°   | 1086.8 | 1084.6 | 1081.4 | 1088.9 | 1094.3 | 1107.1 | 1070.7 | 980.6  | 966.6  | 804.6  | 617.9  |
| 27.5° | 1130.7 | 1132.9 | 1128.6 | 1127.5 | 1127.5 | 1135.0 | 1126.5 | 1043.8 | 1031.0 | 856.1  | 648.0  |
| 30°   | 1188.7 | 1191.9 | 1184.4 | 1179.0 | 1169.4 | 1168.3 | 1170.4 | 1114.7 | 1096.4 | 911.9  | 679.1  |
| 32.5° | 1245.5 | 1248.8 | 1244.5 | 1237.0 | 1212.3 | 1202.6 | 1211.2 | 1174.7 | 1162.9 | 973.0  | 718.8  |
| 35°   | 1291.7 | 1299.2 | 1299.2 | 1284.2 | 1249.8 | 1244.5 | 1258.4 | 1233.7 | 1225.2 | 1044.9 | 766.0  |
| 37.5° | 1353.9 | 1358.2 | 1353.9 | 1326.0 | 1283.1 | 1289.5 | 1311.0 | 1296.0 | 1290.6 | 1122.2 | 821.8  |
| 40°   | 1486.9 | 1492.3 | 1464.4 | 1397.9 | 1329.2 | 1336.7 | 1374.3 | 1365.7 | 1357.1 | 1198.3 | 873.3  |
| 42.5° | 1672.5 | 1659.6 | 1654.3 | 1506.2 | 1400.0 | 1395.7 | 1442.9 | 1431.1 | 1430.1 | 1275.6 | 920.5  |
| 45°   | 1794.8 | 1799.1 | 1772.3 | 1631.8 | 1549.1 | 1468.7 | 1519.1 | 1514.8 | 1506.2 | 1353.9 | 977.3  |
| 47.5° | 1879.6 | 1869.9 | 1803.4 | 1735.8 | 1751.9 | 1564.2 | 1603.9 | 1614.6 | 1609.2 | 1442.9 | 1047.1 |
| 50°   | 1915.0 | 1905.3 | 1861.3 | 1816.3 | 1835.6 | 1673.6 | 1690.8 | 1726.2 | 1720.8 | 1533.1 | 1106.1 |
| 52.5° | 1871.0 | 1859.2 | 1862.4 | 1874.2 | 1864.6 | 1759.4 | 1798.0 | 1853.8 | 1847.4 | 1638.2 | 1174.7 |
| 55°   | 1591.0 | 1622.1 | 1742.3 | 1862.4 | 1859.2 | 1824.9 | 1912.8 | 1994.4 | 1981.5 | 1747.6 | 1233.7 |
| 57.5° | 1283.1 | 1300.3 | 1452.6 | 1777.7 | 1842.0 | 1879.6 | 2043.7 | 2144.6 | 2140.3 | 1857.0 | 1287.4 |
| 60°   | 1020.2 | 1038.5 | 1154.3 | 1601.7 | 1802.3 | 1936.4 | 2177.8 | 2310.8 | 2306.6 | 1967.5 | 1326.0 |
| 62.5° | 811.0  | 811.0  | 914.0  | 1348.5 | 1726.2 | 1969.7 | 2284.0 | 2478.2 | 2470.7 | 2056.6 | 1335.7 |
| 65°   | 583.6  | 591.1  | 668.4  | 1084.6 | 1602.8 | 1961.1 | 2335.5 | 2597.3 | 2593.0 | 2107.0 | 1315.3 |
| 67.5° | 431.3  | 439.9  | 491.3  | 813.2  | 1420.4 | 1875.3 | 2288.3 | 2624.1 | 2626.3 | 2108.1 | 1248.8 |
| 70°   | 336.9  | 339.0  | 377.6  | 565.4  | 1164.0 | 1684.3 | 2111.3 | 2535.1 | 2535.1 | 2055.5 | 1150.1 |
| 72.5° | 256.4  | 258.5  | 291.8  | 385.1  | 857.2  | 1392.5 | 1846.3 | 2299.0 | 2315.1 | 1916.0 | 1004.2 |
| 75°   | 198.5  | 202.8  | 225.3  | 276.8  | 537.5  | 990.2  | 1517.0 | 1882.8 | 1926.8 | 1645.7 | 827.1  |
| 77.5° | 153.4  | 157.7  | 175.9  | 202.8  | 313.3  | 610.4  | 1066.4 | 1407.5 | 1447.2 | 1296.0 | 638.3  |
| 80°   | 123.4  | 125.5  | 137.3  | 152.3  | 189.9  | 314.3  | 651.2  | 924.8  | 936.6  | 880.8  | 422.7  |
| 82.5° | 56.9   | 61.2   | 74.0   | 83.7   | 94.4   | 145.9  | 277.9  | 342.2  | 357.2  | 349.7  | 173.8  |
| 85°   | 6.4    | 6.4    | 7.5    | 8.6    | 9.7    | 15.0   | 19.3   | 17.2   | 17.2   | 20.4   | 18.2   |
| 87.5° | 0.0    | 0.0    | 0.0    | 1.1    | 2.1    | 2.1    | 3.2    | 3.2    | 3.2    | 3.2    | 3.2    |
| 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: P867639

CATALOG NUMBER: MEM2-HTN-SA-40-722-U-T3-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 464.5 | 464.5 | 464.5 | 464.5 | 464.5 | 464.5 | 464.5 | 464.5 | 464.5 | 464.5 | 464.5 |
| 2.5°  | 465.6 | 458.1 | 444.1 | 432.3 | 421.6 | 410.9 | 405.5 | 392.7 | 389.4 | 391.6 | 384.1 |
| 5°    | 467.7 | 452.7 | 423.8 | 396.9 | 374.4 | 353.0 | 334.7 | 315.4 | 311.1 | 304.7 | 301.5 |
| 7.5°  | 471.0 | 448.4 | 403.4 | 361.5 | 327.2 | 296.1 | 273.6 | 258.5 | 246.7 | 243.5 | 242.5 |
| 10°   | 475.3 | 443.1 | 380.8 | 328.3 | 281.1 | 248.9 | 228.5 | 217.8 | 213.5 | 210.3 | 211.3 |
| 12.5° | 478.5 | 437.7 | 359.4 | 290.7 | 244.6 | 215.6 | 206.0 | 197.4 | 195.3 | 194.2 | 194.2 |
| 15°   | 482.8 | 432.3 | 333.6 | 257.5 | 213.5 | 196.3 | 186.7 | 183.5 | 183.5 | 182.4 | 182.4 |
| 17.5° | 488.1 | 428.1 | 312.2 | 231.7 | 195.3 | 179.2 | 174.9 | 170.6 | 170.6 | 170.6 | 169.5 |
| 20°   | 498.9 | 425.9 | 292.9 | 210.3 | 179.2 | 168.4 | 162.0 | 158.8 | 157.7 | 156.6 | 156.6 |
| 22.5° | 509.6 | 425.9 | 271.4 | 194.2 | 168.4 | 156.6 | 150.2 | 147.0 | 145.9 | 145.9 | 145.9 |
| 25°   | 524.6 | 424.8 | 254.3 | 180.2 | 158.8 | 144.8 | 138.4 | 135.2 | 133.0 | 133.0 | 132.0 |
| 27.5° | 541.8 | 424.8 | 239.2 | 169.5 | 148.0 | 134.1 | 126.6 | 123.4 | 120.2 | 120.2 | 119.1 |
| 30°   | 558.9 | 427.0 | 226.4 | 160.9 | 137.3 | 124.4 | 114.8 | 110.5 | 108.4 | 107.3 | 107.3 |
| 32.5° | 581.5 | 433.4 | 217.8 | 154.5 | 127.7 | 114.8 | 105.1 | 100.8 | 98.7  | 97.6  | 97.6  |
| 35°   | 615.8 | 449.5 | 218.9 | 151.3 | 121.2 | 106.2 | 96.6  | 91.2  | 90.1  | 90.1  | 89.0  |
| 37.5° | 652.3 | 464.5 | 222.1 | 149.1 | 114.8 | 99.8  | 90.1  | 84.8  | 83.7  | 83.7  | 83.7  |
| 40°   | 683.4 | 477.4 | 226.4 | 148.0 | 109.4 | 93.3  | 84.8  | 80.5  | 78.3  | 78.3  | 78.3  |
| 42.5° | 714.5 | 484.9 | 227.4 | 144.8 | 106.2 | 88.0  | 80.5  | 76.2  | 74.0  | 75.1  | 75.1  |
| 45°   | 745.6 | 490.3 | 224.2 | 140.5 | 103.0 | 83.7  | 76.2  | 71.9  | 69.7  | 69.7  | 69.7  |
| 47.5° | 783.2 | 502.1 | 218.9 | 134.1 | 100.8 | 80.5  | 71.9  | 67.6  | 66.5  | 66.5  | 66.5  |
| 50°   | 820.7 | 511.7 | 214.6 | 126.6 | 95.5  | 76.2  | 68.7  | 63.3  | 62.2  | 62.2  | 62.2  |
| 52.5° | 851.8 | 516.0 | 209.2 | 116.9 | 90.1  | 71.9  | 64.4  | 59.0  | 56.9  | 56.9  | 56.9  |
| 55°   | 875.4 | 517.1 | 201.7 | 109.4 | 82.6  | 67.6  | 60.1  | 54.7  | 52.6  | 51.5  | 51.5  |
| 57.5° | 894.7 | 516.0 | 194.2 | 101.9 | 76.2  | 62.2  | 54.7  | 50.4  | 47.2  | 46.1  | 46.1  |
| 60°   | 905.5 | 512.8 | 183.5 | 92.3  | 67.6  | 56.9  | 50.4  | 45.1  | 42.9  | 41.8  | 41.8  |
| 62.5° | 899.0 | 504.2 | 168.4 | 77.2  | 61.2  | 51.5  | 46.1  | 41.8  | 38.6  | 37.5  | 37.5  |
| 65°   | 869.0 | 487.1 | 149.1 | 63.3  | 54.7  | 46.1  | 41.8  | 37.5  | 33.3  | 32.2  | 32.2  |
| 67.5° | 816.4 | 458.1 | 123.4 | 53.6  | 50.4  | 41.8  | 37.5  | 33.3  | 30.0  | 27.9  | 27.9  |
| 70°   | 743.5 | 419.5 | 96.6  | 46.1  | 45.1  | 38.6  | 34.3  | 30.0  | 26.8  | 24.7  | 24.7  |
| 72.5° | 639.4 | 356.2 | 71.9  | 39.7  | 39.7  | 35.4  | 31.1  | 27.9  | 24.7  | 22.5  | 22.5  |
| 75°   | 517.1 | 269.3 | 54.7  | 36.5  | 35.4  | 32.2  | 27.9  | 24.7  | 22.5  | 20.4  | 20.4  |
| 77.5° | 377.6 | 179.2 | 45.1  | 33.3  | 33.3  | 29.0  | 25.7  | 22.5  | 20.4  | 19.3  | 19.3  |
| 80°   | 229.6 | 103.0 | 32.2  | 25.7  | 25.7  | 24.7  | 21.5  | 19.3  | 18.2  | 16.1  | 15.0  |
| 82.5° | 93.3  | 39.7  | 17.2  | 12.9  | 12.9  | 11.8  | 7.5   | 6.4   | 6.4   | 6.4   | 5.4   |
| 85°   | 9.7   | 6.4   | 4.3   | 3.2   | 3.2   | 3.2   | 2.1   | 2.1   | 2.1   | 2.1   | 2.1   |
| 87.5° | 3.2   | 3.2   | 2.1   | 2.1   | 2.1   | 2.1   | 1.1   | 1.1   | 1.1   | 1.1   | 1.1   |
| 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:  $4\pi$   
 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**

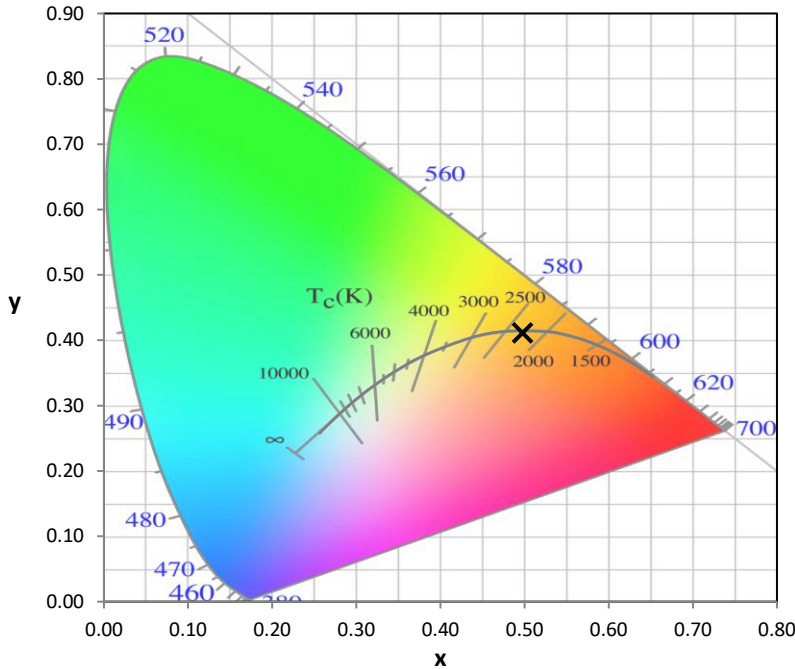
Stabilization Time: 29M  
 Operation Time: 1H 29M  
 Sphere Temperature (°C): 24.1

REPORT NUMBER: SP1-2407-157-2

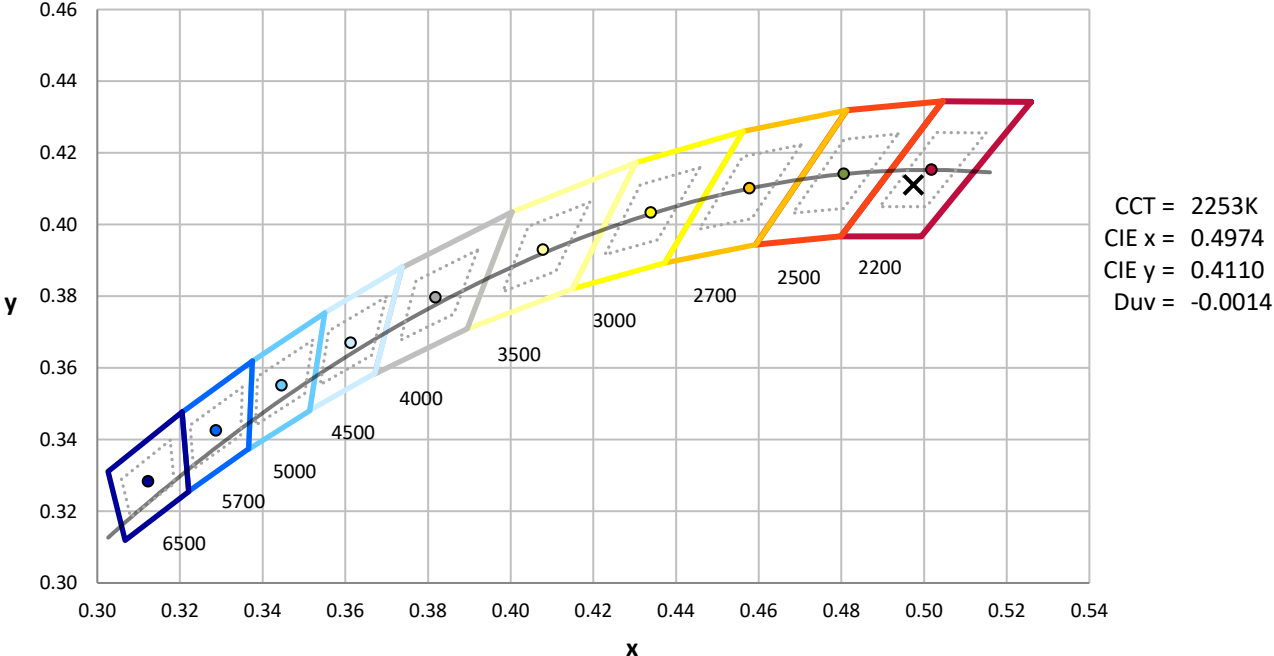
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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**

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

REPORT NUMBER: SP1-2407-157-2

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 0.96**

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

REPORT NUMBER: SP1-2407-157-2

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.71

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

**Summary**

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



**Color Vector Graphics**





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

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



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)