

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: P868063

Luminaire Tested: **MEM2-HSN-SA-110-722-U-T3-HSS**

Issue Date: 08/21/2024



Test Information

Test Method: LM-79-08
Report Number: P868063
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: STREETWORKS
Catalog Number: MEM2-HSN-SA-110-722-U-T3-HSS
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 110W 70CRI 2200K
FITXURE w/ TYPE III DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD
Light Source: (30) 2200K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

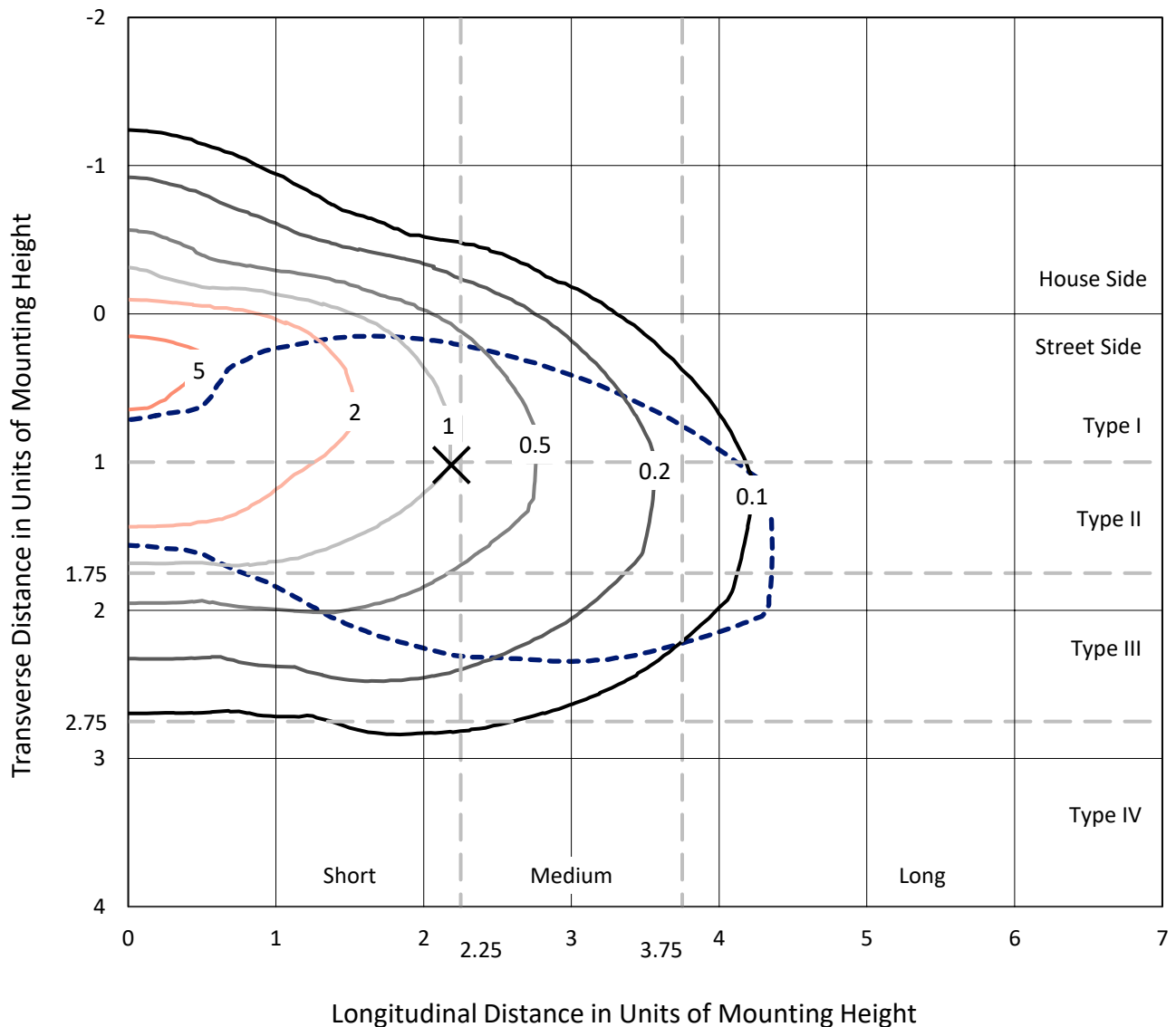
Lumens per Lamp: N/A
Luminaire Lumens: 10144.5 lumens
Efficiency: N/A
Efficacy: 89.8 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')
IES Classification: Type III - Short
BUG Rating: B1 - U0 - G2

Input Watts (W): 113
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 7.77%
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

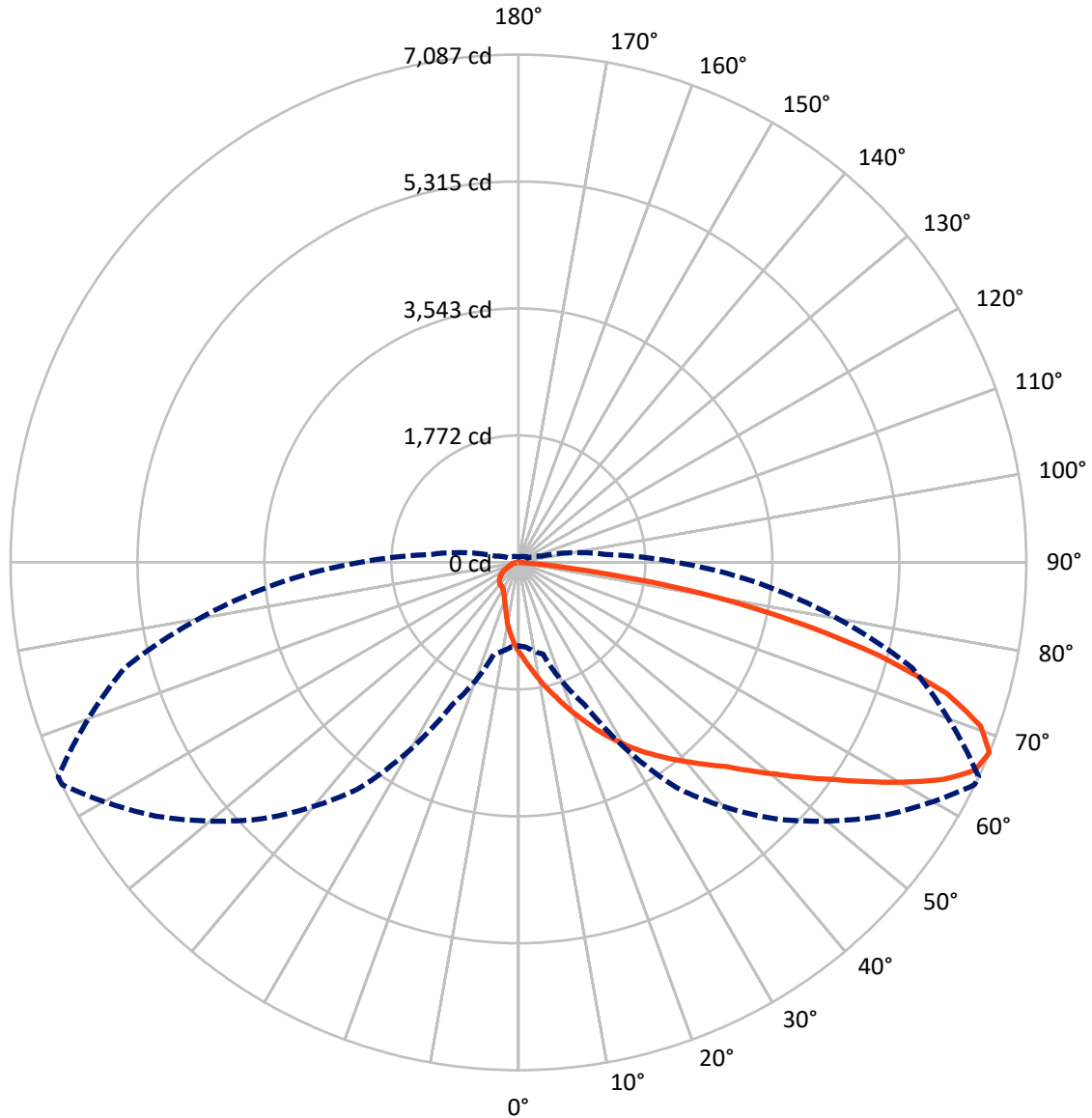
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 5.8 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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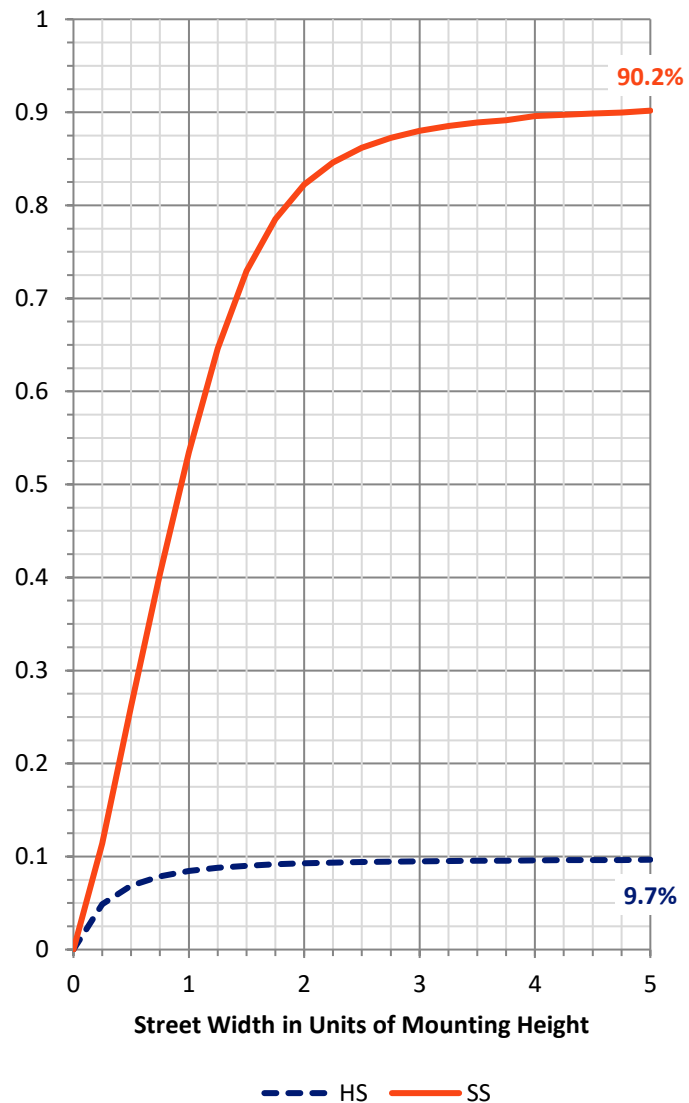
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 987.4 | 0.0 | 987.4 |
| | % Fixture | 9.7 | 0.0 | 9.7 |
| Street Side | Lumens | 9157.1 | 0.0 | 9157.1 |
| | % Fixture | 90.3 | 0.0 | 90.3 |
| Total | Lumens | 10144.5 | 0.0 | 10144.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 122.7 | 1.2 |
| 10°-20° | 407.1 | 4.0 |
| 20°-30° | 740.9 | 7.3 |
| 30°-40° | 1146.6 | 11.3 |
| 40°-50° | 1733.2 | 17.1 |
| 50°-60° | 2254.8 | 22.2 |
| 60°-70° | 2224.4 | 21.9 |
| 70°-80° | 1354.0 | 13.3 |
| 80°-90° | 160.9 | 1.6 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 10144.5 | 100.0 |
| 0°-180° | 10144.5 | 100.0 |



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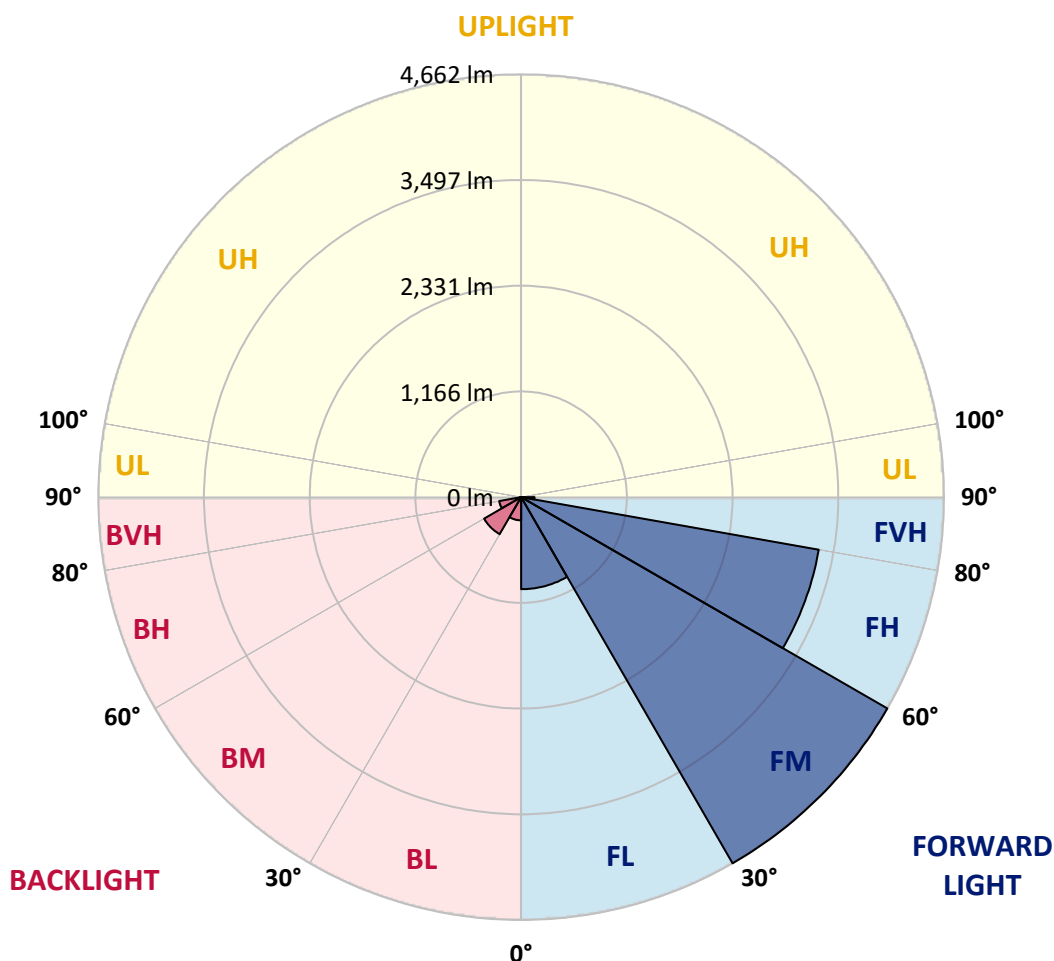
CATALOG NUMBER: MEM2-HSN-SA-110-722-U-T3-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|------|-------------|--------|-----------|-------------------------|------|---------|
| | | | | B | U | G |
| FL | (0°-30°) | 1015.1 | 10.0 | | | |
| FM | (30°-60°) | 4662.4 | 46.0 | | | |
| FH | (60°-80°) | 3332.5 | 32.9 | | | G2/5000 |
| FVH | (80°-90°) | 147.1 | 1.5 | | | G2/225 |
| BL | (0°-30°) | 255.5 | 2.5 | B1/500 | | |
| BM | (30°-60°) | 472.2 | 4.7 | B1/1000 | | |
| BH | (60°-80°) | 245.8 | 2.4 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 13.8 | 0.1 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G2

Type III Short





REPORT NUMBER: P868063

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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 64° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 |
| 2.5° | 1464.9 | 1453.3 | 1462.0 | 1441.7 | 1418.5 | 1401.2 | 1366.4 | 1337.5 | 1334.6 | 1305.6 | 1273.8 |
| 5° | 1745.7 | 1708.0 | 1710.9 | 1670.4 | 1621.2 | 1569.1 | 1514.1 | 1441.7 | 1441.7 | 1372.2 | 1299.9 |
| 7.5° | 1997.5 | 1991.8 | 1965.7 | 1902.0 | 1844.1 | 1763.0 | 1661.7 | 1569.1 | 1548.8 | 1441.7 | 1328.8 |
| 10° | 2240.7 | 2232.0 | 2208.9 | 2159.7 | 2061.2 | 1971.5 | 1844.1 | 1705.1 | 1679.1 | 1525.7 | 1363.5 |
| 12.5° | 2434.7 | 2437.6 | 2411.5 | 2371.0 | 2284.1 | 2177.0 | 2009.1 | 1835.4 | 1812.3 | 1606.7 | 1398.3 |
| 15° | 2605.5 | 2602.6 | 2596.8 | 2562.1 | 2478.1 | 2379.7 | 2182.8 | 1980.2 | 1942.5 | 1693.6 | 1433.0 |
| 17.5° | 2735.8 | 2730.0 | 2718.4 | 2689.4 | 2648.9 | 2553.4 | 2365.2 | 2133.6 | 2101.8 | 1794.9 | 1473.6 |
| 20° | 2773.4 | 2770.5 | 2770.5 | 2790.8 | 2773.4 | 2715.5 | 2547.6 | 2292.8 | 2258.1 | 1902.0 | 1528.6 |
| 22.5° | 2842.9 | 2840.0 | 2837.1 | 2857.4 | 2868.9 | 2863.1 | 2718.4 | 2455.0 | 2423.1 | 2026.5 | 1598.0 |
| 25° | 2932.6 | 2926.8 | 2918.2 | 2938.4 | 2952.9 | 2987.6 | 2889.2 | 2646.0 | 2608.4 | 2171.2 | 1667.5 |
| 27.5° | 3051.3 | 3057.1 | 3045.5 | 3042.6 | 3042.6 | 3062.9 | 3039.7 | 2816.8 | 2782.1 | 2310.2 | 1748.6 |
| 30° | 3207.6 | 3216.3 | 3196.1 | 3181.6 | 3155.5 | 3152.6 | 3158.4 | 3007.9 | 2958.7 | 2460.7 | 1832.5 |
| 32.5° | 3361.1 | 3369.8 | 3358.2 | 3337.9 | 3271.3 | 3245.3 | 3268.4 | 3170.0 | 3138.2 | 2625.8 | 1939.6 |
| 35° | 3485.6 | 3505.8 | 3505.8 | 3465.3 | 3372.7 | 3358.2 | 3395.8 | 3329.2 | 3306.1 | 2819.7 | 2067.0 |
| 37.5° | 3653.5 | 3665.1 | 3653.5 | 3578.2 | 3462.4 | 3479.8 | 3537.7 | 3497.1 | 3482.7 | 3028.2 | 2217.6 |
| 40° | 4012.5 | 4026.9 | 3951.7 | 3772.2 | 3586.9 | 3607.2 | 3708.5 | 3685.3 | 3662.2 | 3233.7 | 2356.5 |
| 42.5° | 4513.3 | 4478.6 | 4464.1 | 4064.6 | 3778.0 | 3766.4 | 3893.8 | 3861.9 | 3859.0 | 3442.1 | 2483.9 |
| 45° | 4843.3 | 4854.9 | 4782.5 | 4403.3 | 4180.4 | 3963.2 | 4099.3 | 4087.7 | 4064.6 | 3653.5 | 2637.3 |
| 47.5° | 5072.0 | 5046.0 | 4866.5 | 4684.1 | 4727.5 | 4220.9 | 4328.0 | 4357.0 | 4342.5 | 3893.8 | 2825.5 |
| 50° | 5167.6 | 5141.5 | 5022.8 | 4901.2 | 4953.3 | 4516.2 | 4562.5 | 4658.0 | 4643.6 | 4136.9 | 2984.7 |
| 52.5° | 5048.9 | 5017.0 | 5025.7 | 5057.5 | 5031.5 | 4747.8 | 4852.0 | 5002.5 | 4985.2 | 4420.7 | 3170.0 |
| 55° | 4293.3 | 4377.2 | 4701.5 | 5025.7 | 5017.0 | 4924.4 | 5161.8 | 5381.8 | 5347.0 | 4715.9 | 3329.2 |
| 57.5° | 3462.4 | 3508.7 | 3919.8 | 4797.0 | 4970.7 | 5072.0 | 5515.0 | 5787.1 | 5775.5 | 5011.2 | 3474.0 |
| 60° | 2753.1 | 2802.4 | 3115.0 | 4322.2 | 4863.6 | 5225.5 | 5876.8 | 6235.8 | 6224.2 | 5309.4 | 3578.2 |
| 62.5° | 2188.6 | 2188.6 | 2466.5 | 3639.0 | 4658.0 | 5315.2 | 6163.4 | 6687.4 | 6667.2 | 5549.7 | 3604.3 |
| 65° | 1574.9 | 1595.1 | 1803.6 | 2926.8 | 4325.1 | 5292.0 | 6302.4 | 7008.8 | 6997.2 | 5685.8 | 3549.3 |
| 67.5° | 1163.8 | 1186.9 | 1325.9 | 2194.4 | 3833.0 | 5060.4 | 6175.0 | 7081.1 | 7086.9 | 5688.7 | 3369.8 |
| 70° | 909.0 | 914.8 | 1019.0 | 1525.7 | 3141.1 | 4545.1 | 5697.3 | 6840.9 | 6840.9 | 5546.8 | 3103.4 |
| 72.5° | 691.9 | 697.7 | 787.4 | 1039.3 | 2313.1 | 3757.7 | 4982.3 | 6204.0 | 6247.4 | 5170.5 | 2709.7 |
| 75° | 535.6 | 547.2 | 607.9 | 746.9 | 1450.4 | 2672.1 | 4093.5 | 5080.7 | 5199.4 | 4440.9 | 2232.0 |
| 77.5° | 414.0 | 425.6 | 474.8 | 547.2 | 845.3 | 1647.2 | 2877.6 | 3798.2 | 3905.3 | 3497.1 | 1722.5 |
| 80° | 332.9 | 338.7 | 370.6 | 411.1 | 512.4 | 848.2 | 1757.3 | 2495.5 | 2527.3 | 2376.8 | 1140.6 |
| 82.5° | 153.4 | 165.0 | 199.8 | 225.8 | 254.8 | 393.7 | 749.8 | 923.5 | 964.0 | 943.8 | 469.0 |
| 85° | 17.4 | 17.4 | 20.3 | 23.2 | 26.1 | 40.5 | 52.1 | 46.3 | 46.3 | 55.0 | 49.2 |
| 87.5° | 0.0 | 0.0 | 0.0 | 2.9 | 5.8 | 5.8 | 8.7 | 8.7 | 8.7 | 8.7 | 8.7 |
| 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: P868063

CATALOG NUMBER: MEM2-HSN-SA-110-722-U-T3-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 | 1253.5 |
| 2.5° | 1256.4 | 1236.2 | 1198.5 | 1166.7 | 1137.7 | 1108.8 | 1094.3 | 1059.6 | 1050.9 | 1056.7 | 1036.4 |
| 5° | 1262.2 | 1221.7 | 1143.5 | 1071.1 | 1010.4 | 952.5 | 903.2 | 851.1 | 839.5 | 822.2 | 813.5 |
| 7.5° | 1270.9 | 1210.1 | 1088.5 | 975.6 | 883.0 | 799.0 | 738.2 | 697.7 | 665.8 | 657.2 | 654.3 |
| 10° | 1282.5 | 1195.6 | 1027.7 | 885.9 | 758.5 | 671.6 | 616.6 | 587.7 | 576.1 | 567.4 | 570.3 |
| 12.5° | 1291.2 | 1181.2 | 969.8 | 784.5 | 660.1 | 581.9 | 555.8 | 532.7 | 526.9 | 524.0 | 524.0 |
| 15° | 1302.7 | 1166.7 | 900.3 | 694.8 | 576.1 | 529.8 | 503.7 | 495.0 | 495.0 | 492.1 | 492.1 |
| 17.5° | 1317.2 | 1155.1 | 842.4 | 625.3 | 526.9 | 483.5 | 471.9 | 460.3 | 460.3 | 460.3 | 457.4 |
| 20° | 1346.2 | 1149.3 | 790.3 | 567.4 | 483.5 | 454.5 | 437.1 | 428.5 | 425.6 | 422.7 | 422.7 |
| 22.5° | 1375.1 | 1149.3 | 732.4 | 524.0 | 454.5 | 422.7 | 405.3 | 396.6 | 393.7 | 393.7 | 393.7 |
| 25° | 1415.7 | 1146.4 | 686.1 | 486.4 | 428.5 | 390.8 | 373.5 | 364.8 | 359.0 | 359.0 | 356.1 |
| 27.5° | 1462.0 | 1146.4 | 645.6 | 457.4 | 399.5 | 361.9 | 341.6 | 332.9 | 324.2 | 324.2 | 321.3 |
| 30° | 1508.3 | 1152.2 | 610.8 | 434.2 | 370.6 | 335.8 | 309.8 | 298.2 | 292.4 | 289.5 | 289.5 |
| 32.5° | 1569.1 | 1169.6 | 587.7 | 416.9 | 344.5 | 309.8 | 283.7 | 272.1 | 266.3 | 263.4 | 263.4 |
| 35° | 1661.7 | 1213.0 | 590.6 | 408.2 | 327.1 | 286.6 | 260.5 | 246.1 | 243.2 | 243.2 | 240.3 |
| 37.5° | 1760.2 | 1253.5 | 599.3 | 402.4 | 309.8 | 269.2 | 243.2 | 228.7 | 225.8 | 225.8 | 225.8 |
| 40° | 1844.1 | 1288.3 | 610.8 | 399.5 | 295.3 | 251.9 | 228.7 | 217.1 | 211.3 | 211.3 | 211.3 |
| 42.5° | 1928.1 | 1308.5 | 613.7 | 390.8 | 286.6 | 237.4 | 217.1 | 205.5 | 199.8 | 202.6 | 202.6 |
| 45° | 2012.0 | 1323.0 | 605.1 | 379.2 | 277.9 | 225.8 | 205.5 | 194.0 | 188.2 | 188.2 | 188.2 |
| 47.5° | 2113.3 | 1354.9 | 590.6 | 361.9 | 272.1 | 217.1 | 194.0 | 182.4 | 179.5 | 179.5 | 179.5 |
| 50° | 2214.7 | 1380.9 | 579.0 | 341.6 | 257.7 | 205.5 | 185.3 | 170.8 | 167.9 | 167.9 | 167.9 |
| 52.5° | 2298.6 | 1392.5 | 564.5 | 315.6 | 243.2 | 194.0 | 173.7 | 159.2 | 153.4 | 153.4 | 153.4 |
| 55° | 2362.3 | 1395.4 | 544.3 | 295.3 | 222.9 | 182.4 | 162.1 | 147.6 | 141.9 | 139.0 | 139.0 |
| 57.5° | 2414.4 | 1392.5 | 524.0 | 275.0 | 205.5 | 167.9 | 147.6 | 136.1 | 127.4 | 124.5 | 124.5 |
| 60° | 2443.4 | 1383.8 | 495.0 | 249.0 | 182.4 | 153.4 | 136.1 | 121.6 | 115.8 | 112.9 | 112.9 |
| 62.5° | 2426.0 | 1360.6 | 454.5 | 208.4 | 165.0 | 139.0 | 124.5 | 112.9 | 104.2 | 101.3 | 101.3 |
| 65° | 2344.9 | 1314.3 | 402.4 | 170.8 | 147.6 | 124.5 | 112.9 | 101.3 | 89.7 | 86.8 | 86.8 |
| 67.5° | 2203.1 | 1236.2 | 332.9 | 144.7 | 136.1 | 112.9 | 101.3 | 89.7 | 81.1 | 75.3 | 75.3 |
| 70° | 2006.2 | 1131.9 | 260.5 | 124.5 | 121.6 | 104.2 | 92.6 | 81.1 | 72.4 | 66.6 | 66.6 |
| 72.5° | 1725.4 | 961.1 | 194.0 | 107.1 | 107.1 | 95.5 | 84.0 | 75.3 | 66.6 | 60.8 | 60.8 |
| 75° | 1395.4 | 726.6 | 147.6 | 98.4 | 95.5 | 86.8 | 75.3 | 66.6 | 60.8 | 55.0 | 55.0 |
| 77.5° | 1019.0 | 483.5 | 121.6 | 89.7 | 89.7 | 78.2 | 69.5 | 60.8 | 55.0 | 52.1 | 52.1 |
| 80° | 619.5 | 277.9 | 86.8 | 69.5 | 69.5 | 66.6 | 57.9 | 52.1 | 49.2 | 43.4 | 40.5 |
| 82.5° | 251.9 | 107.1 | 46.3 | 34.7 | 34.7 | 31.8 | 20.3 | 17.4 | 17.4 | 17.4 | 14.5 |
| 85° | 26.1 | 17.4 | 11.6 | 8.7 | 8.7 | 8.7 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 |
| 87.5° | 8.7 | 8.7 | 5.8 | 5.8 | 5.8 | 5.8 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



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-30-722-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-30-722-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-2
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 08/20/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-SA-30-722-U-5WQ-2**
 Description: Epic Modern Light Square 30W 5WQ Optic and Flare Trim

Spectral Parameters

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

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



Test Conditions

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

REPORT NUMBER: SP1-2407-157-2

| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC Power Source | IN0208 | 10/24/2023 | 10/24/2024 |
| Sphere Thermometer | IN0085 | 10/24/2023 | 10/24/2024 |
| Room Thermometer | IN0046 | 10/24/2023 | 10/24/2024 |

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CIE 1931 Chromaticity Diagram



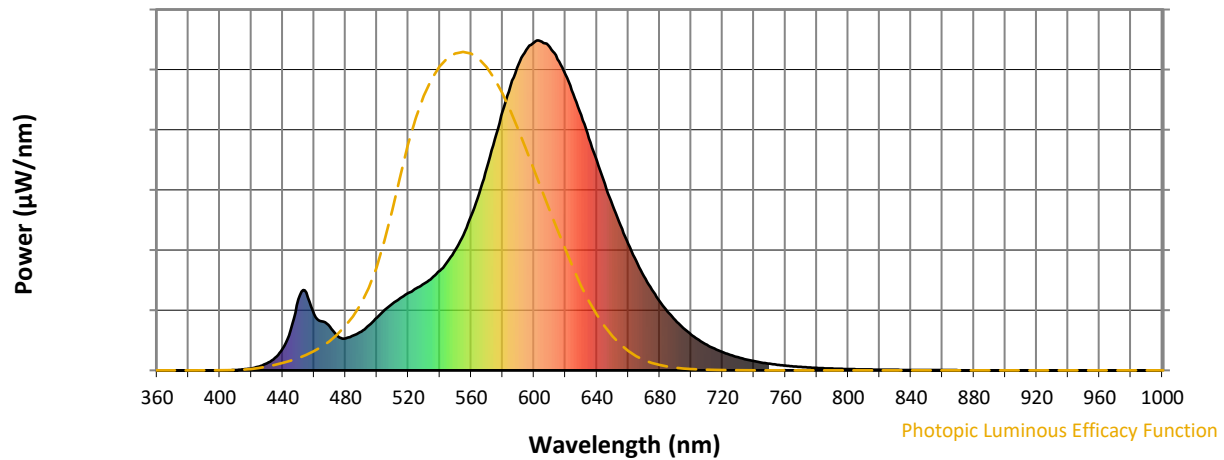
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 2200K 4-step quadrangle

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Photopic Flux vs. Wavelength



Photopic Lumens: NR

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

REPORT NUMBER: SP1-2407-157-2

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 0.96

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

REPORT NUMBER: SP1-2407-157-2

Melanopic Flux vs. Wavelength



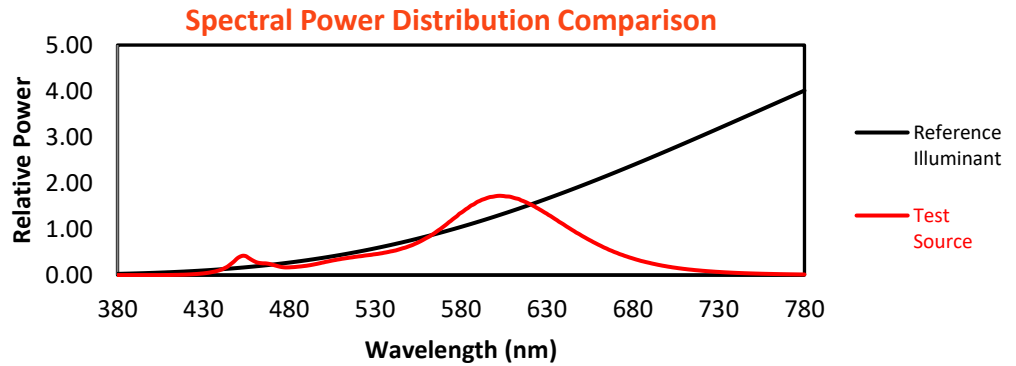
Melanopic Lumens: NR

M/P: 1.71

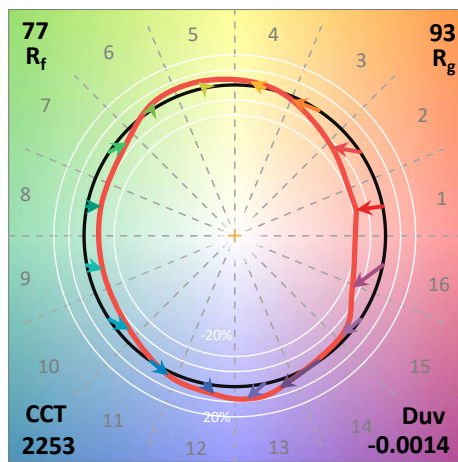
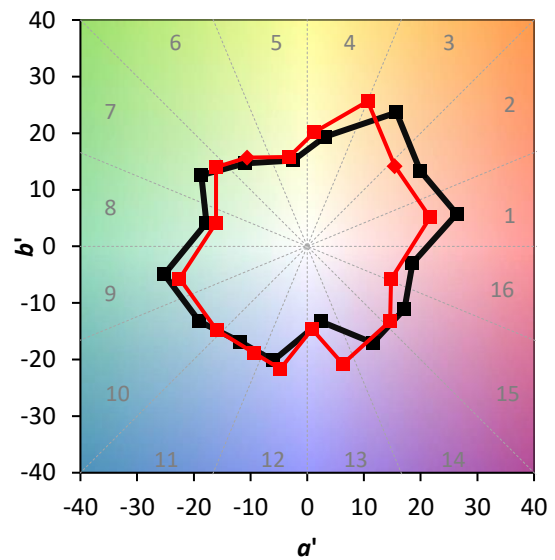
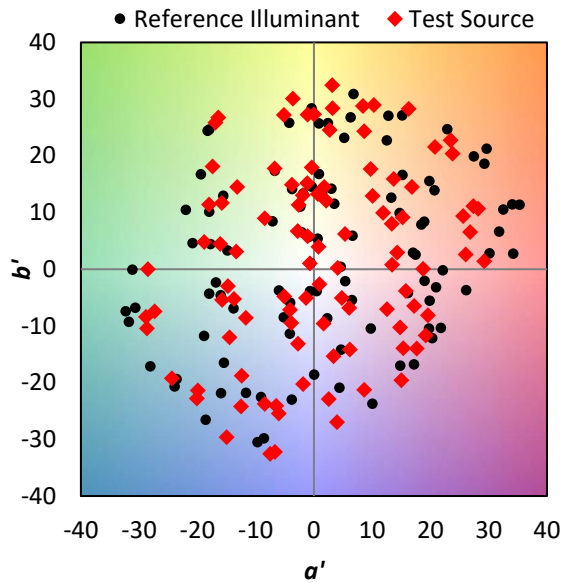
| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|------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

Summary

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

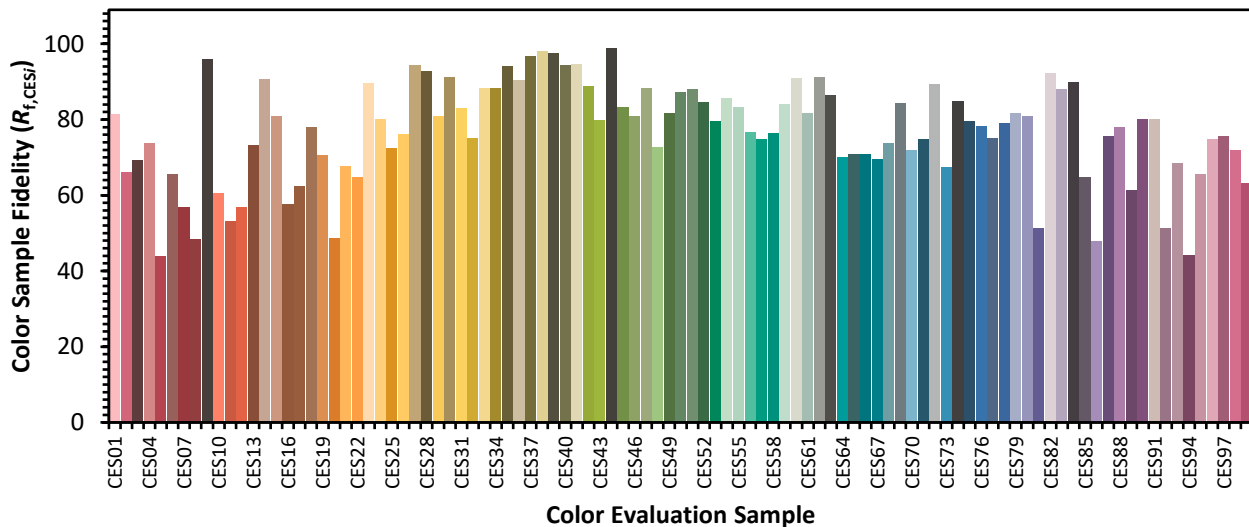


Color Vector Graphics



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

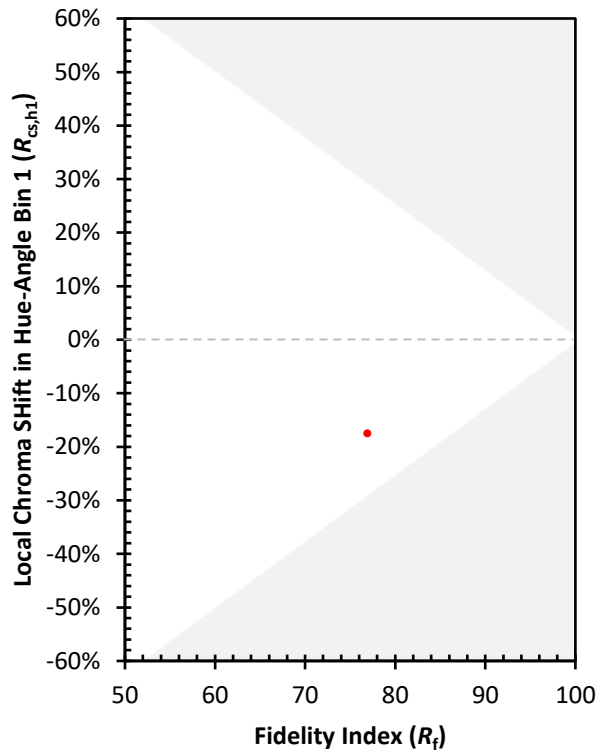
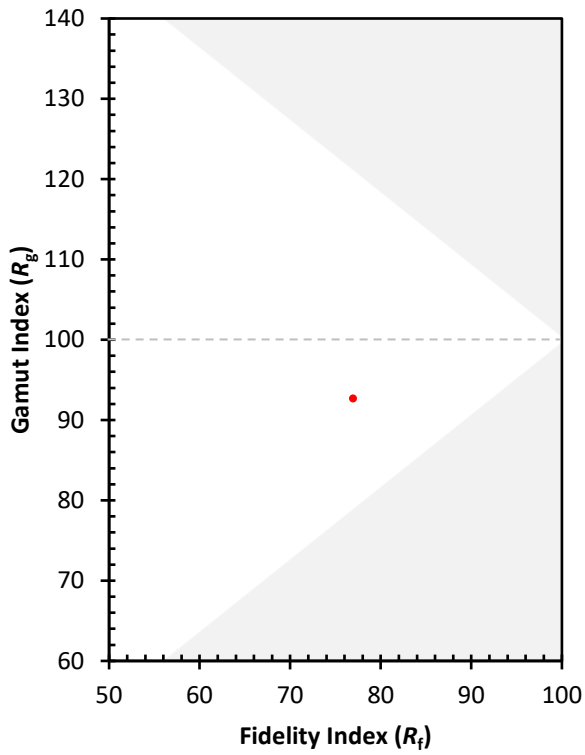
| | | | |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 76 | CES51 = 88 | CES76 = 78 |
| CES02 = 65 | CES27 = 94 | CES52 = 85 | CES77 = 75 |
| CES03 = 32 | CES28 = 93 | CES53 = 80 | CES78 = 79 |
| CES04 = 72 | CES29 = 81 | CES54 = 86 | CES79 = 82 |
| CES05 = 51 | CES30 = 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)