

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: P867864

Luminaire Tested: **MEM2-HSN-SA-60-730-U-T1**

Issue Date: 08/21/2024



Test Information

Test Method: LM-79-08
Report Number: P867864
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: STREETWORKS
Catalog Number: MEM2-HSN-SA-60-730-U-T1
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 60W 70CRI 3000K
FIXTURE w/ TYPE 1 DISTRIBUTION OPTIC
Light Source: (20) 3000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

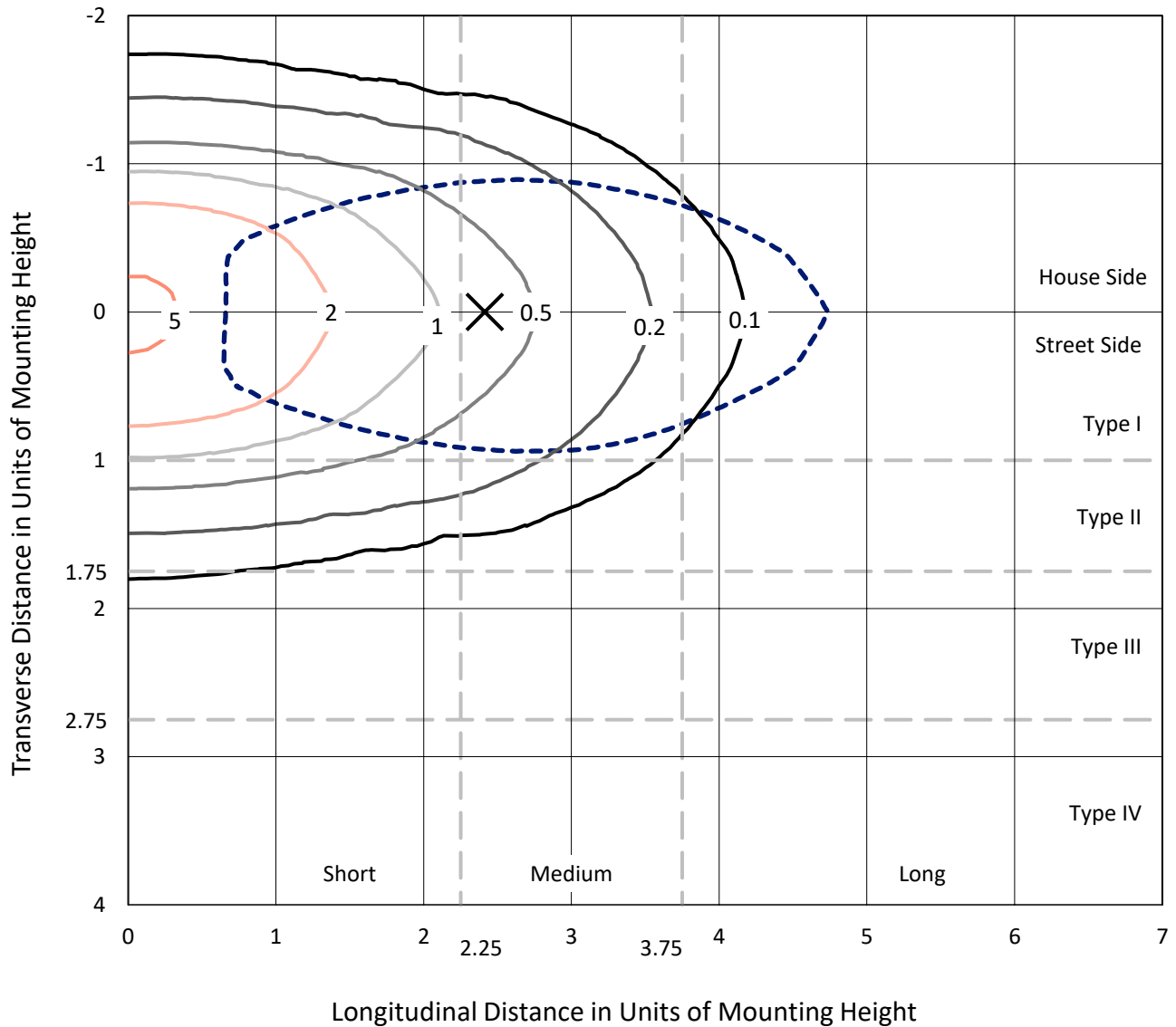
Lumens per Lamp: N/A
Luminaire Lumens: 9147.9 lumens
Efficiency: N/A
Efficacy: 150.0 lumens/watt
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification: Type I - Short
BUG Rating: B3 - U0 - G3

Input Watts (W): 61
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 9.89%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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Iso-Footcandle Lines of Horizontal Illumination

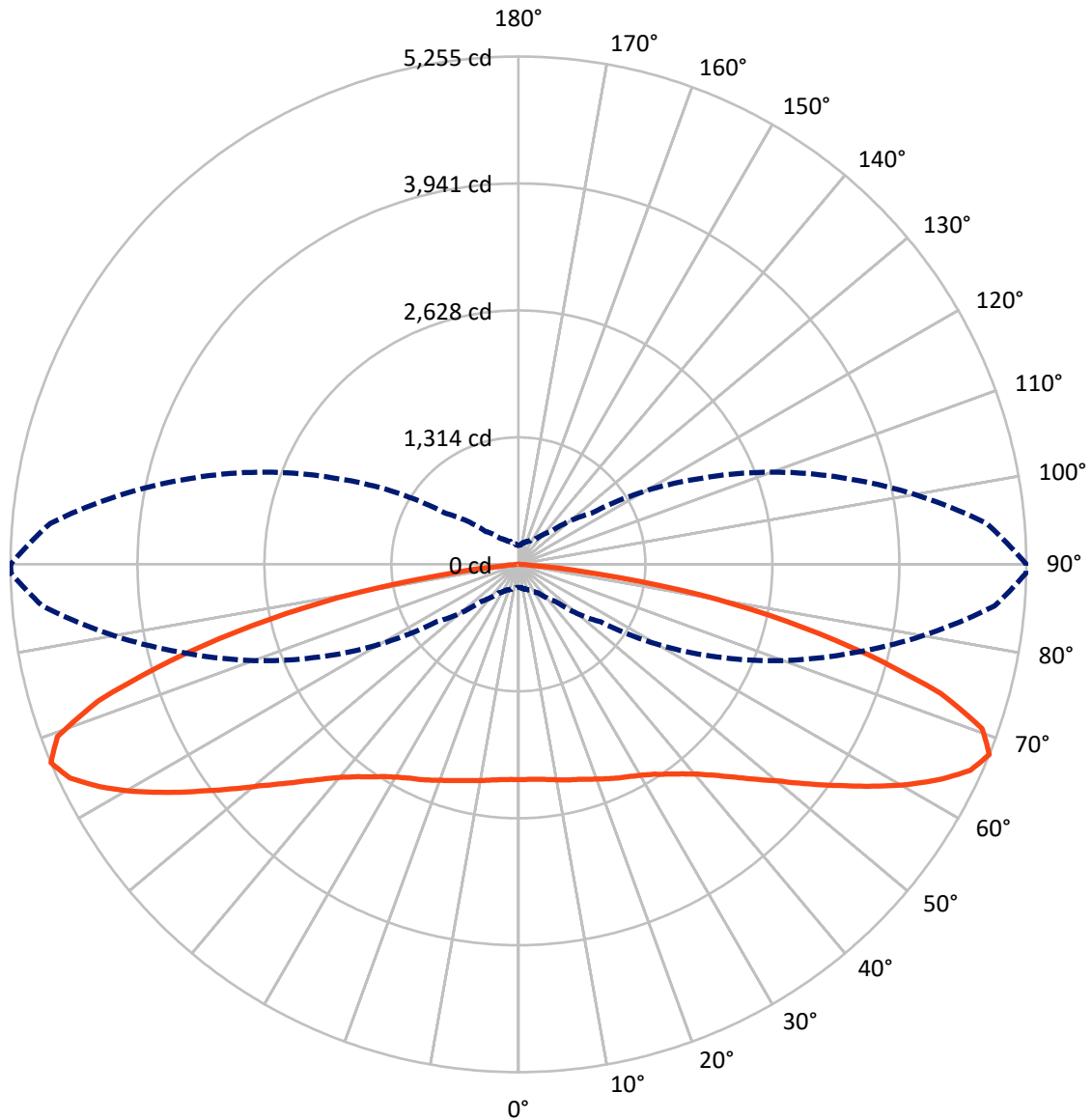
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 5.6 fc
 Type I - Short - N/A

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Luminous Intensity Polar Plot



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

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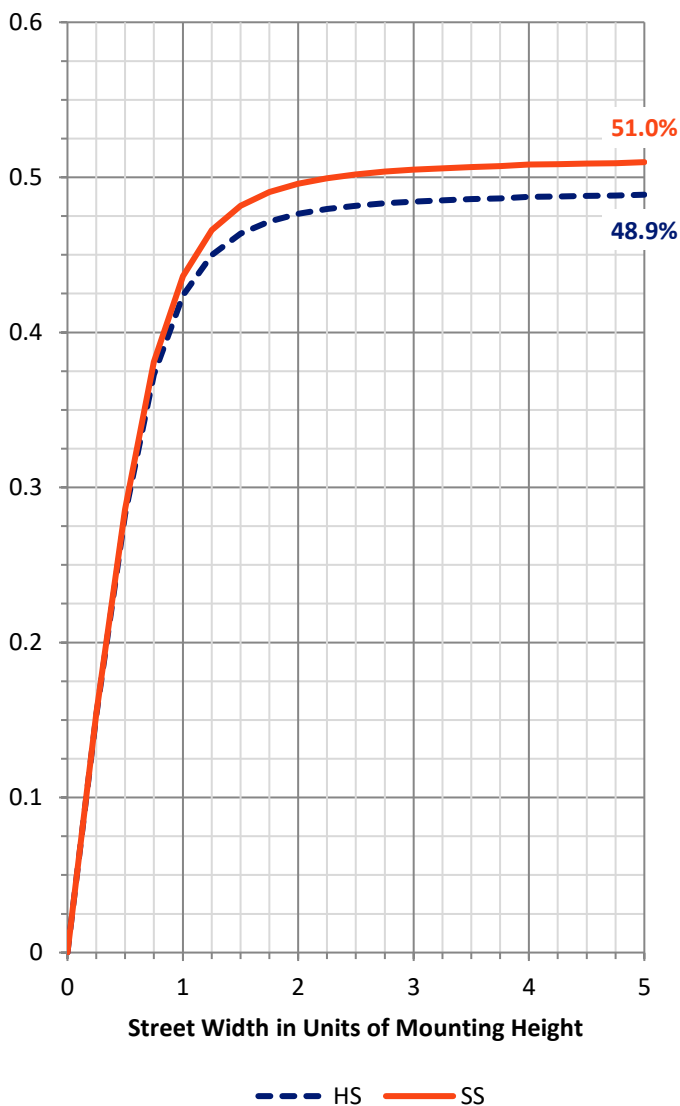
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 4492.7 | 0.0 | 4492.7 |
| | % Fixture | 49.1 | 0.0 | 49.1 |
| Street Side | Lumens | 4655.2 | 0.0 | 4655.2 |
| | % Fixture | 50.9 | 0.0 | 50.9 |
| Total | Lumens | 9147.9 | 0.0 | 9147.9 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 213.6 | 2.3 |
| 10°-20° | 641.9 | 7.0 |
| 20°-30° | 1062.4 | 11.6 |
| 30°-40° | 1408.7 | 15.4 |
| 40°-50° | 1588.3 | 17.4 |
| 50°-60° | 1628.2 | 17.8 |
| 60°-70° | 1537.8 | 16.8 |
| 70°-80° | 943.6 | 10.3 |
| 80°-90° | 123.5 | 1.3 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 9147.9 | 100.0 |
| 0°-180° | 9147.9 | 100.0 |

Coefficient of Utilization



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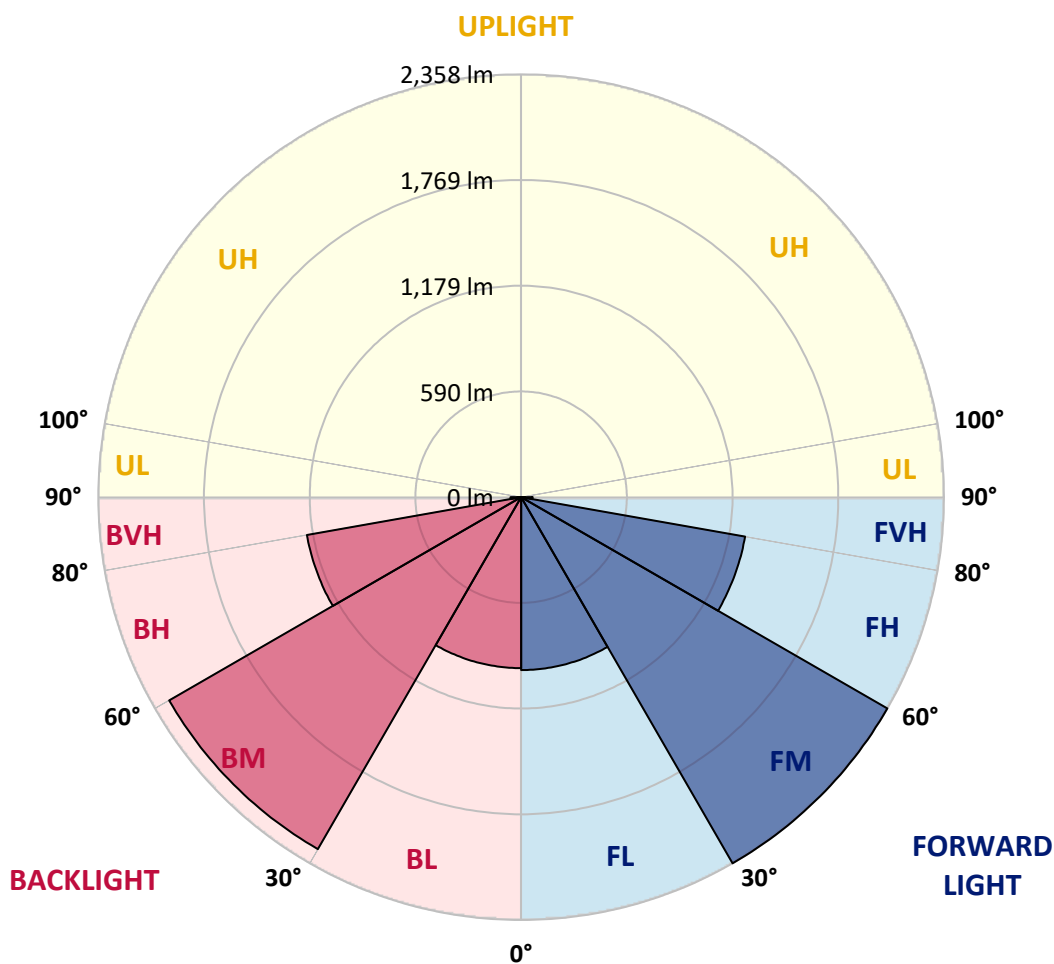
CATALOG NUMBER: MEM2-HSN-SA-60-730-U-T1

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 964.5 | 10.5 | | | |
| FM (30°-60°) | 2358.2 | 25.8 | | | |
| FH (60°-80°) | 1268.2 | 13.9 | | | G1/1800 |
| FVH (80°-90°) | 64.3 | 0.7 | | | G1/100 |
| BL (0°-30°) | 953.4 | 10.4 | B2/1000 | | |
| BM (30°-60°) | 2266.9 | 24.8 | B2/2500 | | |
| BH (60°-80°) | 1213.2 | 13.3 | B3/2500 | | G3/2500 |
| BVH (80°-90°) | 59.2 | 0.6 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G3

Type I Short





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CATALOG NUMBER: MEM2-HSN-SA-60-730-U-T1

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 89° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 |
| 2.5° | 2237.6 | 2237.6 | 2232.4 | 2223.6 | 2221.8 | 2223.6 | 2234.1 | 2228.9 | 2228.9 | 2230.6 | 2228.9 |
| 5° | 2237.6 | 2237.6 | 2234.1 | 2225.3 | 2225.3 | 2225.3 | 2237.6 | 2232.4 | 2234.1 | 2235.9 | 2235.9 |
| 7.5° | 2241.2 | 2241.2 | 2237.6 | 2230.6 | 2230.6 | 2230.6 | 2248.2 | 2244.7 | 2244.7 | 2249.9 | 2246.4 |
| 10° | 2249.9 | 2246.4 | 2242.9 | 2244.7 | 2239.4 | 2248.2 | 2257.0 | 2258.7 | 2265.7 | 2269.3 | 2267.5 |
| 12.5° | 2249.9 | 2246.4 | 2237.6 | 2248.2 | 2248.2 | 2260.5 | 2272.8 | 2279.8 | 2288.6 | 2288.6 | 2288.6 |
| 15° | 2239.4 | 2235.9 | 2228.9 | 2246.4 | 2253.5 | 2269.3 | 2286.8 | 2297.4 | 2313.2 | 2313.2 | 2311.4 |
| 17.5° | 2227.1 | 2221.8 | 2218.3 | 2244.7 | 2260.5 | 2281.6 | 2307.9 | 2322.0 | 2339.5 | 2341.3 | 2337.8 |
| 20° | 2204.3 | 2202.5 | 2204.3 | 2239.4 | 2267.5 | 2297.4 | 2329.0 | 2348.3 | 2371.1 | 2378.2 | 2372.9 |
| 22.5° | 2179.7 | 2179.7 | 2186.7 | 2234.1 | 2278.0 | 2318.4 | 2360.6 | 2385.2 | 2408.0 | 2415.0 | 2408.0 |
| 25° | 2146.3 | 2146.3 | 2160.4 | 2216.6 | 2281.6 | 2341.3 | 2390.5 | 2423.8 | 2444.9 | 2451.9 | 2448.4 |
| 27.5° | 2095.4 | 2095.4 | 2111.2 | 2181.4 | 2271.0 | 2358.8 | 2422.1 | 2460.7 | 2483.5 | 2490.6 | 2487.1 |
| 30° | 2023.4 | 2019.9 | 2040.9 | 2128.7 | 2251.7 | 2378.2 | 2458.9 | 2499.3 | 2529.2 | 2534.5 | 2529.2 |
| 32.5° | 1909.2 | 1914.5 | 1946.1 | 2056.7 | 2220.1 | 2390.5 | 2502.9 | 2550.3 | 2583.7 | 2594.2 | 2590.7 |
| 35° | 1770.4 | 1779.2 | 1823.1 | 1965.4 | 2160.4 | 2388.7 | 2548.5 | 2606.5 | 2650.4 | 2664.4 | 2662.7 |
| 37.5° | 1605.3 | 1617.6 | 1672.1 | 1838.9 | 2070.8 | 2362.3 | 2590.7 | 2669.7 | 2727.7 | 2745.2 | 2748.8 |
| 40° | 1424.4 | 1436.7 | 1507.0 | 1691.4 | 1949.6 | 2300.9 | 2615.3 | 2741.7 | 2819.0 | 2854.1 | 2859.4 |
| 42.5° | 1233.0 | 1254.1 | 1338.4 | 1517.5 | 1803.8 | 2202.5 | 2615.3 | 2812.0 | 2906.8 | 2971.8 | 2977.1 |
| 45° | 1048.6 | 1066.1 | 1168.0 | 1343.6 | 1647.5 | 2076.1 | 2585.4 | 2882.2 | 3026.3 | 3138.7 | 3135.2 |
| 47.5° | 888.7 | 894.0 | 987.1 | 1164.5 | 1473.6 | 1932.0 | 2523.9 | 2945.5 | 3152.7 | 3302.0 | 3333.6 |
| 50° | 723.6 | 735.9 | 815.0 | 990.6 | 1296.2 | 1774.0 | 2420.3 | 2985.9 | 3282.7 | 3509.3 | 3549.7 |
| 52.5° | 607.7 | 609.5 | 669.2 | 830.8 | 1111.8 | 1582.5 | 2295.6 | 2996.4 | 3407.4 | 3734.1 | 3783.3 |
| 55° | 495.3 | 504.1 | 555.0 | 676.2 | 934.4 | 1394.6 | 2134.0 | 2980.6 | 3521.6 | 3951.9 | 4043.2 |
| 57.5° | 425.0 | 426.8 | 463.7 | 560.3 | 788.6 | 1194.3 | 1954.9 | 2927.9 | 3616.4 | 4192.5 | 4308.4 |
| 60° | 365.3 | 365.3 | 393.4 | 467.2 | 637.6 | 999.4 | 1744.1 | 2834.8 | 3669.1 | 4450.7 | 4619.3 |
| 62.5° | 317.9 | 319.7 | 344.3 | 398.7 | 530.4 | 825.5 | 1512.3 | 2689.0 | 3688.4 | 4700.1 | 4893.3 |
| 65° | 288.0 | 289.8 | 303.9 | 340.7 | 437.3 | 670.9 | 1275.1 | 2511.6 | 3662.1 | 4886.3 | 5137.4 |
| 67.5° | 238.9 | 240.6 | 265.2 | 293.3 | 363.6 | 539.2 | 1036.3 | 2265.7 | 3554.9 | 4944.2 | 5251.6 |
| 70° | 182.7 | 187.9 | 221.3 | 251.2 | 302.1 | 430.3 | 795.6 | 1940.8 | 3298.5 | 4747.5 | 5063.7 |
| 72.5° | 152.8 | 154.6 | 179.2 | 212.5 | 252.9 | 337.2 | 604.2 | 1528.1 | 2908.6 | 4239.9 | 4591.2 |
| 75° | 133.5 | 135.2 | 149.3 | 179.2 | 210.8 | 270.5 | 419.8 | 1055.6 | 2320.2 | 3428.5 | 3749.9 |
| 77.5° | 121.2 | 122.9 | 126.5 | 151.0 | 177.4 | 209.0 | 296.8 | 627.0 | 1637.0 | 2620.5 | 2789.2 |
| 80° | 115.9 | 115.9 | 107.1 | 124.7 | 145.8 | 163.3 | 198.5 | 360.1 | 1050.3 | 1766.9 | 1902.2 |
| 82.5° | 82.6 | 80.8 | 73.8 | 77.3 | 89.6 | 89.6 | 101.9 | 149.3 | 402.2 | 746.5 | 809.7 |
| 85° | 5.3 | 5.3 | 8.8 | 10.5 | 15.8 | 21.1 | 26.3 | 35.1 | 101.9 | 138.8 | 144.0 |
| 87.5° | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 3.5 | 3.5 | 3.5 | 5.3 | 7.0 | 7.0 |
| 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: P867864
 CATALOG NUMBER: MEM2-HSN-SA-60-730-U-T1

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 | 2228.9 |
| 2.5° | 2227.1 | 2228.9 | 2228.9 | 2232.4 | 2235.9 | 2234.1 | 2232.4 | 2235.9 | 2230.6 | 2220.1 | 2218.3 |
| 5° | 2234.1 | 2234.1 | 2232.4 | 2235.9 | 2239.4 | 2235.9 | 2232.4 | 2232.4 | 2228.9 | 2218.3 | 2216.6 |
| 7.5° | 2248.2 | 2246.4 | 2246.4 | 2246.4 | 2246.4 | 2241.2 | 2235.9 | 2232.4 | 2227.1 | 2216.6 | 2211.3 |
| 10° | 2267.5 | 2265.7 | 2264.0 | 2262.2 | 2253.5 | 2248.2 | 2239.4 | 2234.1 | 2227.1 | 2214.8 | 2211.3 |
| 12.5° | 2288.6 | 2285.1 | 2281.6 | 2283.3 | 2265.7 | 2249.9 | 2241.2 | 2228.9 | 2223.6 | 2195.5 | 2190.2 |
| 15° | 2309.7 | 2304.4 | 2302.6 | 2295.6 | 2278.0 | 2255.2 | 2237.6 | 2220.1 | 2202.5 | 2176.2 | 2167.4 |
| 17.5° | 2337.8 | 2334.2 | 2323.7 | 2316.7 | 2292.1 | 2260.5 | 2234.1 | 2209.5 | 2186.7 | 2155.1 | 2149.8 |
| 20° | 2371.1 | 2367.6 | 2357.1 | 2343.0 | 2311.4 | 2272.8 | 2235.9 | 2197.2 | 2169.1 | 2132.3 | 2123.5 |
| 22.5° | 2408.0 | 2402.7 | 2394.0 | 2378.2 | 2337.8 | 2292.1 | 2241.2 | 2190.2 | 2148.1 | 2105.9 | 2100.6 |
| 25° | 2446.7 | 2443.1 | 2434.4 | 2411.5 | 2367.6 | 2311.4 | 2241.2 | 2165.6 | 2112.9 | 2076.1 | 2060.2 |
| 27.5° | 2483.5 | 2481.8 | 2471.2 | 2444.9 | 2399.2 | 2325.5 | 2225.3 | 2125.2 | 2055.0 | 2005.8 | 1995.3 |
| 30° | 2531.0 | 2527.4 | 2515.2 | 2485.3 | 2434.4 | 2334.2 | 2193.7 | 2056.7 | 1968.9 | 1914.5 | 1898.7 |
| 32.5° | 2588.9 | 2585.4 | 2567.8 | 2531.0 | 2476.5 | 2336.0 | 2148.1 | 1968.9 | 1853.0 | 1795.0 | 1775.7 |
| 35° | 2666.2 | 2659.2 | 2636.3 | 2592.4 | 2516.9 | 2318.4 | 2067.3 | 1856.5 | 1714.2 | 1638.7 | 1612.4 |
| 37.5° | 2750.5 | 2741.7 | 2711.9 | 2657.4 | 2545.0 | 2271.0 | 1953.1 | 1705.5 | 1543.9 | 1454.3 | 1435.0 |
| 40° | 2854.1 | 2841.8 | 2796.2 | 2720.7 | 2555.6 | 2188.5 | 1824.9 | 1550.9 | 1378.8 | 1280.4 | 1257.6 |
| 42.5° | 2984.1 | 2963.0 | 2889.3 | 2790.9 | 2534.5 | 2076.1 | 1672.1 | 1391.1 | 1194.3 | 1103.0 | 1097.7 |
| 45° | 3140.4 | 3107.1 | 2996.4 | 2859.4 | 2488.8 | 1935.5 | 1510.5 | 1211.9 | 1024.0 | 934.4 | 911.6 |
| 47.5° | 3324.9 | 3284.5 | 3121.1 | 2912.1 | 2399.2 | 1791.5 | 1336.6 | 1038.0 | 865.9 | 774.6 | 757.0 |
| 50° | 3528.6 | 3490.0 | 3252.8 | 2942.0 | 2302.6 | 1622.9 | 1166.2 | 883.5 | 711.3 | 635.8 | 635.8 |
| 52.5° | 3776.2 | 3688.4 | 3379.3 | 2945.5 | 2155.1 | 1436.7 | 1002.9 | 732.4 | 597.2 | 530.4 | 516.4 |
| 55° | 4039.7 | 3936.1 | 3493.5 | 2913.9 | 2002.3 | 1266.4 | 827.3 | 609.5 | 490.0 | 442.6 | 430.3 |
| 57.5° | 4333.0 | 4174.9 | 3576.0 | 2850.6 | 1809.1 | 1080.2 | 690.3 | 502.3 | 412.8 | 374.1 | 368.8 |
| 60° | 4628.1 | 4424.4 | 3625.2 | 2743.5 | 1603.6 | 908.1 | 574.3 | 419.8 | 354.8 | 326.7 | 321.4 |
| 62.5° | 4902.1 | 4628.1 | 3628.7 | 2587.2 | 1403.4 | 757.0 | 470.7 | 361.8 | 314.4 | 293.3 | 293.3 |
| 65° | 5139.2 | 4798.5 | 3569.0 | 2386.9 | 1148.7 | 607.7 | 388.2 | 305.6 | 274.0 | 251.2 | 245.9 |
| 67.5° | 5255.1 | 4863.5 | 3463.6 | 2112.9 | 920.3 | 481.3 | 326.7 | 265.2 | 235.4 | 200.2 | 196.7 |
| 70° | 5091.8 | 4675.5 | 3193.1 | 1761.7 | 711.3 | 382.9 | 272.2 | 226.6 | 196.7 | 166.9 | 163.3 |
| 72.5° | 4570.1 | 4174.9 | 2755.8 | 1364.7 | 535.7 | 309.1 | 226.6 | 193.2 | 161.6 | 145.8 | 142.3 |
| 75° | 3739.4 | 3472.4 | 2177.9 | 939.7 | 374.1 | 242.4 | 189.7 | 163.3 | 137.0 | 130.0 | 128.2 |
| 77.5° | 2838.3 | 2581.9 | 1591.3 | 588.4 | 256.4 | 189.7 | 161.6 | 138.8 | 119.4 | 124.7 | 121.2 |
| 80° | 1895.1 | 1777.5 | 1057.3 | 333.7 | 172.1 | 138.8 | 122.9 | 101.9 | 91.3 | 105.4 | 101.9 |
| 82.5° | 860.6 | 815.0 | 497.1 | 145.8 | 77.3 | 59.7 | 42.2 | 31.6 | 24.6 | 22.8 | 26.3 |
| 85° | 144.0 | 126.5 | 35.1 | 15.8 | 8.8 | 5.3 | 3.5 | 3.5 | 1.8 | 1.8 | 1.8 |
| 87.5° | 7.0 | 5.3 | 5.3 | 3.5 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 0.0 | 0.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-157-4

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-30-730-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-30-730-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-4
 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-30-730-U-5WQ-2**
 Description: Epic Modern Light Square 30W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K): 3057
 CIE u': 0.2487
 CIE v': 0.5199
 Duv: -0.0002
 CIE x: 0.4326
 CIE y: 0.4020
 CIE z: 0.1654
 Peak Wavelength (nm): 593
 Dominant Wavelength (nm): 582
 Purity: 50.50735
 Rf: 74.6
 Rg: 94

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.7 | | |
| R1: | 68.1 | R9: | -34.8 |
| R2: | 82.0 | R10: | 58.5 |
| R3: | 93.5 | R11: | 62.5 |
| R4: | 67.5 | R12: | 47.5 |
| R5: | 67.2 | R13: | 70.7 |
| R6: | 74.9 | R14: | 96.4 |
| R7: | 77.4 | R15: | 60.0 |
| R8: | 43.1 | | |



Test Conditions

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

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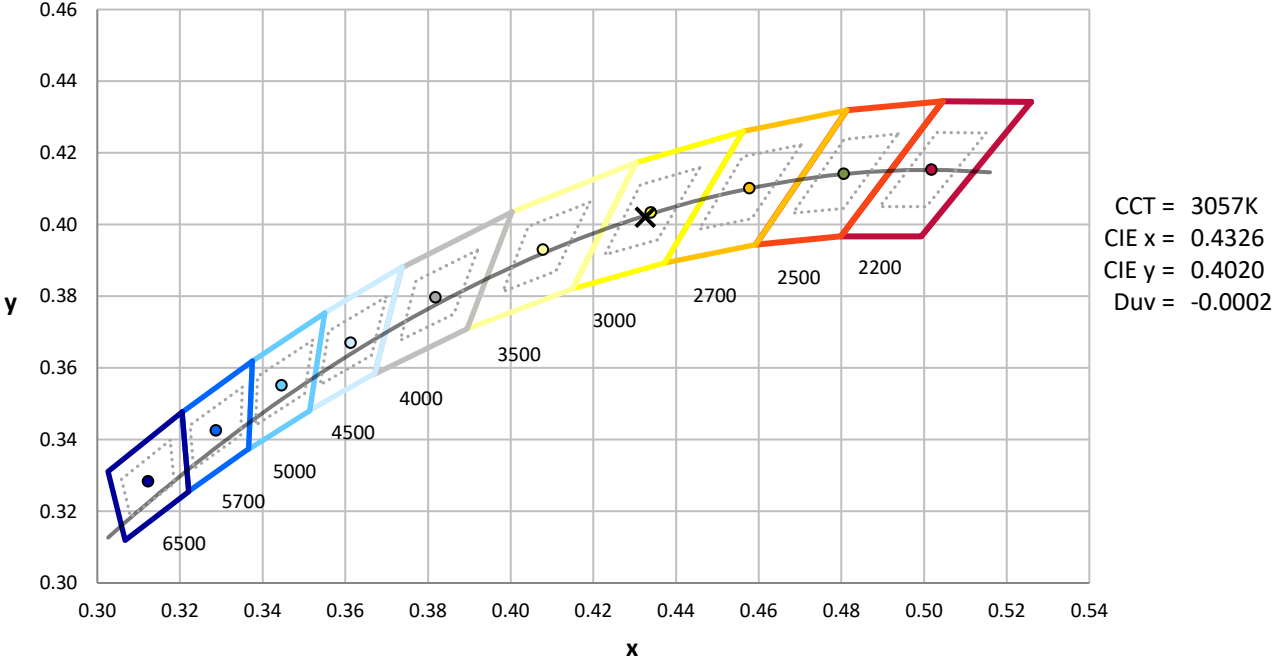
| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 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: SP1-2407-157-4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-157-4

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 | 104 | NR | 620 | 818 | NR | 750 | 20 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 135 | NR | 625 | 755 | NR | 755 | 17 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 184 | NR | 630 | 691 | NR | 760 | 15 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 247 | NR | 635 | 625 | NR | 765 | 13 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 309 | NR | 640 | 561 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 369 | NR | 645 | 499 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 419 | NR | 650 | 441 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 460 | NR | 655 | 388 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 492 | NR | 660 | 338 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 524 | NR | 665 | 294 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 7 | NR | 540 | 553 | NR | 670 | 253 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 15 | NR | 545 | 588 | NR | 675 | 218 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 31 | NR | 550 | 625 | NR | 680 | 188 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 60 | NR | 555 | 670 | NR | 685 | 161 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 107 | NR | 560 | 723 | NR | 690 | 139 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 183 | NR | 565 | 780 | NR | 695 | 118 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 289 | NR | 570 | 837 | NR | 700 | 100 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 460 | NR | 575 | 894 | NR | 705 | 85 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 646 | NR | 580 | 942 | NR | 710 | 73 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 561 | NR | 585 | 976 | NR | 715 | 62 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 331 | NR | 590 | 998 | NR | 720 | 53 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 238 | NR | 595 | 1000 | NR | 725 | 45 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 178 | NR | 600 | 990 | NR | 730 | 39 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 120 | NR | 605 | 962 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 96 | NR | 610 | 925 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 95 | NR | 615 | 873 | NR | 745 | 24 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-157-4

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR S/P: 1.23

| 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 | 104 | NR | 620 | 818 | NR | 750 | 20 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 135 | NR | 625 | 755 | NR | 755 | 17 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 184 | NR | 630 | 691 | NR | 760 | 15 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 247 | NR | 635 | 625 | NR | 765 | 13 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 309 | NR | 640 | 561 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 369 | NR | 645 | 499 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 419 | NR | 650 | 441 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 460 | NR | 655 | 388 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 492 | NR | 660 | 338 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 524 | NR | 665 | 294 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 7 | NR | 540 | 553 | NR | 670 | 253 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 15 | NR | 545 | 588 | NR | 675 | 218 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 31 | NR | 550 | 625 | NR | 680 | 188 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 60 | NR | 555 | 670 | NR | 685 | 161 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 107 | NR | 560 | 723 | NR | 690 | 139 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 183 | NR | 565 | 780 | NR | 695 | 118 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 289 | NR | 570 | 837 | NR | 700 | 100 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 460 | NR | 575 | 894 | NR | 705 | 85 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 646 | NR | 580 | 942 | NR | 710 | 73 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 561 | NR | 585 | 976 | NR | 715 | 62 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 331 | NR | 590 | 998 | NR | 720 | 53 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 238 | NR | 595 | 1000 | NR | 725 | 45 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 178 | NR | 600 | 990 | NR | 730 | 39 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 120 | NR | 605 | 962 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 96 | NR | 610 | 925 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 95 | NR | 615 | 873 | NR | 745 | 24 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-157-4

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.27

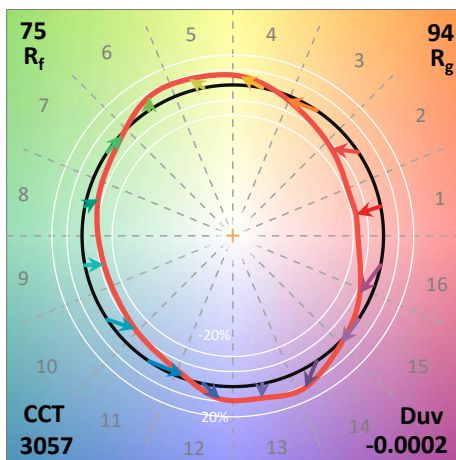
| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 104 | NR | 620 | 818 | NR | 750 | 20 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 135 | NR | 625 | 755 | NR | 755 | 17 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 184 | NR | 630 | 691 | NR | 760 | 15 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 247 | NR | 635 | 625 | NR | 765 | 13 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 309 | NR | 640 | 561 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 369 | NR | 645 | 499 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 419 | NR | 650 | 441 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 460 | NR | 655 | 388 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 492 | NR | 660 | 338 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 524 | NR | 665 | 294 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 7 | NR | 540 | 553 | NR | 670 | 253 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 15 | NR | 545 | 588 | NR | 675 | 218 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 31 | NR | 550 | 625 | NR | 680 | 188 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 60 | NR | 555 | 670 | NR | 685 | 161 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 107 | NR | 560 | 723 | NR | 690 | 139 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 183 | NR | 565 | 780 | NR | 695 | 118 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 289 | NR | 570 | 837 | NR | 700 | 100 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 460 | NR | 575 | 894 | NR | 705 | 85 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 646 | NR | 580 | 942 | NR | 710 | 73 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 561 | NR | 585 | 976 | NR | 715 | 62 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 331 | NR | 590 | 998 | NR | 720 | 53 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 238 | NR | 595 | 1000 | NR | 725 | 45 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 178 | NR | 600 | 990 | NR | 730 | 39 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 120 | NR | 605 | 962 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 96 | NR | 610 | 925 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 95 | NR | 615 | 873 | NR | 745 | 24 | NR | 875 | 1 | NR | | | |

Summary

$R_f = 74.6$
 $R_g = 94$
 $CIE R_a = 71.7$
 $R_g = -34.8$

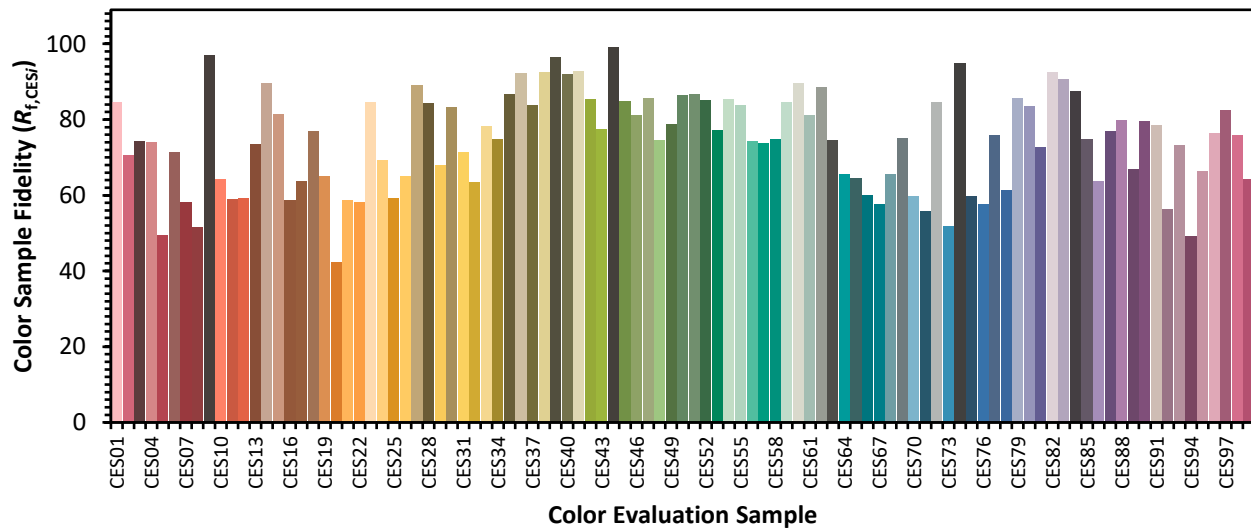


Color Vector Graphics

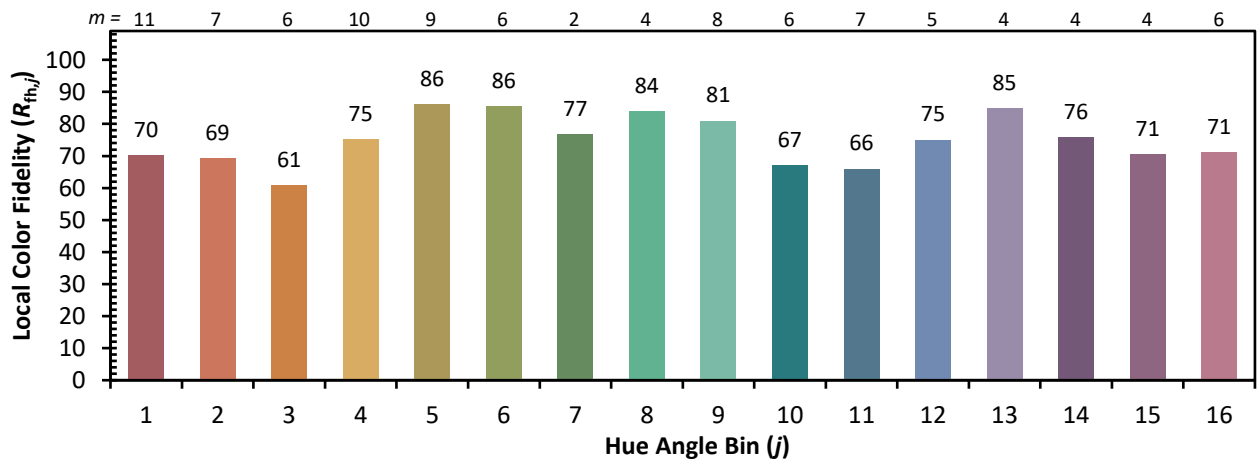


Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 65 | CES51 = 87 | CES76 = 58 |
| CES02 = 62 | CES27 = 89 | CES52 = 85 | CES77 = 76 |
| CES03 = 31 | CES28 = 84 | CES53 = 77 | CES78 = 61 |
| CES04 = 71 | CES29 = 68 | CES54 = 85 | CES79 = 86 |
| CES05 = 49 | CES30 = 83 | CES55 = 84 | CES80 = 83 |
| CES06 = 51 | CES31 = 71 | CES56 = 74 | CES81 = 73 |
| CES07 = 41 | CES32 = 64 | CES57 = 74 | CES82 = 93 |
| CES08 = 40 | CES33 = 78 | CES58 = 75 | CES83 = 91 |
| CES09 = 29 | CES34 = 75 | CES59 = 85 | CES84 = 88 |
| CES10 = 76 | CES35 = 87 | CES60 = 90 | CES85 = 75 |
| CES11 = 59 | CES36 = 92 | CES61 = 81 | CES86 = 64 |
| CES12 = 65 | CES37 = 84 | CES62 = 89 | CES87 = 77 |
| CES13 = 43 | CES38 = 92 | CES63 = 75 | CES88 = 80 |
| CES14 = 74 | CES39 = 96 | CES64 = 65 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 64 | CES90 = 80 |
| CES16 = 47 | CES41 = 93 | CES66 = 60 | CES91 = 78 |
| CES17 = 50 | CES42 = 86 | CES67 = 58 | CES92 = 56 |
| CES18 = 56 | CES43 = 77 | CES68 = 66 | CES93 = 73 |
| CES19 = 73 | CES44 = 99 | CES69 = 75 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 60 | CES95 = 66 |
| CES21 = 87 | CES46 = 81 | CES71 = 56 | CES96 = 76 |
| CES22 = 79 | CES47 = 86 | CES72 = 85 | CES97 = 82 |
| CES23 = 92 | CES48 = 75 | CES73 = 52 | CES98 = 76 |
| CES24 = 91 | CES49 = 79 | CES74 = 95 | CES99 = 64 |
| CES25 = 73 | CES50 = 86 | CES75 = 60 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)