

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: INVUE

Report Number: P868790

Luminaire Tested: **EMM2-HSN-SA2A-750-U-T1**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P868790
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-SA2A-750-U-T1
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 70W 70CRI 5000K
FIXTURE w/ TYPE 1 DISTRIBUTION OPTIC
Light Source: (20) 5000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

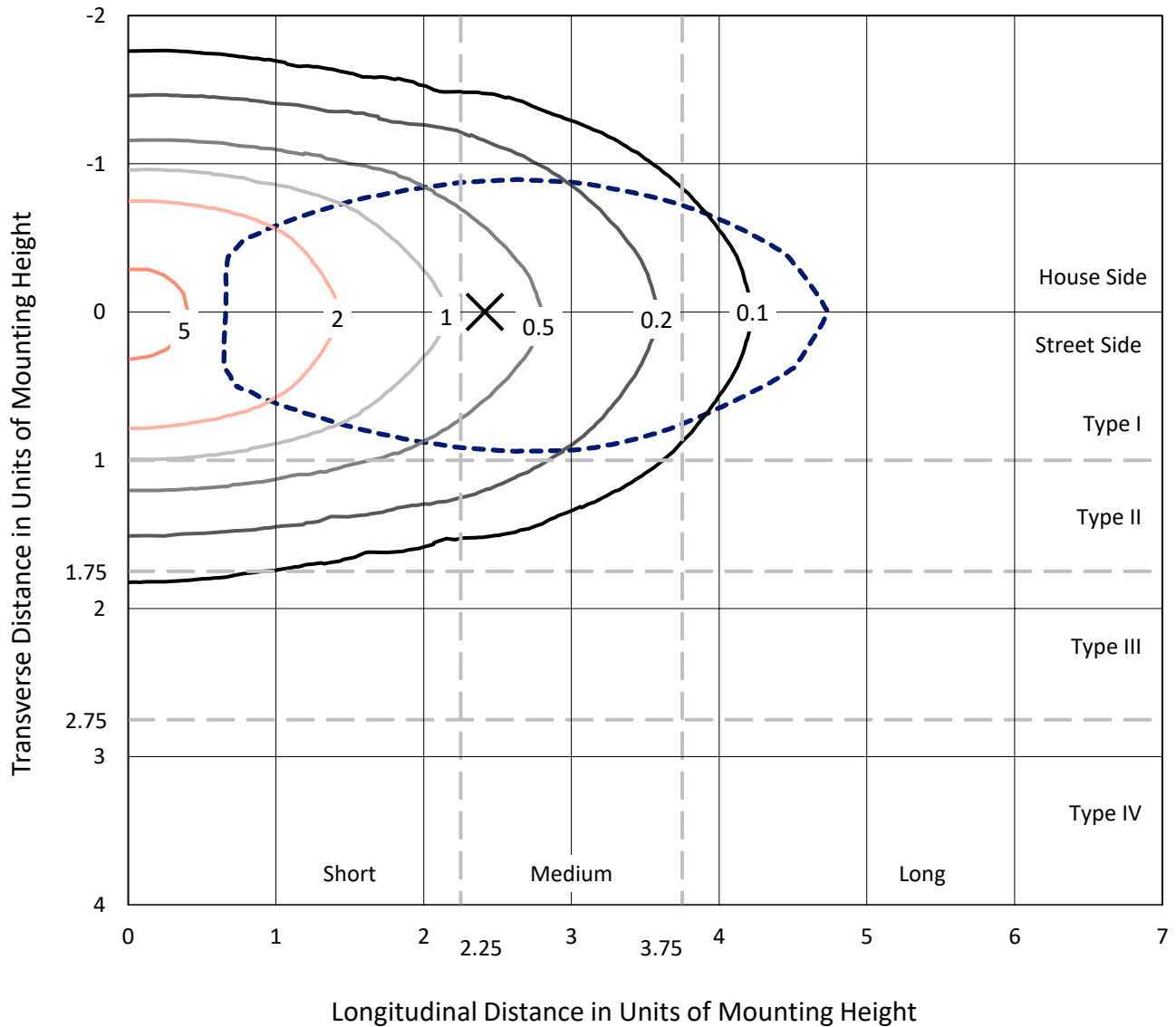
Lumens per Lamp: N/A
Luminaire Lumens: 9572.7 lumens
Efficiency: N/A
Efficacy: 156.9 lumens/watt
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification: Type I - Short
BUG Rating: B3 - U0 - G3

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

REPORT NUMBER: P868790
 CATALOG NUMBER: EMM2-HSN-SA2A-750-U-T1

Iso-Footcandle Lines of Horizontal Illumination

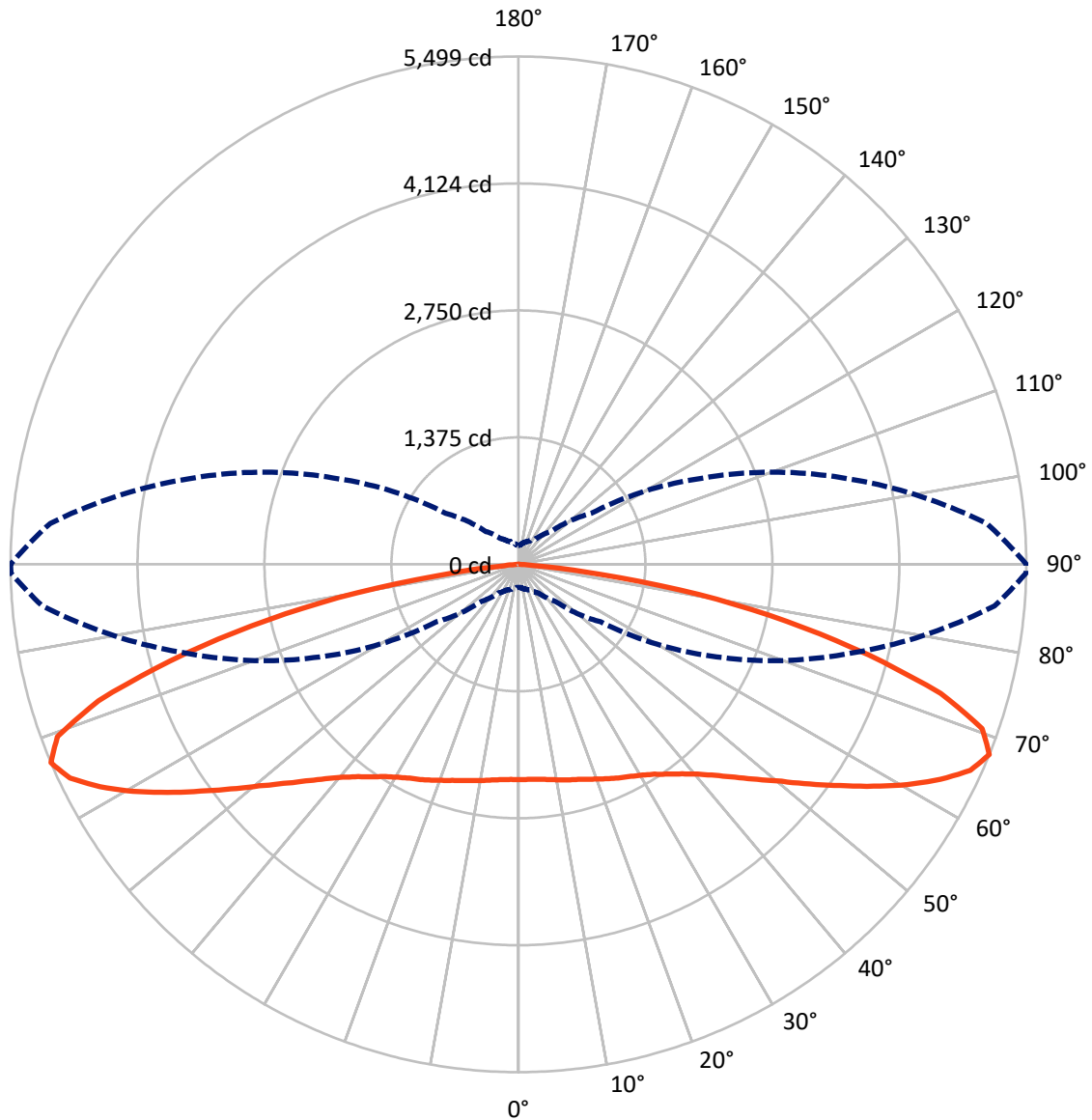
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 5.8 fc
 Type I - Short - N/A

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CATALOG NUMBER: EMM2-HSN-SA2A-750-U-T1

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 | 4701.4 | 0.0 | 4701.4 |
| | % Fixture | 49.1 | 0.0 | 49.1 |
| Street Side | Lumens | 4871.4 | 0.0 | 4871.4 |
| | % Fixture | 50.9 | 0.0 | 50.9 |
| Total | Lumens | 9572.7 | 0.0 | 9572.7 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 223.5 | 2.3 |
| 10°-20° | 671.7 | 7.0 |
| 20°-30° | 1111.7 | 11.6 |
| 30°-40° | 1474.1 | 15.4 |
| 40°-50° | 1662.0 | 17.4 |
| 50°-60° | 1703.8 | 17.8 |
| 60°-70° | 1609.2 | 16.8 |
| 70°-80° | 987.4 | 10.3 |
| 80°-90° | 129.2 | 1.3 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 9572.7 | 100.0 |
| 0°-180° | 9572.7 | 100.0 |



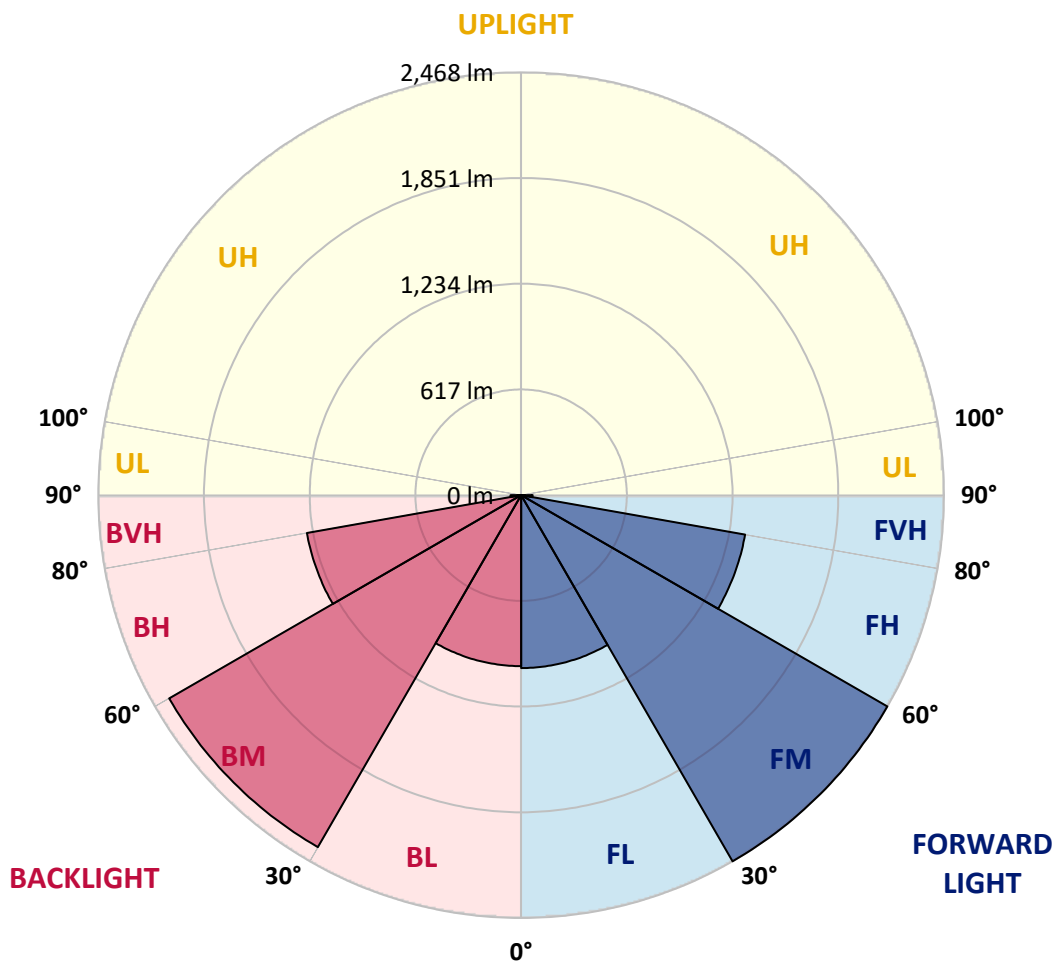
REPORT NUMBER: P868790
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1009.2 | 10.5 | | | |
| FM (30°-60°) | 2467.7 | 25.8 | | | |
| FH (60°-80°) | 1327.1 | 13.9 | | | G1/1800 |
| FVH (80°-90°) | 67.3 | 0.7 | | | G1/100 |
| BL (0°-30°) | 997.7 | 10.4 | B2/1000 | | |
| BM (30°-60°) | 2372.2 | 24.8 | B2/2500 | | |
| BH (60°-80°) | 1269.6 | 13.3 | B3/2500 | | G3/2500 |
| BVH (80°-90°) | 61.9 | 0.6 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G3

Type I Short





REPORT NUMBER: P868790

CATALOG NUMBER: EMM2-HSN-SA2A-750-U-T1

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 89° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 |
| 2.5° | 2341.6 | 2341.6 | 2336.1 | 2326.9 | 2325.0 | 2326.9 | 2337.9 | 2332.4 | 2332.4 | 2334.2 | 2332.4 |
| 5° | 2341.6 | 2341.6 | 2337.9 | 2328.7 | 2328.7 | 2328.7 | 2341.6 | 2336.1 | 2337.9 | 2339.7 | 2339.7 |
| 7.5° | 2345.2 | 2345.2 | 2341.6 | 2334.2 | 2334.2 | 2334.2 | 2352.6 | 2348.9 | 2348.9 | 2354.4 | 2350.8 |
| 10° | 2354.4 | 2350.8 | 2347.1 | 2348.9 | 2343.4 | 2352.6 | 2361.8 | 2363.6 | 2371.0 | 2374.6 | 2372.8 |
| 12.5° | 2354.4 | 2350.8 | 2341.6 | 2352.6 | 2352.6 | 2365.5 | 2378.3 | 2385.7 | 2394.9 | 2394.9 | 2394.9 |
| 15° | 2343.4 | 2339.7 | 2332.4 | 2350.8 | 2358.1 | 2374.6 | 2393.0 | 2404.1 | 2420.6 | 2420.6 | 2418.8 |
| 17.5° | 2330.5 | 2325.0 | 2321.3 | 2348.9 | 2365.5 | 2387.5 | 2415.1 | 2429.8 | 2448.2 | 2450.0 | 2446.3 |
| 20° | 2306.6 | 2304.8 | 2306.6 | 2343.4 | 2372.8 | 2404.1 | 2437.1 | 2457.4 | 2481.3 | 2488.6 | 2483.1 |
| 22.5° | 2280.9 | 2280.9 | 2288.3 | 2337.9 | 2383.8 | 2426.1 | 2470.2 | 2496.0 | 2519.8 | 2527.2 | 2519.8 |
| 25° | 2246.0 | 2246.0 | 2260.7 | 2319.5 | 2387.5 | 2450.0 | 2501.5 | 2536.4 | 2558.4 | 2565.8 | 2562.1 |
| 27.5° | 2192.7 | 2192.7 | 2209.2 | 2282.8 | 2376.5 | 2468.4 | 2534.6 | 2575.0 | 2598.9 | 2606.2 | 2602.6 |
| 30° | 2117.3 | 2113.7 | 2135.7 | 2227.6 | 2356.3 | 2488.6 | 2573.1 | 2615.4 | 2646.7 | 2652.2 | 2646.7 |
| 32.5° | 1997.9 | 2003.4 | 2036.5 | 2152.3 | 2323.2 | 2501.5 | 2619.1 | 2668.7 | 2703.6 | 2714.7 | 2711.0 |
| 35° | 1852.7 | 1861.9 | 1907.8 | 2056.7 | 2260.7 | 2499.6 | 2666.9 | 2727.5 | 2773.5 | 2788.2 | 2786.4 |
| 37.5° | 1679.9 | 1692.8 | 1749.7 | 1924.3 | 2167.0 | 2472.1 | 2711.0 | 2793.7 | 2854.4 | 2872.7 | 2876.4 |
| 40° | 1490.6 | 1503.5 | 1577.0 | 1770.0 | 2040.1 | 2407.7 | 2736.7 | 2869.1 | 2949.9 | 2986.7 | 2992.2 |
| 42.5° | 1290.3 | 1312.3 | 1400.5 | 1588.0 | 1887.6 | 2304.8 | 2736.7 | 2942.6 | 3041.8 | 3109.8 | 3115.3 |
| 45° | 1097.3 | 1115.6 | 1222.2 | 1406.0 | 1724.0 | 2172.5 | 2705.5 | 3016.1 | 3166.8 | 3284.4 | 3280.8 |
| 47.5° | 930.0 | 935.5 | 1032.9 | 1218.6 | 1542.1 | 2021.8 | 2641.2 | 3082.3 | 3299.1 | 3455.4 | 3488.5 |
| 50° | 757.2 | 770.1 | 852.8 | 1036.6 | 1356.4 | 1856.3 | 2532.7 | 3124.5 | 3435.2 | 3672.3 | 3714.5 |
| 52.5° | 635.9 | 637.8 | 700.3 | 869.4 | 1163.4 | 1656.0 | 2402.2 | 3135.6 | 3565.6 | 3907.5 | 3959.0 |
| 55° | 518.3 | 527.5 | 580.8 | 707.6 | 977.8 | 1459.3 | 2233.1 | 3119.0 | 3685.1 | 4135.4 | 4231.0 |
| 57.5° | 444.8 | 446.6 | 485.2 | 586.3 | 825.2 | 1249.8 | 2045.7 | 3063.9 | 3784.4 | 4387.2 | 4508.5 |
| 60° | 382.3 | 382.3 | 411.7 | 488.9 | 667.2 | 1045.8 | 1825.1 | 2966.5 | 3839.5 | 4657.4 | 4833.8 |
| 62.5° | 332.7 | 334.5 | 360.2 | 417.2 | 555.1 | 863.8 | 1582.5 | 2813.9 | 3859.7 | 4918.4 | 5120.6 |
| 65° | 301.4 | 303.3 | 318.0 | 356.6 | 457.7 | 702.1 | 1334.4 | 2628.3 | 3832.2 | 5113.2 | 5376.0 |
| 67.5° | 250.0 | 251.8 | 277.5 | 306.9 | 380.5 | 564.3 | 1084.4 | 2371.0 | 3720.0 | 5173.9 | 5495.5 |
| 70° | 191.1 | 196.7 | 231.6 | 262.8 | 316.1 | 450.3 | 832.6 | 2031.0 | 3451.7 | 4968.0 | 5298.8 |
| 72.5° | 159.9 | 161.7 | 187.5 | 222.4 | 264.7 | 352.9 | 632.3 | 1599.0 | 3043.7 | 4436.8 | 4804.4 |
| 75° | 139.7 | 141.5 | 156.2 | 187.5 | 220.6 | 283.0 | 439.3 | 1104.6 | 2428.0 | 3587.7 | 3924.1 |
| 77.5° | 126.8 | 128.7 | 132.3 | 158.1 | 185.6 | 218.7 | 310.6 | 656.2 | 1713.0 | 2742.2 | 2918.7 |
| 80° | 121.3 | 121.3 | 112.1 | 130.5 | 152.6 | 170.9 | 207.7 | 376.8 | 1099.1 | 1849.0 | 1990.5 |
| 82.5° | 86.4 | 84.5 | 77.2 | 80.9 | 93.7 | 93.7 | 106.6 | 156.2 | 420.9 | 781.1 | 847.3 |
| 85° | 5.5 | 5.5 | 9.2 | 11.0 | 16.5 | 22.1 | 27.6 | 36.8 | 106.6 | 145.2 | 150.7 |
| 87.5° | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 3.7 | 3.7 | 3.7 | 5.5 | 7.4 | 7.4 |
| 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: P868790
 CATALOG NUMBER: EMM2-HSN-SA2A-750-U-T1

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 | 2332.4 |
| 2.5° | 2330.5 | 2332.4 | 2332.4 | 2336.1 | 2339.7 | 2337.9 | 2336.1 | 2339.7 | 2334.2 | 2323.2 | 2321.3 |
| 5° | 2337.9 | 2337.9 | 2336.1 | 2339.7 | 2343.4 | 2339.7 | 2336.1 | 2336.1 | 2332.4 | 2321.3 | 2319.5 |
| 7.5° | 2352.6 | 2350.8 | 2350.8 | 2350.8 | 2350.8 | 2345.2 | 2339.7 | 2336.1 | 2330.5 | 2319.5 | 2314.0 |
| 10° | 2372.8 | 2371.0 | 2369.1 | 2367.3 | 2358.1 | 2352.6 | 2343.4 | 2337.9 | 2330.5 | 2317.7 | 2314.0 |
| 12.5° | 2394.9 | 2391.2 | 2387.5 | 2389.4 | 2371.0 | 2354.4 | 2345.2 | 2332.4 | 2326.9 | 2297.5 | 2291.9 |
| 15° | 2416.9 | 2411.4 | 2409.6 | 2402.2 | 2383.8 | 2359.9 | 2341.6 | 2323.2 | 2304.8 | 2277.2 | 2268.0 |
| 17.5° | 2446.3 | 2442.7 | 2431.6 | 2424.3 | 2398.5 | 2365.5 | 2337.9 | 2312.2 | 2288.3 | 2255.2 | 2249.7 |
| 20° | 2481.3 | 2477.6 | 2466.5 | 2451.8 | 2418.8 | 2378.3 | 2339.7 | 2299.3 | 2269.9 | 2231.3 | 2222.1 |
| 22.5° | 2519.8 | 2514.3 | 2505.1 | 2488.6 | 2446.3 | 2398.5 | 2345.2 | 2291.9 | 2247.8 | 2203.7 | 2198.2 |
| 25° | 2560.3 | 2556.6 | 2547.4 | 2523.5 | 2477.6 | 2418.8 | 2345.2 | 2266.2 | 2211.1 | 2172.5 | 2155.9 |
| 27.5° | 2598.9 | 2597.0 | 2586.0 | 2558.4 | 2510.7 | 2433.5 | 2328.7 | 2223.9 | 2150.4 | 2099.0 | 2087.9 |
| 30° | 2648.5 | 2644.8 | 2632.0 | 2600.7 | 2547.4 | 2442.7 | 2295.6 | 2152.3 | 2060.4 | 2003.4 | 1986.8 |
| 32.5° | 2709.2 | 2705.5 | 2687.1 | 2648.5 | 2591.5 | 2444.5 | 2247.8 | 2060.4 | 1939.1 | 1878.4 | 1858.2 |
| 35° | 2790.0 | 2782.7 | 2758.8 | 2712.8 | 2633.8 | 2426.1 | 2163.3 | 1942.7 | 1793.9 | 1714.8 | 1687.3 |
| 37.5° | 2878.3 | 2869.1 | 2837.8 | 2780.8 | 2663.2 | 2376.5 | 2043.8 | 1784.7 | 1615.6 | 1521.8 | 1501.6 |
| 40° | 2986.7 | 2973.8 | 2926.0 | 2847.0 | 2674.2 | 2290.1 | 1909.6 | 1622.9 | 1442.8 | 1339.9 | 1316.0 |
| 42.5° | 3122.7 | 3100.6 | 3023.5 | 2920.5 | 2652.2 | 2172.5 | 1749.7 | 1455.7 | 1249.8 | 1154.2 | 1148.7 |
| 45° | 3286.3 | 3251.4 | 3135.6 | 2992.2 | 2604.4 | 2025.4 | 1580.6 | 1268.2 | 1071.5 | 977.8 | 953.9 |
| 47.5° | 3479.3 | 3437.0 | 3266.1 | 3047.3 | 2510.7 | 1874.7 | 1398.7 | 1086.2 | 906.1 | 810.5 | 792.2 |
| 50° | 3692.5 | 3652.0 | 3403.9 | 3078.6 | 2409.6 | 1698.3 | 1220.4 | 924.5 | 744.4 | 665.3 | 665.3 |
| 52.5° | 3951.6 | 3859.7 | 3536.2 | 3082.3 | 2255.2 | 1503.5 | 1049.5 | 766.4 | 624.9 | 555.1 | 540.4 |
| 55° | 4227.3 | 4118.9 | 3655.7 | 3049.2 | 2095.3 | 1325.2 | 865.7 | 637.8 | 512.8 | 463.2 | 450.3 |
| 57.5° | 4534.3 | 4368.8 | 3742.1 | 2983.0 | 1893.1 | 1130.3 | 722.3 | 525.7 | 431.9 | 391.5 | 386.0 |
| 60° | 4843.0 | 4629.8 | 3793.6 | 2870.9 | 1678.1 | 950.2 | 601.0 | 439.3 | 371.3 | 341.9 | 336.3 |
| 62.5° | 5129.8 | 4843.0 | 3797.2 | 2707.3 | 1468.5 | 792.2 | 492.6 | 378.6 | 329.0 | 306.9 | 306.9 |
| 65° | 5377.9 | 5021.3 | 3734.7 | 2497.8 | 1202.0 | 635.9 | 406.2 | 319.8 | 286.7 | 262.8 | 257.3 |
| 67.5° | 5499.2 | 5089.3 | 3624.5 | 2211.1 | 963.1 | 503.6 | 341.9 | 277.5 | 246.3 | 209.5 | 205.9 |
| 70° | 5328.3 | 4892.7 | 3341.4 | 1843.5 | 744.4 | 400.7 | 284.9 | 237.1 | 205.9 | 174.6 | 170.9 |
| 72.5° | 4782.4 | 4368.8 | 2883.8 | 1428.1 | 560.6 | 323.5 | 237.1 | 202.2 | 169.1 | 152.6 | 148.9 |
| 75° | 3913.0 | 3633.7 | 2279.1 | 983.3 | 391.5 | 253.6 | 198.5 | 170.9 | 143.4 | 136.0 | 134.2 |
| 77.5° | 2970.1 | 2701.8 | 1665.2 | 615.7 | 268.3 | 198.5 | 169.1 | 145.2 | 125.0 | 130.5 | 126.8 |
| 80° | 1983.2 | 1860.0 | 1106.5 | 349.2 | 180.1 | 145.2 | 128.7 | 106.6 | 95.6 | 110.3 | 106.6 |
| 82.5° | 900.6 | 852.8 | 520.1 | 152.6 | 80.9 | 62.5 | 44.1 | 33.1 | 25.7 | 23.9 | 27.6 |
| 85° | 150.7 | 132.3 | 36.8 | 16.5 | 9.2 | 5.5 | 3.7 | 3.7 | 1.8 | 1.8 | 1.8 |
| 87.5° | 7.4 | 5.5 | 5.5 | 3.7 | 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: SP1-2407-157-6

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-750-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-750-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-6
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 08/20/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-SA-40-750-U-5WQ-2**
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K): 5094
 CIE u': 0.2082
 CIE v': 0.4867
 Duv: 0.0032
 CIE x: 0.3430
 CIE y: 0.3564
 CIE z: 0.3006
 Peak Wavelength (nm): 451
 Dominant Wavelength (nm): 568
 Purity: 9.86439
 Rf: 73.7
 Rg: 93

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 72.0 | | |
| R1: | 68.6 | R9: | -39.6 |
| R2: | 78.1 | R10: | 47.6 |
| R3: | 84.6 | R11: | 68.2 |
| R4: | 71.6 | R12: | 41.4 |
| R5: | 69.6 | R13: | 70.4 |
| R6: | 69.4 | R14: | 91.4 |
| R7: | 80.9 | R15: | 61.4 |
| R8: | 53.1 | | |



Test Conditions

Stabilization Time: 20M
 Operation Time: 1H 20M
 Sphere Temperature (°C): 24.2

REPORT NUMBER: SP1-2407-157-6

| 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: SP1-2407-157-6

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5000K 4-step quadrangle

REPORT NUMBER: SP1-2407-157-6

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 | 114 | NR | 620 | 361 | NR | 750 | 9 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 145 | NR | 625 | 326 | NR | 755 | 8 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 197 | NR | 630 | 294 | NR | 760 | 7 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 259 | NR | 635 | 261 | NR | 765 | 6 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 319 | NR | 640 | 232 | NR | 770 | 5 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 373 | NR | 645 | 204 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 414 | NR | 650 | 179 | NR | 780 | 4 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 445 | NR | 655 | 157 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 465 | NR | 660 | 136 | NR | 790 | 3 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 482 | NR | 665 | 118 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 9 | NR | 540 | 493 | NR | 670 | 102 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 18 | NR | 545 | 505 | NR | 675 | 87 | NR | 805 | 2 | NR | 935 | 0 | NR |
| 420 | 36 | NR | 550 | 515 | NR | 680 | 75 | NR | 810 | 2 | NR | 940 | 0 | NR |
| 425 | 72 | NR | 555 | 527 | NR | 685 | 65 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 134 | NR | 560 | 540 | NR | 690 | 56 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 242 | NR | 565 | 550 | NR | 695 | 48 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 407 | NR | 570 | 557 | NR | 700 | 41 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 684 | NR | 575 | 561 | NR | 705 | 35 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 988 | NR | 580 | 559 | NR | 710 | 30 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 828 | NR | 585 | 551 | NR | 715 | 26 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 473 | NR | 590 | 537 | NR | 720 | 22 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 333 | NR | 595 | 516 | NR | 725 | 19 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 232 | NR | 600 | 491 | NR | 730 | 16 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 146 | NR | 605 | 461 | NR | 735 | 14 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 113 | NR | 610 | 429 | NR | 740 | 12 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 106 | NR | 615 | 395 | NR | 745 | 10 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-6

Scotopic Flux vs. Wavelength



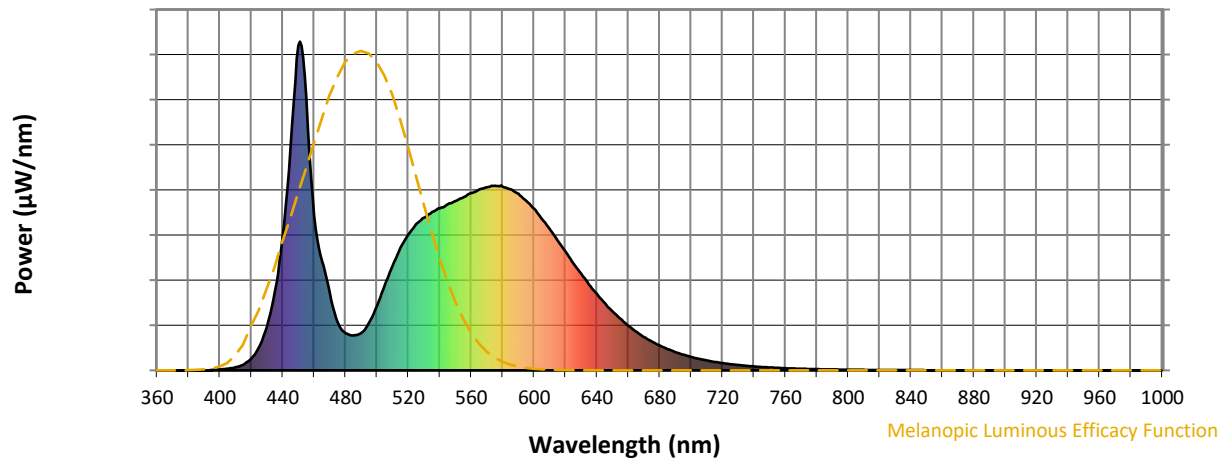
Scotopic Lumens: NR

S/P: 1.81

| 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 | 114 | NR | 620 | 361 | NR | 750 | 9 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 145 | NR | 625 | 326 | NR | 755 | 8 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 197 | NR | 630 | 294 | NR | 760 | 7 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 259 | NR | 635 | 261 | NR | 765 | 6 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 319 | NR | 640 | 232 | NR | 770 | 5 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 373 | NR | 645 | 204 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 414 | NR | 650 | 179 | NR | 780 | 4 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 445 | NR | 655 | 157 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 465 | NR | 660 | 136 | NR | 790 | 3 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 482 | NR | 665 | 118 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 9 | NR | 540 | 493 | NR | 670 | 102 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 18 | NR | 545 | 505 | NR | 675 | 87 | NR | 805 | 2 | NR | 935 | 0 | NR |
| 420 | 36 | NR | 550 | 515 | NR | 680 | 75 | NR | 810 | 2 | NR | 940 | 0 | NR |
| 425 | 72 | NR | 555 | 527 | NR | 685 | 65 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 134 | NR | 560 | 540 | NR | 690 | 56 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 242 | NR | 565 | 550 | NR | 695 | 48 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 407 | NR | 570 | 557 | NR | 700 | 41 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 684 | NR | 575 | 561 | NR | 705 | 35 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 988 | NR | 580 | 559 | NR | 710 | 30 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 828 | NR | 585 | 551 | NR | 715 | 26 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 473 | NR | 590 | 537 | NR | 720 | 22 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 333 | NR | 595 | 516 | NR | 725 | 19 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 232 | NR | 600 | 491 | NR | 730 | 16 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 146 | NR | 605 | 461 | NR | 735 | 14 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 113 | NR | 610 | 429 | NR | 740 | 12 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 106 | NR | 615 | 395 | NR | 745 | 10 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-6

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.73

| 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 | 114 | NR | 620 | 361 | NR | 750 | 9 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 145 | NR | 625 | 326 | NR | 755 | 8 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 197 | NR | 630 | 294 | NR | 760 | 7 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 259 | NR | 635 | 261 | NR | 765 | 6 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 319 | NR | 640 | 232 | NR | 770 | 5 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 373 | NR | 645 | 204 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 414 | NR | 650 | 179 | NR | 780 | 4 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 445 | NR | 655 | 157 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 465 | NR | 660 | 136 | NR | 790 | 3 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 482 | NR | 665 | 118 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 9 | NR | 540 | 493 | NR | 670 | 102 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 18 | NR | 545 | 505 | NR | 675 | 87 | NR | 805 | 2 | NR | 935 | 0 | NR |
| 420 | 36 | NR | 550 | 515 | NR | 680 | 75 | NR | 810 | 2 | NR | 940 | 0 | NR |
| 425 | 72 | NR | 555 | 527 | NR | 685 | 65 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 134 | NR | 560 | 540 | NR | 690 | 56 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 242 | NR | 565 | 550 | NR | 695 | 48 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 407 | NR | 570 | 557 | NR | 700 | 41 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 684 | NR | 575 | 561 | NR | 705 | 35 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 988 | NR | 580 | 559 | NR | 710 | 30 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 828 | NR | 585 | 551 | NR | 715 | 26 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 473 | NR | 590 | 537 | NR | 720 | 22 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 333 | NR | 595 | 516 | NR | 725 | 19 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 232 | NR | 600 | 491 | NR | 730 | 16 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 146 | NR | 605 | 461 | NR | 735 | 14 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 113 | NR | 610 | 429 | NR | 740 | 12 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 106 | NR | 615 | 395 | NR | 745 | 10 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 73.7$
 $R_g = 93$
 $CIE R_a = 72.0$
 $R_9 = -39.6$



Color Vector Graphics



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

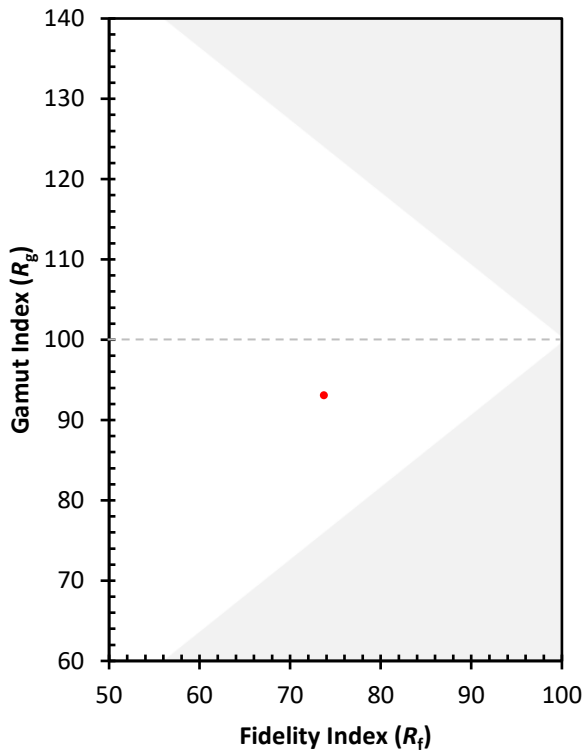
| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 62 | CES51 = 90 | CES76 = 50 |
| CES02 = 59 | CES27 = 88 | CES52 = 89 | CES77 = 67 |
| CES03 = 30 | CES28 = 80 | CES53 = 79 | CES78 = 53 |
| CES04 = 69 | CES29 = 69 | CES54 = 84 | CES79 = 80 |
| CES05 = 46 | CES30 = 88 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 72 | CES56 = 74 | CES81 = 78 |
| CES07 = 38 | CES32 = 62 | CES57 = 73 | CES82 = 90 |
| CES08 = 38 | CES33 = 82 | CES58 = 73 | CES83 = 90 |
| CES09 = 29 | CES34 = 69 | CES59 = 86 | CES84 = 85 |
| CES10 = 72 | CES35 = 83 | CES60 = 88 | CES85 = 77 |
| CES11 = 56 | CES36 = 87 | CES61 = 82 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 81 | CES87 = 76 |
| CES13 = 41 | CES38 = 98 | CES63 = 73 | CES88 = 81 |
| CES14 = 74 | CES39 = 96 | CES64 = 63 | CES89 = 72 |
| CES15 = 70 | CES40 = 91 | CES65 = 60 | CES90 = 80 |
| CES16 = 46 | CES41 = 96 | CES66 = 56 | CES91 = 71 |
| CES17 = 49 | CES42 = 79 | CES67 = 53 | CES92 = 58 |
| CES18 = 55 | CES43 = 78 | CES68 = 63 | CES93 = 74 |
| CES19 = 71 | CES44 = 99 | CES69 = 72 | CES94 = 52 |
| CES20 = 63 | CES45 = 86 | CES70 = 55 | CES95 = 64 |
| CES21 = 85 | CES46 = 85 | CES71 = 46 | CES96 = 76 |
| CES22 = 77 | CES47 = 89 | CES72 = 82 | CES97 = 86 |
| CES23 = 91 | CES48 = 80 | CES73 = 45 | CES98 = 76 |
| CES24 = 90 | CES49 = 83 | CES74 = 90 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 48 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)