

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: P868825

Luminaire Tested: **EMM2-HSN-SA2A-750-U-T2R**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P868825
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-T2R
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 70W 70CRI 5000K
FITXURE w/ TYPE II ROADWAY DISTRIBUTION OPTIC
Light Source: (20) 5000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

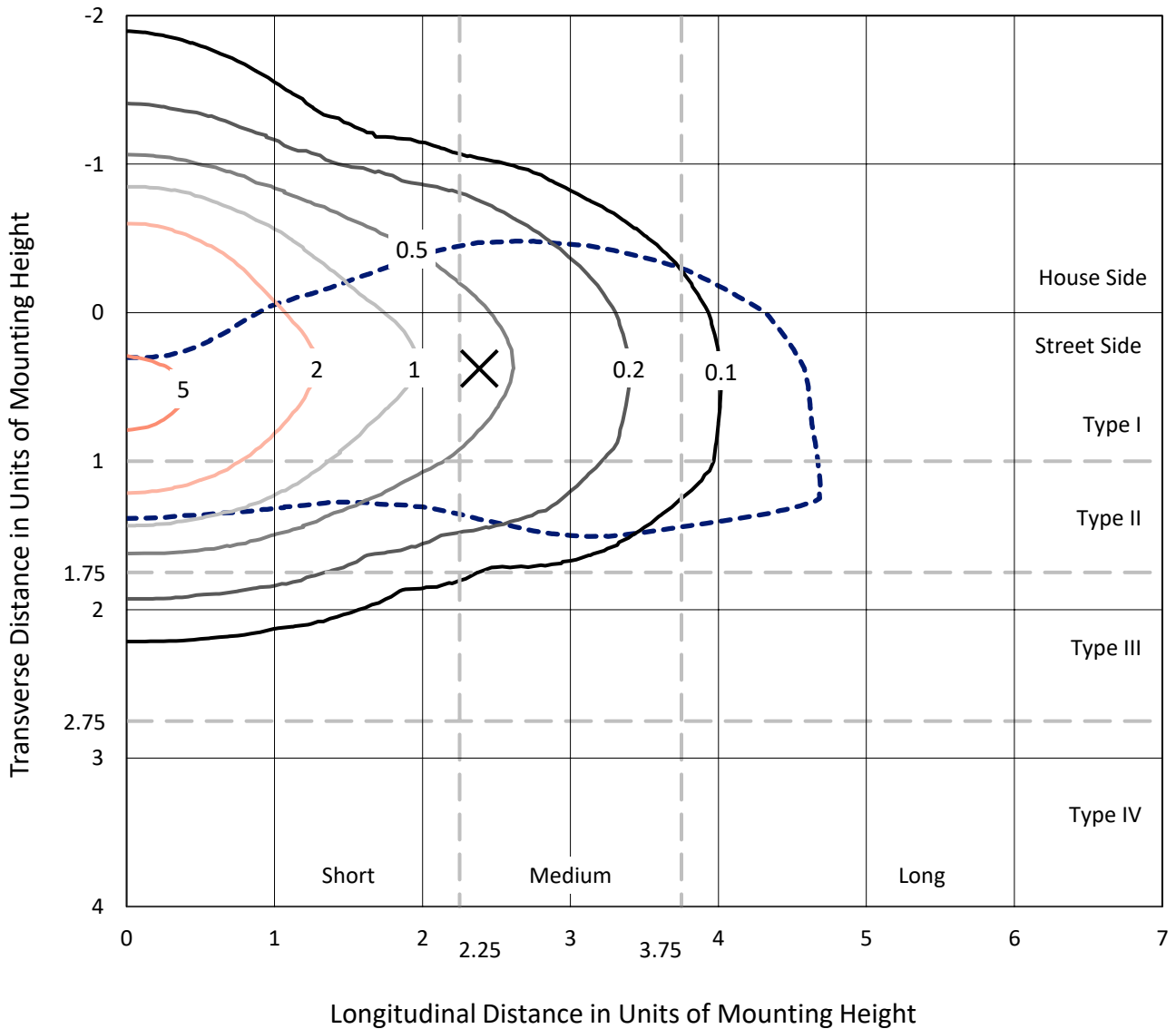
Lumens per Lamp: N/A
Luminaire Lumens: 9269.5 lumens
Efficiency: N/A
Efficacy: 152.0 lumens/watt
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification: Type II - Medium
BUG Rating: B2 - U0 - G2

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: P868825
 CATALOG NUMBER: EMM2-HSN-SA2A-750-U-T2R

Iso-Footcandle Lines of Horizontal Illumination

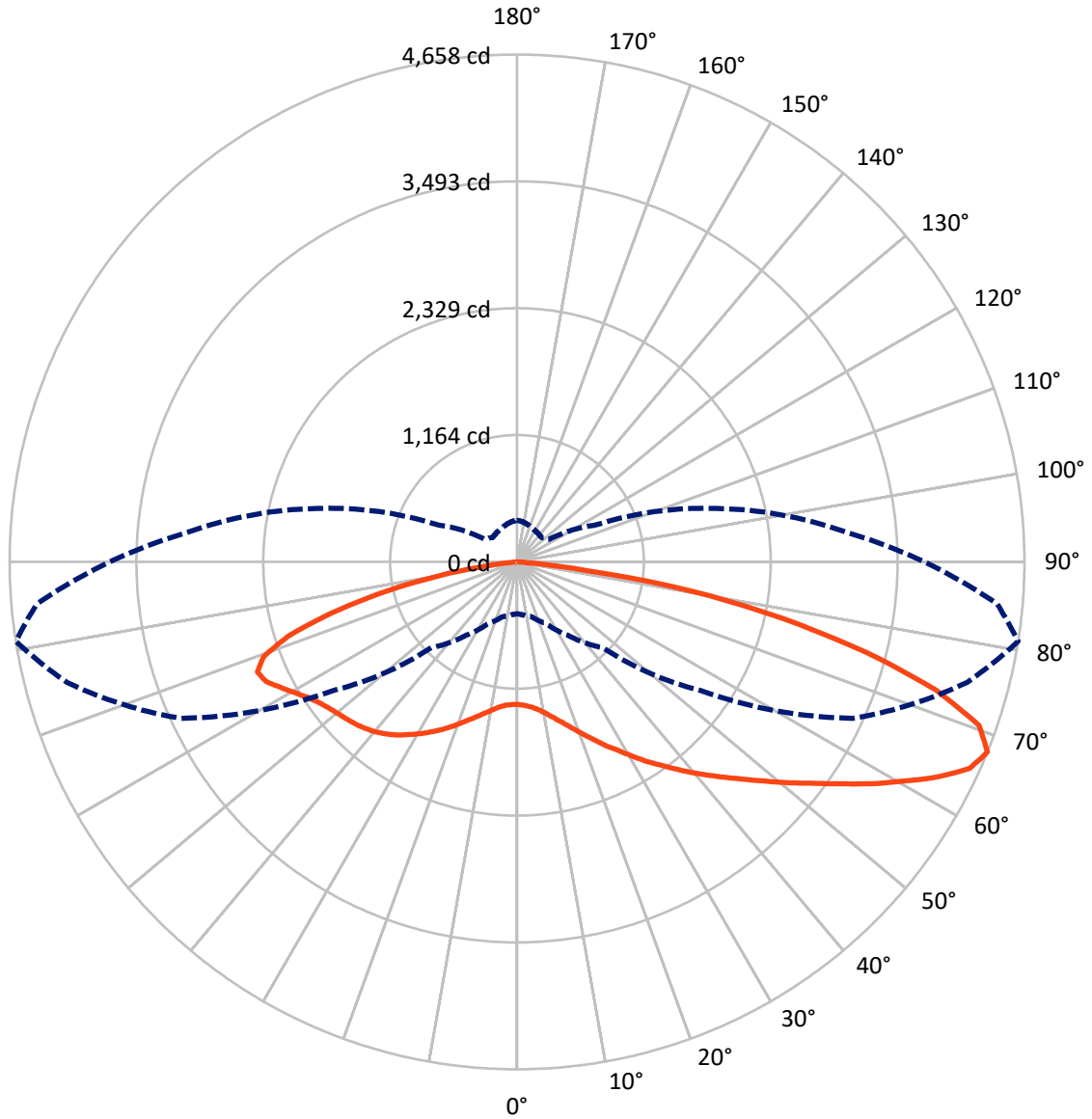
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 5.9 fc
 Type II - Medium - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 81-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 2840.4 | 0.0 | 2840.4 |
| | % Fixture | 30.6 | 0.0 | 30.6 |
| Street Side | Lumens | 6429.1 | 0.0 | 6429.1 |
| | % Fixture | 69.4 | 0.0 | 69.4 |
| Total | Lumens | 9269.5 | 0.0 | 9269.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 133.4 | 1.4 |
| 10°-20° | 473.7 | 5.1 |
| 20°-30° | 943.5 | 10.2 |
| 30°-40° | 1482.3 | 16.0 |
| 40°-50° | 1838.3 | 19.8 |
| 50°-60° | 1797.1 | 19.4 |
| 60°-70° | 1511.2 | 16.3 |
| 70°-80° | 960.3 | 10.4 |
| 80°-90° | 129.6 | 1.4 |
| 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° | 9269.5 | 100.0 |
| 0°-180° | 9269.5 | 100.0 |

Coefficient of Utilization

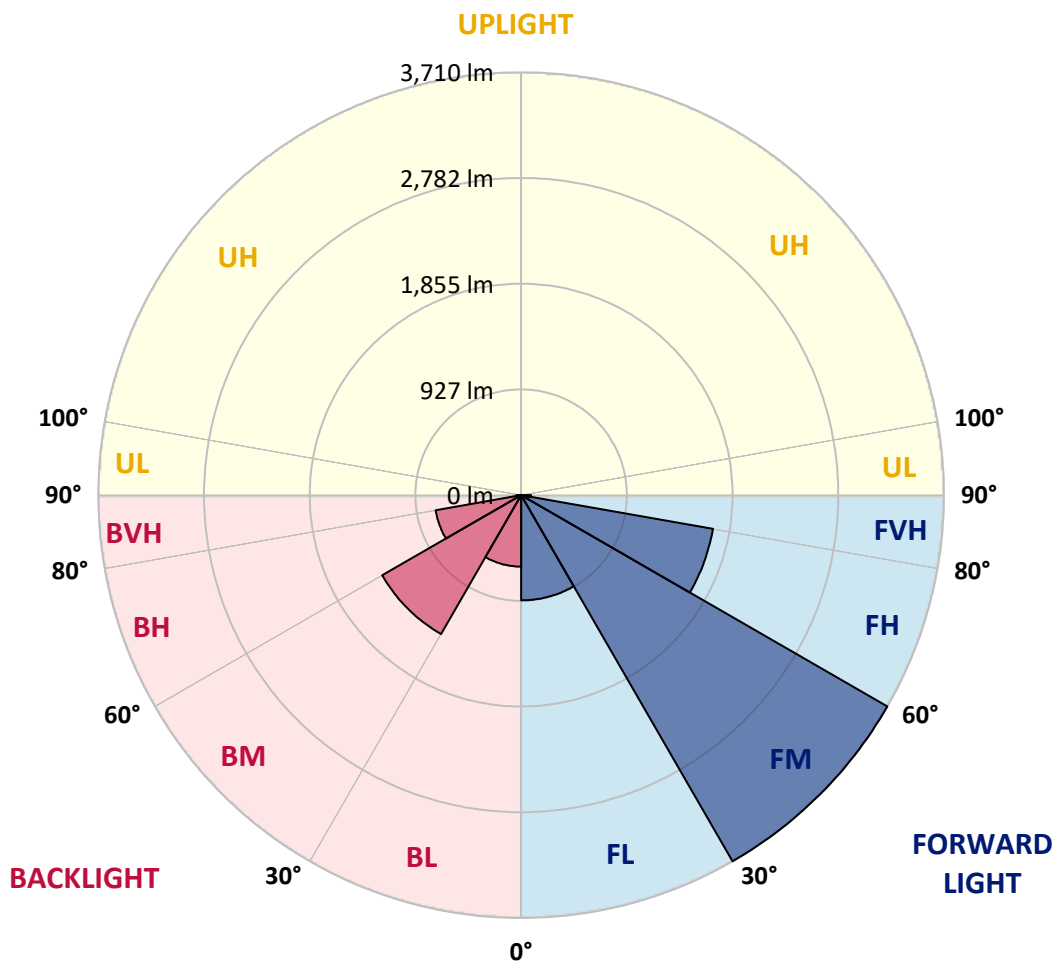


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 923.3 | 10.0 | | | |
| FM (30°-60°) | 3709.9 | 40.0 | | | |
| FH (60°-80°) | 1709.0 | 18.4 | | | G1/1800 |
| FVH (80°-90°) | 86.8 | 0.9 | | | G1/100 |
| BL (0°-30°) | 627.4 | 6.8 | B2/1000 | | |
| BM (30°-60°) | 1407.8 | 15.2 | B2/2500 | | |
| BH (60°-80°) | 762.5 | 8.2 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 42.8 | 0.5 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G2
 Type II Medium





REPORT NUMBER: P868825

CATALOG NUMBER: EMM2-HSN-SA2A-750-U-T2R

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 81° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 |
| 2.5° | 1354.6 | 1352.8 | 1352.8 | 1338.1 | 1338.1 | 1334.4 | 1336.3 | 1325.2 | 1319.7 | 1317.9 | 1316.0 |
| 5° | 1452.1 | 1452.1 | 1441.0 | 1431.8 | 1413.5 | 1396.9 | 1382.2 | 1360.2 | 1343.6 | 1336.3 | 1330.7 |
| 7.5° | 1599.1 | 1588.1 | 1584.4 | 1556.8 | 1518.2 | 1485.1 | 1455.7 | 1407.9 | 1376.7 | 1365.7 | 1358.3 |
| 10° | 1779.2 | 1764.5 | 1737.0 | 1705.7 | 1656.1 | 1606.5 | 1547.6 | 1483.3 | 1431.8 | 1409.8 | 1400.6 |
| 12.5° | 1964.9 | 1944.7 | 1906.1 | 1876.7 | 1812.3 | 1737.0 | 1654.2 | 1566.0 | 1494.3 | 1463.1 | 1446.5 |
| 15° | 2168.9 | 2157.9 | 2111.9 | 2053.1 | 1977.7 | 1871.1 | 1768.2 | 1659.8 | 1567.9 | 1523.7 | 1496.2 |
| 17.5° | 2389.5 | 2372.9 | 2323.3 | 2251.6 | 2145.0 | 2018.2 | 1898.7 | 1759.0 | 1652.4 | 1595.4 | 1564.2 |
| 20° | 2606.4 | 2602.7 | 2529.2 | 2461.2 | 2336.2 | 2178.1 | 2023.7 | 1876.7 | 1742.5 | 1676.3 | 1635.9 |
| 22.5° | 2849.0 | 2825.1 | 2760.8 | 2665.2 | 2516.3 | 2371.1 | 2189.1 | 1998.0 | 1839.9 | 1762.7 | 1716.7 |
| 25° | 3100.8 | 3099.0 | 3019.9 | 2902.3 | 2727.7 | 2543.9 | 2347.2 | 2135.8 | 1955.7 | 1861.9 | 1801.3 |
| 27.5° | 3413.3 | 3389.4 | 3288.3 | 3154.1 | 2951.9 | 2740.5 | 2512.6 | 2279.2 | 2066.0 | 1953.8 | 1880.3 |
| 30° | 3687.1 | 3679.8 | 3565.8 | 3415.1 | 3189.0 | 2937.2 | 2690.9 | 2440.9 | 2196.5 | 2064.1 | 1983.3 |
| 32.5° | 3909.5 | 3900.3 | 3802.9 | 3652.2 | 3409.6 | 3148.6 | 2865.5 | 2593.5 | 2327.0 | 2183.6 | 2077.0 |
| 35° | 4095.2 | 4080.5 | 3979.4 | 3828.7 | 3619.1 | 3354.4 | 3053.0 | 2753.4 | 2470.3 | 2295.7 | 2194.6 |
| 37.5° | 4168.7 | 4155.8 | 4073.1 | 3948.1 | 3755.1 | 3512.5 | 3222.1 | 2929.9 | 2613.7 | 2422.6 | 2308.6 |
| 40° | 4141.1 | 4133.8 | 4075.0 | 3988.6 | 3841.5 | 3639.3 | 3383.9 | 3113.7 | 2775.5 | 2556.7 | 2420.7 |
| 42.5° | 4010.6 | 4010.6 | 3973.9 | 3929.8 | 3856.2 | 3711.0 | 3527.2 | 3290.1 | 2931.7 | 2690.9 | 2527.3 |
| 45° | 3826.8 | 3819.5 | 3806.6 | 3790.1 | 3779.0 | 3723.9 | 3621.0 | 3442.7 | 3104.5 | 2838.0 | 2656.0 |
| 47.5° | 3582.4 | 3587.9 | 3578.7 | 3586.0 | 3632.0 | 3666.9 | 3661.4 | 3584.2 | 3280.9 | 2999.7 | 2782.8 |
| 50° | 3198.2 | 3223.9 | 3253.4 | 3339.7 | 3433.5 | 3530.9 | 3621.0 | 3685.3 | 3488.6 | 3183.5 | 2929.9 |
| 52.5° | 2722.2 | 2733.2 | 2812.2 | 3016.2 | 3216.6 | 3345.3 | 3516.2 | 3731.2 | 3672.4 | 3374.7 | 3102.6 |
| 55° | 2135.8 | 2156.0 | 2275.5 | 2564.1 | 2920.7 | 3167.0 | 3367.3 | 3711.0 | 3859.9 | 3593.4 | 3304.8 |
| 57.5° | 1531.1 | 1544.0 | 1735.1 | 2032.9 | 2497.9 | 2911.5 | 3198.2 | 3630.2 | 4010.6 | 3841.5 | 3512.5 |
| 60° | 1088.1 | 1112.0 | 1235.2 | 1525.6 | 1972.2 | 2558.6 | 3043.8 | 3512.5 | 4150.3 | 4084.2 | 3784.5 |
| 62.5° | 803.2 | 816.1 | 902.5 | 1113.9 | 1481.5 | 2077.0 | 2843.5 | 3426.1 | 4242.2 | 4345.2 | 4056.6 |
| 65° | 604.7 | 610.2 | 669.1 | 814.3 | 1108.3 | 1531.1 | 2527.3 | 3409.6 | 4293.7 | 4567.6 | 4297.4 |
| 67.5° | 476.1 | 485.2 | 522.0 | 621.3 | 825.3 | 1113.9 | 2058.6 | 3398.6 | 4275.3 | 4657.6 | 4424.2 |
| 70° | 400.7 | 402.5 | 430.1 | 485.2 | 617.6 | 801.4 | 1538.4 | 3233.1 | 4172.4 | 4499.6 | 4306.6 |
| 72.5° | 347.4 | 347.4 | 360.3 | 404.4 | 496.3 | 606.6 | 1047.7 | 2838.0 | 3911.4 | 4019.8 | 3898.5 |
| 75° | 281.2 | 279.4 | 301.4 | 343.7 | 398.9 | 466.9 | 704.0 | 2148.7 | 3363.6 | 3308.5 | 3209.2 |
| 77.5° | 244.5 | 242.6 | 261.0 | 297.8 | 329.0 | 373.1 | 481.6 | 1395.1 | 2646.8 | 2481.4 | 2418.9 |
| 80° | 209.5 | 204.0 | 218.7 | 253.7 | 270.2 | 290.4 | 332.7 | 812.4 | 1729.6 | 1626.7 | 1551.3 |
| 82.5° | 158.1 | 145.2 | 141.5 | 170.9 | 182.0 | 169.1 | 169.1 | 284.9 | 628.6 | 634.1 | 586.3 |
| 85° | 12.9 | 14.7 | 18.4 | 22.1 | 31.2 | 34.9 | 36.8 | 60.7 | 93.7 | 90.1 | 91.9 |
| 87.5° | 1.8 | 1.8 | 1.8 | 3.7 | 3.7 | 5.5 | 5.5 | 5.5 | 7.4 | 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: P868825

CATALOG NUMBER: EMM2-HSN-SA2A-750-U-T2R

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 | 1308.7 |
| 2.5° | 1314.2 | 1310.5 | 1306.9 | 1306.9 | 1306.9 | 1303.2 | 1301.3 | 1301.3 | 1299.5 | 1294.0 | 1292.2 |
| 5° | 1327.1 | 1321.6 | 1316.0 | 1316.0 | 1316.0 | 1314.2 | 1312.4 | 1314.2 | 1312.4 | 1306.9 | 1305.0 |
| 7.5° | 1352.8 | 1345.5 | 1338.1 | 1338.1 | 1341.8 | 1339.9 | 1339.9 | 1341.8 | 1339.9 | 1334.4 | 1332.6 |
| 10° | 1389.6 | 1378.5 | 1374.9 | 1374.9 | 1378.5 | 1376.7 | 1374.9 | 1374.9 | 1373.0 | 1363.8 | 1367.5 |
| 12.5° | 1430.0 | 1419.0 | 1415.3 | 1417.1 | 1415.3 | 1411.6 | 1413.5 | 1407.9 | 1406.1 | 1391.4 | 1389.6 |
| 15° | 1481.5 | 1468.6 | 1461.3 | 1463.1 | 1457.6 | 1450.2 | 1442.9 | 1439.2 | 1431.8 | 1419.0 | 1415.3 |
| 17.5° | 1540.3 | 1520.1 | 1510.9 | 1510.9 | 1499.9 | 1485.1 | 1474.1 | 1463.1 | 1452.1 | 1437.4 | 1433.7 |
| 20° | 1597.3 | 1578.9 | 1564.2 | 1560.5 | 1538.4 | 1514.6 | 1494.3 | 1476.0 | 1463.1 | 1446.5 | 1442.9 |
| 22.5° | 1669.0 | 1643.2 | 1623.0 | 1606.5 | 1573.4 | 1534.8 | 1503.5 | 1477.8 | 1459.4 | 1441.0 | 1435.5 |
| 25° | 1744.3 | 1707.6 | 1674.5 | 1643.2 | 1597.3 | 1542.1 | 1498.0 | 1461.3 | 1437.4 | 1417.1 | 1413.5 |
| 27.5° | 1819.7 | 1771.9 | 1724.1 | 1674.5 | 1604.6 | 1532.9 | 1470.4 | 1426.3 | 1395.1 | 1369.3 | 1365.7 |
| 30° | 1900.5 | 1841.7 | 1766.4 | 1694.7 | 1602.8 | 1509.0 | 1430.0 | 1367.5 | 1330.7 | 1301.3 | 1297.7 |
| 32.5° | 1983.3 | 1909.7 | 1806.8 | 1709.4 | 1593.6 | 1474.1 | 1371.2 | 1305.0 | 1259.1 | 1226.0 | 1216.8 |
| 35° | 2075.2 | 1985.1 | 1843.6 | 1714.9 | 1567.9 | 1422.7 | 1308.7 | 1226.0 | 1172.7 | 1139.6 | 1132.2 |
| 37.5° | 2168.9 | 2054.9 | 1867.5 | 1711.2 | 1531.1 | 1362.0 | 1227.8 | 1143.3 | 1080.8 | 1034.8 | 1027.5 |
| 40° | 2264.5 | 2119.3 | 1882.2 | 1692.8 | 1479.6 | 1286.6 | 1152.5 | 1049.5 | 959.5 | 917.2 | 897.0 |
| 42.5° | 2352.7 | 2178.1 | 1889.5 | 1667.1 | 1422.7 | 1207.6 | 1053.2 | 919.0 | 834.5 | 788.5 | 797.7 |
| 45° | 2444.6 | 2233.2 | 1891.4 | 1635.9 | 1347.3 | 1106.5 | 928.2 | 803.2 | 718.7 | 683.8 | 680.1 |
| 47.5° | 2523.6 | 2279.2 | 1887.7 | 1591.8 | 1262.7 | 990.7 | 797.7 | 678.2 | 615.7 | 582.7 | 579.0 |
| 50° | 2628.4 | 2330.7 | 1882.2 | 1540.3 | 1152.5 | 858.4 | 676.4 | 579.0 | 522.0 | 496.3 | 494.4 |
| 52.5° | 2733.2 | 2387.6 | 1878.5 | 1468.6 | 1036.7 | 733.4 | 566.1 | 488.9 | 450.3 | 437.5 | 433.8 |
| 55° | 2871.0 | 2457.5 | 1880.3 | 1385.9 | 904.3 | 604.7 | 479.7 | 426.4 | 406.2 | 400.7 | 400.7 |
| 57.5° | 3029.1 | 2547.5 | 1891.4 | 1294.0 | 766.5 | 500.0 | 417.2 | 393.3 | 391.5 | 395.2 | 397.0 |
| 60° | 3220.3 | 2667.0 | 1913.4 | 1198.4 | 639.6 | 422.8 | 380.5 | 378.6 | 384.2 | 397.0 | 400.7 |
| 62.5° | 3435.3 | 2797.5 | 1941.0 | 1073.4 | 518.3 | 371.3 | 360.3 | 367.6 | 375.0 | 389.7 | 391.5 |
| 65° | 3624.6 | 2944.6 | 1957.5 | 953.9 | 433.8 | 341.9 | 347.4 | 351.1 | 369.4 | 389.7 | 389.7 |
| 67.5° | 3738.6 | 3051.2 | 1895.0 | 803.2 | 362.1 | 316.1 | 327.2 | 338.2 | 358.4 | 376.8 | 380.5 |
| 70° | 3700.0 | 3016.2 | 1681.8 | 623.1 | 307.0 | 292.3 | 305.1 | 321.7 | 341.9 | 363.9 | 375.0 |
| 72.5° | 3431.6 | 2768.1 | 1365.7 | 454.0 | 266.5 | 270.2 | 286.7 | 308.8 | 327.2 | 351.1 | 365.8 |
| 75° | 2869.2 | 2310.4 | 985.2 | 327.2 | 233.4 | 248.1 | 273.9 | 292.3 | 305.1 | 310.6 | 312.5 |
| 77.5° | 2178.1 | 1698.4 | 670.9 | 244.5 | 202.2 | 222.4 | 250.0 | 270.2 | 273.9 | 277.5 | 281.2 |
| 80° | 1422.7 | 1080.8 | 378.6 | 170.9 | 154.4 | 182.0 | 204.0 | 226.1 | 218.7 | 229.8 | 233.4 |
| 82.5° | 601.0 | 472.4 | 172.8 | 84.6 | 71.7 | 77.2 | 82.7 | 73.5 | 68.0 | 68.0 | 58.8 |
| 85° | 79.0 | 60.7 | 25.7 | 11.0 | 9.2 | 5.5 | 5.5 | 5.5 | 3.7 | 3.7 | 3.7 |
| 87.5° | 7.4 | 7.4 | 5.5 | 5.5 | 3.7 | 3.7 | 1.8 | 3.7 | 1.8 | 1.8 | 1.8 |
| 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

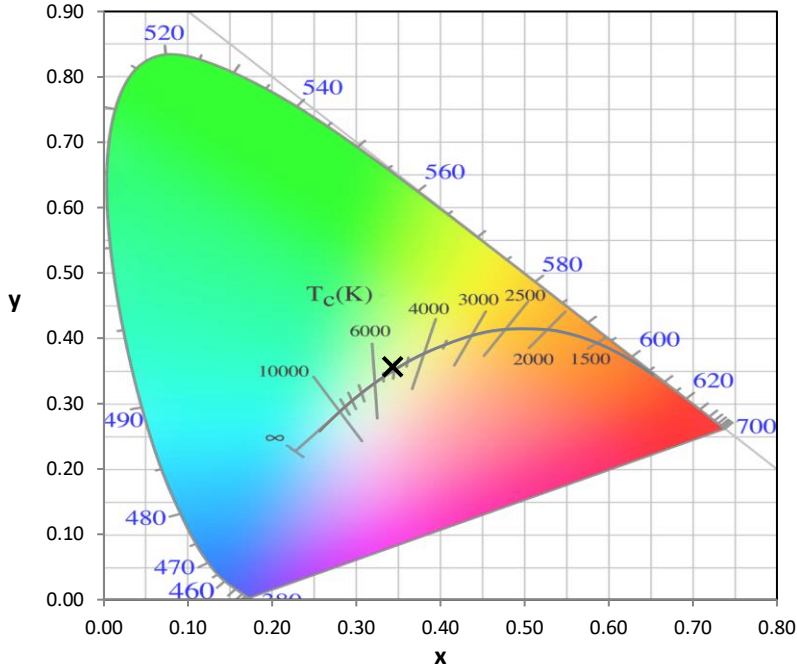
Stabilization Time: 20M
 Operation Time: 1H 20M
 Sphere Temperature (°C): 24.2

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)