

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: P868952

Luminaire Tested: **EMM2-HSN-SA2B-730-U-T3**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P868952
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-SA2B-730-U-T3
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 100W 70CRI 3000K
FIXTURE w/ TYPE III DISTRIBUTION OPTIC
Light Source: (20) 3000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

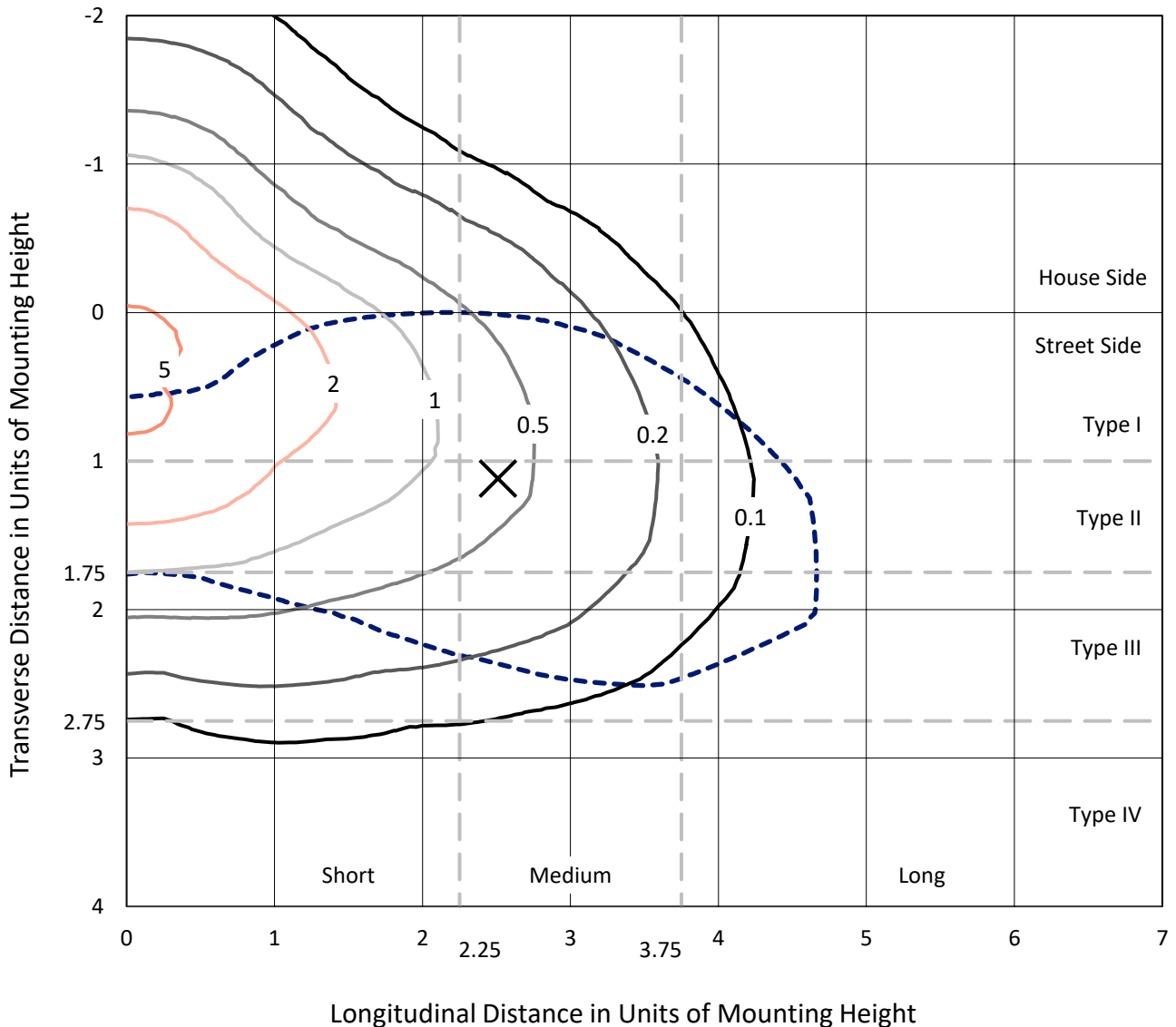
Lumens per Lamp: N/A
Luminaire Lumens: 12151.3 lumens
Efficiency: N/A
Efficacy: 135.0 lumens/watt
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B2 - U0 - G2

Input Watts (W): 90
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 6.20%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P868952
 CATALOG NUMBER: EMM2-HSN-SA2B-730-U-T3

Iso-Footcandle Lines of Horizontal Illumination

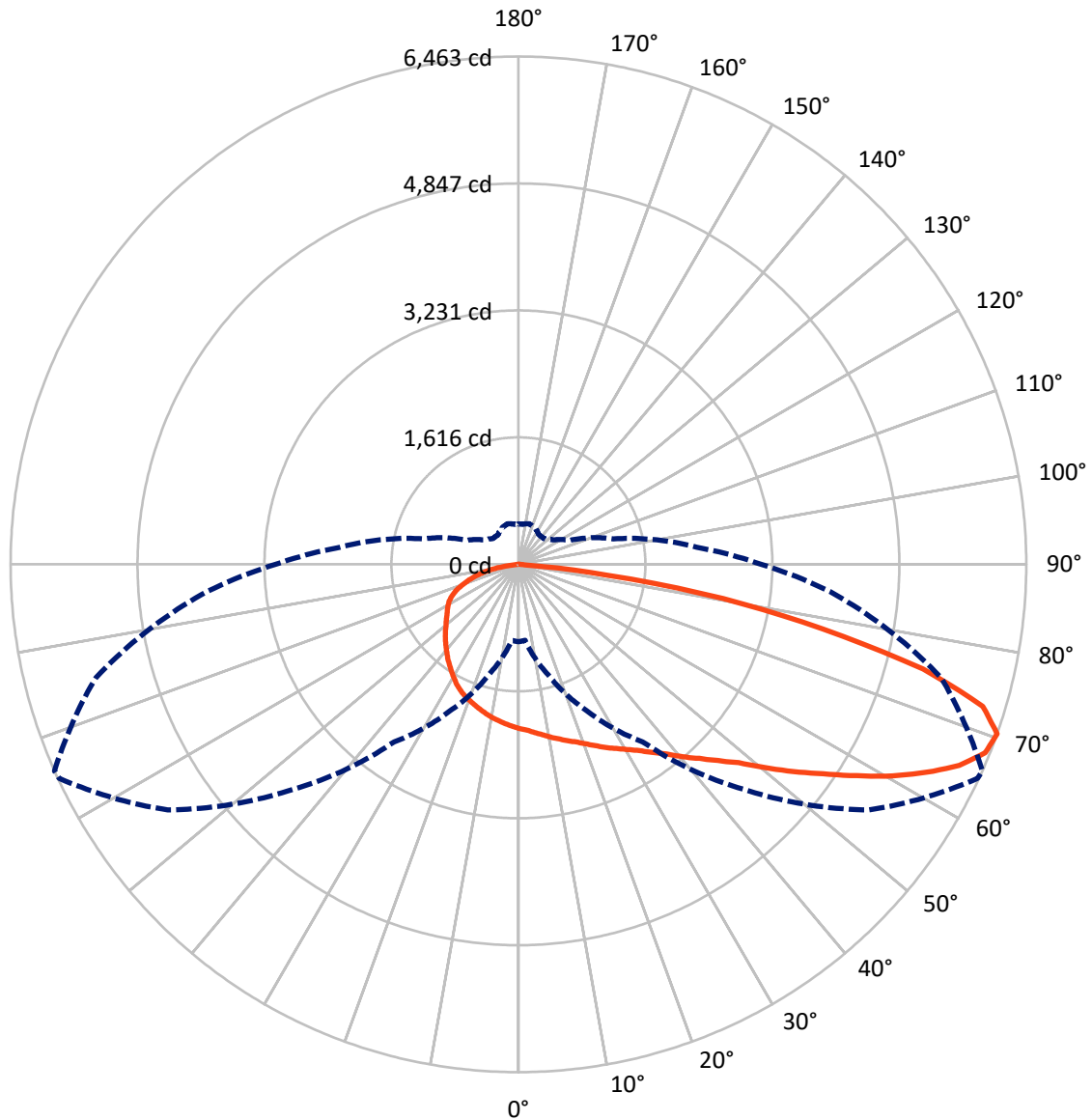
✕ Max cd
 - - - 1/2 Max cd



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

REPORT NUMBER: P868952
CATALOG NUMBER: EMM2-HSN-SA2B-730-U-T3

Luminous Intensity Polar Plot



— Vertical Plane Through 66-Deg Lateral - - - Horizontal Cone Through 70-Deg Vertical

REPORT NUMBER: P868952
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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 3131.5 | 0.0 | 3131.5 |
| | % Fixture | 25.8 | 0.0 | 25.8 |
| Street Side | Lumens | 9019.8 | 0.0 | 9019.8 |
| | % Fixture | 74.2 | 0.0 | 74.2 |
| Total | Lumens | 12151.3 | 0.0 | 12151.3 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 200.1 | 1.6 |
| 10°-20° | 595.9 | 4.9 |
| 20°-30° | 1001.0 | 8.2 |
| 30°-40° | 1508.1 | 12.4 |
| 40°-50° | 2047.4 | 16.8 |
| 50°-60° | 2432.9 | 20.0 |
| 60°-70° | 2482.9 | 20.4 |
| 70°-80° | 1660.7 | 13.7 |
| 80°-90° | 222.2 | 1.8 |
| 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° | 12151.3 | 100.0 |
| 0°-180° | 12151.3 | 100.0 |

Coefficient of Utilization



REPORT NUMBER: P868952

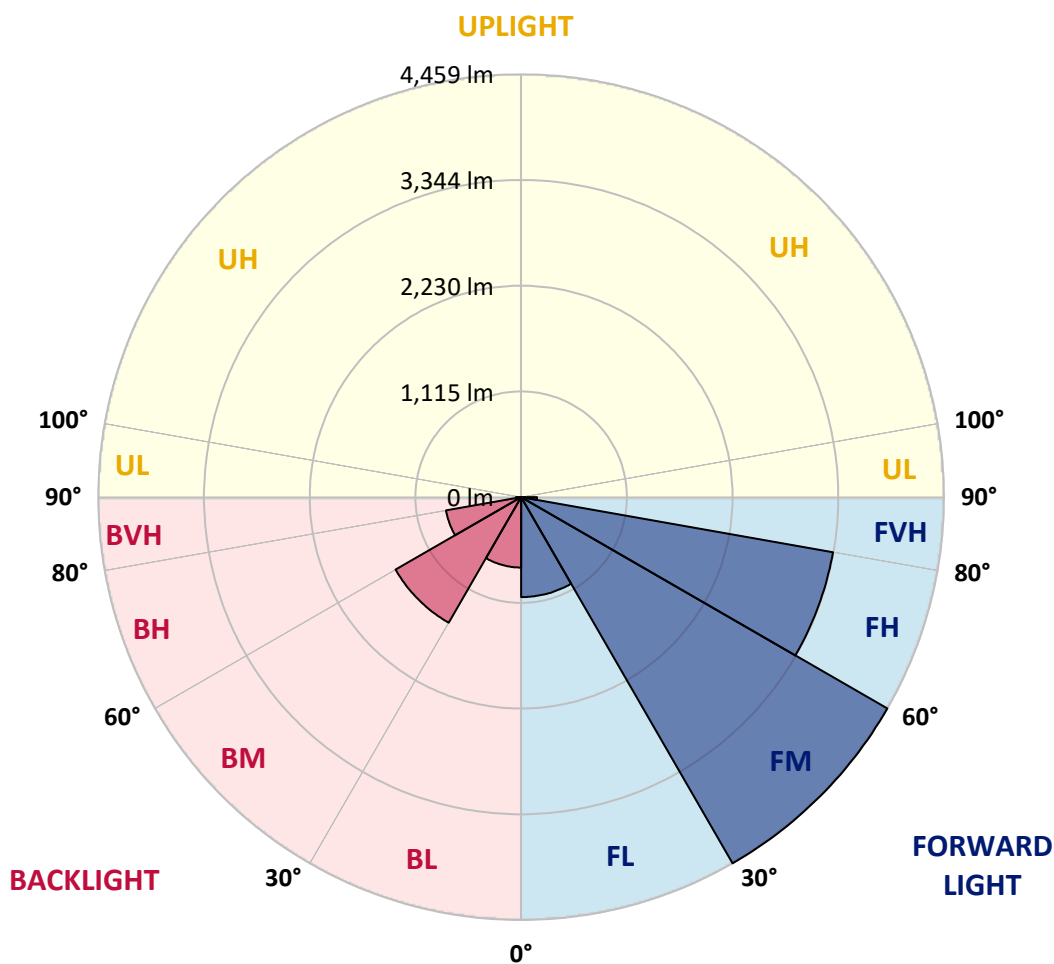
CATALOG NUMBER: EMM2-HSN-SA2B-730-U-T3

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1054.5 | 8.7 | | | |
| FM (30°-60°) | 4459.3 | 36.7 | | | |
| FH (60°-80°) | 3339.6 | 27.5 | | | G2/5000 |
| FVH (80°-90°) | 166.4 | 1.4 | | | G2/225 |
| BL (0°-30°) | 742.5 | 6.1 | B2/1000 | | |
| BM (30°-60°) | 1529.1 | 12.6 | B2/2500 | | |
| BH (60°-80°) | 804.1 | 6.6 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 55.8 | 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 III Medium





REPORT NUMBER: P868952

CATALOG NUMBER: EMM2-HSN-SA2B-730-U-T3

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 66° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 |
| 2.5° | 2165.5 | 2155.9 | 2148.6 | 2153.5 | 2139.0 | 2143.8 | 2126.9 | 2114.8 | 2112.4 | 2107.6 | 2102.8 |
| 5° | 2233.1 | 2233.1 | 2221.1 | 2221.1 | 2204.2 | 2201.7 | 2177.6 | 2151.0 | 2151.0 | 2134.1 | 2114.8 |
| 7.5° | 2305.5 | 2300.7 | 2286.2 | 2283.8 | 2264.5 | 2259.7 | 2233.1 | 2192.1 | 2189.7 | 2158.3 | 2129.3 |
| 10° | 2356.2 | 2358.7 | 2349.0 | 2349.0 | 2334.5 | 2322.4 | 2283.8 | 2240.4 | 2235.5 | 2194.5 | 2148.6 |
| 12.5° | 2394.9 | 2399.7 | 2397.3 | 2397.3 | 2385.2 | 2385.2 | 2341.8 | 2283.8 | 2279.0 | 2225.9 | 2160.7 |
| 15° | 2435.9 | 2433.5 | 2440.7 | 2443.2 | 2438.3 | 2431.1 | 2399.7 | 2332.1 | 2329.7 | 2259.7 | 2177.6 |
| 17.5° | 2472.1 | 2469.7 | 2472.1 | 2484.2 | 2486.6 | 2486.6 | 2455.2 | 2385.2 | 2375.6 | 2300.7 | 2192.1 |
| 20° | 2493.9 | 2498.7 | 2508.3 | 2522.8 | 2530.1 | 2549.4 | 2522.8 | 2448.0 | 2438.3 | 2344.2 | 2223.5 |
| 22.5° | 2575.9 | 2561.5 | 2568.7 | 2578.4 | 2588.0 | 2614.6 | 2590.4 | 2513.2 | 2505.9 | 2409.4 | 2259.7 |
| 25° | 2716.0 | 2716.0 | 2699.1 | 2682.2 | 2670.1 | 2682.2 | 2662.8 | 2588.0 | 2583.2 | 2467.3 | 2300.7 |
| 27.5° | 2959.8 | 2959.8 | 2923.6 | 2860.8 | 2781.1 | 2759.4 | 2744.9 | 2667.7 | 2653.2 | 2530.1 | 2327.3 |
| 30° | 3268.8 | 3278.5 | 3213.3 | 3107.1 | 2959.8 | 2863.2 | 2827.0 | 2742.5 | 2735.3 | 2592.8 | 2368.3 |
| 32.5° | 3599.6 | 3618.9 | 3570.6 | 3416.1 | 3174.7 | 2986.3 | 2928.4 | 2841.5 | 2824.6 | 2667.7 | 2421.4 |
| 35° | 3896.5 | 3915.8 | 3850.6 | 3705.8 | 3396.8 | 3165.0 | 3049.1 | 2950.1 | 2940.5 | 2764.2 | 2501.1 |
| 37.5° | 4137.9 | 4142.7 | 4101.7 | 3925.5 | 3582.7 | 3314.7 | 3198.8 | 3080.5 | 3061.2 | 2880.1 | 2585.6 |
| 40° | 4393.8 | 4413.1 | 4372.1 | 4154.8 | 3751.6 | 3476.4 | 3348.5 | 3237.4 | 3220.5 | 3000.8 | 2665.3 |
| 42.5° | 4661.8 | 4659.4 | 4659.4 | 4352.8 | 3920.6 | 3611.6 | 3510.2 | 3387.1 | 3377.4 | 3124.0 | 2752.2 |
| 45° | 4826.0 | 4835.6 | 4809.1 | 4471.1 | 4169.3 | 3751.6 | 3667.1 | 3577.8 | 3560.9 | 3295.4 | 2865.6 |
| 47.5° | 4867.0 | 4845.3 | 4724.6 | 4562.8 | 4449.3 | 3896.5 | 3865.1 | 3812.0 | 3773.4 | 3483.7 | 3005.7 |
| 50° | 4811.5 | 4777.7 | 4707.7 | 4603.9 | 4553.2 | 4070.3 | 4065.5 | 4092.0 | 4065.5 | 3713.0 | 3167.4 |
| 52.5° | 4603.9 | 4599.0 | 4587.0 | 4611.1 | 4529.0 | 4207.9 | 4292.4 | 4384.2 | 4379.3 | 3947.2 | 3336.4 |
| 55° | 4166.9 | 4198.3 | 4343.1 | 4495.2 | 4437.3 | 4302.1 | 4545.9 | 4722.1 | 4702.8 | 4222.4 | 3510.2 |
| 57.5° | 3720.3 | 3751.6 | 3937.5 | 4299.7 | 4347.9 | 4403.5 | 4830.8 | 5106.0 | 5074.6 | 4521.8 | 3669.6 |
| 60° | 3331.6 | 3297.8 | 3483.7 | 4005.1 | 4222.4 | 4495.2 | 5113.2 | 5494.7 | 5468.1 | 4821.1 | 3833.7 |
| 62.5° | 2716.0 | 2749.8 | 3046.7 | 3575.4 | 4046.2 | 4553.2 | 5345.0 | 5847.2 | 5830.3 | 5096.3 | 3966.5 |
| 65° | 2148.6 | 2102.8 | 2549.4 | 3124.0 | 3742.0 | 4533.8 | 5545.4 | 6177.9 | 6165.8 | 5366.7 | 4067.9 |
| 67.5° | 1460.6 | 1429.2 | 2018.3 | 2674.9 | 3329.2 | 4379.3 | 5591.3 | 6400.0 | 6404.8 | 5526.1 | 4094.5 |
| 70° | 985.0 | 970.5 | 1450.9 | 2056.9 | 2757.0 | 4046.2 | 5448.8 | 6445.9 | 6462.8 | 5567.1 | 3976.2 |
| 72.5° | 726.7 | 724.3 | 1062.2 | 1467.8 | 2052.1 | 3416.1 | 5060.1 | 6146.5 | 6177.9 | 5277.4 | 3628.5 |
| 75° | 572.2 | 579.4 | 758.1 | 1042.9 | 1368.8 | 2527.7 | 4256.2 | 5270.2 | 5318.5 | 4558.0 | 3012.9 |
| 77.5° | 468.4 | 468.4 | 531.1 | 748.4 | 915.0 | 1569.2 | 3061.2 | 3857.9 | 3954.4 | 3517.5 | 2320.0 |
| 80° | 379.0 | 386.3 | 393.5 | 521.5 | 606.0 | 895.7 | 1781.7 | 2573.5 | 2643.5 | 2450.4 | 1675.4 |
| 82.5° | 207.6 | 222.1 | 214.9 | 270.4 | 304.2 | 415.2 | 707.4 | 1040.5 | 1146.7 | 1021.2 | 760.5 |
| 85° | 14.5 | 9.7 | 16.9 | 21.7 | 26.6 | 41.0 | 55.5 | 77.3 | 72.4 | 103.8 | 53.1 |
| 87.5° | 2.4 | 2.4 | 2.4 | 4.8 | 4.8 | 7.2 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 |
| 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: P868952

CATALOG NUMBER: EMM2-HSN-SA2B-730-U-T3

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 | 2090.7 |
| 2.5° | 2100.3 | 2088.3 | 2069.0 | 2064.1 | 2056.9 | 2047.2 | 2037.6 | 2023.1 | 2018.3 | 2023.1 | 2027.9 |
| 5° | 2102.8 | 2085.9 | 2054.5 | 2035.2 | 2015.8 | 1998.9 | 1979.6 | 1960.3 | 1948.2 | 1950.7 | 1960.3 |
| 7.5° | 2110.0 | 2085.9 | 2037.6 | 2006.2 | 1974.8 | 1948.2 | 1916.9 | 1895.1 | 1880.7 | 1883.1 | 1890.3 |
| 10° | 2119.7 | 2085.9 | 2027.9 | 1974.8 | 1931.3 | 1892.7 | 1861.3 | 1834.8 | 1820.3 | 1817.9 | 1820.3 |
| 12.5° | 2122.1 | 2083.4 | 2006.2 | 1941.0 | 1887.9 | 1837.2 | 1803.4 | 1779.3 | 1764.8 | 1757.5 | 1762.4 |
| 15° | 2129.3 | 2076.2 | 1984.5 | 1904.8 | 1839.6 | 1786.5 | 1745.5 | 1716.5 | 1706.8 | 1702.0 | 1699.6 |
| 17.5° | 2139.0 | 2073.8 | 1965.1 | 1868.6 | 1791.3 | 1731.0 | 1694.8 | 1665.8 | 1653.7 | 1648.9 | 1653.7 |
| 20° | 2153.5 | 2076.2 | 1943.4 | 1832.4 | 1747.9 | 1687.5 | 1646.5 | 1617.5 | 1607.8 | 1605.4 | 1603.0 |
| 22.5° | 2172.8 | 2081.0 | 1926.5 | 1798.6 | 1699.6 | 1639.2 | 1598.2 | 1578.9 | 1571.6 | 1574.0 | 1574.0 |
| 25° | 2192.1 | 2085.9 | 1902.4 | 1752.7 | 1648.9 | 1586.1 | 1557.1 | 1542.7 | 1547.5 | 1557.1 | 1557.1 |
| 27.5° | 2209.0 | 2083.4 | 1868.6 | 1704.4 | 1588.5 | 1530.6 | 1508.9 | 1511.3 | 1523.4 | 1540.3 | 1542.7 |
| 30° | 2230.7 | 2083.4 | 1832.4 | 1644.1 | 1520.9 | 1465.4 | 1460.6 | 1479.9 | 1499.2 | 1516.1 | 1516.1 |
| 32.5° | 2264.5 | 2097.9 | 1803.4 | 1583.7 | 1450.9 | 1407.5 | 1429.2 | 1455.8 | 1477.5 | 1494.4 | 1499.2 |
| 35° | 2322.4 | 2129.3 | 1784.1 | 1523.4 | 1383.3 | 1351.9 | 1393.0 | 1436.4 | 1450.9 | 1463.0 | 1465.4 |
| 37.5° | 2378.0 | 2158.3 | 1759.9 | 1465.4 | 1313.3 | 1301.2 | 1356.8 | 1402.6 | 1405.1 | 1412.3 | 1412.3 |
| 40° | 2431.1 | 2180.0 | 1728.6 | 1402.6 | 1245.7 | 1245.7 | 1310.9 | 1349.5 | 1344.7 | 1337.5 | 1339.9 |
| 42.5° | 2489.0 | 2192.1 | 1692.3 | 1344.7 | 1190.2 | 1190.2 | 1243.3 | 1277.1 | 1274.7 | 1284.3 | 1291.6 |
| 45° | 2559.0 | 2216.2 | 1644.1 | 1291.6 | 1132.3 | 1122.6 | 1166.1 | 1195.0 | 1231.2 | 1274.7 | 1286.8 |
| 47.5° | 2655.6 | 2250.0 | 1605.4 | 1233.6 | 1084.0 | 1050.2 | 1067.1 | 1127.4 | 1168.5 | 1204.7 | 1209.5 |
| 50° | 2757.0 | 2298.3 | 1571.6 | 1173.3 | 1026.0 | 965.7 | 980.2 | 1047.8 | 1071.9 | 1086.4 | 1093.6 |
| 52.5° | 2865.6 | 2336.9 | 1542.7 | 1122.6 | 965.7 | 878.8 | 898.1 | 963.3 | 980.2 | 992.2 | 994.6 |
| 55° | 2959.8 | 2368.3 | 1506.5 | 1074.3 | 900.5 | 796.7 | 820.8 | 883.6 | 900.5 | 915.0 | 915.0 |
| 57.5° | 3058.8 | 2397.3 | 1482.3 | 1033.3 | 830.5 | 729.1 | 746.0 | 808.8 | 832.9 | 837.7 | 845.0 |
| 60° | 3140.9 | 2423.8 | 1460.6 | 994.6 | 765.3 | 668.7 | 680.8 | 736.3 | 765.3 | 767.7 | 772.5 |
| 62.5° | 3198.8 | 2440.7 | 1448.5 | 946.4 | 700.1 | 608.4 | 618.0 | 673.6 | 707.4 | 714.6 | 717.0 |
| 65° | 3235.0 | 2450.4 | 1426.8 | 883.6 | 644.6 | 557.7 | 557.7 | 613.2 | 647.0 | 663.9 | 668.7 |
| 67.5° | 3218.1 | 2433.5 | 1368.8 | 811.2 | 593.9 | 507.0 | 504.6 | 560.1 | 589.1 | 598.7 | 601.1 |
| 70° | 3087.7 | 2334.5 | 1250.5 | 721.8 | 540.8 | 461.1 | 456.3 | 507.0 | 533.5 | 511.8 | 514.2 |
| 72.5° | 2822.2 | 2110.0 | 1088.8 | 632.5 | 485.3 | 417.7 | 412.8 | 456.3 | 458.7 | 458.7 | 456.3 |
| 75° | 2378.0 | 1723.7 | 869.1 | 538.4 | 427.3 | 371.8 | 374.2 | 408.0 | 410.4 | 422.5 | 415.2 |
| 77.5° | 1822.7 | 1277.1 | 678.4 | 429.7 | 362.1 | 330.7 | 342.8 | 354.9 | 371.8 | 388.7 | 371.8 |
| 80° | 1325.4 | 881.2 | 470.8 | 321.1 | 280.0 | 280.0 | 284.9 | 296.9 | 321.1 | 338.0 | 321.1 |
| 82.5° | 567.3 | 388.7 | 217.3 | 159.3 | 137.6 | 135.2 | 137.6 | 137.6 | 169.0 | 173.8 | 152.1 |
| 85° | 43.5 | 36.2 | 26.6 | 26.6 | 21.7 | 12.1 | 12.1 | 9.7 | 7.2 | 7.2 | 7.2 |
| 87.5° | 9.7 | 7.2 | 7.2 | 7.2 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 |
| 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: SP1-2407-157-4

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-730-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-730-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-40-730-U-5WQ-2**
 Description: Epic Modern Light Square 40W 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

REPORT NUMBER: SP1-2407-157-4

| 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

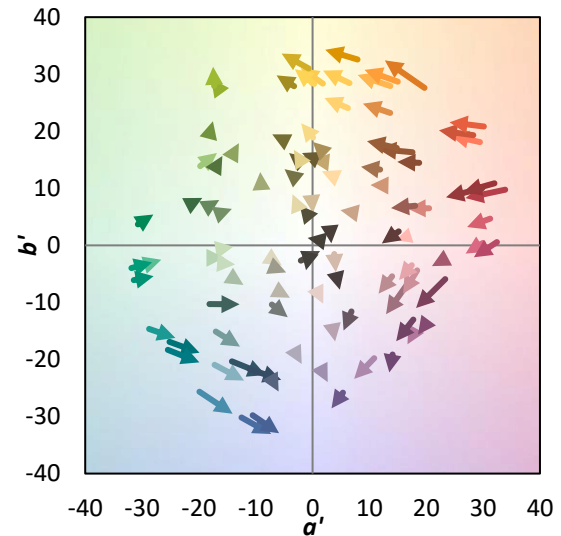
| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 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

$R_f = 74.6$
 $R_g = 94$
 $CIE R_a = 71.7$
 $R_9 = -34.8$



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)