

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: P869046

Luminaire Tested: **EMM2-HSN-SA3B-722-U-T4W-HSS**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P869046
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-SA3B-722-U-T4W-HSS
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 150W 70CRI 2200K
FITURE w/ TYPE IV WIDE DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD
Light Source: (30) 2200K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

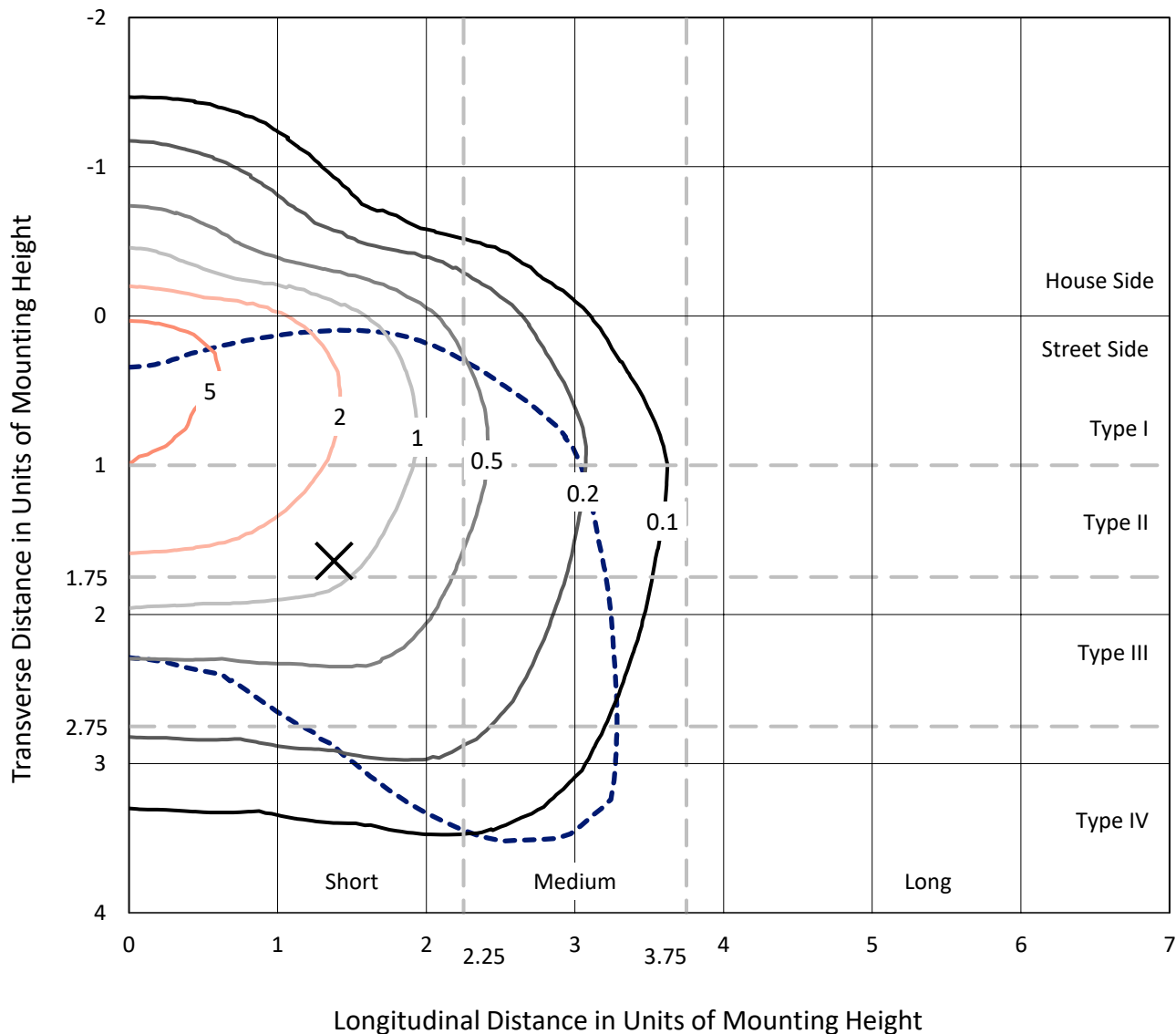
Lumens per Lamp: N/A
Luminaire Lumens: 11608 lumens
Efficiency: N/A
Efficacy: 86.6 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B1 - U0 - G2

Input Watts (W): 134
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 6.70%
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

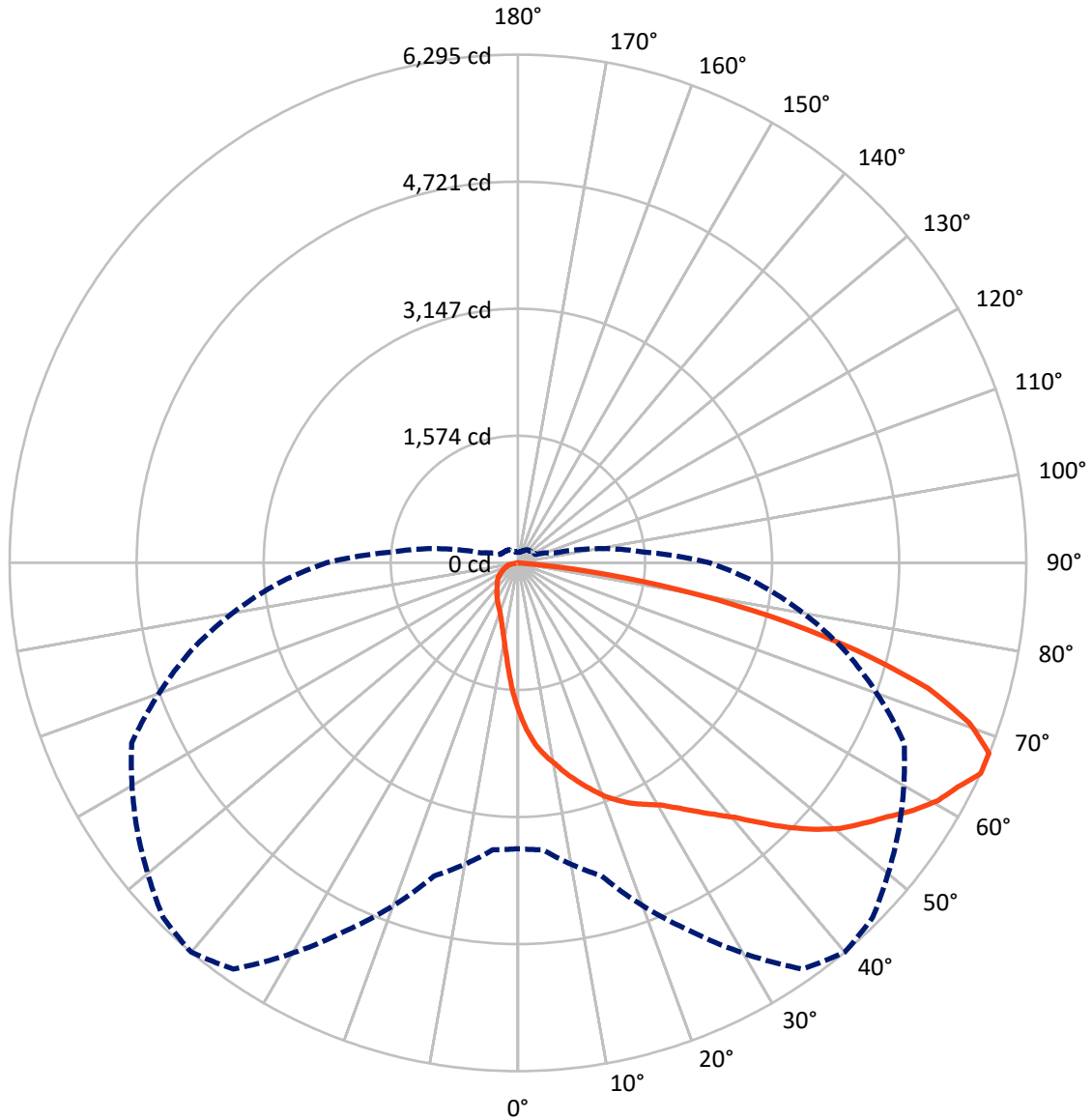
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 6.7 fc
 Type IV - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 40-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

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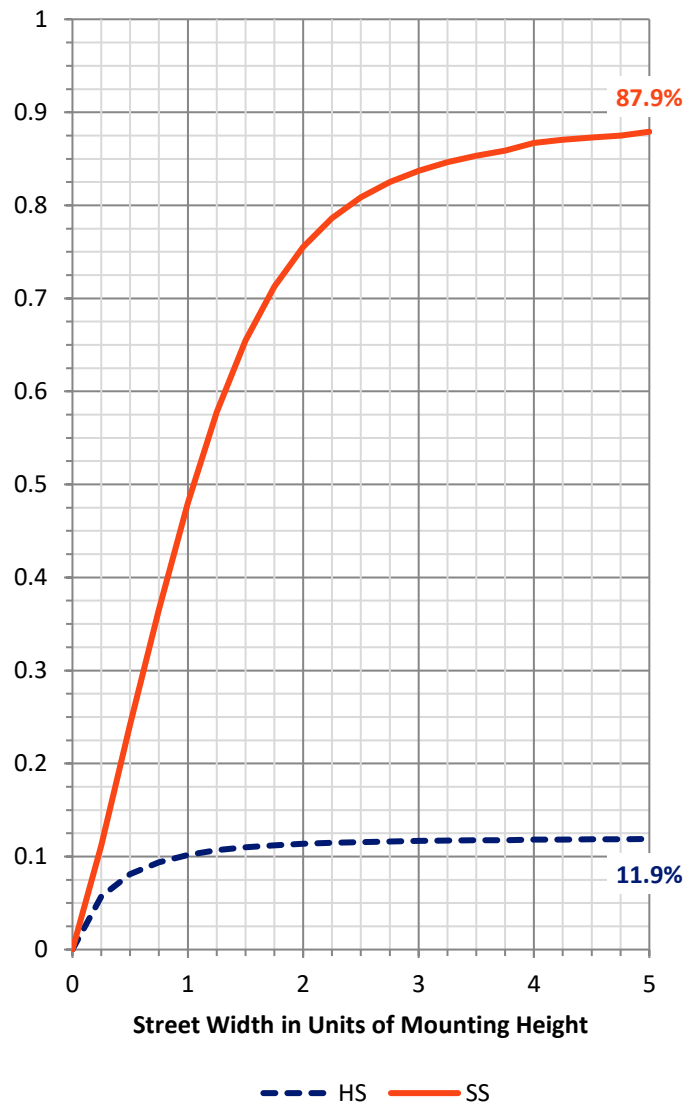
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 1389.7 | 0.0 | 1389.7 |
| | % Fixture | 12.0 | 0.0 | 12.0 |
| Street Side | Lumens | 10218.3 | 0.0 | 10218.3 |
| | % Fixture | 88.0 | 0.0 | 88.0 |
| Total | Lumens | 11608.0 | 0.0 | 11608.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 172.7 | 1.5 |
| 10°-20° | 519.4 | 4.5 |
| 20°-30° | 893.4 | 7.7 |
| 30°-40° | 1350.5 | 11.6 |
| 40°-50° | 1974.8 | 17.0 |
| 50°-60° | 2522.2 | 21.7 |
| 60°-70° | 2517.2 | 21.7 |
| 70°-80° | 1476.1 | 12.7 |
| 80°-90° | 181.8 | 1.6 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 11608.0 | 100.0 |
| 0°-180° | 11608.0 | 100.0 |



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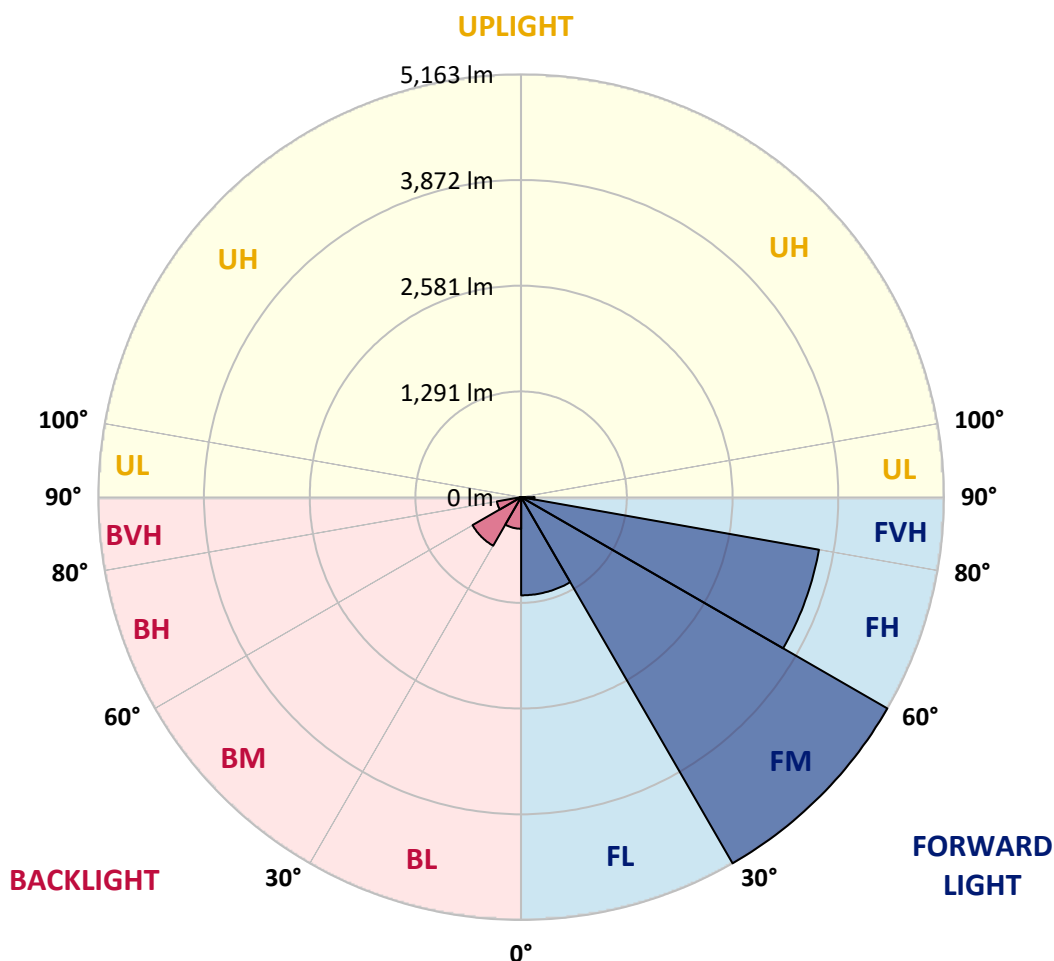
CATALOG NUMBER: EMM2-HSN-SA3B-722-U-T4W-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1199.0 | 10.3 | | | |
| FM (30°-60°) | 5162.7 | 44.5 | | | |
| FH (60°-80°) | 3692.3 | 31.8 | | | G2/5000 |
| FVH (80°-90°) | 164.3 | 1.4 | | | G2/225 |
| BL (0°-30°) | 386.5 | 3.3 | B1/500 | | |
| BM (30°-60°) | 684.8 | 5.9 | B1/1000 | | |
| BH (60°-80°) | 300.9 | 2.6 | B1/500 | | G1/500 |
| BVH (80°-90°) | 17.5 | 0.2 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G2

Type IV Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 40° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 |
| 2.5° | 2152.7 | 2142.9 | 2123.3 | 2106.9 | 2084.0 | 2064.4 | 2044.8 | 2008.8 | 1963.0 | 1923.7 | 1874.6 |
| 5° | 2365.4 | 2349.0 | 2335.9 | 2316.3 | 2277.0 | 2260.7 | 2247.6 | 2172.4 | 2093.8 | 2012.0 | 1904.1 |
| 7.5° | 2515.9 | 2529.0 | 2502.8 | 2473.3 | 2424.3 | 2404.6 | 2385.0 | 2309.8 | 2211.6 | 2093.8 | 1940.1 |
| 10° | 2689.3 | 2692.5 | 2659.8 | 2623.8 | 2571.5 | 2532.2 | 2506.1 | 2414.5 | 2306.5 | 2175.6 | 1979.3 |
| 12.5° | 2856.1 | 2856.1 | 2836.5 | 2784.1 | 2715.4 | 2679.5 | 2633.7 | 2529.0 | 2398.1 | 2244.3 | 2025.1 |
| 15° | 2990.3 | 2996.8 | 2980.4 | 2941.2 | 2865.9 | 2816.9 | 2771.1 | 2650.0 | 2483.2 | 2322.8 | 2061.1 |
| 17.5° | 3111.3 | 3108.0 | 3098.2 | 3062.2 | 2990.3 | 2951.0 | 2905.2 | 2771.1 | 2581.3 | 2385.0 | 2116.7 |
| 20° | 3193.1 | 3193.1 | 3189.8 | 3170.2 | 3117.9 | 3088.4 | 3032.8 | 2892.1 | 2689.3 | 2476.6 | 2175.6 |
| 22.5° | 3255.3 | 3252.0 | 3252.0 | 3255.3 | 3225.8 | 3196.4 | 3173.5 | 3032.8 | 2800.5 | 2555.1 | 2234.5 |
| 25° | 3307.6 | 3304.3 | 3314.1 | 3320.7 | 3307.6 | 3301.1 | 3274.9 | 3166.9 | 2937.9 | 2646.7 | 2293.4 |
| 27.5° | 3376.3 | 3386.1 | 3382.9 | 3382.9 | 3379.6 | 3386.1 | 3382.9 | 3291.2 | 3072.0 | 2744.9 | 2355.6 |
| 30° | 3484.3 | 3500.6 | 3490.8 | 3477.7 | 3477.7 | 3481.0 | 3497.4 | 3438.5 | 3229.1 | 2865.9 | 2424.3 |
| 32.5° | 3736.2 | 3719.8 | 3651.1 | 3605.3 | 3611.9 | 3615.1 | 3631.5 | 3598.8 | 3386.1 | 3003.3 | 2496.2 |
| 35° | 4024.1 | 4004.5 | 3929.2 | 3824.5 | 3788.5 | 3775.4 | 3772.2 | 3752.5 | 3556.2 | 3150.6 | 2581.3 |
| 37.5° | 4397.1 | 4403.6 | 4292.4 | 4141.9 | 4033.9 | 3952.1 | 3935.8 | 3893.2 | 3703.5 | 3284.7 | 2669.6 |
| 40° | 4776.6 | 4750.4 | 4655.5 | 4508.3 | 4295.6 | 4145.1 | 4096.1 | 4037.2 | 3870.3 | 3425.4 | 2754.7 |
| 42.5° | 5143.0 | 5093.9 | 4969.6 | 4809.3 | 4560.6 | 4397.1 | 4285.8 | 4210.6 | 4024.1 | 3579.1 | 2836.5 |
| 45° | 5620.6 | 5480.0 | 5257.5 | 5113.5 | 4802.7 | 4668.6 | 4567.2 | 4400.3 | 4207.3 | 3732.9 | 2934.6 |
| 47.5° | 5996.9 | 5725.3 | 5522.5 | 5460.3 | 5054.6 | 4930.3 | 4838.7 | 4606.4 | 4393.8 | 3906.3 | 3036.1 |
| 50° | 5928.2 | 5761.3 | 5712.2 | 5656.6 | 5244.4 | 5169.2 | 5084.1 | 4842.0 | 4583.5 | 4089.5 | 3134.2 |
| 52.5° | 5751.5 | 5771.1 | 5833.3 | 5738.4 | 5411.3 | 5358.9 | 5303.3 | 5093.9 | 4773.3 | 4240.0 | 3222.5 |
| 55° | 5610.8 | 5650.1 | 5816.9 | 5787.5 | 5610.8 | 5551.9 | 5512.7 | 5342.6 | 4956.5 | 4377.4 | 3297.8 |
| 57.5° | 5355.6 | 5322.9 | 5532.3 | 5872.6 | 5823.5 | 5777.7 | 5738.4 | 5604.3 | 5143.0 | 4475.6 | 3346.9 |
| 60° | 4953.2 | 4832.2 | 5113.5 | 5767.9 | 5970.7 | 5977.2 | 5954.3 | 5800.6 | 5293.5 | 4475.6 | 3320.7 |
| 62.5° | 4387.2 | 4272.7 | 4619.5 | 5417.8 | 6049.2 | 6111.4 | 6098.3 | 5869.3 | 5358.9 | 4377.4 | 3219.3 |
| 65° | 3539.9 | 3566.1 | 4014.3 | 5021.9 | 6140.8 | 6294.6 | 6212.8 | 5758.0 | 5277.1 | 4187.7 | 2990.3 |
| 67.5° | 2826.7 | 2905.2 | 3307.6 | 4508.3 | 6098.3 | 6291.3 | 6176.8 | 5444.0 | 4927.1 | 3922.7 | 2640.2 |
| 70° | 2231.2 | 2283.6 | 2617.3 | 3814.7 | 5725.3 | 5928.2 | 5784.2 | 4963.0 | 4334.9 | 3513.7 | 2195.3 |
| 72.5° | 1743.8 | 1792.8 | 2077.5 | 3052.4 | 5077.5 | 5313.1 | 5133.2 | 4315.3 | 3595.5 | 2980.4 | 1743.8 |
| 75° | 1325.0 | 1361.0 | 1573.6 | 2352.3 | 4043.7 | 4338.2 | 4207.3 | 3454.8 | 2807.0 | 2358.8 | 1334.8 |
| 77.5° | 853.9 | 903.0 | 1141.8 | 1648.9 | 2856.1 | 3209.5 | 3225.8 | 2581.3 | 2018.6 | 1704.5 | 981.5 |
| 80° | 566.0 | 585.6 | 732.8 | 1073.1 | 1756.9 | 2031.7 | 2126.6 | 1743.8 | 1289.0 | 1086.2 | 706.7 |
| 82.5° | 235.6 | 261.7 | 350.1 | 539.8 | 880.1 | 883.3 | 1010.9 | 736.1 | 523.5 | 461.3 | 297.7 |
| 85° | 6.5 | 13.1 | 9.8 | 26.2 | 22.9 | 36.0 | 42.5 | 58.9 | 42.5 | 45.8 | 45.8 |
| 87.5° | 0.0 | 0.0 | 3.3 | 3.3 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 9.8 | 6.5 |
| 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: P869046

CATALOG NUMBER: EMM2-HSN-SA3B-722-U-T4W-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 | 1845.2 |
| 2.5° | 1851.7 | 1822.3 | 1763.4 | 1717.6 | 1668.5 | 1632.5 | 1599.8 | 1563.8 | 1540.9 | 1544.2 | 1521.3 |
| 5° | 1851.7 | 1796.1 | 1678.3 | 1573.6 | 1478.8 | 1410.1 | 1334.8 | 1275.9 | 1233.4 | 1226.9 | 1246.5 |
| 7.5° | 1861.5 | 1769.9 | 1593.3 | 1436.2 | 1305.4 | 1197.4 | 1118.9 | 1060.0 | 1030.6 | 1010.9 | 1007.7 |
| 10° | 1871.4 | 1750.3 | 1514.8 | 1315.2 | 1151.6 | 1033.8 | 965.1 | 899.7 | 867.0 | 863.7 | 853.9 |
| 12.5° | 1877.9 | 1727.4 | 1442.8 | 1194.1 | 1024.0 | 912.8 | 844.1 | 791.7 | 765.6 | 765.6 | 762.3 |
| 15° | 1900.8 | 1720.9 | 1367.5 | 1102.5 | 925.9 | 817.9 | 759.0 | 716.5 | 700.1 | 690.3 | 687.0 |
| 17.5° | 1920.4 | 1707.8 | 1302.1 | 1010.9 | 837.5 | 742.7 | 687.0 | 657.6 | 641.2 | 634.7 | 631.4 |
| 20° | 1949.9 | 1701.2 | 1239.9 | 935.7 | 772.1 | 680.5 | 638.0 | 611.8 | 602.0 | 595.4 | 595.4 |
| 22.5° | 1979.3 | 1694.7 | 1177.8 | 870.3 | 716.5 | 634.7 | 595.4 | 572.5 | 562.7 | 559.4 | 556.2 |
| 25° | 2015.3 | 1691.4 | 1125.4 | 814.6 | 667.4 | 598.7 | 562.7 | 543.1 | 530.0 | 523.5 | 523.5 |
| 27.5° | 2051.3 | 1694.7 | 1073.1 | 759.0 | 624.9 | 566.0 | 530.0 | 507.1 | 497.3 | 484.2 | 487.5 |
| 30° | 2100.4 | 1698.0 | 1030.6 | 713.2 | 588.9 | 533.3 | 500.6 | 471.1 | 458.0 | 451.5 | 451.5 |
| 32.5° | 2149.5 | 1711.1 | 988.0 | 670.7 | 552.9 | 507.1 | 467.8 | 441.7 | 425.3 | 422.0 | 418.8 |
| 35° | 2201.8 | 1720.9 | 948.8 | 634.7 | 523.5 | 477.7 | 438.4 | 412.2 | 399.1 | 395.9 | 395.9 |
| 37.5° | 2260.7 | 1737.2 | 919.3 | 602.0 | 494.0 | 448.2 | 412.2 | 386.1 | 376.2 | 373.0 | 373.0 |
| 40° | 2322.8 | 1763.4 | 896.4 | 572.5 | 471.1 | 422.0 | 389.3 | 366.4 | 359.9 | 356.6 | 356.6 |
| 42.5° | 2385.0 | 1786.3 | 876.8 | 549.6 | 448.2 | 399.1 | 373.0 | 350.1 | 340.2 | 340.2 | 340.2 |
| 45° | 2443.9 | 1802.7 | 857.2 | 526.7 | 425.3 | 382.8 | 353.3 | 333.7 | 323.9 | 323.9 | 323.9 |
| 47.5° | 2496.2 | 1819.0 | 827.7 | 503.8 | 402.4 | 359.9 | 337.0 | 317.3 | 307.5 | 307.5 | 307.5 |
| 50° | 2551.9 | 1828.8 | 795.0 | 474.4 | 379.5 | 343.5 | 320.6 | 297.7 | 291.2 | 287.9 | 287.9 |
| 52.5° | 2597.7 | 1828.8 | 752.5 | 444.9 | 353.3 | 320.6 | 301.0 | 281.4 | 271.5 | 265.0 | 265.0 |
| 55° | 2630.4 | 1828.8 | 706.7 | 409.0 | 327.2 | 301.0 | 281.4 | 261.7 | 248.6 | 238.8 | 238.8 |
| 57.5° | 2650.0 | 1819.0 | 654.3 | 366.4 | 301.0 | 274.8 | 261.7 | 238.8 | 212.7 | 193.0 | 186.5 |
| 60° | 2633.7 | 1789.6 | 598.7 | 320.6 | 271.5 | 251.9 | 242.1 | 212.7 | 176.7 | 166.9 | 166.9 |
| 62.5° | 2564.9 | 1720.9 | 543.1 | 281.4 | 248.6 | 229.0 | 219.2 | 186.5 | 160.3 | 150.5 | 150.5 |
| 65° | 2371.9 | 1554.0 | 474.4 | 245.4 | 222.5 | 209.4 | 196.3 | 166.9 | 144.0 | 130.9 | 130.9 |
| 67.5° | 2090.6 | 1341.4 | 395.9 | 215.9 | 199.6 | 189.8 | 179.9 | 150.5 | 127.6 | 114.5 | 114.5 |
| 70° | 1694.7 | 1082.9 | 337.0 | 189.8 | 176.7 | 170.1 | 160.3 | 137.4 | 111.2 | 101.4 | 101.4 |
| 72.5° | 1331.5 | 850.6 | 281.4 | 170.1 | 163.6 | 150.5 | 144.0 | 121.0 | 101.4 | 91.6 | 91.6 |
| 75° | 991.3 | 634.7 | 248.6 | 150.5 | 150.5 | 134.1 | 130.9 | 108.0 | 88.3 | 81.8 | 81.8 |
| 77.5° | 729.6 | 471.1 | 215.9 | 130.9 | 130.9 | 117.8 | 111.2 | 94.9 | 81.8 | 75.2 | 75.2 |
| 80° | 494.0 | 320.6 | 160.3 | 98.1 | 98.1 | 94.9 | 88.3 | 81.8 | 68.7 | 62.2 | 58.9 |
| 82.5° | 209.4 | 134.1 | 78.5 | 49.1 | 45.8 | 36.0 | 29.4 | 22.9 | 22.9 | 19.6 | 19.6 |
| 85° | 36.0 | 16.4 | 16.4 | 13.1 | 9.8 | 9.8 | 9.8 | 6.5 | 6.5 | 6.5 | 6.5 |
| 87.5° | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| 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: SP1-2407-157-2

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-722-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-722-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-2
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 08/20/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-SA-40-722-U-5WQ-2**
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

Spectral Parameters

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

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



Test Conditions

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

REPORT NUMBER: SP1-2407-157-2

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

REPORT NUMBER: SP1-2407-157-2

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 2200K 4-step quadrangle

REPORT NUMBER: SP1-2407-157-2

Photopic Flux vs. Wavelength



Photopic Lumens: NR

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

REPORT NUMBER: SP1-2407-157-2

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 0.96

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

REPORT NUMBER: SP1-2407-157-2

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.71

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

Summary

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



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 76 | CES51 = 88 | CES76 = 78 |
| CES02 = 65 | CES27 = 94 | CES52 = 85 | CES77 = 75 |
| CES03 = 32 | CES28 = 93 | CES53 = 80 | CES78 = 79 |
| CES04 = 72 | CES29 = 81 | CES54 = 86 | CES79 = 82 |
| CES05 = 51 | CES30 = 91 | CES55 = 83 | CES80 = 81 |
| CES06 = 52 | CES31 = 83 | CES56 = 77 | CES81 = 51 |
| CES07 = 44 | CES32 = 75 | CES57 = 75 | CES82 = 92 |
| CES08 = 42 | CES33 = 88 | CES58 = 76 | CES83 = 88 |
| CES09 = 29 | CES34 = 88 | CES59 = 84 | CES84 = 90 |
| CES10 = 79 | CES35 = 94 | CES60 = 91 | CES85 = 65 |
| CES11 = 62 | CES36 = 90 | CES61 = 82 | CES86 = 48 |
| CES12 = 68 | CES37 = 97 | CES62 = 91 | CES87 = 76 |
| CES13 = 45 | CES38 = 98 | CES63 = 86 | CES88 = 78 |
| CES14 = 75 | CES39 = 97 | CES64 = 70 | CES89 = 61 |
| CES15 = 72 | CES40 = 94 | CES65 = 71 | CES90 = 80 |
| CES16 = 48 | CES41 = 95 | CES66 = 71 | CES91 = 80 |
| CES17 = 51 | CES42 = 89 | CES67 = 70 | CES92 = 51 |
| CES18 = 57 | CES43 = 80 | CES68 = 74 | CES93 = 68 |
| CES19 = 74 | CES44 = 99 | CES69 = 84 | CES94 = 44 |
| CES20 = 68 | CES45 = 83 | CES70 = 72 | CES95 = 66 |
| CES21 = 88 | CES46 = 81 | CES71 = 75 | CES96 = 75 |
| CES22 = 81 | CES47 = 88 | CES72 = 89 | CES97 = 76 |
| CES23 = 92 | CES48 = 73 | CES73 = 68 | CES98 = 72 |
| CES24 = 92 | CES49 = 82 | CES74 = 85 | CES99 = 63 |
| CES25 = 73 | CES50 = 87 | CES75 = 80 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)