

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: P868486

Luminaire Tested: **EMM2-HTN-SA3B-722-U-T2U-HSS**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P868486
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HTN-SA3B-722-U-T2U-HSS
Description: EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 150W 70CRI 2200K
FIXTURE w/ TYPE II URBAN DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD
Light Source: (30) 2200K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

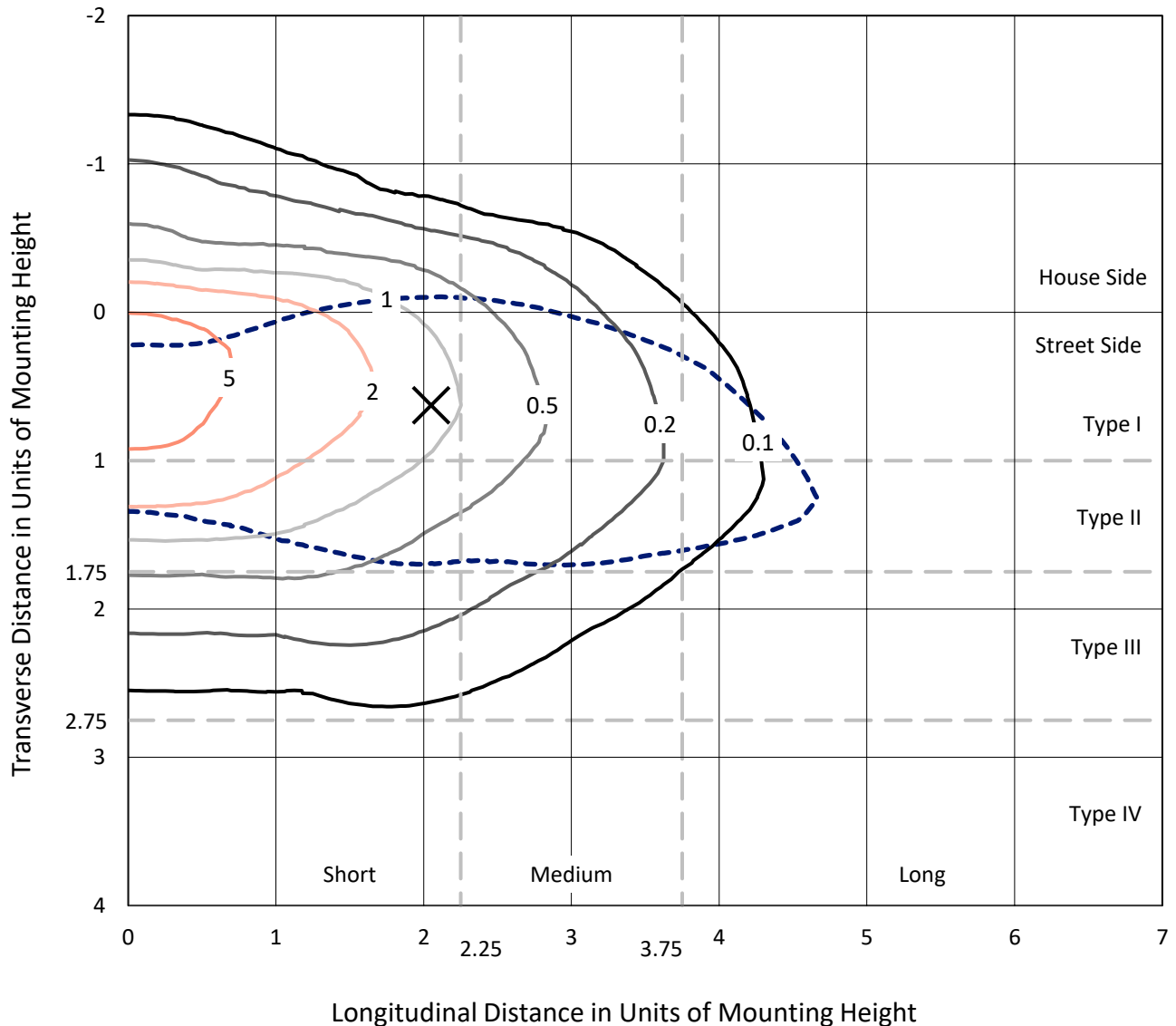
Lumens per Lamp: N/A
Luminaire Lumens: 11121.4 lumens
Efficiency: N/A
Efficacy: 83.0 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')
IES Classification: Type II - Short
BUG Rating: B1 - U0 - G2

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

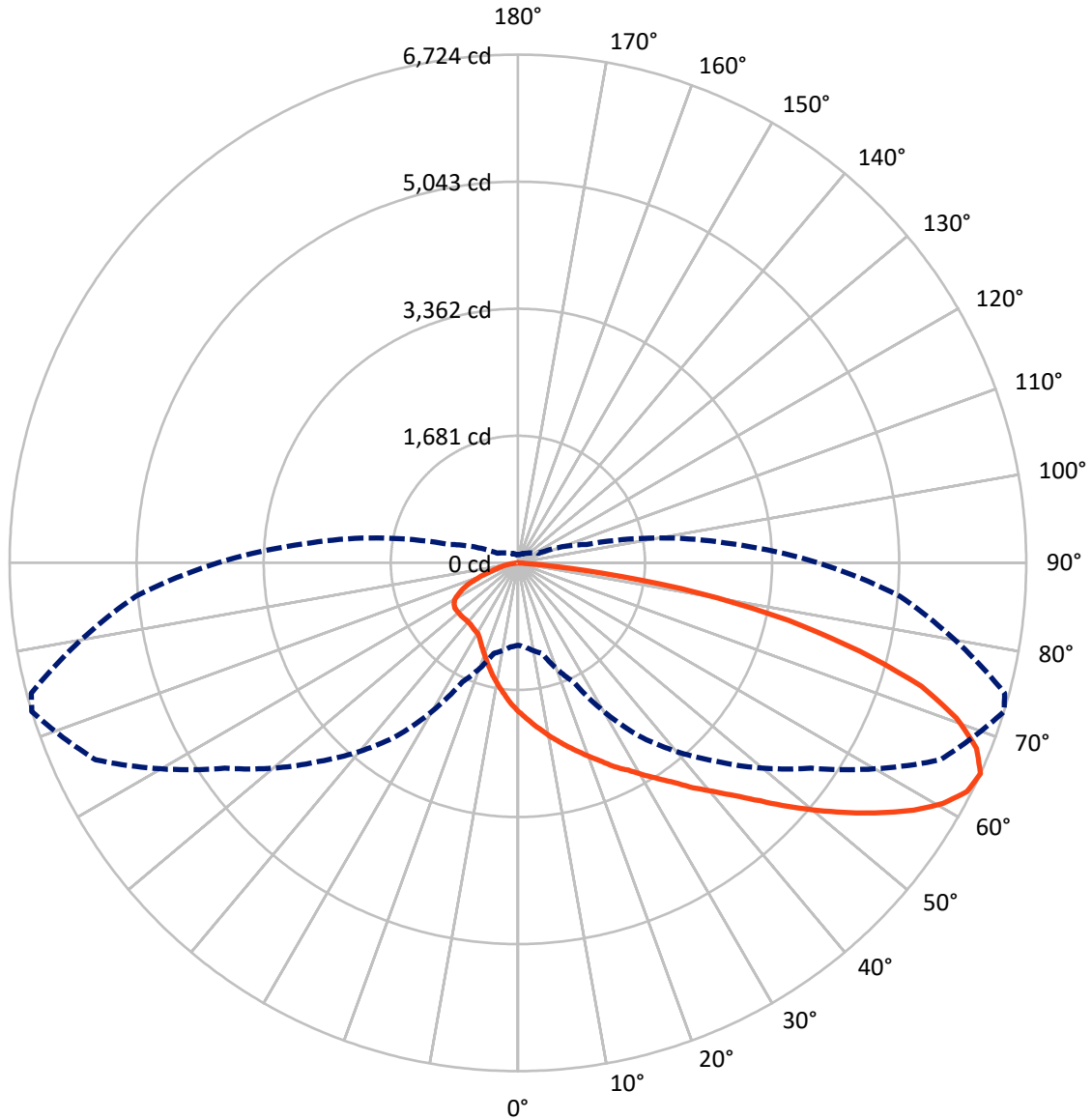
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 8 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 73-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

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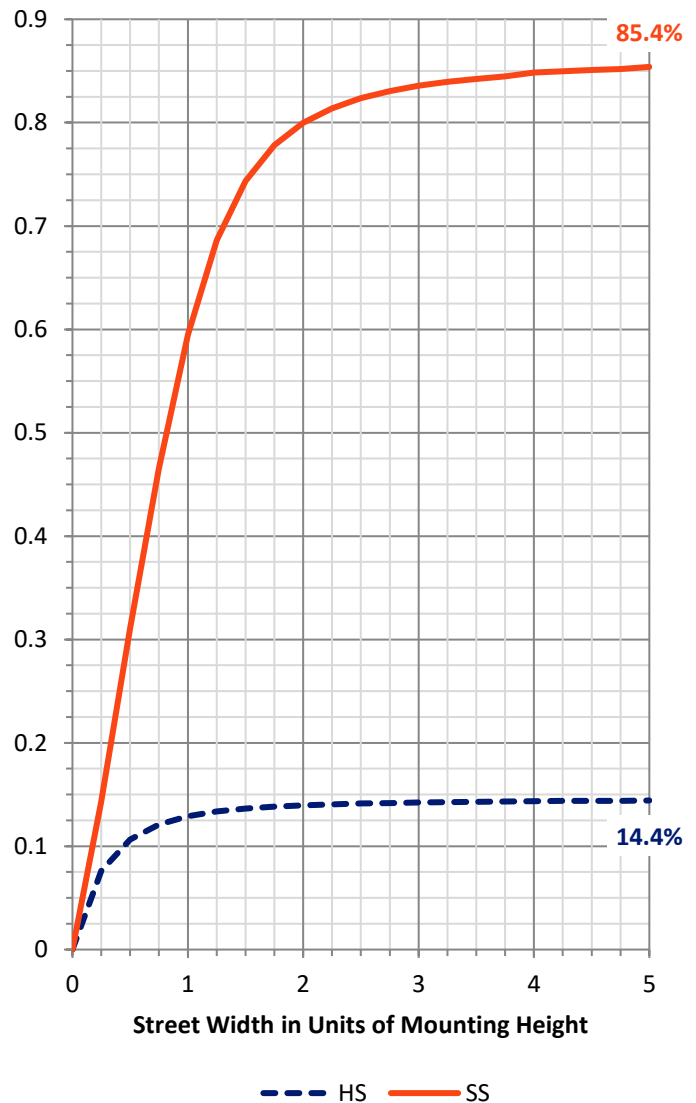
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 1617.2 | 0.0 | 1617.2 |
| | % Fixture | 14.5 | 0.0 | 14.5 |
| Street Side | Lumens | 9504.2 | 0.0 | 9504.2 |
| | % Fixture | 85.5 | 0.0 | 85.5 |
| Total | Lumens | 11121.4 | 0.0 | 11121.4 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 190.4 | 1.7 |
| 10°-20° | 578.8 | 5.2 |
| 20°-30° | 969.3 | 8.7 |
| 30°-40° | 1462.2 | 13.1 |
| 40°-50° | 2066.0 | 18.6 |
| 50°-60° | 2324.7 | 20.9 |
| 60°-70° | 2084.6 | 18.7 |
| 70°-80° | 1267.9 | 11.4 |
| 80°-90° | 177.4 | 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° | 11121.4 | 100.0 |
| 0°-180° | 11121.4 | 100.0 |



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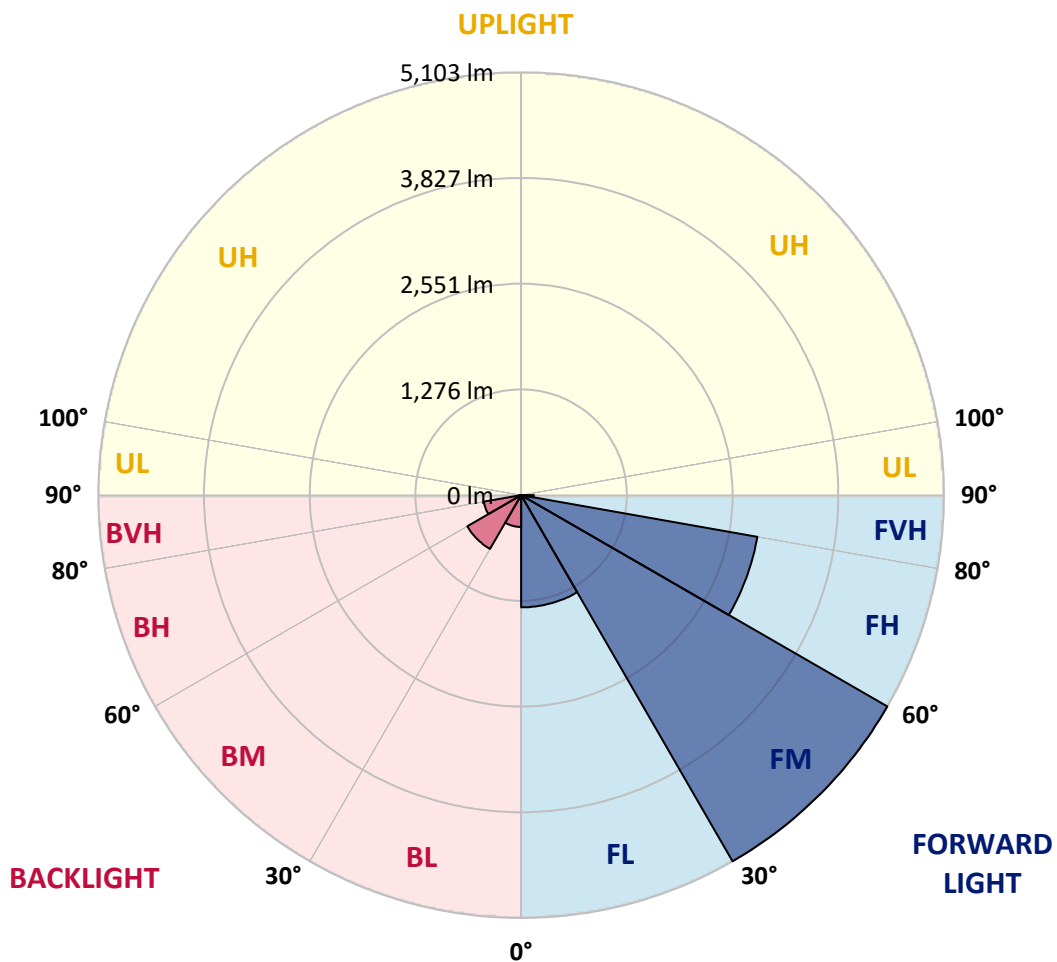
CATALOG NUMBER: EMM2-HTN-SA3B-722-U-T2U-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1354.4 | 12.2 | | | |
| FM (30°-60°) | 5103.0 | 45.9 | | | |
| FH (60°-80°) | 2894.4 | 26.0 | | | G2/5000 |
| FVH (80°-90°) | 152.4 | 1.4 | | | G2/225 |
| BL (0°-30°) | 384.2 | 3.5 | B1/500 | | |
| BM (30°-60°) | 749.9 | 6.7 | B1/1000 | | |
| BH (60°-80°) | 458.1 | 4.1 | B1/500 | | G1/500 |
| BVH (80°-90°) | 25.0 | 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 II Short





REPORT NUMBER: P868486

CATALOG NUMBER: EMM2-HTN-SA3B-722-U-T2U-HSS

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 73° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 |
| 2.5° | 2277.2 | 2264.2 | 2244.5 | 2228.2 | 2198.7 | 2159.5 | 2126.7 | 2084.2 | 2054.8 | 2044.9 | 2002.4 |
| 5° | 2607.7 | 2591.4 | 2568.4 | 2529.2 | 2450.7 | 2404.9 | 2319.8 | 2221.6 | 2143.1 | 2126.7 | 2028.6 |
| 7.5° | 2948.0 | 2941.4 | 2889.1 | 2830.2 | 2735.3 | 2633.9 | 2503.0 | 2349.2 | 2234.7 | 2208.5 | 2058.0 |
| 10° | 3235.9 | 3206.5 | 3177.0 | 3121.4 | 3020.0 | 2876.0 | 2705.9 | 2493.2 | 2332.9 | 2290.3 | 2087.5 |
| 12.5° | 3409.3 | 3399.5 | 3373.3 | 3307.9 | 3209.7 | 3085.4 | 2882.6 | 2633.9 | 2427.8 | 2368.9 | 2116.9 |
| 15° | 3536.9 | 3546.7 | 3520.6 | 3478.0 | 3376.6 | 3258.8 | 3062.5 | 2781.1 | 2529.2 | 2460.5 | 2149.6 |
| 17.5° | 3658.0 | 3651.4 | 3648.2 | 3599.1 | 3507.5 | 3389.7 | 3190.1 | 2902.2 | 2630.6 | 2555.4 | 2182.4 |
| 20° | 3726.7 | 3730.0 | 3723.4 | 3703.8 | 3615.5 | 3500.9 | 3314.4 | 3046.1 | 2741.9 | 2656.8 | 2224.9 |
| 22.5° | 3762.7 | 3775.8 | 3788.9 | 3785.6 | 3713.6 | 3625.3 | 3432.2 | 3160.7 | 2856.4 | 2768.0 | 2277.2 |
| 25° | 3785.6 | 3795.4 | 3824.9 | 3864.1 | 3798.7 | 3726.7 | 3563.1 | 3298.1 | 2990.5 | 2889.1 | 2339.4 |
| 27.5° | 3805.2 | 3818.3 | 3854.3 | 3913.2 | 3860.9 | 3818.3 | 3677.6 | 3415.9 | 3105.0 | 3013.4 | 2411.4 |
| 30° | 3932.8 | 3949.2 | 3949.2 | 3978.6 | 3919.7 | 3909.9 | 3805.2 | 3556.6 | 3249.0 | 3150.8 | 2503.0 |
| 32.5° | 4269.8 | 4237.1 | 4178.2 | 4148.8 | 4008.1 | 4011.4 | 3929.6 | 3697.3 | 3402.8 | 3304.6 | 2617.5 |
| 35° | 4561.0 | 4561.0 | 4489.1 | 4394.2 | 4168.4 | 4122.6 | 4073.5 | 3883.8 | 3569.7 | 3474.8 | 2768.0 |
| 37.5° | 4842.4 | 4845.7 | 4770.4 | 4688.6 | 4430.2 | 4266.6 | 4240.4 | 4063.7 | 3775.8 | 3664.5 | 2925.1 |
| 40° | 5019.1 | 5038.7 | 5019.1 | 4956.9 | 4708.3 | 4518.5 | 4404.0 | 4266.6 | 3972.1 | 3887.0 | 3105.0 |
| 42.5° | 5048.6 | 5087.8 | 5159.8 | 5179.4 | 4911.1 | 4744.3 | 4613.4 | 4476.0 | 4207.7 | 4112.8 | 3311.2 |
| 45° | 4973.3 | 4986.4 | 5146.7 | 5169.6 | 5061.6 | 4924.2 | 4835.9 | 4721.4 | 4489.1 | 4407.3 | 3540.2 |
| 47.5° | 4767.2 | 4741.0 | 4796.6 | 4996.2 | 5038.7 | 5032.2 | 5055.1 | 4999.5 | 4816.2 | 4711.5 | 3792.1 |
| 50° | 4325.5 | 4335.3 | 4515.2 | 4757.4 | 4904.6 | 5071.5 | 5218.7 | 5280.9 | 5146.7 | 5042.0 | 4063.7 |
| 52.5° | 3520.6 | 3566.4 | 3909.9 | 4482.5 | 4737.7 | 5045.3 | 5336.5 | 5545.9 | 5490.3 | 5388.8 | 4332.0 |
| 55° | 2892.4 | 2961.1 | 3304.6 | 4040.8 | 4508.7 | 4917.7 | 5405.2 | 5824.0 | 5833.8 | 5755.3 | 4577.4 |
| 57.5° | 2264.2 | 2319.8 | 2683.0 | 3357.0 | 4181.5 | 4718.1 | 5415.0 | 6062.8 | 6174.1 | 6082.5 | 4793.3 |
| 60° | 1773.4 | 1812.6 | 2025.3 | 2797.5 | 3779.1 | 4433.4 | 5343.0 | 6252.6 | 6462.0 | 6393.3 | 4979.8 |
| 62.5° | 1344.8 | 1374.2 | 1564.0 | 2211.8 | 3285.0 | 4099.7 | 5100.9 | 6321.3 | 6664.9 | 6599.4 | 5084.5 |
| 65° | 1089.5 | 1115.7 | 1240.1 | 1737.4 | 2797.5 | 3713.6 | 4734.5 | 6164.3 | 6723.8 | 6664.9 | 5071.5 |
| 67.5° | 890.0 | 899.8 | 1001.2 | 1354.6 | 2365.6 | 3278.5 | 4197.9 | 5755.3 | 6543.8 | 6540.5 | 4921.0 |
| 70° | 719.8 | 746.0 | 831.1 | 1079.7 | 1966.4 | 2777.9 | 3572.9 | 5114.0 | 6154.5 | 6187.2 | 4619.9 |
| 72.5° | 611.8 | 618.4 | 693.6 | 893.2 | 1603.2 | 2254.3 | 2957.8 | 4374.5 | 5581.9 | 5608.1 | 4148.8 |
| 75° | 517.0 | 526.8 | 582.4 | 723.1 | 1302.2 | 1789.7 | 2378.7 | 3533.7 | 4672.3 | 4783.5 | 3494.4 |
| 77.5° | 445.0 | 448.3 | 487.5 | 595.5 | 926.0 | 1344.8 | 1743.9 | 2650.2 | 3658.0 | 3736.5 | 2745.1 |
| 80° | 350.1 | 356.6 | 399.2 | 471.2 | 644.6 | 873.6 | 1204.1 | 1812.6 | 2444.1 | 2532.5 | 1901.0 |
| 82.5° | 163.6 | 183.2 | 193.0 | 258.5 | 337.0 | 431.9 | 569.3 | 755.8 | 1105.9 | 1102.6 | 886.7 |
| 85° | 16.4 | 13.1 | 13.1 | 19.6 | 29.4 | 29.4 | 36.0 | 42.5 | 85.1 | 101.4 | 78.5 |
| 87.5° | 0.0 | 0.0 | 0.0 | 3.3 | 6.5 | 6.5 | 6.5 | 9.8 | 9.8 | 9.8 | 9.8 |
| 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: P868486

CATALOG NUMBER: EMM2-HTN-SA3B-722-U-T2U-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 | 1973.0 |
| 2.5° | 1982.8 | 1953.3 | 1901.0 | 1851.9 | 1819.2 | 1793.0 | 1750.5 | 1724.3 | 1704.7 | 1678.5 | 1675.2 |
| 5° | 1976.2 | 1923.9 | 1819.2 | 1730.8 | 1645.8 | 1573.8 | 1498.5 | 1452.7 | 1403.6 | 1380.7 | 1400.4 |
| 7.5° | 1982.8 | 1897.7 | 1734.1 | 1600.0 | 1472.4 | 1357.8 | 1259.7 | 1197.5 | 1151.7 | 1128.8 | 1132.1 |
| 10° | 1986.0 | 1874.8 | 1662.1 | 1475.6 | 1312.0 | 1177.9 | 1066.6 | 981.6 | 926.0 | 912.9 | 896.5 |
| 12.5° | 1979.5 | 1845.4 | 1590.1 | 1354.6 | 1158.3 | 1011.0 | 880.1 | 814.7 | 759.1 | 732.9 | 732.9 |
| 15° | 1986.0 | 1822.5 | 1514.9 | 1243.3 | 1020.8 | 850.7 | 739.5 | 667.5 | 634.8 | 611.8 | 615.1 |
| 17.5° | 1986.0 | 1802.8 | 1442.9 | 1135.4 | 886.7 | 729.6 | 628.2 | 569.3 | 536.6 | 523.5 | 520.2 |
| 20° | 2009.0 | 1786.5 | 1374.2 | 1033.9 | 768.9 | 621.7 | 539.9 | 494.1 | 467.9 | 454.8 | 448.3 |
| 22.5° | 2025.3 | 1773.4 | 1312.0 | 935.8 | 670.7 | 543.1 | 474.4 | 431.9 | 412.3 | 405.7 | 405.7 |
| 25° | 2054.8 | 1770.1 | 1256.4 | 840.9 | 592.2 | 484.2 | 422.1 | 389.4 | 373.0 | 366.5 | 366.5 |
| 27.5° | 2097.3 | 1776.6 | 1204.1 | 759.1 | 533.3 | 425.3 | 379.5 | 353.4 | 343.6 | 340.3 | 337.0 |
| 30° | 2159.5 | 1806.1 | 1171.3 | 696.9 | 477.7 | 389.4 | 346.8 | 330.5 | 323.9 | 320.6 | 320.6 |
| 32.5° | 2241.3 | 1858.4 | 1158.3 | 664.2 | 445.0 | 359.9 | 323.9 | 310.8 | 304.3 | 304.3 | 301.0 |
| 35° | 2342.7 | 1917.3 | 1148.4 | 634.8 | 422.1 | 340.3 | 307.6 | 294.5 | 291.2 | 291.2 | 291.2 |
| 37.5° | 2463.7 | 1979.5 | 1132.1 | 615.1 | 409.0 | 323.9 | 294.5 | 281.4 | 281.4 | 281.4 | 281.4 |
| 40° | 2597.9 | 2071.1 | 1128.8 | 602.0 | 399.2 | 314.1 | 281.4 | 268.3 | 268.3 | 268.3 | 268.3 |
| 42.5° | 2748.4 | 2169.3 | 1125.5 | 592.2 | 392.6 | 307.6 | 268.3 | 255.2 | 255.2 | 255.2 | 255.2 |
| 45° | 2931.6 | 2293.6 | 1132.1 | 585.7 | 392.6 | 301.0 | 258.5 | 242.1 | 238.8 | 238.8 | 238.8 |
| 47.5° | 3111.6 | 2411.4 | 1138.6 | 579.1 | 386.1 | 291.2 | 245.4 | 229.0 | 225.8 | 222.5 | 222.5 |
| 50° | 3304.6 | 2532.5 | 1138.6 | 572.6 | 379.5 | 281.4 | 235.6 | 212.7 | 209.4 | 206.1 | 206.1 |
| 52.5° | 3494.4 | 2633.9 | 1141.9 | 562.8 | 363.2 | 265.0 | 219.2 | 199.6 | 193.0 | 189.8 | 186.5 |
| 55° | 3677.6 | 2741.9 | 1145.2 | 546.4 | 343.6 | 248.7 | 209.4 | 186.5 | 176.7 | 170.1 | 170.1 |
| 57.5° | 3815.0 | 2830.2 | 1128.8 | 513.7 | 317.4 | 232.3 | 193.0 | 170.1 | 157.1 | 150.5 | 150.5 |
| 60° | 3945.9 | 2885.8 | 1099.4 | 464.6 | 291.2 | 215.9 | 180.0 | 153.8 | 140.7 | 134.1 | 134.1 |
| 62.5° | 3998.3 | 2895.6 | 1030.7 | 379.5 | 258.5 | 199.6 | 163.6 | 140.7 | 130.9 | 127.6 | 127.6 |
| 65° | 3968.8 | 2853.1 | 939.0 | 301.0 | 229.0 | 180.0 | 150.5 | 130.9 | 117.8 | 108.0 | 108.0 |
| 67.5° | 3808.5 | 2705.9 | 814.7 | 238.8 | 199.6 | 163.6 | 137.4 | 117.8 | 104.7 | 94.9 | 94.9 |
| 70° | 3504.2 | 2470.3 | 634.8 | 189.8 | 173.4 | 144.0 | 124.3 | 108.0 | 94.9 | 85.1 | 85.1 |
| 72.5° | 3056.0 | 2143.1 | 461.3 | 160.3 | 150.5 | 127.6 | 111.2 | 98.2 | 85.1 | 78.5 | 78.5 |
| 75° | 2519.4 | 1652.3 | 327.2 | 137.4 | 134.1 | 114.5 | 101.4 | 88.3 | 78.5 | 72.0 | 72.0 |
| 77.5° | 1891.2 | 1151.7 | 255.2 | 121.1 | 117.8 | 104.7 | 91.6 | 81.8 | 72.0 | 68.7 | 65.4 |
| 80° | 1259.7 | 713.3 | 193.0 | 91.6 | 88.3 | 81.8 | 75.3 | 68.7 | 58.9 | 52.4 | 52.4 |
| 82.5° | 562.8 | 301.0 | 98.2 | 52.4 | 45.8 | 39.3 | 32.7 | 22.9 | 22.9 | 19.6 | 19.6 |
| 85° | 58.9 | 39.3 | 19.6 | 13.1 | 13.1 | 9.8 | 9.8 | 9.8 | 6.5 | 6.5 | 6.5 |
| 87.5° | 9.8 | 9.8 | 6.5 | 6.5 | 6.5 | 3.3 | 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 | R9: | -36.0 |
| R2: | 88.7 | R10: | 78.2 |
| R3: | 85.4 | R11: | 61.0 |
| R4: | 63.5 | R12: | 74.2 |
| R5: | 69.0 | R13: | 72.8 |
| R6: | 88.9 | R14: | 92.2 |
| R7: | 68.5 | R15: | 58.0 |
| R8: | 32.0 | | |



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 ² /nm | Lumens (φ/nm) | λ (nm) | Power W ² /nm | Lumens (φ/nm) | λ (nm) | Power W ² /nm | Lumens (φ/nm) | λ (nm) | Power W ² /nm | Lumens (φ/nm) | λ (nm) | Power W ² /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)