

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: P871110

Luminaire Tested: **EMM2-HSN-SA3B-830-U-T2U**

Issue Date: 09/05/2024



Test Information

Test Method: LM-79-08
Report Number: P871110
Test Lab: INNOVATION CENTER(G3)
Issue Date: 09/05/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-SA3B-830-U-T2U
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 150W 80CRI 3000K
FITXURE w/ TYPE II URBAN DISTRIBUTION OPTIC
Light Source: (30) 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

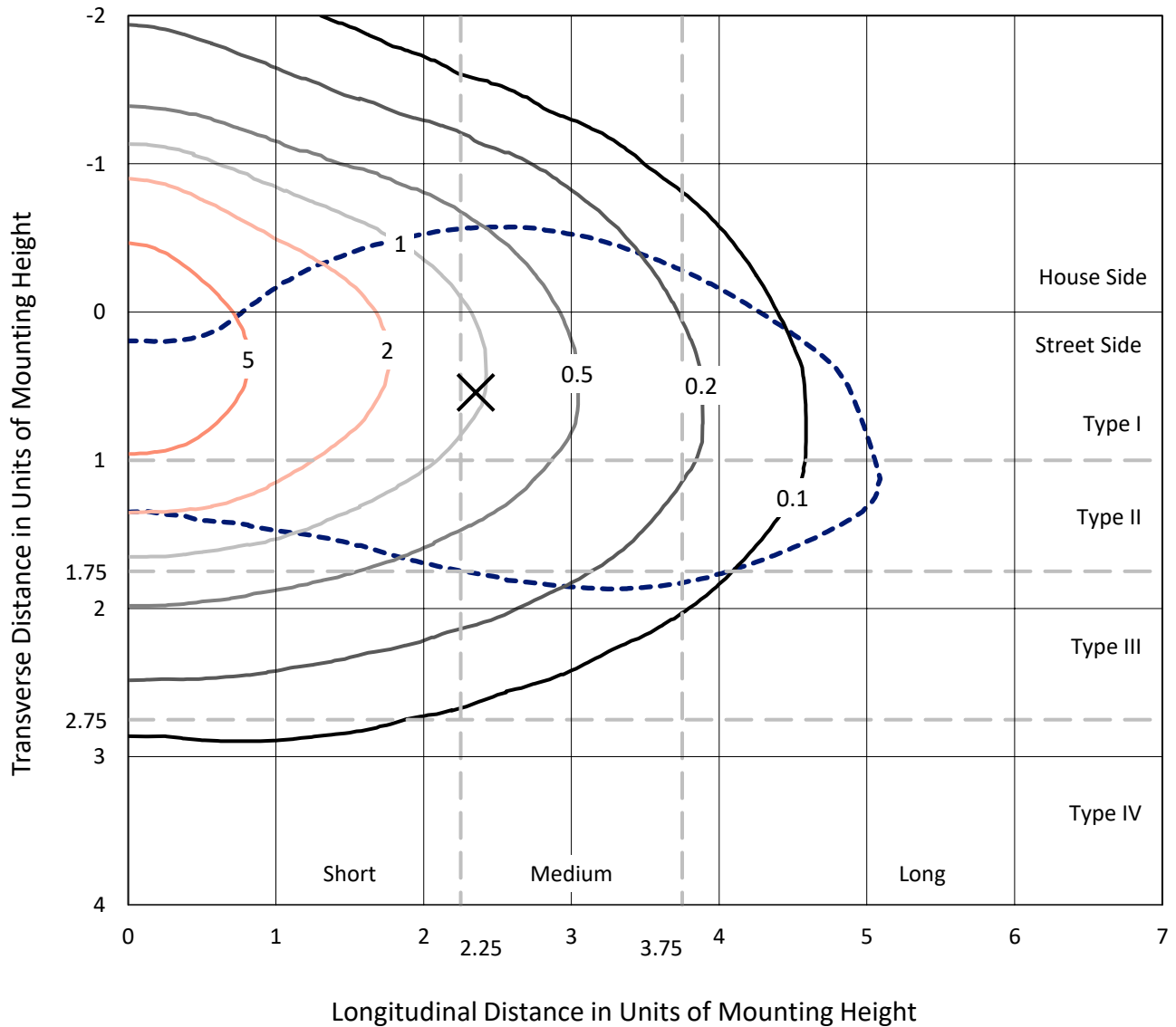
Lumens per Lamp: N/A
Luminaire Lumens: 16792.8 lumens
Efficiency: N/A
Efficacy: 125.3 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B3 - U0 - G3

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

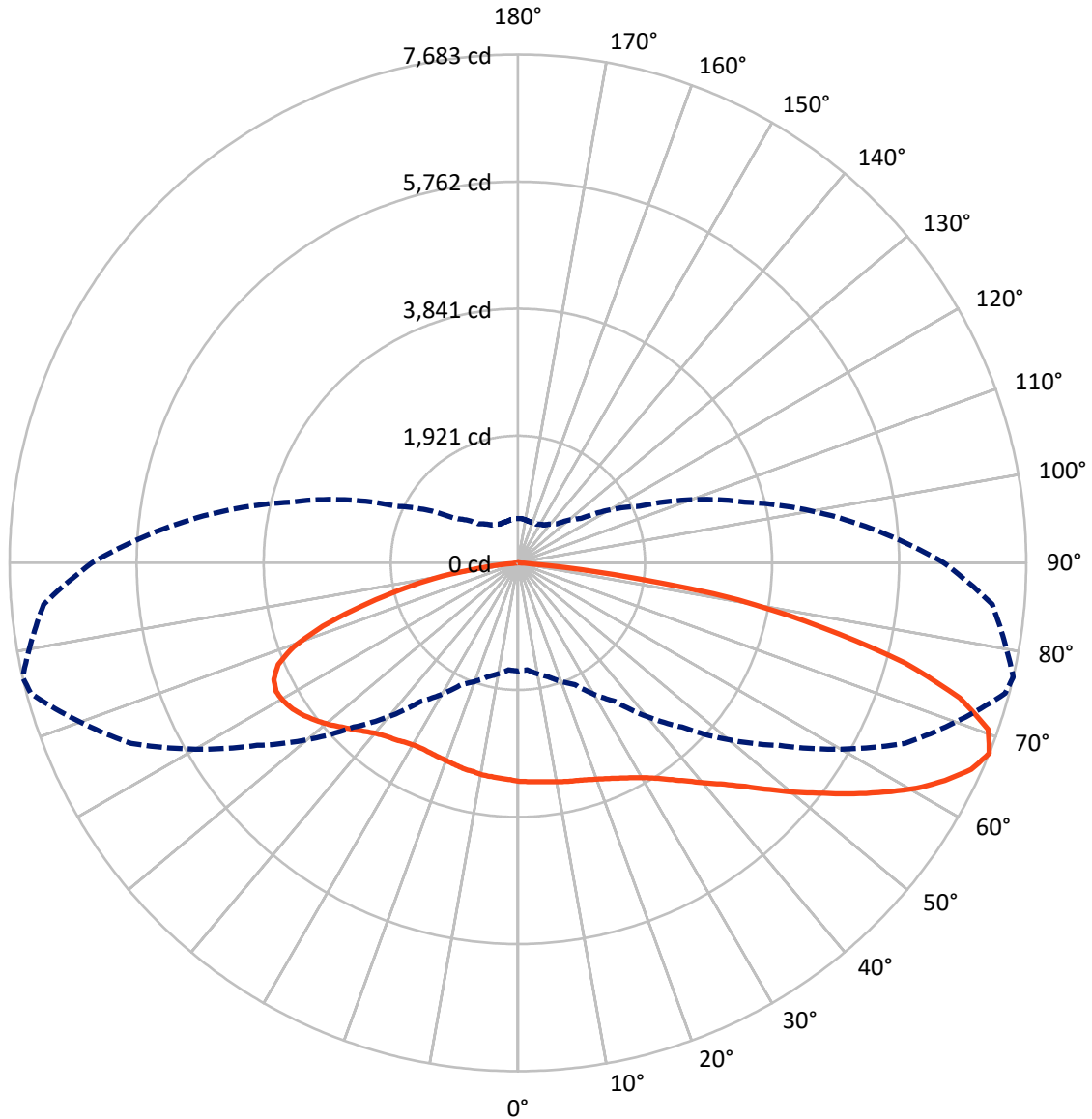
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 9.1 fc
 Type III - Medium - N/A

REPORT NUMBER: P871110
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Luminous Intensity Polar Plot



— Vertical Plane Through 77-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 5584.2 | 0.0 | 5584.2 |
| | % Fixture | 33.3 | 0.0 | 33.3 |
| Street Side | Lumens | 11208.6 | 0.0 | 11208.6 |
| | % Fixture | 66.7 | 0.0 | 66.7 |
| Total | Lumens | 16792.8 | 0.0 | 16792.8 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 317.3 | 1.9 |
| 10°-20° | 962.4 | 5.7 |
| 20°-30° | 1622.6 | 9.7 |
| 30°-40° | 2302.5 | 13.7 |
| 40°-50° | 2913.1 | 17.3 |
| 50°-60° | 3191.2 | 19.0 |
| 60°-70° | 3084.8 | 18.4 |
| 70°-80° | 2074.7 | 12.4 |
| 80°-90° | 324.2 | 1.9 |
| 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° | 16792.8 | 100.0 |
| 0°-180° | 16792.8 | 100.0 |

Coefficient of Utilization



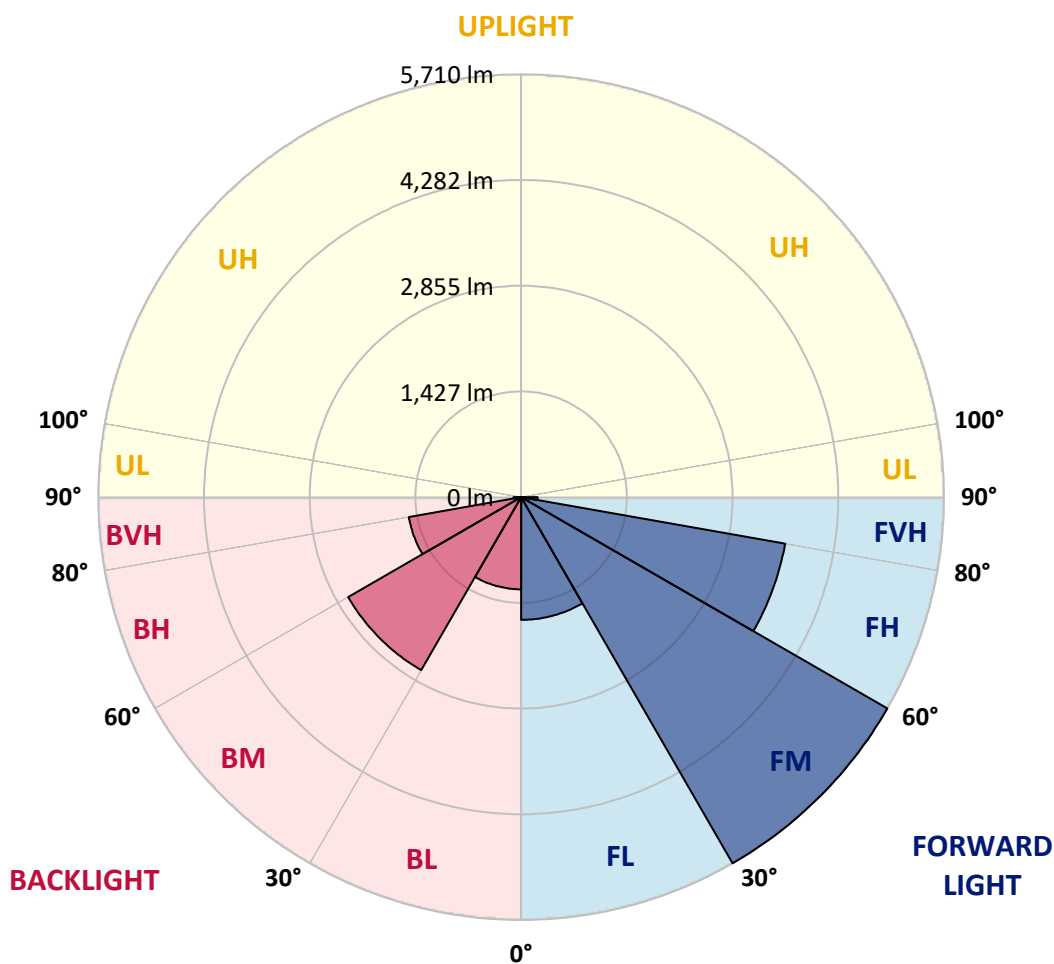
REPORT NUMBER: P871110
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1657.5 | 9.9 | | | |
| FM (30°-60°) | 5709.8 | 34.0 | | | |
| FH (60°-80°) | 3619.4 | 21.6 | | | G2/5000 |
| FVH (80°-90°) | 222.0 | 1.3 | | | G2/225 |
| BL (0°-30°) | 1244.8 | 7.4 | B3/2500 | | |
| BM (30°-60°) | 2697.0 | 16.1 | B3/5000 | | |
| BH (60°-80°) | 1540.1 | 9.2 | B3/2500 | | G3/2500 |
| BVH (80°-90°) | 102.2 | 0.6 | | | G2/225 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G3

Type III Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 77° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 |
| 2.5° | 3374.7 | 3371.4 | 3354.8 | 3361.4 | 3341.5 | 3354.8 | 3334.9 | 3318.3 | 3314.9 | 3311.6 | 3314.9 |
| 5° | 3481.0 | 3464.4 | 3447.8 | 3437.8 | 3421.2 | 3414.6 | 3381.4 | 3348.1 | 3328.2 | 3324.9 | 3318.3 |
| 7.5° | 3603.9 | 3597.3 | 3574.0 | 3560.7 | 3514.2 | 3491.0 | 3444.5 | 3384.7 | 3354.8 | 3341.5 | 3324.9 |
| 10° | 3730.1 | 3746.7 | 3716.8 | 3690.3 | 3637.1 | 3587.3 | 3507.6 | 3431.2 | 3371.4 | 3364.8 | 3328.2 |
| 12.5° | 3886.2 | 3882.9 | 3863.0 | 3816.5 | 3753.4 | 3683.6 | 3587.3 | 3481.0 | 3401.3 | 3388.0 | 3334.9 |
| 15° | 4025.7 | 4022.4 | 3995.9 | 3952.7 | 3869.6 | 3783.3 | 3653.7 | 3530.8 | 3431.2 | 3411.3 | 3348.1 |
| 17.5° | 4155.3 | 4148.6 | 4132.0 | 4085.5 | 3982.6 | 3876.3 | 3750.1 | 3587.3 | 3467.7 | 3444.5 | 3358.1 |
| 20° | 4268.2 | 4274.9 | 4254.9 | 4208.4 | 4112.1 | 3999.2 | 3839.7 | 3660.4 | 3514.2 | 3487.7 | 3388.0 |
| 22.5° | 4391.1 | 4394.4 | 4384.5 | 4367.9 | 4245.0 | 4125.4 | 3952.7 | 3743.4 | 3567.4 | 3540.8 | 3421.2 |
| 25° | 4520.7 | 4524.0 | 4530.6 | 4520.7 | 4381.2 | 4251.6 | 4068.9 | 3846.4 | 3640.4 | 3603.9 | 3467.7 |
| 27.5° | 4670.1 | 4673.5 | 4686.7 | 4666.8 | 4517.3 | 4381.2 | 4198.5 | 3956.0 | 3716.8 | 3677.0 | 3507.6 |
| 30° | 4839.5 | 4852.8 | 4842.9 | 4836.2 | 4663.5 | 4530.6 | 4328.0 | 4068.9 | 3816.5 | 3766.7 | 3577.3 |
| 32.5° | 5042.1 | 5038.8 | 5018.9 | 4999.0 | 4822.9 | 4683.4 | 4474.2 | 4215.1 | 3939.4 | 3882.9 | 3690.3 |
| 35° | 5188.3 | 5188.3 | 5158.4 | 5148.4 | 4985.7 | 4839.5 | 4633.6 | 4377.8 | 4078.9 | 4025.7 | 3809.8 |
| 37.5° | 5278.0 | 5291.3 | 5268.0 | 5274.7 | 5118.5 | 4982.4 | 4793.0 | 4543.9 | 4231.7 | 4185.2 | 3956.0 |
| 40° | 5311.2 | 5344.4 | 5364.3 | 5390.9 | 5234.8 | 5118.5 | 4962.4 | 4723.3 | 4427.7 | 4374.5 | 4132.0 |
| 42.5° | 5317.8 | 5367.7 | 5437.4 | 5493.9 | 5317.8 | 5221.5 | 5125.2 | 4906.0 | 4620.3 | 4573.8 | 4324.7 |
| 45° | 5284.6 | 5261.4 | 5430.8 | 5437.4 | 5364.3 | 5304.6 | 5268.0 | 5125.2 | 4899.3 | 4822.9 | 4563.8 |
| 47.5° | 5032.2 | 5005.6 | 5052.1 | 5264.7 | 5307.9 | 5341.1 | 5414.2 | 5380.9 | 5178.3 | 5118.5 | 4839.5 |
| 50° | 4623.6 | 4610.3 | 4796.4 | 5025.5 | 5168.4 | 5337.8 | 5533.7 | 5626.7 | 5487.2 | 5450.7 | 5188.3 |
| 52.5° | 3949.4 | 3912.8 | 4291.5 | 4736.6 | 4985.7 | 5304.6 | 5616.8 | 5879.2 | 5836.0 | 5782.9 | 5487.2 |
| 55° | 3520.9 | 3520.9 | 3776.6 | 4331.3 | 4753.2 | 5185.0 | 5669.9 | 6144.9 | 6221.3 | 6161.5 | 5829.4 |
| 57.5° | 3062.5 | 3099.0 | 3364.8 | 3746.7 | 4417.7 | 4965.8 | 5663.3 | 6367.5 | 6593.3 | 6536.9 | 6191.4 |
| 60° | 2670.5 | 2700.4 | 2853.2 | 3238.5 | 4022.4 | 4676.8 | 5590.2 | 6550.1 | 6938.8 | 6918.8 | 6510.3 |
| 62.5° | 2272.0 | 2308.5 | 2431.4 | 2793.4 | 3500.9 | 4344.6 | 5437.4 | 6649.8 | 7264.3 | 7244.4 | 6832.5 |
| 65° | 1953.1 | 1956.4 | 2079.3 | 2381.6 | 2979.5 | 3942.7 | 5168.4 | 6629.9 | 7516.7 | 7530.0 | 7104.8 |
| 67.5° | 1634.2 | 1624.2 | 1783.7 | 2029.5 | 2554.3 | 3510.9 | 4809.6 | 6453.8 | 7623.0 | 7682.8 | 7194.5 |
| 70° | 1202.4 | 1215.7 | 1438.2 | 1710.6 | 2159.0 | 3012.7 | 4308.1 | 6111.7 | 7450.3 | 7543.3 | 6988.6 |
| 72.5° | 903.5 | 930.0 | 1145.9 | 1428.3 | 1803.6 | 2514.4 | 3760.0 | 5517.1 | 6968.7 | 6981.9 | 6360.8 |
| 75° | 734.1 | 740.7 | 933.4 | 1185.8 | 1478.1 | 2016.2 | 3019.3 | 4607.0 | 5892.5 | 6045.3 | 5404.2 |
| 77.5° | 624.5 | 617.8 | 710.8 | 956.6 | 1192.4 | 1611.0 | 2275.3 | 3504.3 | 4627.0 | 4696.7 | 4231.7 |
| 80° | 531.5 | 528.1 | 561.3 | 773.9 | 933.4 | 1149.3 | 1557.8 | 2441.4 | 3301.6 | 3378.0 | 3006.0 |
| 82.5° | 279.0 | 298.9 | 292.3 | 478.3 | 528.1 | 604.5 | 747.4 | 1109.4 | 1441.6 | 1461.5 | 1381.8 |
| 85° | 13.3 | 13.3 | 13.3 | 19.9 | 33.2 | 53.1 | 103.0 | 103.0 | 112.9 | 215.9 | 245.8 |
| 87.5° | 3.3 | 3.3 | 6.6 | 6.6 | 6.6 | 10.0 | 10.0 | 13.3 | 13.3 | 13.3 | 13.3 |
| 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: P871110

CATALOG NUMBER: EMM2-HSN-SA3B-830-U-T2U

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 | 3301.6 |
| 2.5° | 3308.3 | 3295.0 | 3275.1 | 3278.4 | 3275.1 | 3275.1 | 3258.5 | 3245.2 | 3241.9 | 3248.5 | 3261.8 |
| 5° | 3311.6 | 3291.7 | 3261.8 | 3251.8 | 3241.9 | 3235.2 | 3208.6 | 3188.7 | 3178.7 | 3185.4 | 3188.7 |
| 7.5° | 3311.6 | 3281.7 | 3248.5 | 3228.6 | 3202.0 | 3182.1 | 3152.2 | 3125.6 | 3112.3 | 3115.6 | 3122.3 |
| 10° | 3305.0 | 3271.7 | 3245.2 | 3205.3 | 3162.1 | 3138.9 | 3092.4 | 3059.2 | 3042.6 | 3045.9 | 3029.3 |
| 12.5° | 3305.0 | 3268.4 | 3215.3 | 3178.7 | 3119.0 | 3069.1 | 3032.6 | 2996.1 | 2982.8 | 2969.5 | 2962.8 |
| 15° | 3308.3 | 3261.8 | 3208.6 | 3132.2 | 3062.5 | 3009.3 | 2962.8 | 2939.6 | 2919.7 | 2913.0 | 2916.3 |
| 17.5° | 3308.3 | 3261.8 | 3182.1 | 3092.4 | 3012.7 | 2946.2 | 2906.4 | 2879.8 | 2873.2 | 2866.5 | 2866.5 |
| 20° | 3324.9 | 3265.1 | 3158.8 | 3052.5 | 2952.9 | 2883.1 | 2846.6 | 2830.0 | 2830.0 | 2820.0 | 2820.0 |
| 22.5° | 3351.5 | 3271.7 | 3145.5 | 3019.3 | 2903.1 | 2826.7 | 2786.8 | 2766.9 | 2776.8 | 2770.2 | 2766.9 |
| 25° | 3381.4 | 3295.0 | 3128.9 | 2972.8 | 2836.6 | 2756.9 | 2717.0 | 2703.8 | 2700.4 | 2683.8 | 2707.1 |
| 27.5° | 3404.6 | 3311.6 | 3119.0 | 2926.3 | 2776.8 | 2683.8 | 2634.0 | 2610.8 | 2594.1 | 2600.8 | 2594.1 |
| 30° | 3467.7 | 3358.1 | 3122.3 | 2886.4 | 2710.4 | 2597.5 | 2537.7 | 2511.1 | 2504.5 | 2504.5 | 2504.5 |
| 32.5° | 3554.1 | 3417.9 | 3145.5 | 2869.8 | 2647.3 | 2514.4 | 2441.4 | 2414.8 | 2408.1 | 2394.9 | 2401.5 |
| 35° | 3663.7 | 3507.6 | 3182.1 | 2843.3 | 2597.5 | 2418.1 | 2338.4 | 2301.9 | 2291.9 | 2278.6 | 2278.6 |
| 37.5° | 3786.6 | 3597.3 | 3208.6 | 2830.0 | 2531.0 | 2318.5 | 2228.8 | 2182.3 | 2175.6 | 2162.3 | 2169.0 |
| 40° | 3942.7 | 3720.2 | 3251.8 | 2803.4 | 2454.6 | 2228.8 | 2109.2 | 2032.8 | 2049.4 | 2056.1 | 2069.3 |
| 42.5° | 4118.8 | 3876.3 | 3318.3 | 2776.8 | 2394.9 | 2135.8 | 1959.7 | 1883.3 | 1903.3 | 1896.6 | 1909.9 |
| 45° | 4357.9 | 4059.0 | 3401.3 | 2766.9 | 2321.8 | 2022.8 | 1806.9 | 1720.6 | 1713.9 | 1704.0 | 1710.6 |
| 47.5° | 4607.0 | 4278.2 | 3481.0 | 2746.9 | 2242.1 | 1883.3 | 1634.2 | 1524.6 | 1498.0 | 1484.7 | 1471.5 |
| 50° | 4866.1 | 4497.4 | 3574.0 | 2733.7 | 2135.8 | 1727.2 | 1461.5 | 1335.3 | 1285.4 | 1268.8 | 1252.2 |
| 52.5° | 5158.4 | 4733.2 | 3653.7 | 2700.4 | 2019.5 | 1564.5 | 1305.4 | 1162.6 | 1106.1 | 1072.9 | 1076.2 |
| 55° | 5467.3 | 4949.1 | 3726.8 | 2660.6 | 1886.7 | 1411.7 | 1149.3 | 1029.7 | 973.2 | 963.3 | 963.3 |
| 57.5° | 5753.0 | 5171.7 | 3780.0 | 2590.8 | 1753.8 | 1262.2 | 1019.7 | 916.8 | 890.2 | 903.5 | 903.5 |
| 60° | 6045.3 | 5351.1 | 3806.5 | 2514.4 | 1617.6 | 1136.0 | 930.0 | 847.0 | 833.7 | 860.3 | 863.6 |
| 62.5° | 6281.1 | 5493.9 | 3799.9 | 2408.1 | 1468.1 | 1026.4 | 843.7 | 777.2 | 783.9 | 830.4 | 840.4 |
| 65° | 6450.5 | 5563.6 | 3716.8 | 2248.7 | 1325.3 | 930.0 | 767.3 | 704.2 | 704.2 | 737.4 | 747.4 |
| 67.5° | 6437.2 | 5474.0 | 3550.8 | 2026.2 | 1172.5 | 833.7 | 697.5 | 647.7 | 647.7 | 671.0 | 667.6 |
| 70° | 6164.8 | 5165.0 | 3235.2 | 1757.1 | 1023.0 | 750.7 | 637.7 | 601.2 | 597.9 | 607.8 | 604.5 |
| 72.5° | 5510.5 | 4537.3 | 2743.6 | 1451.5 | 883.5 | 667.6 | 578.0 | 544.7 | 538.1 | 524.8 | 514.8 |
| 75° | 4547.2 | 3726.8 | 2142.4 | 1155.9 | 747.4 | 587.9 | 521.5 | 491.6 | 465.0 | 481.6 | 471.7 |
| 77.5° | 3527.5 | 2859.9 | 1594.4 | 896.8 | 607.8 | 511.5 | 465.0 | 431.8 | 425.2 | 484.9 | 465.0 |
| 80° | 2574.2 | 1976.3 | 1126.0 | 641.1 | 471.7 | 415.2 | 388.6 | 362.1 | 458.4 | 614.5 | 611.2 |
| 82.5° | 1142.6 | 953.3 | 514.8 | 305.6 | 219.2 | 182.7 | 152.8 | 172.7 | 289.0 | 282.3 | 292.3 |
| 85° | 103.0 | 106.3 | 56.5 | 36.5 | 23.3 | 19.9 | 13.3 | 13.3 | 10.0 | 10.0 | 10.0 |
| 87.5° | 13.3 | 13.3 | 10.0 | 10.0 | 6.6 | 6.6 | 6.6 | 6.6 | 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 |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-157-7

Test Date: 09/05/2024

Luminaire Tested: MEM2-HTN-SA-40-830-U-5WQ

Data in this report applies to families of products including MEM2-HTN-SA-40-830-U-5WQ

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-7
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 09/05/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-SA-40-830-U-5WQ**
 Description: Epic Modern Light Square 40W 5WQ Optic

Spectral Parameters

CCT (K): 3126
 CIE u': 0.2465
 CIE v': 0.5182
 Duv: -0.0004
 CIE x: 0.4277
 CIE y: 0.3997
 CIE z: 0.1727
 Peak Wavelength (nm): 601
 Dominant Wavelength (nm): 582
 Purity: 48.31913
 Rf: 84.4
 Rg: 94.7

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 82.6 | | |
| R1: | 81.4 | R9: | 5.1 |
| R2: | 92.2 | R10: | 82.2 |
| R3: | 94.9 | R11: | 79.8 |
| R4: | 80.1 | R12: | 70.4 |
| R5: | 81.8 | R13: | 84.2 |
| R6: | 90.5 | R14: | 97.9 |
| R7: | 81.8 | R15: | 73.6 |
| R8: | 58.0 | | |



Test Conditions

Stabilization Time: 22M
 Operation Time: 1H 22M
 Sphere Temperature (°C): 24.3

REPORT NUMBER: SP1-2407-157-7

| 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 |

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CIE 1931 Chromaticity Diagram



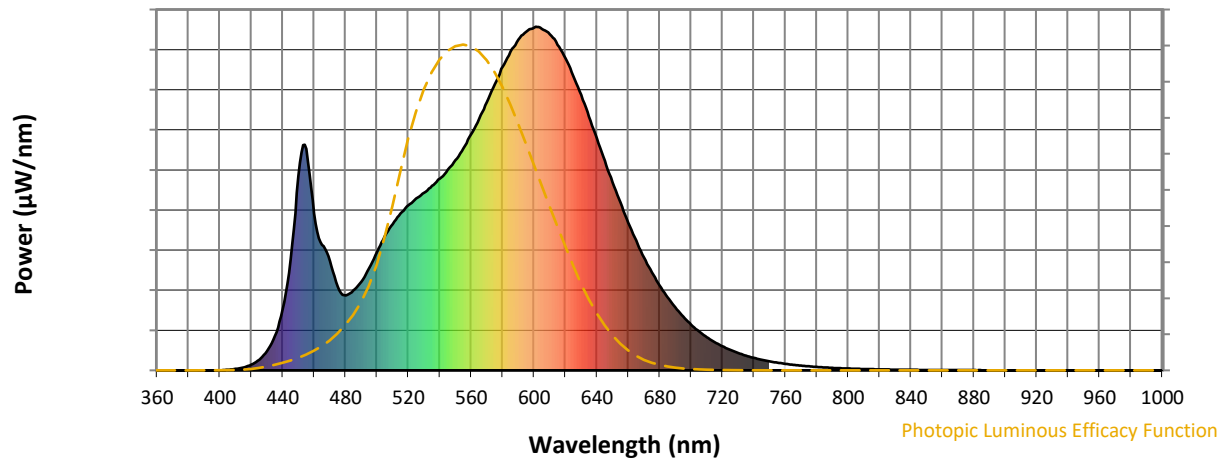
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

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Photopic Flux vs. Wavelength

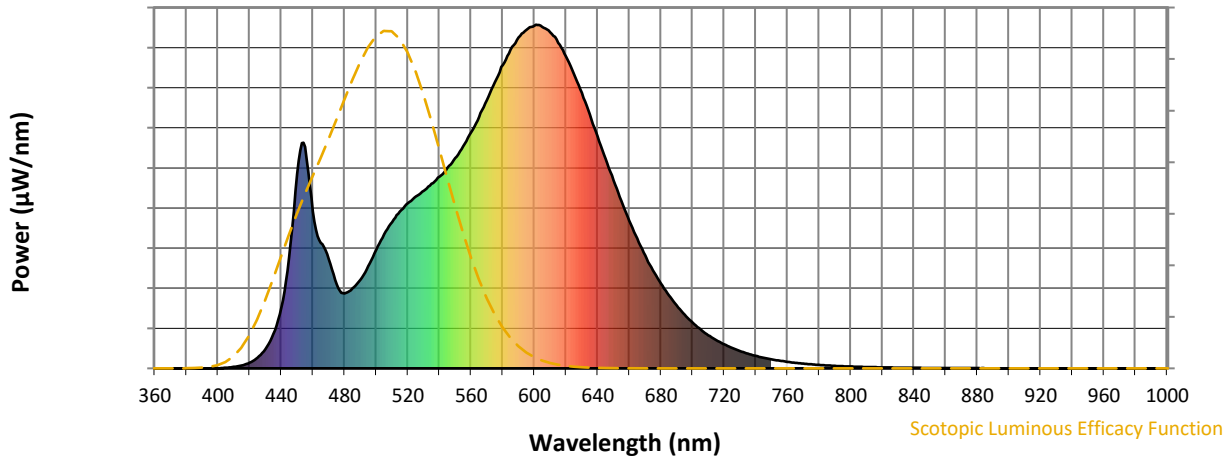


Photopic Lumens: NR

| 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 | 258 | NR | 620 | 908 | NR | 750 | 26 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 297 | NR | 625 | 857 | NR | 755 | 22 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 345 | NR | 630 | 801 | NR | 760 | 19 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 391 | NR | 635 | 738 | NR | 765 | 16 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 426 | NR | 640 | 675 | NR | 770 | 14 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 456 | NR | 645 | 610 | NR | 775 | 12 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 480 | NR | 650 | 547 | NR | 780 | 10 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 500 | NR | 655 | 488 | NR | 785 | 9 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 517 | NR | 660 | 429 | NR | 790 | 7 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 538 | NR | 665 | 378 | NR | 795 | 6 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 558 | NR | 670 | 328 | NR | 800 | 5 | NR | 930 | 0 | NR |
| 415 | 9 | NR | 545 | 584 | NR | 675 | 285 | NR | 805 | 5 | NR | 935 | 0 | NR |
| 420 | 16 | NR | 550 | 611 | NR | 680 | 247 | NR | 810 | 4 | NR | 940 | 0 | NR |
| 425 | 31 | NR | 555 | 646 | NR | 685 | 212 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 56 | NR | 560 | 687 | NR | 690 | 183 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 101 | NR | 565 | 731 | NR | 695 | 156 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 178 | NR | 570 | 780 | NR | 700 | 133 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 323 | NR | 575 | 832 | NR | 705 | 114 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 566 | NR | 580 | 883 | NR | 710 | 96 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 645 | NR | 585 | 927 | NR | 715 | 82 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 457 | NR | 590 | 963 | NR | 720 | 70 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 365 | NR | 595 | 985 | NR | 725 | 59 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 317 | NR | 600 | 998 | NR | 730 | 50 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 244 | NR | 605 | 994 | NR | 735 | 43 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 218 | NR | 610 | 978 | NR | 740 | 36 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 233 | NR | 615 | 947 | NR | 745 | 31 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-157-7

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.42

| 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 | 258 | NR | 620 | 908 | NR | 750 | 26 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 297 | NR | 625 | 857 | NR | 755 | 22 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 345 | NR | 630 | 801 | NR | 760 | 19 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 391 | NR | 635 | 738 | NR | 765 | 16 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 426 | NR | 640 | 675 | NR | 770 | 14 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 456 | NR | 645 | 610 | NR | 775 | 12 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 480 | NR | 650 | 547 | NR | 780 | 10 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 500 | NR | 655 | 488 | NR | 785 | 9 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 517 | NR | 660 | 429 | NR | 790 | 7 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 538 | NR | 665 | 378 | NR | 795 | 6 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 558 | NR | 670 | 328 | NR | 800 | 5 | NR | 930 | 0 | NR |
| 415 | 9 | NR | 545 | 584 | NR | 675 | 285 | NR | 805 | 5 | NR | 935 | 0 | NR |
| 420 | 16 | NR | 550 | 611 | NR | 680 | 247 | NR | 810 | 4 | NR | 940 | 0 | NR |
| 425 | 31 | NR | 555 | 646 | NR | 685 | 212 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 56 | NR | 560 | 687 | NR | 690 | 183 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 101 | NR | 565 | 731 | NR | 695 | 156 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 178 | NR | 570 | 780 | NR | 700 | 133 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 323 | NR | 575 | 832 | NR | 705 | 114 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 566 | NR | 580 | 883 | NR | 710 | 96 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 645 | NR | 585 | 927 | NR | 715 | 82 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 457 | NR | 590 | 963 | NR | 720 | 70 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 365 | NR | 595 | 985 | NR | 725 | 59 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 317 | NR | 600 | 998 | NR | 730 | 50 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 244 | NR | 605 | 994 | NR | 735 | 43 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 218 | NR | 610 | 978 | NR | 740 | 36 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 233 | NR | 615 | 947 | NR | 745 | 31 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-157-7

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.79

| 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 | 258 | NR | 620 | 908 | NR | 750 | 26 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 297 | NR | 625 | 857 | NR | 755 | 22 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 345 | NR | 630 | 801 | NR | 760 | 19 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 391 | NR | 635 | 738 | NR | 765 | 16 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 426 | NR | 640 | 675 | NR | 770 | 14 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 456 | NR | 645 | 610 | NR | 775 | 12 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 480 | NR | 650 | 547 | NR | 780 | 10 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 500 | NR | 655 | 488 | NR | 785 | 9 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 517 | NR | 660 | 429 | NR | 790 | 7 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 538 | NR | 665 | 378 | NR | 795 | 6 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 558 | NR | 670 | 328 | NR | 800 | 5 | NR | 930 | 0 | NR |
| 415 | 9 | NR | 545 | 584 | NR | 675 | 285 | NR | 805 | 5 | NR | 935 | 0 | NR |
| 420 | 16 | NR | 550 | 611 | NR | 680 | 247 | NR | 810 | 4 | NR | 940 | 0 | NR |
| 425 | 31 | NR | 555 | 646 | NR | 685 | 212 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 56 | NR | 560 | 687 | NR | 690 | 183 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 101 | NR | 565 | 731 | NR | 695 | 156 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 178 | NR | 570 | 780 | NR | 700 | 133 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 323 | NR | 575 | 832 | NR | 705 | 114 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 566 | NR | 580 | 883 | NR | 710 | 96 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 645 | NR | 585 | 927 | NR | 715 | 82 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 457 | NR | 590 | 963 | NR | 720 | 70 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 365 | NR | 595 | 985 | NR | 725 | 59 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 317 | NR | 600 | 998 | NR | 730 | 50 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 244 | NR | 605 | 994 | NR | 735 | 43 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 218 | NR | 610 | 978 | NR | 740 | 36 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 233 | NR | 615 | 947 | NR | 745 | 31 | NR | 875 | 1 | NR | | | |

Summary

$R_f = 84.4$
 $R_g = 94.7$
 $CIE R_a = 82.6$
 $R_9 = 5.1$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 86 | CES51 = 93 | CES76 = 82 |
| CES02 = 63 | CES27 = 92 | CES52 = 93 | CES77 = 84 |
| CES03 = 31 | CES28 = 94 | CES53 = 89 | CES78 = 81 |
| CES04 = 70 | CES29 = 92 | CES54 = 89 | CES79 = 90 |
| CES05 = 49 | CES30 = 91 | CES55 = 86 | CES80 = 89 |
| CES06 = 51 | CES31 = 93 | CES56 = 85 | CES81 = 72 |
| CES07 = 42 | CES32 = 85 | CES57 = 83 | CES82 = 95 |
| CES08 = 41 | CES33 = 97 | CES58 = 84 | CES83 = 94 |
| CES09 = 29 | CES34 = 92 | CES59 = 91 | CES84 = 91 |
| CES10 = 76 | CES35 = 96 | CES60 = 90 | CES85 = 74 |
| CES11 = 59 | CES36 = 81 | CES61 = 87 | CES86 = 68 |
| CES12 = 65 | CES37 = 96 | CES62 = 83 | CES87 = 84 |
| CES13 = 43 | CES38 = 86 | CES63 = 87 | CES88 = 88 |
| CES14 = 74 | CES39 = 98 | CES64 = 79 | CES89 = 75 |
| CES15 = 71 | CES40 = 96 | CES65 = 78 | CES90 = 89 |
| CES16 = 47 | CES41 = 96 | CES66 = 77 | CES91 = 73 |
| CES17 = 50 | CES42 = 97 | CES67 = 76 | CES92 = 63 |
| CES18 = 56 | CES43 = 91 | CES68 = 80 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 85 | CES94 = 61 |
| CES20 = 66 | CES45 = 93 | CES70 = 78 | CES95 = 73 |
| CES21 = 87 | CES46 = 90 | CES71 = 74 | CES96 = 84 |
| CES22 = 79 | CES47 = 94 | CES72 = 91 | CES97 = 88 |
| CES23 = 92 | CES48 = 83 | CES73 = 74 | CES98 = 85 |
| CES24 = 91 | CES49 = 91 | CES74 = 90 | CES99 = 76 |
| CES25 = 72 | CES50 = 93 | CES75 = 78 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)