

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

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Peachtree City, GA 30269

Scaled data based on original data using  
LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: STREETWORKS

Report Number: P1461652

Luminaire Tested: USSL-150-730-U-T3R

Issue Date: 06/10/2026

**Test Information**

Test Method: LM-79-2024  
Report Number: P1461652  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 6/11/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: USSL-150-730-U-T3R  
Description: USSL DISCRETE LED 1 SQUARE 150W 70CRI 3000K FIXTURE w/ TYPE III DISTRIBUTION OPTIC  
Light Source: (40) 3000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 20484.8 lumens  
Efficiency: N/A  
Efficacy: 134.8 lumens/watt  
Luminous Opening: Rectangular (W 0.67' x L: 0.67' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B3 - U0 - G3

Input Watts (W): 152  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.98  
Total Harmonic Distortion (THDi): 2.75%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

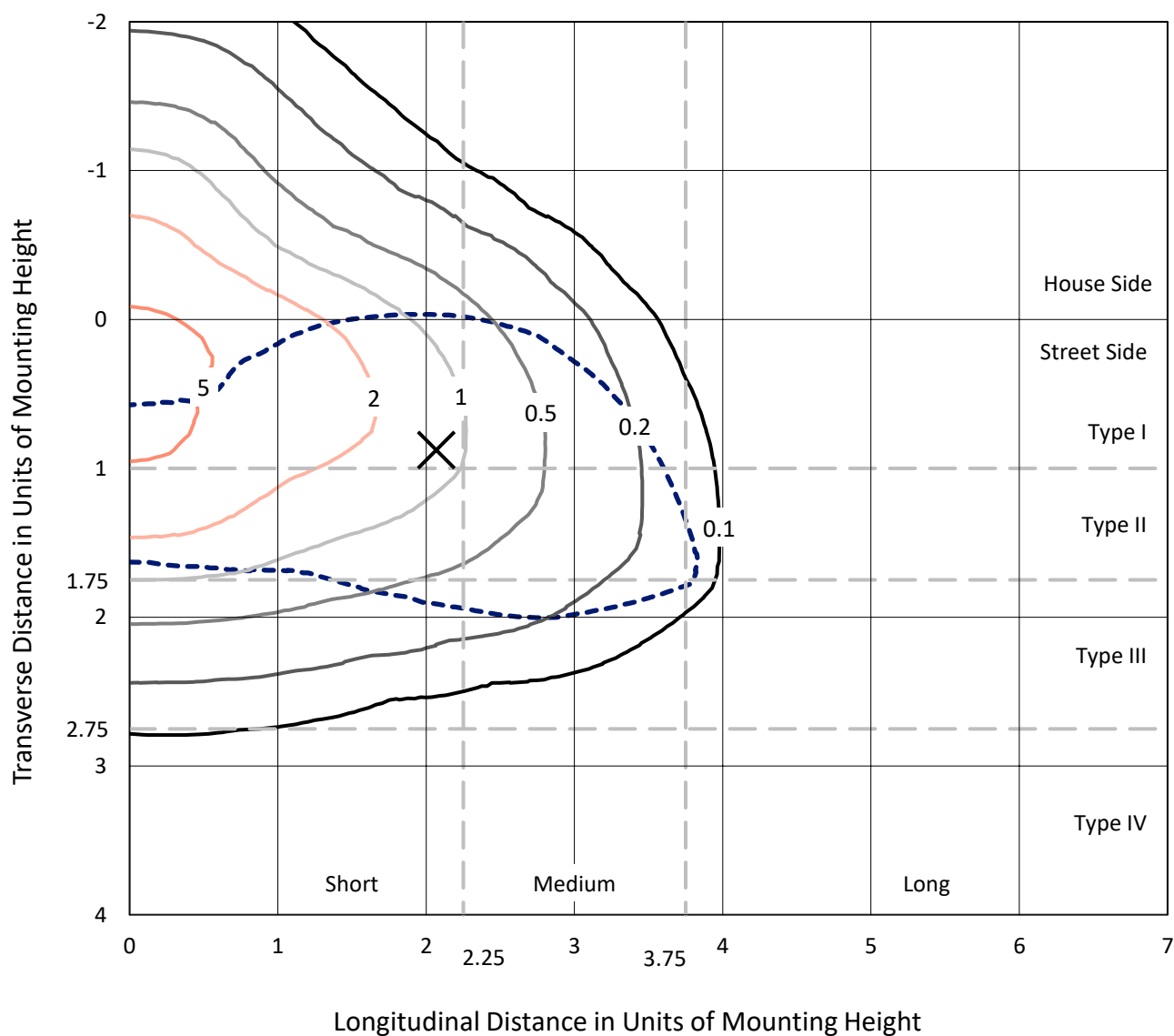
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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd



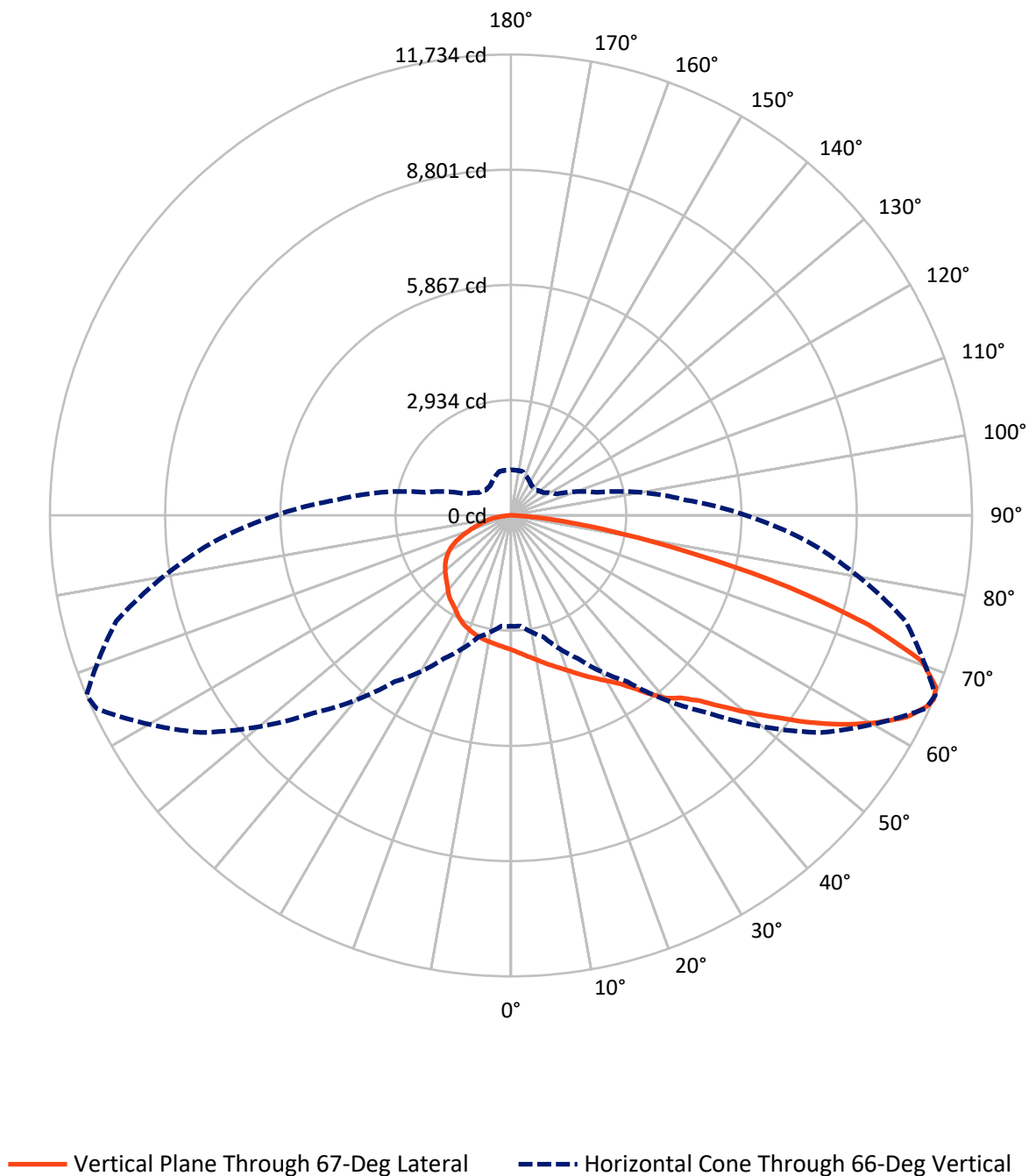
Based on 25 foot mounting height. Maximum calculated value = 6.3 fc

Type III - Short - N/A

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CATALOG NUMBER: USSL-150-730-U-T3R

## Luminous Intensity Polar Plot



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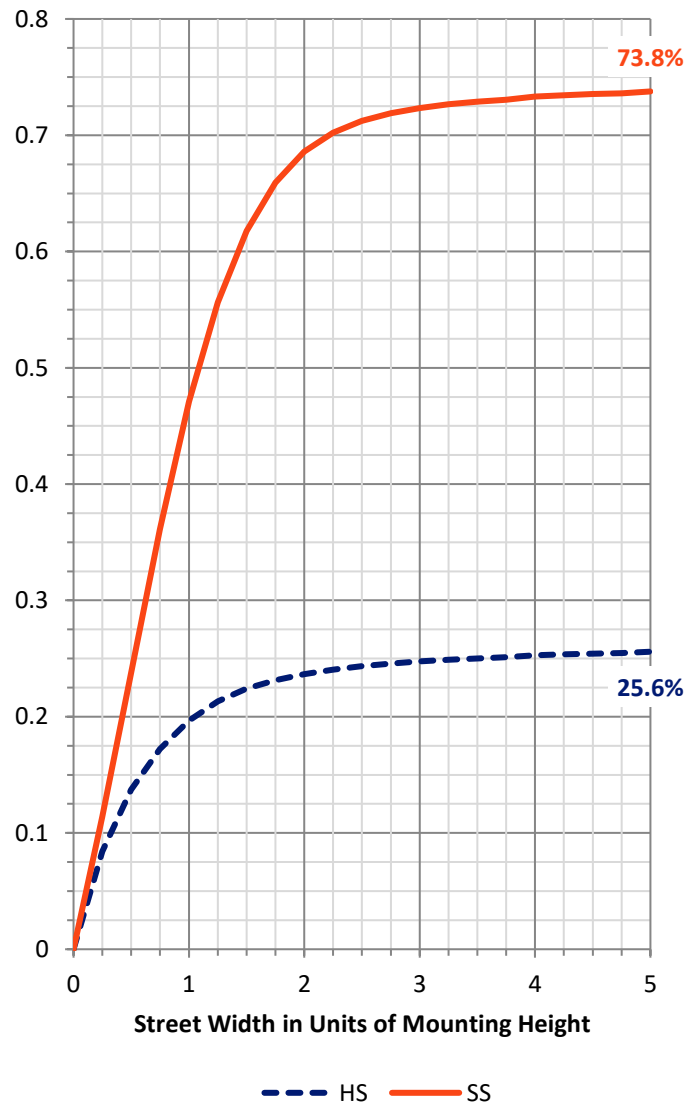
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 5308.9   | 0.0    | 5308.9  |
|                    | % Fixture | 25.9     | 0.0    | 25.9    |
| <b>Street Side</b> | Lumens    | 15175.9  | 0.0    | 15175.9 |
|                    | % Fixture | 74.1     | 0.0    | 74.1    |
| <b>Total</b>       | Lumens    | 20484.8  | 0.0    | 20484.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 329.8   | 1.6       |
| 10°-20°   | 992.8   | 4.8       |
| 20°-30°   | 1689.8  | 8.2       |
| 30°-40°   | 2641.6  | 12.9      |
| 40°-50°   | 3653.0  | 17.8      |
| 50°-60°   | 4380.6  | 21.4      |
| 60°-70°   | 4227.2  | 20.6      |
| 70°-80°   | 2181.6  | 10.6      |
| 80°-90°   | 388.4   | 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°    | 20484.8 | 100.0     |
| 0°-180°   | 20484.8 | 100.0     |

**Coefficient of Utilization**



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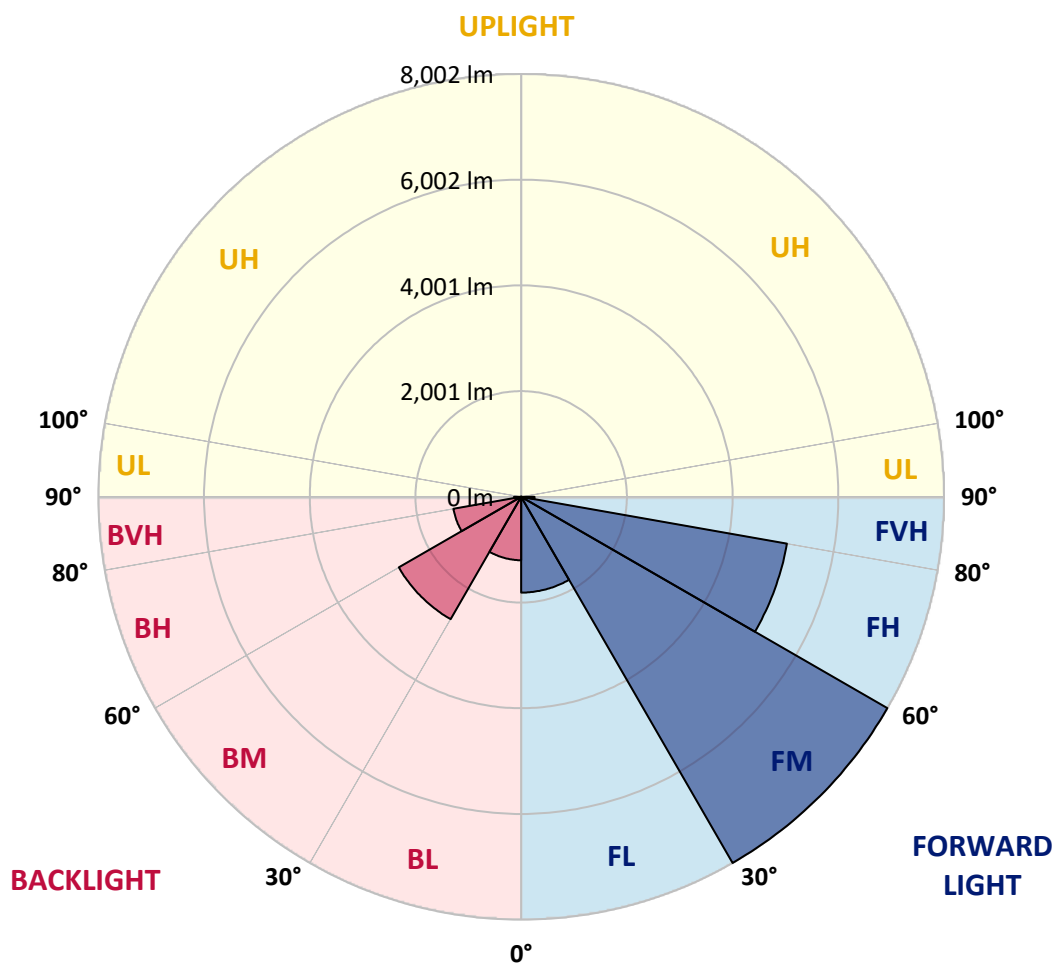
CATALOG NUMBER: USSL-150-730-U-T3R

**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1812.8 | 8.8       |                         |      |         |
| FM   | (30°-60°)   | 8002.2 | 39.1      |                         |      |         |
| FH   | (60°-80°)   | 5107.2 | 24.9      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 253.7  | 1.2       |                         |      | G3/500  |
| BL   | (0°-30°)    | 1199.6 | 5.9       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 2673.0 | 13.0      | B3/5000                 |      |         |
| BH   | (60°-80°)   | 1301.5 | 6.4       | B3/2500                 |      | G3/2500 |
| BVH  | (80°-90°)   | 134.8  | 0.7       |                         |      | 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 Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°     | 67°     | 75°     | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|--------|
| 0°    | 3423.4 | 3423.4 | 3423.4 | 3423.4 | 3423.4 | 3423.4 | 3423.4 | 3423.4  | 3423.4  | 3423.4  | 3423.4 |
| 2.5°  | 3562.4 | 3565.2 | 3567.1 | 3561.4 | 3543.3 | 3531.0 | 3521.4 | 3491.0  | 3491.9  | 3472.9  | 3437.7 |
| 5°    | 3698.5 | 3712.8 | 3709.0 | 3698.5 | 3676.6 | 3646.2 | 3612.8 | 3564.3  | 3568.1  | 3527.2  | 3466.2 |
| 7.5°  | 3828.0 | 3846.1 | 3839.4 | 3830.8 | 3806.1 | 3767.1 | 3728.0 | 3657.6  | 3654.7  | 3592.8  | 3500.5 |
| 10°   | 3930.8 | 3949.8 | 3949.8 | 3944.1 | 3933.7 | 3888.9 | 3838.5 | 3762.3  | 3747.1  | 3660.4  | 3550.0 |
| 12.5° | 4015.5 | 4032.7 | 4044.1 | 4039.3 | 4043.1 | 4012.7 | 3957.5 | 3874.6  | 3859.4  | 3744.2  | 3605.2 |
| 15°   | 4066.0 | 4098.4 | 4106.9 | 4122.2 | 4142.2 | 4129.8 | 4091.7 | 3980.3  | 3970.8  | 3841.3  | 3663.3 |
| 17.5° | 4117.4 | 4135.5 | 4156.4 | 4194.5 | 4226.9 | 4245.9 | 4207.8 | 4114.5  | 4089.8  | 3933.7  | 3724.2 |
| 20°   | 4177.4 | 4210.7 | 4233.5 | 4273.5 | 4319.2 | 4365.9 | 4357.3 | 4246.9  | 4222.1  | 4048.9  | 3798.5 |
| 22.5° | 4336.4 | 4360.2 | 4370.6 | 4398.2 | 4452.5 | 4499.2 | 4504.9 | 4407.8  | 4377.3  | 4188.8  | 3887.0 |
| 25°   | 4656.2 | 4682.9 | 4642.9 | 4612.4 | 4597.2 | 4638.1 | 4666.7 | 4577.2  | 4543.9  | 4327.8  | 3973.6 |
| 27.5° | 5225.5 | 5224.6 | 5108.4 | 4984.7 | 4852.3 | 4803.8 | 4823.8 | 4747.6  | 4711.4  | 4463.0  | 4074.6 |
| 30°   | 5871.9 | 5903.4 | 5805.3 | 5505.4 | 5194.1 | 4998.0 | 5010.4 | 4924.7  | 4897.1  | 4626.7  | 4191.7 |
| 32.5° | 6547.9 | 6565.9 | 6448.8 | 6160.4 | 5658.7 | 5297.9 | 5224.6 | 5153.2  | 5113.2  | 4844.7  | 4343.0 |
| 35°   | 6876.3 | 6912.5 | 6849.6 | 6573.6 | 6068.0 | 5665.4 | 5539.7 | 5463.5  | 5409.3  | 5102.7  | 4538.2 |
| 37.5° | 7300.9 | 7353.2 | 7340.9 | 6948.6 | 6323.2 | 5959.5 | 5871.0 | 5796.7  | 5772.9  | 5425.4  | 4785.7 |
| 40°   | 7926.4 | 7924.4 | 7952.1 | 7325.6 | 6594.5 | 6163.2 | 6166.1 | 6169.0  | 6122.3  | 5691.1  | 4969.4 |
| 42.5° | 8229.1 | 8220.5 | 8128.2 | 7534.1 | 6910.6 | 6364.1 | 6400.3 | 6396.5  | 6347.9  | 5892.9  | 5115.1 |
| 45°   | 8321.4 | 8311.0 | 8091.0 | 7694.1 | 7405.6 | 6590.7 | 6694.5 | 6772.5  | 6732.5  | 6260.4  | 5405.5 |
| 47.5° | 8256.7 | 8235.8 | 8114.8 | 7789.3 | 7676.9 | 6989.6 | 7031.5 | 7286.6  | 7279.0  | 6718.3  | 5742.5 |
| 50°   | 8095.8 | 8037.7 | 8001.6 | 7823.5 | 7597.9 | 7167.6 | 7448.4 | 7921.6  | 7903.5  | 7279.9  | 6102.3 |
| 52.5° | 7740.7 | 7733.1 | 7778.8 | 7661.7 | 7434.2 | 7247.6 | 7904.5 | 8558.5  | 8562.3  | 7851.1  | 6465.0 |
| 55°   | 7299.0 | 7271.4 | 7415.1 | 7405.6 | 7262.8 | 7406.6 | 8352.8 | 9289.6  | 9316.3  | 8441.4  | 6854.4 |
| 57.5° | 6238.5 | 6269.9 | 6883.9 | 7056.2 | 7083.8 | 7569.4 | 8831.7 | 9979.8  | 10035.0 | 9039.2  | 7187.6 |
| 60°   | 5201.7 | 5262.7 | 5704.4 | 6482.2 | 6803.9 | 7654.1 | 9280.1 | 10682.4 | 10705.2 | 9638.0  | 7490.3 |
| 62.5° | 4312.6 | 4294.5 | 4698.1 | 5575.9 | 6353.6 | 7620.8 | 9597.1 | 11226.0 | 11308.8 | 10115.0 | 7663.6 |
| 65°   | 3198.7 | 3241.6 | 3679.5 | 4457.3 | 5591.1 | 7305.6 | 9697.1 | 11602.0 | 11670.6 | 10379.7 | 7656.9 |
| 66°   | 2820.8 | 2828.4 | 3204.4 | 4015.5 | 5166.5 | 7110.5 | 9633.3 | 11637.2 | 11734.4 | 10398.7 | 7576.0 |
| 67.5° | 2331.4 | 2341.9 | 2640.8 | 3304.4 | 4497.2 | 6685.9 | 9389.6 | 11572.5 | 11665.8 | 10293.0 | 7321.8 |
| 70°   | 1655.5 | 1711.7 | 1871.6 | 2318.1 | 3170.2 | 5438.8 | 8606.1 | 10871.8 | 11085.1 | 9622.8  | 6580.2 |
| 72.5° | 1198.6 | 1213.8 | 1343.3 | 1574.6 | 1992.5 | 3626.2 | 7121.9 | 9362.9  | 9500.0  | 8047.3  | 5245.5 |
| 75°   | 854.9  | 873.9  | 983.4  | 1075.8 | 1318.5 | 2237.2 | 5021.8 | 7334.2  | 7301.8  | 5757.7  | 3573.8 |
| 77.5° | 664.5  | 678.8  | 718.8  | 768.3  | 885.4  | 1279.5 | 3022.6 | 4956.1  | 4885.7  | 3609.0  | 2227.7 |
| 80°   | 539.8  | 543.6  | 531.2  | 551.2  | 610.2  | 806.3  | 1729.8 | 2959.8  | 2896.9  | 2036.3  | 1349.0 |
| 82.5° | 420.8  | 425.5  | 416.0  | 402.7  | 432.2  | 544.5  | 1010.1 | 1565.1  | 1556.5  | 1180.5  | 731.1  |
| 85°   | 269.4  | 279.9  | 268.5  | 249.4  | 269.4  | 331.3  | 532.2  | 667.4   | 641.6   | 534.1   | 278.0  |
| 87.5° | 150.4  | 148.5  | 136.1  | 109.5  | 95.2   | 120.0  | 148.5  | 149.5   | 143.8   | 125.7   | 76.2   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     | 0.0     | 0.0    |

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**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3423.4 | 3423.4 | 3423.4 | 3423.4 | 3423.4 | 3423.4 | 3423.4 | 3423.4 | 3423.4 | 3423.4 | 3423.4 |
| 2.5°  | 3430.1 | 3423.4 | 3395.8 | 3371.0 | 3345.3 | 3330.1 | 3307.2 | 3296.8 | 3284.4 | 3273.9 | 3264.4 |
| 5°    | 3449.1 | 3426.2 | 3373.9 | 3325.3 | 3278.7 | 3248.2 | 3207.3 | 3187.3 | 3164.4 | 3155.9 | 3144.5 |
| 7.5°  | 3471.9 | 3428.2 | 3357.7 | 3282.5 | 3219.7 | 3163.5 | 3111.1 | 3079.7 | 3054.0 | 3046.4 | 3045.4 |
| 10°   | 3501.5 | 3448.1 | 3343.4 | 3245.4 | 3157.8 | 3081.6 | 3015.0 | 2967.4 | 2938.8 | 2928.4 | 2923.6 |
| 12.5° | 3536.7 | 3466.2 | 3333.9 | 3209.2 | 3095.0 | 3001.7 | 2918.8 | 2858.9 | 2831.2 | 2814.1 | 2816.0 |
| 15°   | 3578.6 | 3489.1 | 3323.4 | 3167.3 | 3022.6 | 2911.2 | 2810.3 | 2741.8 | 2709.4 | 2697.0 | 2695.1 |
| 17.5° | 3622.4 | 3510.0 | 3312.0 | 3117.8 | 2942.6 | 2805.5 | 2699.9 | 2622.8 | 2581.8 | 2579.0 | 2586.6 |
| 20°   | 3672.8 | 3541.4 | 3298.7 | 3061.6 | 2858.9 | 2701.8 | 2584.7 | 2517.1 | 2476.2 | 2472.3 | 2487.6 |
| 22.5° | 3731.8 | 3571.9 | 3278.7 | 2996.9 | 2765.6 | 2594.2 | 2479.0 | 2414.3 | 2381.9 | 2385.7 | 2398.1 |
| 25°   | 3798.5 | 3605.2 | 3253.0 | 2924.5 | 2661.8 | 2481.9 | 2375.2 | 2329.5 | 2309.6 | 2317.2 | 2334.3 |
| 27.5° | 3864.2 | 3642.4 | 3214.0 | 2835.1 | 2550.4 | 2379.0 | 2302.9 | 2269.6 | 2263.9 | 2278.1 | 2298.1 |
| 30°   | 3945.1 | 3678.5 | 3167.3 | 2729.4 | 2430.5 | 2289.6 | 2235.3 | 2227.7 | 2233.4 | 2245.8 | 2268.6 |
| 32.5° | 4057.4 | 3751.8 | 3134.9 | 2632.3 | 2324.8 | 2201.0 | 2191.5 | 2203.9 | 2219.1 | 2235.3 | 2261.0 |
| 35°   | 4208.8 | 3845.1 | 3126.4 | 2552.3 | 2228.6 | 2130.6 | 2154.4 | 2203.9 | 2229.6 | 2248.6 | 2273.4 |
| 37.5° | 4399.2 | 3959.4 | 3114.0 | 2478.1 | 2138.2 | 2060.1 | 2128.7 | 2217.2 | 2251.5 | 2261.0 | 2280.0 |
| 40°   | 4505.8 | 3992.7 | 3025.5 | 2381.0 | 2051.6 | 1998.2 | 2102.0 | 2220.1 | 2249.6 | 2263.9 | 2280.0 |
| 42.5° | 4603.9 | 4008.9 | 2942.6 | 2282.9 | 1984.0 | 1934.5 | 2056.3 | 2185.8 | 2234.3 | 2296.2 | 2317.2 |
| 45°   | 4793.3 | 4114.5 | 2909.3 | 2195.3 | 1913.5 | 1863.1 | 1967.8 | 2104.9 | 2227.7 | 2296.2 | 2313.4 |
| 47.5° | 5038.9 | 4232.6 | 2876.9 | 2114.4 | 1834.5 | 1766.9 | 1832.6 | 2043.9 | 2181.0 | 2233.4 | 2240.1 |
| 50°   | 5294.1 | 4338.3 | 2834.1 | 2037.3 | 1736.4 | 1636.5 | 1718.4 | 1955.4 | 2101.1 | 2125.8 | 2131.5 |
| 52.5° | 5524.5 | 4435.4 | 2792.2 | 1956.4 | 1633.6 | 1508.0 | 1600.3 | 1831.6 | 1963.0 | 1969.7 | 1984.0 |
| 55°   | 5754.8 | 4528.7 | 2740.8 | 1871.6 | 1510.8 | 1375.6 | 1466.1 | 1669.8 | 1773.6 | 1763.1 | 1763.1 |
| 57.5° | 5935.7 | 4612.4 | 2694.2 | 1766.9 | 1395.6 | 1261.4 | 1327.1 | 1487.0 | 1585.1 | 1575.6 | 1567.0 |
| 60°   | 6088.0 | 4666.7 | 2638.9 | 1645.1 | 1279.5 | 1151.0 | 1191.9 | 1333.8 | 1429.0 | 1408.0 | 1408.0 |
| 62.5° | 6149.0 | 4667.7 | 2548.5 | 1515.6 | 1160.5 | 1044.3 | 1071.0 | 1197.6 | 1305.2 | 1292.8 | 1300.4 |
| 65°   | 6079.5 | 4579.1 | 2360.0 | 1356.6 | 1048.2 | 942.5  | 964.4  | 1072.9 | 1199.5 | 1195.7 | 1203.3 |
| 66°   | 5983.3 | 4476.3 | 2259.1 | 1291.9 | 1008.2 | 911.1  | 918.7  | 1030.1 | 1155.7 | 1157.6 | 1156.7 |
| 67.5° | 5773.9 | 4291.6 | 2078.2 | 1199.5 | 943.4  | 851.1  | 860.6  | 972.0  | 1096.7 | 1087.2 | 1091.0 |
| 70°   | 5237.0 | 3692.8 | 1706.9 | 1035.8 | 846.3  | 754.0  | 769.2  | 884.4  | 976.8  | 967.2  | 965.3  |
| 72.5° | 4185.9 | 2786.5 | 1378.5 | 884.4  | 748.3  | 668.3  | 691.2  | 771.1  | 885.4  | 880.6  | 883.5  |
| 75°   | 2776.0 | 1821.2 | 1084.3 | 744.5  | 645.5  | 600.7  | 602.6  | 671.2  | 781.6  | 795.9  | 804.4  |
| 77.5° | 1728.8 | 1246.2 | 872.0  | 625.5  | 541.7  | 502.7  | 506.5  | 578.8  | 669.3  | 675.9  | 683.5  |
| 80°   | 1109.1 | 918.7  | 687.3  | 507.4  | 414.1  | 405.6  | 417.9  | 484.6  | 559.8  | 565.5  | 561.7  |
| 82.5° | 669.3  | 595.0  | 514.1  | 362.7  | 319.9  | 319.9  | 337.0  | 389.4  | 417.0  | 323.7  | 302.7  |
| 85°   | 266.6  | 309.4  | 279.9  | 199.9  | 205.6  | 210.4  | 220.9  | 263.7  | 278.0  | 146.6  | 115.2  |
| 87.5° | 61.9   | 84.7   | 82.8   | 58.1   | 63.8   | 69.5   | 68.5   | 111.4  | 139.0  | 62.8   | 36.2   |
| 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

McGraw-Edison

Report Number: SP2-2501-321-4

Test Date: 04/10/2025

Luminaire Tested: GKO-PB1E-730-U-T4W

Data in this report applies to families of products including GKO-PB1E-730-U-T4W

### Test Information

Test Method: LM-79-2019  
 Report Number: SP2-2501-321-4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP2 - 165CM SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 04/10/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GKO-PB1E-730-U-T4W**  
 Description: Gekko Wedge Wall Pack Fixture 1 SQ w/ T4W distribution

### Spectral Parameters

CCT (K): 3072  
 CIE  $u'$ : 0.2482  
 CIE  $v'$ : 0.5193  
 Duv: -0.0004  
 CIE x: 0.4313  
 CIE y: 0.4010  
 CIE z: 0.1677  
 Peak Wavelength (nm): 593  
 Dominant Wavelength (nm): 582  
 Purity: 49.8225  
 R<sub>f</sub>: 74.7  
 R<sub>g</sub>: 94.2

CRI (Ra): 71.7  
 R1: 68.1  
 R2: 82.1  
 R3: 93.4  
 R4: 67.3  
 R5: 67.2  
 R6: 74.9  
 R7: 77.5  
 R8: 43.4  
 R9: -33.9  
 R10: 58.6  
 R11: 62.0  
 R12: 48.5  
 R13: 70.7  
 R14: 96.4  
 R15: 60.2



### Test Conditions

Stabilization Time: 30M  
 Operation Time: 1H 30M  
 Sphere Temperature (°C): 25.7

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| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN2187                | 1/6/2025         | 7/6/2025             |
| Power Meter                    | INXT2011002           | 1/21/2025        | 1/21/2026            |
| AC Power Source                | IN0458                | 10/22/2024       | 10/22/2025           |
| DC Power Source                | IN0212                | 10/22/2024       | 10/22/2025           |
| Sphere Thermometer             | IN4036B               | 10/22/2024       | 10/22/2025           |
| Room Thermometer               | IN0046                | 10/22/2024       | 10/22/2025           |

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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

REPORT NUMBER: SP2-2501-321-4

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|
| 360               | 0                                      | NR                             | 490               | 114                                    | NR                             | 620               | 817                                    | NR                             | 750               | 22                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 141                                    | NR                             | 625               | 756                                    | NR                             | 755               | 19                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 189                                    | NR                             | 630               | 693                                    | NR                             | 760               | 16                                     | NR                             | 890               | 0                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 247                                    | NR                             | 635               | 628                                    | NR                             | 765               | 14                                     | NR                             | 895               | 0                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 307                                    | NR                             | 640               | 564                                    | NR                             | 770               | 12                                     | NR                             | 900               | 0                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 366                                    | NR                             | 645               | 504                                    | NR                             | 775               | 10                                     | NR                             | 905               | 0                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 415                                    | NR                             | 650               | 446                                    | NR                             | 780               | 9                                      | NR                             | 910               | 0                                      | NR                             |
| 395               | 2                                      | NR                             | 525               | 455                                    | NR                             | 655               | 393                                    | NR                             | 785               | 8                                      | NR                             | 915               | 0                                      | NR                             |
| 400               | 3                                      | NR                             | 530               | 491                                    | NR                             | 660               | 344                                    | NR                             | 790               | 7                                      | NR                             | 920               | 0                                      | NR                             |
| 405               | 6                                      | NR                             | 535               | 523                                    | NR                             | 665               | 300                                    | NR                             | 795               | 6                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 11                                     | NR                             | 540               | 556                                    | NR                             | 670               | 260                                    | NR                             | 800               | 5                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 21                                     | NR                             | 545               | 591                                    | NR                             | 675               | 226                                    | NR                             | 805               | 4                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 41                                     | NR                             | 550               | 632                                    | NR                             | 680               | 195                                    | NR                             | 810               | 4                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 76                                     | NR                             | 555               | 679                                    | NR                             | 685               | 167                                    | NR                             | 815               | 3                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 129                                    | NR                             | 560               | 732                                    | NR                             | 690               | 144                                    | NR                             | 820               | 3                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 205                                    | NR                             | 565               | 787                                    | NR                             | 695               | 123                                    | NR                             | 825               | 2                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 307                                    | NR                             | 570               | 847                                    | NR                             | 700               | 105                                    | NR                             | 830               | 2                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 451                                    | NR                             | 575               | 900                                    | NR                             | 705               | 90                                     | NR                             | 835               | 2                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 603                                    | NR                             | 580               | 944                                    | NR                             | 710               | 77                                     | NR                             | 840               | 2                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 544                                    | NR                             | 585               | 977                                    | NR                             | 715               | 66                                     | NR                             | 845               | 1                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 348                                    | NR                             | 590               | 997                                    | NR                             | 720               | 56                                     | NR                             | 850               | 1                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 249                                    | NR                             | 595               | 998                                    | NR                             | 725               | 48                                     | NR                             | 855               | 1                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 191                                    | NR                             | 600               | 986                                    | NR                             | 730               | 41                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 133                                    | NR                             | 605               | 960                                    | NR                             | 735               | 35                                     | NR                             | 865               | 1                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 107                                    | NR                             | 610               | 921                                    | NR                             | 740               | 30                                     | NR                             | 870               | 1                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 104                                    | NR                             | 615               | 874                                    | NR                             | 745               | 26                                     | NR                             | 875               | 1                                      | NR                             |                   |                                        |                                |

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### Scotopic Flux vs. Wavelength



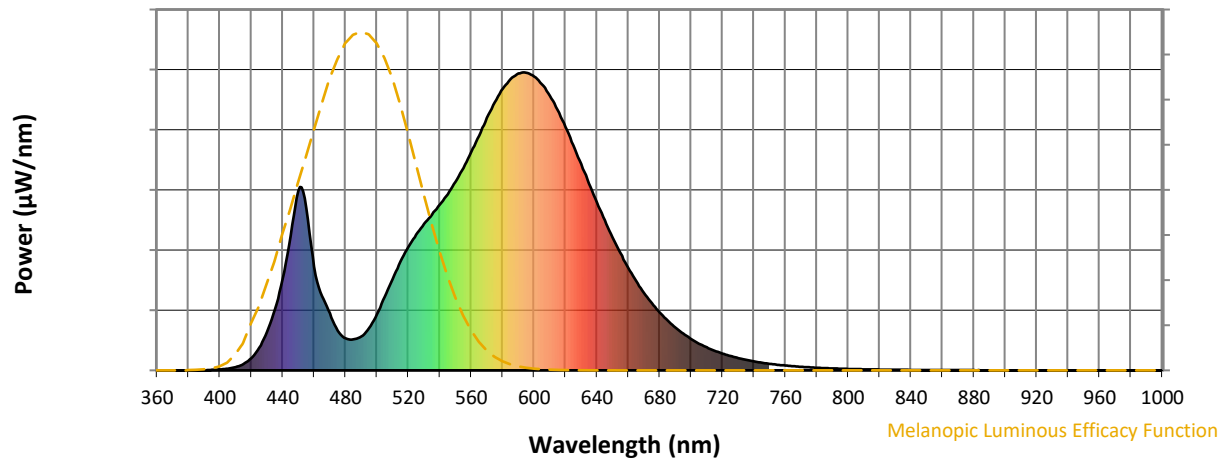
Scotopic Lumens: NR

S/P: 1.24

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 114                      | NR            | 620    | 817                      | NR            | 750    | 22                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 141                      | NR            | 625    | 756                      | NR            | 755    | 19                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 189                      | NR            | 630    | 693                      | NR            | 760    | 16                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 247                      | NR            | 635    | 628                      | NR            | 765    | 14                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 307                      | NR            | 640    | 564                      | NR            | 770    | 12                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 366                      | NR            | 645    | 504                      | NR            | 775    | 10                       | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 415                      | NR            | 650    | 446                      | NR            | 780    | 9                        | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 455                      | NR            | 655    | 393                      | NR            | 785    | 8                        | NR            | 915    | 0                        | NR            |
| 400    | 3                        | NR            | 530    | 491                      | NR            | 660    | 344                      | NR            | 790    | 7                        | NR            | 920    | 0                        | NR            |
| 405    | 6                        | NR            | 535    | 523                      | NR            | 665    | 300                      | NR            | 795    | 6                        | NR            | 925    | 0                        | NR            |
| 410    | 11                       | NR            | 540    | 556                      | NR            | 670    | 260                      | NR            | 800    | 5                        | NR            | 930    | 0                        | NR            |
| 415    | 21                       | NR            | 545    | 591                      | NR            | 675    | 226                      | NR            | 805    | 4                        | NR            | 935    | 0                        | NR            |
| 420    | 41                       | NR            | 550    | 632                      | NR            | 680    | 195                      | NR            | 810    | 4                        | NR            | 940    | 0                        | NR            |
| 425    | 76                       | NR            | 555    | 679                      | NR            | 685    | 167                      | NR            | 815    | 3                        | NR            | 945    | 0                        | NR            |
| 430    | 129                      | NR            | 560    | 732                      | NR            | 690    | 144                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 205                      | NR            | 565    | 787                      | NR            | 695    | 123                      | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 307                      | NR            | 570    | 847                      | NR            | 700    | 105                      | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 451                      | NR            | 575    | 900                      | NR            | 705    | 90                       | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 603                      | NR            | 580    | 944                      | NR            | 710    | 77                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 544                      | NR            | 585    | 977                      | NR            | 715    | 66                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 348                      | NR            | 590    | 997                      | NR            | 720    | 56                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 249                      | NR            | 595    | 998                      | NR            | 725    | 48                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 191                      | NR            | 600    | 986                      | NR            | 730    | 41                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 133                      | NR            | 605    | 960                      | NR            | 735    | 35                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 107                      | NR            | 610    | 921                      | NR            | 740    | 30                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 104                      | NR            | 615    | 874                      | NR            | 745    | 26                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.3

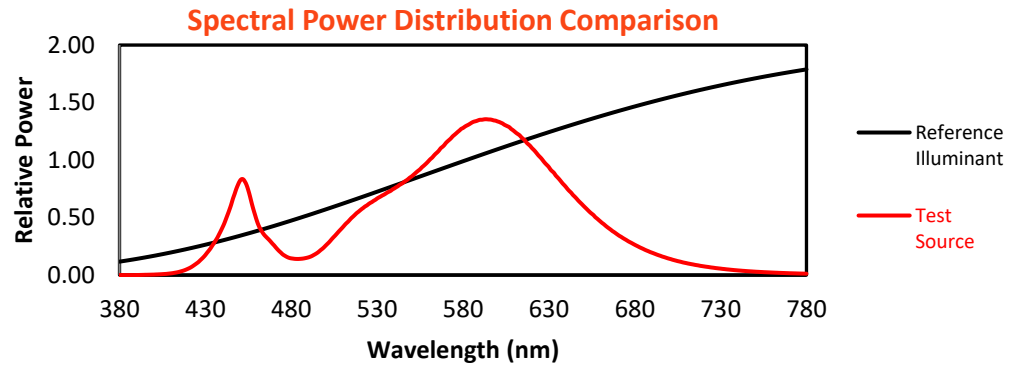
| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 114                         | NR               | 620       | 817                         | NR               | 750       | 22                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 141                         | NR               | 625       | 756                         | NR               | 755       | 19                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 189                         | NR               | 630       | 693                         | NR               | 760       | 16                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 247                         | NR               | 635       | 628                         | NR               | 765       | 14                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 307                         | NR               | 640       | 564                         | NR               | 770       | 12                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 366                         | NR               | 645       | 504                         | NR               | 775       | 10                          | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 415                         | NR               | 650       | 446                         | NR               | 780       | 9                           | NR               | 910       | 0                           | NR               |
| 395       | 2                           | NR               | 525       | 455                         | NR               | 655       | 393                         | NR               | 785       | 8                           | NR               | 915       | 0                           | NR               |
| 400       | 3                           | NR               | 530       | 491                         | NR               | 660       | 344                         | NR               | 790       | 7                           | NR               | 920       | 0                           | NR               |
| 405       | 6                           | NR               | 535       | 523                         | NR               | 665       | 300                         | NR               | 795       | 6                           | NR               | 925       | 0                           | NR               |
| 410       | 11                          | NR               | 540       | 556                         | NR               | 670       | 260                         | NR               | 800       | 5                           | NR               | 930       | 0                           | NR               |
| 415       | 21                          | NR               | 545       | 591                         | NR               | 675       | 226                         | NR               | 805       | 4                           | NR               | 935       | 0                           | NR               |
| 420       | 41                          | NR               | 550       | 632                         | NR               | 680       | 195                         | NR               | 810       | 4                           | NR               | 940       | 0                           | NR               |
| 425       | 76                          | NR               | 555       | 679                         | NR               | 685       | 167                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 129                         | NR               | 560       | 732                         | NR               | 690       | 144                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 205                         | NR               | 565       | 787                         | NR               | 695       | 123                         | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 307                         | NR               | 570       | 847                         | NR               | 700       | 105                         | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 451                         | NR               | 575       | 900                         | NR               | 705       | 90                          | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 603                         | NR               | 580       | 944                         | NR               | 710       | 77                          | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 544                         | NR               | 585       | 977                         | NR               | 715       | 66                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 348                         | NR               | 590       | 997                         | NR               | 720       | 56                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 249                         | NR               | 595       | 998                         | NR               | 725       | 48                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 191                         | NR               | 600       | 986                         | NR               | 730       | 41                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 133                         | NR               | 605       | 960                         | NR               | 735       | 35                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 107                         | NR               | 610       | 921                         | NR               | 740       | 30                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 104                         | NR               | 615       | 874                         | NR               | 745       | 26                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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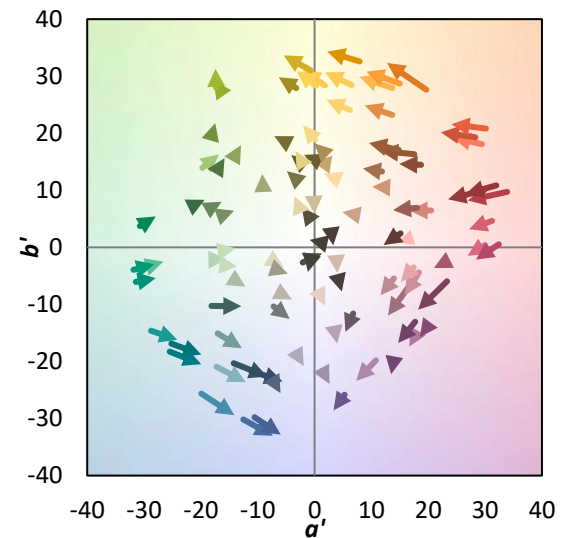
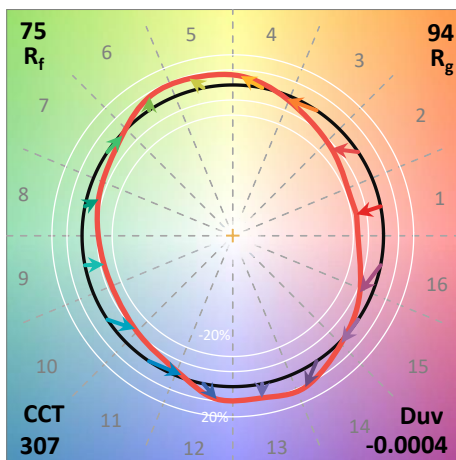
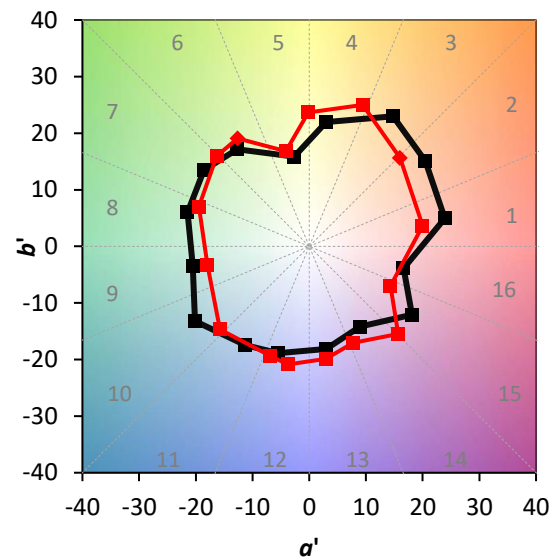
TM-30-18

### Summary

$R_f = 74.7$   
 $R_g = 94.2$   
 $\text{CIE } R_a = 71.7$   
 $R_g = -33.9$

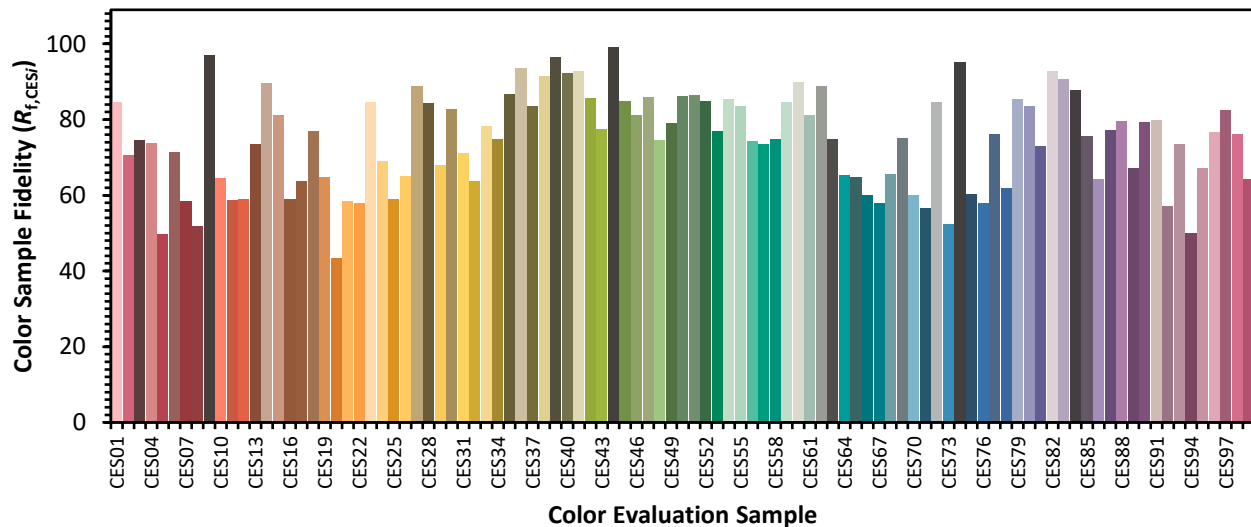


### Color Vector Graphics

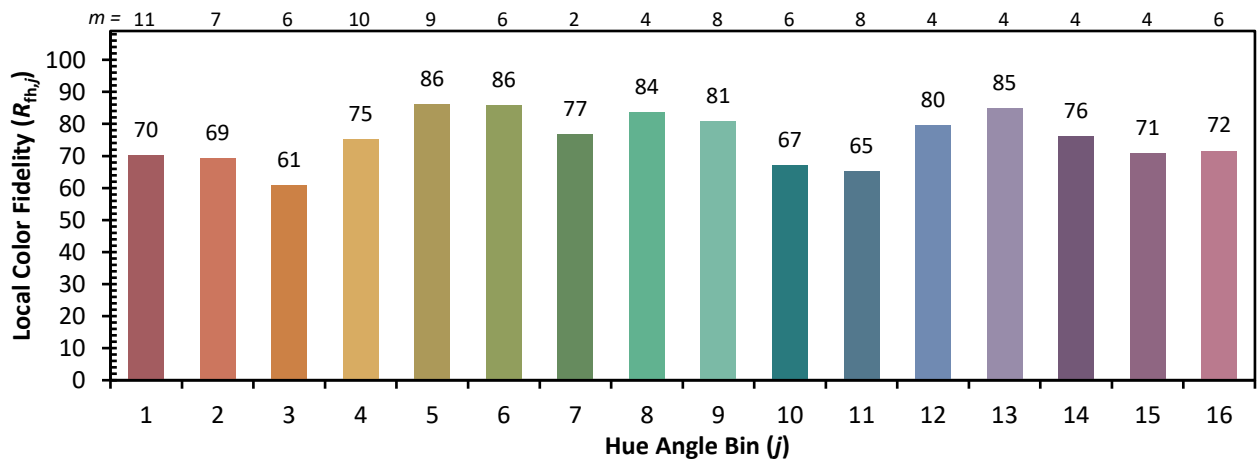


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 65 | CES51 = 86 | CES76 = 58 |
| CES02 = 62 | CES27 = 89 | CES52 = 85 | CES77 = 76 |
| CES03 = 31 | CES28 = 84 | CES53 = 77 | CES78 = 62 |
| CES04 = 71 | CES29 = 68 | CES54 = 85 | CES79 = 85 |
| CES05 = 49 | CES30 = 83 | CES55 = 84 | CES80 = 84 |
| 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 = 76 |
| CES11 = 59 | CES36 = 94 | 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 = 65 | CES90 = 79 |
| CES16 = 47 | CES41 = 93 | CES66 = 60 | CES91 = 80 |
| CES17 = 50 | CES42 = 86 | CES67 = 58 | CES92 = 57 |
| CES18 = 56 | CES43 = 78 | CES68 = 66 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 75 | CES94 = 50 |
| CES20 = 66 | CES45 = 85 | CES70 = 60 | CES95 = 67 |
| CES21 = 87 | CES46 = 81 | CES71 = 57 | CES96 = 77 |
| CES22 = 79 | CES47 = 86 | CES72 = 85 | CES97 = 83 |
| 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)