

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: P1461452

Luminaire Tested: USSL-150-750-U-T2U

Issue Date: 06/10/2026

**Test Information**

Test Method: LM-79-2024  
Report Number: P1461452  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 6/11/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: USSL-150-750-U-T2U  
Description: USSL DISCRETE LED 1 SQUARE 150W 70CRI 5000K FIXTURE w/ TYPE II URBAN DISTRIBUTION OPTIC  
Light Source: (40) 5000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 21517.8 lumens  
Efficiency: N/A  
Efficacy: 141.6 lumens/watt  
Luminous Opening: Rectangular (W 0.67' x L: 0.67' x H: 0')  
IES Classification: Type II - 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

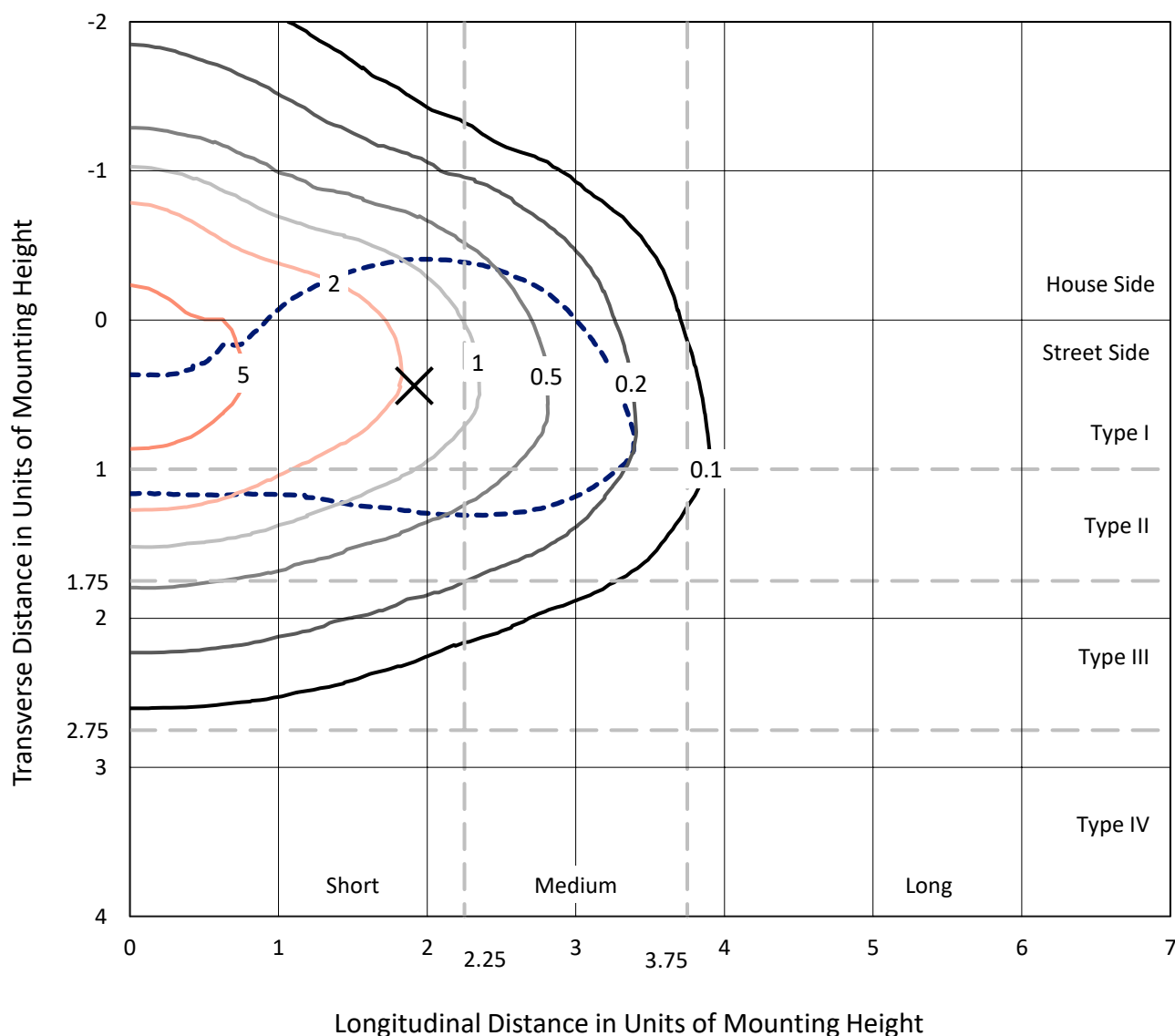
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CATALOG NUMBER: USSL-150-750-U-T2U

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd



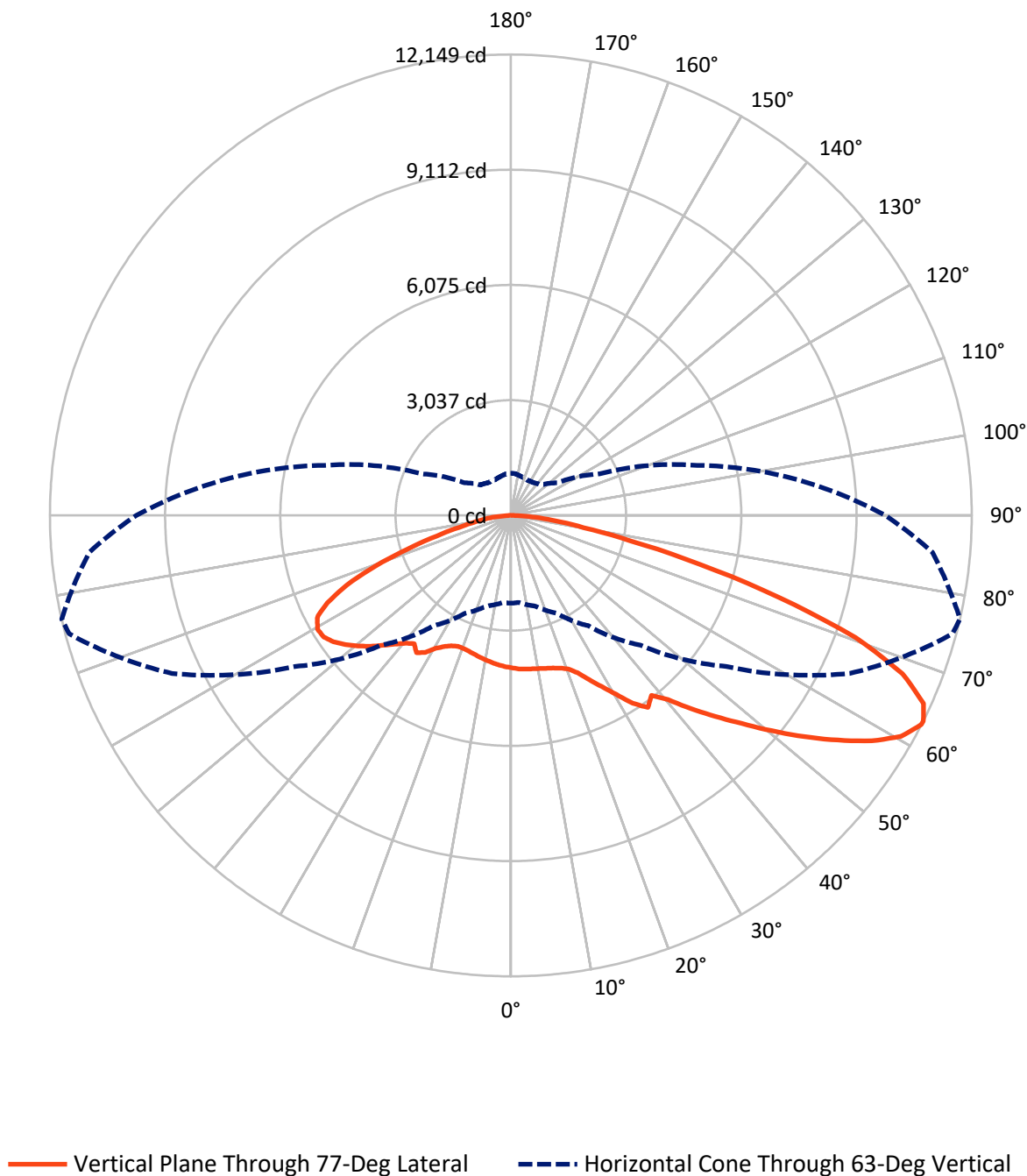
Based on 25 foot mounting height. Maximum calculated value = 8 fc

Type II - Short - N/A

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CATALOG NUMBER: USSL-150-750-U-T2U

## Luminous Intensity Polar Plot



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CATALOG NUMBER: USSL-150-750-U-T2U

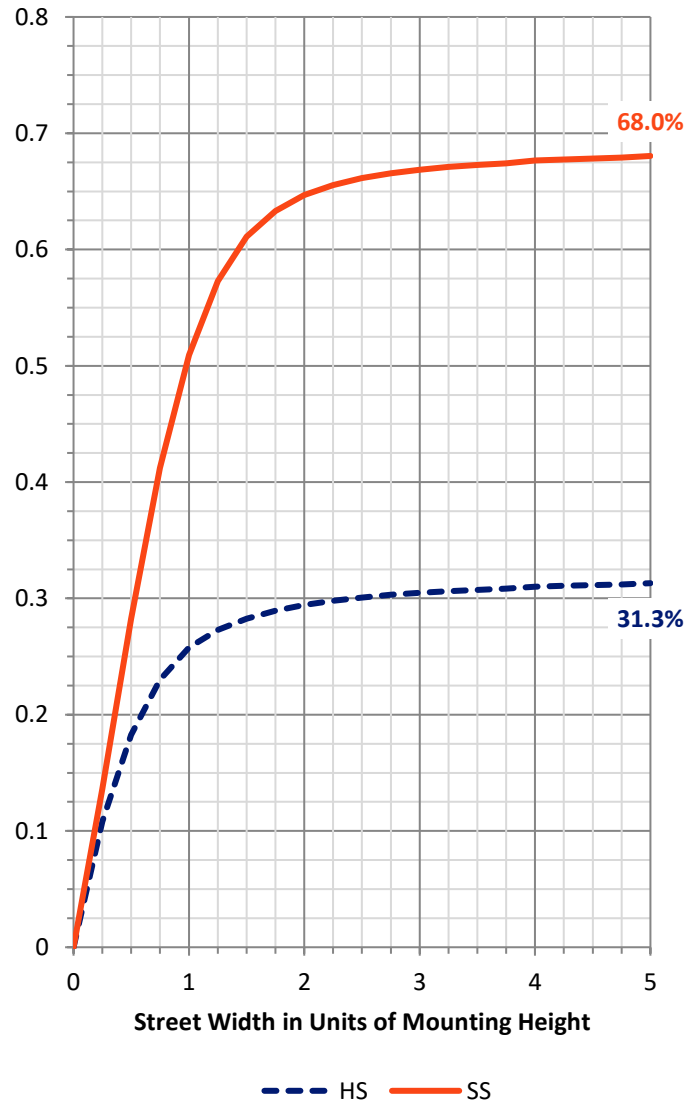
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 6824.7   | 0.0    | 6824.7  |
|                    | % Fixture | 31.7     | 0.0    | 31.7    |
| <b>Street Side</b> | Lumens    | 14693.1  | 0.0    | 14693.1 |
|                    | % Fixture | 68.3     | 0.0    | 68.3    |
| <b>Total</b>       | Lumens    | 21517.8  | 0.0    | 21517.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 384.0   | 1.8       |
| 10°-20°   | 1178.3  | 5.5       |
| 20°-30°   | 2092.1  | 9.7       |
| 30°-40°   | 3116.7  | 14.5      |
| 40°-50°   | 3995.3  | 18.6      |
| 50°-60°   | 4488.2  | 20.9      |
| 60°-70°   | 3963.1  | 18.4      |
| 70°-80°   | 1894.8  | 8.8       |
| 80°-90°   | 405.2   | 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°    | 21517.8 | 100.0     |
| 0°-180°   | 21517.8 | 100.0     |

**Coefficient of Utilization**



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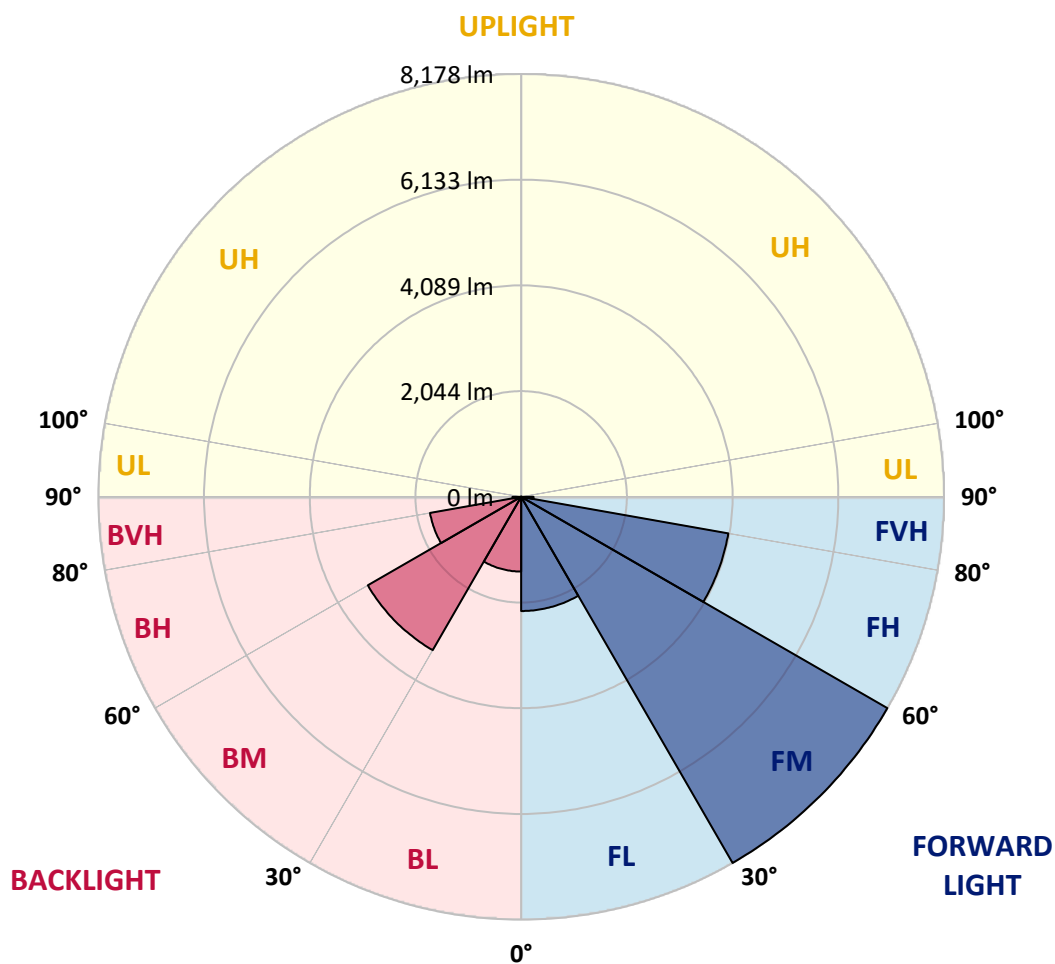
CATALOG NUMBER: USSL-150-750-U-T2U

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 2208.7 | 10.3      |                         |      |         |
| FM   | (30°-60°)   | 8177.6 | 38.0      |                         |      |         |
| FH   | (60°-80°)   | 4068.6 | 18.9      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 238.3  | 1.1       |                         |      | G3/500  |
| BL   | (0°-30°)    | 1445.8 | 6.7       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 3422.6 | 15.9      | B3/5000                 |      |         |
| BH   | (60°-80°)   | 1789.3 | 8.3       | B3/2500                 |      | G3/2500 |
| BVH  | (80°-90°)   | 167.0  | 0.8       |                         |      | 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 II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°     | 75°     | 77°     | 85°     |
|-------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|
| 0°    | 4017.4 | 4017.4 | 4017.4 | 4017.4 | 4017.4 | 4017.4 | 4017.4 | 4017.4  | 4017.4  | 4017.4  | 4017.4  |
| 2.5°  | 4114.4 | 4132.4 | 4115.4 | 4113.4 | 4106.4 | 4086.4 | 4087.4 | 4061.4  | 4042.4  | 4051.4  | 4026.4  |
| 5°    | 4269.4 | 4271.4 | 4262.4 | 4247.4 | 4221.4 | 4181.4 | 4145.4 | 4107.4  | 4062.4  | 4066.4  | 4027.4  |
| 7.5°  | 4475.4 | 4480.4 | 4446.4 | 4416.4 | 4364.4 | 4291.4 | 4229.4 | 4149.4  | 4081.4  | 4083.4  | 4019.4  |
| 10°   | 4704.4 | 4709.4 | 4680.4 | 4628.4 | 4544.4 | 4437.4 | 4322.4 | 4214.4  | 4110.4  | 4105.4  | 4012.4  |
| 12.5° | 4963.5 | 4969.5 | 4947.5 | 4857.5 | 4747.4 | 4600.4 | 4447.4 | 4287.4  | 4150.4  | 4136.4  | 4023.4  |
| 15°   | 5253.5 | 5264.5 | 5211.5 | 5122.5 | 4979.5 | 4783.4 | 4587.4 | 4379.4  | 4196.4  | 4174.4  | 4034.4  |
| 17.5° | 5672.5 | 5636.5 | 5598.5 | 5476.5 | 5261.5 | 5019.5 | 4743.4 | 4490.4  | 4256.4  | 4232.4  | 4053.4  |
| 20°   | 6097.6 | 6100.6 | 6061.6 | 5985.6 | 5723.5 | 5411.5 | 4989.5 | 4651.4  | 4351.4  | 4318.4  | 4113.4  |
| 22.5° | 6065.6 | 6066.6 | 6084.6 | 6119.6 | 6090.6 | 5926.6 | 5539.5 | 5012.5  | 4567.4  | 4503.4  | 4229.4  |
| 25°   | 6171.6 | 6189.6 | 6177.6 | 6151.6 | 6024.6 | 5939.6 | 5855.5 | 5464.5  | 4885.5  | 4798.4  | 4447.4  |
| 27.5° | 6423.6 | 6453.6 | 6434.6 | 6411.6 | 6266.6 | 6104.6 | 5858.5 | 5665.5  | 5210.5  | 5105.5  | 4692.4  |
| 30°   | 6694.6 | 6705.6 | 6678.6 | 6642.6 | 6537.6 | 6396.6 | 6162.6 | 5824.5  | 5542.5  | 5469.5  | 5040.5  |
| 32.5° | 6897.6 | 6900.6 | 6887.6 | 6895.6 | 6788.6 | 6693.6 | 6529.6 | 6190.6  | 5926.6  | 5901.5  | 5612.5  |
| 35°   | 7047.7 | 7080.7 | 7070.7 | 7105.7 | 7041.7 | 6993.7 | 6905.6 | 6738.6  | 6318.6  | 6219.6  | 5779.5  |
| 37.5° | 7194.7 | 7231.7 | 7261.7 | 7279.7 | 7219.7 | 7214.7 | 7198.7 | 6928.6  | 6154.6  | 6020.6  | 5518.5  |
| 40°   | 7240.7 | 7261.7 | 7386.7 | 7458.7 | 7366.7 | 7361.7 | 7328.7 | 6986.6  | 6474.6  | 6382.6  | 5870.5  |
| 42.5° | 7192.7 | 7188.7 | 7337.7 | 7392.7 | 7442.7 | 7493.7 | 7557.7 | 7427.7  | 7014.7  | 6959.6  | 6400.6  |
| 45°   | 6888.6 | 6842.6 | 6922.6 | 7207.7 | 7380.7 | 7577.7 | 7848.7 | 7907.7  | 7637.7  | 7557.7  | 6983.6  |
| 47.5° | 6499.6 | 6469.6 | 6569.6 | 6906.6 | 7213.7 | 7605.7 | 8081.8 | 8428.8  | 8264.8  | 8189.8  | 7656.7  |
| 50°   | 5887.5 | 5922.6 | 6130.6 | 6500.6 | 6941.6 | 7561.7 | 8269.8 | 8931.8  | 8978.8  | 8923.8  | 8334.8  |
| 52.5° | 5087.5 | 5112.5 | 5556.5 | 6030.6 | 6566.6 | 7280.7 | 8351.8 | 9450.9  | 9721.9  | 9690.9  | 9027.8  |
| 55°   | 4230.4 | 4305.4 | 4624.4 | 5356.5 | 6000.6 | 6929.6 | 8294.8 | 9869.9  | 10507.0 | 10454.0 | 9755.9  |
| 57.5° | 3501.3 | 3579.3 | 3799.4 | 4462.4 | 5331.5 | 6398.6 | 8082.8 | 10166.9 | 11208.0 | 11213.0 | 10436.0 |
| 60°   | 2845.3 | 2914.3 | 3076.3 | 3611.3 | 4546.4 | 5765.5 | 7658.7 | 10227.0 | 11774.1 | 11821.1 | 10929.0 |
| 62.5° | 2383.2 | 2411.2 | 2564.2 | 2946.3 | 3757.3 | 5008.5 | 7064.7 | 9955.9  | 12053.1 | 12145.1 | 11155.0 |
| 63°   | 2315.2 | 2302.2 | 2474.2 | 2840.3 | 3548.3 | 4840.4 | 6941.6 | 9851.9  | 12054.1 | 12149.1 | 11154.0 |
| 65°   | 1965.2 | 1984.2 | 2095.2 | 2405.2 | 2987.3 | 4139.4 | 6235.6 | 9304.9  | 11817.1 | 11954.1 | 10903.0 |
| 67.5° | 1541.1 | 1559.1 | 1711.2 | 1963.2 | 2377.2 | 3356.3 | 5304.5 | 8338.8  | 11014.0 | 11137.0 | 10049.9 |
| 70°   | 1222.1 | 1230.1 | 1327.1 | 1556.1 | 1931.2 | 2615.2 | 4168.4 | 6988.6  | 9544.9  | 9640.9  | 8513.8  |
| 72.5° | 991.1  | 1017.1 | 1081.1 | 1220.1 | 1463.1 | 1987.2 | 3145.3 | 5511.5  | 7536.7  | 7392.7  | 6259.6  |
| 75°   | 831.1  | 839.1  | 903.1  | 972.1  | 1098.1 | 1431.1 | 2269.2 | 4063.4  | 5138.5  | 5127.5  | 4079.4  |
| 77.5° | 702.1  | 718.1  | 733.1  | 766.1  | 838.1  | 1018.1 | 1594.1 | 2822.3  | 3272.3  | 3216.3  | 2352.2  |
| 80°   | 592.1  | 598.1  | 592.1  | 598.1  | 625.1  | 689.1  | 1035.1 | 1848.2  | 2086.2  | 1940.2  | 1431.1  |
| 82.5° | 413.0  | 443.0  | 447.0  | 467.0  | 477.0  | 504.0  | 692.1  | 1204.1  | 1328.1  | 1194.1  | 843.1   |
| 85°   | 245.0  | 242.0  | 254.0  | 288.0  | 321.0  | 318.0  | 439.0  | 602.1   | 716.1   | 666.1   | 405.0   |
| 87.5° | 87.0   | 82.0   | 82.0   | 101.0  | 109.0  | 118.0  | 144.0  | 188.0   | 178.0   | 179.0   | 101.0   |
| 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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CATALOG NUMBER: USSL-150-750-U-T2U

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 4017.4 | 4017.4 | 4017.4 | 4017.4 | 4017.4 | 4017.4 | 4017.4 | 4017.4 | 4017.4 | 4017.4 | 4017.4 |
| 2.5°  | 4013.4 | 3996.4 | 3988.4 | 3974.4 | 3952.4 | 3940.4 | 3929.4 | 3914.4 | 3909.4 | 3896.4 | 3894.4 |
| 5°    | 3999.4 | 3982.4 | 3949.4 | 3913.4 | 3883.4 | 3860.4 | 3818.4 | 3793.4 | 3770.4 | 3766.4 | 3772.4 |
| 7.5°  | 3977.4 | 3956.4 | 3904.4 | 3852.4 | 3793.4 | 3754.3 | 3700.3 | 3665.3 | 3645.3 | 3641.3 | 3649.3 |
| 10°   | 3968.4 | 3930.4 | 3854.4 | 3780.4 | 3706.3 | 3645.3 | 3586.3 | 3542.3 | 3513.3 | 3509.3 | 3500.3 |
| 12.5° | 3959.4 | 3911.4 | 3807.4 | 3714.3 | 3608.3 | 3537.3 | 3473.3 | 3437.3 | 3407.3 | 3403.3 | 3401.3 |
| 15°   | 3955.4 | 3894.4 | 3759.3 | 3634.3 | 3517.3 | 3432.3 | 3368.3 | 3339.3 | 3330.3 | 3324.3 | 3327.3 |
| 17.5° | 3961.4 | 3882.4 | 3717.3 | 3553.3 | 3419.3 | 3333.3 | 3283.3 | 3264.3 | 3261.3 | 3263.3 | 3270.3 |
| 20°   | 3993.4 | 3891.4 | 3682.3 | 3485.3 | 3333.3 | 3245.3 | 3208.3 | 3198.3 | 3198.3 | 3209.3 | 3216.3 |
| 22.5° | 4065.4 | 3939.4 | 3664.3 | 3430.3 | 3261.3 | 3179.3 | 3136.3 | 3124.3 | 3137.3 | 3157.3 | 3162.3 |
| 25°   | 4255.4 | 4078.4 | 3700.3 | 3399.3 | 3205.3 | 3107.3 | 3061.3 | 3059.3 | 3073.3 | 3091.3 | 3093.3 |
| 27.5° | 4472.4 | 4252.4 | 3784.4 | 3394.3 | 3153.3 | 3033.3 | 2984.3 | 2978.3 | 2985.3 | 3003.3 | 3003.3 |
| 30°   | 4770.4 | 4484.4 | 3911.4 | 3430.3 | 3117.3 | 2952.3 | 2894.3 | 2875.3 | 2883.3 | 2906.3 | 2899.3 |
| 32.5° | 5242.5 | 4854.5 | 4108.4 | 3493.3 | 3084.3 | 2871.3 | 2794.3 | 2778.3 | 2778.3 | 2796.3 | 2804.3 |
| 35°   | 5470.5 | 5128.5 | 4207.4 | 3469.3 | 3010.3 | 2777.3 | 2685.2 | 2662.2 | 2692.3 | 2726.3 | 2731.3 |
| 37.5° | 5238.5 | 4889.5 | 4068.4 | 3364.3 | 2905.3 | 2666.2 | 2578.2 | 2559.2 | 2585.2 | 2618.2 | 2622.2 |
| 40°   | 5516.5 | 5111.5 | 4175.4 | 3367.3 | 2839.3 | 2562.2 | 2459.2 | 2398.2 | 2402.2 | 2428.2 | 2422.2 |
| 42.5° | 5983.6 | 5491.5 | 4333.4 | 3381.3 | 2759.3 | 2449.2 | 2296.2 | 2190.2 | 2175.2 | 2179.2 | 2185.2 |
| 45°   | 6518.6 | 5919.6 | 4520.4 | 3384.3 | 2657.2 | 2310.2 | 2096.2 | 1965.2 | 1928.2 | 1906.2 | 1900.2 |
| 47.5° | 7090.7 | 6377.6 | 4724.4 | 3377.3 | 2526.2 | 2131.2 | 1893.2 | 1762.2 | 1691.2 | 1658.2 | 1661.2 |
| 50°   | 7710.7 | 6851.6 | 4906.5 | 3344.3 | 2386.2 | 1941.2 | 1701.2 | 1573.1 | 1493.1 | 1474.1 | 1465.1 |
| 52.5° | 8297.8 | 7316.7 | 5081.5 | 3296.3 | 2229.2 | 1747.2 | 1520.1 | 1410.1 | 1343.1 | 1325.1 | 1321.1 |
| 55°   | 8918.8 | 7778.7 | 5228.5 | 3213.3 | 2052.2 | 1564.1 | 1361.1 | 1287.1 | 1240.1 | 1228.1 | 1230.1 |
| 57.5° | 9450.9 | 8185.8 | 5307.5 | 3092.3 | 1882.2 | 1402.1 | 1245.1 | 1196.1 | 1167.1 | 1173.1 | 1177.1 |
| 60°   | 9846.9 | 8390.8 | 5291.5 | 2918.3 | 1709.2 | 1270.1 | 1150.1 | 1124.1 | 1124.1 | 1173.1 | 1188.1 |
| 62.5° | 9907.9 | 8349.8 | 5130.5 | 2668.2 | 1521.1 | 1159.1 | 1068.1 | 1043.1 | 1068.1 | 1128.1 | 1140.1 |
| 63°   | 9871.9 | 8281.8 | 5088.5 | 2587.2 | 1492.1 | 1135.1 | 1050.1 | 1026.1 | 1060.1 | 1108.1 | 1108.1 |
| 65°   | 9516.9 | 7919.7 | 4715.4 | 2317.2 | 1339.1 | 1056.1 | 987.1  | 975.1  | 1022.1 | 1054.1 | 1059.1 |
| 67.5° | 8647.8 | 7178.7 | 4077.4 | 1918.2 | 1179.1 | 966.1  | 904.1  | 925.1  | 960.1  | 985.1  | 993.1  |
| 70°   | 7268.7 | 5946.6 | 3262.3 | 1543.1 | 1028.1 | 872.1  | 837.1  | 850.1  | 882.1  | 904.1  | 912.1  |
| 72.5° | 5289.5 | 4481.4 | 2447.2 | 1232.1 | 895.1  | 781.1  | 762.1  | 761.1  | 782.1  | 790.1  | 802.1  |
| 75°   | 3429.3 | 2999.3 | 1787.2 | 994.1  | 764.1  | 688.1  | 667.1  | 661.1  | 701.1  | 717.1  | 733.1  |
| 77.5° | 2044.2 | 1858.2 | 1276.1 | 817.1  | 651.1  | 565.1  | 577.1  | 577.1  | 618.1  | 668.1  | 691.1  |
| 80°   | 1236.1 | 1136.1 | 946.1  | 678.1  | 512.0  | 462.0  | 474.0  | 481.0  | 581.1  | 677.1  | 686.1  |
| 82.5° | 745.1  | 732.1  | 702.1  | 525.0  | 397.0  | 353.0  | 377.0  | 423.0  | 547.1  | 419.0  | 483.0  |
| 85°   | 367.0  | 395.0  | 451.0  | 293.0  | 247.0  | 241.0  | 253.0  | 374.0  | 362.0  | 167.0  | 157.0  |
| 87.5° | 94.0   | 112.0  | 106.0  | 78.0   | 67.0   | 62.0   | 84.0   | 140.0  | 115.0  | 40.0   | 24.0   |
| 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: SP2-2501-321-5

Test Date: 04/10/2025

Luminaire Tested: GKO-PB1E-750-U-T4W

Data in this report applies to families of products including GKO-PB1E-750-U-T4W

### Test Information

Test Method: LM-79-2019  
 Report Number: SP2-2501-321-5  
 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-750-U-T4W**  
 Description: Gekko Wedge Wall Pack Fixture 1 SQ w/ T4W distribution

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 5105     | CRI (Ra): | 72.2 |      |       |
| CIE u':                   | 0.2079   | R1:       | 68.8 | R9:  | -38.2 |
| CIE v':                   | 0.4868   | R2:       | 78.3 | R10: | 48.2  |
| Duv:                      | 0.0035   | R3:       | 84.9 | R11: | 68.1  |
| CIE x:                    | 0.3428   | R4:       | 71.7 | R12: | 42.9  |
| CIE y:                    | 0.3567   | R5:       | 69.8 | R13: | 70.6  |
| CIE z:                    | 0.3005   | R6:       | 69.8 | R14: | 91.6  |
| Peak Wavelength (nm):     | 451      | R7:       | 81.2 | R15: | 61.7  |
| Dominant Wavelength (nm): | 567      | R8:       | 53.5 |      |       |
| Purity:                   | 9.884628 |           |      |      |       |
| Rf:                       | 74.2     |           |      |      |       |
| Rg:                       | 92.7     |           |      |      |       |



### Test Conditions

Stabilization Time: 30M  
 Operation Time: 1H 30M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP2-2501-321-5

| 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 5000K 4-step quadrangle

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### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 134                         | NR               | 620       | 390                         | NR               | 750       | 10                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 165                         | NR               | 625       | 354                         | NR               | 755       | 9                           | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 218                         | NR               | 630       | 319                         | NR               | 760       | 8                           | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 281                         | NR               | 635       | 285                         | NR               | 765       | 7                           | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 343                         | NR               | 640       | 254                         | NR               | 770       | 6                           | NR               | 900       | 0                           | NR               |
| 385       | 1                           | NR               | 515       | 400                         | NR               | 645       | 224                         | NR               | 775       | 5                           | NR               | 905       | 0                           | NR               |
| 390       | 2                           | NR               | 520       | 444                         | NR               | 650       | 197                         | NR               | 780       | 4                           | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 477                         | NR               | 655       | 173                         | NR               | 785       | 4                           | NR               | 915       | 0                           | NR               |
| 400       | 6                           | NR               | 530       | 501                         | NR               | 660       | 150                         | NR               | 790       | 3                           | NR               | 920       | 0                           | NR               |
| 405       | 9                           | NR               | 535       | 520                         | NR               | 665       | 131                         | NR               | 795       | 3                           | NR               | 925       | 0                           | NR               |
| 410       | 14                          | NR               | 540       | 534                         | NR               | 670       | 113                         | NR               | 800       | 2                           | NR               | 930       | 0                           | NR               |
| 415       | 26                          | NR               | 545       | 547                         | NR               | 675       | 98                          | NR               | 805       | 2                           | NR               | 935       | 0                           | NR               |
| 420       | 50                          | NR               | 550       | 561                         | NR               | 680       | 85                          | NR               | 810       | 2                           | NR               | 940       | 0                           | NR               |
| 425       | 95                          | NR               | 555       | 574                         | NR               | 685       | 73                          | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 168                         | NR               | 560       | 586                         | NR               | 690       | 63                          | NR               | 820       | 1                           | NR               | 950       | 0                           | NR               |
| 435       | 284                         | NR               | 565       | 596                         | NR               | 695       | 54                          | NR               | 825       | 1                           | NR               | 955       | 0                           | NR               |
| 440       | 452                         | NR               | 570       | 604                         | NR               | 700       | 46                          | NR               | 830       | 1                           | NR               | 960       | 0                           | NR               |
| 445       | 705                         | NR               | 575       | 606                         | NR               | 705       | 40                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 980                         | NR               | 580       | 603                         | NR               | 710       | 34                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 869                         | NR               | 585       | 592                         | NR               | 715       | 29                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 531                         | NR               | 590       | 577                         | NR               | 720       | 25                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 372                         | NR               | 595       | 554                         | NR               | 725       | 22                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 268                         | NR               | 600       | 527                         | NR               | 730       | 19                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 174                         | NR               | 605       | 497                         | NR               | 735       | 16                          | NR               | 865       | 0                           | NR               | 995       | 0                           | NR               |
| 480       | 135                         | NR               | 610       | 462                         | NR               | 740       | 14                          | NR               | 870       | 0                           | NR               | 1000      | 0                           | NR               |
| 485       | 126                         | NR               | 615       | 428                         | NR               | 745       | 12                          | NR               | 875       | 0                           | NR               |           |                             |                  |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.82

| 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    | 134                      | NR            | 620    | 390                      | NR            | 750    | 10                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 165                      | NR            | 625    | 354                      | NR            | 755    | 9                        | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 218                      | NR            | 630    | 319                      | NR            | 760    | 8                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 281                      | NR            | 635    | 285                      | NR            | 765    | 7                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 343                      | NR            | 640    | 254                      | NR            | 770    | 6                        | NR            | 900    | 0                        | NR            |
| 385    | 1                        | NR            | 515    | 400                      | NR            | 645    | 224                      | NR            | 775    | 5                        | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 444                      | NR            | 650    | 197                      | NR            | 780    | 4                        | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 477                      | NR            | 655    | 173                      | NR            | 785    | 4                        | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 501                      | NR            | 660    | 150                      | NR            | 790    | 3                        | NR            | 920    | 0                        | NR            |
| 405    | 9                        | NR            | 535    | 520                      | NR            | 665    | 131                      | NR            | 795    | 3                        | NR            | 925    | 0                        | NR            |
| 410    | 14                       | NR            | 540    | 534                      | NR            | 670    | 113                      | NR            | 800    | 2                        | NR            | 930    | 0                        | NR            |
| 415    | 26                       | NR            | 545    | 547                      | NR            | 675    | 98                       | NR            | 805    | 2                        | NR            | 935    | 0                        | NR            |
| 420    | 50                       | NR            | 550    | 561                      | NR            | 680    | 85                       | NR            | 810    | 2                        | NR            | 940    | 0                        | NR            |
| 425    | 95                       | NR            | 555    | 574                      | NR            | 685    | 73                       | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 168                      | NR            | 560    | 586                      | NR            | 690    | 63                       | NR            | 820    | 1                        | NR            | 950    | 0                        | NR            |
| 435    | 284                      | NR            | 565    | 596                      | NR            | 695    | 54                       | NR            | 825    | 1                        | NR            | 955    | 0                        | NR            |
| 440    | 452                      | NR            | 570    | 604                      | NR            | 700    | 46                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 705                      | NR            | 575    | 606                      | NR            | 705    | 40                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 980                      | NR            | 580    | 603                      | NR            | 710    | 34                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 869                      | NR            | 585    | 592                      | NR            | 715    | 29                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 531                      | NR            | 590    | 577                      | NR            | 720    | 25                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 372                      | NR            | 595    | 554                      | NR            | 725    | 22                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 268                      | NR            | 600    | 527                      | NR            | 730    | 19                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 174                      | NR            | 605    | 497                      | NR            | 735    | 16                       | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 135                      | NR            | 610    | 462                      | NR            | 740    | 14                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 126                      | NR            | 615    | 428                      | NR            | 745    | 12                       | NR            | 875    | 0                        | NR            |        |                          |               |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.75

| $\lambda$<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               | 134                                    | NR                             | 620               | 390                                    | NR                             | 750               | 10                                     | NR                             | 880               | 0                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 165                                    | NR                             | 625               | 354                                    | NR                             | 755               | 9                                      | NR                             | 885               | 0                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 218                                    | NR                             | 630               | 319                                    | NR                             | 760               | 8                                      | NR                             | 890               | 0                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 281                                    | NR                             | 635               | 285                                    | NR                             | 765               | 7                                      | NR                             | 895               | 0                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 343                                    | NR                             | 640               | 254                                    | NR                             | 770               | 6                                      | NR                             | 900               | 0                                      | NR                             |
| 385               | 1                                      | NR                             | 515               | 400                                    | NR                             | 645               | 224                                    | NR                             | 775               | 5                                      | NR                             | 905               | 0                                      | NR                             |
| 390               | 2                                      | NR                             | 520               | 444                                    | NR                             | 650               | 197                                    | NR                             | 780               | 4                                      | NR                             | 910               | 0                                      | NR                             |
| 395               | 4                                      | NR                             | 525               | 477                                    | NR                             | 655               | 173                                    | NR                             | 785               | 4                                      | NR                             | 915               | 0                                      | NR                             |
| 400               | 6                                      | NR                             | 530               | 501                                    | NR                             | 660               | 150                                    | NR                             | 790               | 3                                      | NR                             | 920               | 0                                      | NR                             |
| 405               | 9                                      | NR                             | 535               | 520                                    | NR                             | 665               | 131                                    | NR                             | 795               | 3                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 14                                     | NR                             | 540               | 534                                    | NR                             | 670               | 113                                    | NR                             | 800               | 2                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 26                                     | NR                             | 545               | 547                                    | NR                             | 675               | 98                                     | NR                             | 805               | 2                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 50                                     | NR                             | 550               | 561                                    | NR                             | 680               | 85                                     | NR                             | 810               | 2                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 95                                     | NR                             | 555               | 574                                    | NR                             | 685               | 73                                     | NR                             | 815               | 2                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 168                                    | NR                             | 560               | 586                                    | NR                             | 690               | 63                                     | NR                             | 820               | 1                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 284                                    | NR                             | 565               | 596                                    | NR                             | 695               | 54                                     | NR                             | 825               | 1                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 452                                    | NR                             | 570               | 604                                    | NR                             | 700               | 46                                     | NR                             | 830               | 1                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 705                                    | NR                             | 575               | 606                                    | NR                             | 705               | 40                                     | NR                             | 835               | 1                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 980                                    | NR                             | 580               | 603                                    | NR                             | 710               | 34                                     | NR                             | 840               | 1                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 869                                    | NR                             | 585               | 592                                    | NR                             | 715               | 29                                     | NR                             | 845               | 1                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 531                                    | NR                             | 590               | 577                                    | NR                             | 720               | 25                                     | NR                             | 850               | 1                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 372                                    | NR                             | 595               | 554                                    | NR                             | 725               | 22                                     | NR                             | 855               | 1                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 268                                    | NR                             | 600               | 527                                    | NR                             | 730               | 19                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 174                                    | NR                             | 605               | 497                                    | NR                             | 735               | 16                                     | NR                             | 865               | 0                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 135                                    | NR                             | 610               | 462                                    | NR                             | 740               | 14                                     | NR                             | 870               | 0                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 126                                    | NR                             | 615               | 428                                    | NR                             | 745               | 12                                     | NR                             | 875               | 0                                      | NR                             |                   |                                        |                                |

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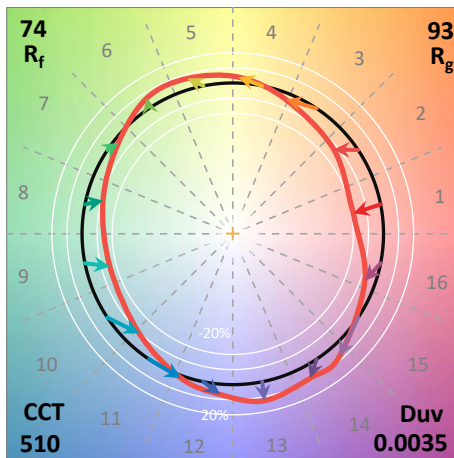
TM-30-18

### Summary

$R_f = 74.2$   
 $R_g = 92.7$   
 $\text{CIE } R_a = 72.2$   
 $R_g = -38.2$



### Color Vector Graphics

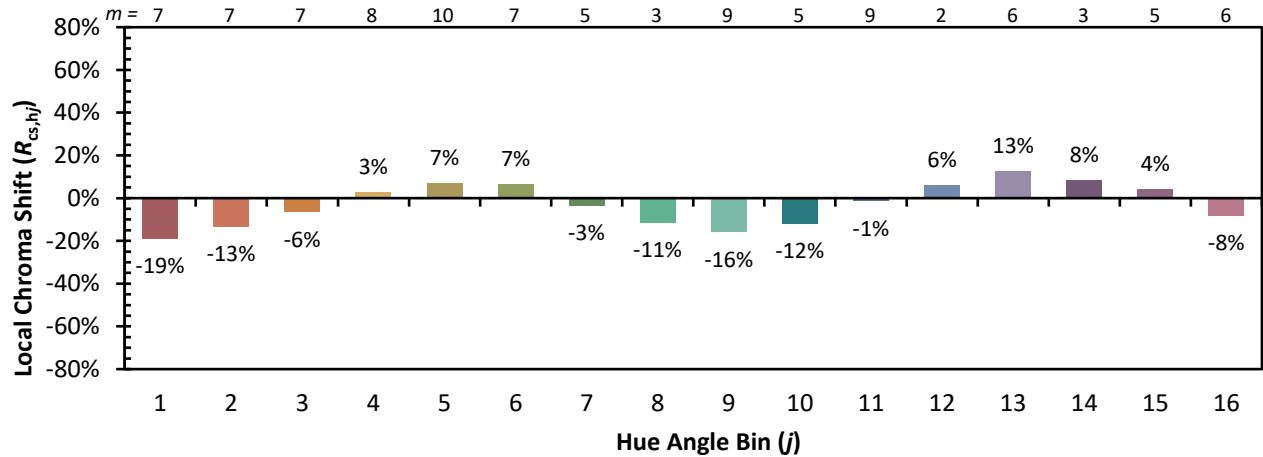


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

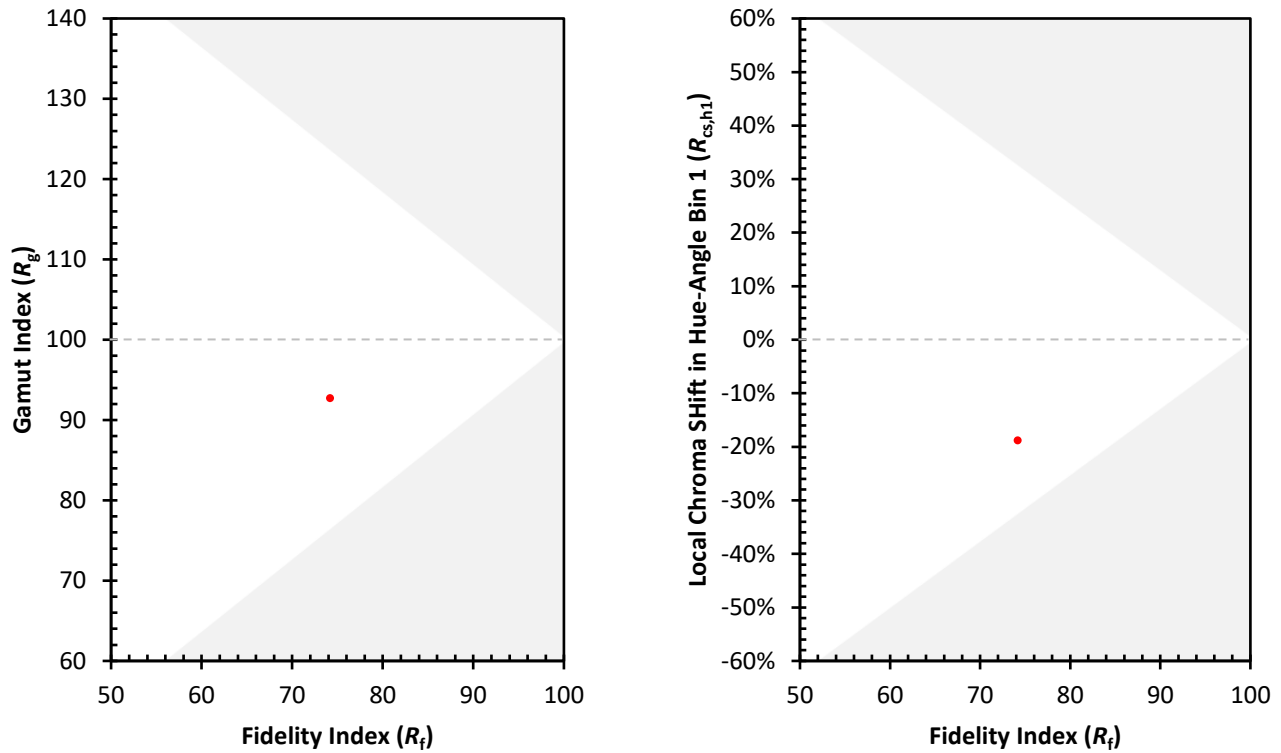
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 63 | CES51 = 89 | CES76 = 51 |
| CES02 = 59 | CES27 = 89 | CES52 = 89 | CES77 = 68 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 69 | CES54 = 84 | CES79 = 80 |
| CES05 = 46 | CES30 = 88 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 72 | CES56 = 74 | CES81 = 79 |
| CES07 = 38 | CES32 = 63 | CES57 = 73 | CES82 = 91 |
| CES08 = 38 | CES33 = 82 | CES58 = 74 | CES83 = 90 |
| CES09 = 29 | CES34 = 70 | CES59 = 86 | CES84 = 85 |
| CES10 = 72 | CES35 = 83 | CES60 = 88 | CES85 = 78 |
| CES11 = 56 | CES36 = 88 | CES61 = 82 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 81 | CES87 = 77 |
| CES13 = 41 | CES38 = 98 | CES63 = 73 | CES88 = 81 |
| CES14 = 74 | CES39 = 97 | CES64 = 64 | CES89 = 73 |
| CES15 = 70 | CES40 = 91 | CES65 = 61 | CES90 = 80 |
| CES16 = 46 | CES41 = 96 | CES66 = 56 | CES91 = 72 |
| CES17 = 49 | CES42 = 80 | CES67 = 54 | CES92 = 58 |
| CES18 = 55 | CES43 = 79 | CES68 = 64 | CES93 = 75 |
| CES19 = 71 | CES44 = 99 | CES69 = 73 | CES94 = 53 |
| CES20 = 63 | CES45 = 87 | CES70 = 56 | CES95 = 64 |
| CES21 = 85 | CES46 = 85 | CES71 = 47 | CES96 = 76 |
| CES22 = 77 | CES47 = 90 | CES72 = 82 | CES97 = 86 |
| CES23 = 91 | CES48 = 80 | CES73 = 47 | CES98 = 76 |
| CES24 = 90 | CES49 = 83 | CES74 = 90 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 50 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)