

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: P1461639

Luminaire Tested: USSL-110-740-U-T3R

Issue Date: 06/10/2026

**Test Information**

Test Method: LM-79-2024  
Report Number: P1461639  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 6/11/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: USSL-110-740-U-T3R  
Description: USSL DISCRETE LED 1 SQUARE 110W 70CRI 4000K FIXTURE w/ TYPE III DISTRIBUTION OPTIC  
Light Source: (40) 4000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17054.7 lumens  
Efficiency: N/A  
Efficacy: 153.6 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): 111  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.98  
Total Harmonic Distortion (THDi): 2.87%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

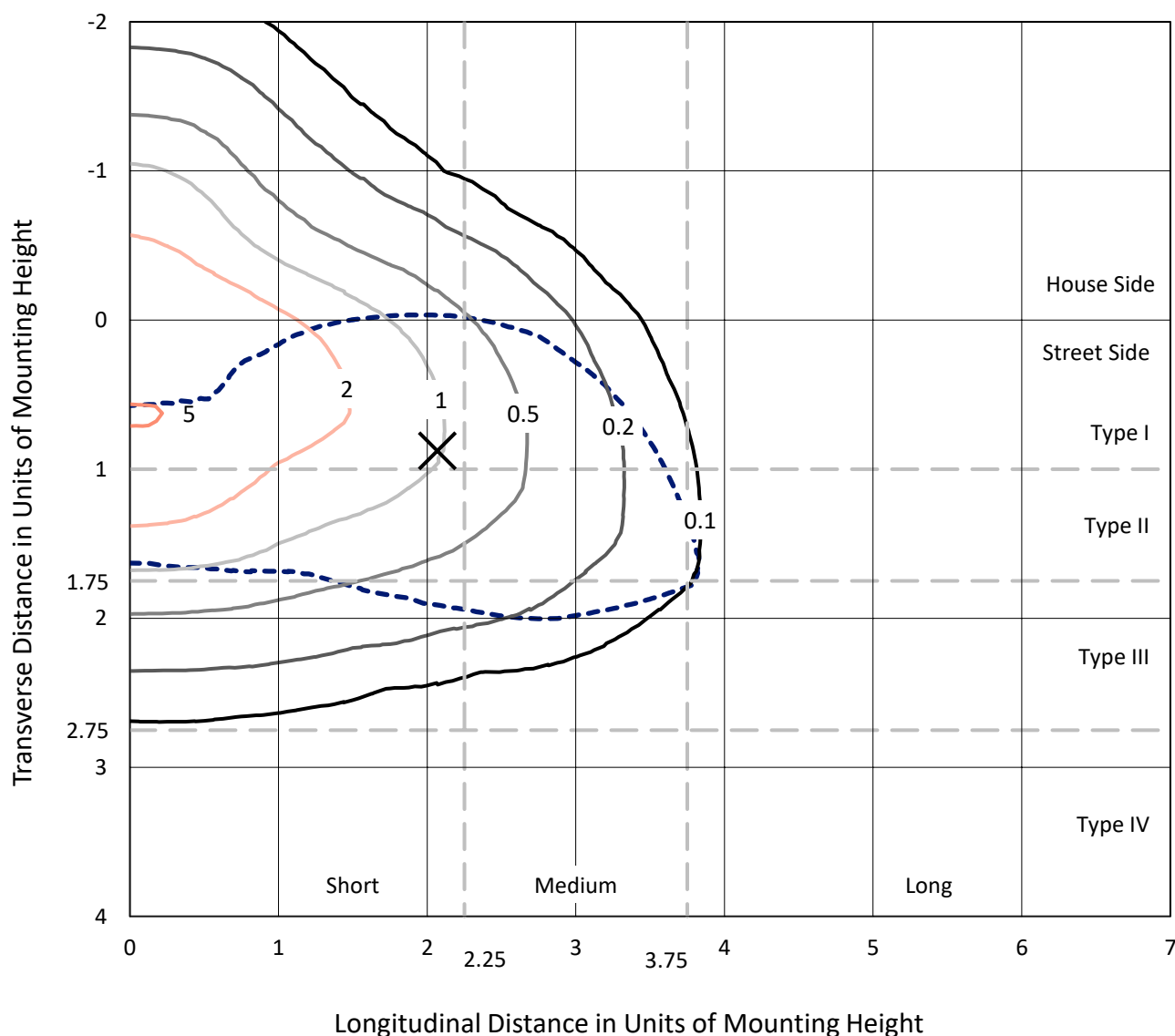
REPORT NUMBER: P1461639

CATALOG NUMBER: USSL-110-740-U-T3R

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

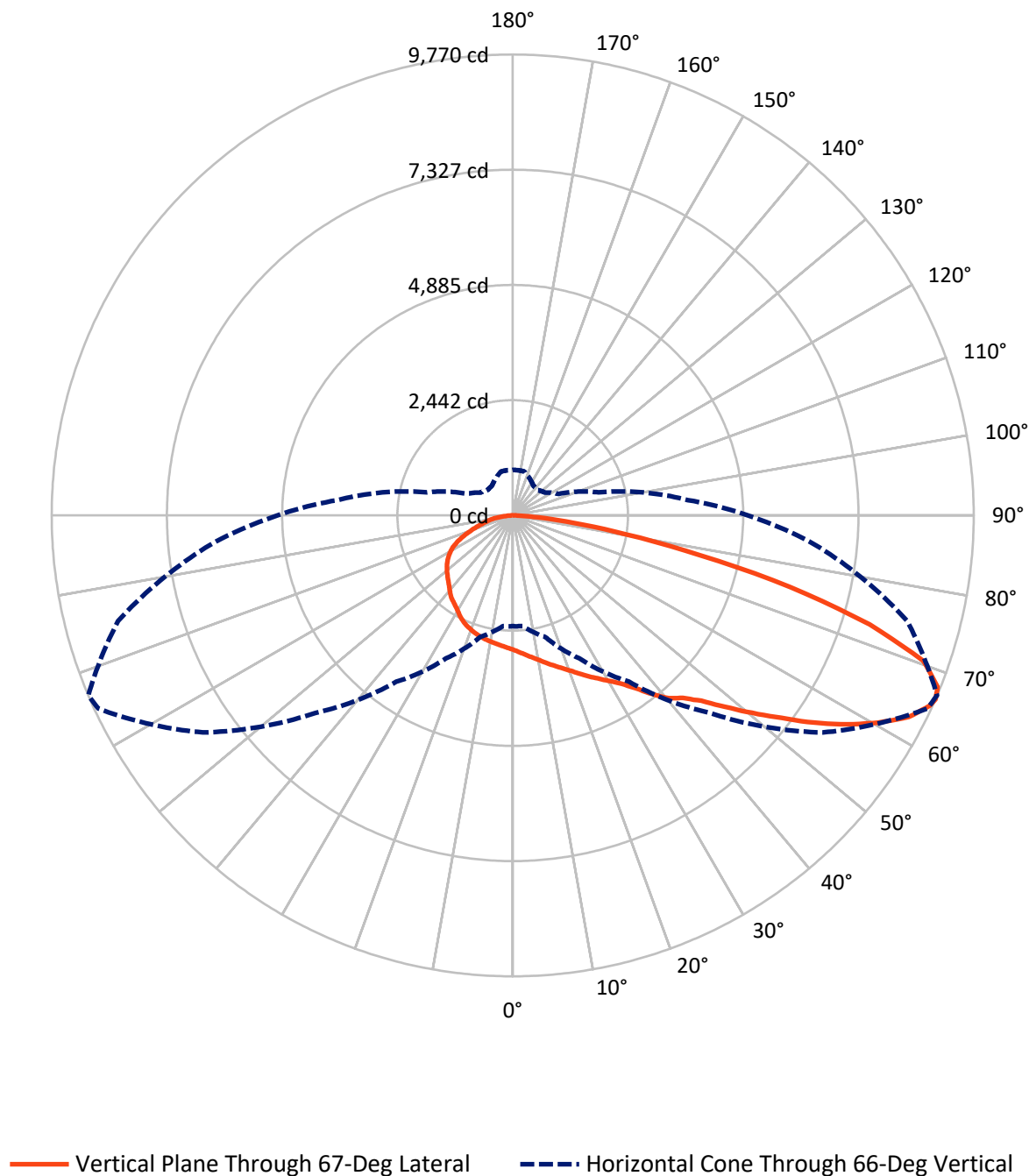


Based on 25 foot mounting height. Maximum calculated value = 5.2 fc  
 Type III - Short - N/A

REPORT NUMBER: P1461639

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## Luminous Intensity Polar Plot



REPORT NUMBER: P1461639

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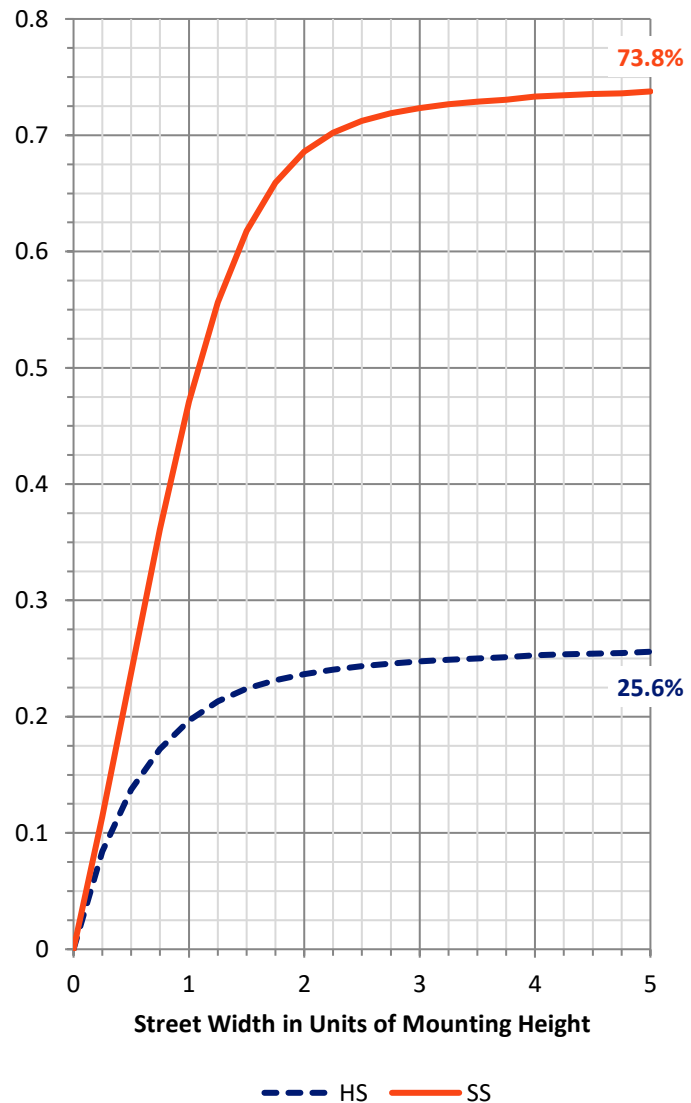
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 4419.9   | 0.0    | 4419.9  |
|                    | % Fixture | 25.9     | 0.0    | 25.9    |
| <b>Street Side</b> | Lumens    | 12634.7  | 0.0    | 12634.7 |
|                    | % Fixture | 74.1     | 0.0    | 74.1    |
| <b>Total</b>       | Lumens    | 17054.7  | 0.0    | 17054.7 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 274.6   | 1.6       |
| 10°-20°   | 826.6   | 4.8       |
| 20°-30°   | 1406.9  | 8.2       |
| 30°-40°   | 2199.3  | 12.9      |
| 40°-50°   | 3041.3  | 17.8      |
| 50°-60°   | 3647.1  | 21.4      |
| 60°-70°   | 3519.4  | 20.6      |
| 70°-80°   | 1816.3  | 10.6      |
| 80°-90°   | 323.4   | 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°    | 17054.7 | 100.0     |
| 0°-180°   | 17054.7 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P1461639

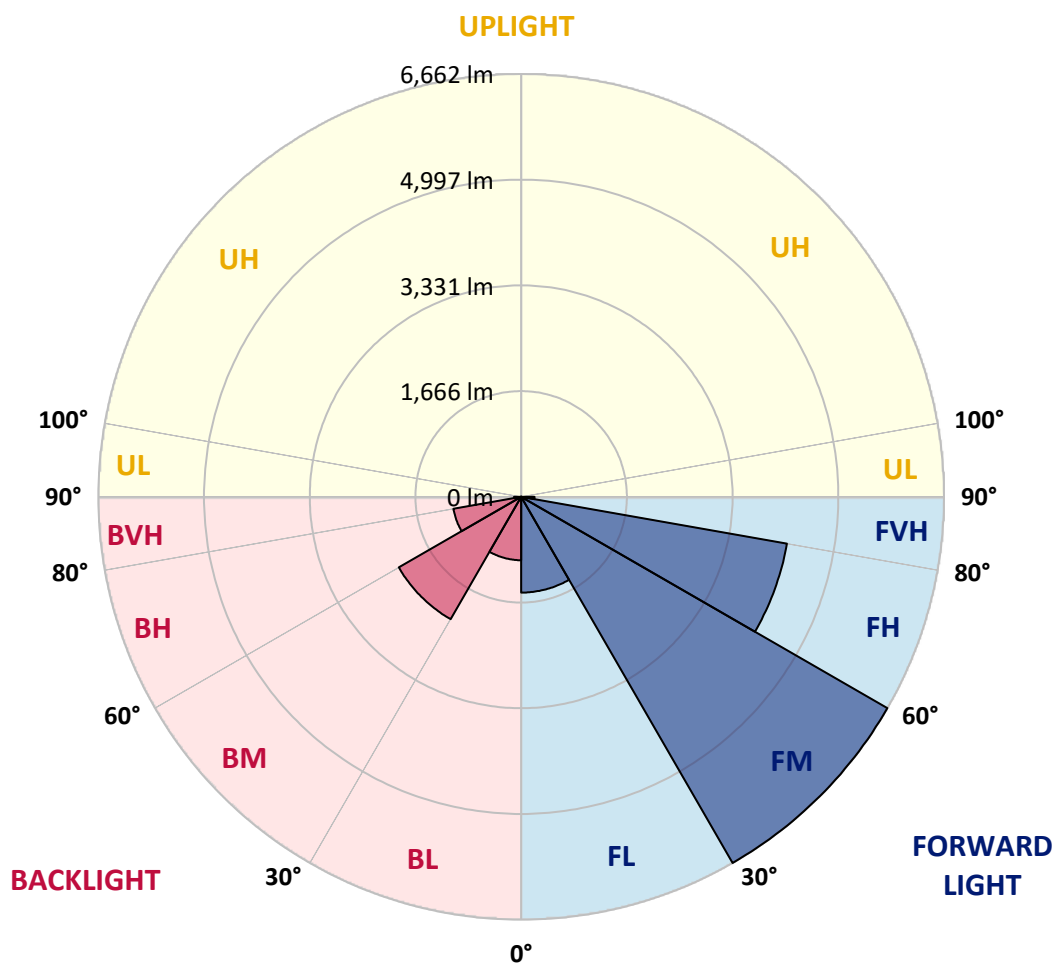
CATALOG NUMBER: USSL-110-740-U-T3R

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1509.3 | 8.8       |                         |      |         |
| FM   | (30°-60°)   | 6662.2 | 39.1      |                         |      |         |
| FH   | (60°-80°)   | 4252.0 | 24.9      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 211.2  | 1.2       |                         |      | G2/225  |
| BL   | (0°-30°)    | 998.7  | 5.9       | B2/1000                 |      |         |
| BM   | (30°-60°)   | 2225.4 | 13.0      | B2/2500                 |      |         |
| BH   | (60°-80°)   | 1083.6 | 6.4       | B3/2500                 |      | G3/2500 |
| BVH  | (80°-90°)   | 112.2  | 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



REPORT NUMBER: P1461639

CATALOG NUMBER: USSL-110-740-U-T3R

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 67°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 |
| 2.5°  | 2965.9 | 2968.3 | 2969.8 | 2965.1 | 2950.0 | 2939.7 | 2931.8 | 2906.4 | 2907.2 | 2891.4 | 2862.1 |
| 5°    | 3079.2 | 3091.1 | 3087.9 | 3079.2 | 3061.0 | 3035.6 | 3007.9 | 2967.5 | 2970.6 | 2936.6 | 2885.8 |
| 7.5°  | 3187.0 | 3202.1 | 3196.5 | 3189.4 | 3168.8 | 3136.3 | 3103.8 | 3045.1 | 3042.8 | 2991.2 | 2914.4 |
| 10°   | 3272.6 | 3288.5 | 3288.5 | 3283.7 | 3275.0 | 3237.7 | 3195.7 | 3132.3 | 3119.6 | 3047.5 | 2955.6 |
| 12.5° | 3343.2 | 3357.4 | 3366.9 | 3363.0 | 3366.1 | 3340.8 | 3294.8 | 3225.9 | 3213.2 | 3117.3 | 3001.5 |
| 15°   | 3385.2 | 3412.1 | 3419.2 | 3431.9 | 3448.6 | 3438.3 | 3406.6 | 3313.8 | 3305.9 | 3198.1 | 3049.9 |
| 17.5° | 3428.0 | 3443.0 | 3460.5 | 3492.2 | 3519.1 | 3535.0 | 3503.3 | 3425.6 | 3405.0 | 3275.0 | 3100.6 |
| 20°   | 3477.9 | 3505.6 | 3524.7 | 3557.9 | 3596.0 | 3634.8 | 3627.7 | 3535.8 | 3515.1 | 3370.9 | 3162.4 |
| 22.5° | 3610.3 | 3630.1 | 3638.8 | 3661.8 | 3707.0 | 3745.8 | 3750.5 | 3669.7 | 3644.3 | 3487.4 | 3236.2 |
| 25°   | 3876.6 | 3898.8 | 3865.5 | 3840.1 | 3827.4 | 3861.5 | 3885.3 | 3810.8 | 3783.0 | 3603.1 | 3308.3 |
| 27.5° | 4350.5 | 4349.7 | 4253.1 | 4150.0 | 4039.8 | 3999.4 | 4016.1 | 3952.7 | 3922.5 | 3715.7 | 3392.3 |
| 30°   | 4888.7 | 4914.9 | 4833.2 | 4583.6 | 4324.4 | 4161.1 | 4171.4 | 4100.1 | 4077.1 | 3852.0 | 3489.8 |
| 32.5° | 5451.4 | 5466.5 | 5369.0 | 5128.9 | 4711.2 | 4410.8 | 4349.7 | 4290.3 | 4257.0 | 4033.5 | 3615.8 |
| 35°   | 5724.9 | 5755.0 | 5702.7 | 5472.8 | 5052.0 | 4716.7 | 4612.1 | 4548.7 | 4503.5 | 4248.3 | 3778.3 |
| 37.5° | 6078.4 | 6122.0 | 6111.7 | 5785.1 | 5264.4 | 4961.6 | 4887.9 | 4826.1 | 4806.3 | 4517.0 | 3984.4 |
| 40°   | 6599.1 | 6597.5 | 6620.5 | 6099.0 | 5490.3 | 5131.2 | 5133.6 | 5136.0 | 5097.2 | 4738.1 | 4137.3 |
| 42.5° | 6851.2 | 6844.0 | 6767.2 | 6272.6 | 5753.4 | 5298.5 | 5328.6 | 5325.4 | 5285.0 | 4906.1 | 4258.6 |
| 45°   | 6928.0 | 6919.3 | 6736.2 | 6405.7 | 6165.6 | 5487.1 | 5573.5 | 5638.5 | 5605.2 | 5212.1 | 4500.3 |
| 47.5° | 6874.2 | 6856.7 | 6756.1 | 6485.0 | 6391.5 | 5819.2 | 5854.1 | 6066.5 | 6060.2 | 5593.3 | 4780.9 |
| 50°   | 6740.2 | 6691.9 | 6661.7 | 6513.5 | 6325.7 | 5967.4 | 6201.2 | 6595.2 | 6580.1 | 6061.0 | 5080.5 |
| 52.5° | 6444.6 | 6438.2 | 6476.3 | 6378.8 | 6189.4 | 6034.0 | 6580.9 | 7125.4 | 7128.6 | 6536.5 | 5382.5 |
| 55°   | 6076.8 | 6053.8 | 6173.5 | 6165.6 | 6046.7 | 6166.4 | 6954.2 | 7734.1 | 7756.3 | 7027.9 | 5706.7 |
| 57.5° | 5193.9 | 5220.0 | 5731.2 | 5874.7 | 5897.7 | 6301.9 | 7352.9 | 8308.7 | 8354.7 | 7525.7 | 5984.1 |
| 60°   | 4330.7 | 4381.4 | 4749.2 | 5396.8 | 5664.7 | 6372.4 | 7726.2 | 8893.7 | 8912.7 | 8024.2 | 6236.1 |
| 62.5° | 3590.4 | 3575.4 | 3911.4 | 4642.2 | 5289.8 | 6344.7 | 7990.1 | 9346.2 | 9415.2 | 8421.3 | 6380.4 |
| 65°   | 2663.1 | 2698.8 | 3063.4 | 3710.9 | 4654.9 | 6082.4 | 8073.3 | 9659.3 | 9716.4 | 8641.6 | 6374.8 |
| 66°   | 2348.5 | 2354.8 | 2667.9 | 3343.2 | 4301.4 | 5919.9 | 8020.2 | 9688.6 | 9769.5 | 8657.5 | 6307.4 |
| 67.5° | 1941.1 | 1949.8 | 2198.7 | 2751.1 | 3744.2 | 5566.4 | 7817.3 | 9634.8 | 9712.4 | 8569.5 | 6095.8 |
| 70°   | 1378.3 | 1425.1 | 1558.2 | 1930.0 | 2639.3 | 4528.1 | 7165.0 | 9051.4 | 9228.9 | 8011.5 | 5478.4 |
| 72.5° | 997.9  | 1010.6 | 1118.3 | 1310.9 | 1658.9 | 3019.0 | 5929.4 | 7795.1 | 7909.3 | 6699.8 | 4367.2 |
| 75°   | 711.7  | 727.6  | 818.7  | 895.6  | 1097.7 | 1862.6 | 4180.9 | 6106.1 | 6079.2 | 4793.6 | 2975.4 |
| 77.5° | 553.2  | 565.1  | 598.4  | 639.6  | 737.1  | 1065.2 | 2516.5 | 4126.2 | 4067.6 | 3004.7 | 1854.7 |
| 80°   | 449.4  | 452.6  | 442.3  | 458.9  | 508.1  | 671.3  | 1440.1 | 2464.2 | 2411.9 | 1695.4 | 1123.1 |
| 82.5° | 350.3  | 354.3  | 346.4  | 335.3  | 359.8  | 453.4  | 840.9  | 1303.0 | 1295.9 | 982.8  | 608.7  |
| 85°   | 224.3  | 233.0  | 223.5  | 207.7  | 224.3  | 275.8  | 443.1  | 555.6  | 534.2  | 444.6  | 231.4  |
| 87.5° | 125.2  | 123.6  | 113.3  | 91.1   | 79.3   | 99.9   | 123.6  | 124.4  | 119.7  | 104.6  | 63.4   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

REPORT NUMBER: P1461639

CATALOG NUMBER: USSL-110-740-U-T3R

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 | 2850.2 |
| 2.5°  | 2855.7 | 2850.2 | 2827.2 | 2806.6 | 2785.2 | 2772.5 | 2753.5 | 2744.7 | 2734.4 | 2725.7 | 2717.8 |
| 5°    | 2871.6 | 2852.5 | 2808.9 | 2768.5 | 2729.7 | 2704.3 | 2670.2 | 2653.6 | 2634.6 | 2627.4 | 2617.9 |
| 7.5°  | 2890.6 | 2854.1 | 2795.5 | 2732.9 | 2680.5 | 2633.8 | 2590.2 | 2564.0 | 2542.6 | 2536.3 | 2535.5 |
| 10°   | 2915.2 | 2870.8 | 2783.6 | 2701.9 | 2629.0 | 2565.6 | 2510.1 | 2470.5 | 2446.7 | 2438.0 | 2434.1 |
| 12.5° | 2944.5 | 2885.8 | 2775.7 | 2671.8 | 2576.7 | 2499.0 | 2430.1 | 2380.2 | 2357.2 | 2342.9 | 2344.5 |
| 15°   | 2979.4 | 2904.9 | 2766.9 | 2637.0 | 2516.5 | 2423.7 | 2339.7 | 2282.7 | 2255.7 | 2245.4 | 2243.8 |
| 17.5° | 3015.8 | 2922.3 | 2757.4 | 2595.7 | 2449.9 | 2335.8 | 2247.8 | 2183.6 | 2149.5 | 2147.1 | 2153.5 |
| 20°   | 3057.8 | 2948.4 | 2746.3 | 2549.0 | 2380.2 | 2249.4 | 2151.9 | 2095.6 | 2061.5 | 2058.4 | 2071.0 |
| 22.5° | 3107.0 | 2973.8 | 2729.7 | 2495.1 | 2302.5 | 2159.8 | 2063.9 | 2010.0 | 1983.1 | 1986.2 | 1996.5 |
| 25°   | 3162.4 | 3001.5 | 2708.3 | 2434.8 | 2216.1 | 2066.3 | 1977.5 | 1939.5 | 1922.8 | 1929.2 | 1943.4 |
| 27.5° | 3217.1 | 3032.5 | 2675.8 | 2360.3 | 2123.4 | 1980.7 | 1917.3 | 1889.5 | 1884.8 | 1896.7 | 1913.3 |
| 30°   | 3284.5 | 3062.6 | 2637.0 | 2272.4 | 2023.5 | 1906.2 | 1861.0 | 1854.7 | 1859.4 | 1869.7 | 1888.7 |
| 32.5° | 3378.0 | 3123.6 | 2610.0 | 2191.5 | 1935.5 | 1832.5 | 1824.5 | 1834.9 | 1847.5 | 1861.0 | 1882.4 |
| 35°   | 3504.1 | 3201.3 | 2602.9 | 2124.9 | 1855.5 | 1773.8 | 1793.6 | 1834.9 | 1856.3 | 1872.1 | 1892.7 |
| 37.5° | 3662.6 | 3296.4 | 2592.6 | 2063.1 | 1780.2 | 1715.2 | 1772.2 | 1845.9 | 1874.5 | 1882.4 | 1898.3 |
| 40°   | 3751.3 | 3324.1 | 2518.9 | 1982.3 | 1708.0 | 1663.7 | 1750.0 | 1848.3 | 1872.9 | 1884.8 | 1898.3 |
| 42.5° | 3833.0 | 3337.6 | 2449.9 | 1900.6 | 1651.8 | 1610.5 | 1712.0 | 1819.8 | 1860.2 | 1911.7 | 1929.2 |
| 45°   | 3990.7 | 3425.6 | 2422.2 | 1827.7 | 1593.1 | 1551.1 | 1638.3 | 1752.4 | 1854.7 | 1911.7 | 1926.0 |
| 47.5° | 4195.2 | 3523.9 | 2395.2 | 1760.3 | 1527.3 | 1471.1 | 1525.7 | 1701.7 | 1815.8 | 1859.4 | 1865.0 |
| 50°   | 4407.6 | 3611.8 | 2359.5 | 1696.1 | 1445.7 | 1362.5 | 1430.6 | 1628.0 | 1749.3 | 1769.9 | 1774.6 |
| 52.5° | 4599.4 | 3692.7 | 2324.7 | 1628.8 | 1360.1 | 1255.5 | 1332.3 | 1524.9 | 1634.3 | 1639.9 | 1651.8 |
| 55°   | 4791.2 | 3770.4 | 2281.9 | 1558.2 | 1257.8 | 1145.3 | 1220.6 | 1390.2 | 1476.6 | 1467.9 | 1467.9 |
| 57.5° | 4941.8 | 3840.1 | 2243.0 | 1471.1 | 1161.9 | 1050.2 | 1104.9 | 1238.0 | 1319.7 | 1311.7 | 1304.6 |
| 60°   | 5068.6 | 3885.3 | 2197.1 | 1369.6 | 1065.2 | 958.2  | 992.3  | 1110.4 | 1189.7 | 1172.2 | 1172.2 |
| 62.5° | 5119.4 | 3886.1 | 2121.8 | 1261.8 | 966.2  | 869.5  | 891.7  | 997.1  | 1086.6 | 1076.3 | 1082.7 |
| 65°   | 5061.5 | 3812.4 | 1964.8 | 1129.4 | 872.6  | 784.7  | 802.9  | 893.3  | 998.7  | 995.5  | 1001.8 |
| 66°   | 4981.4 | 3726.8 | 1880.8 | 1075.5 | 839.4  | 758.5  | 764.9  | 857.6  | 962.2  | 963.8  | 963.0  |
| 67.5° | 4807.1 | 3573.0 | 1730.2 | 998.7  | 785.5  | 708.6  | 716.5  | 809.2  | 913.1  | 905.1  | 908.3  |
| 70°   | 4360.0 | 3074.5 | 1421.1 | 862.3  | 704.6  | 627.7  | 640.4  | 736.3  | 813.2  | 805.3  | 803.7  |
| 72.5° | 3485.0 | 2319.9 | 1147.7 | 736.3  | 623.0  | 556.4  | 575.4  | 642.0  | 737.1  | 733.1  | 735.5  |
| 75°   | 2311.2 | 1516.2 | 902.8  | 619.8  | 537.4  | 500.1  | 501.7  | 558.8  | 650.7  | 662.6  | 669.7  |
| 77.5° | 1439.3 | 1037.5 | 726.0  | 520.7  | 451.0  | 418.5  | 421.7  | 481.9  | 557.2  | 562.7  | 569.1  |
| 80°   | 923.4  | 764.9  | 572.3  | 422.5  | 344.8  | 337.6  | 347.9  | 403.4  | 466.0  | 470.8  | 467.6  |
| 82.5° | 557.2  | 495.4  | 428.0  | 302.0  | 266.3  | 266.3  | 280.6  | 324.2  | 347.2  | 269.5  | 252.0  |
| 85°   | 221.9  | 257.6  | 233.0  | 166.4  | 171.2  | 175.2  | 183.9  | 219.5  | 231.4  | 122.1  | 95.9   |
| 87.5° | 51.5   | 70.5   | 69.0   | 48.3   | 53.1   | 57.9   | 57.1   | 92.7   | 115.7  | 52.3   | 30.1   |
| 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: SP2-2501-321-1

Test Date: 04/09/2025

Luminaire Tested: GKO-PB1E-740-U-T4W

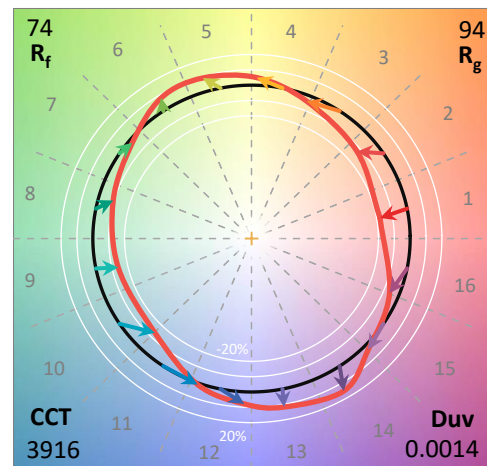
Data in this report applies to families of products including GKO-PB1E-740-U-T4W

### Test Information

Test Method: LM-79-2019  
 Report Number: SP2-2501-321-1  
 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-740-U-T4W**  
 Description: Gekko Wedge Wall Pack Fixture 1 SQ w/ T4W distribution

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 3916     | CRI (Ra): | 71.0 |      |       |
| CIE u':                   | 0.2259   | R1:       | 67.4 | R9:  | -37.9 |
| CIE v':                   | 0.5049   | R2:       | 78.3 | R10: | 48.9  |
| Duv:                      | 0.0014   | R3:       | 87.2 | R11: | 64.6  |
| CIE x:                    | 0.3853   | R4:       | 69.5 | R12: | 40.9  |
| CIE y:                    | 0.3827   | R5:       | 67.2 | R13: | 69.2  |
| CIE z:                    | 0.2321   | R6:       | 69.3 | R14: | 92.7  |
| Peak Wavelength (nm):     | 449      | R7:       | 79.9 | R15: | 59.8  |
| Dominant Wavelength (nm): | 578      | R8:       | 48.9 |      |       |
| Purity:                   | 30.46652 |           |      |      |       |
| Rf:                       | 73.5     |           |      |      |       |
| Rg:                       | 93.5     |           |      |      |       |



### Test Conditions

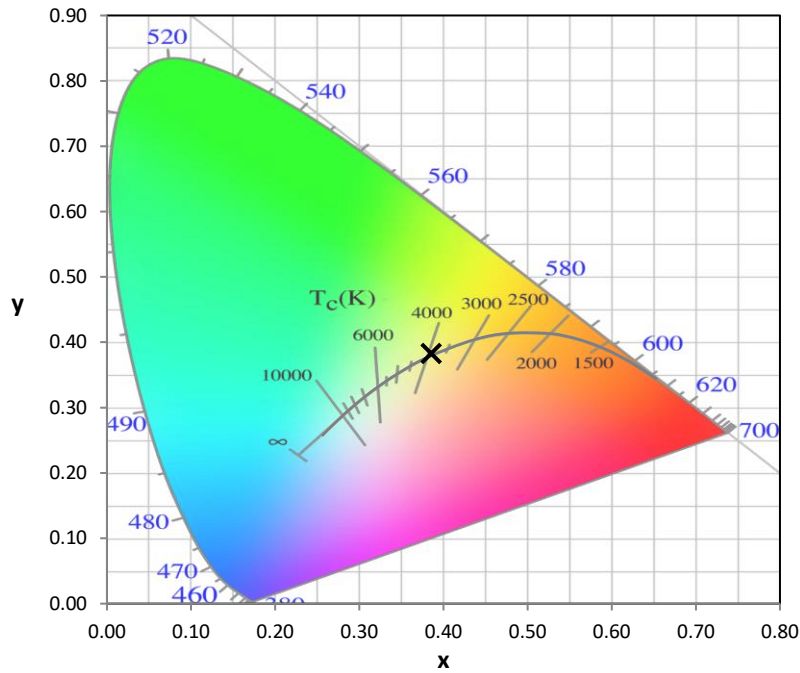
Stabilization Time: 33M  
 Operation Time: 1H 33M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP2-2501-321-1

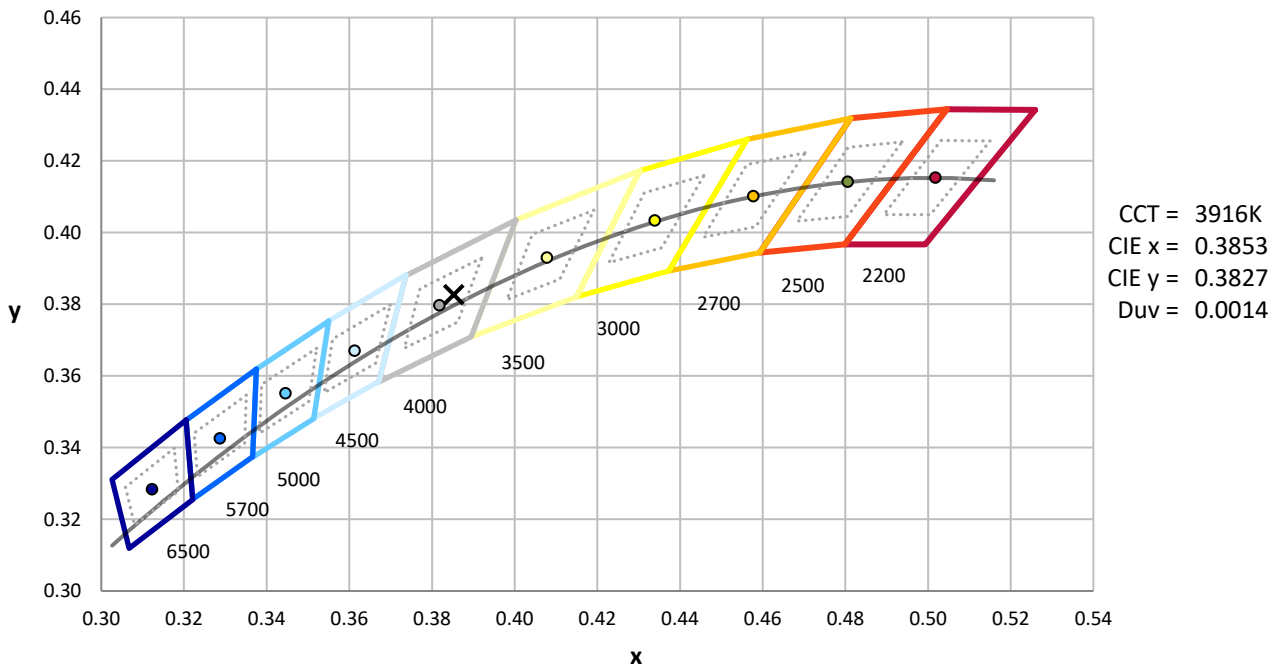
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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           |

REPORT NUMBER: SP2-2501-321-1

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP2-2501-321-1

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| 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    | 132                      | NR            | 620    | 668                      | NR            | 750    | 17                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 174                      | NR            | 625    | 611                      | NR            | 755    | 15                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 238                      | NR            | 630    | 554                      | NR            | 760    | 13                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 314                      | NR            | 635    | 498                      | NR            | 765    | 11                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 392                      | NR            | 640    | 445                      | NR            | 770    | 10                       | NR            | 900    | 0                        | NR            |
| 385    | 1                        | NR            | 515    | 467                      | NR            | 645    | 394                      | NR            | 775    | 8                        | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 526                      | NR            | 650    | 347                      | NR            | 780    | 7                        | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 575                      | NR            | 655    | 305                      | NR            | 785    | 6                        | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 613                      | NR            | 660    | 266                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 10                       | NR            | 535    | 644                      | NR            | 665    | 231                      | NR            | 795    | 5                        | NR            | 925    | 0                        | NR            |
| 410    | 18                       | NR            | 540    | 673                      | NR            | 670    | 200                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 34                       | NR            | 545    | 703                      | NR            | 675    | 174                      | NR            | 805    | 4                        | NR            | 935    | 0                        | NR            |
| 420    | 66                       | NR            | 550    | 734                      | NR            | 680    | 150                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 124                      | NR            | 555    | 768                      | NR            | 685    | 129                      | NR            | 815    | 3                        | NR            | 945    | 0                        | NR            |
| 430    | 216                      | NR            | 560    | 804                      | NR            | 690    | 111                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 352                      | NR            | 565    | 838                      | NR            | 695    | 95                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 548                      | NR            | 570    | 872                      | NR            | 700    | 81                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 836                      | NR            | 575    | 896                      | NR            | 705    | 69                       | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 997                      | NR            | 580    | 913                      | NR            | 710    | 60                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 705                      | NR            | 585    | 917                      | NR            | 715    | 51                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 429                      | NR            | 590    | 911                      | NR            | 720    | 44                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 316                      | NR            | 595    | 891                      | NR            | 725    | 38                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 213                      | NR            | 600    | 862                      | NR            | 730    | 32                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 143                      | NR            | 605    | 822                      | NR            | 735    | 28                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 121                      | NR            | 610    | 776                      | NR            | 740    | 24                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 118                      | NR            | 615    | 725                      | NR            | 745    | 20                       | NR            | 875    | 1                        | NR            |        |                          |               |

REPORT NUMBER: SP2-2501-321-1

### Scotopic Flux vs. Wavelength



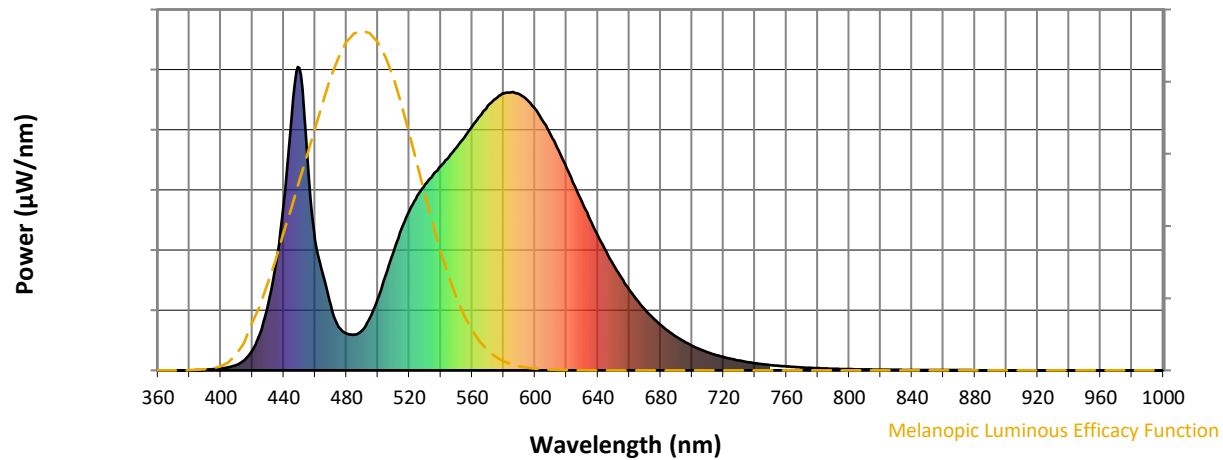
Scotopic Lumens: NR

S/P: 1.49

| 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    | 132                      | NR            | 620    | 668                      | NR            | 750    | 17                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 174                      | NR            | 625    | 611                      | NR            | 755    | 15                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 238                      | NR            | 630    | 554                      | NR            | 760    | 13                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 314                      | NR            | 635    | 498                      | NR            | 765    | 11                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 392                      | NR            | 640    | 445                      | NR            | 770    | 10                       | NR            | 900    | 0                        | NR            |
| 385    | 1                        | NR            | 515    | 467                      | NR            | 645    | 394                      | NR            | 775    | 8                        | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 526                      | NR            | 650    | 347                      | NR            | 780    | 7                        | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 575                      | NR            | 655    | 305                      | NR            | 785    | 6                        | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 613                      | NR            | 660    | 266                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 10                       | NR            | 535    | 644                      | NR            | 665    | 231                      | NR            | 795    | 5                        | NR            | 925    | 0                        | NR            |
| 410    | 18                       | NR            | 540    | 673                      | NR            | 670    | 200                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 34                       | NR            | 545    | 703                      | NR            | 675    | 174                      | NR            | 805    | 4                        | NR            | 935    | 0                        | NR            |
| 420    | 66                       | NR            | 550    | 734                      | NR            | 680    | 150                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 124                      | NR            | 555    | 768                      | NR            | 685    | 129                      | NR            | 815    | 3                        | NR            | 945    | 0                        | NR            |
| 430    | 216                      | NR            | 560    | 804                      | NR            | 690    | 111                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 352                      | NR            | 565    | 838                      | NR            | 695    | 95                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 548                      | NR            | 570    | 872                      | NR            | 700    | 81                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 836                      | NR            | 575    | 896                      | NR            | 705    | 69                       | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 997                      | NR            | 580    | 913                      | NR            | 710    | 60                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 705                      | NR            | 585    | 917                      | NR            | 715    | 51                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 429                      | NR            | 590    | 911                      | NR            | 720    | 44                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 316                      | NR            | 595    | 891                      | NR            | 725    | 38                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 213                      | NR            | 600    | 862                      | NR            | 730    | 32                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 143                      | NR            | 605    | 822                      | NR            | 735    | 28                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 121                      | NR            | 610    | 776                      | NR            | 740    | 24                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 118                      | NR            | 615    | 725                      | NR            | 745    | 20                       | NR            | 875    | 1                        | NR            |        |                          |               |

REPORT NUMBER: SP2-2501-321-1

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.88

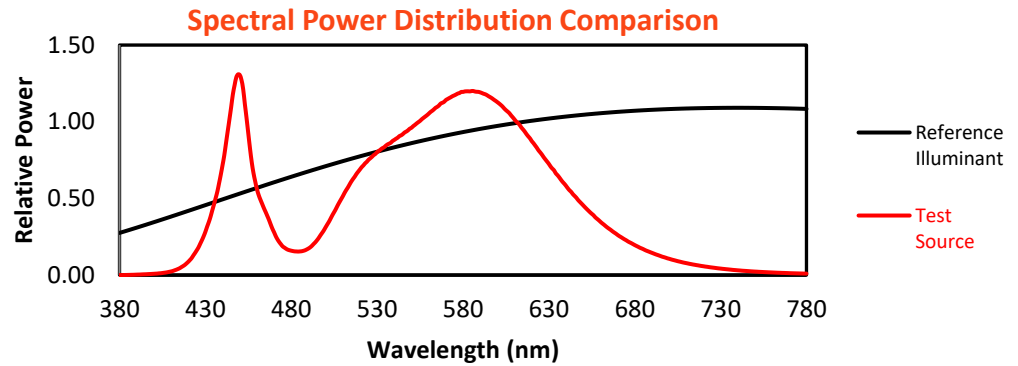
| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 132                         | NR               | 620       | 668                         | NR               | 750       | 17                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 174                         | NR               | 625       | 611                         | NR               | 755       | 15                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 238                         | NR               | 630       | 554                         | NR               | 760       | 13                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 314                         | NR               | 635       | 498                         | NR               | 765       | 11                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 392                         | NR               | 640       | 445                         | NR               | 770       | 10                          | NR               | 900       | 0                           | NR               |
| 385       | 1                           | NR               | 515       | 467                         | NR               | 645       | 394                         | NR               | 775       | 8                           | NR               | 905       | 0                           | NR               |
| 390       | 2                           | NR               | 520       | 526                         | NR               | 650       | 347                         | NR               | 780       | 7                           | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 575                         | NR               | 655       | 305                         | NR               | 785       | 6                           | NR               | 915       | 0                           | NR               |
| 400       | 6                           | NR               | 530       | 613                         | NR               | 660       | 266                         | NR               | 790       | 5                           | NR               | 920       | 0                           | NR               |
| 405       | 10                          | NR               | 535       | 644                         | NR               | 665       | 231                         | NR               | 795       | 5                           | NR               | 925       | 0                           | NR               |
| 410       | 18                          | NR               | 540       | 673                         | NR               | 670       | 200                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 34                          | NR               | 545       | 703                         | NR               | 675       | 174                         | NR               | 805       | 4                           | NR               | 935       | 0                           | NR               |
| 420       | 66                          | NR               | 550       | 734                         | NR               | 680       | 150                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 124                         | NR               | 555       | 768                         | NR               | 685       | 129                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 216                         | NR               | 560       | 804                         | NR               | 690       | 111                         | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 352                         | NR               | 565       | 838                         | NR               | 695       | 95                          | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 548                         | NR               | 570       | 872                         | NR               | 700       | 81                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 836                         | NR               | 575       | 896                         | NR               | 705       | 69                          | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 997                         | NR               | 580       | 913                         | NR               | 710       | 60                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 705                         | NR               | 585       | 917                         | NR               | 715       | 51                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 429                         | NR               | 590       | 911                         | NR               | 720       | 44                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 316                         | NR               | 595       | 891                         | NR               | 725       | 38                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 213                         | NR               | 600       | 862                         | NR               | 730       | 32                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 143                         | NR               | 605       | 822                         | NR               | 735       | 28                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 121                         | NR               | 610       | 776                         | NR               | 740       | 24                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 118                         | NR               | 615       | 725                         | NR               | 745       | 20                          | NR               | 875       | 1                           | NR               |           |                             |                  |

REPORT NUMBER: SP2-2501-321-1

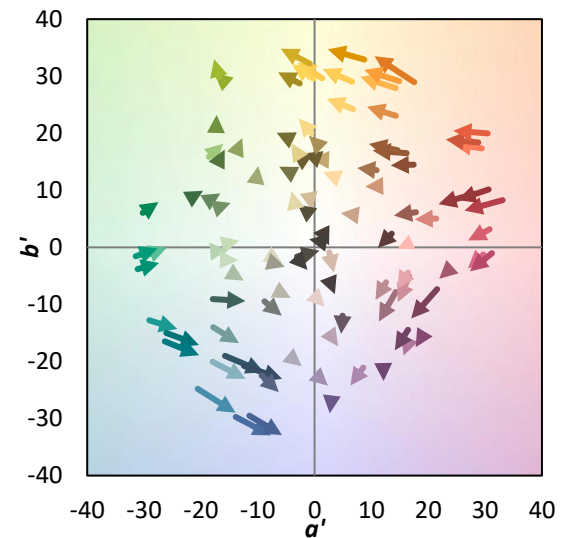
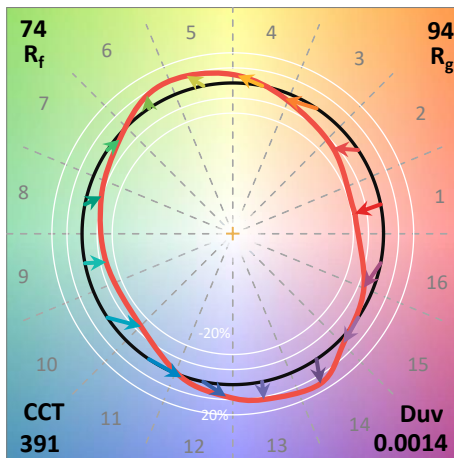
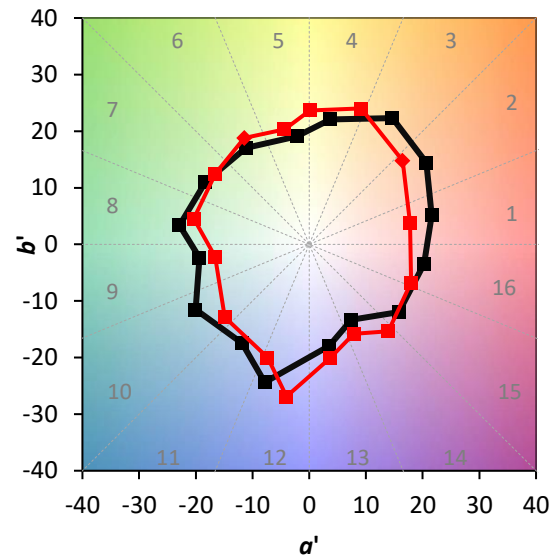
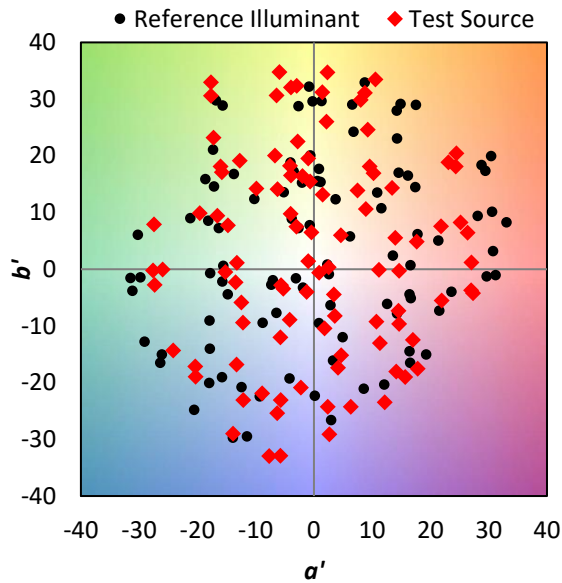
TM-30-18

### Summary

$R_f = 73.5$   
 $R_g = 93.5$   
 $CIE R_a = 71.0$   
 $R_g = -37.9$

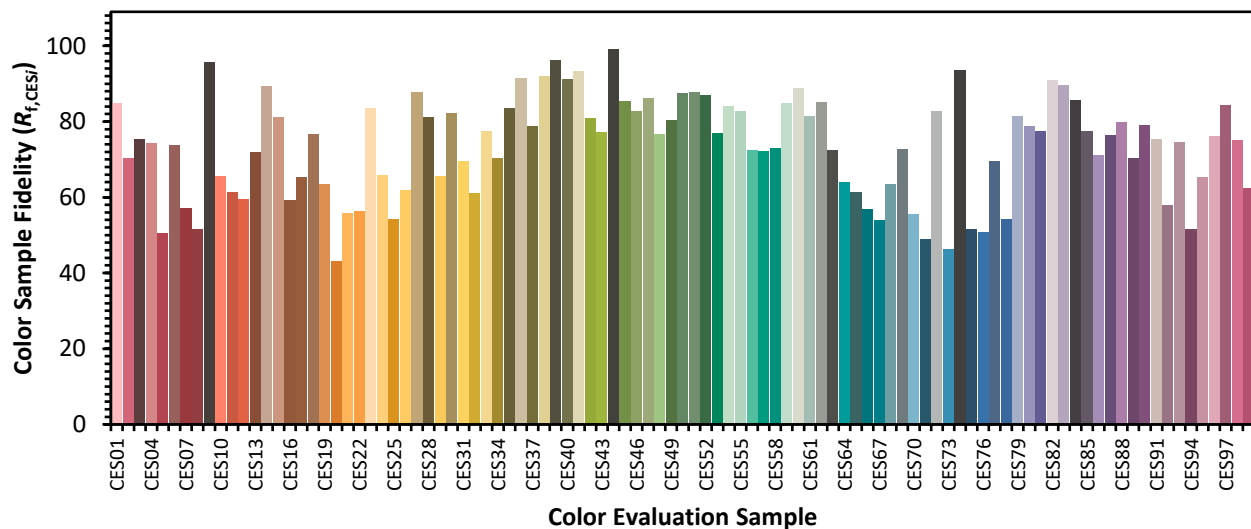


### Color Vector Graphics

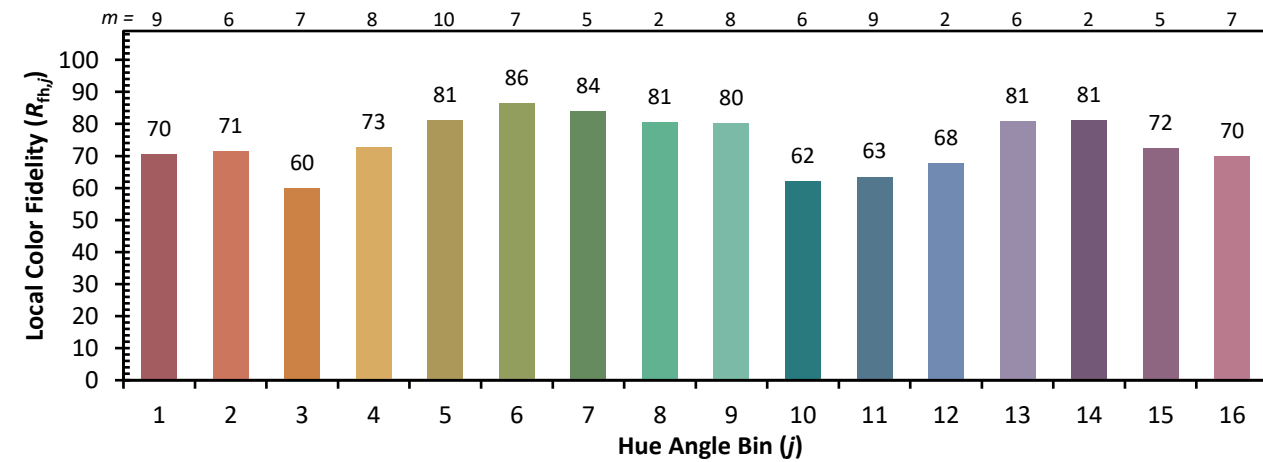
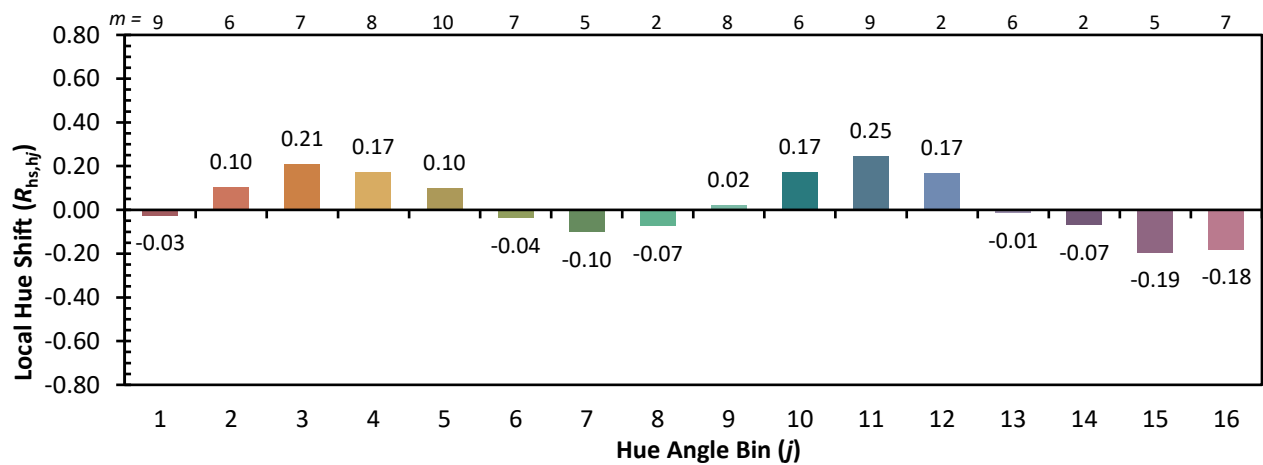
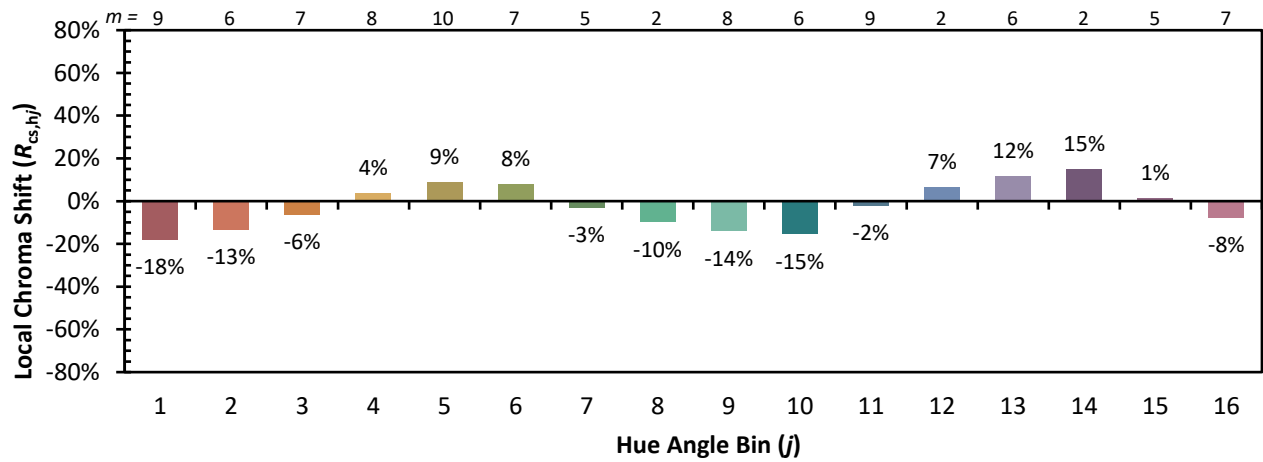


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

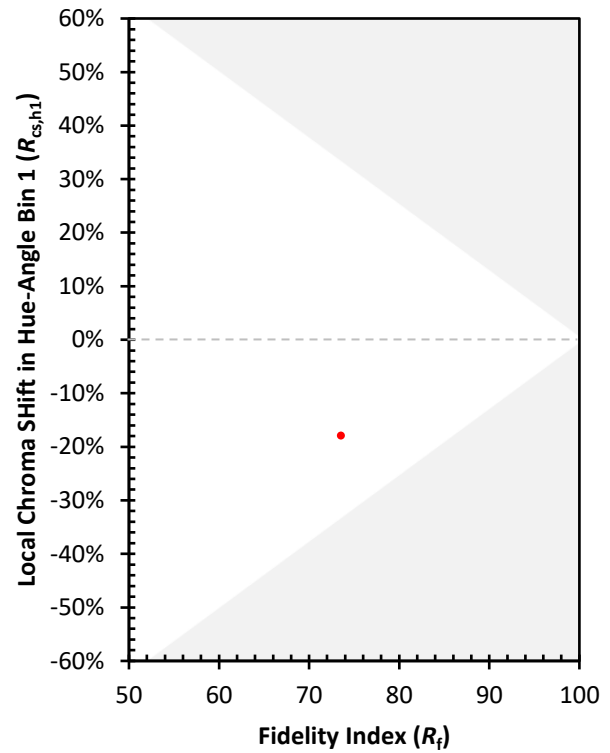
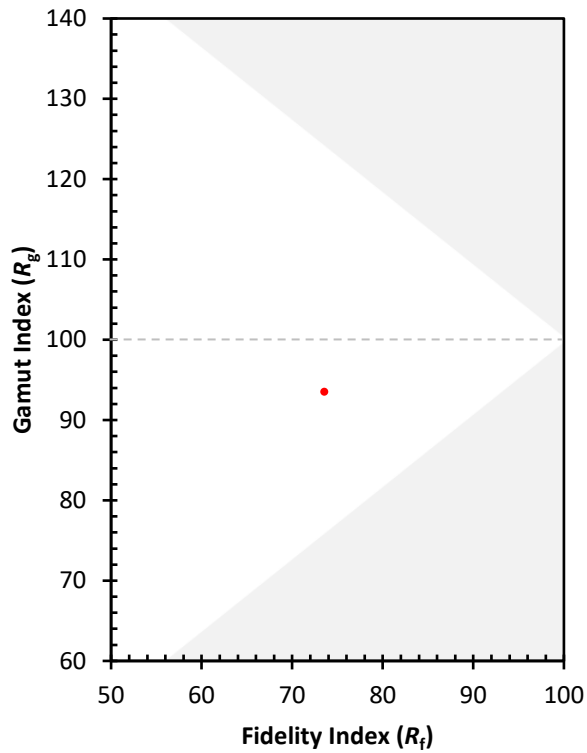
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 62 | CES51 = 88 | CES76 = 51 |
| CES02 = 61 | CES27 = 88 | CES52 = 87 | CES77 = 70 |
| CES03 = 30 | CES28 = 81 | CES53 = 77 | CES78 = 54 |
| CES04 = 70 | CES29 = 66 | CES54 = 84 | CES79 = 81 |
| CES05 = 47 | CES30 = 82 | CES55 = 83 | CES80 = 79 |
| CES06 = 50 | CES31 = 69 | CES56 = 73 | CES81 = 77 |
| CES07 = 40 | CES32 = 61 | CES57 = 72 | CES82 = 91 |
| CES08 = 39 | CES33 = 77 | CES58 = 73 | CES83 = 90 |
| CES09 = 29 | CES34 = 70 | CES59 = 85 | CES84 = 86 |
| CES10 = 74 | CES35 = 84 | CES60 = 89 | CES85 = 77 |
| CES11 = 57 | CES36 = 91 | CES61 = 81 | CES86 = 71 |
| CES12 = 63 | CES37 = 79 | CES62 = 85 | CES87 = 76 |
| CES13 = 42 | CES38 = 92 | CES63 = 72 | CES88 = 80 |
| CES14 = 74 | CES39 = 96 | CES64 = 64 | CES89 = 70 |
| CES15 = 71 | CES40 = 91 | CES65 = 61 | CES90 = 79 |
| CES16 = 46 | CES41 = 93 | CES66 = 57 | CES91 = 75 |
| CES17 = 49 | CES42 = 81 | CES67 = 54 | CES92 = 58 |
| CES18 = 56 | CES43 = 77 | CES68 = 63 | CES93 = 75 |
| CES19 = 72 | CES44 = 99 | CES69 = 73 | CES94 = 52 |
| CES20 = 65 | CES45 = 85 | CES70 = 56 | CES95 = 65 |
| CES21 = 86 | CES46 = 83 | CES71 = 49 | CES96 = 76 |
| CES22 = 78 | CES47 = 86 | CES72 = 83 | CES97 = 84 |
| CES23 = 92 | CES48 = 77 | CES73 = 46 | CES98 = 75 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 62 |
| CES25 = 72 | CES50 = 87 | CES75 = 52 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)