

Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P383017

Luminaire Tested: **GLEON-SA3C-735-U-T4W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P383017  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-18)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA3C-735-U-T4W  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(3) 70 CRI, 3500K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV WIDE OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 19974.2 lumens  
Efficiency: N/A  
Efficacy: 120.3 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B3 - U0 - G4

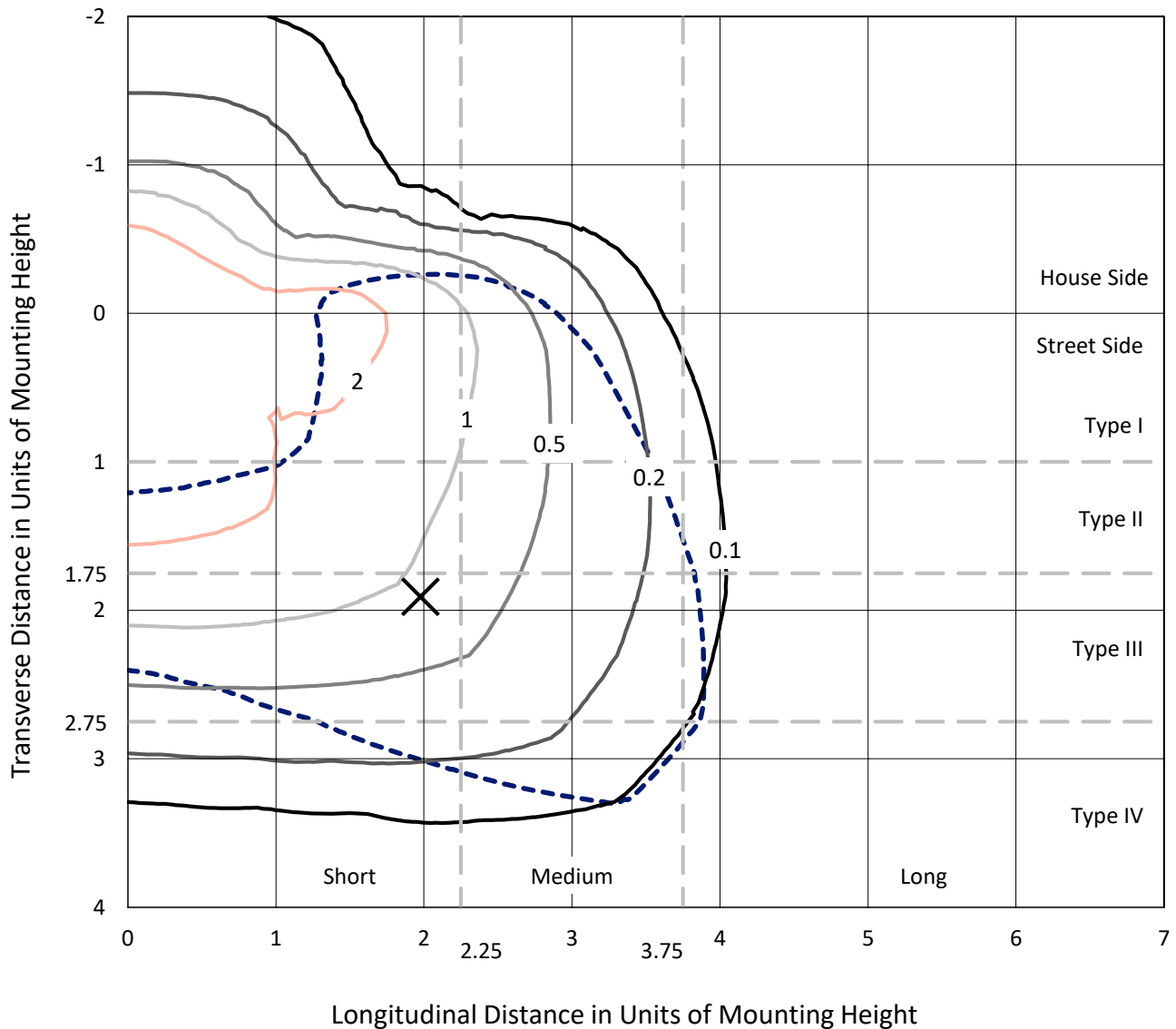
Input Watts (W): 166  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P383017  
 CATALOG NUMBER: GLEON-SA3C-735-U-T4W

## Iso-Footcandle Lines of Horizontal Illumination

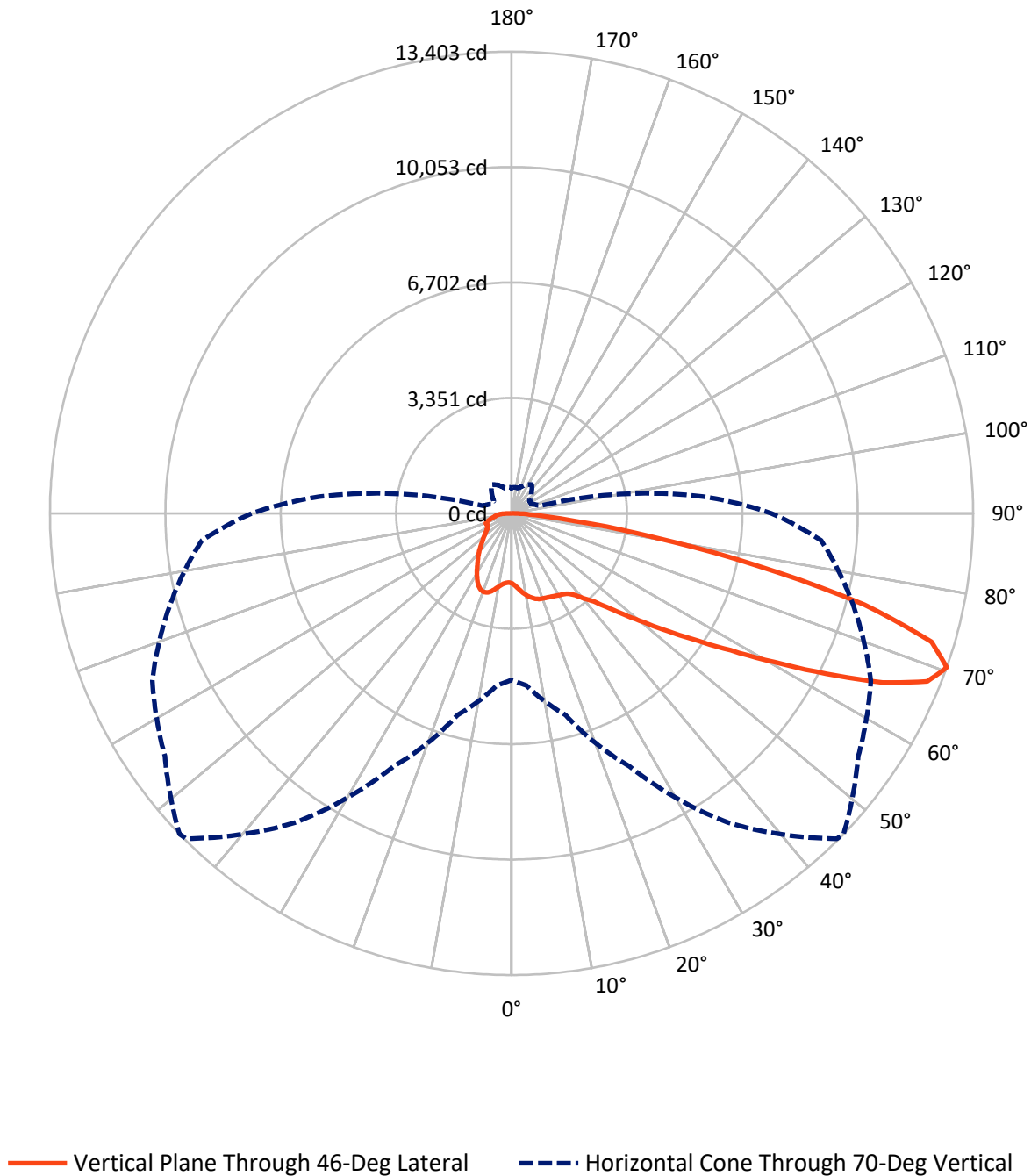
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 4.1 fc  
 Type IV - Short - N/A

REPORT NUMBER: P383017  
CATALOG NUMBER: GLEON-SA3C-735-U-T4W

## Luminous Intensity Polar Plot



REPORT NUMBER: P383017

CATALOG NUMBER: GLEON-SA3C-735-U-T4W

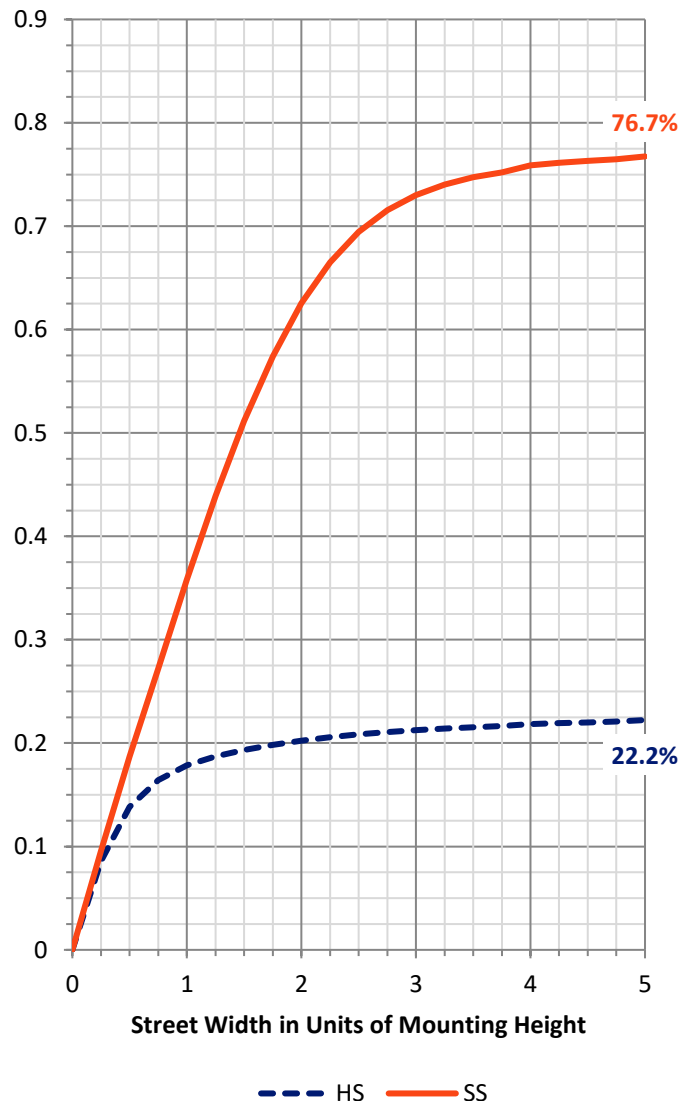
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 4578.0   | 0.0    | 4578.0  |
|                    | % Fixture | 22.9     | 0.0    | 22.9    |
| <b>Street Side</b> | Lumens    | 15396.2  | 0.0    | 15396.2 |
|                    | % Fixture | 77.1     | 0.0    | 77.1    |
| <b>Total</b>       | Lumens    | 19974.2  | 0.0    | 19974.2 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 207.4   | 1.0       |
| 10°-20°   | 691.2   | 3.5       |
| 20°-30°   | 1152.4  | 5.8       |
| 30°-40°   | 1635.4  | 8.2       |
| 40°-50°   | 2405.6  | 12.0      |
| 50°-60°   | 4073.8  | 20.4      |
| 60°-70°   | 5782.7  | 29.0      |
| 70°-80°   | 3513.0  | 17.6      |
| 80°-90°   | 512.7   | 2.6       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 19974.2 | 100.0     |
| 0°-180°   | 19974.2 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P383017

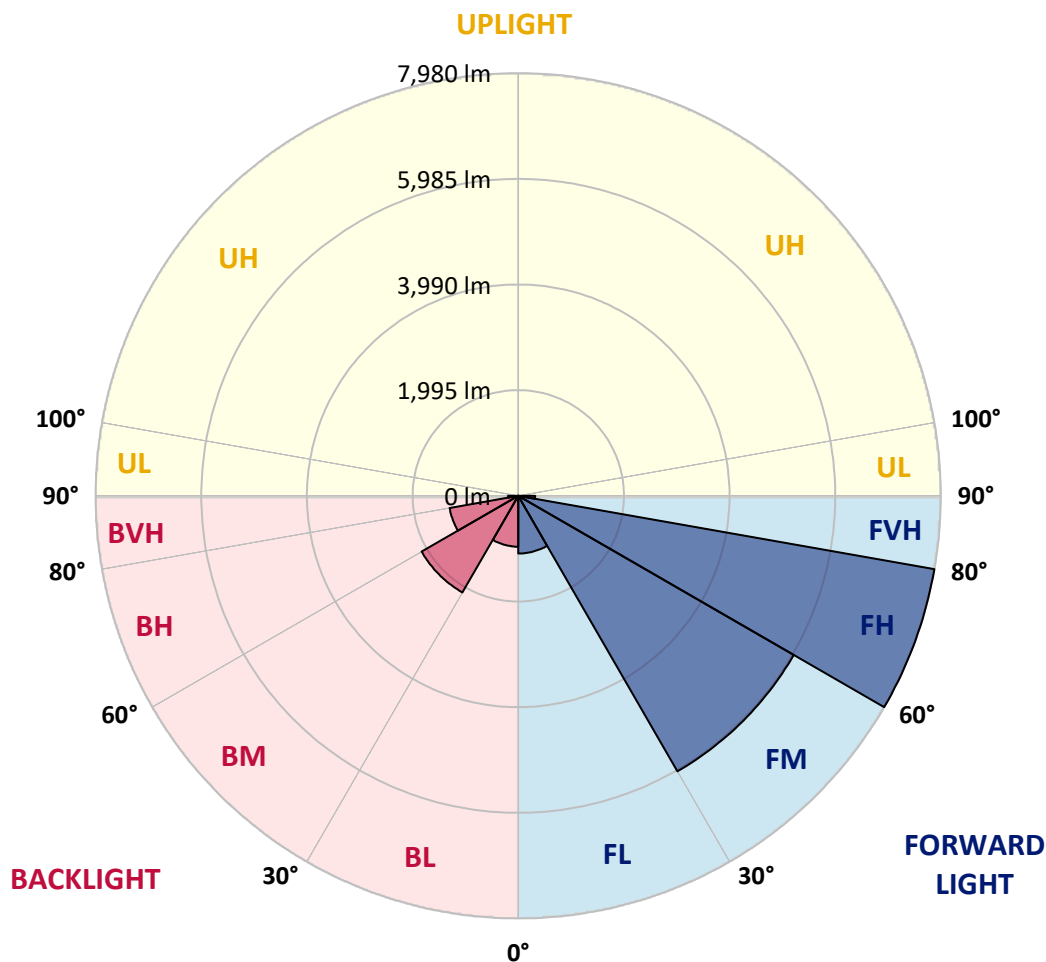
CATALOG NUMBER: GLEON-SA3C-735-U-T4W

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|--------|-----------|-------------------------|------|----------|
|      |             |        |           | B                       | U    | G        |
| FL   | (0°-30°)    | 1089.9 | 5.5       |                         |      |          |
| FM   | (30°-60°)   | 6007.4 | 30.1      |                         |      |          |
| FH   | (60°-80°)   | 7979.6 | 39.9      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 319.4  | 1.6       |                         |      | G3/500   |
| BL   | (0°-30°)    | 961.2  | 4.8       | B2/1000                 |      |          |
| BM   | (30°-60°)   | 2107.4 | 10.6      | B2/2500                 |      |          |
| BH   | (60°-80°)   | 1316.1 | 6.6       | B3/2500                 |      | G3/2500  |
| BVH  | (80°-90°)   | 193.3  | 1.0       |                         |      | G2/225   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |          |

**BUG Rating: B3-U0-G4**

Type IV Short





REPORT NUMBER: P383017

CATALOG NUMBER: GLEON-SA3C-735-U-T4W

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°     | 45°     | 46°     | 55°     | 65°     | 75°     | 85°     |
|-------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 2035.0 | 2035.0 | 2035.0 | 2035.0 | 2035.0  | 2035.0  | 2035.0  | 2035.0  | 2035.0  | 2035.0  | 2035.0  |
| 2.5°  | 2136.9 | 2138.2 | 2141.0 | 2134.1 | 2115.0  | 2109.5  | 2107.4  | 2087.6  | 2074.6  | 2055.5  | 2039.1  |
| 5°    | 2307.7 | 2309.1 | 2305.0 | 2285.8 | 2243.4  | 2212.1  | 2209.3  | 2164.2  | 2123.2  | 2079.4  | 2046.6  |
| 7.5°  | 2486.1 | 2488.2 | 2475.2 | 2439.0 | 2379.5  | 2324.9  | 2321.4  | 2259.8  | 2197.7  | 2131.4  | 2082.2  |
| 10°   | 2644.0 | 2635.8 | 2614.7 | 2564.1 | 2493.7  | 2426.7  | 2424.0  | 2359.7  | 2287.9  | 2208.0  | 2142.3  |
| 12.5° | 2749.3 | 2742.5 | 2715.2 | 2653.6 | 2576.4  | 2514.8  | 2509.4  | 2449.9  | 2380.2  | 2292.7  | 2214.1  |
| 15°   | 2807.4 | 2812.2 | 2775.3 | 2705.6 | 2630.4  | 2578.4  | 2573.7  | 2531.3  | 2469.1  | 2380.8  | 2290.7  |
| 17.5° | 2815.0 | 2819.0 | 2783.5 | 2714.4 | 2653.0  | 2617.4  | 2615.3  | 2587.3  | 2542.2  | 2457.4  | 2363.1  |
| 20°   | 2771.2 | 2774.0 | 2744.5 | 2687.8 | 2647.5  | 2636.6  | 2635.8  | 2623.5  | 2590.1  | 2514.8  | 2423.2  |
| 22.5° | 2707.6 | 2709.7 | 2688.4 | 2647.5 | 2633.8  | 2650.9  | 2655.7  | 2650.9  | 2627.0  | 2556.5  | 2470.5  |
| 25°   | 2691.9 | 2690.5 | 2668.7 | 2627.0 | 2638.6  | 2674.8  | 2681.0  | 2683.0  | 2666.6  | 2605.1  | 2530.5  |
| 27.5° | 2767.8 | 2763.0 | 2721.3 | 2654.3 | 2661.8  | 2705.6  | 2713.8  | 2733.6  | 2723.4  | 2669.3  | 2598.9  |
| 30°   | 2987.2 | 2979.0 | 2893.6 | 2758.2 | 2721.3  | 2743.9  | 2754.1  | 2785.5  | 2787.6  | 2742.5  | 2689.8  |
| 32.5° | 3357.7 | 3347.4 | 3194.3 | 2952.4 | 2821.8  | 2782.8  | 2792.4  | 2839.5  | 2864.9  | 2829.9  | 2773.2  |
| 35°   | 3826.0 | 3814.3 | 3613.4 | 3282.5 | 2989.9  | 2857.3  | 2864.1  | 2901.8  | 2952.4  | 2903.1  | 2827.9  |
| 37.5° | 4314.0 | 4286.0 | 4092.6 | 3670.8 | 3257.2  | 3016.6  | 3016.6  | 3021.4  | 3045.3  | 2942.8  | 2892.2  |
| 40°   | 4799.3 | 4771.3 | 4596.3 | 4127.4 | 3603.1  | 3267.5  | 3251.8  | 3145.7  | 3126.6  | 3038.4  | 3021.4  |
| 42.5° | 5250.5 | 5242.3 | 5139.1 | 4643.5 | 4009.1  | 3514.3  | 3492.4  | 3312.6  | 3316.7  | 3262.0  | 3262.7  |
| 45°   | 5730.3 | 5730.3 | 5646.3 | 5164.4 | 4482.1  | 3910.7  | 3888.8  | 3624.3  | 3665.3  | 3640.0  | 3700.9  |
| 47.5° | 6122.0 | 6134.3 | 6122.7 | 5707.1 | 5032.4  | 4414.5  | 4374.8  | 4056.3  | 4171.1  | 4257.9  | 4435.0  |
| 50°   | 6522.0 | 6541.0 | 6543.1 | 6302.5 | 5697.5  | 5013.3  | 4968.2  | 4629.8  | 4886.2  | 5135.0  | 5482.9  |
| 52.5° | 7102.3 | 7145.3 | 6973.8 | 6896.5 | 6512.4  | 5724.2  | 5679.7  | 5367.4  | 5795.3  | 6144.6  | 6744.1  |
| 55°   | 7640.3 | 7602.6 | 7480.3 | 7528.1 | 7384.6  | 6533.6  | 6500.1  | 6225.9  | 6808.3  | 7262.3  | 8040.8  |
| 57.5° | 7931.5 | 7928.7 | 8051.7 | 8256.9 | 8325.1  | 7531.6  | 7503.5  | 7236.9  | 7950.6  | 8291.7  | 9258.3  |
| 60°   | 8273.3 | 8278.0 | 8582.9 | 9048.4 | 9330.0  | 8774.2  | 8762.0  | 8559.6  | 9060.0  | 9252.8  | 10213.2 |
| 62.5° | 8321.0 | 8407.2 | 8932.2 | 9733.4 | 10270.6 | 10226.2 | 10253.5 | 9751.1  | 10052.6 | 10019.7 | 10926.1 |
| 65°   | 7770.8 | 7884.2 | 8834.4 | 9940.5 | 11205.8 | 11814.2 | 11839.4 | 10949.4 | 10835.3 | 10675.3 | 11181.2 |
| 67.5° | 6643.0 | 6811.1 | 7843.3 | 9490.0 | 11514.0 | 12987.8 | 13023.3 | 11878.3 | 11484.7 | 10897.4 | 10567.3 |
| 70°   | 4834.2 | 5020.9 | 6059.8 | 8105.1 | 10964.4 | 13363.1 | 13403.4 | 12289.2 | 11509.3 | 10265.2 | 9021.0  |
| 72.5° | 2920.2 | 3066.5 | 3923.0 | 5966.8 | 9254.2  | 12679.5 | 12751.3 | 11768.3 | 10507.9 | 8695.0  | 6661.4  |
| 75°   | 1282.4 | 1378.0 | 1896.9 | 3438.3 | 6625.2  | 10490.7 | 10580.2 | 10073.1 | 8537.8  | 6318.9  | 3937.4  |
| 77.5° | 546.2  | 573.6  | 777.9  | 1493.6 | 3745.3  | 7168.6  | 7291.6  | 7360.0  | 5792.5  | 3438.3  | 1663.8  |
| 80°   | 340.4  | 351.4  | 440.2  | 676.0  | 1752.7  | 4026.2  | 4158.8  | 4330.4  | 2876.4  | 1263.9  | 581.0   |
| 82.5° | 207.1  | 219.4  | 292.6  | 408.8  | 912.5   | 1825.1  | 1888.7  | 2009.7  | 1116.3  | 546.2   | 300.8   |
| 85°   | 124.5  | 133.3  | 179.1  | 258.4  | 519.5   | 717.8   | 717.1   | 792.9   | 525.7   | 351.4   | 158.5   |
| 87.5° | 59.4   | 66.3   | 95.7   | 134.0  | 261.8   | 269.3   | 252.3   | 285.7   | 319.2   | 230.4   | 80.0    |
| 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: P383017

CATALOG NUMBER: GLEON-SA3C-735-U-T4W

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2035.0  | 2035.0 | 2035.0 | 2035.0 | 2035.0 | 2035.0 | 2035.0 | 2035.0 | 2035.0 | 2035.0 | 2035.0 |
| 2.5°  | 2033.7  | 2030.9 | 2022.0 | 2015.1 | 2013.8 | 2009.7 | 2006.3 | 2008.3 | 2011.0 | 2011.8 | 2011.8 |
| 5°    | 2032.9  | 2025.4 | 2013.8 | 2009.0 | 2015.1 | 2023.3 | 2033.7 | 2047.3 | 2055.5 | 2061.6 | 2065.7 |
| 7.5°  | 2065.7  | 2051.4 | 2038.4 | 2035.7 | 2048.0 | 2069.8 | 2093.1 | 2121.8 | 2141.6 | 2155.3 | 2158.0 |
| 10°   | 2120.4  | 2102.7 | 2089.6 | 2092.4 | 2114.2 | 2145.7 | 2178.5 | 2215.4 | 2245.5 | 2263.9 | 2265.3 |
| 12.5° | 2183.4  | 2166.2 | 2153.9 | 2165.6 | 2201.8 | 2240.1 | 2274.2 | 2306.3 | 2333.7 | 2352.2 | 2352.2 |
| 15°   | 2255.7  | 2243.4 | 2229.1 | 2255.7 | 2305.0 | 2339.2 | 2353.6 | 2369.2 | 2384.3 | 2398.0 | 2395.2 |
| 17.5° | 2325.5  | 2313.9 | 2306.3 | 2337.8 | 2389.0 | 2404.8 | 2395.2 | 2383.6 | 2383.6 | 2391.1 | 2392.5 |
| 20°   | 2385.7  | 2375.4 | 2380.2 | 2410.9 | 2437.6 | 2421.2 | 2385.7 | 2348.7 | 2333.7 | 2337.8 | 2341.9 |
| 22.5° | 2438.3  | 2433.5 | 2447.8 | 2462.2 | 2443.1 | 2385.7 | 2320.0 | 2270.1 | 2251.6 | 2250.3 | 2251.6 |
| 25°   | 2499.8  | 2499.2 | 2516.9 | 2491.0 | 2406.2 | 2300.2 | 2212.1 | 2163.5 | 2153.3 | 2161.5 | 2175.1 |
| 27.5° | 2576.4  | 2583.9 | 2592.8 | 2497.8 | 2331.0 | 2171.0 | 2081.4 | 2048.0 | 2058.3 | 2078.0 | 2091.0 |
| 30°   | 2674.1  | 2694.6 | 2675.5 | 2480.7 | 2223.0 | 2023.3 | 1937.9 | 1928.3 | 1956.3 | 1984.4 | 1998.1 |
| 32.5° | 2769.1  | 2801.3 | 2754.8 | 2436.3 | 2083.5 | 1866.8 | 1800.5 | 1797.8 | 1832.0 | 1859.3 | 1878.5 |
| 35°   | 2845.7  | 2909.2 | 2814.3 | 2348.1 | 1922.2 | 1722.6 | 1674.1 | 1655.6 | 1667.9 | 1700.1 | 1721.9 |
| 37.5° | 2945.5  | 3051.5 | 2855.3 | 2213.4 | 1747.2 | 1603.7 | 1546.9 | 1504.5 | 1493.6 | 1506.6 | 1517.5 |
| 40°   | 3128.0  | 3268.1 | 2874.4 | 2025.4 | 1576.3 | 1484.7 | 1427.3 | 1365.1 | 1322.1 | 1290.6 | 1291.2 |
| 42.5° | 3426.0  | 3550.5 | 2862.1 | 1797.1 | 1418.4 | 1368.5 | 1303.6 | 1231.8 | 1162.1 | 1090.9 | 1085.5 |
| 45°   | 3910.0  | 3970.2 | 2825.2 | 1555.1 | 1279.7 | 1246.8 | 1186.0 | 1114.2 | 1021.3 | 940.6  | 933.0  |
| 47.5° | 4684.5  | 4551.2 | 2767.8 | 1343.9 | 1157.3 | 1143.6 | 1087.6 | 1004.9 | 906.4  | 841.5  | 836.0  |
| 50°   | 5740.6  | 5389.9 | 2739.8 | 1175.7 | 1049.3 | 1053.4 | 1007.6 | 920.1  | 827.1  | 779.2  | 773.8  |
| 52.5° | 7003.8  | 6366.8 | 2793.7 | 1045.8 | 962.5  | 976.8  | 942.6  | 860.7  | 782.7  | 745.1  | 739.6  |
| 55°   | 8314.2  | 7378.4 | 2851.8 | 951.5  | 880.4  | 908.4  | 896.8  | 829.2  | 758.7  | 723.9  | 719.2  |
| 57.5° | 9436.0  | 8133.8 | 2735.7 | 875.0  | 807.3  | 851.1  | 861.3  | 809.3  | 746.4  | 715.1  | 709.6  |
| 60°   | 10142.1 | 8438.0 | 2430.8 | 803.2  | 749.2  | 805.2  | 840.8  | 803.8  | 751.2  | 748.5  | 744.4  |
| 62.5° | 10477.0 | 8411.3 | 1973.5 | 746.4  | 713.0  | 785.4  | 855.8  | 834.7  | 805.9  | 830.6  | 832.6  |
| 65°   | 10326.7 | 8009.4 | 1469.7 | 708.8  | 687.0  | 792.9  | 900.9  | 892.7  | 821.6  | 846.2  | 849.7  |
| 67.5° | 9336.9  | 7050.3 | 1088.2 | 676.0  | 658.2  | 814.2  | 983.0  | 911.9  | 790.9  | 808.7  | 797.7  |
| 70°   | 7546.6  | 5589.6 | 839.4  | 639.1  | 628.9  | 811.4  | 1019.9 | 900.2  | 757.3  | 761.5  | 732.1  |
| 72.5° | 5204.0  | 3811.6 | 682.9  | 604.9  | 586.5  | 739.6  | 993.9  | 871.6  | 729.4  | 697.9  | 659.0  |
| 75°   | 2829.9  | 2046.0 | 580.4  | 569.5  | 512.0  | 649.4  | 946.1  | 851.1  | 704.1  | 662.4  | 640.5  |
| 77.5° | 1113.6  | 849.0  | 503.8  | 520.9  | 447.7  | 573.6  | 892.7  | 812.1  | 669.2  | 614.5  | 603.5  |
| 80°   | 454.6   | 433.4  | 417.7  | 450.5  | 384.8  | 501.7  | 828.5  | 766.3  | 627.5  | 570.1  | 548.2  |
| 82.5° | 257.7   | 269.3  | 324.7  | 355.5  | 312.3  | 462.0  | 797.7  | 729.4  | 577.7  | 510.6  | 484.7  |
| 85°   | 131.9   | 157.9  | 226.3  | 255.0  | 229.7  | 393.0  | 734.8  | 638.5  | 463.4  | 391.0  | 393.0  |
| 87.5° | 63.5    | 88.2   | 142.9  | 159.9  | 149.0  | 284.4  | 548.9  | 462.8  | 360.9  | 285.7  | 276.9  |
| 90°   | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

All Brands

Data applicable to all product families using SA light engines

Report Number: SP1-2101-121-7

Luminaire Tested: IFLD-S-SA2A-735-U-T2

Test Date: 03/04/2021

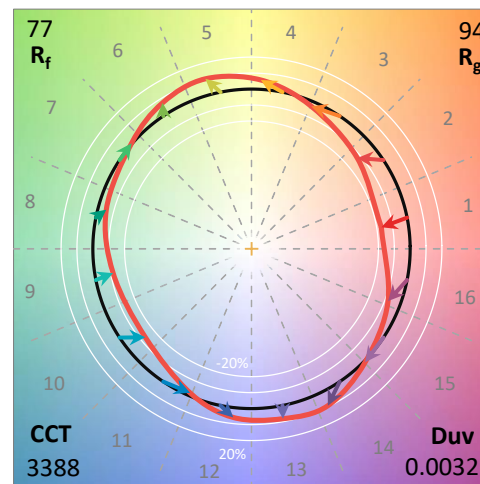
### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-7  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 03/04/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2A-735-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 3388   | CRI (Ra): | 73.1 |      |       |
| CIE u':                   | 0.2371 | R1:       | 68.9 | R9:  | -34.6 |
| CIE v':                   | 0.5177 | R2:       | 81.1 | R10: | 57.8  |
| Duv:                      | 0.0032 | R3:       | 93.1 | R11: | 68.6  |
| CIE x:                    | 0.4153 | R4:       | 71.6 | R12: | 53.9  |
| CIE y:                    | 0.4030 | R5:       | 69.4 | R13: | 70.9  |
| CIE z:                    | 0.1817 | R6:       | 75.0 | R14: | 96.2  |
| Peak Wavelength (nm):     | 590    | R7:       | 79.5 |      |       |
| Dominant Wavelength (nm): | 580    | R8:       | 46.4 |      |       |
| Purity:                   | 45.7   |           |      |      |       |
| Rf:                       | 76.9   |           |      |      |       |
| Rg:                       | 94.4   |           |      |      |       |



### Test Conditions

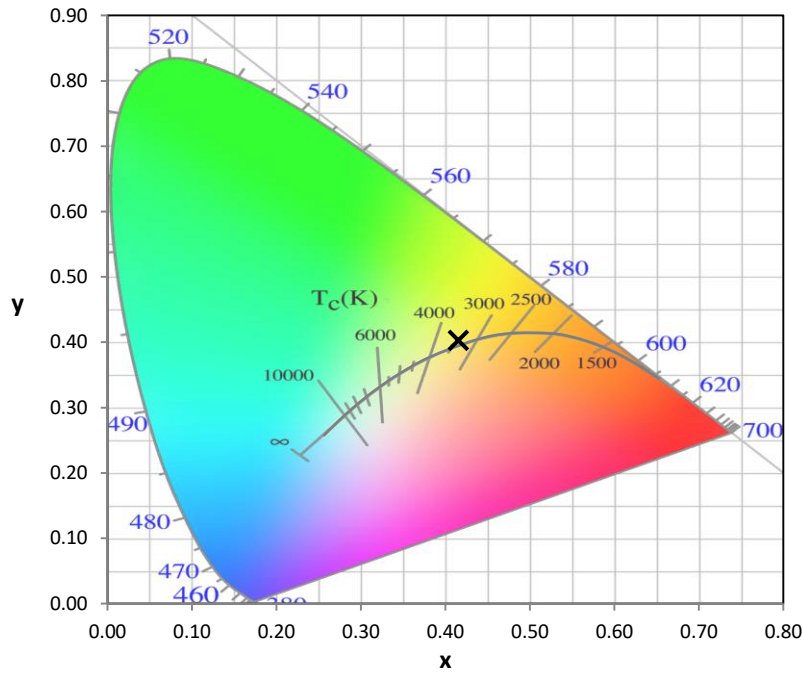
Stabilization Time: 81M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0/30%  
 Sphere Temperature (°C): 24.1

REPORT NUMBER: SP1-2101-121-7

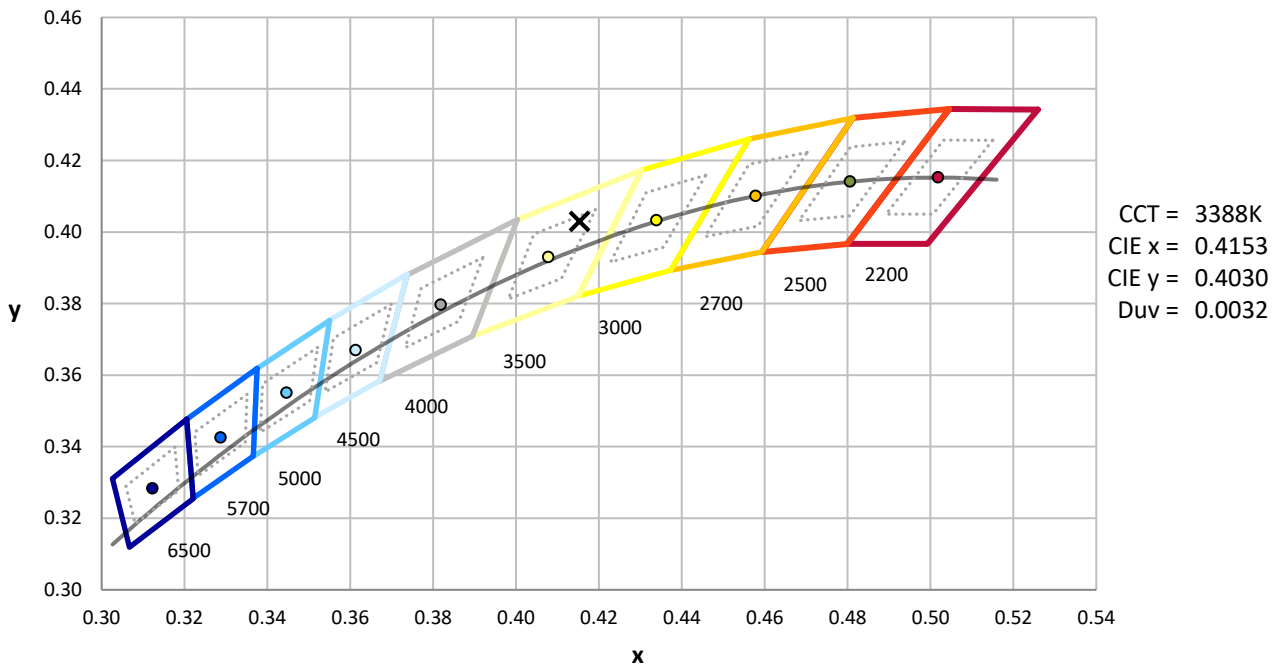
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 1/31/2021        | 7/31/2021            |
| Power Meter                    | IN0071                | 12/1/2020        | 12/1/2021            |
| AC Power Source                | IN0063                | 12/1/2020        | 12/1/2021            |
| DC Power Source                | IN0208                | 12/1/2020        | 12/1/2021            |
| Sphere Thermometer             | IN0085                | 12/1/2020        | 12/1/2021            |
| Room Thermometer               | IN0046                | 12/1/2020        | 12/1/2021            |

REPORT NUMBER: SP1-2101-121-7

**CIE 1931 Chromaticity Diagram**



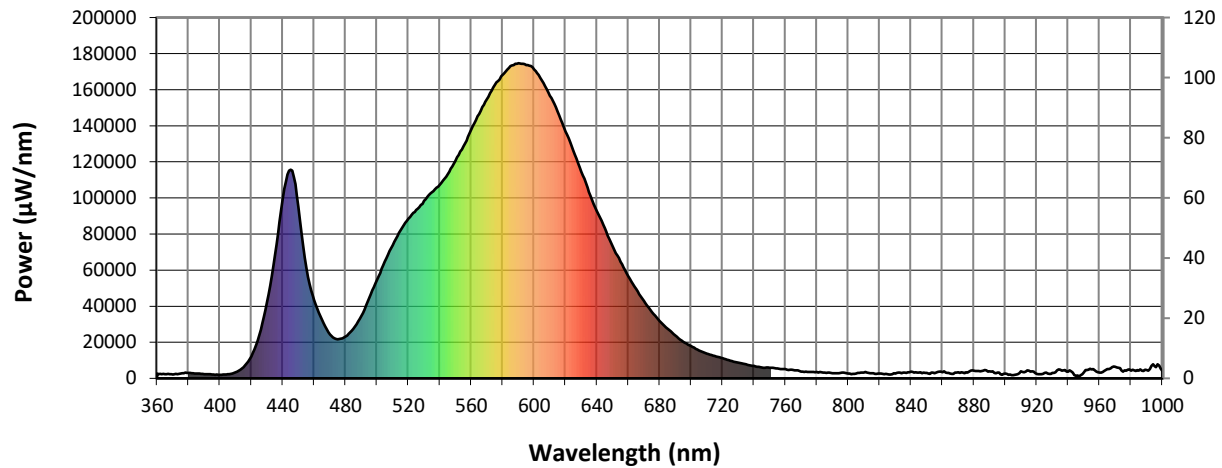
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2101-121-7

### Photopic Flux vs. Wavelength

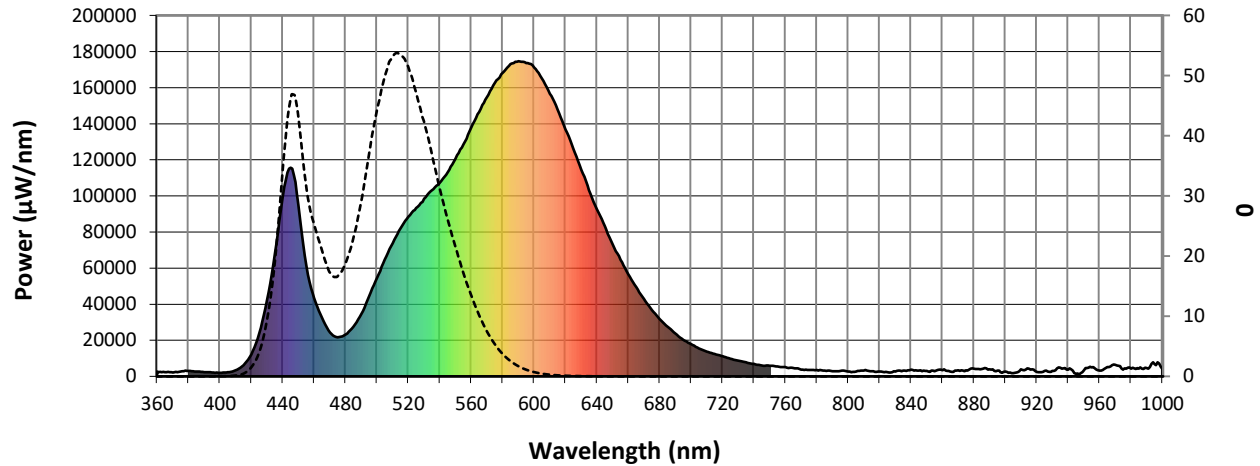


#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2672             | 0.0              | 490       | 34553            | 4.9              | 620       | 136720           | 35.6             | 750       | 5870             | 0.0              | 880       | 4216             | 0.0              |
| 365       | 2252             | 0.0              | 495       | 44336            | 8.0              | 625       | 126308           | 27.9             | 755       | 5421             | 0.0              | 885       | 4132             | 0.0              |
| 370       | 2217             | 0.0              | 500       | 54643            | 12.1             | 630       | 114625           | 20.7             | 760       | 5097             | 0.0              | 890       | 3992             | 0.0              |
| 375       | 2697             | 0.0              | 505       | 64676            | 18.1             | 635       | 103216           | 15.5             | 765       | 4626             | 0.0              | 895       | 3214             | 0.0              |
| 380       | 3039             | 0.0              | 510       | 73825            | 25.4             | 640       | 92605            | 11.1             | 770       | 3782             | 0.0              | 900       | 2580             | 0.0              |
| 385       | 2655             | 0.0              | 515       | 81872            | 33.9             | 645       | 83234            | 8.0              | 775       | 3506             | 0.0              | 905       | 1776             | 0.0              |
| 390       | 2357             | 0.0              | 520       | 88574            | 43.0             | 650       | 73263            | 5.4              | 780       | 3507             | 0.0              | 910       | 3995             | 0.0              |
| 395       | 2186             | 0.0              | 525       | 93289            | 50.1             | 655       | 64627            | 3.7              | 785       | 3267             | 0.0              | 915       | 4288             | 0.0              |
| 400       | 2015             | 0.0              | 530       | 98393            | 57.9             | 660       | 56614            | 2.4              | 790       | 2849             | 0.0              | 920       | 2446             | 0.0              |
| 405       | 2234             | 0.0              | 535       | 103269           | 64.0             | 665       | 49537            | 1.6              | 795       | 3037             | 0.0              | 925       | 3009             | 0.0              |
| 410       | 3412             | 0.0              | 540       | 107316           | 69.9             | 670       | 42866            | 0.9              | 800       | 2716             | 0.0              | 930       | 3026             | 0.0              |
| 415       | 6135             | 0.0              | 545       | 113101           | 75.3             | 675       | 36708            | 0.6              | 805       | 2648             | 0.0              | 935       | 4734             | 0.0              |
| 420       | 12146            | 0.0              | 550       | 120690           | 82.0             | 680       | 31814            | 0.4              | 810       | 3187             | 0.0              | 940       | 3719             | 0.0              |
| 425       | 23983            | 0.1              | 555       | 128583           | 87.8             | 685       | 27485            | 0.2              | 815       | 2931             | 0.0              | 945       | 1480             | 0.0              |
| 430       | 42142            | 0.3              | 560       | 137796           | 93.6             | 690       | 23698            | 0.1              | 820       | 2717             | 0.0              | 950       | 3450             | 0.0              |
| 435       | 68228            | 0.8              | 565       | 146577           | 97.5             | 695       | 20309            | 0.1              | 825       | 2236             | 0.0              | 955       | 5051             | 0.0              |
| 440       | 99323            | 1.6              | 570       | 154581           | 100.5            | 700       | 17890            | 0.1              | 830       | 2628             | 0.0              | 960       | 3176             | 0.0              |
| 445       | 115584           | 2.4              | 575       | 162633           | 101.2            | 705       | 15500            | 0.0              | 835       | 3140             | 0.0              | 965       | 5178             | 0.0              |
| 450       | 94997            | 2.5              | 580       | 168101           | 99.9             | 710       | 13699            | 0.0              | 840       | 3675             | 0.0              | 970       | 6385             | 0.0              |
| 455       | 61433            | 2.1              | 585       | 173145           | 96.2             | 715       | 12398            | 0.0              | 845       | 3283             | 0.0              | 975       | 3810             | 0.0              |
| 460       | 43373            | 1.8              | 590       | 174675           | 90.3             | 720       | 11147            | 0.0              | 850       | 3055             | 0.0              | 980       | 4322             | 0.0              |
| 465       | 32472            | 1.7              | 595       | 173724           | 82.3             | 725       | 9761             | 0.0              | 855       | 2932             | 0.0              | 985       | 4200             | 0.0              |
| 470       | 24257            | 1.5              | 600       | 171241           | 73.8             | 730       | 8651             | 0.0              | 860       | 3382             | 0.0              | 990       | 4661             | 0.0              |
| 475       | 21690            | 1.7              | 605       | 165134           | 64.0             | 735       | 7730             | 0.0              | 865       | 2605             | 0.0              | 995       | 6746             | 0.0              |
| 480       | 23173            | 2.2              | 610       | 156652           | 53.8             | 740       | 6847             | 0.0              | 870       | 3325             | 0.0              | 1000      | 4150             | 0.0              |
| 485       | 27564            | 3.3              | 615       | 147879           | 44.6             | 745       | 6124             | 0.0              | 875       | 3325             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-7

### Scotopic Flux vs. Wavelength



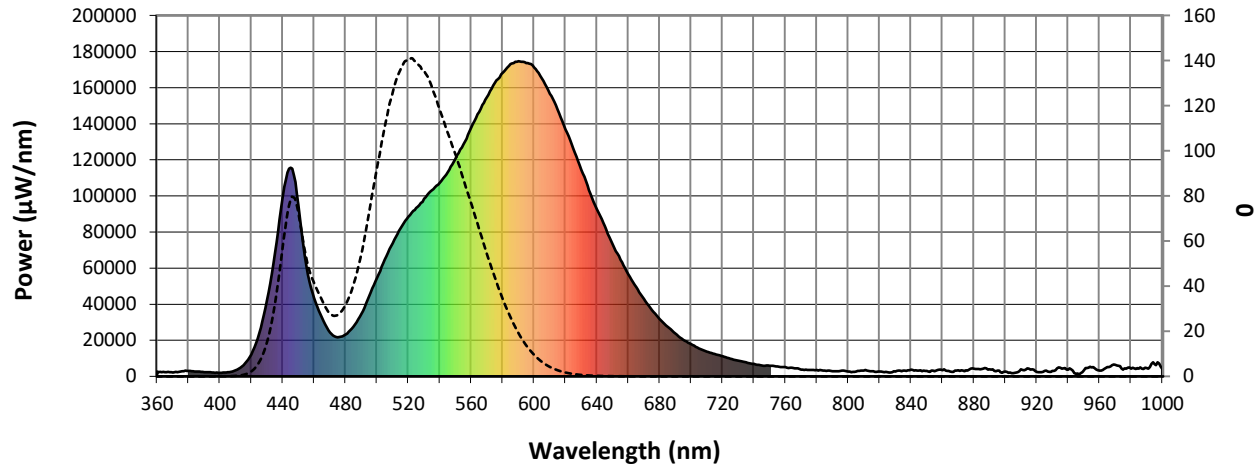
Scotopic Lumens: 12126

S/P: 1.36

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2672             | 0.0              | 490       | 34553            | 53.2             | 620       | 136720           | 1.7              | 750       | 5870             | 0.0              | 880       | 4216             | 0.0              |
| 365       | 2252             | 0.0              | 495       | 44336            | 71.7             | 625       | 126308           | 1.1              | 755       | 5421             | 0.0              | 885       | 4132             | 0.0              |
| 370       | 2217             | 0.0              | 500       | 54643            | 91.4             | 630       | 114625           | 0.6              | 760       | 5097             | 0.0              | 890       | 3992             | 0.0              |
| 375       | 2697             | 0.0              | 505       | 64676            | 110.0            | 635       | 103216           | 0.4              | 765       | 4626             | 0.0              | 895       | 3214             | 0.0              |
| 380       | 3039             | 0.0              | 510       | 73825            | 125.1            | 640       | 92605            | 0.2              | 770       | 3782             | 0.0              | 900       | 2580             | 0.0              |
| 385       | 2655             | 0.0              | 515       | 81872            | 135.7            | 645       | 83234            | 0.1              | 775       | 3506             | 0.0              | 905       | 1776             | 0.0              |
| 390       | 2357             | 0.0              | 520       | 88574            | 140.8            | 650       | 73263            | 0.1              | 780       | 3507             | 0.0              | 910       | 3995             | 0.0              |
| 395       | 2186             | 0.0              | 525       | 93289            | 139.6            | 655       | 64627            | 0.1              | 785       | 3267             | 0.0              | 915       | 4288             | 0.0              |
| 400       | 2015             | 0.0              | 530       | 98393            | 135.7            | 660       | 56614            | 0.0              | 790       | 2849             | 0.0              | 920       | 2446             | 0.0              |
| 405       | 2234             | 0.1              | 535       | 103269           | 128.7            | 665       | 49537            | 0.0              | 795       | 3037             | 0.0              | 925       | 3009             | 0.0              |
| 410       | 3412             | 0.2              | 540       | 107316           | 118.6            | 670       | 42866            | 0.0              | 800       | 2716             | 0.0              | 930       | 3026             | 0.0              |
| 415       | 6135             | 0.6              | 545       | 113101           | 108.4            | 675       | 36708            | 0.0              | 805       | 2648             | 0.0              | 935       | 4734             | 0.0              |
| 420       | 12146            | 2.0              | 550       | 120690           | 98.7             | 680       | 31814            | 0.0              | 810       | 3187             | 0.0              | 940       | 3719             | 0.0              |
| 425       | 23983            | 5.9              | 555       | 128583           | 87.9             | 685       | 27485            | 0.0              | 815       | 2931             | 0.0              | 945       | 1480             | 0.0              |
| 430       | 42142            | 14.3             | 560       | 137796           | 77.0             | 690       | 23698            | 0.0              | 820       | 2717             | 0.0              | 950       | 3450             | 0.0              |
| 435       | 68228            | 30.5             | 565       | 146577           | 65.8             | 695       | 20309            | 0.0              | 825       | 2236             | 0.0              | 955       | 5051             | 0.0              |
| 440       | 99323            | 55.5             | 570       | 154581           | 54.6             | 700       | 17890            | 0.0              | 830       | 2628             | 0.0              | 960       | 3176             | 0.0              |
| 445       | 115584           | 77.4             | 575       | 162633           | 44.3             | 705       | 15500            | 0.0              | 835       | 3140             | 0.0              | 965       | 5178             | 0.0              |
| 450       | 94997            | 73.6             | 580       | 168101           | 34.6             | 710       | 13699            | 0.0              | 840       | 3675             | 0.0              | 970       | 6385             | 0.0              |
| 455       | 61433            | 53.7             | 585       | 173145           | 26.5             | 715       | 12398            | 0.0              | 845       | 3283             | 0.0              | 975       | 3810             | 0.0              |
| 460       | 43373            | 41.9             | 590       | 174675           | 19.5             | 720       | 11147            | 0.0              | 850       | 3055             | 0.0              | 980       | 4322             | 0.0              |
| 465       | 32472            | 34.3             | 595       | 173724           | 13.9             | 725       | 9761             | 0.0              | 855       | 2932             | 0.0              | 985       | 4200             | 0.0              |
| 470       | 24257            | 27.9             | 600       | 171241           | 9.7              | 730       | 8651             | 0.0              | 860       | 3382             | 0.0              | 990       | 4661             | 0.0              |
| 475       | 21690            | 27.1             | 605       | 165134           | 6.5              | 735       | 7730             | 0.0              | 865       | 2605             | 0.0              | 995       | 6746             | 0.0              |
| 480       | 23173            | 31.3             | 610       | 156652           | 4.2              | 740       | 6847             | 0.0              | 870       | 3325             | 0.0              | 1000      | 4150             | 0.0              |
| 485       | 27564            | 40.0             | 615       | 147879           | 2.7              | 745       | 6124             | 0.0              | 875       | 3325             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-7

### Melanopic Flux vs. Wavelength



Melanopic Lumens: 4490.7

M/P: 0.5

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2672             | 0.0              | 490       | 34553            | 28.8             | 620       | 136720           | 0.1              | 750       | 5870             | 0.0              | 880       | 4216             | 0.0              |
| 365       | 2252             | 0.0              | 495       | 44336            | 36.6             | 625       | 126308           | 0.1              | 755       | 5421             | 0.0              | 885       | 4132             | 0.0              |
| 370       | 2217             | 0.0              | 500       | 54643            | 43.9             | 630       | 114625           | 0.0              | 760       | 5097             | 0.0              | 890       | 3992             | 0.0              |
| 375       | 2697             | 0.0              | 505       | 64676            | 49.6             | 635       | 103216           | 0.0              | 765       | 4626             | 0.0              | 895       | 3214             | 0.0              |
| 380       | 3039             | 0.0              | 510       | 73825            | 53.0             | 640       | 92605            | 0.0              | 770       | 3782             | 0.0              | 900       | 2580             | 0.0              |
| 385       | 2655             | 0.0              | 515       | 81872            | 53.5             | 645       | 83234            | 0.0              | 775       | 3506             | 0.0              | 905       | 1776             | 0.0              |
| 390       | 2357             | 0.0              | 520       | 88574            | 51.6             | 650       | 73263            | 0.0              | 780       | 3507             | 0.0              | 910       | 3995             | 0.0              |
| 395       | 2186             | 0.0              | 525       | 93289            | 47.3             | 655       | 64627            | 0.0              | 785       | 3267             | 0.0              | 915       | 4288             | 0.0              |
| 400       | 2015             | 0.0              | 530       | 98393            | 42.5             | 660       | 56614            | 0.0              | 790       | 2849             | 0.0              | 920       | 2446             | 0.0              |
| 405       | 2234             | 0.0              | 535       | 103269           | 37.2             | 665       | 49537            | 0.0              | 795       | 3037             | 0.0              | 925       | 3009             | 0.0              |
| 410       | 3412             | 0.1              | 540       | 107316           | 31.4             | 670       | 42866            | 0.0              | 800       | 2716             | 0.0              | 930       | 3026             | 0.0              |
| 415       | 6135             | 0.4              | 545       | 113101           | 26.3             | 675       | 36708            | 0.0              | 805       | 2648             | 0.0              | 935       | 4734             | 0.0              |
| 420       | 12146            | 1.4              | 550       | 120690           | 21.7             | 680       | 31814            | 0.0              | 810       | 3187             | 0.0              | 940       | 3719             | 0.0              |
| 425       | 23983            | 3.7              | 555       | 128583           | 17.3             | 685       | 27485            | 0.0              | 815       | 2931             | 0.0              | 945       | 1480             | 0.0              |
| 430       | 42142            | 8.9              | 560       | 137796           | 13.6             | 690       | 23698            | 0.0              | 820       | 2717             | 0.0              | 950       | 3450             | 0.0              |
| 435       | 68228            | 18.2             | 565       | 146577           | 10.3             | 695       | 20309            | 0.0              | 825       | 2236             | 0.0              | 955       | 5051             | 0.0              |
| 440       | 99323            | 33.2             | 570       | 154581           | 7.6              | 700       | 17890            | 0.0              | 830       | 2628             | 0.0              | 960       | 3176             | 0.0              |
| 445       | 115584           | 45.6             | 575       | 162633           | 5.4              | 705       | 15500            | 0.0              | 835       | 3140             | 0.0              | 965       | 5178             | 0.0              |
| 450       | 94997            | 43.8             | 580       | 168101           | 3.8              | 710       | 13699            | 0.0              | 840       | 3675             | 0.0              | 970       | 6385             | 0.0              |
| 455       | 61433            | 32.2             | 585       | 173145           | 2.6              | 715       | 12398            | 0.0              | 845       | 3283             | 0.0              | 975       | 3810             | 0.0              |
| 460       | 43373            | 25.6             | 590       | 174675           | 1.7              | 720       | 11147            | 0.0              | 850       | 3055             | 0.0              | 980       | 4322             | 0.0              |
| 465       | 32472            | 21.2             | 595       | 173724           | 1.1              | 725       | 9761             | 0.0              | 855       | 2932             | 0.0              | 985       | 4200             | 0.0              |
| 470       | 24257            | 17.4             | 600       | 171241           | 0.7              | 730       | 8651             | 0.0              | 860       | 3382             | 0.0              | 990       | 4661             | 0.0              |
| 475       | 21690            | 16.6             | 605       | 165134           | 0.5              | 735       | 7730             | 0.0              | 865       | 2605             | 0.0              | 995       | 6746             | 0.0              |
| 480       | 23173            | 18.6             | 610       | 156652           | 0.3              | 740       | 6847             | 0.0              | 870       | 3325             | 0.0              | 1000      | 4150             | 0.0              |
| 485       | 27564            | 22.7             | 615       | 147879           | 0.2              | 745       | 6124             | 0.0              | 875       | 3325             | 0.0              |           |                  |                  |

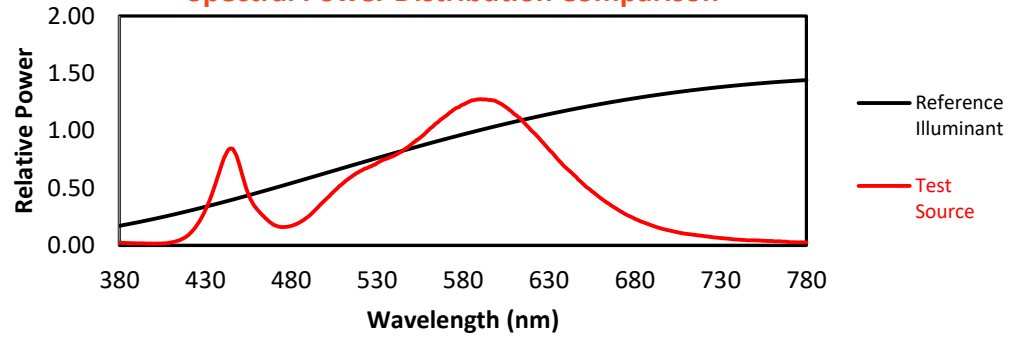
REPORT NUMBER: SP1-2101-121-7

TM-30-18

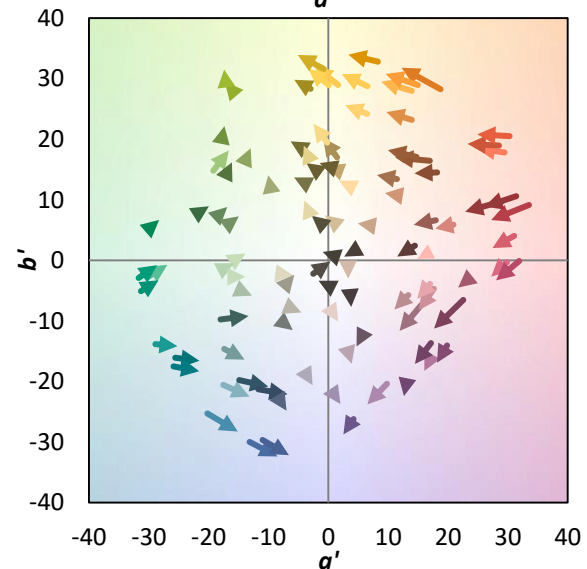
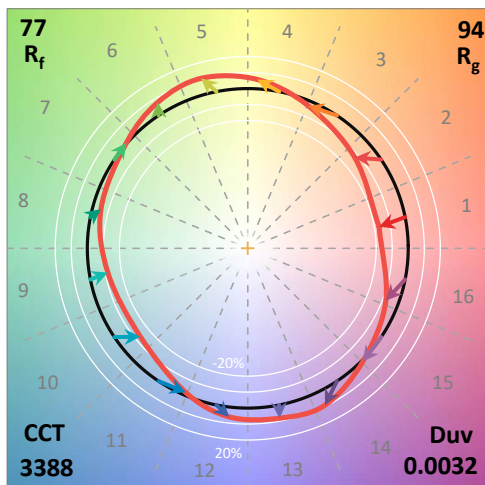
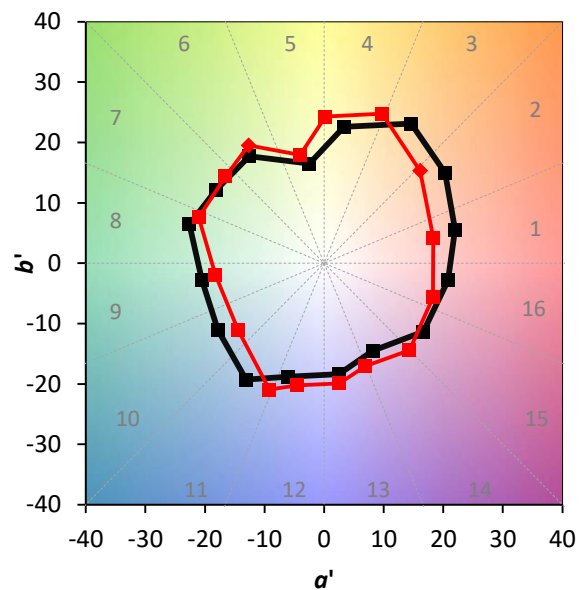
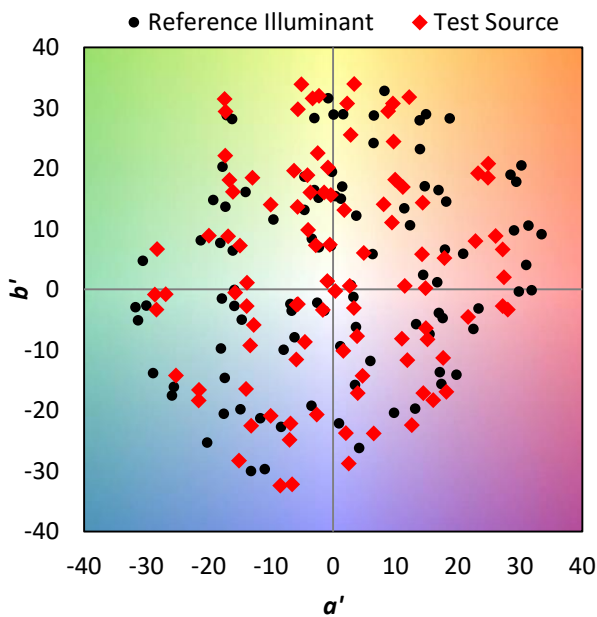
### Summary

$R_f = 76.9$   
 $R_g = 94.4$   
 CIE  $R_a = 73.1$   
 $R_g = -34.6$

### Spectral Power Distribution Comparison



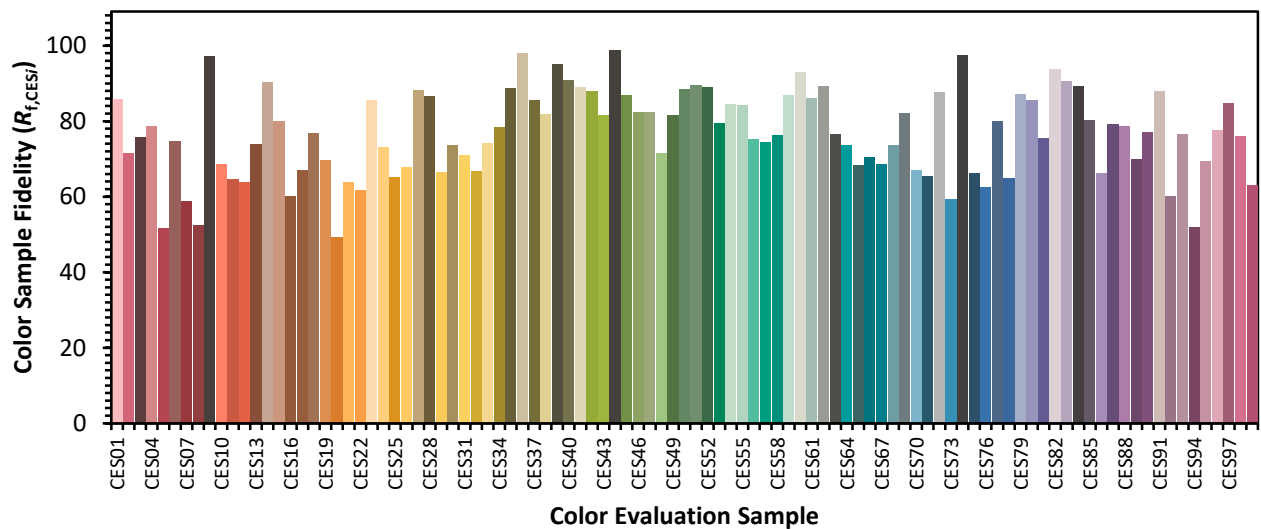
### Color Vector Graphics

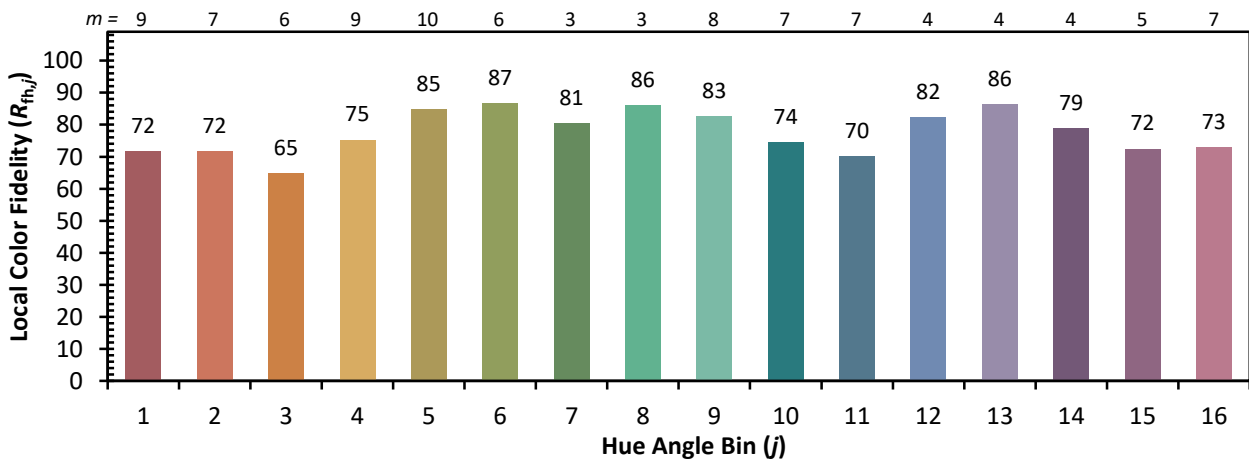
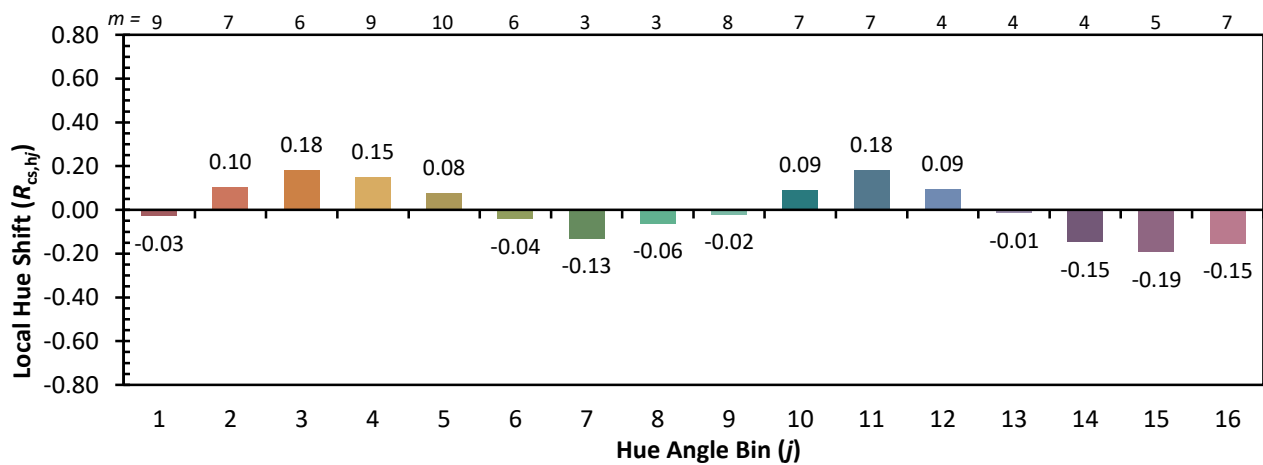
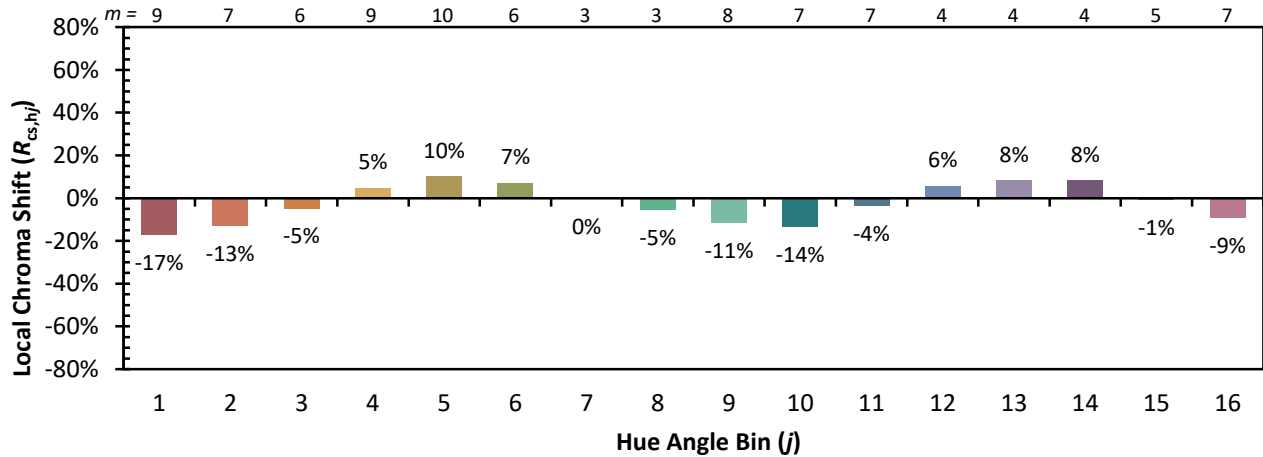




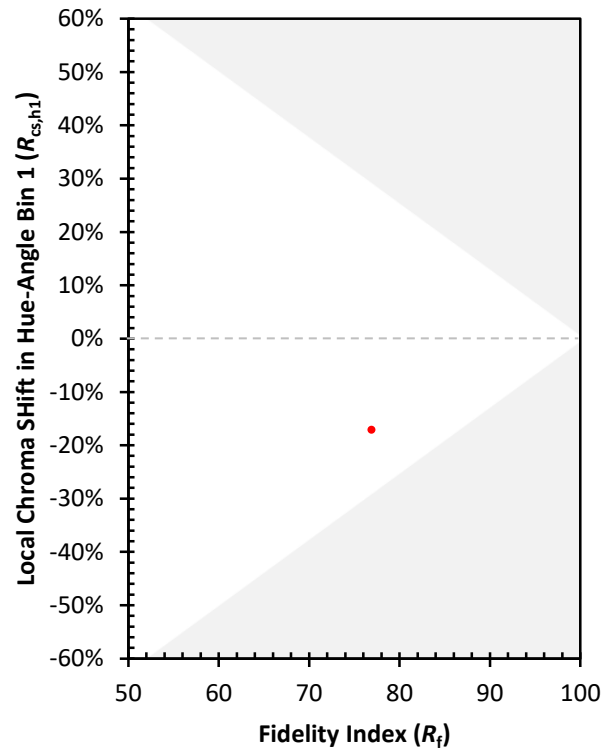
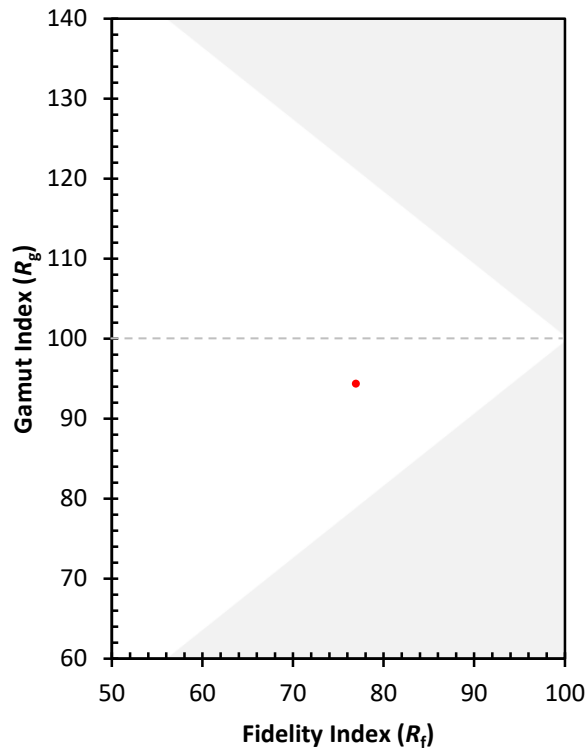
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 68 | CES51 = 90 | CES76 = 63 |
| CES02 = 62 | CES27 = 88 | CES52 = 89 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 80 | CES78 = 65 |
| CES04 = 70 | CES29 = 67 | CES54 = 84 | CES79 = 87 |
| CES05 = 48 | CES30 = 74 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 71 | CES56 = 75 | CES81 = 75 |
| CES07 = 40 | CES32 = 67 | CES57 = 74 | CES82 = 94 |
| CES08 = 39 | CES33 = 74 | CES58 = 76 | CES83 = 91 |
| CES09 = 29 | CES34 = 78 | CES59 = 87 | CES84 = 89 |
| CES10 = 75 | CES35 = 89 | CES60 = 93 | CES85 = 80 |
| CES11 = 58 | CES36 = 98 | CES61 = 86 | CES86 = 66 |
| CES12 = 64 | CES37 = 86 | CES62 = 89 | CES87 = 79 |
| CES13 = 43 | CES38 = 82 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 95 | CES64 = 74 | CES89 = 70 |
| CES15 = 71 | CES40 = 91 | CES65 = 68 | CES90 = 77 |
| CES16 = 47 | CES41 = 89 | CES66 = 71 | CES91 = 88 |
| CES17 = 50 | CES42 = 88 | CES67 = 69 | CES92 = 60 |
| CES18 = 56 | CES43 = 82 | CES68 = 74 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 82 | CES94 = 52 |
| CES20 = 65 | CES45 = 87 | CES70 = 67 | CES95 = 69 |
| CES21 = 86 | CES46 = 82 | CES71 = 66 | CES96 = 78 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 85 |
| CES23 = 92 | CES48 = 72 | CES73 = 59 | CES98 = 76 |
| CES24 = 91 | CES49 = 82 | CES74 = 97 | CES99 = 63 |
| CES25 = 72 | CES50 = 88 | CES75 = 66 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)