

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P635746

Luminaire Tested: GWS-SA3E-735-U-T3-W-GRSBK

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P635746  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-24)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA3E-735-U-T3-W-GRSBK  
Description: GALLEON WALL SLIM LUMINAIRE. (3) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK  
Light Source: (48) 3500K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

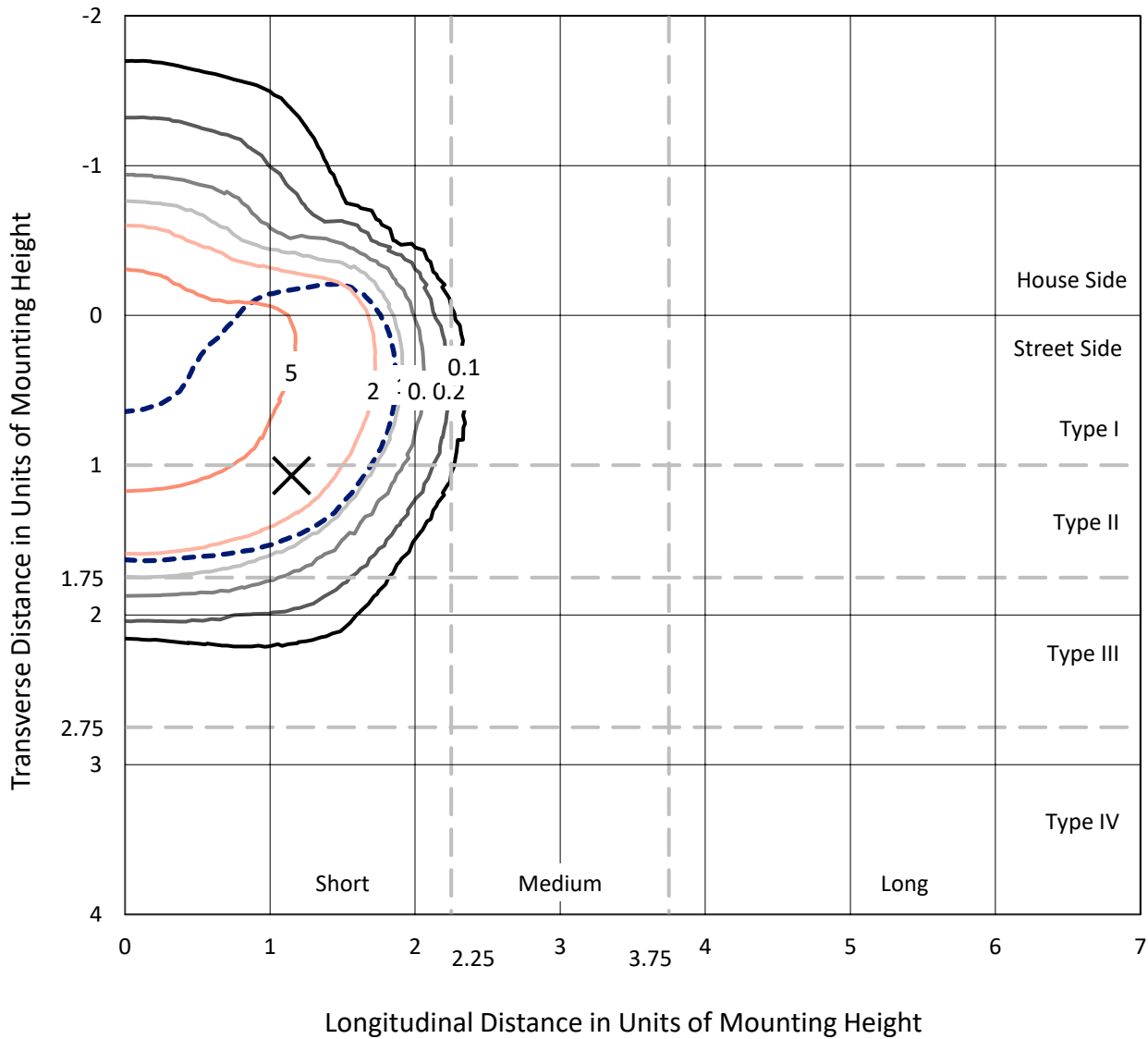
Lumens per Lamp: N/A  
Luminaire Lumens: 13393.9 lumens  
Efficiency: N/A  
Efficacy: 84.1 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 0.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B2 - U0 - G1  
  
Input Watts (W): 159.2  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 0  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



REPORT NUMBER: P635746  
 CATALOG NUMBER: GWS-SA3E-735-U-T3-W-GRSBK

### Iso-Footcandle Lines of Horizontal Illumination

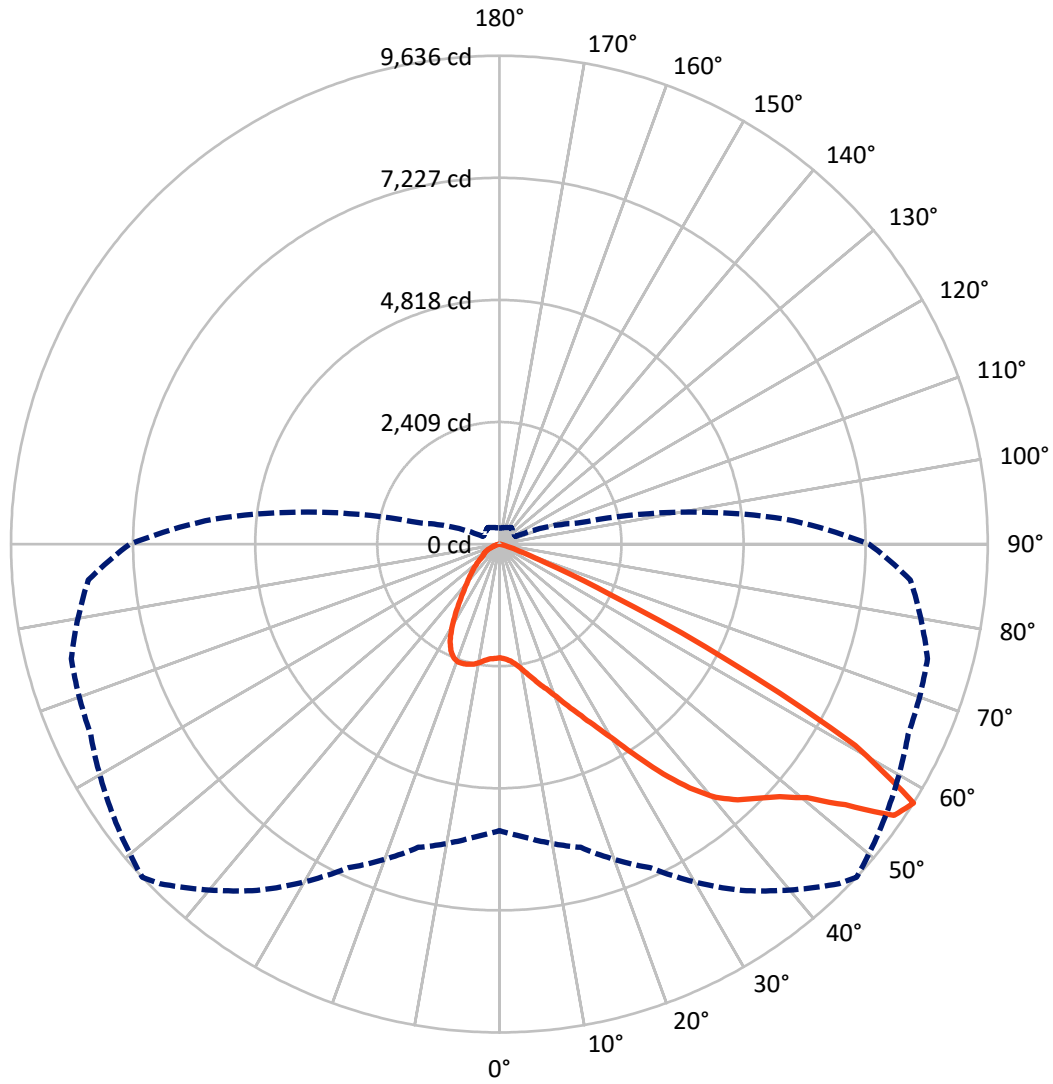
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 7.9 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 47-Deg Lateral    - - - Horizontal Cone Through 57.5-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2905.8   | 0.0    | 2905.8  |
|                    | % Fixture | 21.7     | 0.0    | 21.7    |
| <b>Street Side</b> | Lumens    | 10488.1  | 0.0    | 10488.1 |
|                    | % Fixture | 78.3     | 0.0    | 78.3    |
| <b>Total</b>       | Lumens    | 13393.9  | 0.0    | 13393.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 223.1   | 1.7       |
| 10°-20°   | 752.7   | 5.6       |
| 20°-30°   | 1397.6  | 10.4      |
| 30°-40°   | 2237.2  | 16.7      |
| 40°-50°   | 3270.3  | 24.4      |
| 50°-60°   | 4036.1  | 30.1      |
| 60°-70°   | 1348.6  | 10.1      |
| 70°-80°   | 125.7   | 0.9       |
| 80°-90°   | 2.6     | 0.0       |
| 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°    | 13393.9 | 100.0     |
| 0°-180°   | 13393.9 | 100.0     |

**Coefficient of Utilization**



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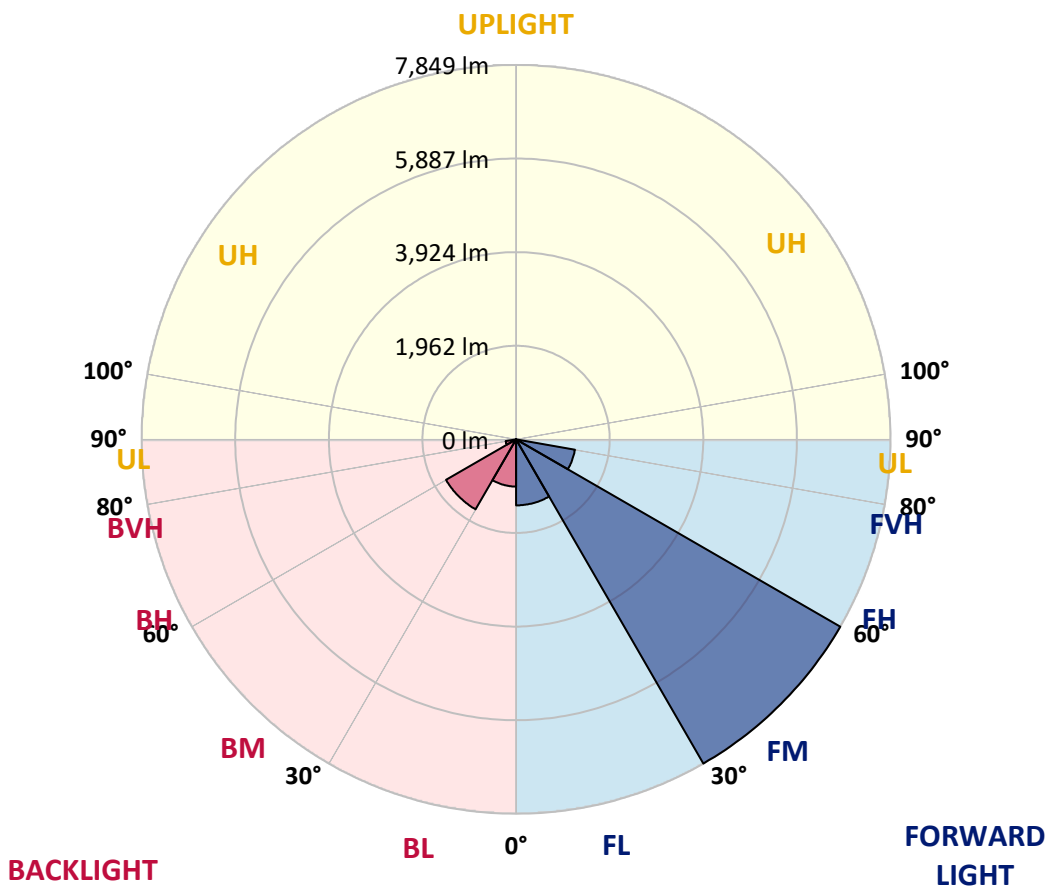
CATALOG NUMBER: GWS-SA3E-735-U-T3-W-GRSBK

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1384.2 | 10.3      |                         |      |         |
| FM (30°-60°)   | 7848.7 | 58.6      |                         |      |         |
| FH (60°-80°)   | 1253.4 | 9.4       |                         |      | G1/1800 |
| FVH (80°-90°)  | 1.8    | 0.0       |                         |      | G0/10   |
| BL (0°-30°)    | 989.1  | 7.4       | B2/1000                 |      |         |
| BM (30°-60°)   | 1695.0 | 12.7      | B2/2500                 |      |         |
| BH (60°-80°)   | 220.9  | 1.6       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 0.8    | 0.0       |                         |      | G0/10   |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G1**

Type II Short





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CATALOG NUMBER: GWS-SA3E-735-U-T3-W-GRSBK

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 47°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 |
| 2.5°  | 2265.5 | 2263.9 | 2262.4 | 2271.7 | 2268.6 | 2267.0 | 2270.1 | 2270.1 | 2270.1 | 2260.8 | 2242.2 |
| 5°    | 2319.9 | 2319.9 | 2318.3 | 2327.7 | 2319.9 | 2315.2 | 2316.8 | 2316.8 | 2310.6 | 2293.5 | 2270.1 |
| 7.5°  | 2405.4 | 2402.3 | 2399.2 | 2408.5 | 2400.8 | 2399.2 | 2402.3 | 2393.0 | 2382.1 | 2354.1 | 2321.5 |
| 10°   | 2528.3 | 2528.3 | 2523.6 | 2532.9 | 2526.7 | 2523.6 | 2523.6 | 2517.4 | 2497.2 | 2453.6 | 2405.4 |
| 12.5° | 2697.7 | 2690.0 | 2679.1 | 2671.3 | 2668.2 | 2666.6 | 2668.2 | 2658.9 | 2637.1 | 2581.1 | 2514.3 |
| 15°   | 2882.8 | 2876.5 | 2859.4 | 2847.0 | 2829.9 | 2826.8 | 2836.1 | 2828.3 | 2806.6 | 2730.4 | 2635.5 |
| 17.5° | 3116.0 | 3123.8 | 3080.2 | 3053.8 | 3004.0 | 3000.9 | 3004.0 | 3016.5 | 3000.9 | 2903.0 | 2764.6 |
| 20°   | 3315.0 | 3321.2 | 3288.6 | 3269.9 | 3224.8 | 3204.6 | 3210.9 | 3231.1 | 3214.0 | 3098.9 | 2906.1 |
| 22.5° | 3528.0 | 3535.8 | 3501.6 | 3462.7 | 3442.5 | 3442.5 | 3465.9 | 3493.8 | 3470.5 | 3319.7 | 3067.8 |
| 25°   | 3783.1 | 3789.3 | 3761.3 | 3710.0 | 3674.2 | 3719.3 | 3753.5 | 3828.1 | 3789.3 | 3584.0 | 3259.1 |
| 27.5° | 4075.4 | 4076.9 | 4036.5 | 3983.6 | 3965.0 | 4048.9 | 4083.1 | 4198.2 | 4182.7 | 3881.0 | 3461.2 |
| 30°   | 4387.9 | 4389.5 | 4380.1 | 4344.4 | 4327.3 | 4437.7 | 4484.3 | 4650.7 | 4639.8 | 4249.5 | 3736.4 |
| 32.5° | 4712.9 | 4712.9 | 4730.0 | 4726.9 | 4747.1 | 4927.5 | 5002.1 | 5191.8 | 5180.9 | 4700.4 | 4078.5 |
| 35°   | 5039.4 | 5041.0 | 5070.5 | 5145.1 | 5229.1 | 5468.6 | 5566.5 | 5796.6 | 5771.8 | 5240.0 | 4515.4 |
| 37.5° | 5411.0 | 5395.5 | 5435.9 | 5547.9 | 5734.4 | 6011.2 | 6104.5 | 6323.7 | 6295.8 | 5792.0 | 5086.0 |
| 40°   | 5858.8 | 5830.8 | 5830.8 | 5961.5 | 6172.9 | 6491.7 | 6571.0 | 6679.8 | 6585.0 | 6238.2 | 5645.8 |
| 42.5° | 6353.3 | 6326.9 | 6292.6 | 6407.7 | 6585.0 | 6833.7 | 6899.1 | 6869.5 | 6791.8 | 6659.6 | 6283.3 |
| 45°   | 6854.0 | 6813.5 | 6836.9 | 6906.8 | 7009.4 | 7127.6 | 7152.5 | 7015.7 | 6979.9 | 7017.2 | 6810.4 |
| 47.5° | 7234.9 | 7206.9 | 7264.5 | 7362.4 | 7446.4 | 7463.5 | 7446.4 | 7256.7 | 7253.6 | 7385.7 | 7175.8 |
| 50°   | 7362.4 | 7365.5 | 7524.1 | 7738.7 | 7874.0 | 7888.0 | 7864.6 | 7647.0 | 7617.4 | 7656.3 | 7373.3 |
| 52.5° | 7374.8 | 7387.3 | 7619.0 | 8027.9 | 8396.4 | 8564.3 | 8545.7 | 8310.9 | 8021.7 | 7979.7 | 7671.8 |
| 55°   | 7074.8 | 7147.8 | 7471.3 | 8068.3 | 8852.0 | 9388.4 | 9450.6 | 9001.3 | 8572.1 | 8536.4 | 8314.0 |
| 57.5° | 5655.1 | 5804.4 | 6194.7 | 7045.2 | 8343.5 | 9474.0 | 9635.7 | 9312.2 | 8897.1 | 8744.7 | 8141.4 |
| 60°   | 3380.3 | 3565.4 | 3940.1 | 4983.4 | 6350.2 | 7786.9 | 8065.2 | 8110.3 | 7919.1 | 7479.0 | 6246.0 |
| 62.5° | 1450.7 | 1435.2 | 1897.0 | 2696.2 | 3776.8 | 4949.2 | 5075.2 | 5271.1 | 5437.5 | 4977.2 | 3790.8 |
| 65°   | 497.6  | 541.1  | 752.6  | 1215.9 | 1890.7 | 2298.1 | 2410.1 | 2585.8 | 2822.1 | 2329.2 | 1388.5 |
| 67.5° | 307.9  | 326.5  | 433.8  | 718.4  | 1020.0 | 1004.5 | 954.7  | 926.7  | 901.8  | 617.3  | 380.9  |
| 70°   | 223.9  | 239.5  | 304.8  | 494.5  | 685.7  | 482.0  | 418.3  | 339.0  | 376.3  | 346.7  | 270.6  |
| 72.5° | 150.8  | 163.3  | 209.9  | 300.1  | 351.4  | 234.8  | 217.7  | 247.2  | 298.5  | 284.5  | 220.8  |
| 75°   | 90.2   | 98.0   | 119.7  | 146.2  | 143.0  | 121.3  | 122.8  | 174.1  | 228.6  | 213.0  | 157.0  |
| 77.5° | 62.2   | 65.3   | 79.3   | 94.8   | 70.0   | 37.3   | 34.2   | 48.2   | 77.7   | 77.7   | 52.9   |
| 80°   | 15.5   | 20.2   | 20.2   | 12.4   | 10.9   | 9.3    | 9.3    | 14.0   | 21.8   | 15.5   | 7.8    |
| 82.5° | 1.6    | 1.6    | 1.6    | 1.6    | 1.6    | 1.6    | 1.6    | 3.1    | 3.1    | 3.1    | 3.1    |
| 85°   | 0.0    | 0.0    | 1.6    | 1.6    | 1.6    | 1.6    | 1.6    | 1.6    | 3.1    | 3.1    | 3.1    |
| 87.5° | 0.0    | 0.0    | 1.6    | 1.6    | 1.6    | 1.6    | 1.6    | 1.6    | 1.6    | 3.1    | 3.1    |
| 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: P635746

CATALOG NUMBER: GWS-SA3E-735-U-T3-W-GRSBK

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 | 2242.2 |
| 2.5°  | 2253.0 | 2234.4 | 2246.8 | 2243.7 | 2253.0 | 2256.1 | 2242.2 | 2239.0 | 2240.6 | 2221.9 | 2215.7 |
| 5°    | 2274.8 | 2253.0 | 2259.3 | 2253.0 | 2263.9 | 2273.3 | 2268.6 | 2274.8 | 2282.6 | 2268.6 | 2262.4 |
| 7.5°  | 2321.5 | 2299.7 | 2298.1 | 2288.8 | 2304.3 | 2310.6 | 2309.0 | 2326.1 | 2341.7 | 2332.3 | 2323.0 |
| 10°   | 2402.3 | 2372.8 | 2369.7 | 2361.9 | 2366.5 | 2371.2 | 2354.1 | 2357.2 | 2371.2 | 2360.3 | 2355.7 |
| 12.5° | 2501.8 | 2466.1 | 2458.3 | 2439.6 | 2439.6 | 2416.3 | 2379.0 | 2371.2 | 2382.1 | 2374.3 | 2366.5 |
| 15°   | 2609.1 | 2560.9 | 2548.5 | 2515.8 | 2484.7 | 2441.2 | 2402.3 | 2393.0 | 2400.8 | 2391.4 | 2385.2 |
| 17.5° | 2728.8 | 2674.4 | 2634.0 | 2576.5 | 2508.0 | 2456.7 | 2413.2 | 2393.0 | 2380.5 | 2361.9 | 2360.3 |
| 20°   | 2847.0 | 2775.5 | 2707.1 | 2615.3 | 2525.1 | 2447.4 | 2375.9 | 2323.0 | 2277.9 | 2249.9 | 2239.0 |
| 22.5° | 2983.8 | 2878.1 | 2767.7 | 2638.7 | 2509.6 | 2391.4 | 2265.5 | 2175.3 | 2097.5 | 2071.1 | 2058.7 |
| 25°   | 3130.0 | 2993.2 | 2828.3 | 2660.4 | 2456.7 | 2267.0 | 2096.0 | 1962.3 | 1859.6 | 1825.4 | 1811.4 |
| 27.5° | 3291.7 | 3103.6 | 2890.5 | 2655.8 | 2347.9 | 2089.8 | 1862.8 | 1696.4 | 1595.3 | 1564.2 | 1575.1 |
| 30°   | 3497.0 | 3246.6 | 2968.3 | 2607.6 | 2184.6 | 1841.0 | 1575.1 | 1435.2 | 1359.0 | 1329.4 | 1331.0 |
| 32.5° | 3770.6 | 3451.9 | 3081.8 | 2504.9 | 1974.7 | 1558.0 | 1324.8 | 1222.1 | 1170.8 | 1132.0 | 1128.9 |
| 35°   | 4162.4 | 3764.4 | 3187.5 | 2340.1 | 1719.7 | 1306.1 | 1136.6 | 1055.8 | 984.2  | 939.2  | 946.9  |
| 37.5° | 4632.0 | 4157.8 | 3245.1 | 2117.8 | 1433.6 | 1110.2 | 995.1  | 912.7  | 831.9  | 765.0  | 772.8  |
| 40°   | 5188.7 | 4672.4 | 3240.4 | 1825.4 | 1172.4 | 976.5  | 877.0  | 780.6  | 679.5  | 618.8  | 625.1  |
| 42.5° | 5809.1 | 5159.1 | 3139.3 | 1516.0 | 971.8  | 867.6  | 763.5  | 642.2  | 544.2  | 506.9  | 508.4  |
| 45°   | 6347.1 | 5554.1 | 2962.1 | 1195.7 | 817.9  | 761.9  | 645.3  | 520.9  | 477.4  | 450.9  | 449.4  |
| 47.5° | 6745.1 | 5843.3 | 2708.6 | 940.7  | 693.5  | 665.5  | 530.2  | 466.5  | 432.3  | 410.5  | 407.4  |
| 50°   | 6967.5 | 5944.3 | 2428.7 | 737.0  | 586.2  | 564.4  | 474.2  | 422.9  | 399.6  | 385.6  | 382.5  |
| 52.5° | 7266.0 | 6065.6 | 2228.2 | 581.5  | 491.3  | 461.8  | 436.9  | 393.4  | 377.8  | 367.0  | 362.3  |
| 55°   | 7738.7 | 6300.4 | 2054.0 | 461.8  | 408.9  | 402.7  | 412.0  | 376.3  | 367.0  | 349.9  | 343.6  |
| 57.5° | 7294.0 | 5659.8 | 1595.3 | 357.6  | 345.2  | 368.5  | 398.1  | 359.2  | 335.9  | 320.3  | 314.1  |
| 60°   | 5132.7 | 3762.8 | 802.3  | 287.7  | 307.9  | 345.2  | 374.7  | 325.0  | 301.6  | 304.8  | 301.6  |
| 62.5° | 2829.9 | 1883.0 | 360.7  | 241.0  | 267.4  | 304.8  | 320.3  | 281.4  | 265.9  | 292.3  | 297.0  |
| 65°   | 925.2  | 640.6  | 208.4  | 186.6  | 211.5  | 248.8  | 276.8  | 267.4  | 264.3  | 295.4  | 304.8  |
| 67.5° | 284.5  | 211.5  | 141.5  | 133.7  | 146.2  | 183.5  | 233.2  | 289.2  | 311.0  | 320.3  | 325.0  |
| 70°   | 213.0  | 166.4  | 121.3  | 113.5  | 119.7  | 139.9  | 197.5  | 241.0  | 227.0  | 228.6  | 225.5  |
| 72.5° | 171.0  | 132.2  | 104.2  | 99.5   | 99.5   | 96.4   | 104.2  | 130.6  | 147.7  | 155.5  | 155.5  |
| 75°   | 119.7  | 93.3   | 79.3   | 73.1   | 57.5   | 46.6   | 42.0   | 42.0   | 37.3   | 35.8   | 34.2   |
| 77.5° | 40.4   | 34.2   | 31.1   | 24.9   | 17.1   | 14.0   | 12.4   | 10.9   | 7.8    | 4.7    | 3.1    |
| 80°   | 6.2    | 4.7    | 3.1    | 3.1    | 3.1    | 1.6    | 1.6    | 1.6    | 0.0    | 0.0    | 0.0    |
| 82.5° | 3.1    | 3.1    | 3.1    | 3.1    | 3.1    | 1.6    | 1.6    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 3.1    | 3.1    | 3.1    | 3.1    | 3.1    | 1.6    | 1.6    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 3.1    | 3.1    | 3.1    | 3.1    | 1.6    | 1.6    | 1.6    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



LM-79-08: 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: 4π  
 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  
 CIE u': 0.2371  
 CIE v': 0.5177  
 Duv: 0.0032  
 CIE x: 0.4153  
 CIE y: 0.4030  
 CIE z: 0.1817  
 Peak Wavelength (nm): 590  
 Dominant Wavelength (nm): 580  
 Purity: 45.7  
 Rf: 76.9  
 Rg: 94.4

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 73.1 |      |       |
| R1:       | 68.9 | R9:  | -34.6 |
| R2:       | 81.1 | R10: | 57.8  |
| R3:       | 93.1 | R11: | 68.6  |
| R4:       | 71.6 | R12: | 53.9  |
| R5:       | 69.4 | R13: | 70.9  |
| R6:       | 75.0 | R14: | 96.2  |
| R7:       | 79.5 |      |       |
| R8:       | 46.4 |      |       |

**Test Conditions**

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



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| 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            |

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CIE 1931 Chromaticity Diagram



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



CCT = 3388K  
 CIE x = 0.4153  
 CIE y = 0.4030  
 Duv = 0.0032

Point lies inside the ANSI 3500K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (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**

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 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 (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (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           |        |               |               |

**Summary**

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



**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)