

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



Scaled data based on original data using  
LM-79-08 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: P319307

Luminaire Tested: **GLEON-SA3A-730-U-SL2**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P319307  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-20)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA3A-730-U-SL2  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(3) 70 CRI, 3000K, 615mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL  
LIGHT ELIMINATOR OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12693 lumens  
Efficiency: N/A  
Efficacy: 132.2 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B2 - U0 - G3

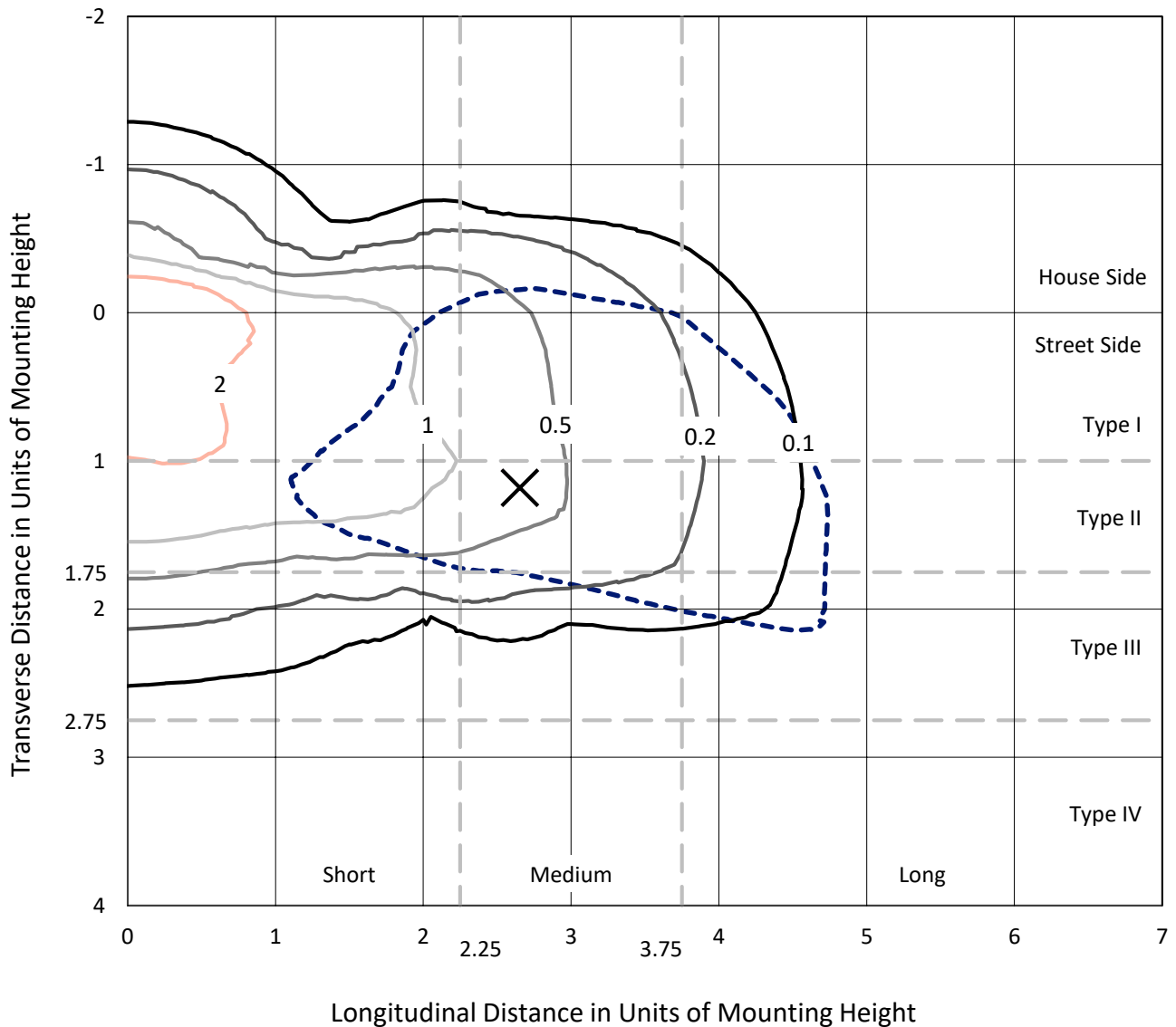
Input Watts (W): 96  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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### Iso-Footcandle Lines of Horizontal Illumination

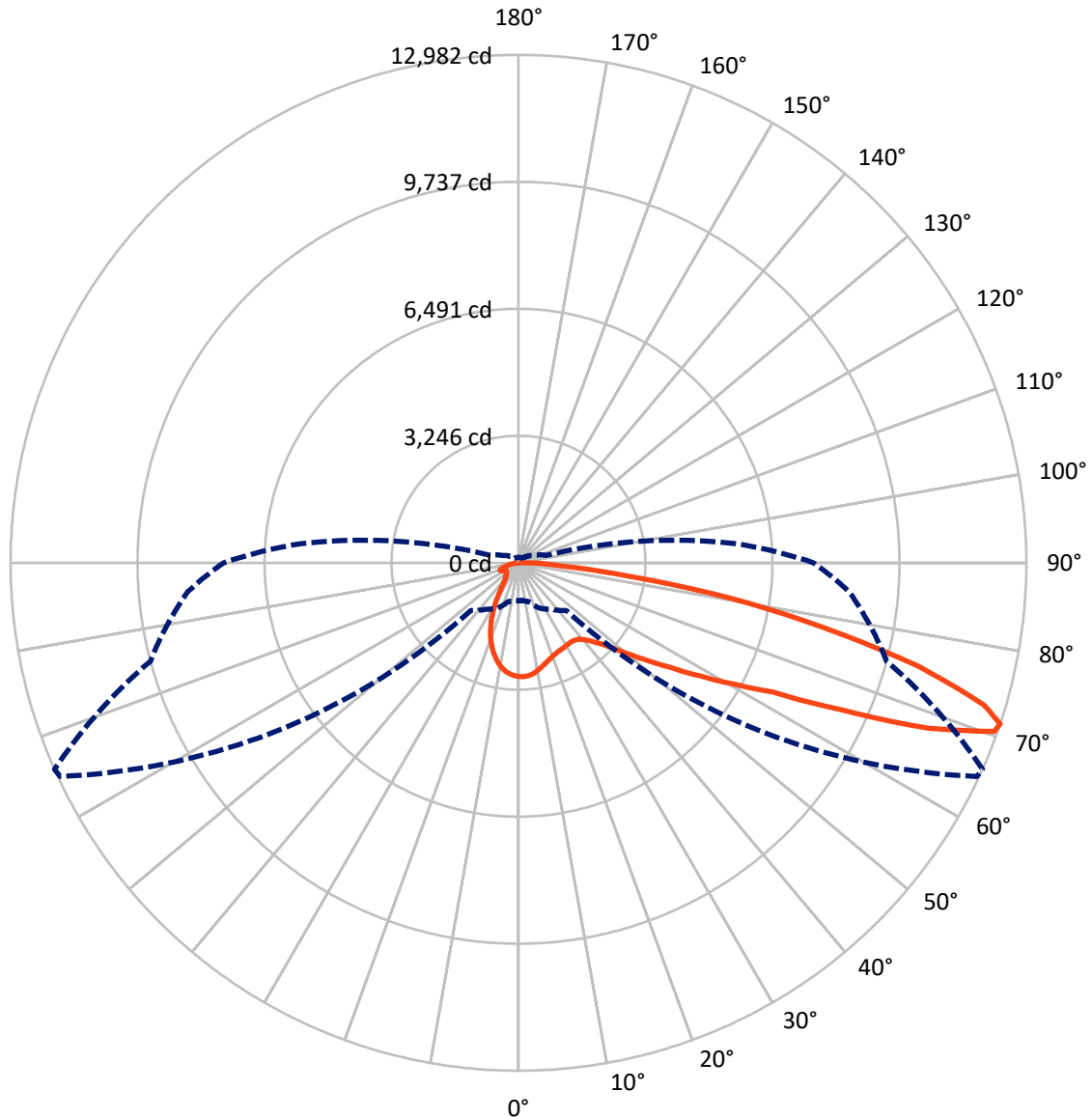
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 4.7 fc  
 Type III - Medium - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 66-Deg Lateral      - - - Horizontal Cone Through 71-Deg Vertical

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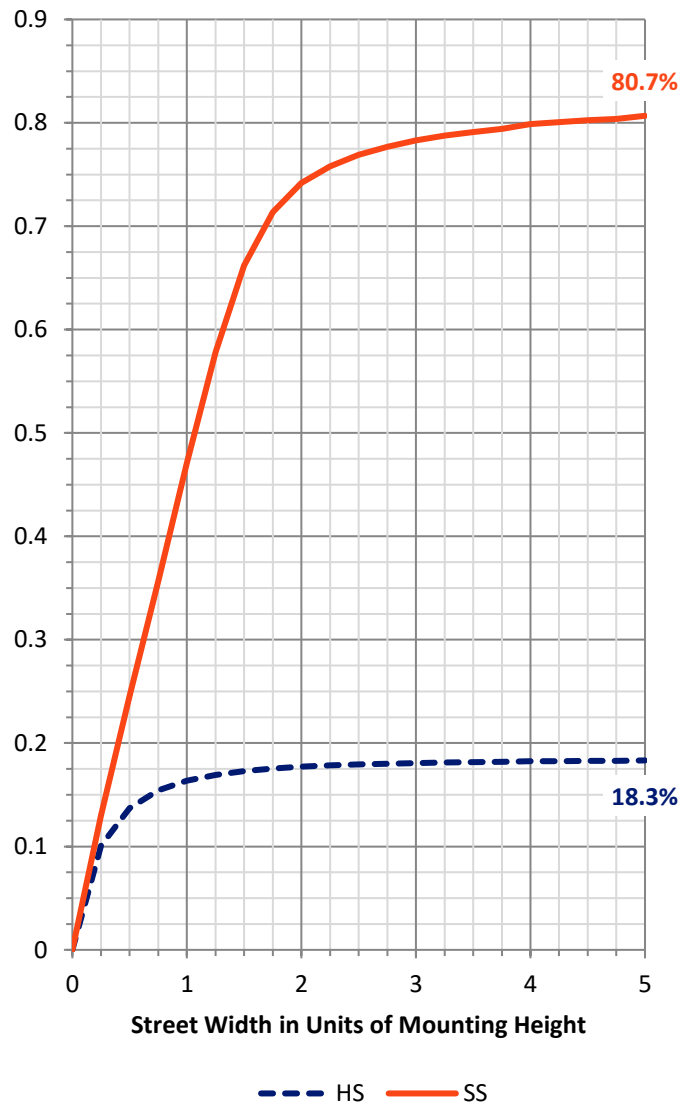
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2352.4   | 0.0    | 2352.4  |
|                    | % Fixture | 18.5     | 0.0    | 18.5    |
| <b>Street Side</b> | Lumens    | 10340.6  | 0.0    | 10340.6 |
|                    | % Fixture | 81.5     | 0.0    | 81.5    |
| <b>Total</b>       | Lumens    | 12693.0  | 0.0    | 12693.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 255.9   | 2.0       |
| 10°-20°   | 613.9   | 4.8       |
| 20°-30°   | 824.6   | 6.5       |
| 30°-40°   | 1084.7  | 8.5       |
| 40°-50°   | 1578.0  | 12.4      |
| 50°-60°   | 2465.0  | 19.4      |
| 60°-70°   | 3087.8  | 24.3      |
| 70°-80°   | 2355.3  | 18.6      |
| 80°-90°   | 427.7   | 3.4       |
| 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°    | 12693.0 | 100.0     |
| 0°-180°   | 12693.0 | 100.0     |

**Coefficient of Utilization**

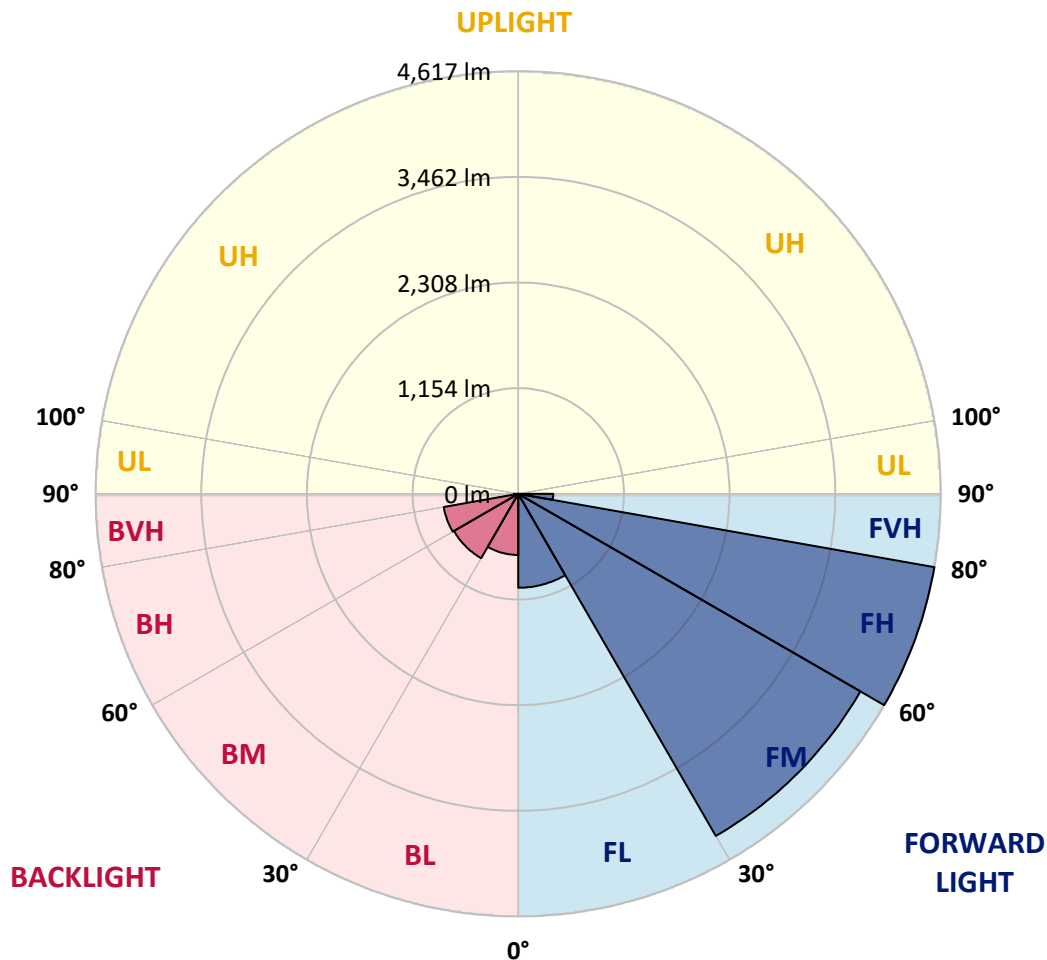


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1026.4 | 8.1       |                         |      |         |
| FM (30°-60°)   | 4316.3 | 34.0      |                         |      |         |
| FH (60°-80°)   | 4616.6 | 36.4      |                         |      | G2/5000 |
| FVH (80°-90°)  | 381.4  | 3.0       |                         |      | G3/500  |
| BL (0°-30°)    | 668.0  | 5.3       | B2/1000                 |      |         |
| BM (30°-60°)   | 811.5  | 6.4       | B1/1000                 |      |         |
| BH (60°-80°)   | 826.6  | 6.5       | B2/1000                 |      | G2/1000 |
| BVH (80°-90°)  | 46.3   | 0.4       |                         |      | G1/100  |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G3**  
 Type III Medium





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CATALOG NUMBER: GLEON-SA3A-730-U-SL2

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°     | 65°     | 66°     | 75°     | 85°    |
|-------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|--------|
| 0°    | 2907.7 | 2907.7 | 2907.7 | 2907.7 | 2907.7 | 2907.7 | 2907.7  | 2907.7  | 2907.7  | 2907.7  | 2907.7 |
| 2.5°  | 2853.8 | 2849.4 | 2862.6 | 2876.2 | 2881.4 | 2890.2 | 2903.3  | 2910.8  | 2910.4  | 2911.7  | 2907.3 |
| 5°    | 2664.5 | 2658.8 | 2685.1 | 2706.6 | 2747.8 | 2794.2 | 2850.7  | 2891.1  | 2891.9  | 2914.7  | 2920.9 |
| 7.5°  | 2485.3 | 2481.3 | 2511.6 | 2546.2 | 2593.9 | 2664.9 | 2756.5  | 2843.3  | 2848.6  | 2910.4  | 2931.8 |
| 10°   | 2341.5 | 2340.6 | 2370.0 | 2407.7 | 2463.3 | 2542.7 | 2647.8  | 2774.9  | 2782.8  | 2889.3  | 2933.6 |
| 12.5° | 2229.3 | 2231.1 | 2256.5 | 2299.4 | 2358.2 | 2441.0 | 2554.9  | 2698.2  | 2711.0  | 2856.0  | 2923.5 |
| 15°   | 2146.5 | 2153.5 | 2174.1 | 2217.5 | 2275.3 | 2359.5 | 2476.5  | 2627.2  | 2646.5  | 2818.8  | 2917.8 |
| 17.5° | 2099.2 | 2107.1 | 2121.5 | 2157.5 | 2211.8 | 2292.9 | 2403.7  | 2569.0  | 2586.5  | 2790.3  | 2918.2 |
| 20°   | 2085.1 | 2091.7 | 2100.0 | 2122.0 | 2168.0 | 2241.6 | 2346.3  | 2516.4  | 2535.2  | 2767.5  | 2922.6 |
| 22.5° | 2112.8 | 2117.6 | 2118.5 | 2116.7 | 2144.7 | 2204.8 | 2304.7  | 2477.8  | 2498.0  | 2752.6  | 2925.7 |
| 25°   | 2171.9 | 2178.5 | 2173.7 | 2157.5 | 2148.3 | 2185.1 | 2283.2  | 2452.4  | 2472.5  | 2741.6  | 2919.6 |
| 27.5° | 2260.9 | 2261.8 | 2257.8 | 2236.8 | 2193.4 | 2187.3 | 2276.7  | 2437.5  | 2456.8  | 2728.9  | 2906.8 |
| 30°   | 2381.8 | 2387.5 | 2380.5 | 2352.0 | 2281.0 | 2222.3 | 2284.5  | 2423.0  | 2440.6  | 2712.7  | 2886.2 |
| 32.5° | 2523.4 | 2537.4 | 2537.0 | 2507.2 | 2405.5 | 2300.8 | 2317.0  | 2414.3  | 2427.8  | 2695.6  | 2861.3 |
| 35°   | 2670.2 | 2689.5 | 2725.4 | 2712.7 | 2586.9 | 2424.8 | 2379.2  | 2428.3  | 2437.5  | 2693.4  | 2843.7 |
| 37.5° | 2822.7 | 2842.0 | 2916.0 | 2950.2 | 2803.0 | 2602.3 | 2477.4  | 2477.8  | 2482.2  | 2720.2  | 2842.4 |
| 40°   | 2982.2 | 3002.8 | 3114.1 | 3203.1 | 3083.0 | 2827.1 | 2635.6  | 2581.2  | 2576.4  | 2785.9  | 2868.3 |
| 42.5° | 3205.7 | 3224.1 | 3357.8 | 3471.3 | 3393.7 | 3115.0 | 2854.3  | 2740.8  | 2730.7  | 2914.7  | 2951.1 |
| 45°   | 3488.4 | 3504.2 | 3646.2 | 3767.5 | 3727.7 | 3443.7 | 3129.0  | 2960.3  | 2958.6  | 3129.5  | 3119.0 |
| 47.5° | 3824.5 | 3836.8 | 3964.3 | 4081.8 | 4096.2 | 3821.9 | 3474.4  | 3299.1  | 3270.6  | 3424.0  | 3378.8 |
| 50°   | 4174.7 | 4188.3 | 4275.0 | 4401.2 | 4508.6 | 4328.1 | 3918.7  | 3714.1  | 3676.0  | 3812.7  | 3746.9 |
| 52.5° | 4406.5 | 4424.5 | 4499.8 | 4659.8 | 4972.3 | 4882.9 | 4444.2  | 4217.2  | 4159.3  | 4283.8  | 4233.4 |
| 55°   | 4303.1 | 4343.4 | 4458.7 | 4715.0 | 5343.0 | 5730.4 | 5092.3  | 4804.0  | 4738.7  | 4842.1  | 4812.3 |
| 57.5° | 3832.8 | 3888.1 | 4045.4 | 4441.1 | 5395.2 | 6477.2 | 6072.2  | 5495.1  | 5449.1  | 5419.3  | 5432.9 |
| 60°   | 2973.5 | 3026.5 | 3221.5 | 3737.3 | 5031.9 | 7022.4 | 7546.9  | 6347.0  | 6280.4  | 5998.6  | 6010.9 |
| 62.5° | 2104.4 | 2077.7 | 2211.4 | 2588.7 | 4088.8 | 7086.3 | 9224.9  | 7486.4  | 7267.3  | 6610.4  | 6556.5 |
| 65°   | 1604.8 | 1598.7 | 1658.7 | 1778.8 | 2476.5 | 6320.7 | 10224.6 | 9401.6  | 9059.3  | 7330.0  | 7202.9 |
| 67.5° | 1318.7 | 1307.7 | 1366.9 | 1541.7 | 1594.8 | 4077.8 | 10246.5 | 11623.4 | 11287.3 | 8225.8  | 7950.5 |
| 70°   | 1084.2 | 1071.9 | 1127.2 | 1352.8 | 1473.8 | 2068.1 | 8623.7  | 12924.6 | 12906.6 | 9359.9  | 8515.0 |
| 71°   | 972.0  | 963.3  | 1029.4 | 1280.1 | 1447.9 | 1723.6 | 7445.7  | 12928.1 | 12982.0 | 9743.8  | 8481.7 |
| 72.5° | 791.5  | 794.5  | 864.6  | 1139.4 | 1428.7 | 1522.0 | 5472.3  | 12325.5 | 12439.4 | 10109.8 | 8178.9 |
| 75°   | 525.9  | 528.5  | 620.5  | 876.5  | 1385.3 | 1489.1 | 3007.6  | 10342.5 | 10551.9 | 9890.6  | 7463.2 |
| 77.5° | 353.2  | 352.3  | 415.0  | 601.3  | 1206.9 | 1489.1 | 1763.5  | 7735.4  | 7965.4  | 7869.9  | 5753.6 |
| 80°   | 243.2  | 241.5  | 285.7  | 415.0  | 913.7  | 1507.1 | 1363.4  | 5421.0  | 5490.7  | 4250.0  | 2338.4 |
| 82.5° | 149.0  | 150.3  | 186.7  | 293.2  | 621.9  | 1356.4 | 1287.1  | 2955.9  | 2880.1  | 1192.0  | 584.2  |
| 85°   | 85.5   | 85.0   | 119.2  | 198.5  | 399.2  | 1144.7 | 1255.1  | 1272.2  | 1167.0  | 358.9   | 211.2  |
| 87.5° | 30.7   | 32.9   | 64.0   | 110.0  | 228.8  | 797.2  | 1064.9  | 661.7   | 596.4   | 162.1   | 95.5   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     | 0.0     | 0.0     | 0.0    |



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 CATALOG NUMBER: GLEON-SA3A-730-U-SL2

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2907.7 | 2907.7 | 2907.7 | 2907.7 | 2907.7 | 2907.7 | 2907.7 | 2907.7 | 2907.7 | 2907.7 | 2907.7 |
| 2.5°  | 2904.2 | 2906.8 | 2903.8 | 2886.2 | 2871.3 | 2847.2 | 2833.7 | 2814.8 | 2809.1 | 2806.5 | 2813.5 |
| 5°    | 2915.2 | 2916.0 | 2890.2 | 2844.2 | 2792.5 | 2731.5 | 2687.7 | 2633.8 | 2608.4 | 2597.4 | 2604.5 |
| 7.5°  | 2925.3 | 2921.3 | 2864.8 | 2776.7 | 2681.2 | 2575.1 | 2480.9 | 2394.5 | 2344.1 | 2323.5 | 2325.3 |
| 10°   | 2926.6 | 2909.9 | 2819.2 | 2682.9 | 2534.8 | 2379.2 | 2234.6 | 2101.4 | 2017.2 | 1962.4 | 1979.1 |
| 12.5° | 2913.0 | 2884.9 | 2752.1 | 2561.5 | 2356.0 | 2143.9 | 1948.4 | 1748.6 | 1628.5 | 1572.8 | 1574.6 |
| 15°   | 2902.5 | 2851.6 | 2669.8 | 2418.6 | 2142.6 | 1861.6 | 1594.8 | 1359.9 | 1231.9 | 1174.9 | 1148.2 |
| 17.5° | 2893.7 | 2815.7 | 2574.2 | 2257.8 | 1890.6 | 1534.3 | 1213.5 | 1004.0 | 933.9  | 917.2  | 910.2  |
| 20°   | 2881.4 | 2777.6 | 2467.7 | 2071.6 | 1603.5 | 1167.9 | 886.1  | 782.7  | 783.1  | 802.4  | 805.0  |
| 22.5° | 2864.3 | 2734.2 | 2354.2 | 1862.5 | 1295.4 | 850.6  | 694.6  | 664.8  | 695.0  | 731.9  | 738.4  |
| 25°   | 2838.9 | 2682.9 | 2228.0 | 1631.6 | 987.8  | 653.9  | 593.4  | 592.1  | 628.9  | 667.4  | 673.1  |
| 27.5° | 2803.0 | 2615.9 | 2087.8 | 1383.5 | 727.9  | 555.7  | 531.6  | 540.8  | 568.0  | 596.0  | 598.2  |
| 30°   | 2754.8 | 2537.8 | 1933.1 | 1121.9 | 570.6  | 494.8  | 492.1  | 500.5  | 517.1  | 536.8  | 538.6  |
| 32.5° | 2701.7 | 2458.5 | 1767.9 | 868.6  | 488.6  | 461.9  | 464.5  | 468.5  | 476.4  | 484.3  | 486.0  |
| 35°   | 2653.5 | 2377.5 | 1598.7 | 660.0  | 449.6  | 440.4  | 438.7  | 437.8  | 438.7  | 436.0  | 436.5  |
| 37.5° | 2622.4 | 2310.4 | 1422.5 | 525.4  | 427.3  | 421.6  | 416.3  | 409.8  | 402.3  | 397.9  | 398.8  |
| 40°   | 2611.0 | 2260.4 | 1244.2 | 454.0  | 408.9  | 404.9  | 394.9  | 380.8  | 372.1  | 369.4  | 369.4  |
| 42.5° | 2641.7 | 2234.6 | 1071.9 | 418.1  | 393.5  | 387.0  | 370.3  | 354.1  | 347.5  | 347.1  | 346.6  |
| 45°   | 2735.5 | 2245.1 | 908.0  | 398.4  | 379.5  | 366.8  | 344.9  | 331.3  | 326.9  | 327.8  | 327.4  |
| 47.5° | 2903.8 | 2311.3 | 767.8  | 385.2  | 365.5  | 348.8  | 324.3  | 313.3  | 308.1  | 308.1  | 308.5  |
| 50°   | 3189.9 | 2466.0 | 656.0  | 374.3  | 353.7  | 332.2  | 309.4  | 295.8  | 288.8  | 288.4  | 288.4  |
| 52.5° | 3606.7 | 2742.9 | 586.4  | 365.1  | 340.5  | 317.3  | 294.5  | 277.4  | 269.1  | 267.3  | 266.4  |
| 55°   | 4129.1 | 3140.0 | 567.1  | 358.9  | 323.0  | 301.1  | 276.5  | 259.4  | 250.2  | 246.3  | 245.9  |
| 57.5° | 4713.3 | 3622.9 | 605.2  | 351.5  | 305.0  | 281.8  | 256.8  | 240.6  | 231.0  | 226.1  | 225.7  |
| 60°   | 5304.5 | 4150.1 | 760.8  | 341.0  | 290.1  | 260.8  | 236.6  | 221.7  | 212.1  | 206.8  | 206.0  |
| 62.5° | 5896.5 | 4705.8 | 1078.5 | 340.1  | 279.6  | 240.6  | 216.1  | 203.3  | 194.1  | 188.4  | 187.1  |
| 65°   | 6564.4 | 5314.1 | 1439.6 | 363.3  | 276.1  | 222.2  | 195.0  | 184.9  | 177.0  | 171.8  | 171.4  |
| 67.5° | 7331.3 | 6000.8 | 1405.0 | 411.1  | 287.9  | 205.5  | 175.3  | 167.4  | 161.7  | 157.3  | 156.9  |
| 70°   | 7691.1 | 5893.4 | 873.4  | 444.8  | 304.6  | 189.3  | 156.5  | 150.8  | 146.4  | 143.3  | 142.0  |
| 71°   | 7540.4 | 5595.9 | 732.3  | 440.9  | 302.8  | 182.3  | 149.0  | 144.6  | 140.2  | 137.6  | 136.3  |
| 72.5° | 7129.3 | 5103.3 | 610.9  | 410.2  | 283.1  | 169.6  | 139.4  | 135.0  | 131.0  | 128.0  | 127.1  |
| 75°   | 6397.4 | 4557.7 | 489.1  | 327.8  | 225.7  | 143.3  | 122.3  | 117.4  | 114.4  | 112.6  | 110.9  |
| 77.5° | 4702.8 | 3252.6 | 378.2  | 259.0  | 166.1  | 117.0  | 104.3  | 100.8  | 97.7   | 95.1   | 93.8   |
| 80°   | 1801.6 | 1259.9 | 254.6  | 193.3  | 121.8  | 92.5   | 84.1   | 82.4   | 79.3   | 77.6   | 77.6   |
| 82.5° | 485.1  | 376.4  | 135.9  | 117.0  | 81.5   | 67.5   | 64.4   | 63.5   | 60.9   | 57.4   | 57.8   |
| 85°   | 196.3  | 166.1  | 76.3   | 64.4   | 50.0   | 39.9   | 43.4   | 43.8   | 40.8   | 36.4   | 36.8   |
| 87.5° | 86.3   | 70.6   | 42.5   | 28.5   | 21.9   | 15.3   | 19.7   | 19.7   | 18.0   | 14.9   | 13.6   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



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LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

Data in this report applies to families of products SA1C-730-U-5WQ .

**Test Information**

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-2-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGRAW-EDISON  
 Catalog Number: **SA1C-730-U-5WQ**  
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

**Spectral Parameters**

CCT (K): 2993  
 CIE u': 0.2508  
 CIE v': 0.5215  
 Duv: 0.0000  
 CIE x: 0.4374  
 CIE y: 0.4043  
 CIE z: 0.1583  
 Peak Wavelength (nm): 593  
 Dominant Wavelength (nm): 582  
 Purity: 53

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 71.8 |      |       |
| R1:       | 67.5 | R9:  | -38.3 |
| R2:       | 82.9 | R10: | 62.5  |
| R3:       | 94.7 | R11: | 63.7  |
| R4:       | 67.7 | R12: | 57.8  |
| R5:       | 67.9 | R13: | 70.4  |
| R6:       | 77.6 | R14: | 97.3  |
| R7:       | 76.0 |      |       |
| R8:       | 40.5 |      |       |

Rf: 75.7  
 Rg: 93.9



**Test Conditions**

Stabilization Time: 53M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-2-R4

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

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CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 3000K 4-step quadrangle

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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    | 2397          | NR            | 490    | 24908         | NR            | 620    | 118784        | NR            | 750    | 5037          | NR            | 880    | 2677          | NR            |
| 365    | 2084          | NR            | 495    | 30998         | NR            | 625    | 108951        | NR            | 755    | 4413          | NR            | 885    | 2940          | NR            |
| 370    | 2143          | NR            | 500    | 37103         | NR            | 630    | 99573         | NR            | 760    | 4189          | NR            | 890    | 3116          | NR            |
| 375    | 2413          | NR            | 505    | 42987         | NR            | 635    | 90444         | NR            | 765    | 3677          | NR            | 895    | 3345          | NR            |
| 380    | 2172          | NR            | 510    | 48702         | NR            | 640    | 80749         | NR            | 770    | 3366          | NR            | 900    | 2312          | NR            |
| 385    | 1997          | NR            | 515    | 53741         | NR            | 645    | 71664         | NR            | 775    | 3211          | NR            | 905    | 2829          | NR            |
| 390    | 1830          | NR            | 520    | 57283         | NR            | 650    | 63936         | NR            | 780    | 2682          | NR            | 910    | 2783          | NR            |
| 395    | 1861          | NR            | 525    | 61876         | NR            | 655    | 56611         | NR            | 785    | 2804          | NR            | 915    | 2662          | NR            |
| 400    | 1717          | NR            | 530    | 65398         | NR            | 660    | 49763         | NR            | 790    | 2581          | NR            | 920    | 3047          | NR            |
| 405    | 1761          | NR            | 535    | 69597         | NR            | 665    | 42891         | NR            | 795    | 2711          | NR            | 925    | 2256          | NR            |
| 410    | 2680          | NR            | 540    | 74214         | NR            | 670    | 36939         | NR            | 800    | 2609          | NR            | 930    | 2976          | NR            |
| 415    | 4374          | NR            | 545    | 79911         | NR            | 675    | 31946         | NR            | 805    | 2581          | NR            | 935    | 3503          | NR            |
| 420    | 8071          | NR            | 550    | 86153         | NR            | 680    | 27385         | NR            | 810    | 2404          | NR            | 940    | 4226          | NR            |
| 425    | 15169         | NR            | 555    | 93952         | NR            | 685    | 23504         | NR            | 815    | 2556          | NR            | 945    | 2930          | NR            |
| 430    | 26038         | NR            | 560    | 102904        | NR            | 690    | 20210         | NR            | 820    | 2742          | NR            | 950    | 2115          | NR            |
| 435    | 41316         | NR            | 565    | 112009        | NR            | 695    | 17459         | NR            | 825    | 2014          | NR            | 955    | 2634          | NR            |
| 440    | 59674         | NR            | 570    | 121662        | NR            | 700    | 15207         | NR            | 830    | 2488          | NR            | 960    | 4200          | NR            |
| 445    | 72751         | NR            | 575    | 130476        | NR            | 705    | 13322         | NR            | 835    | 2625          | NR            | 965    | 1982          | NR            |
| 450    | 65091         | NR            | 580    | 137926        | NR            | 710    | 11676         | NR            | 840    | 2754          | NR            | 970    | 3613          | NR            |
| 455    | 44894         | NR            | 585    | 143406        | NR            | 715    | 10626         | NR            | 845    | 2708          | NR            | 975    | 4034          | NR            |
| 460    | 32712         | NR            | 590    | 147039        | NR            | 720    | 9416          | NR            | 850    | 2608          | NR            | 980    | 3922          | NR            |
| 465    | 25296         | NR            | 595    | 147365        | NR            | 725    | 8333          | NR            | 855    | 2605          | NR            | 985    | 1909          | NR            |
| 470    | 19318         | NR            | 600    | 145800        | NR            | 730    | 7134          | NR            | 860    | 1765          | NR            | 990    | 3617          | NR            |
| 475    | 17265         | NR            | 605    | 141363        | NR            | 735    | 6437          | NR            | 865    | 2581          | NR            | 995    | 4767          | NR            |
| 480    | 18260         | NR            | 610    | 134199        | NR            | 740    | 5834          | NR            | 870    | 3016          | NR            | 1000   | 2528          | NR            |
| 485    | 20845         | NR            | 615    | 127683        | NR            | 745    | 5500          | NR            | 875    | 3952          | NR            |        |               |               |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 8494.8

S/P: 1.23

| $\lambda$<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               | 2397                                 | NR                             | 490               | 24908                                | NR                             | 620               | 118784                               | NR                             | 750               | 5037                                 | NR                             | 880               | 2677                                 | NR                             |
| 365               | 2084                                 | NR                             | 495               | 30998                                | NR                             | 625               | 108951                               | NR                             | 755               | 4413                                 | NR                             | 885               | 2940                                 | NR                             |
| 370               | 2143                                 | NR                             | 500               | 37103                                | NR                             | 630               | 99573                                | NR                             | 760               | 4189                                 | NR                             | 890               | 3116                                 | NR                             |
| 375               | 2413                                 | NR                             | 505               | 42987                                | NR                             | 635               | 90444                                | NR                             | 765               | 3677                                 | NR                             | 895               | 3345                                 | NR                             |
| 380               | 2172                                 | NR                             | 510               | 48702                                | NR                             | 640               | 80749                                | NR                             | 770               | 3366                                 | NR                             | 900               | 2312                                 | NR                             |
| 385               | 1997                                 | NR                             | 515               | 53741                                | NR                             | 645               | 71664                                | NR                             | 775               | 3211                                 | NR                             | 905               | 2829                                 | NR                             |
| 390               | 1830                                 | NR                             | 520               | 57283                                | NR                             | 650               | 63936                                | NR                             | 780               | 2682                                 | NR                             | 910               | 2783                                 | NR                             |
| 395               | 1861                                 | NR                             | 525               | 61876                                | NR                             | 655               | 56611                                | NR                             | 785               | 2804                                 | NR                             | 915               | 2662                                 | NR                             |
| 400               | 1717                                 | NR                             | 530               | 65398                                | NR                             | 660               | 49763                                | NR                             | 790               | 2581                                 | NR                             | 920               | 3047                                 | NR                             |
| 405               | 1761                                 | NR                             | 535               | 69597                                | NR                             | 665               | 42891                                | NR                             | 795               | 2711                                 | NR                             | 925               | 2256                                 | NR                             |
| 410               | 2680                                 | NR                             | 540               | 74214                                | NR                             | 670               | 36939                                | NR                             | 800               | 2609                                 | NR                             | 930               | 2976                                 | NR                             |
| 415               | 4374                                 | NR                             | 545               | 79911                                | NR                             | 675               | 31946                                | NR                             | 805               | 2581                                 | NR                             | 935               | 3503                                 | NR                             |
| 420               | 8071                                 | NR                             | 550               | 86153                                | NR                             | 680               | 27385                                | NR                             | 810               | 2404                                 | NR                             | 940               | 4226                                 | NR                             |
| 425               | 15169                                | NR                             | 555               | 93952                                | NR                             | 685               | 23504                                | NR                             | 815               | 2556                                 | NR                             | 945               | 2930                                 | NR                             |
| 430               | 26038                                | NR                             | 560               | 102904                               | NR                             | 690               | 20210                                | NR                             | 820               | 2742                                 | NR                             | 950               | 2115                                 | NR                             |
| 435               | 41316                                | NR                             | 565               | 112009                               | NR                             | 695               | 17459                                | NR                             | 825               | 2014                                 | NR                             | 955               | 2634                                 | NR                             |
| 440               | 59674                                | NR                             | 570               | 121662                               | NR                             | 700               | 15207                                | NR                             | 830               | 2488                                 | NR                             | 960               | 4200                                 | NR                             |
| 445               | 72751                                | NR                             | 575               | 130476                               | NR                             | 705               | 13322                                | NR                             | 835               | 2625                                 | NR                             | 965               | 1982                                 | NR                             |
| 450               | 65091                                | NR                             | 580               | 137926                               | NR                             | 710               | 11676                                | NR                             | 840               | 2754                                 | NR                             | 970               | 3613                                 | NR                             |
| 455               | 44894                                | NR                             | 585               | 143406                               | NR                             | 715               | 10626                                | NR                             | 845               | 2708                                 | NR                             | 975               | 4034                                 | NR                             |
| 460               | 32712                                | NR                             | 590               | 147039                               | NR                             | 720               | 9416                                 | NR                             | 850               | 2608                                 | NR                             | 980               | 3922                                 | NR                             |
| 465               | 25296                                | NR                             | 595               | 147365                               | NR                             | 725               | 8333                                 | NR                             | 855               | 2605                                 | NR                             | 985               | 1909                                 | NR                             |
| 470               | 19318                                | NR                             | 600               | 145800                               | NR                             | 730               | 7134                                 | NR                             | 860               | 1765                                 | NR                             | 990               | 3617                                 | NR                             |
| 475               | 17265                                | NR                             | 605               | 141363                               | NR                             | 735               | 6437                                 | NR                             | 865               | 2581                                 | NR                             | 995               | 4767                                 | NR                             |
| 480               | 18260                                | NR                             | 610               | 134199                               | NR                             | 740               | 5834                                 | NR                             | 870               | 3016                                 | NR                             | 1000              | 2528                                 | NR                             |
| 485               | 20845                                | NR                             | 615               | 127683                               | NR                             | 745               | 5500                                 | NR                             | 875               | 3952                                 | NR                             |                   |                                      |                                |

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Melanopic Flux vs. Wavelength



Melanopic Lumens: 3101.5 M/P: 0.45

| 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    | 2397          | NR            | 490    | 24908         | NR            | 620    | 118784        | NR            | 750    | 5037          | NR            | 880    | 2677          | NR            |
| 365    | 2084          | NR            | 495    | 30998         | NR            | 625    | 108951        | NR            | 755    | 4413          | NR            | 885    | 2940          | NR            |
| 370    | 2143          | NR            | 500    | 37103         | NR            | 630    | 99573         | NR            | 760    | 4189          | NR            | 890    | 3116          | NR            |
| 375    | 2413          | NR            | 505    | 42987         | NR            | 635    | 90444         | NR            | 765    | 3677          | NR            | 895    | 3345          | NR            |
| 380    | 2172          | NR            | 510    | 48702         | NR            | 640    | 80749         | NR            | 770    | 3366          | NR            | 900    | 2312          | NR            |
| 385    | 1997          | NR            | 515    | 53741         | NR            | 645    | 71664         | NR            | 775    | 3211          | NR            | 905    | 2829          | NR            |
| 390    | 1830          | NR            | 520    | 57283         | NR            | 650    | 63936         | NR            | 780    | 2682          | NR            | 910    | 2783          | NR            |
| 395    | 1861          | NR            | 525    | 61876         | NR            | 655    | 56611         | NR            | 785    | 2804          | NR            | 915    | 2662          | NR            |
| 400    | 1717          | NR            | 530    | 65398         | NR            | 660    | 49763         | NR            | 790    | 2581          | NR            | 920    | 3047          | NR            |
| 405    | 1761          | NR            | 535    | 69597         | NR            | 665    | 42891         | NR            | 795    | 2711          | NR            | 925    | 2256          | NR            |
| 410    | 2680          | NR            | 540    | 74214         | NR            | 670    | 36939         | NR            | 800    | 2609          | NR            | 930    | 2976          | NR            |
| 415    | 4374          | NR            | 545    | 79911         | NR            | 675    | 31946         | NR            | 805    | 2581          | NR            | 935    | 3503          | NR            |
| 420    | 8071          | NR            | 550    | 86153         | NR            | 680    | 27385         | NR            | 810    | 2404          | NR            | 940    | 4226          | NR            |
| 425    | 15169         | NR            | 555    | 93952         | NR            | 685    | 23504         | NR            | 815    | 2556          | NR            | 945    | 2930          | NR            |
| 430    | 26038         | NR            | 560    | 102904        | NR            | 690    | 20210         | NR            | 820    | 2742          | NR            | 950    | 2115          | NR            |
| 435    | 41316         | NR            | 565    | 112009        | NR            | 695    | 17459         | NR            | 825    | 2014          | NR            | 955    | 2634          | NR            |
| 440    | 59674         | NR            | 570    | 121662        | NR            | 700    | 15207         | NR            | 830    | 2488          | NR            | 960    | 4200          | NR            |
| 445    | 72751         | NR            | 575    | 130476        | NR            | 705    | 13322         | NR            | 835    | 2625          | NR            | 965    | 1982          | NR            |
| 450    | 65091         | NR            | 580    | 137926        | NR            | 710    | 11676         | NR            | 840    | 2754          | NR            | 970    | 3613          | NR            |
| 455    | 44894         | NR            | 585    | 143406        | NR            | 715    | 10626         | NR            | 845    | 2708          | NR            | 975    | 4034          | NR            |
| 460    | 32712         | NR            | 590    | 147039        | NR            | 720    | 9416          | NR            | 850    | 2608          | NR            | 980    | 3922          | NR            |
| 465    | 25296         | NR            | 595    | 147365        | NR            | 725    | 8333          | NR            | 855    | 2605          | NR            | 985    | 1909          | NR            |
| 470    | 19318         | NR            | 600    | 145800        | NR            | 730    | 7134          | NR            | 860    | 1765          | NR            | 990    | 3617          | NR            |
| 475    | 17265         | NR            | 605    | 141363        | NR            | 735    | 6437          | NR            | 865    | 2581          | NR            | 995    | 4767          | NR            |
| 480    | 18260         | NR            | 610    | 134199        | NR            | 740    | 5834          | NR            | 870    | 3016          | NR            | 1000   | 2528          | NR            |
| 485    | 20845         | NR            | 615    | 127683        | NR            | 745    | 5500          | NR            | 875    | 3952          | NR            |        |               |               |

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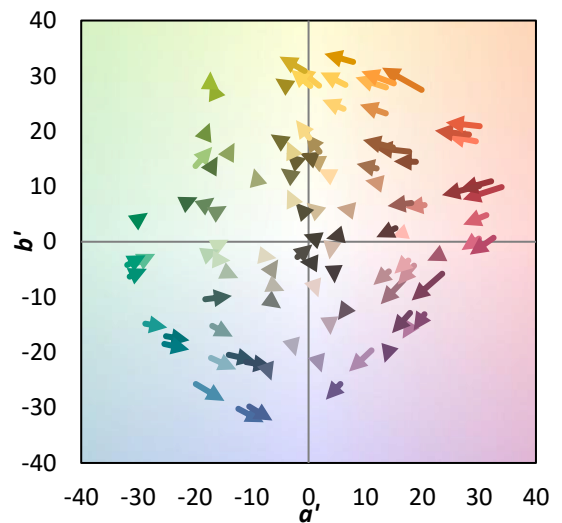
TM-30-18

**Summary**

$R_f = 75.7$   
 $R_g = 93.9$   
 CIE  $R_a = 71.8$   
 $R_9 = -38.3$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 |            |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)