

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: P635132

Luminaire Tested: GWS-SA3D-727-U-T1-W

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P635132
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-10)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA3D-727-U-T1-W
Description: GALLEON WALL SLIM LUMINAIRE. (3) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE I OPTICS
Light Source: (48) 2700K CCT, 70 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 14690.4 lumens
Efficiency: N/A
Efficacy: 121.6 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 0.5' x H: 0')
IES Classification: Type I - Medium
BUG Rating: B3 - U0 - G3

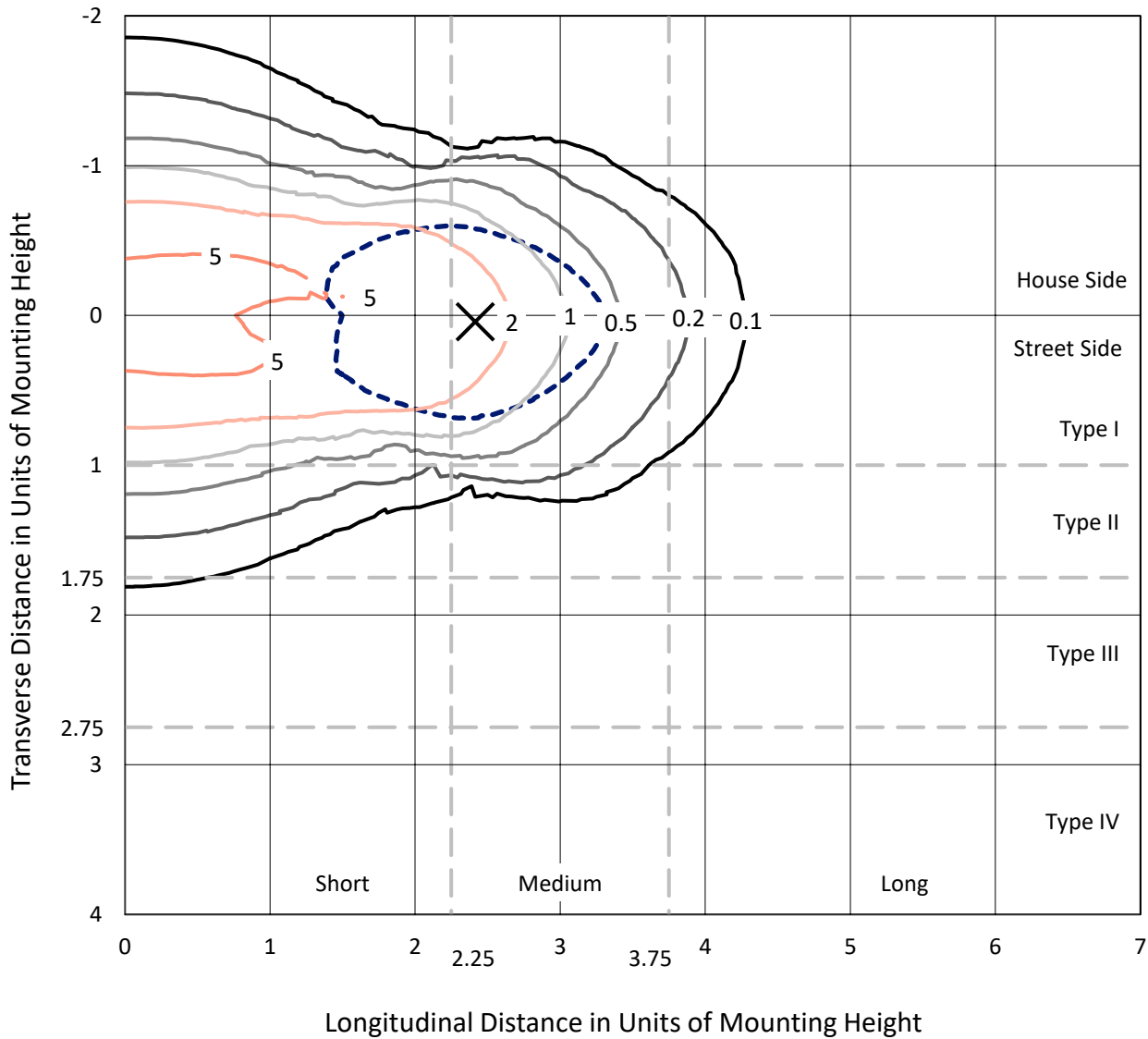
Input Watts (W): 120.8
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P635132
 CATALOG NUMBER: GWS-SA3D-727-U-T1-W

Iso-Footcandle Lines of Horizontal Illumination

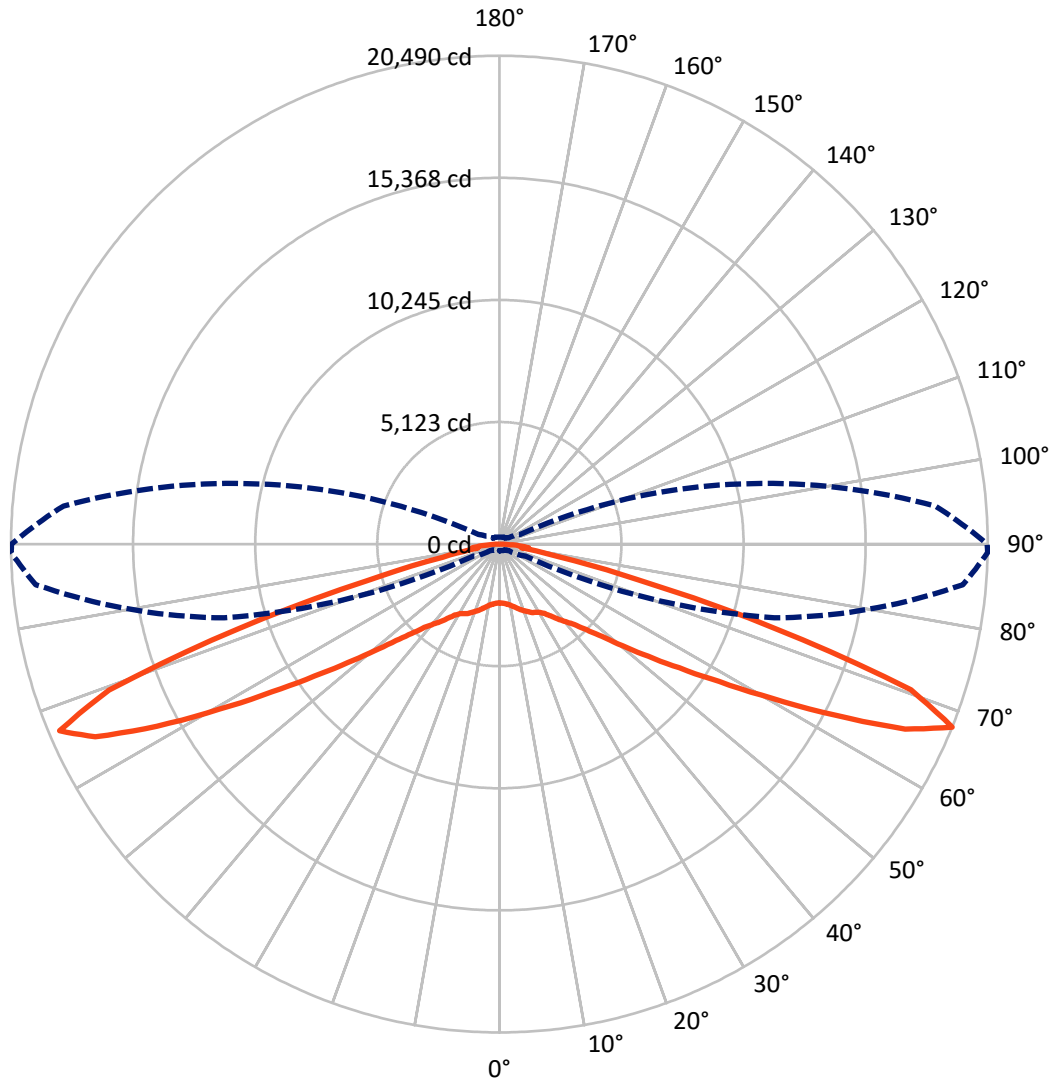
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 6.7 fc
 Type I - Medium - N/A

REPORT NUMBER: P635132
CATALOG NUMBER: GWS-SA3D-727-U-T1-W

Luminous Intensity Polar Plot



— Vertical Plane Through 89-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 7280.8 | 0.0 | 7280.8 |
| | % Fixture | 49.6 | 0.0 | 49.6 |
| Street Side | Lumens | 7409.6 | 0.0 | 7409.6 |
| | % Fixture | 50.4 | 0.0 | 50.4 |
| Total | Lumens | 14690.4 | 0.0 | 14690.4 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 247.3 | 1.7 |
| 10°-20° | 805.3 | 5.5 |
| 20°-30° | 1361.4 | 9.3 |
| 30°-40° | 1868.3 | 12.7 |
| 40°-50° | 2382.5 | 16.2 |
| 50°-60° | 2989.2 | 20.3 |
| 60°-70° | 3605.2 | 24.5 |
| 70°-80° | 1304.3 | 8.9 |
| 80°-90° | 126.8 | 0.9 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 14690.4 | 100.0 |
| 0°-180° | 14690.4 | 100.0 |

Coefficient of Utilization

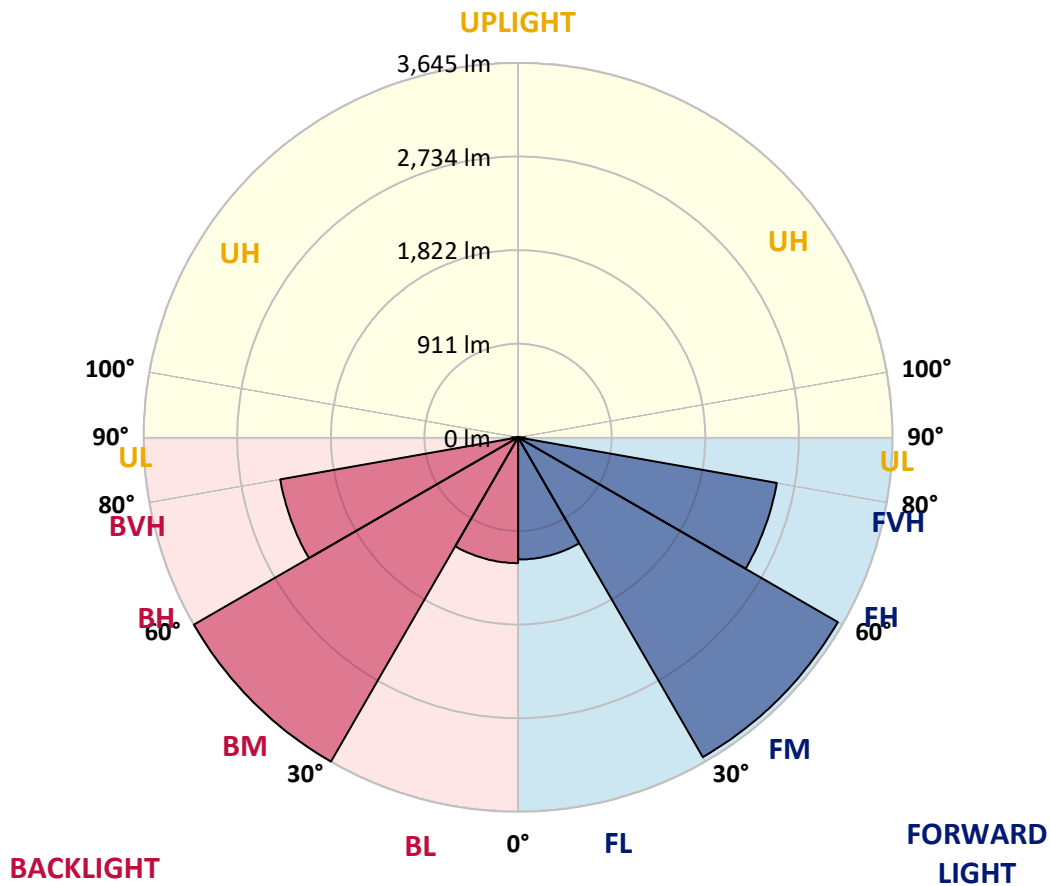


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1189.8 | 8.1 | | | |
| FM (30°-60°) | 3595.0 | 24.5 | | | |
| FH (60°-80°) | 2557.8 | 17.4 | | | G2/5000 |
| FVH (80°-90°) | 66.9 | 0.5 | | | G1/100 |
| BL (0°-30°) | 1224.2 | 8.3 | B3/2500 | | |
| BM (30°-60°) | 3645.0 | 24.8 | B3/5000 | | |
| BH (60°-80°) | 2351.7 | 16.0 | B3/2500 | | G3/2500 |
| BVH (80°-90°) | 59.9 | 0.4 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G3
 Type I Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 89° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| 0° | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 |
| 2.5° | 2473.1 | 2470.9 | 2465.7 | 2481.5 | 2478.3 | 2479.4 | 2485.7 | 2481.5 | 2474.1 | 2461.4 | 2479.4 |
| 5° | 2542.7 | 2541.6 | 2530.0 | 2539.5 | 2529.0 | 2521.6 | 2520.5 | 2510.0 | 2501.5 | 2487.8 | 2506.8 |
| 7.5° | 2610.2 | 2609.2 | 2599.7 | 2616.5 | 2608.1 | 2599.7 | 2590.2 | 2569.1 | 2549.0 | 2529.0 | 2550.1 |
| 10° | 2661.9 | 2660.9 | 2658.7 | 2683.0 | 2685.1 | 2688.3 | 2684.1 | 2648.2 | 2613.4 | 2589.1 | 2610.2 |
| 12.5° | 2691.4 | 2694.6 | 2699.9 | 2744.2 | 2766.4 | 2787.5 | 2792.7 | 2763.2 | 2705.2 | 2670.3 | 2695.7 |
| 15° | 2671.4 | 2677.7 | 2704.1 | 2784.3 | 2845.5 | 2893.0 | 2913.0 | 2888.7 | 2813.8 | 2755.8 | 2784.3 |
| 17.5° | 2575.4 | 2580.7 | 2632.4 | 2754.8 | 2889.8 | 2999.5 | 3032.2 | 3017.5 | 2934.1 | 2863.4 | 2890.9 |
| 20° | 2442.5 | 2454.1 | 2510.0 | 2680.9 | 2882.4 | 3073.4 | 3160.9 | 3155.7 | 3064.9 | 2956.3 | 2989.0 |
| 22.5° | 2322.2 | 2335.9 | 2395.0 | 2583.8 | 2832.8 | 3092.4 | 3290.7 | 3304.4 | 3184.2 | 3049.1 | 3075.5 |
| 25° | 2187.1 | 2199.8 | 2275.8 | 2468.8 | 2747.4 | 3077.6 | 3401.5 | 3463.7 | 3319.2 | 3155.7 | 3179.9 |
| 27.5° | 2048.9 | 2058.4 | 2133.3 | 2339.1 | 2635.5 | 3050.2 | 3489.1 | 3638.9 | 3452.1 | 3229.5 | 3246.4 |
| 30° | 1927.6 | 1940.2 | 2008.8 | 2209.3 | 2513.1 | 2995.3 | 3560.8 | 3825.6 | 3605.1 | 3312.9 | 3326.6 |
| 32.5° | 1810.5 | 1821.0 | 1895.9 | 2081.6 | 2383.4 | 2910.9 | 3625.2 | 4045.1 | 3832.0 | 3468.0 | 3468.0 |
| 35° | 1662.8 | 1681.8 | 1766.2 | 1959.2 | 2261.0 | 2799.1 | 3671.6 | 4300.4 | 4142.1 | 3696.9 | 3698.0 |
| 37.5° | 1526.7 | 1537.2 | 1625.8 | 1821.0 | 2132.3 | 2672.5 | 3675.8 | 4565.2 | 4534.6 | 3988.1 | 3990.2 |
| 40° | 1371.6 | 1385.3 | 1480.2 | 1673.3 | 1984.6 | 2539.5 | 3635.7 | 4812.1 | 4946.1 | 4287.7 | 4276.1 |
| 42.5° | 1214.4 | 1234.4 | 1325.2 | 1514.0 | 1825.2 | 2377.0 | 3529.2 | 5047.4 | 5468.4 | 4634.9 | 4606.4 |
| 45° | 1062.4 | 1075.1 | 1165.8 | 1344.1 | 1642.7 | 2182.9 | 3358.2 | 5273.2 | 6088.7 | 5162.4 | 5121.2 |
| 47.5° | 891.5 | 896.8 | 990.7 | 1161.6 | 1453.9 | 1966.6 | 3113.5 | 5474.7 | 6770.3 | 5860.8 | 5790.1 |
| 50° | 739.6 | 747.0 | 820.8 | 967.5 | 1222.8 | 1710.2 | 2808.6 | 5592.9 | 7638.6 | 6813.6 | 6691.2 |
| 52.5° | 598.2 | 605.6 | 664.7 | 781.8 | 1010.7 | 1418.0 | 2430.8 | 5565.4 | 8519.6 | 7996.3 | 7818.0 |
| 55° | 483.2 | 488.5 | 528.6 | 620.4 | 795.5 | 1127.9 | 1984.6 | 5319.6 | 9497.6 | 9540.9 | 9156.8 |
| 57.5° | 408.3 | 410.4 | 437.8 | 493.8 | 621.4 | 869.4 | 1531.9 | 4739.3 | 10523.1 | 11511.7 | 10880.8 |
| 60° | 365.0 | 366.1 | 378.8 | 413.6 | 490.6 | 663.6 | 1122.6 | 3815.1 | 11585.6 | 13977.4 | 13112.2 |
| 62.5° | 337.6 | 337.6 | 348.2 | 368.2 | 407.3 | 510.6 | 825.1 | 2740.0 | 12348.4 | 16660.4 | 15800.5 |
| 65° | 311.2 | 311.2 | 318.6 | 335.5 | 356.6 | 416.7 | 619.3 | 1767.2 | 12722.9 | 18903.4 | 18712.5 |
| 67.5° | 277.5 | 278.5 | 283.8 | 301.7 | 320.7 | 348.2 | 469.5 | 1195.4 | 11945.3 | 19523.8 | 20490.2 |
| 70° | 245.8 | 246.9 | 254.3 | 265.9 | 281.7 | 300.7 | 367.2 | 824.0 | 8694.7 | 16260.5 | 18321.0 |
| 72.5° | 211.0 | 215.2 | 220.5 | 233.2 | 242.7 | 256.4 | 299.6 | 533.9 | 5059.0 | 10459.8 | 12111.0 |
| 75° | 173.0 | 178.3 | 184.6 | 197.3 | 203.6 | 208.9 | 246.9 | 380.9 | 2434.0 | 5300.6 | 6036.0 |
| 77.5° | 134.0 | 139.3 | 146.7 | 158.3 | 162.5 | 168.8 | 188.9 | 275.4 | 1165.8 | 2349.6 | 2533.2 |
| 80° | 89.7 | 91.8 | 98.1 | 111.8 | 119.2 | 123.4 | 139.3 | 187.8 | 506.4 | 943.2 | 934.8 |
| 82.5° | 54.9 | 55.9 | 58.0 | 66.5 | 69.6 | 73.9 | 90.7 | 115.0 | 241.6 | 1071.9 | 1229.1 |
| 85° | 20.0 | 19.0 | 17.9 | 23.2 | 27.4 | 31.7 | 42.2 | 58.0 | 105.5 | 736.4 | 824.0 |
| 87.5° | 0.0 | 0.0 | 0.0 | 1.1 | 2.1 | 2.1 | 4.2 | 8.4 | 25.3 | 275.4 | 188.9 |
| 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: P635132
 CATALOG NUMBER: GWS-SA3D-727-U-T1-W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 | 2465.7 |
| 2.5° | 2474.1 | 2462.5 | 2477.3 | 2487.8 | 2511.0 | 2519.5 | 2521.6 | 2514.2 | 2514.2 | 2501.5 | 2503.6 |
| 5° | 2502.6 | 2495.2 | 2519.5 | 2537.4 | 2571.2 | 2583.8 | 2592.3 | 2587.0 | 2590.2 | 2581.7 | 2583.8 |
| 7.5° | 2545.8 | 2539.5 | 2581.7 | 2616.5 | 2651.4 | 2666.1 | 2673.5 | 2669.3 | 2670.3 | 2659.8 | 2663.0 |
| 10° | 2606.0 | 2608.1 | 2658.7 | 2704.1 | 2750.5 | 2765.3 | 2768.5 | 2755.8 | 2745.3 | 2726.3 | 2727.3 |
| 12.5° | 2688.3 | 2698.8 | 2770.6 | 2821.2 | 2868.7 | 2889.8 | 2866.6 | 2820.2 | 2776.9 | 2744.2 | 2740.0 |
| 15° | 2778.0 | 2797.0 | 2900.3 | 2964.7 | 3016.4 | 3005.9 | 2937.3 | 2832.8 | 2747.4 | 2698.8 | 2689.3 |
| 17.5° | 2885.6 | 2914.1 | 3043.8 | 3120.9 | 3165.2 | 3097.6 | 2954.2 | 2798.0 | 2678.8 | 2613.4 | 2600.7 |
| 20° | 2986.9 | 3032.2 | 3195.8 | 3296.0 | 3301.3 | 3149.3 | 2946.8 | 2727.3 | 2577.5 | 2497.3 | 2480.4 |
| 22.5° | 3079.7 | 3137.7 | 3355.1 | 3482.7 | 3414.2 | 3172.6 | 2901.4 | 2627.1 | 2455.1 | 2361.2 | 2346.4 |
| 25° | 3181.0 | 3263.3 | 3540.8 | 3660.0 | 3527.1 | 3163.1 | 2806.4 | 2502.6 | 2307.4 | 2211.4 | 2200.8 |
| 27.5° | 3250.6 | 3354.0 | 3727.5 | 3841.5 | 3619.9 | 3109.2 | 2684.1 | 2366.5 | 2172.4 | 2081.6 | 2066.9 |
| 30° | 3330.8 | 3462.7 | 3933.2 | 4038.8 | 3676.9 | 3030.1 | 2553.2 | 2239.9 | 2046.8 | 1948.7 | 1938.1 |
| 32.5° | 3476.4 | 3642.1 | 4188.6 | 4247.7 | 3694.8 | 2932.0 | 2427.7 | 2117.5 | 1916.0 | 1817.9 | 1803.1 |
| 35° | 3710.6 | 3904.8 | 4547.3 | 4480.8 | 3681.1 | 2824.4 | 2308.5 | 1974.0 | 1782.0 | 1690.2 | 1675.4 |
| 37.5° | 4006.0 | 4247.7 | 4947.2 | 4690.8 | 3643.1 | 2706.2 | 2167.1 | 1853.7 | 1661.7 | 1568.9 | 1560.4 |
| 40° | 4281.4 | 4578.9 | 5395.6 | 4872.2 | 3566.1 | 2560.6 | 2031.0 | 1728.2 | 1531.9 | 1433.8 | 1414.8 |
| 42.5° | 4626.4 | 5022.1 | 5914.6 | 5029.5 | 3439.5 | 2386.5 | 1878.0 | 1573.1 | 1369.5 | 1280.8 | 1257.6 |
| 45° | 5150.8 | 5642.4 | 6518.1 | 5180.3 | 3250.6 | 2172.4 | 1686.0 | 1384.2 | 1191.2 | 1100.4 | 1082.5 |
| 47.5° | 5804.9 | 6417.9 | 7172.3 | 5270.0 | 2963.7 | 1946.6 | 1468.6 | 1184.8 | 991.8 | 889.4 | 881.0 |
| 50° | 6723.9 | 7545.8 | 7873.9 | 5254.2 | 2642.9 | 1678.6 | 1223.9 | 947.4 | 786.0 | 712.2 | 700.6 |
| 52.5° | 7843.3 | 8961.6 | 8632.5 | 5064.3 | 2302.1 | 1373.7 | 953.8 | 743.8 | 623.5 | 570.8 | 561.3 |
| 55° | 9247.6 | 10657.1 | 9431.1 | 4657.0 | 1871.7 | 1051.9 | 749.1 | 586.6 | 504.3 | 472.7 | 468.4 |
| 57.5° | 10986.3 | 12852.7 | 10200.3 | 3971.2 | 1407.4 | 802.9 | 577.1 | 484.3 | 445.2 | 426.2 | 425.2 |
| 60° | 13281.0 | 15183.3 | 10868.1 | 3086.0 | 1007.6 | 614.0 | 476.9 | 432.6 | 402.0 | 389.3 | 388.3 |
| 62.5° | 16009.4 | 17299.7 | 11283.8 | 2101.7 | 757.5 | 489.5 | 419.9 | 392.5 | 374.5 | 367.2 | 366.1 |
| 65° | 18813.8 | 18637.6 | 11085.5 | 1376.8 | 575.0 | 415.7 | 376.7 | 361.9 | 346.1 | 338.7 | 338.7 |
| 67.5° | 20470.2 | 18354.8 | 9563.0 | 955.9 | 455.8 | 365.0 | 339.7 | 326.0 | 299.6 | 293.3 | 293.3 |
| 70° | 18131.1 | 14873.1 | 6268.1 | 699.5 | 369.3 | 319.7 | 295.4 | 276.4 | 265.9 | 259.5 | 258.5 |
| 72.5° | 11991.8 | 9678.0 | 3332.9 | 485.3 | 308.1 | 272.2 | 250.0 | 242.7 | 230.0 | 223.7 | 222.6 |
| 75° | 5968.5 | 5083.3 | 1708.1 | 350.3 | 256.4 | 218.4 | 208.9 | 205.7 | 195.2 | 186.7 | 184.6 |
| 77.5° | 2487.8 | 2263.1 | 796.6 | 254.3 | 195.2 | 176.2 | 167.8 | 167.8 | 156.1 | 146.7 | 142.4 |
| 80° | 937.9 | 835.6 | 376.7 | 174.1 | 144.5 | 130.8 | 125.6 | 121.3 | 111.8 | 100.2 | 93.9 |
| 82.5° | 1254.5 | 819.8 | 184.6 | 108.7 | 95.0 | 84.4 | 77.0 | 73.9 | 68.6 | 63.3 | 59.1 |
| 85° | 812.4 | 582.4 | 83.3 | 55.9 | 47.5 | 35.9 | 31.7 | 29.5 | 26.4 | 23.2 | 21.1 |
| 87.5° | 165.6 | 195.2 | 25.3 | 10.6 | 6.3 | 3.2 | 3.2 | 1.1 | 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 |

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



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

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-1-R4

Test Date: 08/20/2019

Luminaire Tested: SA1C-727-U-5WQ

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-1-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-727-U-5WQ**
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-1-R3. TO UPDATE THE CATALOG NUMBER.TESTED IN
 SITU. (1) 70 CRI, 2700K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

CCT (K): 2741
 CIE u': 0.2605
 CIE v': 0.5272
 Duv: 0.0005
 CIE x: 0.4573
 CIE y: 0.4113
 CIE z: 0.1313
 Peak Wavelength (nm): 602
 Dominant Wavelength (nm): 583
 Purity: 61.2

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.5 | | |
| R1: | 69.2 | R9: | -16.1 |
| R2: | 79.4 | R10: | 51.4 |
| R3: | 87.8 | R11: | 63.1 |
| R4: | 69.4 | R12: | 42.0 |
| R5: | 66.4 | R13: | 70.2 |
| R6: | 69.8 | R14: | 92.4 |
| R7: | 79.8 | | |
| R8: | 50.1 | | |

Rf: 69.9
 Rg: 98.3



Test Conditions
 Stabilization Time: 56M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.3./42%
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-1-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 2700K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-1-R4

Photopic Flux vs. Wavelength



Photopic Lumens: 6211.7

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|
| 360 | 2044 | 0.0 | 490 | 7179 | 1.0 | 620 | 118034 | 30.7 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 1.9 | 625 | 111884 | 24.7 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 3.4 | 630 | 106119 | 19.2 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 6.3 | 635 | 99706 | 15.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 10.4 | 640 | 92142 | 11.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 16.3 | 645 | 84987 | 8.2 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 22.9 | 650 | 78016 | 5.7 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 29.7 | 655 | 71541 | 4.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 36.7 | 660 | 64863 | 2.7 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 42.5 | 665 | 58485 | 1.9 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.0 | 540 | 73435 | 47.8 | 670 | 51641 | 1.1 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.0 | 545 | 78677 | 52.4 | 675 | 46030 | 0.8 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 0.0 | 550 | 83331 | 56.6 | 680 | 40590 | 0.5 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 0.1 | 555 | 89120 | 60.9 | 685 | 35691 | 0.3 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 0.3 | 560 | 94613 | 64.3 | 690 | 31631 | 0.2 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 0.6 | 565 | 99818 | 66.4 | 695 | 27437 | 0.1 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 0.9 | 570 | 106526 | 69.3 | 700 | 24589 | 0.1 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 1.1 | 575 | 111610 | 69.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 1.0 | 580 | 117163 | 69.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 0.8 | 585 | 122201 | 67.9 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 0.6 | 590 | 125662 | 65.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 0.5 | 595 | 127415 | 60.4 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 0.4 | 600 | 129155 | 55.7 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 0.4 | 605 | 128057 | 49.6 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 0.5 | 610 | 126031 | 43.3 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 0.7 | 615 | 123059 | 37.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

REPORT NUMBER: SP1-1908-441-1-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 6474.3

S/P: 1.04

| 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 | 2044 | 0.0 | 490 | 7179 | 6.0 | 620 | 118034 | 0.1 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 8.6 | 625 | 111884 | 0.1 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 12.5 | 630 | 106119 | 0.0 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 17.3 | 635 | 99706 | 0.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 21.8 | 640 | 92142 | 0.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 25.7 | 645 | 84987 | 0.0 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 27.5 | 650 | 78016 | 0.0 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 28.1 | 655 | 71541 | 0.0 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 27.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 24.7 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.1 | 540 | 73435 | 21.5 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.5 | 545 | 78677 | 18.3 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 1.6 | 550 | 83331 | 15.0 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 3.9 | 555 | 89120 | 12.0 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 8.1 | 560 | 94613 | 9.3 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 13.3 | 565 | 99818 | 7.0 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 19.1 | 570 | 106526 | 5.2 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 21.6 | 575 | 111610 | 3.7 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 18.1 | 580 | 117163 | 2.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 11.8 | 585 | 122201 | 1.8 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 8.1 | 590 | 125662 | 1.2 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 6.2 | 595 | 127415 | 0.8 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 4.8 | 600 | 129155 | 0.5 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 4.1 | 605 | 128057 | 0.4 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 4.1 | 610 | 126031 | 0.2 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 4.6 | 615 | 123059 | 0.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

REPORT NUMBER: SP1-1908-441-1-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 2145.7 M/P: 0.35

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|
| 360 | 2044 | 0.0 | 490 | 7179 | 11.1 | 620 | 118034 | 1.5 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 16.9 | 625 | 111884 | 0.9 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 26.0 | 630 | 106119 | 0.6 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 38.2 | 635 | 99706 | 0.4 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 51.6 | 640 | 92142 | 0.2 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 65.1 | 645 | 84987 | 0.1 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 75.2 | 650 | 78016 | 0.1 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 82.9 | 655 | 71541 | 0.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 86.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.1 | 535 | 68520 | 85.4 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.2 | 540 | 73435 | 81.1 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.7 | 545 | 78677 | 75.4 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 2.3 | 550 | 83331 | 68.1 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 6.2 | 555 | 89120 | 60.9 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 13.0 | 560 | 94613 | 52.9 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 22.2 | 565 | 99818 | 44.8 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 32.0 | 570 | 106526 | 37.6 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 36.7 | 575 | 111610 | 30.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 30.4 | 580 | 117163 | 24.1 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 19.7 | 585 | 122201 | 18.7 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 13.2 | 590 | 125662 | 14.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 10.0 | 595 | 127415 | 10.2 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 7.7 | 600 | 129155 | 7.3 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 6.7 | 605 | 128057 | 5.0 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 6.9 | 610 | 126031 | 3.4 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 8.1 | 615 | 123059 | 2.3 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

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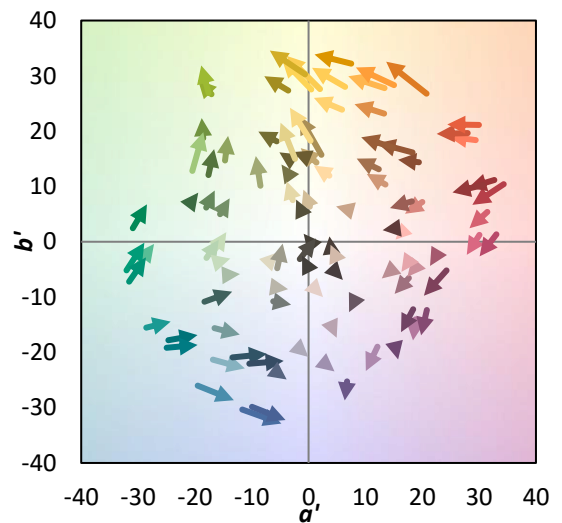
TM-30-18

Summary

$R_f = 69.9$
 $R_g = 98.3$
 $CIE R_a = 71.5$
 $R_9 = -16.1$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 54 | CES51 = 77 | CES76 = 48 |
| CES02 = 63 | CES27 = 74 | CES52 = 80 | CES77 = 75 |
| CES03 = 31 | CES28 = 80 | CES53 = 66 | CES78 = 56 |
| CES04 = 71 | CES29 = 44 | CES54 = 77 | CES79 = 81 |
| CES05 = 50 | CES30 = 46 | CES55 = 74 | CES80 = 80 |
| CES06 = 52 | CES31 = 50 | CES56 = 63 | CES81 = 73 |
| CES07 = 42 | CES32 = 49 | CES57 = 60 | CES82 = 91 |
| CES08 = 41 | CES33 = 53 | CES58 = 63 | CES83 = 84 |
| CES09 = 29 | CES34 = 66 | CES59 = 85 | CES84 = 90 |
| CES10 = 77 | CES35 = 82 | CES60 = 89 | CES85 = 87 |
| CES11 = 60 | CES36 = 78 | CES61 = 85 | CES86 = 65 |
| CES12 = 66 | CES37 = 75 | CES62 = 69 | CES87 = 78 |
| CES13 = 43 | CES38 = 53 | CES63 = 68 | CES88 = 73 |
| CES14 = 74 | CES39 = 91 | CES64 = 68 | CES89 = 68 |
| CES15 = 71 | CES40 = 85 | CES65 = 65 | CES90 = 68 |
| CES16 = 48 | CES41 = 76 | CES66 = 62 | CES91 = 91 |
| CES17 = 50 | CES42 = 76 | CES67 = 60 | CES92 = 71 |
| CES18 = 57 | CES43 = 65 | CES68 = 68 | CES93 = 82 |
| CES19 = 73 | CES44 = 98 | CES69 = 77 | CES94 = 57 |
| CES20 = 67 | CES45 = 75 | CES70 = 60 | CES95 = 78 |
| CES21 = 88 | CES46 = 70 | CES71 = 57 | CES96 = 80 |
| CES22 = 80 | CES47 = 63 | CES72 = 86 | CES97 = 79 |
| CES23 = 92 | CES48 = 51 | CES73 = 52 | CES98 = 71 |
| CES24 = 91 | CES49 = 68 | CES74 = 90 | CES99 = 64 |
| CES25 = 73 | CES50 = 77 | CES75 = 58 | |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)