

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: P637096

Luminaire Tested: GWS-SA4C-727-U-SL2-W-HSS

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P637096
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-30)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA4C-727-U-SL2-W-HSS
Description: GALLEON WALL SLIM LUMINAIRE. (4) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD
Light Source: (64) 2700K CCT, 70 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 12868.9 lumens
Efficiency: N/A
Efficacy: 100.1 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')
IES Classification: Type II - Short
BUG Rating: B2 - U0 - G2

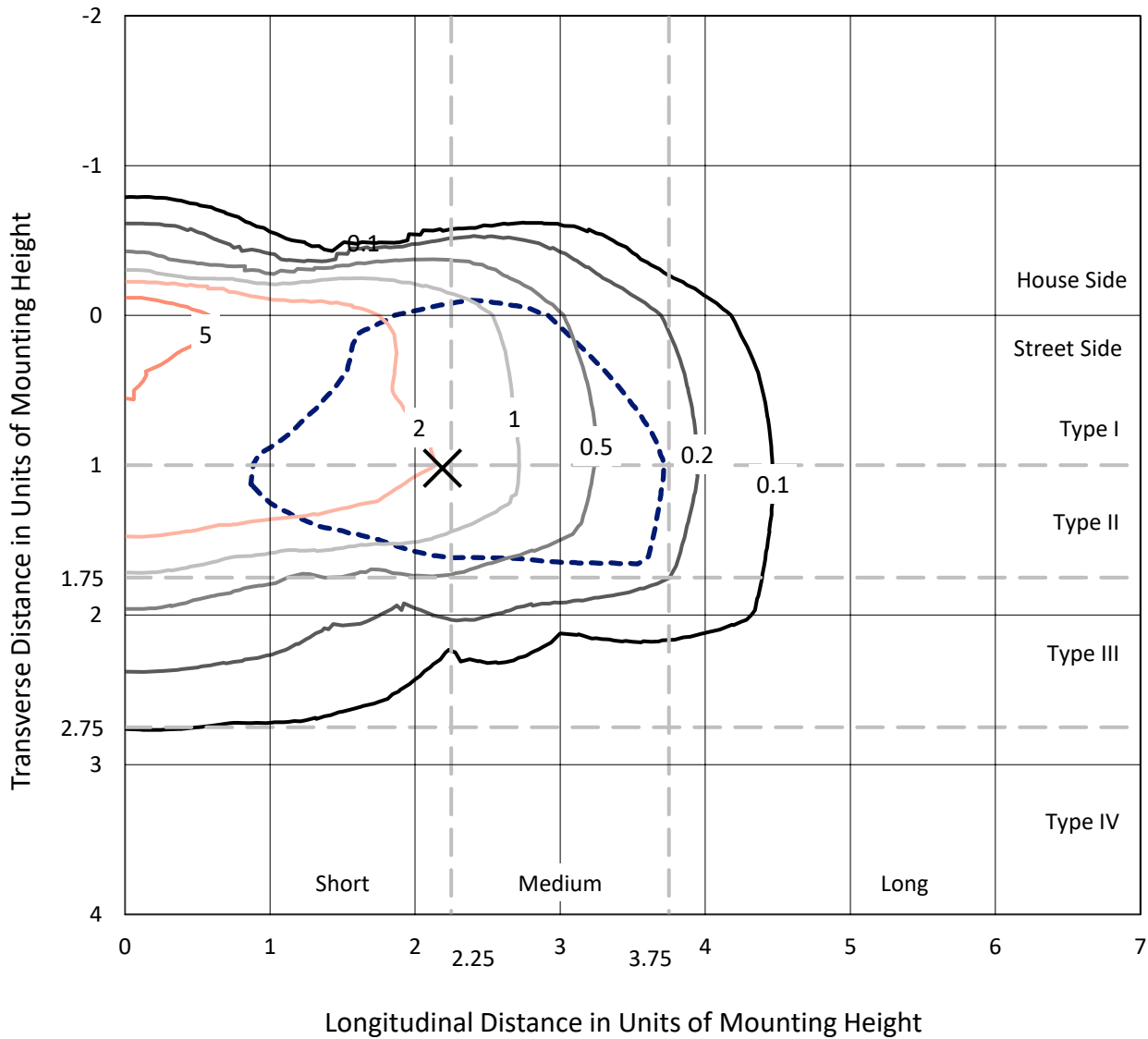
Input Watts (W): 128.5
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P637096
 CATALOG NUMBER: GWS-SA4C-727-U-SL2-W-HSS

Iso-Footcandle Lines of Horizontal Illumination

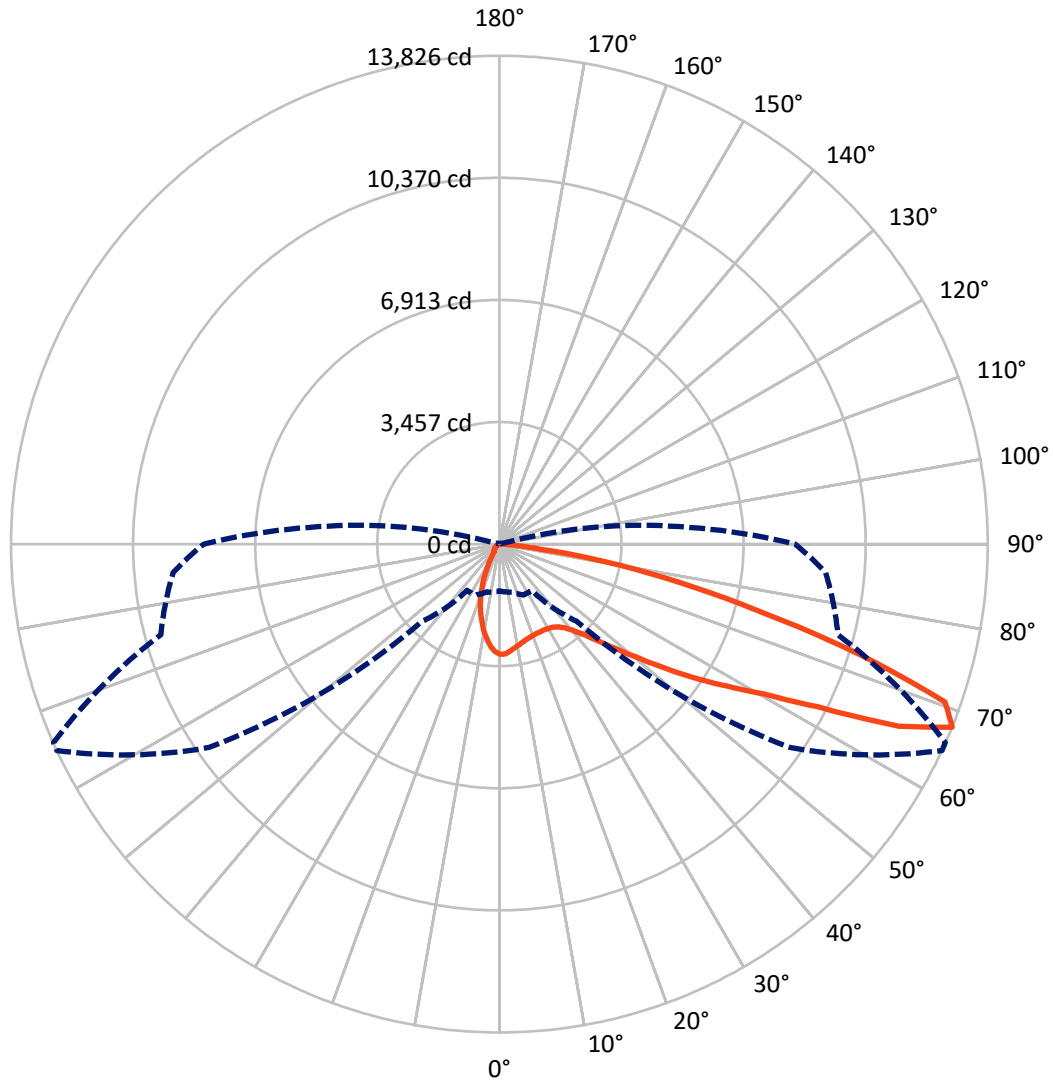
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 7.8 fc
 Type II - Short - N/A

REPORT NUMBER: P637096
CATALOG NUMBER: GWS-SA4C-727-U-SL2-W-HSS

Luminous Intensity Polar Plot



— Vertical Plane Through 65-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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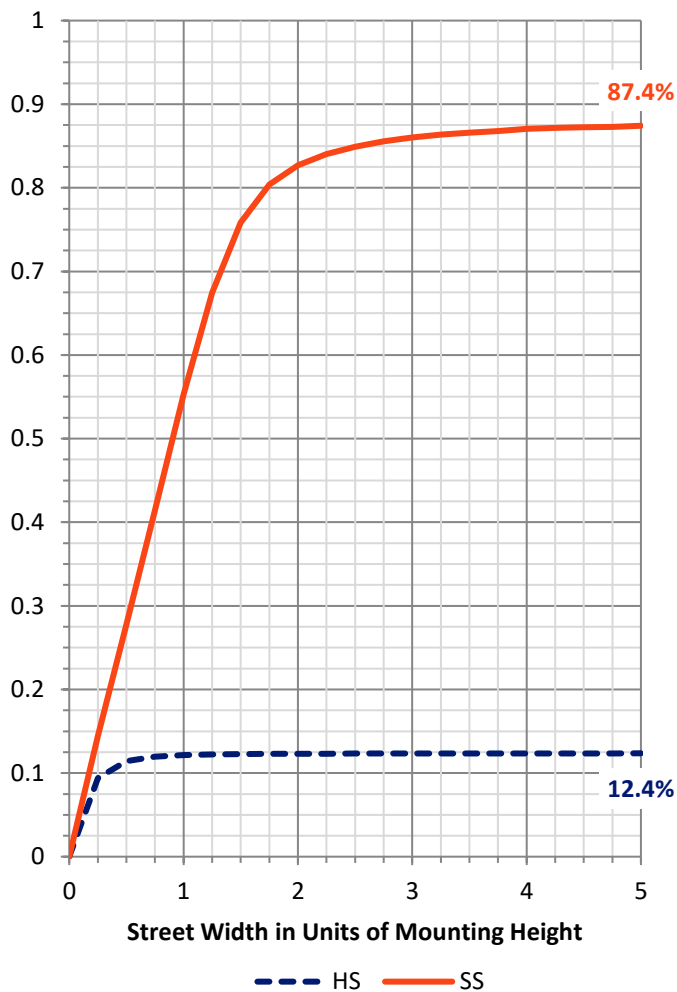
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 1606.9 | 0.0 | 1606.9 |
| | % Fixture | 12.5 | 0.0 | 12.5 |
| Street Side | Lumens | 11262.0 | 0.0 | 11262.0 |
| | % Fixture | 87.5 | 0.0 | 87.5 |
| Total | Lumens | 12868.9 | 0.0 | 12868.9 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 259.2 | 2.0 |
| 10°-20° | 582.7 | 4.5 |
| 20°-30° | 832.7 | 6.5 |
| 30°-40° | 1211.4 | 9.4 |
| 40°-50° | 1897.3 | 14.7 |
| 50°-60° | 2959.9 | 23.0 |
| 60°-70° | 3251.3 | 25.3 |
| 70°-80° | 1730.3 | 13.4 |
| 80°-90° | 144.1 | 1.1 |
| 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° | 12868.9 | 100.0 |
| 0°-180° | 12868.9 | 100.0 |

Coefficient of Utilization



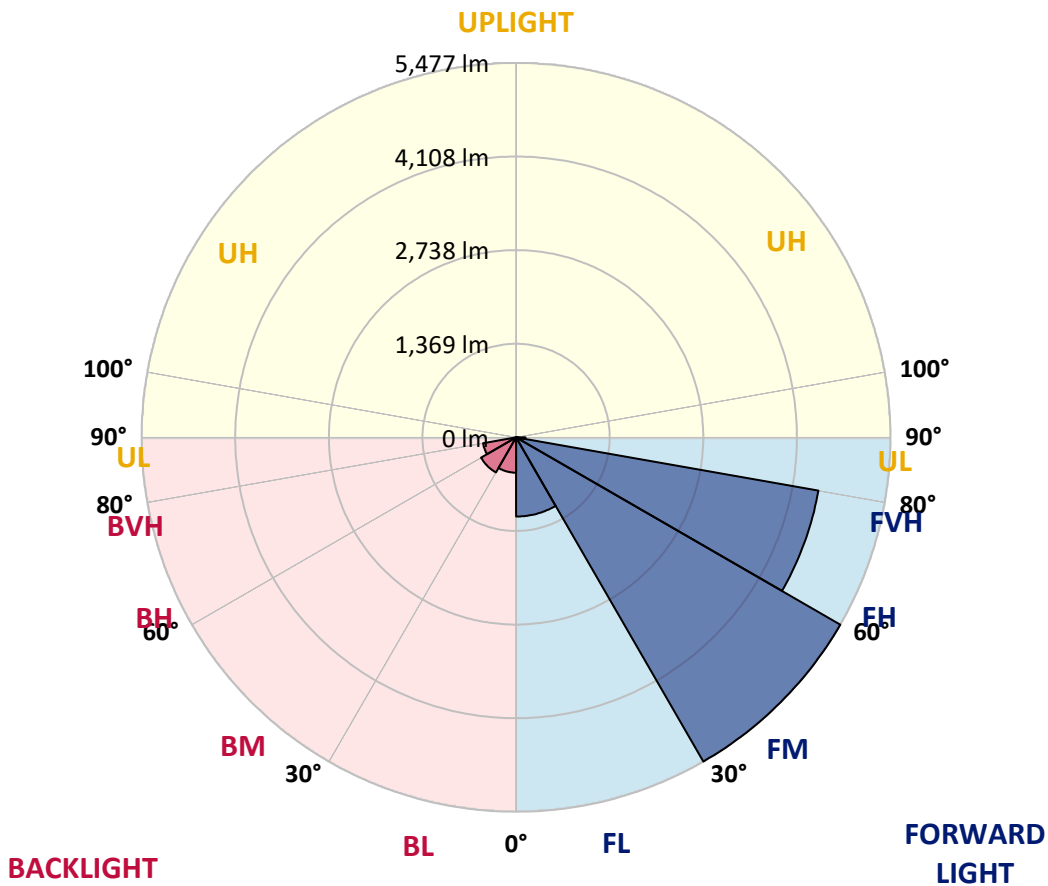
REPORT NUMBER: P637096

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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°) | 1158.1 | 9.0 | | | |
| FM (30°-60°) | 5476.7 | 42.6 | | | |
| FH (60°-80°) | 4490.7 | 34.9 | | | G2/5000 |
| FVH (80°-90°) | 136.4 | 1.1 | | | G2/225 |
| BL (0°-30°) | 516.5 | 4.0 | B2/1000 | | |
| BM (30°-60°) | 591.9 | 4.6 | B1/1000 | | |
| BH (60°-80°) | 490.8 | 3.8 | B1/500 | | G1/500 |
| BVH (80°-90°) | 7.7 | 0.1 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G2
 Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 66° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|--------|
| 0° | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 |
| 2.5° | 3012.9 | 3022.2 | 3009.4 | 3040.8 | 3046.6 | 3081.5 | 3101.3 | 3115.3 | 3114.1 | 3131.6 | 3131.6 |
| 5° | 2836.0 | 2845.3 | 2838.3 | 2872.1 | 2898.8 | 2953.5 | 2998.9 | 3051.3 | 3053.6 | 3107.1 | 3126.9 |
| 7.5° | 2685.9 | 2687.0 | 2687.0 | 2728.9 | 2763.8 | 2831.3 | 2898.8 | 2979.1 | 2988.4 | 3071.1 | 3123.4 |
| 10° | 2562.5 | 2566.0 | 2567.2 | 2614.9 | 2653.3 | 2734.8 | 2820.9 | 2917.5 | 2927.9 | 3039.7 | 3121.1 |
| 12.5° | 2477.6 | 2478.7 | 2483.4 | 2533.4 | 2575.3 | 2660.3 | 2747.6 | 2858.1 | 2872.1 | 3003.6 | 3110.6 |
| 15° | 2436.8 | 2434.5 | 2436.8 | 2478.7 | 2520.6 | 2602.1 | 2691.7 | 2810.4 | 2825.5 | 2973.3 | 3111.8 |
| 17.5° | 2434.5 | 2431.0 | 2428.7 | 2460.1 | 2486.9 | 2559.0 | 2649.8 | 2779.0 | 2795.3 | 2959.4 | 3124.6 |
| 20° | 2468.3 | 2465.9 | 2454.3 | 2468.3 | 2474.1 | 2533.4 | 2623.0 | 2754.5 | 2770.8 | 2957.0 | 3152.5 |
| 22.5° | 2556.7 | 2550.9 | 2533.4 | 2520.6 | 2489.2 | 2524.1 | 2604.4 | 2737.1 | 2755.7 | 2962.8 | 3188.6 |
| 25° | 2688.2 | 2685.9 | 2663.8 | 2632.3 | 2552.1 | 2538.1 | 2605.6 | 2737.1 | 2754.5 | 2969.8 | 3227.0 |
| 27.5° | 2886.0 | 2872.1 | 2844.1 | 2789.5 | 2674.2 | 2592.8 | 2628.9 | 2744.1 | 2761.5 | 2979.1 | 3258.4 |
| 30° | 3087.4 | 3086.2 | 3076.9 | 3021.0 | 2850.0 | 2697.5 | 2677.7 | 2762.7 | 2779.0 | 2987.3 | 3287.5 |
| 32.5° | 3295.7 | 3299.2 | 3322.4 | 3279.4 | 3092.0 | 2853.5 | 2766.2 | 2801.1 | 2812.7 | 3003.6 | 3313.1 |
| 35° | 3493.5 | 3500.5 | 3562.2 | 3577.3 | 3386.4 | 3089.7 | 2910.5 | 2877.9 | 2879.1 | 3039.7 | 3346.9 |
| 37.5° | 3683.2 | 3706.5 | 3805.4 | 3878.7 | 3753.0 | 3376.0 | 3118.8 | 3008.2 | 2998.9 | 3111.8 | 3398.1 |
| 40° | 3898.5 | 3942.7 | 4067.2 | 4191.7 | 4152.2 | 3754.2 | 3402.7 | 3208.4 | 3188.6 | 3244.5 | 3490.0 |
| 42.5° | 4137.0 | 4184.8 | 4350.0 | 4524.6 | 4543.2 | 4211.5 | 3757.7 | 3500.5 | 3466.7 | 3467.9 | 3662.2 |
| 45° | 4393.1 | 4457.1 | 4649.1 | 4900.5 | 5013.3 | 4721.2 | 4195.2 | 3895.0 | 3861.2 | 3811.2 | 3939.2 |
| 47.5° | 4729.4 | 4785.2 | 4970.3 | 5260.0 | 5476.5 | 5268.2 | 4768.9 | 4402.4 | 4340.7 | 4267.4 | 4369.8 |
| 50° | 5019.2 | 5068.0 | 5227.5 | 5590.5 | 6040.9 | 5973.4 | 5419.5 | 5036.6 | 4977.3 | 4852.7 | 4937.7 |
| 52.5° | 5083.2 | 5121.6 | 5268.2 | 5676.7 | 6472.6 | 6863.7 | 6216.6 | 5803.5 | 5761.6 | 5531.2 | 5563.8 |
| 55° | 4795.7 | 4853.9 | 4985.4 | 5439.3 | 6585.5 | 7734.1 | 7251.2 | 6668.2 | 6580.9 | 6213.1 | 6271.3 |
| 57.5° | 4069.6 | 4173.1 | 4296.5 | 4886.5 | 6279.5 | 8197.3 | 8696.5 | 7584.0 | 7504.9 | 6869.5 | 6870.6 |
| 60° | 2982.6 | 3066.4 | 3149.0 | 3689.0 | 5553.3 | 8165.9 | 10008.0 | 8612.7 | 8468.4 | 7406.0 | 7386.2 |
| 62.5° | 2169.2 | 2212.2 | 2211.1 | 2403.1 | 3813.5 | 7628.2 | 10697.0 | 10162.8 | 9826.5 | 7979.7 | 7866.8 |
| 65° | 1706.0 | 1704.9 | 1754.9 | 1817.7 | 2129.6 | 5888.5 | 10781.9 | 12426.3 | 12063.2 | 8748.9 | 8513.8 |
| 67.5° | 1327.8 | 1353.4 | 1403.5 | 1588.5 | 1600.1 | 3081.5 | 10034.8 | 13826.2 | 13819.2 | 9923.1 | 9271.4 |
| 70° | 1024.1 | 1059.0 | 1130.0 | 1400.0 | 1477.9 | 1724.6 | 7508.4 | 13382.9 | 13495.7 | 10447.9 | 8734.9 |
| 72.5° | 657.5 | 655.2 | 759.9 | 1131.1 | 1419.7 | 1437.2 | 4152.2 | 10630.6 | 10758.6 | 9463.4 | 7062.7 |
| 75° | 367.7 | 370.1 | 429.4 | 692.4 | 1323.2 | 1352.2 | 2056.3 | 7580.5 | 7681.8 | 7378.0 | 5426.5 |
| 77.5° | 144.3 | 149.0 | 201.3 | 364.2 | 872.8 | 1207.9 | 1221.9 | 5169.3 | 5184.4 | 4572.3 | 3328.3 |
| 80° | 58.2 | 61.7 | 102.4 | 225.8 | 531.8 | 813.4 | 872.8 | 3045.5 | 2983.8 | 1770.0 | 968.2 |
| 82.5° | 17.5 | 18.6 | 40.7 | 128.0 | 278.1 | 578.4 | 588.8 | 1168.4 | 1103.2 | 380.5 | 246.7 |
| 85° | 1.2 | 1.2 | 9.3 | 39.6 | 98.9 | 145.5 | 392.2 | 380.5 | 337.5 | 95.4 | 109.4 |
| 87.5° | 0.0 | 0.0 | 1.2 | 1.2 | 2.3 | 4.7 | 41.9 | 69.8 | 71.0 | 17.5 | 48.9 |
| 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: P637096

CATALOG NUMBER: GWS-SA4C-727-U-SL2-W-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 | 3121.1 |
| 2.5° | 3131.6 | 3089.7 | 3086.2 | 3053.6 | 3021.0 | 2980.3 | 2932.6 | 2897.7 | 2873.2 | 2830.2 | 2822.0 |
| 5° | 3126.9 | 3071.1 | 3018.7 | 2925.6 | 2822.0 | 2710.3 | 2612.6 | 2521.8 | 2464.8 | 2426.4 | 2410.1 |
| 7.5° | 3117.6 | 3046.6 | 2925.6 | 2749.9 | 2576.5 | 2381.0 | 2228.5 | 2088.9 | 1993.5 | 1937.6 | 1913.2 |
| 10° | 3110.6 | 3015.2 | 2818.5 | 2552.1 | 2283.2 | 2013.2 | 1781.7 | 1574.5 | 1459.3 | 1368.5 | 1353.4 |
| 12.5° | 3096.7 | 2969.8 | 2681.2 | 2320.5 | 1973.7 | 1615.3 | 1319.7 | 1066.0 | 890.3 | 811.1 | 783.2 |
| 15° | 3082.7 | 2922.1 | 2543.9 | 2076.1 | 1636.2 | 1194.0 | 835.6 | 591.2 | 470.1 | 432.9 | 430.6 |
| 17.5° | 3080.4 | 2879.1 | 2394.9 | 1844.5 | 1282.4 | 782.0 | 476.0 | 382.9 | 357.3 | 348.0 | 348.0 |
| 20° | 3087.4 | 2843.0 | 2248.3 | 1578.0 | 934.5 | 476.0 | 354.9 | 331.7 | 316.5 | 308.4 | 308.4 |
| 22.5° | 3094.3 | 2805.7 | 2107.5 | 1309.2 | 620.3 | 348.0 | 313.0 | 293.3 | 275.8 | 266.5 | 261.8 |
| 25° | 3099.0 | 2765.0 | 1951.6 | 1039.2 | 405.0 | 302.6 | 274.6 | 249.0 | 228.1 | 216.5 | 216.5 |
| 27.5° | 3097.8 | 2716.1 | 1794.5 | 775.0 | 314.2 | 268.8 | 235.1 | 208.3 | 187.4 | 174.6 | 175.7 |
| 30° | 3088.5 | 2662.6 | 1631.5 | 541.1 | 274.6 | 235.1 | 201.3 | 173.4 | 152.4 | 142.0 | 140.8 |
| 32.5° | 3081.5 | 2605.6 | 1443.0 | 380.5 | 246.7 | 206.0 | 171.1 | 144.3 | 126.8 | 118.7 | 117.5 |
| 35° | 3073.4 | 2549.7 | 1263.8 | 289.8 | 222.3 | 178.1 | 144.3 | 122.2 | 108.2 | 101.2 | 101.2 |
| 37.5° | 3075.7 | 2491.5 | 1069.5 | 249.0 | 197.8 | 154.8 | 123.4 | 104.7 | 93.1 | 86.1 | 85.0 |
| 40° | 3111.8 | 2456.6 | 878.6 | 225.8 | 175.7 | 133.8 | 107.1 | 90.8 | 79.1 | 72.2 | 71.0 |
| 42.5° | 3201.4 | 2457.8 | 695.9 | 208.3 | 155.9 | 114.0 | 93.1 | 78.0 | 67.5 | 59.4 | 58.2 |
| 45° | 3380.6 | 2506.7 | 534.2 | 189.7 | 135.0 | 98.9 | 80.3 | 66.3 | 55.9 | 48.9 | 47.7 |
| 47.5° | 3673.9 | 2652.1 | 405.0 | 173.4 | 117.5 | 86.1 | 68.7 | 55.9 | 46.5 | 40.7 | 39.6 |
| 50° | 4140.5 | 2915.1 | 318.9 | 153.6 | 98.9 | 74.5 | 58.2 | 46.5 | 38.4 | 32.6 | 31.4 |
| 52.5° | 4701.5 | 3309.6 | 273.5 | 136.2 | 85.0 | 65.2 | 50.0 | 38.4 | 31.4 | 26.8 | 25.6 |
| 55° | 5346.2 | 3780.9 | 252.5 | 118.7 | 72.2 | 55.9 | 40.7 | 31.4 | 25.6 | 22.1 | 19.8 |
| 57.5° | 5937.3 | 4205.7 | 251.4 | 101.2 | 61.7 | 47.7 | 33.7 | 26.8 | 22.1 | 17.5 | 16.3 |
| 60° | 6513.4 | 4560.6 | 236.2 | 83.8 | 53.5 | 39.6 | 29.1 | 22.1 | 18.6 | 15.1 | 14.0 |
| 62.5° | 7035.9 | 4849.2 | 197.8 | 67.5 | 45.4 | 32.6 | 24.4 | 19.8 | 16.3 | 12.8 | 12.8 |
| 65° | 7692.2 | 5217.0 | 151.3 | 54.7 | 37.2 | 26.8 | 20.9 | 17.5 | 15.1 | 11.6 | 11.6 |
| 67.5° | 8370.7 | 5411.3 | 108.2 | 45.4 | 30.3 | 23.3 | 18.6 | 16.3 | 12.8 | 10.5 | 10.5 |
| 70° | 7581.7 | 4572.3 | 78.0 | 37.2 | 25.6 | 19.8 | 16.3 | 15.1 | 12.8 | 10.5 | 9.3 |
| 72.5° | 5921.0 | 3296.8 | 58.2 | 29.1 | 22.1 | 18.6 | 15.1 | 14.0 | 11.6 | 9.3 | 9.3 |
| 75° | 4390.7 | 1922.5 | 44.2 | 23.3 | 17.5 | 15.1 | 15.1 | 14.0 | 11.6 | 9.3 | 8.1 |
| 77.5° | 2386.8 | 670.3 | 33.7 | 18.6 | 14.0 | 11.6 | 12.8 | 12.8 | 10.5 | 8.1 | 7.0 |
| 80° | 631.9 | 183.9 | 23.3 | 14.0 | 11.6 | 9.3 | 9.3 | 11.6 | 9.3 | 7.0 | 7.0 |
| 82.5° | 183.9 | 53.5 | 16.3 | 11.6 | 9.3 | 8.1 | 8.1 | 8.1 | 7.0 | 5.8 | 4.7 |
| 85° | 89.6 | 19.8 | 11.6 | 9.3 | 8.1 | 7.0 | 5.8 | 5.8 | 4.7 | 3.5 | 3.5 |
| 87.5° | 39.6 | 8.1 | 9.3 | 8.1 | 8.1 | 5.8 | 4.7 | 3.5 | 3.5 | 2.3 | 1.2 |
| 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 | | | |

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

TM-30-18

Summary

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



Color Vector Graphics



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

TM-30-18

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

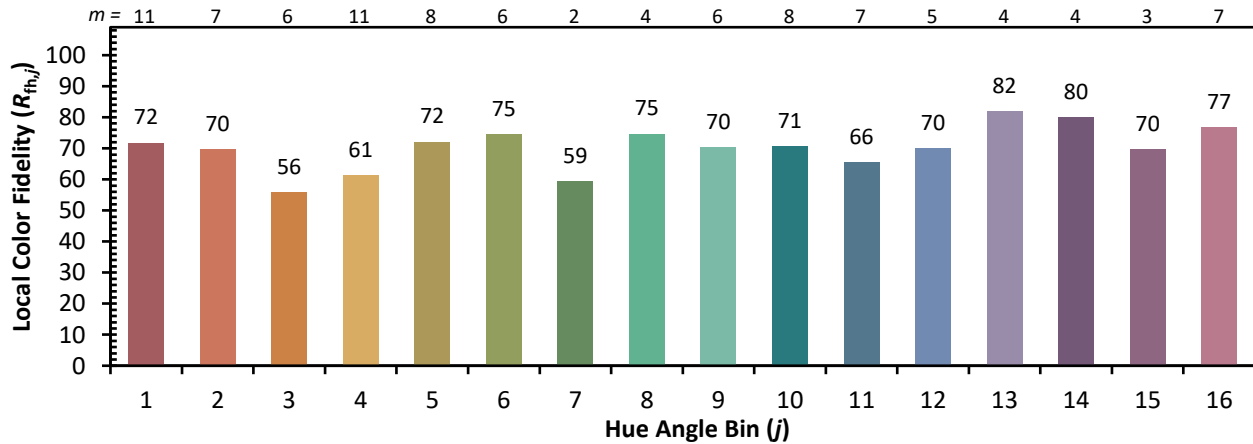
| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 54 | CES51 = 77 | CES76 = 48 |
| CES02 = 63 | CES27 = 74 | CES52 = 80 | CES77 = 75 |
| CES03 = 31 | CES28 = 80 | CES53 = 66 | CES78 = 56 |
| CES04 = 71 | CES29 = 44 | CES54 = 77 | CES79 = 81 |
| CES05 = 50 | CES30 = 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)