

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: P630697

Luminaire Tested: GWS-SA1E-727-U-T4W-W

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P630697
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-52)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA1E-727-U-T4W-W
Description: GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV WIDE OPTICS
Light Source: (16) 2700K CCT, 70 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 6282.8 lumens
Efficiency: N/A
Efficacy: 107.6 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type III - Short
BUG Rating: B1 - U0 - G2

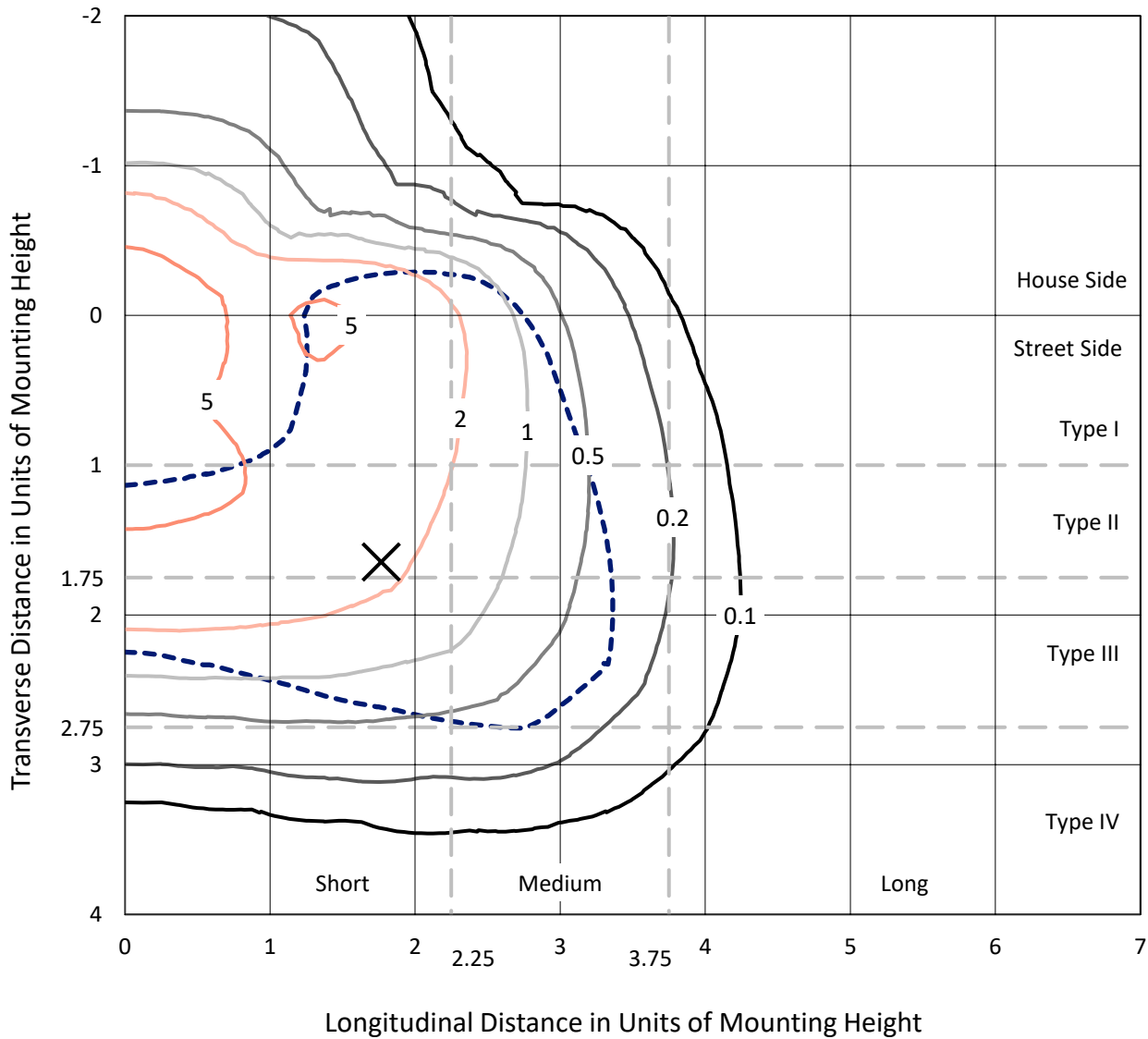
Input Watts (W): 58.4
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P630697
 CATALOG NUMBER: GWS-SA1E-727-U-T4W-W

Iso-Footcandle Lines of Horizontal Illumination

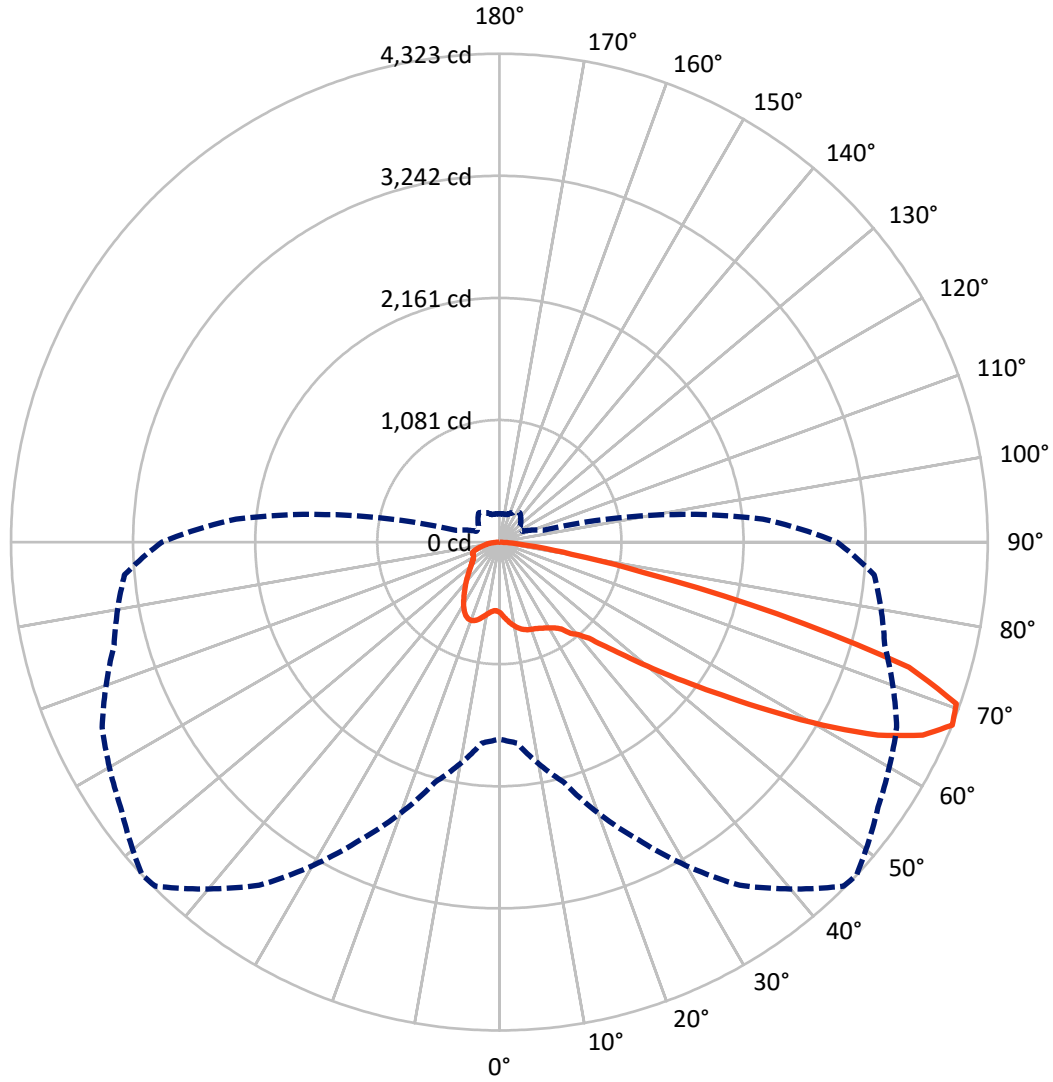
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 7.8 fc
 Type III - Short - N/A

REPORT NUMBER: P630697
CATALOG NUMBER: GWS-SA1E-727-U-T4W-W

Luminous Intensity Polar Plot



— Vertical Plane Through 47-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

REPORT NUMBER: P630697

CATALOG NUMBER: GWS-SA1E-727-U-T4W-W

FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 1431.9 | 0.0 | 1431.9 |
| | % Fixture | 22.8 | 0.0 | 22.8 |
| Street Side | Lumens | 4850.9 | 0.0 | 4850.9 |
| | % Fixture | 77.2 | 0.0 | 77.2 |
| Total | Lumens | 6282.8 | 0.0 | 6282.8 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 63.7 | 1.0 |
| 10°-20° | 212.1 | 3.4 |
| 20°-30° | 360.5 | 5.7 |
| 30°-40° | 528.0 | 8.4 |
| 40°-50° | 804.5 | 12.8 |
| 50°-60° | 1439.5 | 22.9 |
| 60°-70° | 1920.8 | 30.6 |
| 70°-80° | 868.6 | 13.8 |
| 80°-90° | 85.1 | 1.4 |
| 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° | 6282.8 | 100.0 |
| 0°-180° | 6282.8 | 100.0 |

Coefficient of Utilization



REPORT NUMBER: P630697

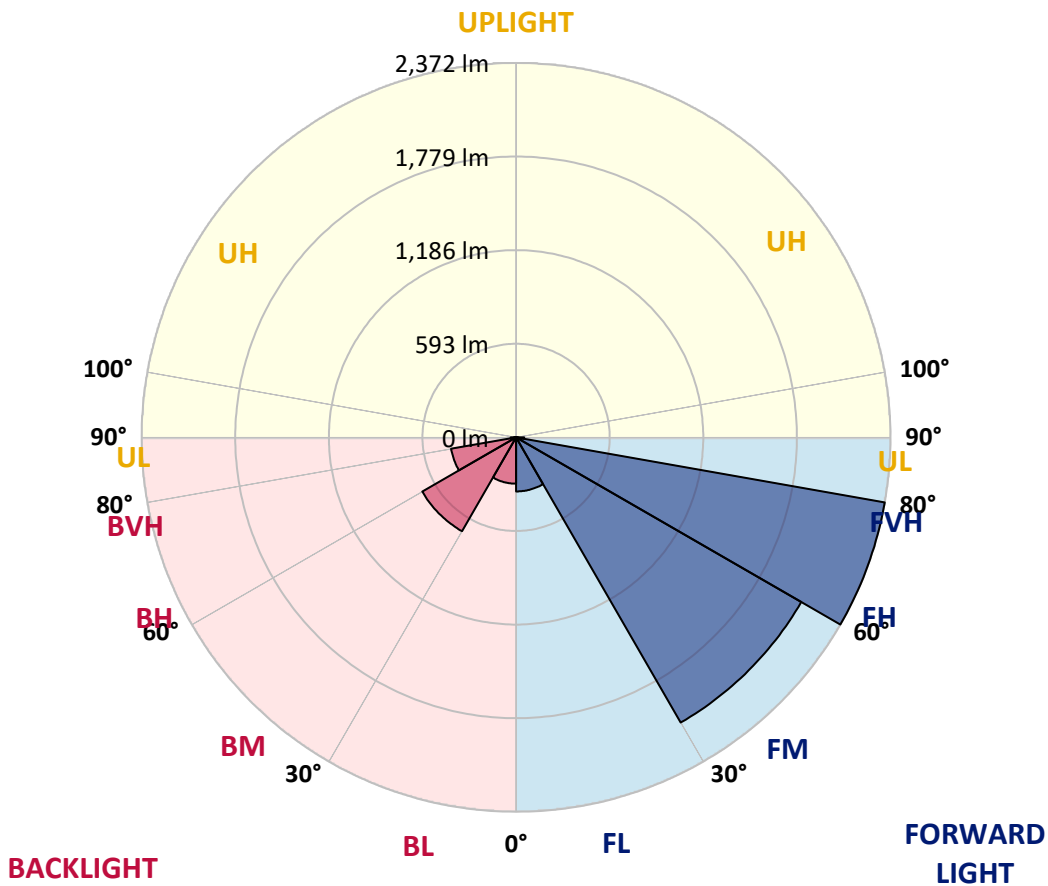
CATALOG NUMBER: GWS-SA1E-727-U-T4W-W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 342.6 | 5.5 | | | |
| FM (30°-60°) | 2086.0 | 33.2 | | | |
| FH (60°-80°) | 2371.7 | 37.7 | | | G2/5000 |
| FVH (80°-90°) | 50.6 | 0.8 | | | G1/100 |
| BL (0°-30°) | 293.5 | 4.7 | B1/500 | | |
| BM (30°-60°) | 686.1 | 10.9 | B1/1000 | | |
| BH (60°-80°) | 417.8 | 6.6 | B1/500 | | G1/500 |
| BVH (80°-90°) | 34.5 | 0.5 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G2

Type III Short





REPORT NUMBER: P630697
 CATALOG NUMBER: GWS-SA1E-727-U-T4W-W

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 47° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 |
| 2.5° | 664.2 | 666.4 | 666.0 | 662.3 | 660.1 | 656.0 | 656.4 | 650.1 | 640.5 | 634.2 | 626.9 |
| 5° | 722.8 | 726.4 | 721.9 | 716.0 | 706.9 | 693.7 | 692.3 | 677.8 | 659.6 | 646.9 | 633.7 |
| 7.5° | 773.6 | 775.9 | 770.5 | 760.5 | 747.3 | 729.6 | 726.4 | 709.1 | 686.4 | 666.4 | 647.4 |
| 10° | 813.2 | 815.9 | 808.6 | 795.5 | 778.2 | 760.5 | 758.2 | 740.5 | 716.4 | 692.8 | 668.7 |
| 12.5° | 846.8 | 847.7 | 840.0 | 822.3 | 803.6 | 785.5 | 783.2 | 766.8 | 744.6 | 720.5 | 694.1 |
| 15° | 866.3 | 866.8 | 857.2 | 837.7 | 820.0 | 804.1 | 802.7 | 788.6 | 768.2 | 745.5 | 717.3 |
| 17.5° | 865.0 | 865.9 | 859.1 | 841.8 | 826.3 | 816.8 | 815.4 | 806.4 | 790.5 | 770.0 | 741.8 |
| 20° | 848.1 | 849.1 | 844.5 | 833.2 | 825.0 | 822.3 | 822.7 | 820.0 | 810.4 | 793.6 | 765.0 |
| 22.5° | 835.0 | 836.3 | 832.2 | 824.1 | 823.2 | 829.5 | 830.9 | 832.2 | 827.7 | 812.7 | 785.0 |
| 25° | 841.3 | 843.6 | 837.2 | 825.9 | 827.7 | 841.8 | 844.5 | 849.1 | 845.4 | 832.7 | 808.6 |
| 27.5° | 885.4 | 886.8 | 870.4 | 847.2 | 841.8 | 856.8 | 860.9 | 868.1 | 865.4 | 853.6 | 835.0 |
| 30° | 987.6 | 986.7 | 951.7 | 894.9 | 872.2 | 878.1 | 881.3 | 891.8 | 892.7 | 884.9 | 867.2 |
| 32.5° | 1131.6 | 1127.1 | 1073.0 | 982.6 | 916.7 | 902.2 | 905.8 | 919.9 | 930.4 | 922.2 | 898.1 |
| 35° | 1283.8 | 1279.7 | 1220.2 | 1114.4 | 999.0 | 948.5 | 944.5 | 955.4 | 971.3 | 948.5 | 914.0 |
| 37.5° | 1428.7 | 1422.4 | 1361.5 | 1230.7 | 1100.3 | 1029.9 | 1024.0 | 1013.1 | 1003.5 | 959.9 | 933.6 |
| 40° | 1589.5 | 1582.3 | 1529.1 | 1381.0 | 1212.0 | 1092.1 | 1077.1 | 1034.0 | 1025.3 | 997.6 | 984.4 |
| 42.5° | 1761.3 | 1761.3 | 1717.2 | 1571.4 | 1347.0 | 1181.1 | 1161.6 | 1096.6 | 1105.7 | 1087.6 | 1072.1 |
| 45° | 1933.0 | 1938.0 | 1903.0 | 1763.1 | 1527.3 | 1349.2 | 1317.9 | 1225.7 | 1247.5 | 1239.3 | 1231.6 |
| 47.5° | 2079.3 | 2088.8 | 2082.0 | 1958.9 | 1748.1 | 1553.7 | 1506.0 | 1410.1 | 1456.9 | 1476.4 | 1498.2 |
| 50° | 2236.9 | 2247.3 | 2240.5 | 2191.9 | 2006.6 | 1801.2 | 1758.5 | 1659.5 | 1739.9 | 1798.5 | 1869.8 |
| 52.5° | 2470.9 | 2485.8 | 2429.1 | 2410.4 | 2320.5 | 2082.4 | 2044.3 | 1931.6 | 2077.4 | 2174.7 | 2333.7 |
| 55° | 2668.5 | 2668.0 | 2648.0 | 2690.7 | 2657.6 | 2426.3 | 2384.1 | 2281.9 | 2468.1 | 2571.3 | 2803.8 |
| 57.5° | 2760.2 | 2771.1 | 2839.7 | 2960.6 | 3026.9 | 2846.5 | 2806.1 | 2701.6 | 2887.4 | 2941.0 | 3192.3 |
| 60° | 2807.5 | 2821.1 | 2953.8 | 3192.7 | 3371.2 | 3305.4 | 3289.5 | 3156.4 | 3260.9 | 3254.5 | 3519.8 |
| 62.5° | 2741.2 | 2768.4 | 2981.5 | 3299.0 | 3617.0 | 3766.5 | 3761.5 | 3560.2 | 3578.4 | 3516.2 | 3722.9 |
| 65° | 2436.8 | 2466.3 | 2800.7 | 3245.9 | 3757.4 | 4117.2 | 4118.5 | 3925.9 | 3822.4 | 3643.4 | 3688.8 |
| 67.5° | 1742.6 | 1784.9 | 2198.3 | 2904.2 | 3707.9 | 4306.6 | 4322.5 | 4091.7 | 3879.6 | 3530.7 | 3330.8 |
| 70° | 949.9 | 980.8 | 1304.7 | 2111.1 | 3261.8 | 4261.2 | 4290.7 | 4011.8 | 3627.0 | 3054.2 | 2564.0 |
| 72.5° | 431.6 | 441.6 | 606.9 | 1158.4 | 2228.3 | 3667.9 | 3791.5 | 3580.2 | 2978.7 | 2256.0 | 1630.4 |
| 75° | 197.6 | 202.2 | 264.4 | 554.2 | 1164.3 | 2454.5 | 2541.3 | 2666.7 | 2072.9 | 1424.6 | 850.0 |
| 77.5° | 124.0 | 125.4 | 150.4 | 253.5 | 580.6 | 1225.2 | 1316.5 | 1587.7 | 1213.8 | 705.0 | 355.3 |
| 80° | 73.1 | 74.5 | 93.6 | 137.2 | 272.6 | 560.6 | 647.4 | 627.8 | 570.6 | 304.4 | 161.7 |
| 82.5° | 36.8 | 38.2 | 54.1 | 78.1 | 148.6 | 223.1 | 262.6 | 263.9 | 212.6 | 164.9 | 91.3 |
| 85° | 13.2 | 13.6 | 17.7 | 30.9 | 63.1 | 73.6 | 82.2 | 100.4 | 104.0 | 95.9 | 44.1 |
| 87.5° | 0.0 | 0.0 | 0.5 | 0.9 | 1.8 | 7.3 | 7.7 | 14.5 | 30.4 | 34.1 | 17.7 |
| 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: P630697
 CATALOG NUMBER: GWS-SA1E-727-U-T4W-W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 | 622.8 |
| 2.5° | 624.6 | 617.8 | 615.6 | 613.3 | 609.7 | 608.3 | 605.6 | 602.8 | 602.8 | 600.1 | 598.7 |
| 5° | 627.8 | 618.7 | 612.8 | 610.1 | 607.8 | 609.2 | 609.2 | 610.1 | 613.3 | 611.5 | 612.4 |
| 7.5° | 639.2 | 628.7 | 620.6 | 618.3 | 618.3 | 623.7 | 627.4 | 631.9 | 637.8 | 638.7 | 638.7 |
| 10° | 659.2 | 646.9 | 638.3 | 636.9 | 639.2 | 646.9 | 652.4 | 657.8 | 665.1 | 665.5 | 666.4 |
| 12.5° | 681.0 | 668.7 | 660.1 | 661.9 | 664.2 | 674.2 | 680.1 | 684.6 | 691.9 | 691.9 | 691.4 |
| 15° | 703.7 | 690.1 | 682.8 | 686.4 | 693.2 | 704.6 | 705.5 | 706.0 | 709.6 | 708.7 | 708.2 |
| 17.5° | 727.3 | 712.8 | 707.3 | 712.8 | 720.0 | 725.5 | 720.9 | 714.6 | 713.2 | 711.4 | 710.5 |
| 20° | 750.5 | 735.5 | 733.2 | 737.3 | 739.6 | 735.0 | 720.9 | 709.1 | 703.7 | 701.0 | 700.1 |
| 22.5° | 770.5 | 757.7 | 756.4 | 756.4 | 745.0 | 729.1 | 708.2 | 692.3 | 685.1 | 681.4 | 680.5 |
| 25° | 794.1 | 782.3 | 780.0 | 767.7 | 738.7 | 709.6 | 681.4 | 666.9 | 661.0 | 659.2 | 659.6 |
| 27.5° | 821.8 | 813.6 | 806.4 | 771.4 | 720.5 | 675.1 | 643.3 | 636.9 | 634.6 | 636.9 | 638.3 |
| 30° | 855.9 | 847.7 | 831.3 | 766.8 | 691.4 | 630.1 | 599.7 | 599.2 | 606.0 | 611.9 | 612.8 |
| 32.5° | 883.6 | 879.9 | 853.1 | 752.3 | 650.5 | 580.6 | 554.7 | 556.5 | 568.8 | 576.9 | 578.3 |
| 35° | 905.4 | 911.3 | 871.3 | 728.2 | 601.9 | 533.8 | 513.3 | 514.3 | 521.1 | 532.4 | 532.9 |
| 37.5° | 936.3 | 956.3 | 887.7 | 691.4 | 546.1 | 493.4 | 474.7 | 467.9 | 467.0 | 470.2 | 471.1 |
| 40° | 998.5 | 1028.5 | 899.5 | 637.8 | 492.0 | 457.0 | 436.1 | 422.9 | 411.6 | 403.0 | 400.2 |
| 42.5° | 1092.6 | 1127.1 | 906.3 | 572.9 | 443.8 | 421.1 | 397.5 | 380.7 | 360.7 | 342.5 | 336.2 |
| 45° | 1265.2 | 1276.5 | 906.3 | 503.8 | 401.1 | 387.5 | 363.9 | 343.9 | 318.5 | 297.1 | 292.6 |
| 47.5° | 1541.4 | 1505.0 | 907.2 | 437.0 | 363.4 | 358.0 | 337.5 | 314.8 | 286.7 | 268.9 | 266.2 |
| 50° | 1957.5 | 1829.9 | 925.8 | 381.6 | 332.1 | 333.0 | 318.0 | 293.0 | 267.6 | 254.4 | 252.1 |
| 52.5° | 2429.1 | 2230.1 | 975.8 | 340.7 | 305.7 | 312.5 | 304.4 | 280.3 | 257.6 | 246.2 | 244.0 |
| 55° | 2872.4 | 2598.1 | 1018.5 | 311.6 | 283.5 | 295.3 | 294.8 | 272.6 | 252.1 | 240.8 | 239.4 |
| 57.5° | 3249.5 | 2850.2 | 1012.1 | 288.0 | 264.4 | 279.4 | 286.2 | 267.6 | 248.5 | 239.0 | 237.6 |
| 60° | 3483.9 | 2983.7 | 921.7 | 266.2 | 249.9 | 268.0 | 281.2 | 266.2 | 250.3 | 248.0 | 248.5 |
| 62.5° | 3585.7 | 2959.2 | 748.2 | 249.9 | 240.3 | 262.6 | 286.7 | 275.8 | 267.1 | 272.6 | 275.8 |
| 65° | 3427.6 | 2748.4 | 550.6 | 237.6 | 231.2 | 263.9 | 299.4 | 290.7 | 267.1 | 270.8 | 272.1 |
| 67.5° | 2988.7 | 2339.6 | 398.0 | 225.3 | 219.9 | 268.0 | 317.5 | 288.5 | 251.7 | 251.7 | 248.9 |
| 70° | 2153.8 | 1682.7 | 288.9 | 213.1 | 208.5 | 262.1 | 318.5 | 273.0 | 234.0 | 232.6 | 225.8 |
| 72.5° | 1296.1 | 992.6 | 225.3 | 199.4 | 191.3 | 232.6 | 298.5 | 254.9 | 216.7 | 205.3 | 197.2 |
| 75° | 673.2 | 497.4 | 189.0 | 184.4 | 164.0 | 197.2 | 273.0 | 226.7 | 185.3 | 175.4 | 170.8 |
| 77.5° | 288.5 | 232.6 | 162.2 | 164.5 | 136.3 | 165.8 | 220.3 | 196.3 | 164.5 | 151.7 | 147.6 |
| 80° | 142.2 | 132.2 | 128.1 | 131.7 | 109.0 | 128.1 | 189.9 | 171.7 | 139.5 | 124.9 | 119.0 |
| 82.5° | 81.3 | 77.2 | 92.2 | 93.6 | 77.7 | 107.2 | 160.4 | 145.4 | 115.4 | 99.5 | 89.9 |
| 85° | 37.7 | 40.4 | 55.9 | 56.3 | 48.2 | 73.6 | 104.9 | 81.8 | 61.3 | 50.9 | 48.6 |
| 87.5° | 15.0 | 17.7 | 24.5 | 24.1 | 14.1 | 13.6 | 9.1 | 5.0 | 4.1 | 3.6 | 3.2 |
| 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 |

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

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 (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 | 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)