

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: P634153

Luminaire Tested: GWS-SA3B-727-U-T3-W-HSS

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P634153
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-26)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA3B-727-U-T3-W-HSS
Description: GALLEON WALL SLIM LUMINAIRE. (3) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS WITH HOUSE SIDE SHIELD
Light Source: (48) 2700K CCT, 70 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 6386.2 lumens
Efficiency: N/A
Efficacy: 93.5 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 0.5' x H: 0')
IES Classification: Type III - Short
BUG Rating: B1 - U0 - G2

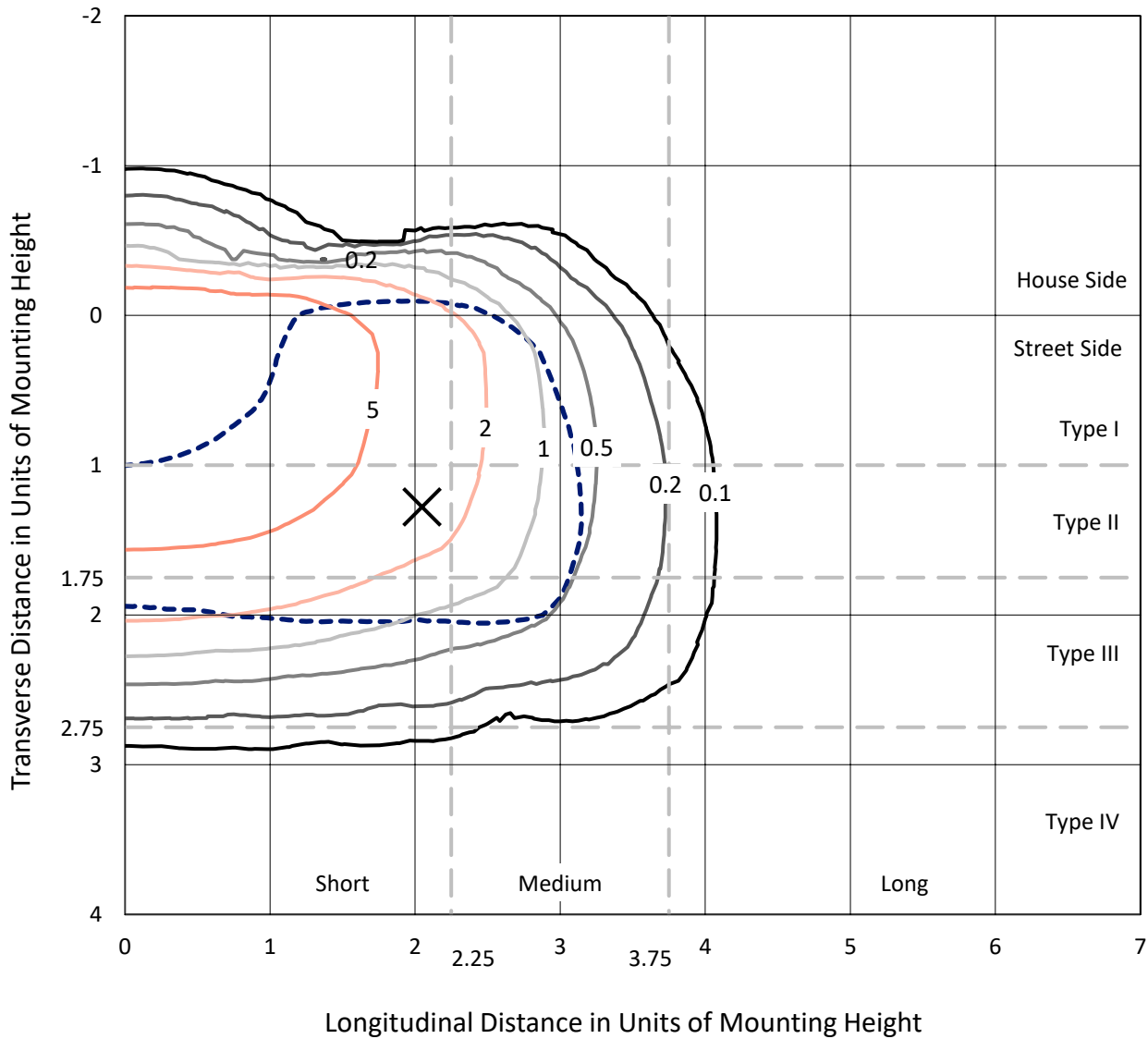
Input Watts (W): 68.3
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P634153
 CATALOG NUMBER: GWS-SA3B-727-U-T3-W-HSS

Iso-Footcandle Lines of Horizontal Illumination

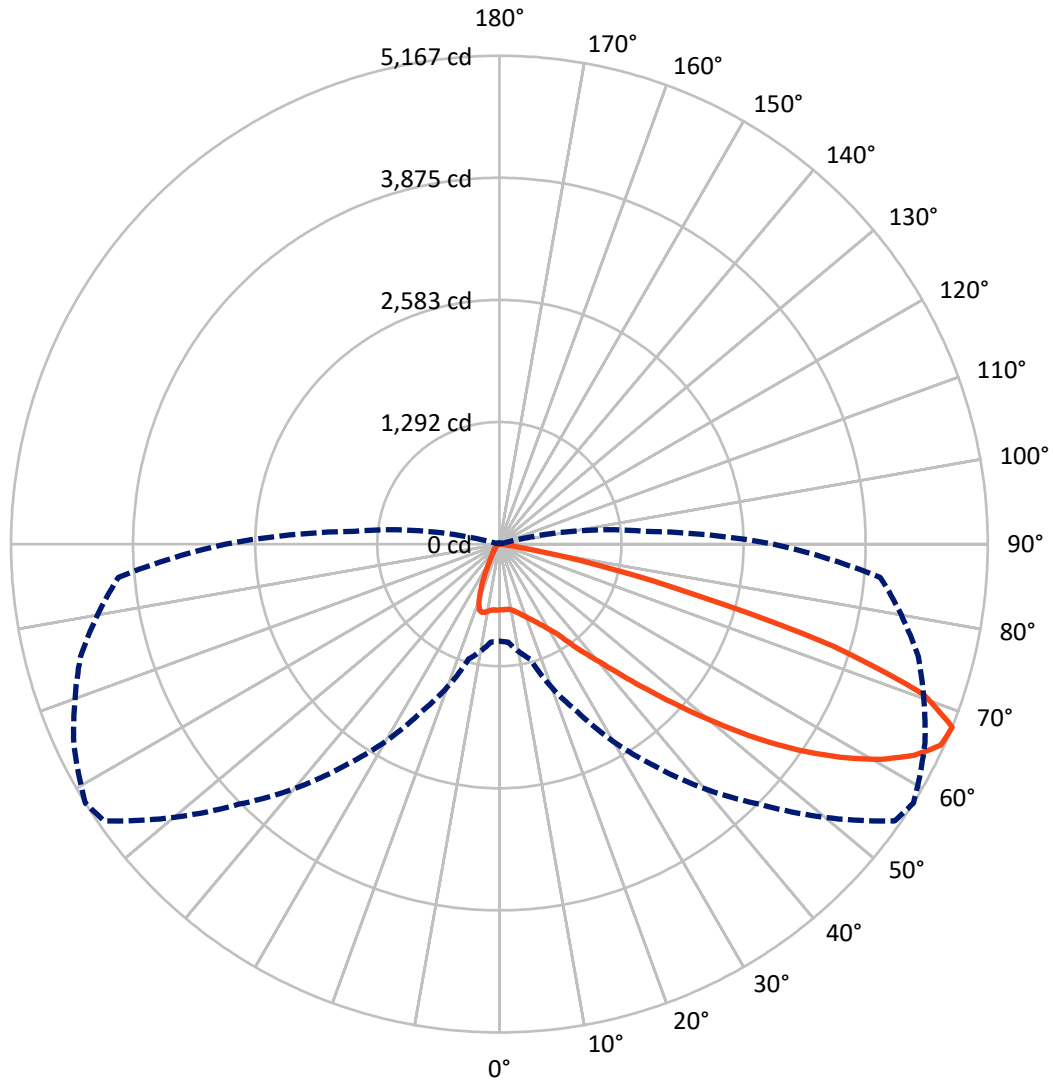
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 9.7 fc
 Type III - Short - N/A

REPORT NUMBER: P634153
CATALOG NUMBER: GWS-SA3B-727-U-T3-W-HSS

Luminous Intensity Polar Plot



— Vertical Plane Through 58-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

REPORT NUMBER: P634153

CATALOG NUMBER: GWS-SA3B-727-U-T3-W-HSS

FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 696.7 | 0.0 | 696.7 |
| | % Fixture | 10.9 | 0.0 | 10.9 |
| Street Side | Lumens | 5689.5 | 0.0 | 5689.5 |
| | % Fixture | 89.1 | 0.0 | 89.1 |
| Total | Lumens | 6386.2 | 0.0 | 6386.2 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 65.4 | 1.0 |
| 10°-20° | 183.5 | 2.9 |
| 20°-30° | 320.4 | 5.0 |
| 30°-40° | 572.2 | 9.0 |
| 40°-50° | 1045.8 | 16.4 |
| 50°-60° | 1739.3 | 27.2 |
| 60°-70° | 1889.2 | 29.6 |
| 70°-80° | 554.7 | 8.7 |
| 80°-90° | 15.8 | 0.2 |
| 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° | 6386.2 | 100.0 |
| 0°-180° | 6386.2 | 100.0 |

Coefficient of Utilization



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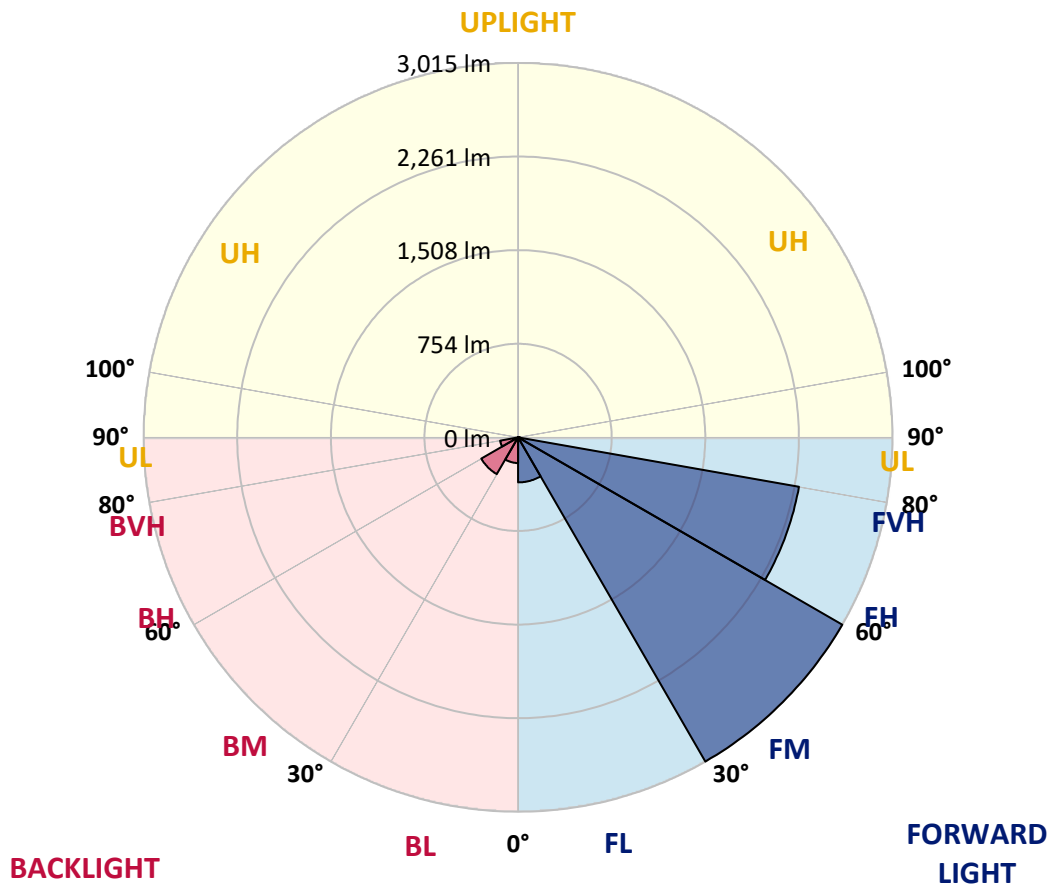
CATALOG NUMBER: GWS-SA3B-727-U-T3-W-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 362.6 | 5.7 | | | |
| FM (30°-60°) | 3015.1 | 47.2 | | | |
| FH (60°-80°) | 2296.8 | 36.0 | | | G2/5000 |
| FVH (80°-90°) | 15.0 | 0.2 | | | G1/100 |
| BL (0°-30°) | 206.7 | 3.2 | B1/500 | | |
| BM (30°-60°) | 342.2 | 5.4 | B1/1000 | | |
| BH (60°-80°) | 147.1 | 2.3 | B1/500 | | G1/500 |
| BVH (80°-90°) | 0.8 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G2

Type III Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 58° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 |
| 2.5° | 682.8 | 681.6 | 681.6 | 686.6 | 687.2 | 689.7 | 695.3 | 695.9 | 699.0 | 697.8 | 693.4 |
| 5° | 647.3 | 647.9 | 651.6 | 660.4 | 667.8 | 677.2 | 690.9 | 694.0 | 700.9 | 704.6 | 702.1 |
| 7.5° | 614.2 | 614.8 | 620.5 | 634.2 | 648.5 | 667.2 | 689.7 | 695.9 | 709.6 | 719.6 | 720.2 |
| 10° | 601.7 | 601.1 | 606.7 | 622.3 | 641.0 | 667.2 | 699.6 | 707.8 | 728.3 | 745.8 | 748.9 |
| 12.5° | 605.5 | 604.9 | 610.5 | 624.8 | 645.4 | 678.4 | 717.1 | 728.3 | 754.5 | 781.3 | 786.9 |
| 15° | 620.5 | 619.8 | 623.6 | 635.4 | 657.9 | 692.2 | 739.6 | 756.4 | 789.4 | 821.9 | 830.6 |
| 17.5° | 665.4 | 662.2 | 658.5 | 659.7 | 672.8 | 708.4 | 768.2 | 788.8 | 830.0 | 868.6 | 876.1 |
| 20° | 745.2 | 737.1 | 727.1 | 714.0 | 707.8 | 732.1 | 801.3 | 825.0 | 874.9 | 919.1 | 920.4 |
| 22.5° | 865.5 | 862.4 | 839.3 | 801.3 | 774.5 | 775.1 | 839.9 | 867.4 | 928.5 | 977.1 | 970.3 |
| 25° | 1033.3 | 1031.4 | 995.8 | 933.5 | 863.6 | 839.9 | 889.2 | 917.3 | 992.1 | 1043.9 | 1022.0 |
| 27.5° | 1241.5 | 1228.4 | 1186.7 | 1102.5 | 998.3 | 924.1 | 951.6 | 976.5 | 1059.4 | 1108.1 | 1066.9 |
| 30° | 1423.0 | 1423.6 | 1384.3 | 1296.4 | 1179.2 | 1050.7 | 1027.6 | 1049.5 | 1121.2 | 1172.3 | 1122.4 |
| 32.5° | 1597.6 | 1603.2 | 1560.2 | 1481.0 | 1352.5 | 1216.0 | 1136.8 | 1140.5 | 1200.4 | 1255.9 | 1195.4 |
| 35° | 1759.7 | 1764.1 | 1734.2 | 1666.8 | 1547.1 | 1388.7 | 1288.9 | 1287.1 | 1319.5 | 1376.2 | 1297.0 |
| 37.5° | 1941.2 | 1945.5 | 1916.2 | 1855.7 | 1743.5 | 1586.4 | 1461.6 | 1459.2 | 1472.3 | 1518.4 | 1428.0 |
| 40° | 2134.5 | 2142.6 | 2110.2 | 2059.0 | 1951.8 | 1819.0 | 1662.4 | 1640.0 | 1626.9 | 1681.1 | 1597.6 |
| 42.5° | 2330.3 | 2342.8 | 2331.5 | 2280.4 | 2188.7 | 2079.0 | 1923.1 | 1888.2 | 1860.1 | 1928.1 | 1839.5 |
| 45° | 2573.5 | 2588.4 | 2583.5 | 2544.2 | 2473.1 | 2383.9 | 2236.7 | 2196.2 | 2183.1 | 2246.1 | 2140.7 |
| 47.5° | 2807.3 | 2823.5 | 2841.6 | 2832.9 | 2782.4 | 2741.2 | 2577.8 | 2554.8 | 2551.0 | 2618.4 | 2455.0 |
| 50° | 2981.3 | 2996.3 | 3065.5 | 3115.4 | 3149.7 | 3140.9 | 2999.4 | 2965.1 | 2959.5 | 3002.5 | 2786.7 |
| 52.5° | 3106.0 | 3120.3 | 3215.8 | 3371.6 | 3497.6 | 3566.2 | 3423.4 | 3415.9 | 3385.4 | 3370.4 | 3097.3 |
| 55° | 3202.7 | 3222.6 | 3323.0 | 3558.7 | 3812.5 | 3964.7 | 3875.5 | 3848.7 | 3770.1 | 3684.1 | 3385.4 |
| 57.5° | 3222.0 | 3230.1 | 3371.6 | 3689.7 | 4057.0 | 4303.3 | 4303.3 | 4256.5 | 4105.0 | 3985.9 | 3718.4 |
| 60° | 3048.6 | 3073.6 | 3265.0 | 3679.1 | 4161.7 | 4524.6 | 4658.1 | 4625.6 | 4421.1 | 4274.6 | 4038.9 |
| 62.5° | 2663.9 | 2692.0 | 2925.2 | 3425.3 | 4057.0 | 4570.2 | 4926.8 | 4921.8 | 4691.1 | 4513.4 | 4304.5 |
| 65° | 2042.8 | 2063.4 | 2266.7 | 2865.3 | 3614.2 | 4394.9 | 5118.9 | 5132.6 | 4904.4 | 4671.2 | 4396.2 |
| 67.5° | 1026.4 | 1040.7 | 1260.2 | 1957.4 | 2864.7 | 3890.5 | 5105.8 | 5166.9 | 4969.2 | 4587.6 | 4046.4 |
| 70° | 358.6 | 372.9 | 476.4 | 839.9 | 1743.5 | 2970.7 | 4664.3 | 4764.1 | 4588.2 | 3916.0 | 2985.0 |
| 72.5° | 122.8 | 129.7 | 197.7 | 311.8 | 678.4 | 1761.0 | 3546.9 | 3697.2 | 3382.2 | 2629.0 | 1715.4 |
| 75° | 69.8 | 74.2 | 106.0 | 169.0 | 284.3 | 579.3 | 2012.3 | 2104.6 | 1971.7 | 1433.0 | 705.9 |
| 77.5° | 47.4 | 51.1 | 66.1 | 96.0 | 157.1 | 186.4 | 820.6 | 1033.3 | 901.1 | 467.7 | 180.2 |
| 80° | 28.1 | 30.6 | 40.5 | 56.7 | 80.4 | 72.3 | 175.8 | 233.8 | 301.2 | 139.7 | 54.3 |
| 82.5° | 13.1 | 15.0 | 26.2 | 37.4 | 40.5 | 30.6 | 51.8 | 63.0 | 84.8 | 68.6 | 22.4 |
| 85° | 0.0 | 0.0 | 8.7 | 15.6 | 15.0 | 8.7 | 14.3 | 15.6 | 23.1 | 34.3 | 8.7 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 1.2 | 1.9 | 3.7 | 6.9 | 3.7 |
| 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: P634153
 CATALOG NUMBER: GWS-SA3B-727-U-T3-W-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 | 695.9 |
| 2.5° | 698.4 | 694.0 | 699.0 | 696.5 | 699.0 | 698.4 | 693.4 | 690.3 | 690.3 | 684.7 | 682.8 |
| 5° | 707.1 | 702.8 | 704.0 | 698.4 | 697.2 | 694.0 | 687.8 | 685.3 | 685.3 | 679.7 | 677.8 |
| 7.5° | 726.5 | 719.6 | 718.4 | 707.1 | 702.1 | 693.4 | 682.2 | 677.8 | 677.2 | 671.6 | 669.7 |
| 10° | 757.0 | 748.9 | 743.3 | 729.0 | 714.6 | 697.2 | 673.5 | 653.5 | 642.3 | 627.3 | 626.1 |
| 12.5° | 794.4 | 784.5 | 775.7 | 753.9 | 730.2 | 690.9 | 621.1 | 548.1 | 503.2 | 467.7 | 470.2 |
| 15° | 836.2 | 826.9 | 813.1 | 780.1 | 731.4 | 629.2 | 483.3 | 371.0 | 316.2 | 286.8 | 285.6 |
| 17.5° | 881.7 | 868.0 | 845.6 | 800.7 | 692.2 | 480.8 | 314.3 | 222.0 | 193.3 | 183.3 | 180.8 |
| 20° | 924.1 | 907.3 | 879.2 | 805.0 | 578.7 | 325.5 | 196.4 | 172.1 | 167.1 | 164.0 | 164.0 |
| 22.5° | 969.0 | 947.8 | 906.0 | 771.4 | 430.3 | 208.3 | 167.1 | 161.5 | 157.8 | 153.4 | 152.8 |
| 25° | 1014.5 | 987.1 | 930.4 | 683.4 | 281.9 | 164.0 | 156.5 | 150.3 | 143.4 | 136.6 | 134.7 |
| 27.5° | 1053.2 | 1017.7 | 949.1 | 552.5 | 180.8 | 147.8 | 142.8 | 132.2 | 122.8 | 115.4 | 114.1 |
| 30° | 1099.4 | 1053.8 | 957.2 | 404.1 | 142.2 | 130.3 | 122.8 | 111.6 | 100.4 | 92.9 | 90.4 |
| 32.5° | 1161.1 | 1111.2 | 944.7 | 263.1 | 126.0 | 114.7 | 102.9 | 89.8 | 78.6 | 70.5 | 69.2 |
| 35° | 1257.1 | 1197.9 | 887.3 | 167.7 | 114.1 | 99.1 | 84.8 | 71.1 | 61.7 | 55.5 | 54.3 |
| 37.5° | 1374.4 | 1319.5 | 793.2 | 126.0 | 102.3 | 86.1 | 69.2 | 56.1 | 49.3 | 44.9 | 43.6 |
| 40° | 1548.3 | 1471.6 | 676.6 | 110.4 | 90.4 | 73.0 | 56.7 | 46.1 | 41.2 | 37.4 | 36.2 |
| 42.5° | 1774.1 | 1651.2 | 542.5 | 100.4 | 79.2 | 61.1 | 46.1 | 38.0 | 33.7 | 31.2 | 30.6 |
| 45° | 2037.8 | 1826.4 | 401.0 | 90.4 | 68.6 | 50.5 | 38.0 | 31.2 | 28.1 | 26.2 | 25.6 |
| 47.5° | 2307.8 | 1979.8 | 276.9 | 79.8 | 58.6 | 41.8 | 31.8 | 26.8 | 24.3 | 21.8 | 21.2 |
| 50° | 2595.9 | 2109.5 | 188.9 | 69.2 | 49.9 | 34.3 | 27.4 | 24.3 | 21.2 | 19.3 | 18.7 |
| 52.5° | 2807.3 | 2157.6 | 131.6 | 59.9 | 42.4 | 29.3 | 24.3 | 21.8 | 19.3 | 16.8 | 16.2 |
| 55° | 3002.5 | 2156.3 | 99.8 | 50.5 | 36.2 | 25.6 | 21.8 | 19.3 | 16.8 | 15.0 | 14.3 |
| 57.5° | 3197.0 | 2139.5 | 78.6 | 43.0 | 31.2 | 23.1 | 19.3 | 16.8 | 15.6 | 13.1 | 12.5 |
| 60° | 3323.0 | 2075.9 | 61.1 | 36.2 | 26.8 | 20.0 | 16.8 | 15.0 | 13.1 | 11.2 | 10.6 |
| 62.5° | 3389.7 | 1987.3 | 46.8 | 28.7 | 21.8 | 17.5 | 15.0 | 13.1 | 11.2 | 9.4 | 8.7 |
| 65° | 3299.3 | 1830.2 | 36.8 | 22.4 | 16.8 | 15.0 | 12.5 | 10.6 | 8.7 | 6.9 | 6.2 |
| 67.5° | 2898.4 | 1543.3 | 28.7 | 18.1 | 13.1 | 11.2 | 10.6 | 8.7 | 6.2 | 5.0 | 4.4 |
| 70° | 2048.4 | 1057.0 | 22.4 | 13.7 | 10.0 | 8.7 | 8.1 | 6.9 | 5.0 | 3.7 | 3.1 |
| 72.5° | 1124.3 | 533.2 | 16.2 | 10.0 | 7.5 | 6.9 | 6.2 | 5.6 | 4.4 | 3.1 | 3.1 |
| 75° | 432.8 | 146.5 | 11.8 | 6.9 | 5.0 | 5.0 | 4.4 | 4.4 | 3.7 | 2.5 | 2.5 |
| 77.5° | 112.9 | 43.6 | 7.5 | 4.4 | 3.1 | 3.1 | 3.1 | 2.5 | 2.5 | 1.9 | 1.9 |
| 80° | 36.2 | 14.3 | 4.4 | 3.1 | 2.5 | 1.9 | 1.9 | 1.2 | 1.9 | 1.2 | 1.2 |
| 82.5° | 11.8 | 5.0 | 2.5 | 2.5 | 1.9 | 1.2 | 1.2 | 0.6 | 0.6 | 0.0 | 0.0 |
| 85° | 4.4 | 2.5 | 1.9 | 1.2 | 1.2 | 1.2 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 2.5 | 1.2 | 1.2 | 1.2 | 1.2 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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

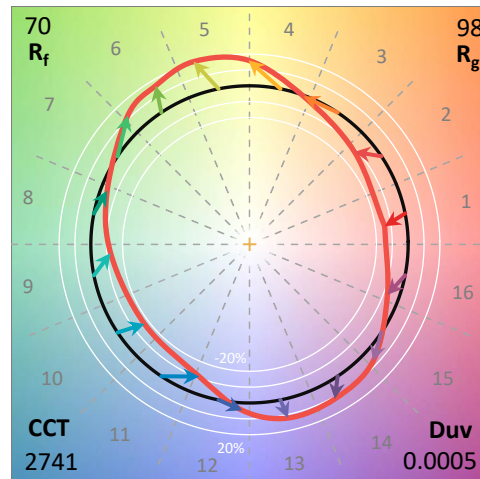
Test Information

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 | CRI (Ra): | 71.5 | R9: | -16.1 |
| CIE u': | 0.2605 | R1: | 69.2 | R10: | 51.4 |
| CIE v': | 0.5272 | R2: | 79.4 | R11: | 63.1 |
| Duv: | 0.0005 | R3: | 87.8 | R12: | 42.0 |
| CIE x: | 0.4573 | R4: | 69.4 | R13: | 70.2 |
| CIE y: | 0.4113 | R5: | 66.4 | R14: | 92.4 |
| CIE z: | 0.1313 | R6: | 69.8 | | |
| Peak Wavelength (nm): | 602 | R7: | 79.8 | | |
| Dominant Wavelength (nm): | 583 | R8: | 50.1 | | |
| Purity: | 61.2 | | | | |
| 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 ($\mu\text{W}/\text{nm}$) | 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



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TM-30-18

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

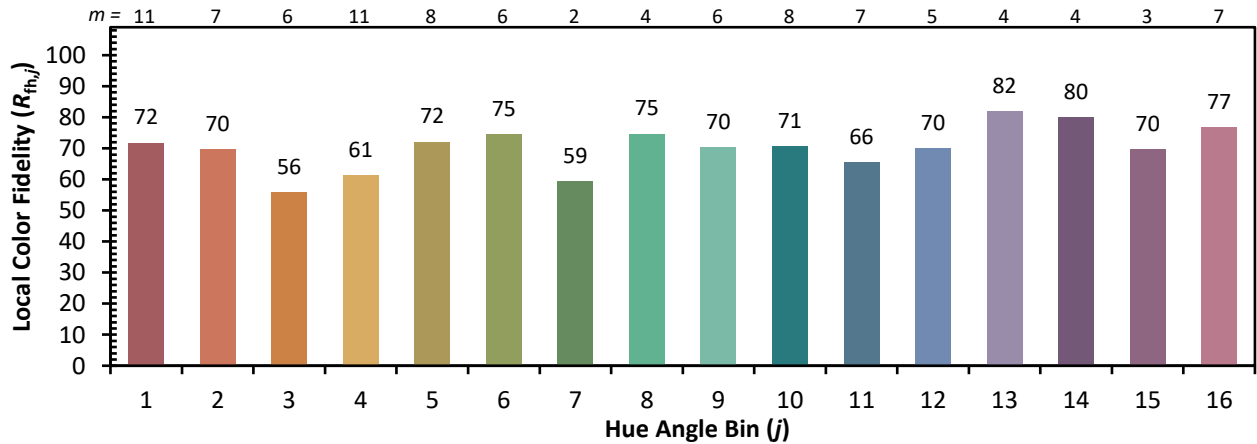
| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 54 | CES51 = 77 | CES76 = 48 |
| CES02 = 63 | CES27 = 74 | CES52 = 80 | CES77 = 75 |
| CES03 = 31 | CES28 = 80 | CES53 = 66 | CES78 = 56 |
| CES04 = 71 | CES29 = 44 | CES54 = 77 | CES79 = 81 |
| CES05 = 50 | CES30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