

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



Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P438664

Luminaire Tested: **ISW-SA1E-727-U-T2-HSS**

Issue Date: 12/10/2020

Test Information

Test Method: LM-79-08
Report Number: P438664
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-7)
Test Lab: INNOVATION CENTER
Issue Date: 12/10/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: McGRAW-EDISON
Catalog Number: ISW-SA1E-727-U-T2-HSS
Description: IMPACT ELITE LED WEDGE LUMINAIRE
(1) 70 CRI, 2700K, 1050mA LIGHTSQUARE WITH 16 LEDS AND TYPE II OPTICS
WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4427 lumens
Efficiency: N/A
Efficacy: 76.1 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type II - Medium
BUG Rating: B1 - U0 - G1

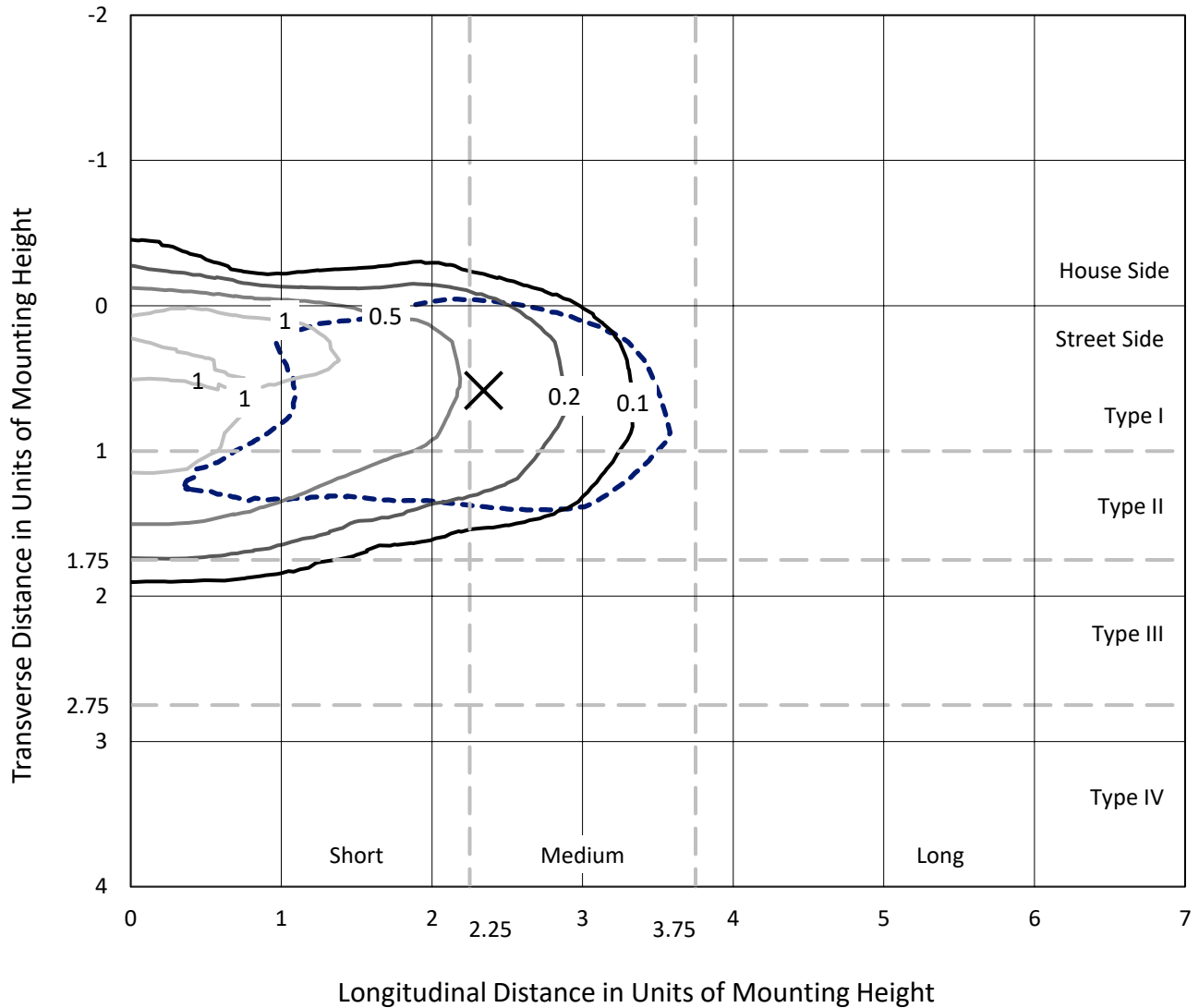
Input Watts (W): 58.2
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

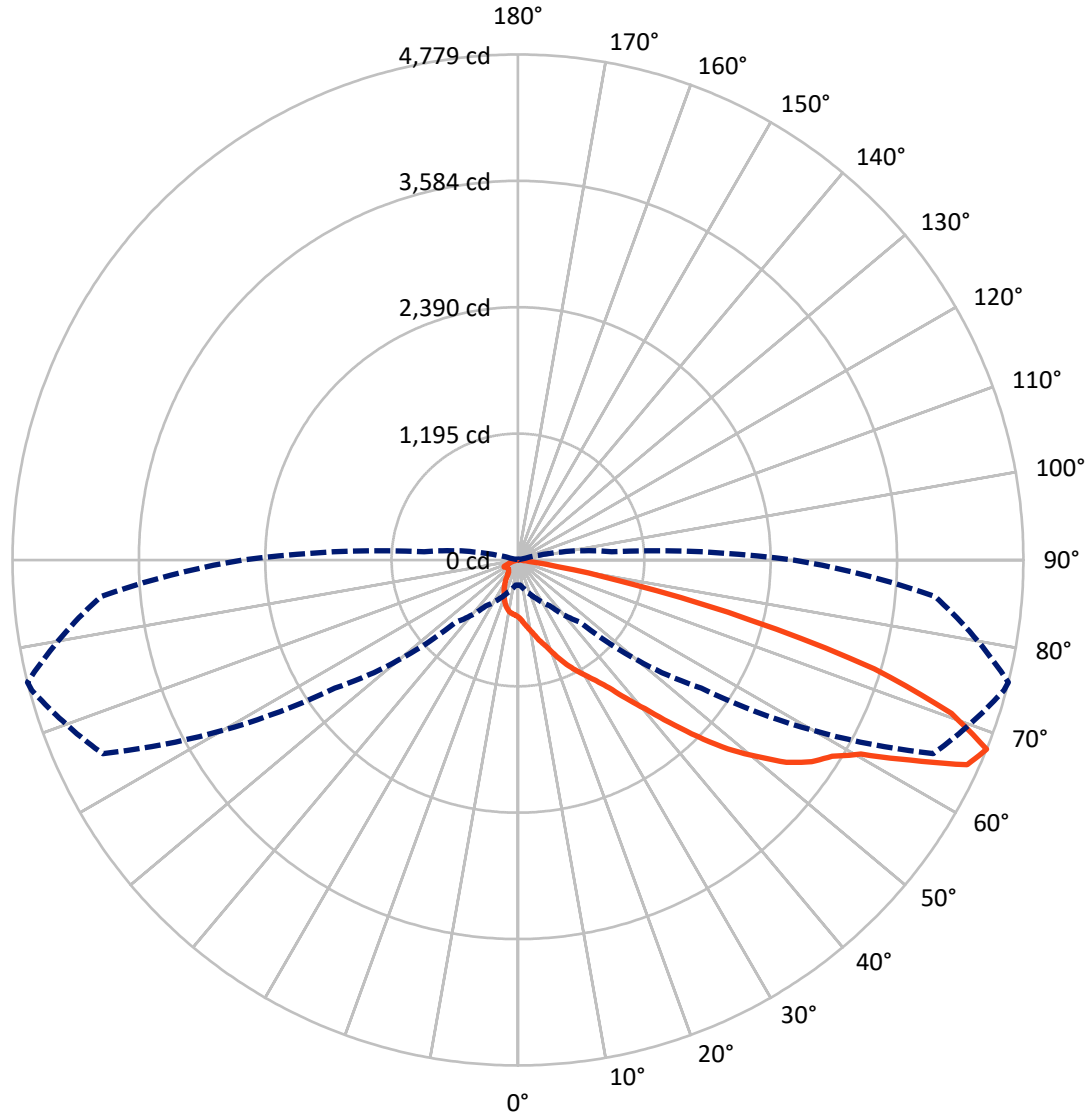
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.3 fc
 Type II - Medium - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 76-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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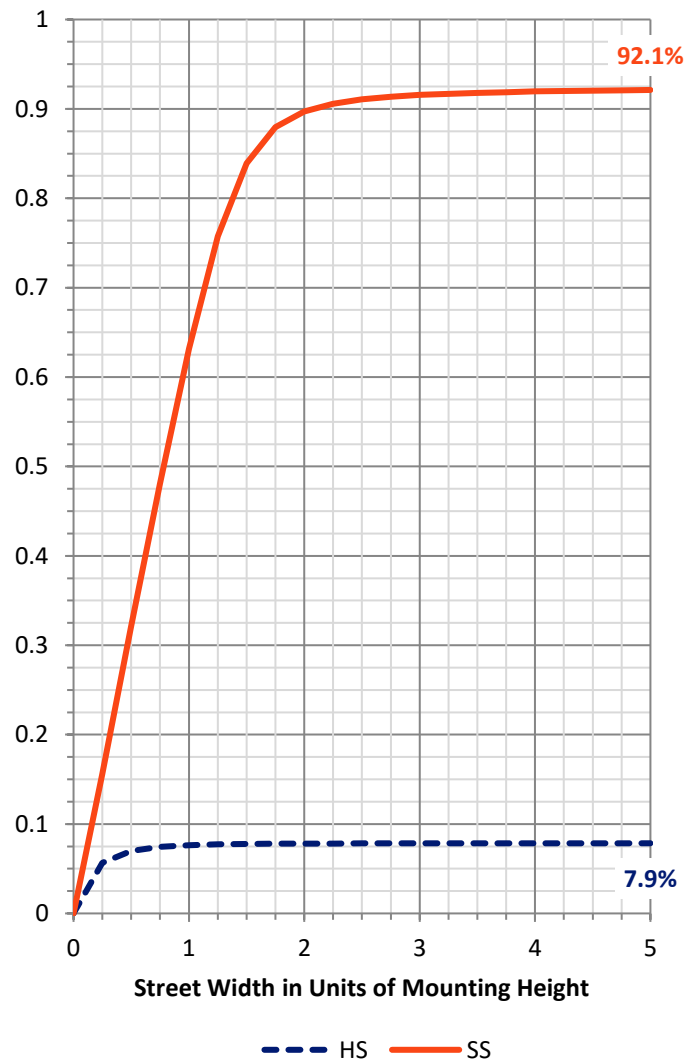
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 350.3 | 0.0 | 350.3 |
| | % Fixture | 7.9 | 0.0 | 7.9 |
| Street Side | Lumens | 4076.8 | 0.0 | 4076.8 |
| | % Fixture | 92.1 | 0.0 | 92.1 |
| Total | Lumens | 4427.0 | 0.0 | 4427.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 51.6 | 1.2 |
| 10°-20° | 143.9 | 3.2 |
| 20°-30° | 248.3 | 5.6 |
| 30°-40° | 442.2 | 10.0 |
| 40°-50° | 787.5 | 17.8 |
| 50°-60° | 1180.9 | 26.7 |
| 60°-70° | 1118.5 | 25.3 |
| 70°-80° | 436.0 | 9.8 |
| 80°-90° | 18.1 | 0.4 |
| 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° | 4427.0 | 100.0 |
| 0°-180° | 4427.0 | 100.0 |



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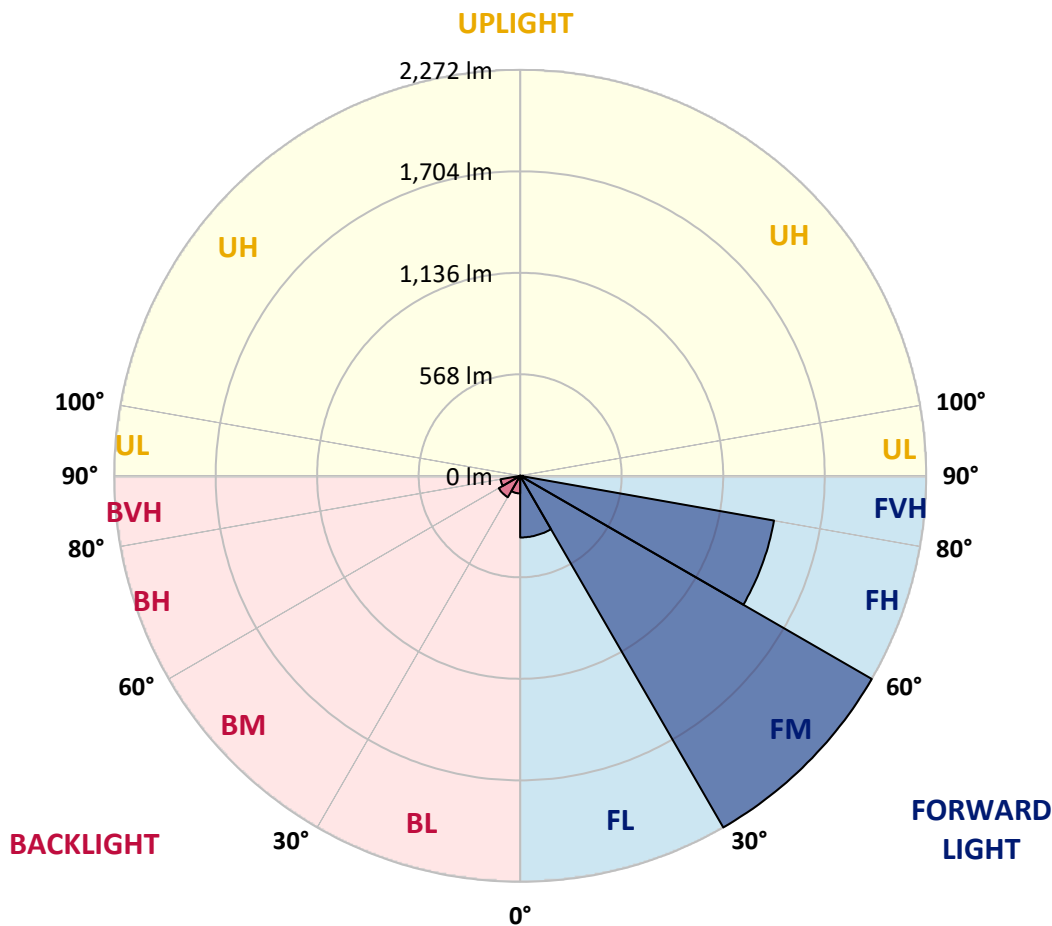
CATALOG NUMBER: ISW-SA1E-727-U-T2-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 345.2 | 7.8 | | | |
| FM (30°-60°) | 2272.5 | 51.3 | | | |
| FH (60°-80°) | 1442.7 | 32.6 | | | G1/1800 |
| FVH (80°-90°) | 16.5 | 0.4 | | | G1/100 |
| BL (0°-30°) | 98.6 | 2.2 | B0/110 | | |
| BM (30°-60°) | 138.2 | 3.1 | B0/220 | | |
| BH (60°-80°) | 111.8 | 2.5 | B1/500 | | G1/500 |
| BVH (80°-90°) | 1.6 | 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-G1

Type II Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 76° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 |
| 2.5° | 637.8 | 631.5 | 627.4 | 625.3 | 621.2 | 608.8 | 598.4 | 579.8 | 563.2 | 563.2 | 552.9 |
| 5° | 695.7 | 693.7 | 685.4 | 681.2 | 679.2 | 670.9 | 652.3 | 629.5 | 602.6 | 600.5 | 575.6 |
| 7.5° | 712.3 | 714.4 | 714.4 | 718.5 | 720.6 | 716.4 | 699.9 | 679.2 | 644.0 | 639.8 | 602.6 |
| 10° | 706.1 | 706.1 | 712.3 | 724.7 | 741.3 | 749.6 | 747.5 | 730.9 | 689.5 | 685.4 | 633.6 |
| 12.5° | 683.3 | 687.5 | 697.8 | 718.5 | 749.6 | 774.4 | 788.9 | 782.7 | 741.3 | 737.1 | 675.0 |
| 15° | 652.3 | 656.4 | 675.0 | 704.0 | 745.4 | 793.1 | 826.2 | 844.8 | 803.4 | 799.3 | 718.5 |
| 17.5° | 608.8 | 612.9 | 633.6 | 677.1 | 735.1 | 801.3 | 865.5 | 902.8 | 867.6 | 855.2 | 764.1 |
| 20° | 592.2 | 596.3 | 612.9 | 648.1 | 716.4 | 801.3 | 900.7 | 971.1 | 944.2 | 933.9 | 822.0 |
| 22.5° | 658.5 | 656.4 | 641.9 | 646.0 | 697.8 | 795.1 | 927.6 | 1056.0 | 1035.3 | 1020.8 | 884.2 |
| 25° | 778.6 | 786.8 | 766.1 | 718.5 | 710.2 | 788.9 | 946.3 | 1122.3 | 1120.2 | 1105.7 | 948.4 |
| 27.5° | 917.3 | 921.4 | 898.7 | 849.0 | 780.6 | 801.3 | 967.0 | 1188.5 | 1198.9 | 1186.5 | 998.0 |
| 30° | 1031.2 | 1045.7 | 1029.1 | 983.6 | 911.1 | 855.2 | 981.5 | 1248.6 | 1283.8 | 1267.2 | 1045.7 |
| 32.5° | 1194.8 | 1201.0 | 1184.4 | 1118.1 | 1043.6 | 958.7 | 1008.4 | 1300.4 | 1377.0 | 1362.5 | 1101.6 |
| 35° | 1366.6 | 1374.9 | 1343.8 | 1271.4 | 1180.3 | 1085.0 | 1072.6 | 1370.8 | 1511.6 | 1482.6 | 1186.5 |
| 37.5° | 1519.8 | 1528.1 | 1513.6 | 1424.6 | 1335.6 | 1234.1 | 1186.5 | 1466.0 | 1675.1 | 1656.5 | 1292.1 |
| 40° | 1642.0 | 1662.7 | 1658.6 | 1582.0 | 1499.1 | 1408.0 | 1350.1 | 1577.8 | 1863.6 | 1847.0 | 1426.7 |
| 42.5° | 1766.3 | 1780.7 | 1772.5 | 1716.6 | 1658.6 | 1602.7 | 1530.2 | 1733.1 | 2105.8 | 2097.6 | 1594.4 |
| 45° | 1921.6 | 1944.3 | 1934.0 | 1888.4 | 1818.0 | 1805.6 | 1737.3 | 1919.5 | 2393.7 | 2381.2 | 1797.3 |
| 47.5° | 2151.4 | 2172.1 | 2155.5 | 2093.4 | 2012.7 | 1989.9 | 1931.9 | 2130.7 | 2675.3 | 2669.0 | 1998.2 |
| 50° | 2275.6 | 2296.3 | 2339.8 | 2350.2 | 2296.3 | 2174.2 | 2105.8 | 2331.5 | 2927.9 | 2917.5 | 2190.7 |
| 52.5° | 2232.1 | 2250.8 | 2356.4 | 2455.8 | 2573.8 | 2470.3 | 2317.0 | 2549.0 | 3159.8 | 3178.4 | 2379.2 |
| 55° | 2045.8 | 2070.6 | 2221.8 | 2381.2 | 2667.0 | 2805.7 | 2629.7 | 2795.4 | 3342.0 | 3368.9 | 2503.4 |
| 57.5° | 1668.9 | 1697.9 | 1892.6 | 2139.0 | 2524.1 | 2890.6 | 3016.9 | 3134.9 | 3466.2 | 3501.4 | 2662.8 |
| 60° | 1000.1 | 1045.7 | 1246.5 | 1573.7 | 2107.9 | 2689.8 | 3292.3 | 3623.6 | 3708.5 | 3725.1 | 3002.4 |
| 62.5° | 554.9 | 544.6 | 706.1 | 975.3 | 1453.6 | 2184.5 | 3250.9 | 4217.9 | 4166.1 | 4166.1 | 3582.2 |
| 65° | 333.4 | 343.7 | 426.6 | 579.8 | 844.8 | 1441.2 | 2898.9 | 4584.4 | 4652.7 | 4667.2 | 4052.2 |
| 67.5° | 236.1 | 238.1 | 298.2 | 397.6 | 528.0 | 830.3 | 2114.1 | 4331.8 | 4758.3 | 4779.0 | 3959.1 |
| 70° | 153.2 | 155.3 | 213.3 | 283.7 | 376.9 | 457.6 | 1292.1 | 3569.8 | 4358.7 | 4348.3 | 3501.4 |
| 72.5° | 93.2 | 97.3 | 134.6 | 209.1 | 289.9 | 258.8 | 695.7 | 2580.0 | 3453.8 | 3524.2 | 2747.7 |
| 75° | 58.0 | 62.1 | 80.8 | 144.9 | 202.9 | 176.0 | 306.5 | 1722.8 | 2228.0 | 2281.8 | 1774.5 |
| 77.5° | 33.1 | 37.3 | 51.8 | 82.8 | 144.9 | 122.2 | 144.9 | 904.9 | 1078.8 | 1114.0 | 712.3 |
| 80° | 12.4 | 14.5 | 26.9 | 41.4 | 89.0 | 74.5 | 66.3 | 306.5 | 343.7 | 385.1 | 217.4 |
| 82.5° | 2.1 | 4.1 | 12.4 | 24.8 | 35.2 | 35.2 | 29.0 | 93.2 | 95.2 | 101.5 | 58.0 |
| 85° | 0.0 | 0.0 | 4.1 | 6.2 | 6.2 | 6.2 | 10.4 | 18.6 | 29.0 | 29.0 | 16.6 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 2.1 | 2.1 | 2.1 | 4.1 | 4.1 | 4.1 | 4.1 |
| 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: P438664
 CATALOG NUMBER: ISW-SA1E-727-U-T2-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 | 538.4 |
| 2.5° | 542.5 | 538.4 | 521.8 | 505.2 | 492.8 | 482.5 | 465.9 | 465.9 | 459.7 | 453.5 | 455.5 |
| 5° | 557.0 | 544.6 | 513.5 | 482.5 | 453.5 | 426.6 | 403.8 | 393.4 | 378.9 | 374.8 | 372.7 |
| 7.5° | 575.6 | 552.9 | 501.1 | 451.4 | 403.8 | 368.6 | 339.6 | 320.9 | 304.4 | 300.2 | 302.3 |
| 10° | 598.4 | 565.3 | 486.6 | 410.0 | 352.0 | 308.5 | 275.4 | 260.9 | 242.3 | 236.1 | 229.8 |
| 12.5° | 631.5 | 579.8 | 463.8 | 364.4 | 300.2 | 256.8 | 209.1 | 173.9 | 161.5 | 157.4 | 157.4 |
| 15° | 658.5 | 588.1 | 434.8 | 320.9 | 256.8 | 188.4 | 149.1 | 142.9 | 140.8 | 140.8 | 140.8 |
| 17.5° | 689.5 | 594.3 | 399.6 | 279.5 | 198.8 | 138.7 | 130.5 | 130.5 | 128.4 | 128.4 | 126.3 |
| 20° | 722.7 | 596.3 | 362.4 | 242.3 | 140.8 | 124.2 | 118.0 | 116.0 | 111.8 | 109.7 | 109.7 |
| 22.5° | 759.9 | 594.3 | 320.9 | 198.8 | 124.2 | 113.9 | 103.5 | 99.4 | 95.2 | 91.1 | 91.1 |
| 25° | 791.0 | 590.1 | 283.7 | 142.9 | 113.9 | 99.4 | 89.0 | 82.8 | 78.7 | 76.6 | 74.5 |
| 27.5° | 817.9 | 567.4 | 246.4 | 122.2 | 103.5 | 89.0 | 76.6 | 70.4 | 66.3 | 64.2 | 64.2 |
| 30° | 820.0 | 530.1 | 215.3 | 113.9 | 95.2 | 78.7 | 66.3 | 62.1 | 60.0 | 58.0 | 58.0 |
| 32.5° | 832.4 | 492.8 | 182.2 | 107.7 | 84.9 | 70.4 | 60.0 | 55.9 | 51.8 | 51.8 | 51.8 |
| 35° | 857.2 | 459.7 | 140.8 | 97.3 | 76.6 | 62.1 | 53.8 | 49.7 | 47.6 | 45.6 | 45.6 |
| 37.5° | 896.6 | 436.9 | 116.0 | 89.0 | 70.4 | 55.9 | 49.7 | 45.6 | 43.5 | 41.4 | 41.4 |
| 40° | 948.4 | 424.5 | 105.6 | 80.8 | 62.1 | 51.8 | 45.6 | 41.4 | 37.3 | 35.2 | 35.2 |
| 42.5° | 1037.4 | 424.5 | 97.3 | 72.5 | 55.9 | 47.6 | 41.4 | 37.3 | 33.1 | 31.1 | 31.1 |
| 45° | 1140.9 | 441.0 | 91.1 | 64.2 | 49.7 | 43.5 | 37.3 | 31.1 | 26.9 | 24.8 | 24.8 |
| 47.5° | 1254.8 | 472.1 | 84.9 | 58.0 | 45.6 | 39.3 | 33.1 | 24.8 | 20.7 | 18.6 | 18.6 |
| 50° | 1387.3 | 517.7 | 80.8 | 51.8 | 41.4 | 35.2 | 26.9 | 18.6 | 16.6 | 14.5 | 14.5 |
| 52.5° | 1499.1 | 563.2 | 74.5 | 47.6 | 37.3 | 31.1 | 20.7 | 16.6 | 12.4 | 12.4 | 12.4 |
| 55° | 1604.7 | 612.9 | 70.4 | 43.5 | 35.2 | 24.8 | 16.6 | 12.4 | 10.4 | 10.4 | 10.4 |
| 57.5° | 1745.5 | 675.0 | 64.2 | 39.3 | 29.0 | 18.6 | 14.5 | 10.4 | 8.3 | 8.3 | 8.3 |
| 60° | 2033.4 | 813.8 | 55.9 | 35.2 | 24.8 | 16.6 | 12.4 | 10.4 | 8.3 | 6.2 | 6.2 |
| 62.5° | 2501.3 | 1039.5 | 47.6 | 31.1 | 18.6 | 14.5 | 10.4 | 8.3 | 6.2 | 4.1 | 4.1 |
| 65° | 2797.4 | 1095.4 | 39.3 | 24.8 | 14.5 | 10.4 | 8.3 | 6.2 | 4.1 | 2.1 | 2.1 |
| 67.5° | 2606.9 | 890.4 | 31.1 | 18.6 | 12.4 | 8.3 | 6.2 | 4.1 | 2.1 | 0.0 | 0.0 |
| 70° | 2201.1 | 673.0 | 22.8 | 12.4 | 10.4 | 6.2 | 4.1 | 2.1 | 0.0 | 0.0 | 0.0 |
| 72.5° | 1739.3 | 511.4 | 20.7 | 10.4 | 8.3 | 4.1 | 4.1 | 2.1 | 0.0 | 0.0 | 0.0 |
| 75° | 1140.9 | 263.0 | 16.6 | 10.4 | 6.2 | 4.1 | 2.1 | 2.1 | 0.0 | 0.0 | 0.0 |
| 77.5° | 449.3 | 99.4 | 12.4 | 8.3 | 6.2 | 4.1 | 2.1 | 2.1 | 0.0 | 0.0 | 0.0 |
| 80° | 122.2 | 33.1 | 6.2 | 4.1 | 4.1 | 2.1 | 2.1 | 2.1 | 0.0 | 0.0 | 0.0 |
| 82.5° | 31.1 | 14.5 | 4.1 | 4.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 0.0 | 0.0 |
| 85° | 10.4 | 4.1 | 4.1 | 2.1 | 2.1 | 2.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 4.1 | 4.1 | 4.1 | 2.1 | 2.1 | 2.1 | 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 |

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
 Rf: 69.9
 Rg: 98.3

| | | | |
|-----------|------|------|-------|
| 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 | | |



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 (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)