

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: P438154

Luminaire Tested: **ISW-SA1B-727-U-T3**

Issue Date: 12/10/2020

Test Information

Test Method: LM-79-08
Report Number: P438154
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-8)
Test Lab: INNOVATION CENTER
Issue Date: 12/10/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: McGRAW-EDISON
Catalog Number: ISW-SA1B-727-U-T3
Description: IMPACT ELITE LED WEDGE LUMINAIRE
(1) 70 CRI, 2700K, 450mA LIGHTSQUARE WITH 16 LEDS AND TYPE III OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2863 lumens
Efficiency: N/A
Efficacy: 112.7 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B1 - U0 - G1

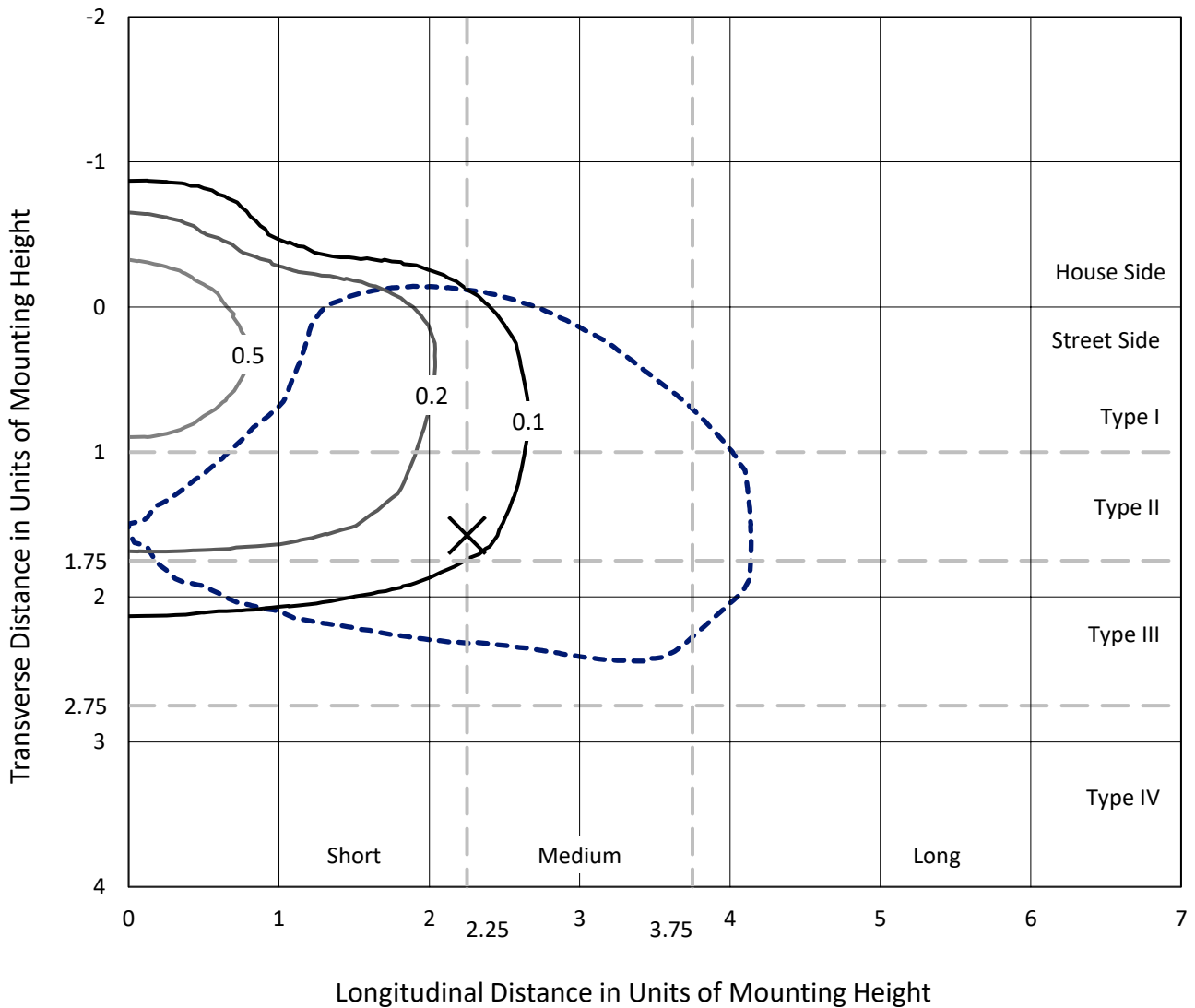
Input Watts (W): 25.4
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

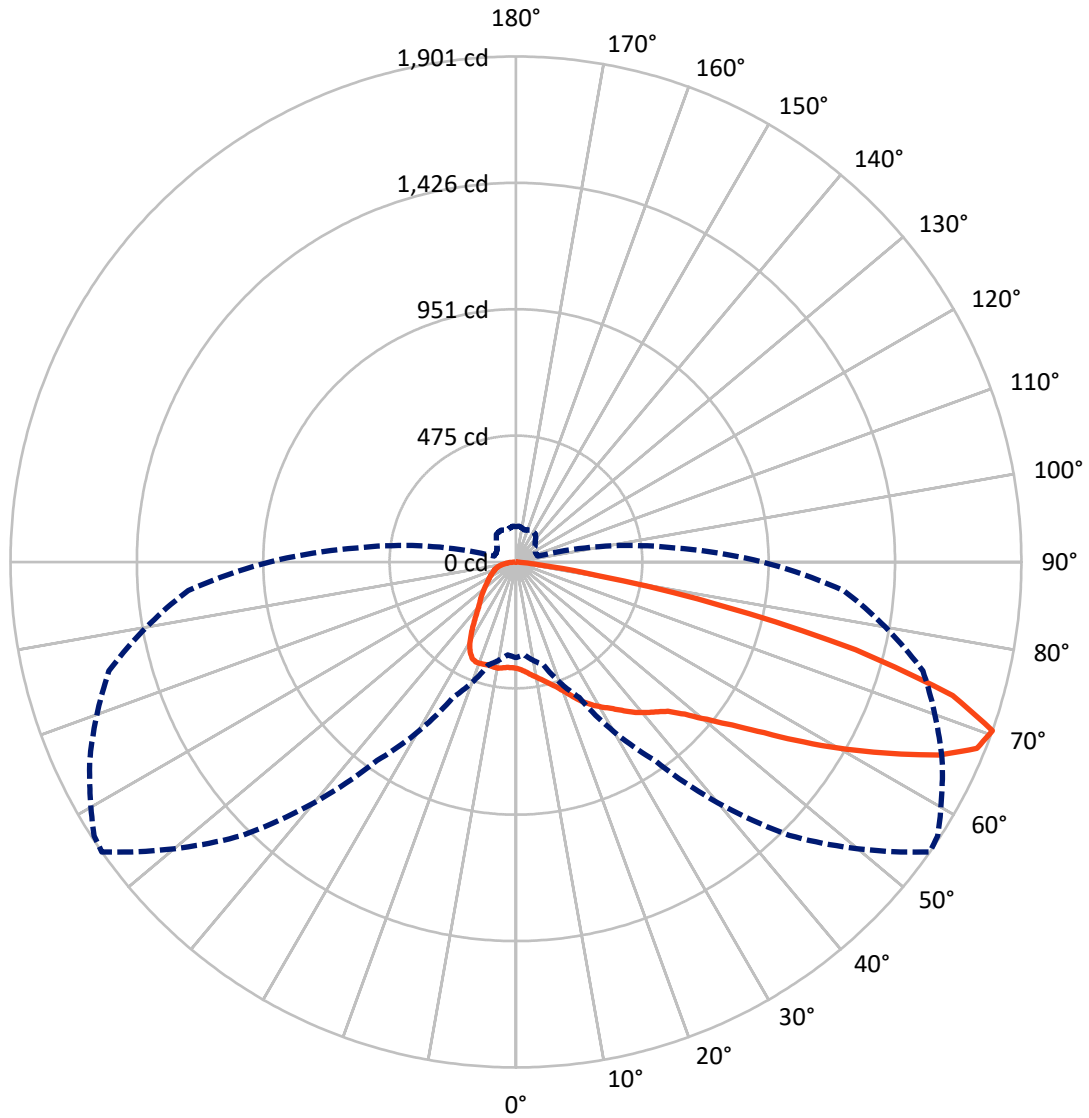
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.7 fc
 Type III - Medium - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 55-Deg Lateral - - - Horizontal Cone Through 70-Deg Vertical

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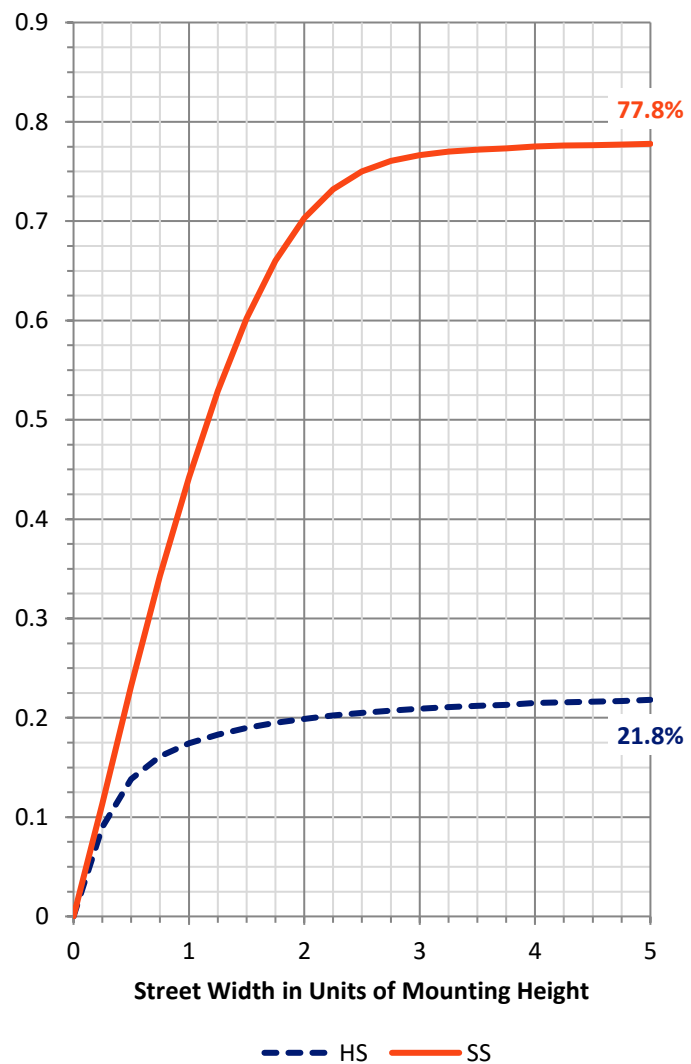
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 633.3 | 0.0 | 633.3 |
| | % Fixture | 22.1 | 0.0 | 22.1 |
| Street Side | Lumens | 2229.7 | 0.0 | 2229.7 |
| | % Fixture | 77.9 | 0.0 | 77.9 |
| Total | Lumens | 2863.0 | 0.0 | 2863.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 39.4 | 1.4 |
| 10°-20° | 125.3 | 4.4 |
| 20°-30° | 218.0 | 7.6 |
| 30°-40° | 307.3 | 10.7 |
| 40°-50° | 407.2 | 14.2 |
| 50°-60° | 593.2 | 20.7 |
| 60°-70° | 740.3 | 25.9 |
| 70°-80° | 394.3 | 13.8 |
| 80°-90° | 38.0 | 1.3 |
| 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° | 2863.0 | 100.0 |
| 0°-180° | 2863.0 | 100.0 |

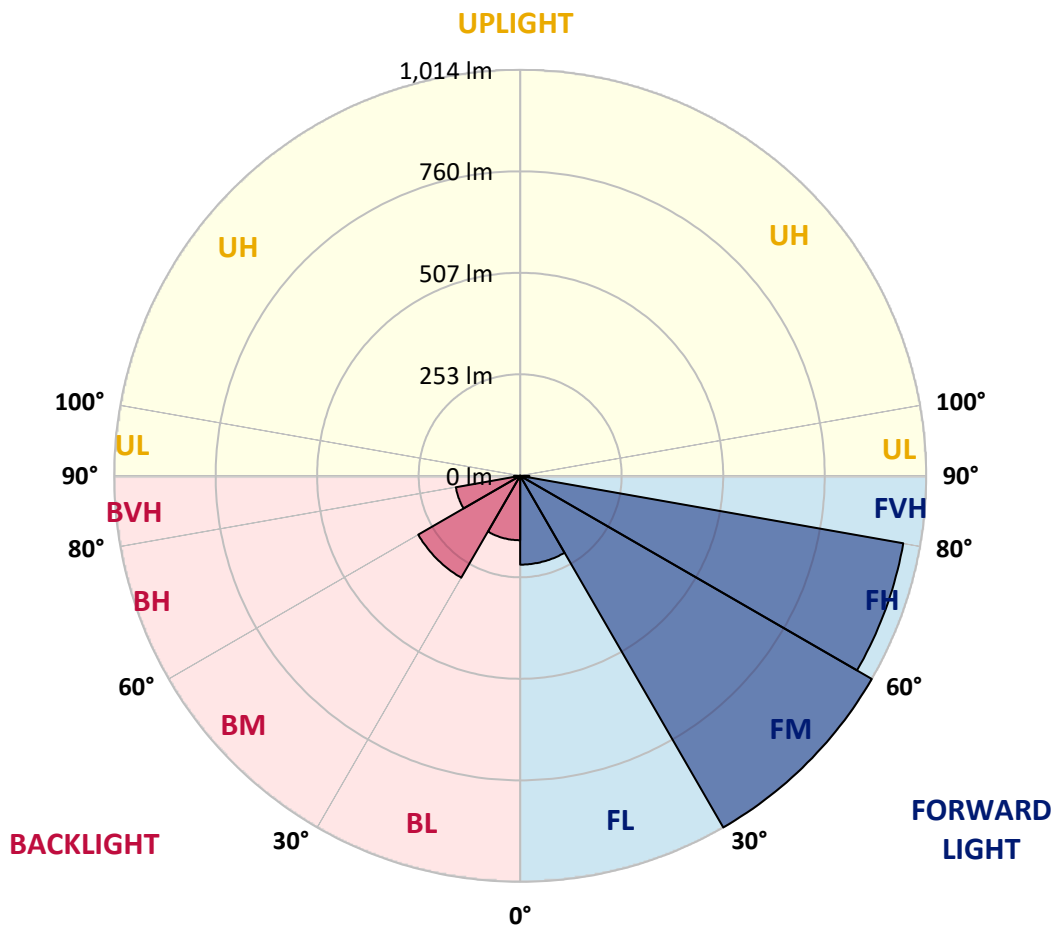


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 221.8 | 7.7 | | | |
| FM (30°-60°) | 1013.9 | 35.4 | | | |
| FH (60°-80°) | 971.4 | 33.9 | | | G1/1800 |
| FVH (80°-90°) | 22.7 | 0.8 | | | G1/100 |
| BL (0°-30°) | 160.9 | 5.6 | B1/500 | | |
| BM (30°-60°) | 293.8 | 10.3 | B1/1000 | | |
| BH (60°-80°) | 163.2 | 5.7 | B1/500 | | G1/500 |
| BVH (80°-90°) | 15.3 | 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-G1
 Type III Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 57° | 65° | 75° | 85° |
|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 |
| 2.5° | 413.2 | 412.2 | 412.2 | 411.2 | 410.1 | 409.1 | 407.0 | 405.0 | 405.0 | 402.9 | 402.9 |
| 5° | 423.5 | 421.5 | 422.5 | 421.5 | 421.5 | 419.4 | 416.3 | 416.3 | 415.3 | 410.1 | 406.0 |
| 7.5° | 433.8 | 432.8 | 432.8 | 433.8 | 432.8 | 430.7 | 429.7 | 428.7 | 424.6 | 418.4 | 412.2 |
| 10° | 448.3 | 448.3 | 448.3 | 447.2 | 447.2 | 445.2 | 442.1 | 442.1 | 436.9 | 429.7 | 422.5 |
| 12.5° | 469.9 | 468.9 | 467.8 | 467.8 | 464.8 | 460.6 | 457.5 | 457.5 | 454.4 | 443.1 | 433.8 |
| 15° | 494.6 | 491.5 | 489.5 | 489.5 | 485.4 | 478.1 | 475.1 | 476.1 | 473.0 | 459.6 | 446.2 |
| 17.5° | 519.4 | 519.4 | 517.3 | 512.2 | 507.0 | 501.8 | 494.6 | 496.7 | 493.6 | 480.2 | 462.7 |
| 20° | 542.0 | 540.0 | 540.0 | 536.9 | 529.7 | 523.5 | 519.4 | 518.3 | 516.3 | 501.8 | 481.2 |
| 22.5° | 566.8 | 565.7 | 562.6 | 560.6 | 555.4 | 552.3 | 550.3 | 550.3 | 542.0 | 522.5 | 495.7 |
| 25° | 596.7 | 595.6 | 595.6 | 587.4 | 583.3 | 578.1 | 581.2 | 578.1 | 574.0 | 545.1 | 511.1 |
| 27.5° | 626.5 | 626.5 | 625.5 | 621.4 | 610.0 | 607.0 | 609.0 | 607.0 | 605.9 | 566.8 | 525.5 |
| 30° | 658.5 | 657.5 | 654.4 | 653.3 | 642.0 | 633.8 | 632.7 | 628.6 | 628.6 | 586.3 | 535.9 |
| 32.5° | 685.3 | 684.2 | 686.3 | 682.2 | 675.0 | 663.6 | 656.4 | 656.4 | 649.2 | 605.9 | 548.2 |
| 35° | 710.0 | 712.1 | 712.1 | 710.0 | 703.8 | 692.5 | 685.3 | 687.3 | 677.0 | 623.4 | 563.7 |
| 37.5° | 737.8 | 735.8 | 732.7 | 730.6 | 722.4 | 717.2 | 717.2 | 719.3 | 703.8 | 642.0 | 584.3 |
| 40° | 744.0 | 749.2 | 756.4 | 748.1 | 744.0 | 743.0 | 745.0 | 739.9 | 724.4 | 670.8 | 619.3 |
| 42.5° | 756.4 | 760.5 | 773.9 | 770.8 | 767.7 | 770.8 | 770.8 | 763.6 | 756.4 | 710.0 | 666.7 |
| 45° | 787.3 | 794.5 | 804.8 | 805.8 | 804.8 | 810.0 | 800.7 | 799.7 | 798.6 | 766.7 | 730.6 |
| 47.5° | 821.3 | 829.5 | 853.2 | 850.2 | 861.5 | 871.8 | 855.3 | 854.3 | 857.4 | 841.9 | 812.0 |
| 50° | 861.5 | 869.7 | 899.6 | 911.0 | 941.9 | 960.4 | 930.5 | 917.1 | 938.8 | 937.7 | 915.1 |
| 52.5° | 907.9 | 918.2 | 938.8 | 977.9 | 1030.5 | 1050.1 | 1018.1 | 1006.8 | 1032.5 | 1044.9 | 1024.3 |
| 55° | 939.8 | 948.0 | 980.0 | 1040.8 | 1126.3 | 1152.1 | 1133.5 | 1123.2 | 1151.1 | 1161.4 | 1139.7 |
| 57.5° | 951.1 | 953.2 | 1000.6 | 1096.4 | 1214.9 | 1280.9 | 1277.8 | 1270.6 | 1259.3 | 1285.0 | 1278.8 |
| 60° | 931.6 | 942.9 | 1003.7 | 1121.2 | 1294.3 | 1419.0 | 1430.3 | 1413.8 | 1399.4 | 1405.6 | 1385.0 |
| 62.5° | 905.8 | 915.1 | 979.0 | 1124.3 | 1347.9 | 1543.7 | 1585.9 | 1567.4 | 1531.3 | 1514.8 | 1466.4 |
| 65° | 815.1 | 815.1 | 878.0 | 1061.4 | 1338.6 | 1645.7 | 1749.8 | 1717.8 | 1651.9 | 1593.1 | 1463.3 |
| 67.5° | 623.4 | 620.4 | 681.2 | 871.8 | 1207.7 | 1656.0 | 1870.3 | 1853.8 | 1747.7 | 1623.0 | 1405.6 |
| 70° | 359.6 | 350.4 | 400.9 | 562.6 | 912.0 | 1454.0 | 1901.3 | 1892.0 | 1769.3 | 1584.9 | 1237.6 |
| 72.5° | 124.7 | 132.9 | 165.9 | 239.1 | 501.8 | 1047.0 | 1717.8 | 1737.4 | 1666.3 | 1439.6 | 994.4 |
| 75° | 64.9 | 64.9 | 76.3 | 104.1 | 212.3 | 540.0 | 1320.1 | 1380.9 | 1396.3 | 1204.6 | 710.0 |
| 77.5° | 47.4 | 48.4 | 54.6 | 67.0 | 101.0 | 207.1 | 792.4 | 850.2 | 966.6 | 829.5 | 410.1 |
| 80° | 31.9 | 33.0 | 39.2 | 44.3 | 61.8 | 80.4 | 316.4 | 347.3 | 479.2 | 371.0 | 158.7 |
| 82.5° | 23.7 | 24.7 | 24.7 | 25.8 | 34.0 | 37.1 | 83.5 | 103.0 | 164.9 | 110.3 | 56.7 |
| 85° | 5.2 | 5.2 | 10.3 | 10.3 | 10.3 | 10.3 | 18.5 | 20.6 | 30.9 | 33.0 | 18.5 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 2.1 | 2.1 | 2.1 | 3.1 | 3.1 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



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 CATALOG NUMBER: ISW-SA1B-727-U-T3

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 | 399.8 |
| 2.5° | 401.9 | 400.9 | 399.8 | 398.8 | 397.8 | 396.7 | 395.7 | 396.7 | 396.7 | 398.8 | 399.8 |
| 5° | 405.0 | 401.9 | 400.9 | 398.8 | 397.8 | 397.8 | 397.8 | 398.8 | 399.8 | 400.9 | 401.9 |
| 7.5° | 410.1 | 409.1 | 406.0 | 401.9 | 400.9 | 400.9 | 398.8 | 398.8 | 398.8 | 400.9 | 400.9 |
| 10° | 419.4 | 416.3 | 412.2 | 408.1 | 405.0 | 398.8 | 393.6 | 389.5 | 391.6 | 394.7 | 394.7 |
| 12.5° | 429.7 | 424.6 | 419.4 | 412.2 | 404.0 | 393.6 | 388.5 | 389.5 | 389.5 | 392.6 | 393.6 |
| 15° | 443.1 | 439.0 | 427.7 | 415.3 | 400.9 | 392.6 | 390.6 | 388.5 | 388.5 | 390.6 | 392.6 |
| 17.5° | 457.5 | 450.3 | 435.9 | 417.3 | 402.9 | 393.6 | 389.5 | 381.3 | 377.2 | 376.1 | 378.2 |
| 20° | 470.9 | 462.7 | 443.1 | 419.4 | 405.0 | 392.6 | 378.2 | 364.8 | 354.5 | 352.4 | 350.4 |
| 22.5° | 482.3 | 472.0 | 448.3 | 423.5 | 405.0 | 382.3 | 357.6 | 338.0 | 323.6 | 319.5 | 321.5 |
| 25° | 494.6 | 479.2 | 454.4 | 427.7 | 397.8 | 361.7 | 327.7 | 304.0 | 289.6 | 283.4 | 283.4 |
| 27.5° | 504.9 | 489.5 | 460.6 | 424.6 | 379.2 | 333.9 | 294.7 | 271.0 | 259.7 | 253.5 | 252.5 |
| 30° | 514.2 | 497.7 | 473.0 | 415.3 | 352.4 | 295.8 | 261.7 | 245.3 | 238.0 | 230.8 | 231.9 |
| 32.5° | 526.6 | 512.2 | 482.3 | 395.7 | 316.4 | 260.7 | 235.0 | 226.7 | 219.5 | 214.3 | 216.4 |
| 35° | 544.1 | 535.9 | 485.4 | 371.0 | 279.3 | 236.0 | 218.5 | 209.2 | 203.0 | 195.8 | 195.8 |
| 37.5° | 568.8 | 561.6 | 475.1 | 333.9 | 246.3 | 217.4 | 205.1 | 192.7 | 182.4 | 174.2 | 172.1 |
| 40° | 598.7 | 588.4 | 457.5 | 292.7 | 220.5 | 205.1 | 193.7 | 178.3 | 163.8 | 152.5 | 150.5 |
| 42.5° | 646.1 | 616.2 | 431.8 | 250.4 | 202.0 | 194.8 | 179.3 | 159.7 | 145.3 | 137.1 | 135.0 |
| 45° | 696.6 | 648.2 | 394.7 | 214.3 | 187.5 | 182.4 | 164.9 | 145.3 | 135.0 | 128.8 | 127.8 |
| 47.5° | 760.5 | 683.2 | 359.6 | 187.5 | 171.1 | 170.0 | 149.4 | 137.1 | 128.8 | 124.7 | 123.7 |
| 50° | 845.0 | 727.5 | 324.6 | 166.9 | 156.6 | 153.5 | 142.2 | 131.9 | 125.7 | 122.6 | 121.6 |
| 52.5° | 942.9 | 779.0 | 296.8 | 151.5 | 143.2 | 141.2 | 138.1 | 129.8 | 125.7 | 122.6 | 121.6 |
| 55° | 1035.6 | 832.6 | 266.9 | 137.1 | 131.9 | 134.0 | 136.0 | 129.8 | 126.8 | 124.7 | 122.6 |
| 57.5° | 1137.7 | 878.0 | 232.9 | 125.7 | 122.6 | 127.8 | 134.0 | 130.9 | 128.8 | 125.7 | 124.7 |
| 60° | 1200.5 | 909.9 | 187.5 | 115.4 | 115.4 | 122.6 | 130.9 | 128.8 | 124.7 | 124.7 | 124.7 |
| 62.5° | 1228.3 | 904.8 | 148.4 | 105.1 | 107.2 | 116.4 | 125.7 | 123.7 | 120.6 | 125.7 | 125.7 |
| 65° | 1192.3 | 846.0 | 120.6 | 95.8 | 98.9 | 108.2 | 120.6 | 120.6 | 120.6 | 128.8 | 128.8 |
| 67.5° | 1098.5 | 757.4 | 98.9 | 87.6 | 90.7 | 102.0 | 120.6 | 127.8 | 126.8 | 136.0 | 136.0 |
| 70° | 927.4 | 600.8 | 85.5 | 81.4 | 85.5 | 102.0 | 127.8 | 131.9 | 124.7 | 135.0 | 132.9 |
| 72.5° | 706.9 | 419.4 | 76.3 | 75.2 | 80.4 | 98.9 | 128.8 | 126.8 | 117.5 | 120.6 | 117.5 |
| 75° | 464.8 | 254.5 | 67.0 | 69.0 | 71.1 | 87.6 | 122.6 | 118.5 | 107.2 | 105.1 | 103.0 |
| 77.5° | 255.6 | 127.8 | 58.7 | 61.8 | 61.8 | 74.2 | 111.3 | 102.0 | 92.7 | 87.6 | 85.5 |
| 80° | 102.0 | 64.9 | 51.5 | 54.6 | 50.5 | 59.8 | 83.5 | 79.3 | 71.1 | 67.0 | 64.9 |
| 82.5° | 46.4 | 36.1 | 43.3 | 45.3 | 38.1 | 44.3 | 61.8 | 59.8 | 53.6 | 46.4 | 44.3 |
| 85° | 17.5 | 20.6 | 33.0 | 30.9 | 26.8 | 25.8 | 35.0 | 31.9 | 25.8 | 20.6 | 20.6 |
| 87.5° | 2.1 | 4.1 | 8.2 | 11.3 | 6.2 | 4.1 | 2.1 | 1.0 | 1.0 | 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

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

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| 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

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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

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

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



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)