

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: P639342

Luminaire Tested: GWS-SA5B-760-U-AFL-W-GRSBK

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P639342
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-46)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA5B-760-U-AFL-W-GRSBK
Description: GALLEON WALL SLIM LUMINAIRE. (5) LIGHTSQUARES WITH 16 LEDS EACH AND AUTOMOTIVE FRONTLINE OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK
Light Source: (80) 5700K CCT, 70 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13491.7 lumens
Efficiency: N/A
Efficacy: 116.6 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')
IES Classification: Type II - Short
BUG Rating: B2 - U0 - G0

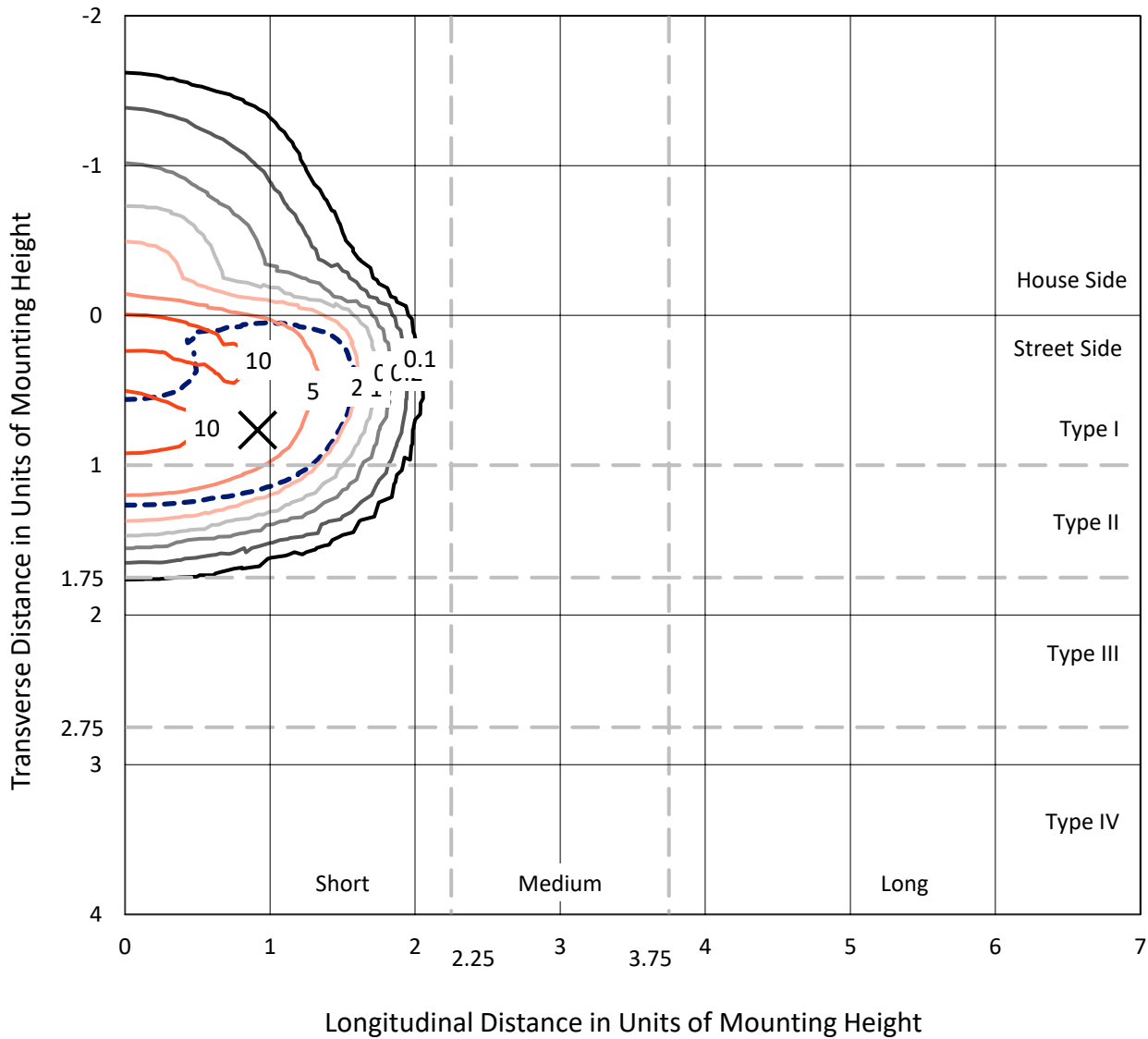
Input Watts (W): 115.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

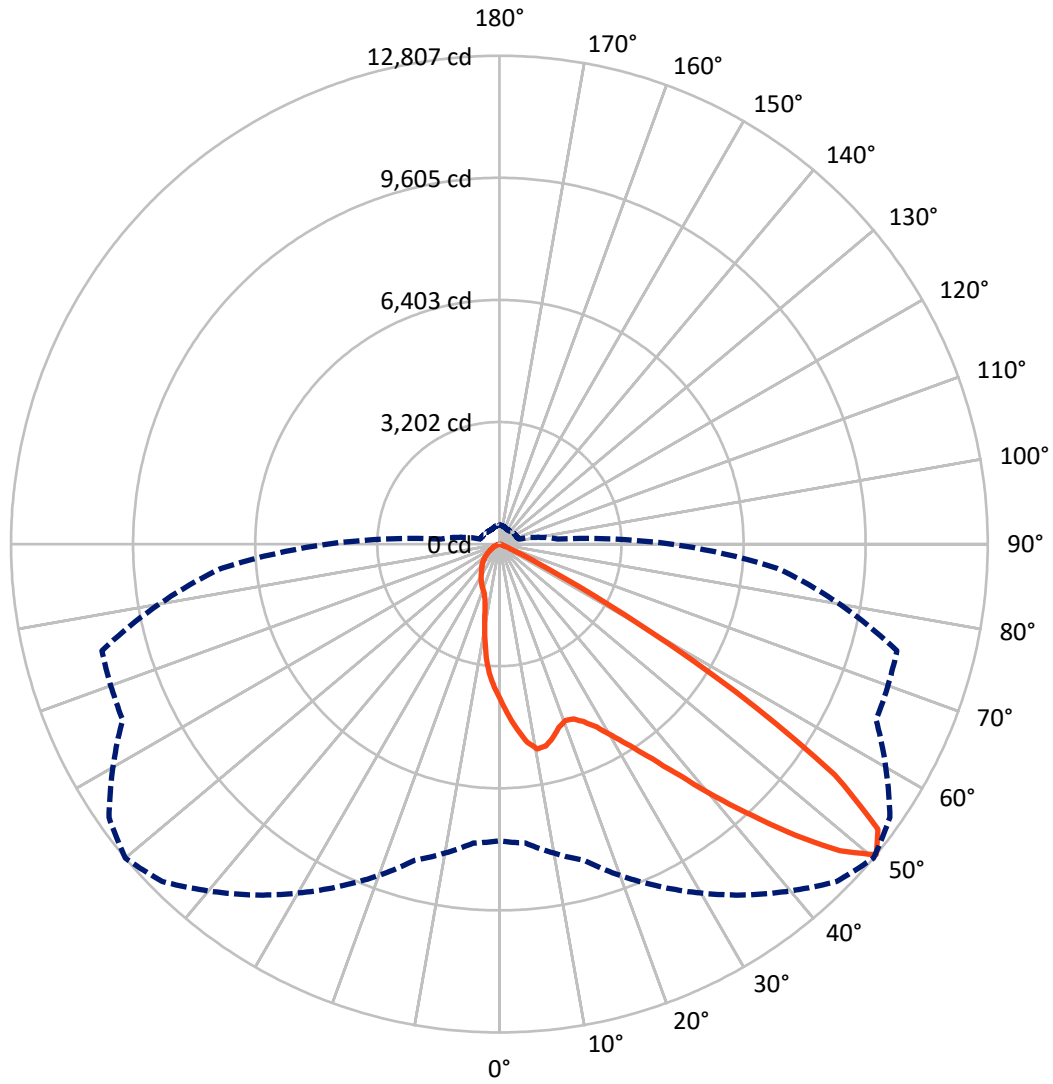
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 13.1 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 50-Deg Lateral - - - Horizontal Cone Through 50-Deg Vertical

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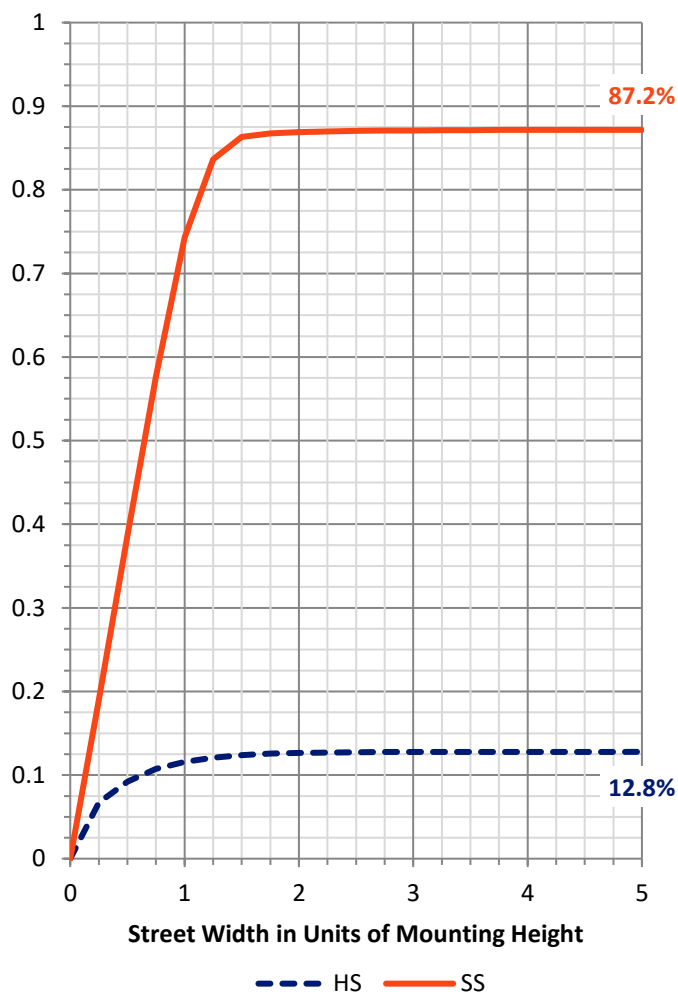
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 1733.5 | 0.0 | 1733.5 |
| | % Fixture | 12.8 | 0.0 | 12.8 |
| Street Side | Lumens | 11758.2 | 0.0 | 11758.2 |
| | % Fixture | 87.2 | 0.0 | 87.2 |
| Total | Lumens | 13491.7 | 0.0 | 13491.7 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 379.2 | 2.8 |
| 10°-20° | 978.3 | 7.3 |
| 20°-30° | 1614.5 | 12.0 |
| 30°-40° | 2664.3 | 19.7 |
| 40°-50° | 4215.6 | 31.2 |
| 50°-60° | 3191.7 | 23.7 |
| 60°-70° | 399.5 | 3.0 |
| 70°-80° | 45.2 | 0.3 |
| 80°-90° | 3.4 | 0.0 |
| 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° | 13491.7 | 100.0 |
| 0°-180° | 13491.7 | 100.0 |

Coefficient of Utilization

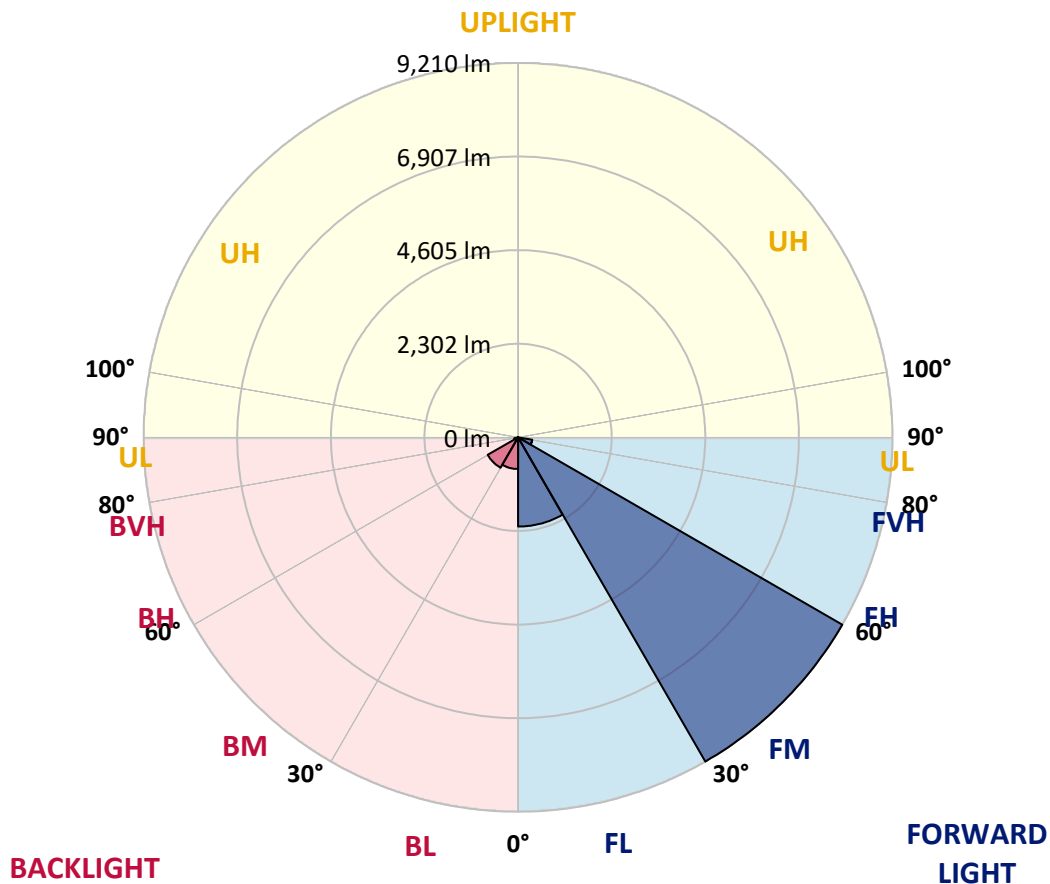


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|--------|
| | | | B | U | G |
| FL (0°-30°) | 2193.9 | 16.3 | | | |
| FM (30°-60°) | 9209.5 | 68.3 | | | |
| FH (60°-80°) | 353.2 | 2.6 | | | G0/660 |
| FVH (80°-90°) | 1.6 | 0.0 | | | G0/10 |
| BL (0°-30°) | 778.1 | 5.8 | B2/1000 | | |
| BM (30°-60°) | 862.1 | 6.4 | B1/1000 | | |
| BH (60°-80°) | 91.5 | 0.7 | B0/110 | | G0/110 |
| BVH (80°-90°) | 1.8 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G0
 Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 50° | 55° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0° | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 |
| 2.5° | 4657.6 | 4694.9 | 4684.6 | 4635.8 | 4583.1 | 4545.9 | 4488.1 | 4470.1 | 4339.1 | 4248.0 | 4151.7 |
| 5° | 5220.1 | 5231.6 | 5218.8 | 5159.7 | 5067.3 | 4978.6 | 4883.6 | 4828.4 | 4608.8 | 4411.1 | 4209.4 |
| 7.5° | 5354.9 | 5340.8 | 5365.2 | 5394.7 | 5381.9 | 5343.3 | 5243.2 | 5182.8 | 4920.9 | 4598.5 | 4292.9 |
| 10° | 4933.7 | 4901.6 | 4992.8 | 5145.6 | 5306.1 | 5487.2 | 5461.5 | 5466.6 | 5225.2 | 4834.8 | 4402.1 |
| 12.5° | 4375.1 | 4362.3 | 4430.3 | 4607.5 | 4922.1 | 5333.1 | 5432.0 | 5597.6 | 5503.9 | 5090.4 | 4526.6 |
| 15° | 4129.8 | 4136.2 | 4177.3 | 4289.1 | 4515.1 | 5026.2 | 5263.7 | 5562.9 | 5753.0 | 5338.2 | 4664.0 |
| 17.5° | 4167.1 | 4190.2 | 4188.9 | 4226.1 | 4363.5 | 4773.2 | 5050.6 | 5453.8 | 5945.6 | 5623.3 | 4822.0 |
| 20° | 4420.0 | 4443.2 | 4408.5 | 4380.2 | 4426.5 | 4709.0 | 4938.8 | 5343.3 | 6075.3 | 5910.9 | 4988.9 |
| 22.5° | 4798.9 | 4825.8 | 4743.6 | 4662.7 | 4633.2 | 4814.3 | 4981.2 | 5298.4 | 6174.2 | 6174.2 | 5137.9 |
| 25° | 5257.3 | 5294.5 | 5167.4 | 5023.6 | 4941.4 | 5036.4 | 5162.3 | 5399.8 | 6275.6 | 6410.5 | 5239.3 |
| 27.5° | 5769.7 | 5771.0 | 5661.8 | 5500.0 | 5345.9 | 5357.5 | 5433.2 | 5628.4 | 6387.4 | 6664.7 | 5318.9 |
| 30° | 6346.3 | 6350.1 | 6205.0 | 6011.1 | 5817.2 | 5764.5 | 5828.8 | 5976.4 | 6619.8 | 6984.5 | 5429.4 |
| 32.5° | 7091.1 | 7109.1 | 6901.0 | 6615.9 | 6364.2 | 6265.4 | 6302.6 | 6458.0 | 6989.6 | 7385.1 | 5595.0 |
| 35° | 8097.8 | 8117.1 | 7810.2 | 7433.9 | 7033.3 | 6884.3 | 6921.6 | 7078.2 | 7525.1 | 7954.0 | 5859.6 |
| 37.5° | 9091.8 | 9117.5 | 8806.7 | 8456.1 | 7906.5 | 7660.0 | 7698.5 | 7847.4 | 8329.0 | 8739.9 | 6283.3 |
| 40° | 9778.8 | 9813.5 | 9717.2 | 9480.9 | 8971.1 | 8647.5 | 8693.7 | 8747.6 | 9213.8 | 9679.9 | 6833.0 |
| 42.5° | 10140.9 | 10189.7 | 10230.8 | 10351.5 | 10083.1 | 9812.2 | 9733.9 | 9737.7 | 10114.0 | 10637.9 | 7404.4 |
| 45° | 10162.8 | 10210.3 | 10420.9 | 10887.0 | 11091.2 | 11034.7 | 10892.2 | 10795.8 | 10801.0 | 11276.1 | 7761.4 |
| 47.5° | 9456.5 | 9545.1 | 9939.3 | 10852.3 | 11620.3 | 12089.0 | 12017.1 | 11788.5 | 11089.9 | 11318.5 | 7722.9 |
| 50° | 7783.2 | 7870.6 | 8587.1 | 9900.8 | 11235.0 | 12510.2 | 12806.8 | 12499.9 | 10901.1 | 10790.7 | 7326.1 |
| 52.5° | 5652.8 | 5661.8 | 6126.7 | 7661.2 | 9673.5 | 11733.3 | 12431.9 | 12402.3 | 10613.5 | 10151.2 | 6784.2 |
| 55° | 2685.2 | 2653.1 | 3175.7 | 4323.7 | 6690.4 | 9489.9 | 10667.4 | 11001.3 | 10205.1 | 9688.9 | 6364.2 |
| 57.5° | 782.0 | 797.5 | 1029.9 | 1687.4 | 3346.5 | 6065.0 | 7305.5 | 7927.1 | 8376.5 | 7965.6 | 4936.3 |
| 60° | 350.6 | 351.9 | 391.7 | 513.7 | 1114.6 | 2821.3 | 3776.7 | 4545.9 | 5008.2 | 4640.9 | 2448.9 |
| 62.5° | 254.3 | 255.5 | 271.0 | 290.2 | 378.8 | 955.4 | 1416.4 | 1887.7 | 1922.4 | 1258.5 | 620.2 |
| 65° | 211.9 | 211.9 | 214.5 | 214.5 | 227.3 | 341.6 | 430.2 | 554.8 | 467.4 | 346.7 | 242.7 |
| 67.5° | 170.8 | 172.1 | 174.6 | 174.6 | 170.8 | 170.8 | 184.9 | 202.9 | 217.0 | 268.4 | 223.4 |
| 70° | 133.6 | 132.3 | 132.3 | 133.6 | 129.7 | 110.4 | 119.4 | 136.1 | 149.0 | 209.3 | 193.9 |
| 72.5° | 104.0 | 105.3 | 104.0 | 98.9 | 89.9 | 65.5 | 70.6 | 88.6 | 95.0 | 131.0 | 131.0 |
| 75° | 78.3 | 79.6 | 74.5 | 56.5 | 37.2 | 20.5 | 27.0 | 43.7 | 55.2 | 64.2 | 47.5 |
| 77.5° | 10.3 | 10.3 | 7.7 | 7.7 | 6.4 | 7.7 | 7.7 | 10.3 | 15.4 | 15.4 | 11.6 |
| 80° | 1.3 | 1.3 | 1.3 | 2.6 | 3.9 | 5.1 | 5.1 | 5.1 | 5.1 | 6.4 | 6.4 |
| 82.5° | 1.3 | 1.3 | 1.3 | 1.3 | 3.9 | 3.9 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 |
| 85° | 0.0 | 0.0 | 0.0 | 1.3 | 2.6 | 3.9 | 3.9 | 5.1 | 5.1 | 5.1 | 5.1 |
| 87.5° | 0.0 | 0.0 | 0.0 | 1.3 | 2.6 | 3.9 | 3.9 | 3.9 | 5.1 | 5.1 | 5.1 |
| 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: P639342
 CATALOG NUMBER: GWS-SA5B-760-U-AFL-W-GRSBK

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 | 4087.4 |
| 2.5° | 4093.9 | 4019.4 | 3929.5 | 3867.9 | 3780.5 | 3722.8 | 3640.6 | 3585.3 | 3537.8 | 3500.6 | 3521.1 |
| 5° | 4095.2 | 3977.0 | 3793.4 | 3636.7 | 3465.9 | 3309.3 | 3141.0 | 3008.8 | 2889.3 | 2835.4 | 2864.9 |
| 7.5° | 4120.8 | 3951.3 | 3670.1 | 3391.4 | 3064.0 | 2740.4 | 2437.3 | 2190.8 | 2068.8 | 2011.0 | 2029.0 |
| 10° | 4170.9 | 3939.8 | 3532.7 | 3070.4 | 2538.8 | 2097.0 | 1802.9 | 1636.0 | 1567.9 | 1532.0 | 1538.4 |
| 12.5° | 4217.1 | 3932.1 | 3354.2 | 2647.9 | 2003.3 | 1627.0 | 1474.2 | 1451.1 | 1465.2 | 1466.5 | 1465.2 |
| 15° | 4280.1 | 3917.9 | 3133.3 | 2213.9 | 1602.6 | 1406.1 | 1410.0 | 1443.4 | 1476.8 | 1487.0 | 1484.5 |
| 17.5° | 4346.8 | 3896.1 | 2848.2 | 1797.8 | 1359.9 | 1341.9 | 1386.9 | 1431.8 | 1465.2 | 1470.4 | 1471.6 |
| 20° | 4416.2 | 3851.2 | 2523.4 | 1467.8 | 1246.9 | 1293.1 | 1343.2 | 1376.6 | 1401.0 | 1408.7 | 1411.3 |
| 22.5° | 4448.3 | 3756.1 | 2148.4 | 1231.5 | 1171.1 | 1232.8 | 1270.0 | 1313.7 | 1321.4 | 1293.1 | 1298.3 |
| 25° | 4431.6 | 3595.6 | 1782.4 | 1072.3 | 1095.4 | 1157.0 | 1212.2 | 1190.4 | 1158.3 | 1137.8 | 1144.2 |
| 27.5° | 4379.0 | 3382.5 | 1424.1 | 955.4 | 1014.5 | 1092.8 | 1099.2 | 1074.8 | 1069.7 | 1053.0 | 1058.1 |
| 30° | 4322.4 | 3137.2 | 1145.5 | 861.7 | 932.3 | 1014.5 | 995.2 | 1004.2 | 1005.5 | 986.2 | 992.6 |
| 32.5° | 4287.8 | 2880.3 | 911.7 | 798.7 | 879.6 | 895.1 | 933.6 | 951.6 | 952.8 | 907.9 | 915.6 |
| 35° | 4299.3 | 2627.4 | 771.8 | 747.4 | 830.8 | 827.0 | 880.9 | 891.2 | 816.7 | 755.1 | 761.5 |
| 37.5° | 4393.1 | 2393.7 | 692.2 | 707.6 | 746.1 | 775.6 | 816.7 | 748.7 | 732.0 | 703.7 | 707.6 |
| 40° | 4567.7 | 2194.6 | 644.6 | 683.2 | 688.3 | 735.8 | 672.9 | 681.9 | 683.2 | 665.2 | 669.0 |
| 42.5° | 4771.9 | 2029.0 | 616.4 | 669.0 | 656.2 | 663.9 | 601.0 | 619.0 | 638.2 | 630.5 | 631.8 |
| 45° | 4874.6 | 1867.2 | 592.0 | 620.2 | 624.1 | 550.9 | 536.8 | 556.0 | 580.4 | 584.3 | 585.6 |
| 47.5° | 4783.5 | 1713.1 | 566.3 | 549.6 | 575.3 | 502.1 | 485.4 | 491.8 | 520.1 | 535.5 | 538.1 |
| 50° | 4504.8 | 1535.8 | 527.8 | 486.7 | 472.6 | 450.7 | 435.3 | 436.6 | 468.7 | 495.7 | 500.8 |
| 52.5° | 4113.1 | 1350.9 | 464.9 | 412.2 | 380.1 | 396.8 | 400.7 | 392.9 | 422.5 | 449.5 | 454.6 |
| 55° | 3733.0 | 1119.8 | 368.6 | 335.2 | 305.6 | 341.6 | 351.9 | 341.6 | 350.6 | 368.6 | 369.8 |
| 57.5° | 2628.7 | 633.1 | 282.5 | 277.4 | 253.0 | 292.8 | 309.5 | 294.1 | 278.7 | 290.2 | 292.8 |
| 60° | 1218.7 | 331.3 | 217.0 | 217.0 | 210.6 | 251.7 | 279.9 | 258.1 | 228.6 | 233.7 | 237.6 |
| 62.5° | 381.4 | 209.3 | 159.2 | 150.2 | 172.1 | 214.5 | 237.6 | 215.7 | 181.1 | 181.1 | 186.2 |
| 65° | 215.7 | 179.8 | 125.8 | 115.6 | 140.0 | 172.1 | 186.2 | 163.1 | 132.3 | 129.7 | 129.7 |
| 67.5° | 200.3 | 170.8 | 111.7 | 93.7 | 98.9 | 110.4 | 115.6 | 100.2 | 91.2 | 89.9 | 91.2 |
| 70° | 165.7 | 142.5 | 89.9 | 64.2 | 60.4 | 59.1 | 61.6 | 57.8 | 55.2 | 56.5 | 60.4 |
| 72.5° | 102.7 | 86.0 | 56.5 | 38.5 | 33.4 | 32.1 | 32.1 | 32.1 | 30.8 | 30.8 | 30.8 |
| 75° | 37.2 | 32.1 | 25.7 | 19.3 | 16.7 | 15.4 | 15.4 | 16.7 | 15.4 | 14.1 | 12.8 |
| 77.5° | 11.6 | 10.3 | 10.3 | 10.3 | 9.0 | 7.7 | 6.4 | 6.4 | 5.1 | 3.9 | 3.9 |
| 80° | 6.4 | 6.4 | 6.4 | 6.4 | 5.1 | 5.1 | 3.9 | 2.6 | 1.3 | 1.3 | 0.0 |
| 82.5° | 6.4 | 6.4 | 6.4 | 5.1 | 5.1 | 5.1 | 3.9 | 2.6 | 1.3 | 0.0 | 0.0 |
| 85° | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 3.9 | 2.6 | 1.3 | 0.0 | 0.0 |
| 87.5° | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 3.9 | 2.6 | 1.3 | 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: SP1-1908-441-9-R4

Test Date: 10/23/2019

Luminaire Tested: SA1C-760-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-9-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-760-U-5WQ**
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

CCT (K): 5474
 CIE u': 0.2052
 CIE v': 0.4804
 Duv: 0.0025
 CIE x: 0.3330
 CIE y: 0.3466
 CIE z: 0.3204
 Peak Wavelength (nm): 442
 Dominant Wavelength (nm): 554
 Purity: 4.1

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.7 | | |
| R1: | 70.6 | R9: | -27.1 |
| R2: | 74.6 | R10: | 40.8 |
| R3: | 78.3 | R11: | 74.6 |
| R4: | 73.8 | R12: | 50.4 |
| R5: | 72.4 | R13: | 70.0 |
| R6: | 67.5 | R14: | 87.8 |
| R7: | 77.5 | | |
| R8: | 58.9 | | |

Rf: 72.1
 Rg: 97.2



Test Conditions

Stabilization Time: 240M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 24.6/31%
 Sphere Temperature (°C): 25.9

REPORT NUMBER: SP1-1908-441-9-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 5700K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-9-R4

Photopic Flux vs. Wavelength



#####

| 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 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

REPORT NUMBER: SP1-1908-441-9-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 13759.3 S/P: 1.85

| 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 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

REPORT NUMBER: SP1-1908-441-9-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 5527.6 M/P: 0.74

| 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 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

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Summary

$R_f = 72.1$
 $R_g = 97.2$
 CIE $R_a = 71.7$
 $R_g = -27.1$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 54 | CES51 = 88 | CES76 = 43 |
| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
| CES11 = 55 | CES36 = 90 | CES61 = 88 | CES86 = 76 |
| CES12 = 61 | CES37 = 72 | CES62 = 81 | CES87 = 75 |
| CES13 = 41 | CES38 = 68 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
| CES16 = 46 | CES41 = 84 | CES66 = 66 | CES91 = 92 |
| CES17 = 48 | CES42 = 70 | CES67 = 64 | CES92 = 70 |
| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
| CES21 = 85 | CES46 = 78 | CES71 = 55 | CES96 = 79 |
| CES22 = 77 | CES47 = 76 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 | |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)