

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: P635604

Luminaire Tested: GWS-SA3E-727-U-AFL-W-HSS

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P635604
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-48)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA3E-727-U-AFL-W-HSS
Description: GALLEON WALL SLIM LUMINAIRE. (3) LIGHTSQUARES WITH 16 LEDS EACH AND
AUTOMOTIVE FRONTLINE OPTICS WITH HOUSE SIDE SHIELD
Light Source: (48) 2700K CCT, 70 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 15423 lumens
Efficiency: N/A
Efficacy: 96.9 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 0.5' x H: 0')
IES Classification: Type II - Short
BUG Rating: B1 - U0 - G2

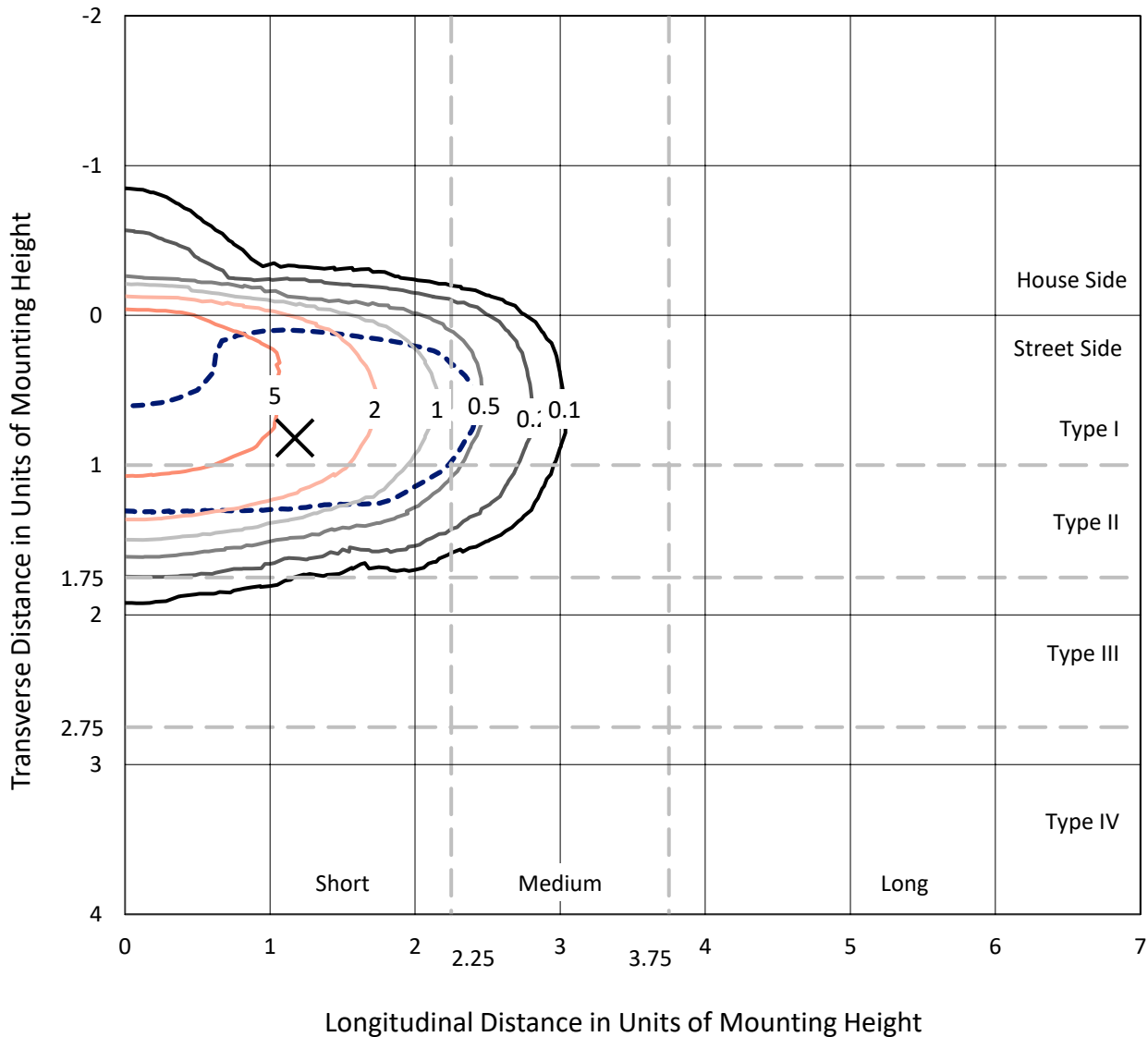
Input Watts (W): 159.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P635604
 CATALOG NUMBER: GWS-SA3E-727-U-AFL-W-HSS

Iso-Footcandle Lines of Horizontal Illumination

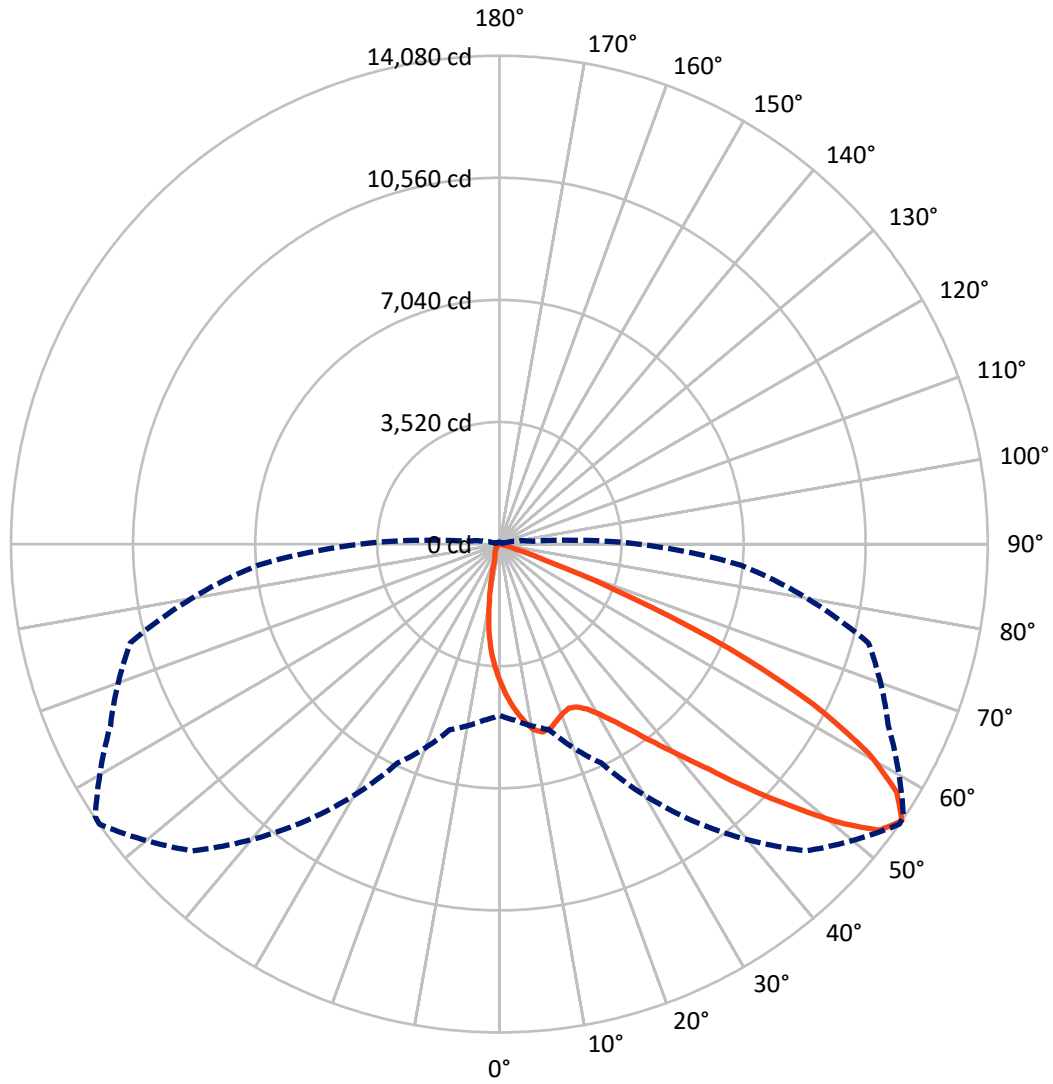
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 8.4 fc
 Type II - Short - N/A

REPORT NUMBER: P635604
CATALOG NUMBER: GWS-SA3E-727-U-AFL-W-HSS

Luminous Intensity Polar Plot



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

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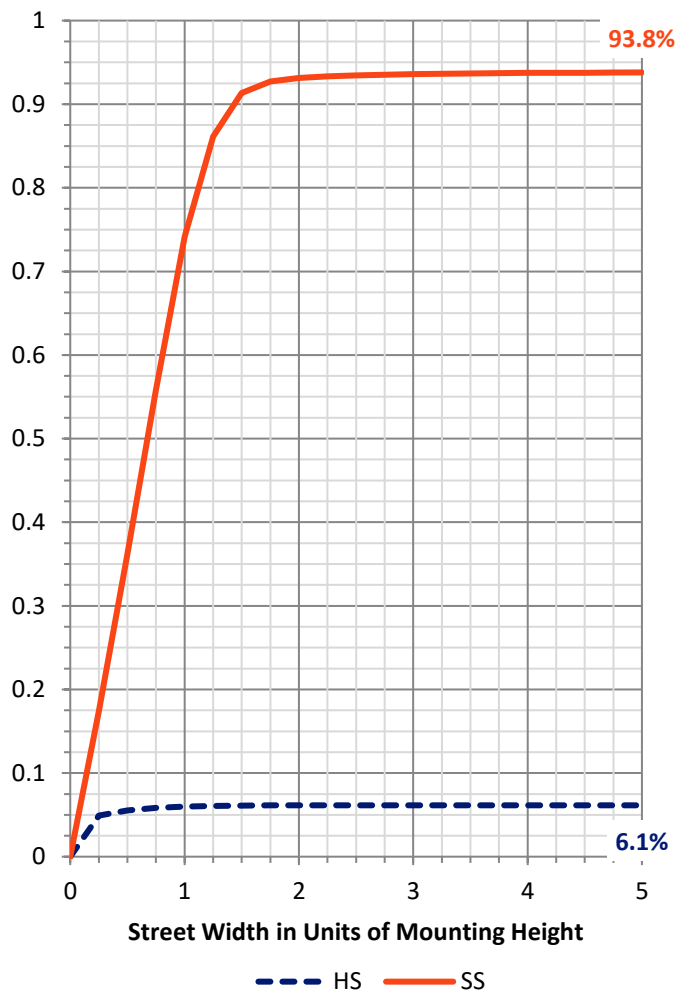
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 951.7 | 0.0 | 951.7 |
| | % Fixture | 6.2 | 0.0 | 6.2 |
| Street Side | Lumens | 14471.3 | 0.0 | 14471.3 |
| | % Fixture | 93.8 | 0.0 | 93.8 |
| Total | Lumens | 15423.0 | 0.0 | 15423.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 352.1 | 2.3 |
| 10°-20° | 848.9 | 5.5 |
| 20°-30° | 1413.8 | 9.2 |
| 30°-40° | 2409.2 | 15.6 |
| 40°-50° | 3932.7 | 25.5 |
| 50°-60° | 4117.3 | 26.7 |
| 60°-70° | 2076.7 | 13.5 |
| 70°-80° | 262.3 | 1.7 |
| 80°-90° | 10.0 | 0.1 |
| 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° | 15423.0 | 100.0 |
| 0°-180° | 15423.0 | 100.0 |

Coefficient of Utilization



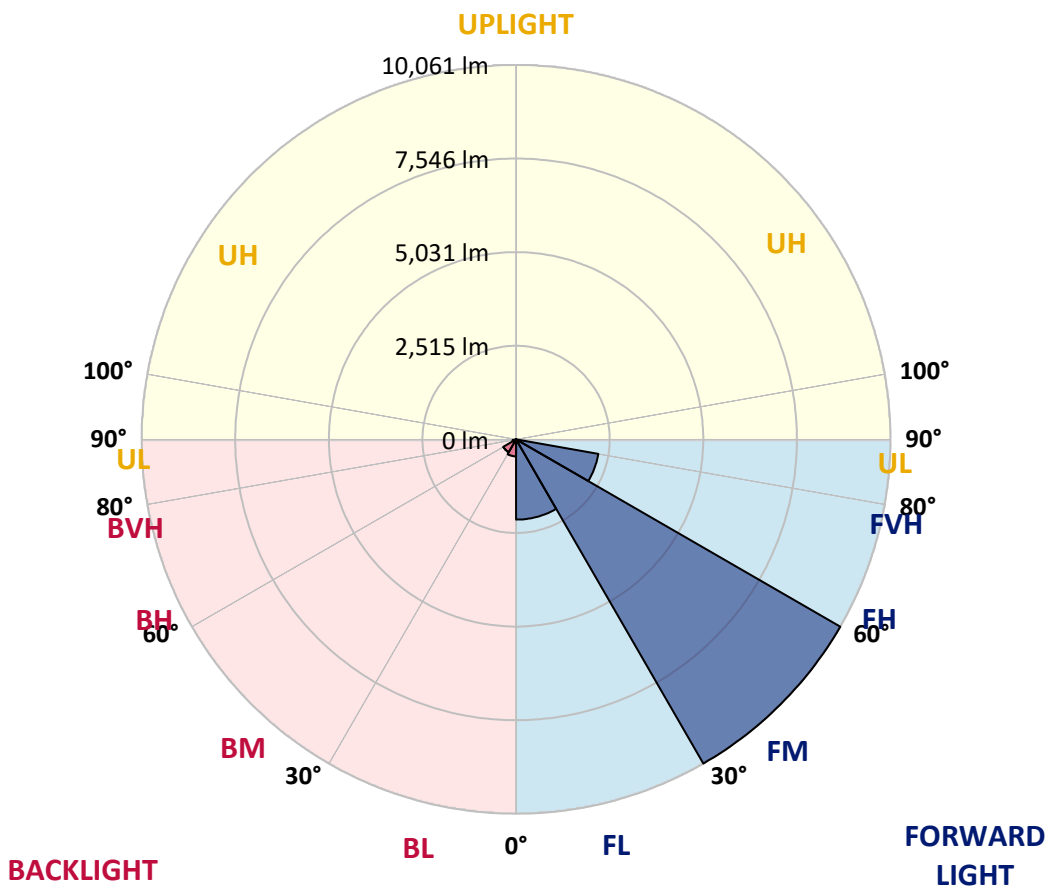
REPORT NUMBER: P635604

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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°) | 2157.5 | 14.0 | | | |
| FM (30°-60°) | 10061.3 | 65.2 | | | |
| FH (60°-80°) | 2243.5 | 14.5 | | | G2/5000 |
| FVH (80°-90°) | 9.1 | 0.1 | | | G0/10 |
| BL (0°-30°) | 457.4 | 3.0 | B1/500 | | |
| BM (30°-60°) | 397.9 | 2.6 | B1/1000 | | |
| BH (60°-80°) | 95.5 | 0.6 | B0/110 | | G0/110 |
| BVH (80°-90°) | 0.9 | 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 II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 56° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0° | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 |
| 2.5° | 4645.0 | 4622.5 | 4656.8 | 4617.3 | 4550.0 | 4493.3 | 4419.5 | 4393.1 | 4274.5 | 4162.4 | 4054.3 |
| 5° | 5209.3 | 5215.8 | 5205.3 | 5149.9 | 5055.0 | 4949.5 | 4800.5 | 4767.6 | 4560.6 | 4347.0 | 4116.2 |
| 7.5° | 5349.0 | 5345.1 | 5367.5 | 5388.6 | 5372.7 | 5320.0 | 5157.8 | 5124.9 | 4867.8 | 4547.4 | 4211.2 |
| 10° | 4917.9 | 4920.5 | 4966.7 | 5109.1 | 5285.7 | 5469.0 | 5443.9 | 5425.5 | 5173.7 | 4774.2 | 4316.7 |
| 12.5° | 4308.7 | 4332.5 | 4381.3 | 4584.3 | 4883.6 | 5300.2 | 5558.6 | 5577.1 | 5454.5 | 5023.3 | 4440.6 |
| 15° | 4045.0 | 4050.3 | 4089.9 | 4212.5 | 4435.3 | 4949.5 | 5509.9 | 5561.3 | 5689.2 | 5273.9 | 4575.1 |
| 17.5° | 4038.5 | 4045.0 | 4062.2 | 4116.2 | 4261.3 | 4674.0 | 5353.0 | 5442.6 | 5865.8 | 5542.8 | 4735.9 |
| 20° | 4286.3 | 4282.4 | 4270.5 | 4241.5 | 4304.8 | 4583.0 | 5207.9 | 5306.8 | 5962.1 | 5805.2 | 4898.1 |
| 22.5° | 4735.9 | 4730.7 | 4677.9 | 4557.9 | 4506.5 | 4666.0 | 5136.7 | 5226.4 | 6020.1 | 6038.6 | 5031.3 |
| 25° | 5254.1 | 5291.0 | 5192.1 | 5010.2 | 4883.6 | 4878.3 | 5200.0 | 5263.3 | 6070.2 | 6245.6 | 5122.2 |
| 27.5° | 5822.3 | 5834.2 | 5749.8 | 5545.5 | 5362.2 | 5218.5 | 5383.3 | 5430.8 | 6125.6 | 6430.2 | 5173.7 |
| 30° | 6446.0 | 6442.0 | 6345.8 | 6108.4 | 5885.6 | 5678.6 | 5691.8 | 5710.3 | 6254.8 | 6641.1 | 5230.3 |
| 32.5° | 7225.2 | 7242.3 | 7070.9 | 6747.9 | 6480.3 | 6194.1 | 6095.3 | 6097.9 | 6488.2 | 6912.7 | 5316.0 |
| 35° | 8283.9 | 8241.7 | 8014.9 | 7554.8 | 7098.6 | 6790.1 | 6621.3 | 6606.8 | 6848.1 | 7277.9 | 5465.0 |
| 37.5° | 9292.5 | 9296.5 | 9059.2 | 8552.9 | 7976.7 | 7490.2 | 7251.6 | 7212.0 | 7354.4 | 7784.2 | 5712.9 |
| 40° | 9992.6 | 10005.8 | 9906.9 | 9641.9 | 9031.5 | 8343.2 | 7992.5 | 7951.7 | 8011.0 | 8425.0 | 6037.2 |
| 42.5° | 10363.1 | 10400.0 | 10427.7 | 10489.7 | 10026.9 | 9408.6 | 8869.3 | 8865.4 | 8803.4 | 9155.4 | 6413.0 |
| 45° | 10377.6 | 10433.0 | 10601.8 | 11025.0 | 11077.7 | 10624.2 | 10037.5 | 9949.1 | 9710.5 | 9937.3 | 6749.2 |
| 47.5° | 9804.1 | 9932.0 | 10290.6 | 11129.2 | 11682.9 | 11833.2 | 11251.8 | 11197.7 | 10527.9 | 10555.6 | 7001.0 |
| 50° | 8467.2 | 8600.3 | 9260.9 | 10595.2 | 11835.9 | 12793.1 | 12584.7 | 12472.7 | 11210.9 | 10964.4 | 7122.3 |
| 52.5° | 7096.0 | 7217.3 | 7665.6 | 9324.2 | 11201.7 | 13095.0 | 13708.1 | 13574.9 | 11824.0 | 11106.7 | 7072.2 |
| 55° | 4937.6 | 5099.8 | 5537.6 | 6969.4 | 9740.8 | 12507.0 | 14079.9 | 14052.2 | 12371.2 | 11017.1 | 6994.5 |
| 57.5° | 2420.7 | 2581.6 | 3018.0 | 4296.9 | 7216.0 | 10919.5 | 13511.6 | 13658.0 | 12698.1 | 10920.8 | 6931.2 |
| 60° | 1011.3 | 1077.2 | 1227.5 | 1885.4 | 4037.1 | 8252.3 | 12228.8 | 12431.8 | 12497.7 | 10790.3 | 6924.6 |
| 62.5° | 586.7 | 597.3 | 613.1 | 781.8 | 1570.3 | 4730.7 | 10144.3 | 10433.0 | 11444.3 | 10617.6 | 6820.4 |
| 65° | 443.0 | 447.0 | 440.4 | 479.9 | 648.7 | 1794.4 | 7329.3 | 7722.2 | 9552.3 | 9942.5 | 6409.1 |
| 67.5° | 363.9 | 363.9 | 346.8 | 354.7 | 407.4 | 672.4 | 4046.4 | 4594.8 | 7068.3 | 8171.8 | 5292.3 |
| 70° | 290.1 | 296.7 | 288.7 | 278.2 | 291.4 | 371.8 | 1439.8 | 1785.2 | 4116.2 | 4825.6 | 3086.5 |
| 72.5° | 220.2 | 220.2 | 233.4 | 225.5 | 216.2 | 233.4 | 502.3 | 564.3 | 1652.0 | 2012.0 | 1114.1 |
| 75° | 170.1 | 175.4 | 184.6 | 176.7 | 163.5 | 138.4 | 241.3 | 255.8 | 498.4 | 468.1 | 249.2 |
| 77.5° | 87.0 | 88.3 | 117.3 | 129.2 | 121.3 | 84.4 | 105.5 | 116.0 | 162.2 | 145.0 | 92.3 |
| 80° | 52.7 | 55.4 | 65.9 | 101.5 | 80.4 | 44.8 | 43.5 | 46.1 | 76.5 | 65.9 | 38.2 |
| 82.5° | 22.4 | 23.7 | 36.9 | 36.9 | 33.0 | 17.1 | 17.1 | 17.1 | 36.9 | 34.3 | 15.8 |
| 85° | 0.0 | 0.0 | 6.6 | 5.3 | 5.3 | 6.6 | 6.6 | 6.6 | 9.2 | 13.2 | 7.9 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | 4.0 | 4.0 |
| 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: P635604

CATALOG NUMBER: GWS-SA3E-727-U-AFL-W-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 | 3984.4 |
| 2.5° | 3984.4 | 3900.0 | 3786.6 | 3683.8 | 3545.4 | 3467.6 | 3359.4 | 3271.1 | 3196.0 | 3172.2 | 3161.7 |
| 5° | 3985.7 | 3840.7 | 3598.1 | 3355.5 | 3057.5 | 2822.8 | 2581.6 | 2390.4 | 2233.5 | 2183.4 | 2170.2 |
| 7.5° | 4012.1 | 3798.5 | 3405.6 | 2965.2 | 2466.8 | 2055.5 | 1687.6 | 1358.0 | 1205.1 | 1153.7 | 1143.1 |
| 10° | 4047.7 | 3762.9 | 3182.8 | 2497.2 | 1781.2 | 1252.5 | 887.3 | 676.4 | 576.2 | 520.8 | 528.7 |
| 12.5° | 4093.8 | 3733.9 | 2936.2 | 1990.9 | 1178.7 | 688.2 | 487.8 | 408.7 | 387.6 | 377.1 | 371.8 |
| 15° | 4155.8 | 3699.6 | 2630.3 | 1488.5 | 722.5 | 443.0 | 375.8 | 354.7 | 346.8 | 341.5 | 340.2 |
| 17.5° | 4219.1 | 3660.1 | 2319.2 | 1046.9 | 479.9 | 367.9 | 337.5 | 327.0 | 321.7 | 317.7 | 316.4 |
| 20° | 4286.3 | 3592.8 | 1954.0 | 721.2 | 378.4 | 330.9 | 311.2 | 299.3 | 292.7 | 286.1 | 284.8 |
| 22.5° | 4315.3 | 3484.7 | 1604.6 | 505.0 | 336.2 | 304.6 | 279.5 | 265.0 | 257.1 | 251.8 | 251.8 |
| 25° | 4287.6 | 3309.3 | 1243.3 | 383.7 | 305.9 | 275.6 | 250.5 | 234.7 | 228.1 | 222.8 | 222.8 |
| 27.5° | 4213.8 | 3083.9 | 907.1 | 317.7 | 272.9 | 245.2 | 221.5 | 207.0 | 201.7 | 199.1 | 199.1 |
| 30° | 4132.1 | 2799.1 | 639.5 | 272.9 | 236.0 | 213.6 | 193.8 | 184.6 | 183.3 | 180.6 | 180.6 |
| 32.5° | 4062.2 | 2532.8 | 440.4 | 240.0 | 208.3 | 185.9 | 172.7 | 168.8 | 170.1 | 167.4 | 168.8 |
| 35° | 4024.0 | 2271.7 | 327.0 | 213.6 | 185.9 | 164.8 | 158.2 | 158.2 | 158.2 | 156.9 | 156.9 |
| 37.5° | 4039.8 | 2014.6 | 266.3 | 195.1 | 166.1 | 150.3 | 143.7 | 146.3 | 149.0 | 149.0 | 149.0 |
| 40° | 4118.9 | 1786.5 | 236.0 | 178.0 | 149.0 | 137.1 | 131.8 | 135.8 | 139.8 | 142.4 | 142.4 |
| 42.5° | 4219.1 | 1601.9 | 213.6 | 163.5 | 137.1 | 123.9 | 121.3 | 125.3 | 129.2 | 131.8 | 131.8 |
| 45° | 4282.4 | 1416.0 | 191.2 | 145.0 | 125.3 | 109.4 | 109.4 | 114.7 | 113.4 | 114.7 | 114.7 |
| 47.5° | 4311.4 | 1268.4 | 168.8 | 125.3 | 106.8 | 94.9 | 96.2 | 98.9 | 96.2 | 98.9 | 98.9 |
| 50° | 4240.2 | 1119.4 | 149.0 | 104.2 | 88.3 | 83.1 | 85.7 | 84.4 | 84.4 | 89.7 | 89.7 |
| 52.5° | 4109.7 | 1008.6 | 131.8 | 88.3 | 75.2 | 73.8 | 76.5 | 71.2 | 72.5 | 72.5 | 71.2 |
| 55° | 4013.4 | 945.3 | 117.3 | 76.5 | 64.6 | 65.9 | 64.6 | 55.4 | 50.1 | 44.8 | 43.5 |
| 57.5° | 3965.9 | 920.3 | 106.8 | 68.6 | 58.0 | 58.0 | 52.7 | 38.2 | 29.0 | 22.4 | 19.8 |
| 60° | 3955.4 | 890.0 | 96.2 | 59.3 | 51.4 | 48.8 | 38.2 | 22.4 | 14.5 | 10.5 | 9.2 |
| 62.5° | 3855.2 | 816.1 | 87.0 | 47.5 | 44.8 | 39.6 | 23.7 | 13.2 | 7.9 | 5.3 | 4.0 |
| 65° | 3526.9 | 671.1 | 77.8 | 36.9 | 34.3 | 29.0 | 14.5 | 7.9 | 4.0 | 1.3 | 0.0 |
| 67.5° | 2805.7 | 476.0 | 68.6 | 27.7 | 23.7 | 18.5 | 9.2 | 5.3 | 1.3 | 0.0 | 0.0 |
| 70° | 1617.8 | 257.1 | 56.7 | 19.8 | 15.8 | 11.9 | 6.6 | 2.6 | 0.0 | 0.0 | 0.0 |
| 72.5° | 540.6 | 120.0 | 43.5 | 13.2 | 11.9 | 9.2 | 4.0 | 1.3 | 0.0 | 0.0 | 0.0 |
| 75° | 118.7 | 71.2 | 29.0 | 9.2 | 7.9 | 6.6 | 2.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| 77.5° | 44.8 | 50.1 | 14.5 | 6.6 | 5.3 | 4.0 | 1.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80° | 17.1 | 33.0 | 6.6 | 4.0 | 4.0 | 1.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 9.2 | 13.2 | 4.0 | 2.6 | 2.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 5.3 | 6.6 | 2.6 | 1.3 | 1.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 2.6 | 1.3 | 1.3 | 1.3 | 0.0 | 0.0 | 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
 CIE u': 0.2605
 CIE v': 0.5272
 Duv: 0.0005
 CIE x: 0.4573
 CIE y: 0.4113
 CIE z: 0.1313
 Peak Wavelength (nm): 602
 Dominant Wavelength (nm): 583
 Purity: 61.2

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.5 | | |
| R1: | 69.2 | R9: | -16.1 |
| R2: | 79.4 | R10: | 51.4 |
| R3: | 87.8 | R11: | 63.1 |
| R4: | 69.4 | R12: | 42.0 |
| R5: | 66.4 | R13: | 70.2 |
| R6: | 69.8 | R14: | 92.4 |
| R7: | 79.8 | | |
| R8: | 50.1 | | |

Rf: 69.9
 Rg: 98.3



Test Conditions

Stabilization Time: 56M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.3./42%
 Sphere Temperature (°C): 25.7

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

| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/28/2019 | 12/28/2019 |
| Power Meter | IN0071 | 12/5/2018 | 12/5/2019 |
| AC Power Source | IN0063 | 12/5/2018 | 12/5/2019 |
| DC Power Source | IN0208 | 12/5/2018 | 12/5/2019 |
| Sphere Thermometer | IN0085 | 12/5/2018 | 12/5/2019 |
| Room Thermometer | IN0046 | 12/5/2018 | 12/5/2019 |

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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

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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)