

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: P321531

Luminaire Tested: **GLEON-SA7C-727-U-T3R-HSS**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P321531
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-11)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: McGRAW-EDISON
Catalog Number: GLEON-SA7C-727-U-T3R-HSS
Description: GALLEON AREA AND ROADWAY LUMINAIRE
(7) 70 CRI, 2700K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III
ROADWAY OPTICS WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 32178 lumens
Efficiency: N/A
Efficacy: 82.3 lumens/watt
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B3 - U0 - G5

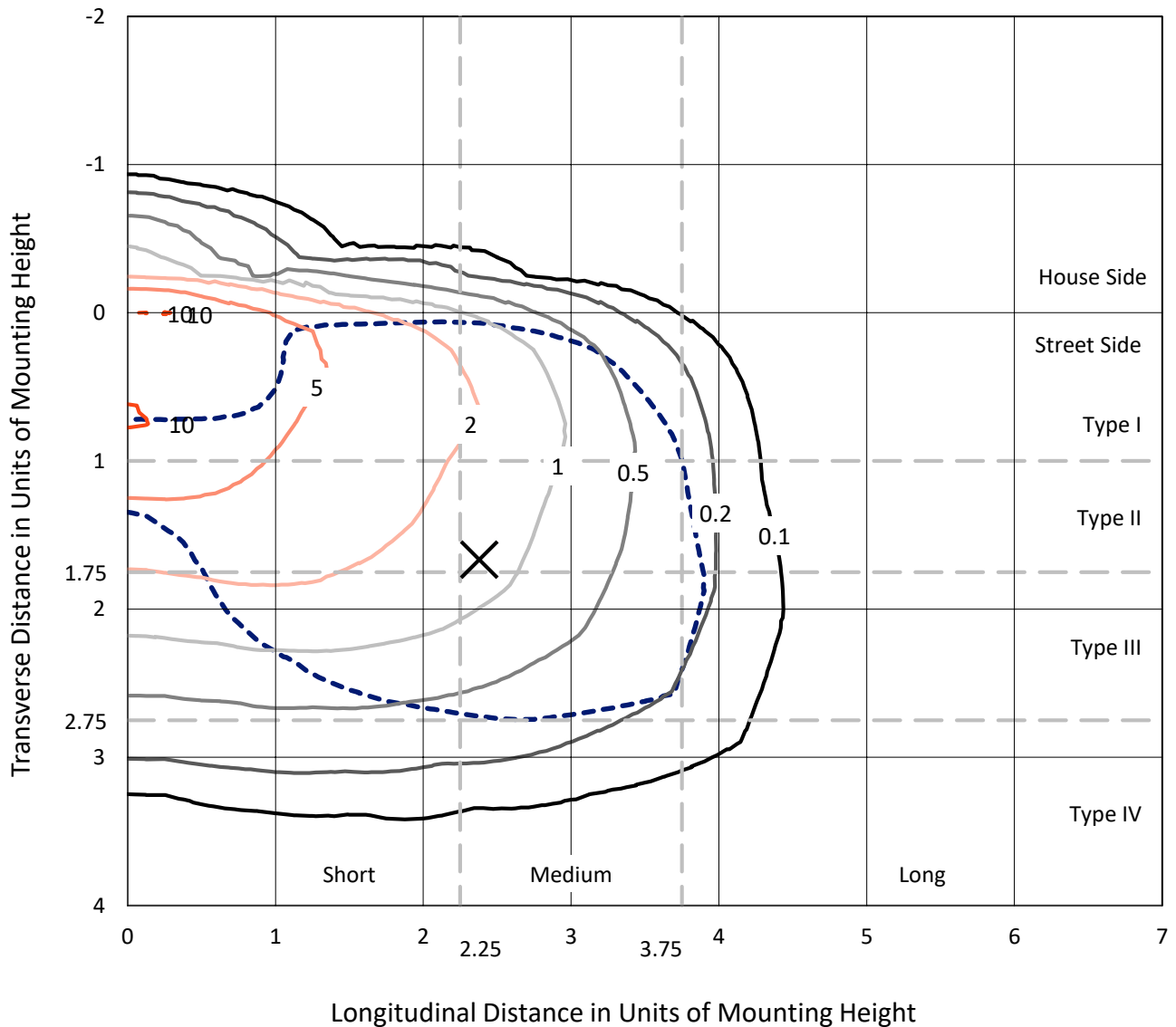
Input Watts (W): 391
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



REPORT NUMBER: P321531
 CATALOG NUMBER: GLEON-SA7C-727-U-T3R-HSS

Iso-Footcandle Lines of Horizontal Illumination

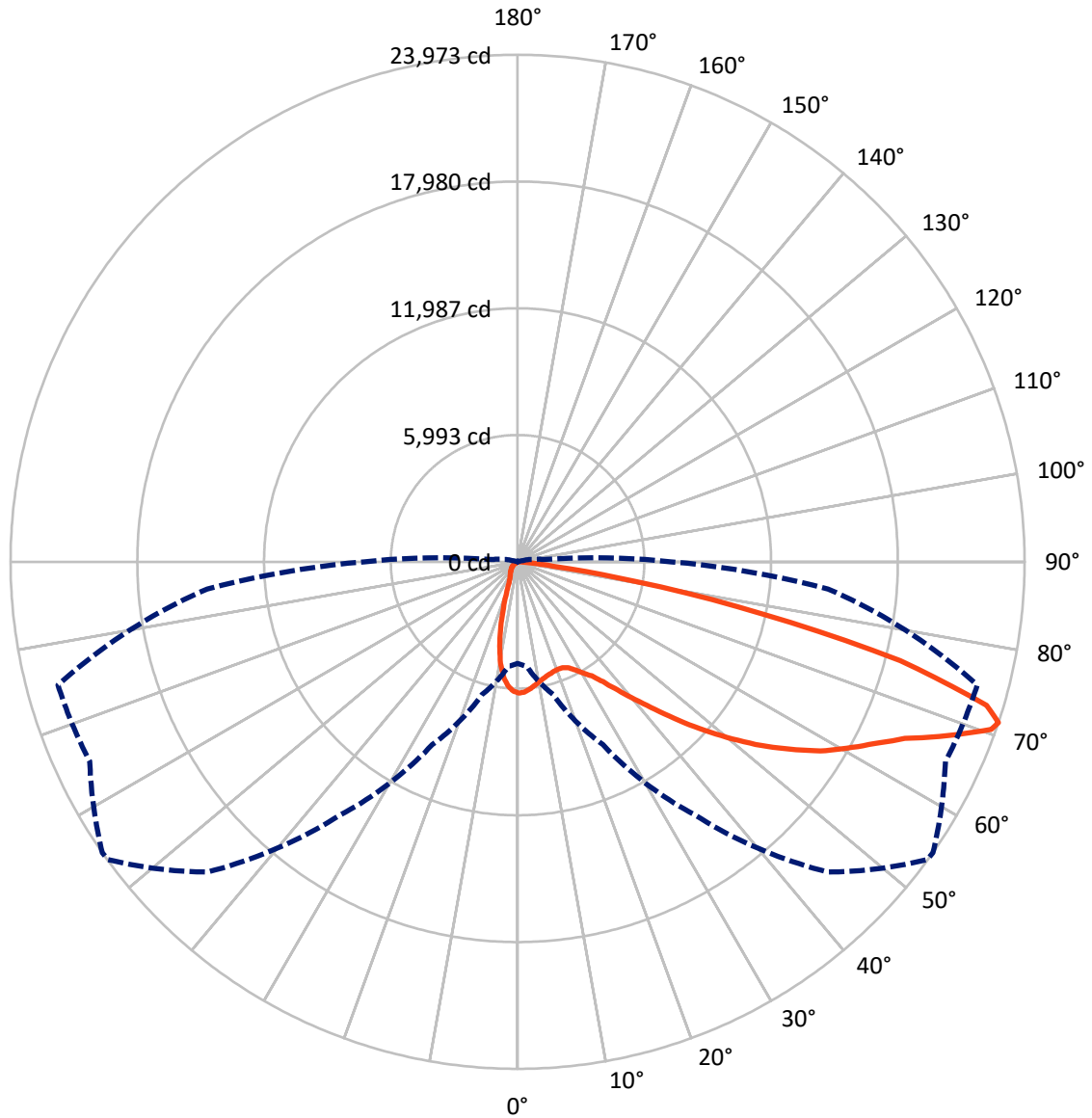
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 10.2 fc
 Type III - Medium - N/A

REPORT NUMBER: P321531
CATALOG NUMBER: GLEON-SA7C-727-U-T3R-HSS

Luminous Intensity Polar Plot



— Vertical Plane Through 55-Deg Lateral - - - Horizontal Cone Through 71-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 2547.6 | 0.0 | 2547.6 |
| | % Fixture | 7.9 | 0.0 | 7.9 |
| Street Side | Lumens | 29630.4 | 0.0 | 29630.4 |
| | % Fixture | 92.1 | 0.0 | 92.1 |
| Total | Lumens | 32178.0 | 0.0 | 32178.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 529.1 | 1.6 |
| 10°-20° | 1194.5 | 3.7 |
| 20°-30° | 1919.6 | 6.0 |
| 30°-40° | 3261.5 | 10.1 |
| 40°-50° | 5062.3 | 15.7 |
| 50°-60° | 6806.1 | 21.2 |
| 60°-70° | 8326.2 | 25.9 |
| 70°-80° | 4868.1 | 15.1 |
| 80°-90° | 210.4 | 0.7 |
| 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° | 32178.0 | 100.0 |
| 0°-180° | 32178.0 | 100.0 |

Coefficient of Utilization

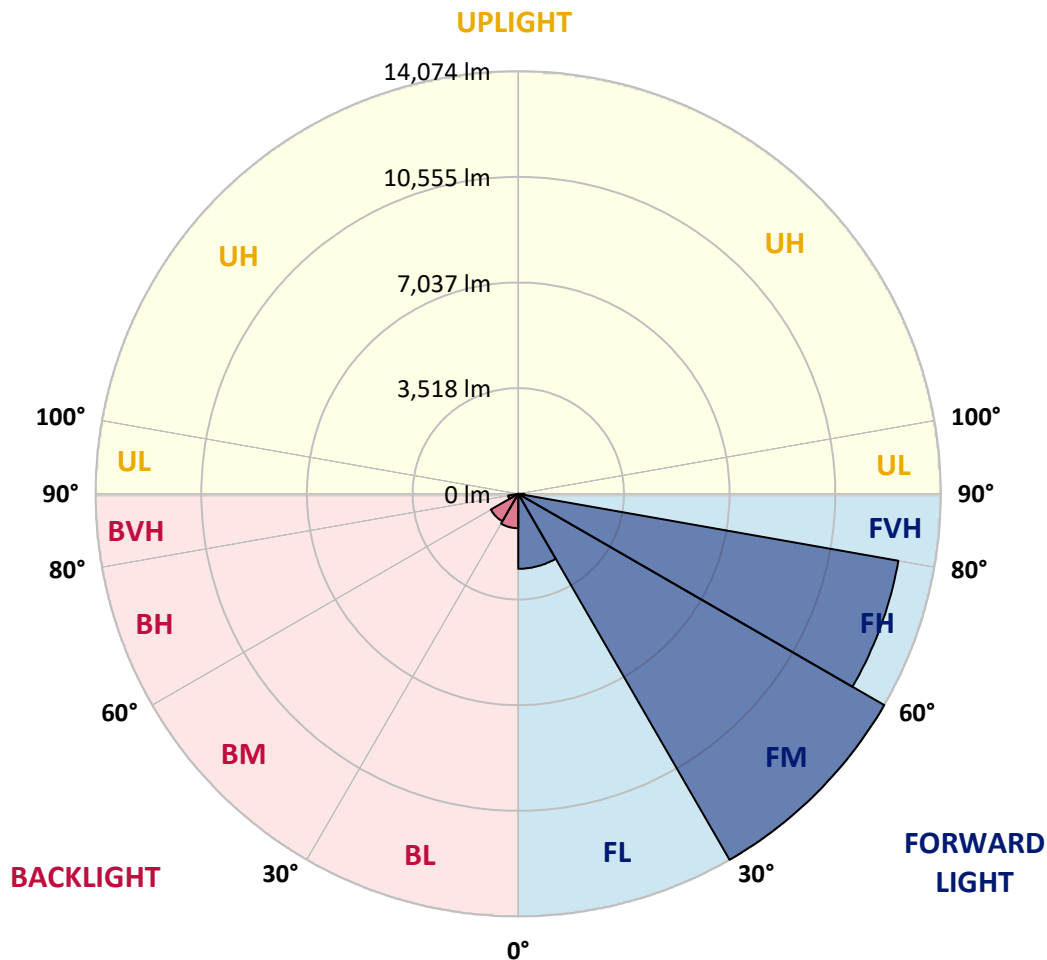


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|---------|-----------|-------------------------|------|--------|
| | | | B | U | G |
| FL (0°-30°) | 2496.6 | 7.8 | | | |
| FM (30°-60°) | 14073.7 | 43.7 | | | |
| FH (60°-80°) | 12853.0 | 39.9 | | | G5 |
| FVH (80°-90°) | 207.1 | 0.6 | | | G2/225 |
| BL (0°-30°) | 1146.7 | 3.6 | B3/2500 | | |
| BM (30°-60°) | 1056.3 | 3.3 | B2/2500 | | |
| BH (60°-80°) | 341.3 | 1.1 | B1/500 | | G1/500 |
| BVH (80°-90°) | 3.3 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G5
 Type III Medium





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CATALOG NUMBER: GLEON-SA7C-727-U-T3R-HSS

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 54° | 55° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 |
| 2.5° | 6023.6 | 6030.8 | 6056.8 | 6068.4 | 6095.8 | 6142.1 | 6165.2 | 6166.6 | 6204.2 | 6218.6 | 6230.2 |
| 5° | 5597.4 | 5640.7 | 5684.1 | 5730.3 | 5814.1 | 5925.3 | 6035.2 | 6045.3 | 6166.6 | 6256.2 | 6303.9 |
| 7.5° | 5230.4 | 5269.4 | 5321.4 | 5395.1 | 5513.6 | 5688.4 | 5871.9 | 5893.6 | 6123.3 | 6327.0 | 6433.9 |
| 10° | 4853.3 | 4885.0 | 4960.2 | 5068.5 | 5231.8 | 5465.9 | 5712.9 | 5749.1 | 6084.3 | 6422.4 | 6610.2 |
| 12.5° | 4450.1 | 4468.9 | 4560.0 | 4716.0 | 4955.8 | 5253.5 | 5578.6 | 5626.3 | 6059.7 | 6532.2 | 6818.3 |
| 15° | 4143.8 | 4152.5 | 4239.2 | 4401.0 | 4675.5 | 5062.8 | 5474.5 | 5532.3 | 6065.5 | 6663.7 | 7045.1 |
| 17.5° | 4065.8 | 4070.2 | 4116.4 | 4227.6 | 4470.4 | 4892.3 | 5392.2 | 5463.0 | 6082.8 | 6792.3 | 7273.4 |
| 20° | 4382.2 | 4351.9 | 4304.2 | 4286.9 | 4390.9 | 4789.7 | 5343.1 | 5422.5 | 6105.9 | 6906.4 | 7478.6 |
| 22.5° | 5250.6 | 5161.0 | 4963.1 | 4698.7 | 4538.3 | 4796.9 | 5356.1 | 5435.5 | 6179.6 | 7046.5 | 7715.5 |
| 25° | 6539.4 | 6415.1 | 6078.5 | 5558.3 | 5058.4 | 5005.0 | 5464.4 | 5545.3 | 6322.7 | 7214.1 | 7942.4 |
| 27.5° | 8005.9 | 7883.1 | 7471.3 | 6728.7 | 5876.2 | 5416.8 | 5712.9 | 5788.1 | 6535.1 | 7363.0 | 8115.7 |
| 30° | 9410.3 | 9375.6 | 8890.2 | 8046.4 | 6905.0 | 6084.3 | 6033.7 | 6097.3 | 6692.6 | 7452.6 | 8253.0 |
| 32.5° | 10600.9 | 10546.0 | 10155.9 | 9335.2 | 8082.5 | 6886.2 | 6410.8 | 6429.6 | 6811.0 | 7568.1 | 8432.2 |
| 35° | 11704.8 | 11636.8 | 11294.4 | 10518.5 | 9290.4 | 7865.8 | 6991.6 | 6964.2 | 7069.7 | 7800.8 | 8692.2 |
| 37.5° | 12668.5 | 12730.6 | 12350.6 | 11612.3 | 10374.0 | 8884.4 | 7774.8 | 7692.4 | 7474.2 | 8179.3 | 9069.3 |
| 40° | 13474.7 | 13474.7 | 13276.8 | 12661.2 | 11544.4 | 9937.7 | 8660.4 | 8552.1 | 8082.5 | 8763.0 | 9547.6 |
| 42.5° | 13765.1 | 13827.2 | 13900.9 | 13552.7 | 12591.9 | 11032.9 | 9647.3 | 9534.6 | 8939.3 | 9590.9 | 10151.5 |
| 45° | 13782.5 | 13880.7 | 14257.8 | 14256.4 | 13538.3 | 12120.9 | 10759.8 | 10706.4 | 10037.4 | 10654.3 | 10900.0 |
| 47.5° | 13538.3 | 13661.1 | 14282.4 | 14634.9 | 14288.1 | 13133.7 | 11976.4 | 11909.9 | 11327.6 | 11957.6 | 11683.1 |
| 50° | 13161.2 | 13297.0 | 14019.4 | 14783.7 | 14798.2 | 14015.1 | 13258.0 | 13158.3 | 12747.9 | 13447.2 | 12492.2 |
| 52.5° | 12486.4 | 12749.4 | 13783.9 | 14818.4 | 15133.4 | 14776.5 | 14477.4 | 14434.1 | 14337.3 | 14882.0 | 13136.6 |
| 55° | 11043.0 | 11334.9 | 13193.0 | 14830.0 | 15444.0 | 15451.3 | 15620.3 | 15631.9 | 15826.9 | 16222.8 | 13616.3 |
| 57.5° | 10361.0 | 10525.8 | 12161.3 | 14884.9 | 15904.9 | 16217.0 | 16784.9 | 16874.4 | 17176.4 | 17495.7 | 14163.9 |
| 60° | 9931.9 | 10127.0 | 11652.7 | 14809.7 | 16628.8 | 17221.2 | 17864.2 | 17894.5 | 18218.1 | 18809.1 | 14905.1 |
| 62.5° | 9589.5 | 9781.7 | 11332.0 | 14520.8 | 17442.3 | 18429.1 | 18918.9 | 18921.8 | 19164.5 | 20373.9 | 15747.5 |
| 65° | 8744.2 | 8906.1 | 10683.2 | 14195.7 | 17979.7 | 19624.0 | 20144.1 | 20125.4 | 20323.3 | 22023.9 | 16725.6 |
| 67.5° | 7521.9 | 7646.2 | 9358.3 | 12963.2 | 17777.5 | 20710.5 | 21993.5 | 21931.4 | 21691.6 | 23450.0 | 17109.9 |
| 70° | 5815.5 | 5860.3 | 7376.0 | 10803.2 | 15881.8 | 21128.1 | 23780.8 | 23749.0 | 22531.0 | 23194.2 | 15701.2 |
| 71° | 4807.0 | 4954.4 | 6500.4 | 9534.6 | 14611.8 | 20742.3 | 23954.2 | 23973.0 | 22320.1 | 22497.8 | 14731.7 |
| 72.5° | 2791.5 | 2917.2 | 4711.7 | 7322.5 | 12405.5 | 19132.7 | 23055.5 | 23191.3 | 21334.7 | 20463.5 | 12583.2 |
| 75° | 598.2 | 640.1 | 1746.8 | 3544.2 | 6824.0 | 13409.7 | 18197.9 | 18681.9 | 17388.8 | 13921.2 | 7584.0 |
| 77.5° | 416.1 | 449.3 | 748.4 | 1608.1 | 2255.4 | 6626.1 | 11304.5 | 11850.7 | 10388.5 | 5231.8 | 2427.4 |
| 80° | 329.4 | 367.0 | 583.7 | 794.7 | 609.7 | 2136.9 | 5295.4 | 5629.1 | 3464.8 | 1167.4 | 408.9 |
| 82.5° | 183.5 | 218.2 | 455.1 | 429.1 | 234.1 | 406.0 | 1482.4 | 1676.0 | 693.5 | 235.5 | 96.8 |
| 85° | 53.5 | 65.0 | 293.3 | 312.1 | 99.7 | 78.0 | 252.8 | 313.5 | 131.5 | 62.1 | 43.3 |
| 87.5° | 0.0 | 0.0 | 141.6 | 119.9 | 28.9 | 11.6 | 23.1 | 26.0 | 26.0 | 26.0 | 28.9 |
| 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: P321531

CATALOG NUMBER: GLEON-SA7C-727-U-T3R-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 | 6205.6 |
| 2.5° | 6230.2 | 6240.3 | 6204.2 | 6156.5 | 6105.9 | 6043.8 | 5978.8 | 5928.2 | 5926.8 | 5902.2 | 5877.7 |
| 5° | 6306.8 | 6301.0 | 6201.3 | 6049.6 | 5870.4 | 5684.1 | 5506.3 | 5305.5 | 5239.0 | 5156.7 | 5129.2 |
| 7.5° | 6448.4 | 6407.9 | 6197.0 | 5864.7 | 5471.7 | 5081.5 | 4678.4 | 4272.4 | 4099.0 | 3943.0 | 3915.6 |
| 10° | 6626.1 | 6549.5 | 6169.5 | 5587.2 | 4866.3 | 4146.7 | 3538.4 | 2986.5 | 2743.8 | 2557.4 | 2548.7 |
| 12.5° | 6811.0 | 6694.0 | 6092.9 | 5168.2 | 4073.0 | 3061.6 | 2360.9 | 1817.6 | 1615.3 | 1485.3 | 1496.9 |
| 15° | 7004.6 | 6829.8 | 5928.2 | 4603.3 | 3170.0 | 2077.7 | 1450.6 | 1131.3 | 1050.4 | 1017.2 | 1025.8 |
| 17.5° | 7202.6 | 6923.7 | 5698.5 | 3922.8 | 2278.5 | 1340.8 | 1004.2 | 914.6 | 914.6 | 921.8 | 924.7 |
| 20° | 7374.5 | 6974.3 | 5360.4 | 3159.9 | 1544.5 | 976.7 | 878.5 | 865.5 | 872.7 | 884.2 | 885.7 |
| 22.5° | 7545.0 | 6977.2 | 4919.7 | 2386.9 | 1080.7 | 855.4 | 836.6 | 830.8 | 835.1 | 848.1 | 849.6 |
| 25° | 7683.7 | 6942.5 | 4367.8 | 1697.7 | 862.6 | 806.2 | 797.6 | 794.7 | 797.6 | 813.5 | 813.5 |
| 27.5° | 7740.1 | 6816.8 | 3694.5 | 1193.4 | 773.0 | 751.3 | 748.4 | 751.3 | 755.7 | 767.2 | 768.7 |
| 30° | 7745.9 | 6597.2 | 2960.5 | 864.0 | 700.8 | 677.6 | 683.4 | 693.5 | 689.2 | 686.3 | 689.2 |
| 32.5° | 7760.3 | 6342.9 | 2245.3 | 710.9 | 640.1 | 603.9 | 596.7 | 596.7 | 579.4 | 569.3 | 563.5 |
| 35° | 7808.0 | 6043.8 | 1628.3 | 638.6 | 577.9 | 536.0 | 508.6 | 476.8 | 443.6 | 426.2 | 421.9 |
| 37.5° | 7883.1 | 5730.3 | 1166.0 | 590.9 | 523.0 | 475.4 | 423.3 | 367.0 | 319.3 | 306.3 | 306.3 |
| 40° | 8020.4 | 5406.6 | 862.6 | 553.4 | 479.7 | 420.5 | 342.4 | 268.7 | 225.4 | 218.2 | 218.2 |
| 42.5° | 8237.1 | 5065.7 | 687.7 | 520.1 | 442.1 | 364.1 | 261.5 | 195.1 | 163.3 | 158.9 | 157.5 |
| 45° | 8462.5 | 4690.0 | 601.1 | 488.4 | 401.7 | 299.1 | 193.6 | 144.5 | 125.7 | 121.4 | 121.4 |
| 47.5° | 8687.9 | 4289.8 | 559.2 | 458.0 | 362.7 | 232.6 | 144.5 | 114.1 | 105.5 | 105.5 | 106.9 |
| 50° | 8878.6 | 3872.2 | 528.8 | 424.8 | 312.1 | 176.3 | 114.1 | 96.8 | 93.9 | 99.7 | 101.1 |
| 52.5° | 8926.3 | 3461.9 | 491.2 | 382.9 | 250.0 | 134.4 | 93.9 | 85.2 | 85.2 | 85.2 | 85.2 |
| 55° | 8897.4 | 3144.0 | 442.1 | 330.9 | 184.9 | 106.9 | 80.9 | 75.1 | 73.7 | 73.7 | 73.7 |
| 57.5° | 8995.7 | 2956.2 | 354.0 | 257.2 | 132.9 | 86.7 | 70.8 | 66.5 | 63.6 | 62.1 | 62.1 |
| 60° | 9193.6 | 2833.4 | 252.8 | 184.9 | 99.7 | 72.2 | 60.7 | 56.3 | 52.0 | 49.1 | 49.1 |
| 62.5° | 9456.6 | 2726.4 | 187.8 | 137.3 | 76.6 | 57.8 | 50.6 | 46.2 | 40.5 | 37.6 | 37.6 |
| 65° | 9658.8 | 2535.7 | 143.0 | 102.6 | 57.8 | 46.2 | 39.0 | 37.6 | 28.9 | 26.0 | 24.6 |
| 67.5° | 9349.6 | 2116.7 | 115.6 | 75.1 | 43.3 | 36.1 | 30.3 | 28.9 | 17.3 | 14.4 | 14.4 |
| 70° | 8018.9 | 1473.7 | 92.5 | 54.9 | 31.8 | 28.9 | 24.6 | 18.8 | 13.0 | 11.6 | 11.6 |
| 71° | 7271.9 | 1231.0 | 83.8 | 46.2 | 27.5 | 27.5 | 23.1 | 15.9 | 11.6 | 10.1 | 10.1 |
| 72.5° | 6040.9 | 874.1 | 70.8 | 36.1 | 24.6 | 28.9 | 24.6 | 14.4 | 11.6 | 10.1 | 8.7 |
| 75° | 3506.7 | 365.5 | 49.1 | 24.6 | 18.8 | 34.7 | 31.8 | 13.0 | 8.7 | 7.2 | 7.2 |
| 77.5° | 1054.7 | 134.4 | 27.5 | 15.9 | 14.4 | 30.3 | 36.1 | 11.6 | 4.3 | 1.4 | 1.4 |
| 80° | 192.2 | 57.8 | 17.3 | 10.1 | 10.1 | 18.8 | 27.5 | 5.8 | 0.0 | 0.0 | 0.0 |
| 82.5° | 67.9 | 28.9 | 10.1 | 5.8 | 4.3 | 8.7 | 13.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 39.0 | 20.2 | 5.8 | 2.9 | 0.0 | 1.4 | 2.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 26.0 | 5.8 | 0.0 | 0.0 | 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 |

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

CIE 1931 Chromaticity Diagram



CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 2700K 4-step quadrangle

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

Photopic Flux vs. Wavelength



Photopic Lumens: 6211.7

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360 | 2044 | 0.0 | 490 | 7179 | 1.0 | 620 | 118034 | 30.7 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 1.9 | 625 | 111884 | 24.7 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 3.4 | 630 | 106119 | 19.2 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 6.3 | 635 | 99706 | 15.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 10.4 | 640 | 92142 | 11.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 16.3 | 645 | 84987 | 8.2 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 22.9 | 650 | 78016 | 5.7 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 29.7 | 655 | 71541 | 4.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 36.7 | 660 | 64863 | 2.7 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 42.5 | 665 | 58485 | 1.9 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.0 | 540 | 73435 | 47.8 | 670 | 51641 | 1.1 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.0 | 545 | 78677 | 52.4 | 675 | 46030 | 0.8 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 0.0 | 550 | 83331 | 56.6 | 680 | 40590 | 0.5 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 0.1 | 555 | 89120 | 60.9 | 685 | 35691 | 0.3 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 0.3 | 560 | 94613 | 64.3 | 690 | 31631 | 0.2 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 0.6 | 565 | 99818 | 66.4 | 695 | 27437 | 0.1 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 0.9 | 570 | 106526 | 69.3 | 700 | 24589 | 0.1 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 1.1 | 575 | 111610 | 69.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 1.0 | 580 | 117163 | 69.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 0.8 | 585 | 122201 | 67.9 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 0.6 | 590 | 125662 | 65.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 0.5 | 595 | 127415 | 60.4 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 0.4 | 600 | 129155 | 55.7 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 0.4 | 605 | 128057 | 49.6 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 0.5 | 610 | 126031 | 43.3 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 0.7 | 615 | 123059 | 37.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

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

Scotopic Flux vs. Wavelength



Scotopic Lumens: 6474.3

S/P: 1.04

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 2044 | 0.0 | 490 | 7179 | 6.0 | 620 | 118034 | 0.1 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 8.6 | 625 | 111884 | 0.1 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 12.5 | 630 | 106119 | 0.0 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 17.3 | 635 | 99706 | 0.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 21.8 | 640 | 92142 | 0.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 25.7 | 645 | 84987 | 0.0 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 27.5 | 650 | 78016 | 0.0 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 28.1 | 655 | 71541 | 0.0 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 27.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 24.7 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.1 | 540 | 73435 | 21.5 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.5 | 545 | 78677 | 18.3 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 1.6 | 550 | 83331 | 15.0 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 3.9 | 555 | 89120 | 12.0 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 8.1 | 560 | 94613 | 9.3 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 13.3 | 565 | 99818 | 7.0 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 19.1 | 570 | 106526 | 5.2 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 21.6 | 575 | 111610 | 3.7 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 18.1 | 580 | 117163 | 2.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 11.8 | 585 | 122201 | 1.8 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 8.1 | 590 | 125662 | 1.2 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 6.2 | 595 | 127415 | 0.8 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 4.8 | 600 | 129155 | 0.5 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 4.1 | 605 | 128057 | 0.4 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 4.1 | 610 | 126031 | 0.2 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 4.6 | 615 | 123059 | 0.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

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

Melanopic Flux vs. Wavelength



Melanopic Lumens: 2145.7 M/P: 0.35

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|
| 360 | 2044 | 0.0 | 490 | 7179 | 11.1 | 620 | 118034 | 1.5 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 16.9 | 625 | 111884 | 0.9 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 26.0 | 630 | 106119 | 0.6 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 38.2 | 635 | 99706 | 0.4 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 51.6 | 640 | 92142 | 0.2 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 65.1 | 645 | 84987 | 0.1 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 75.2 | 650 | 78016 | 0.1 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 82.9 | 655 | 71541 | 0.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 86.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.1 | 535 | 68520 | 85.4 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.2 | 540 | 73435 | 81.1 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.7 | 545 | 78677 | 75.4 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 2.3 | 550 | 83331 | 68.1 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 6.2 | 555 | 89120 | 60.9 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 13.0 | 560 | 94613 | 52.9 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 22.2 | 565 | 99818 | 44.8 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 32.0 | 570 | 106526 | 37.6 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 36.7 | 575 | 111610 | 30.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 30.4 | 580 | 117163 | 24.1 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 19.7 | 585 | 122201 | 18.7 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 13.2 | 590 | 125662 | 14.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 10.0 | 595 | 127415 | 10.2 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 7.7 | 600 | 129155 | 7.3 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 6.7 | 605 | 128057 | 5.0 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 6.9 | 610 | 126031 | 3.4 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 8.1 | 615 | 123059 | 2.3 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

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

TM-30-18

Summary

$R_f = 69.9$
 $R_g = 98.3$
 CIE $R_a = 71.5$
 $R_9 = -16.1$



Color Vector Graphics



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)