

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: P321855

Luminaire Tested: **GLEON-SA1D-727-U-T2-HSS**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P321855
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-13)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: McGRAW-EDISON
Catalog Number: GLEON-SA1D-727-U-T2-HSS
Description: GALLEON AREA AND ROADWAY LUMINAIRE
(1) 70 CRI, 2700K, 1200mA LIGHTSQUARE WITH 16 LEDS AND TYPE II OPTICS
WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4834 lumens
Efficiency: N/A
Efficacy: 72.1 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type II - Medium
BUG Rating: B0 - U0 - G1

Input Watts (W): 67
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

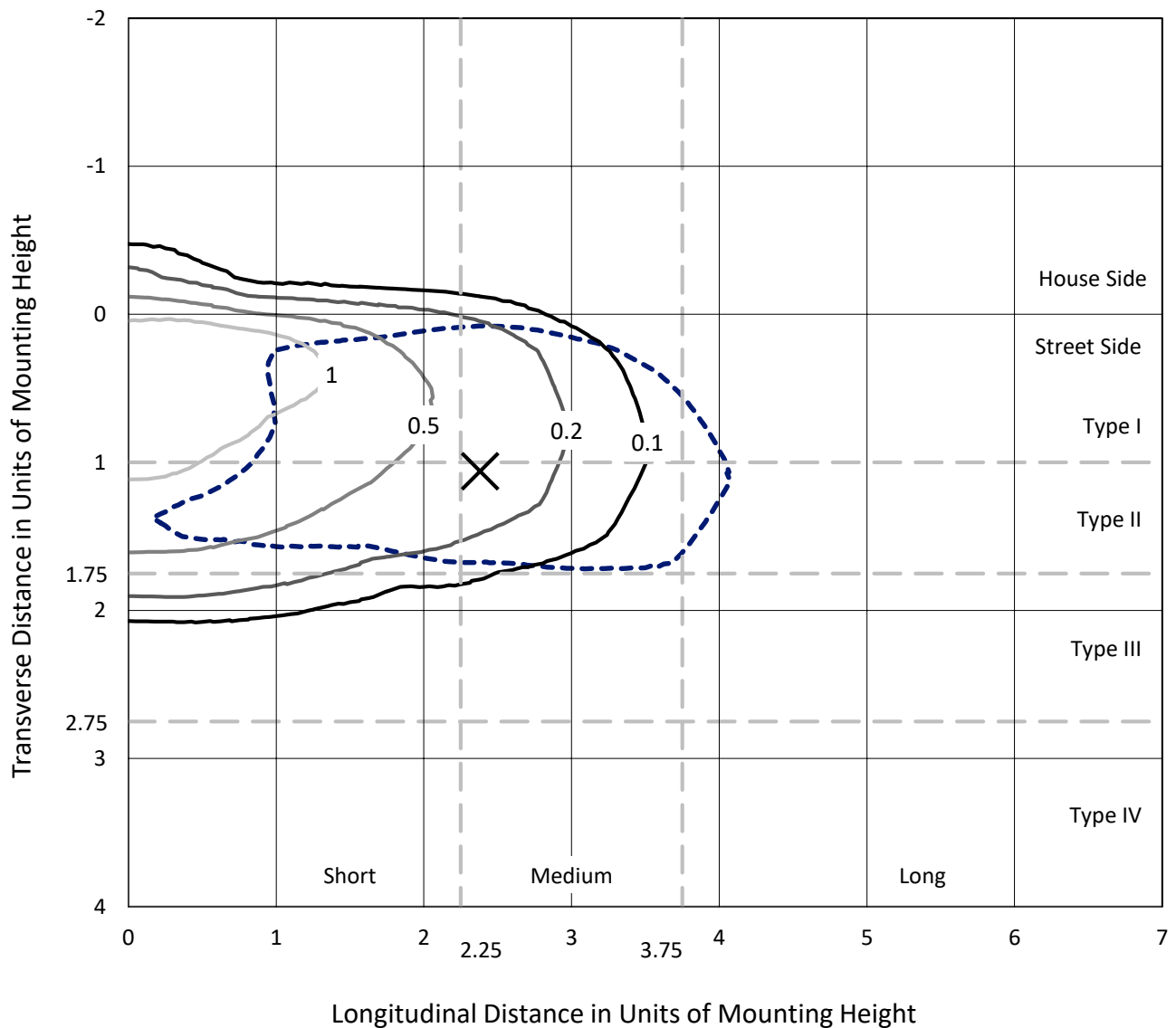




REPORT NUMBER: P321855
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Iso-Footcandle Lines of Horizontal Illumination

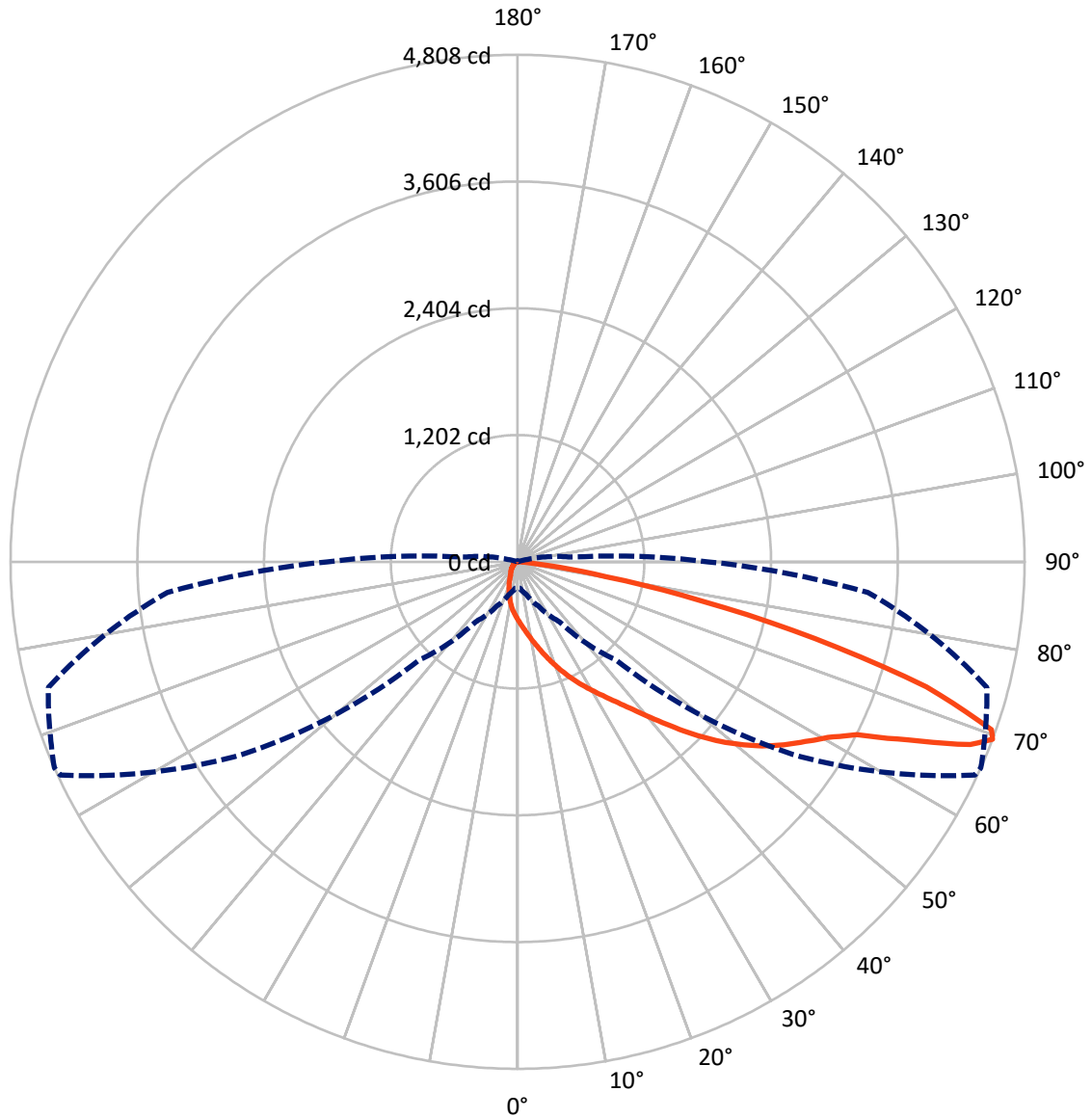
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.5 fc
 Type II - Medium - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 66-Deg Lateral - - - Horizontal Cone Through 69-Deg Vertical

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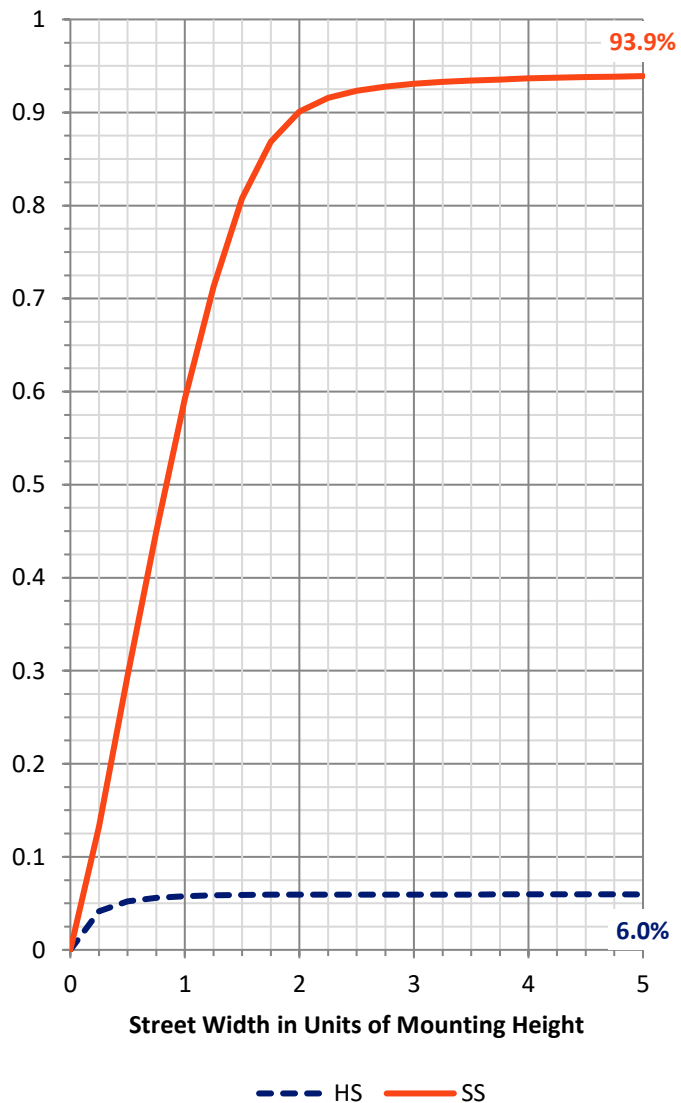
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 290.0 | 0.0 | 290.0 |
| | % Fixture | 6.0 | 0.0 | 6.0 |
| Street Side | Lumens | 4544.0 | 0.0 | 4544.0 |
| | % Fixture | 94.0 | 0.0 | 94.0 |
| Total | Lumens | 4834.0 | 0.0 | 4834.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 53.2 | 1.1 |
| 10°-20° | 158.3 | 3.3 |
| 20°-30° | 275.6 | 5.7 |
| 30°-40° | 483.5 | 10.0 |
| 40°-50° | 809.4 | 16.7 |
| 50°-60° | 1189.7 | 24.6 |
| 60°-70° | 1221.5 | 25.3 |
| 70°-80° | 603.0 | 12.5 |
| 80°-90° | 39.9 | 0.8 |
| 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° | 4834.0 | 100.0 |
| 0°-180° | 4834.0 | 100.0 |

Coefficient of Utilization

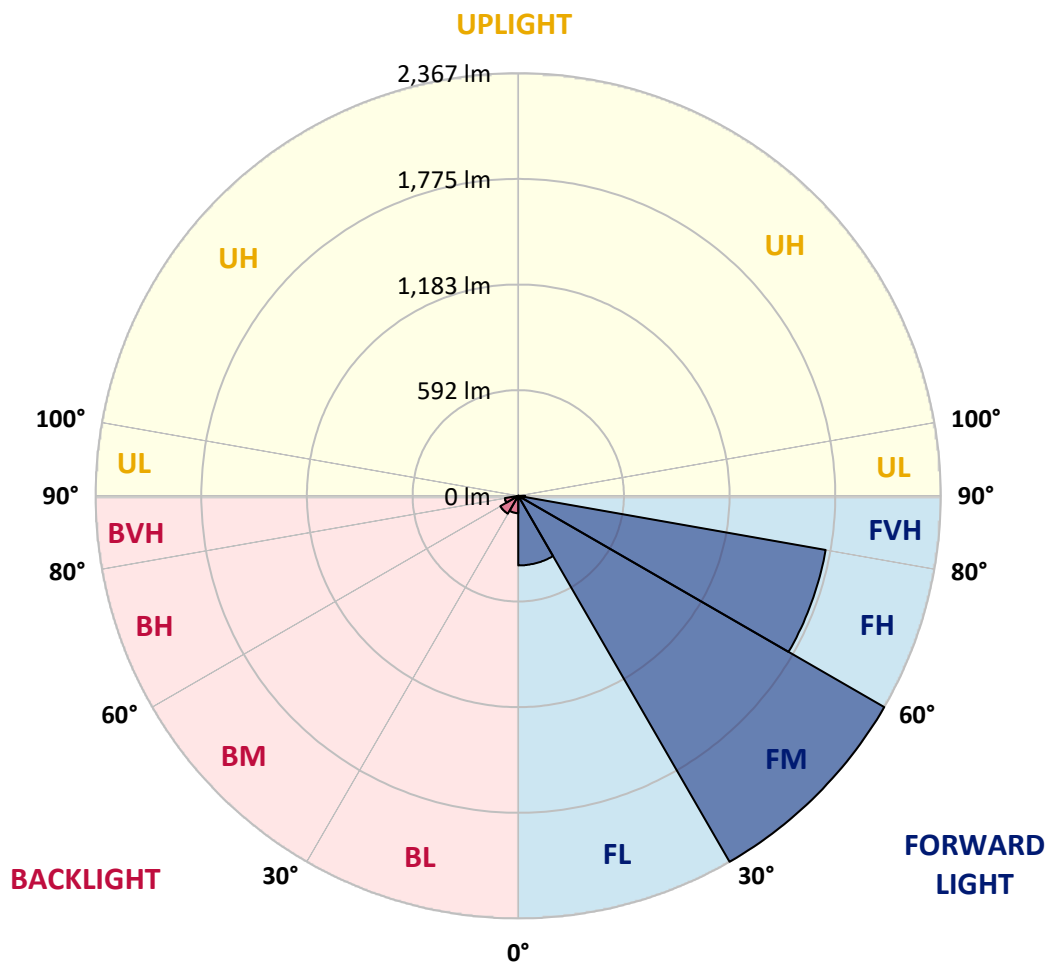


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 390.1 | 8.1 | | | |
| FM (30°-60°) | 2367.0 | 49.0 | | | |
| FH (60°-80°) | 1748.1 | 36.2 | | | G1/1800 |
| FVH (80°-90°) | 38.9 | 0.8 | | | G1/100 |
| BL (0°-30°) | 97.0 | 2.0 | B0/110 | | |
| BM (30°-60°) | 115.6 | 2.4 | B0/220 | | |
| BH (60°-80°) | 76.4 | 1.6 | B0/110 | | G0/110 |
| BVH (80°-90°) | 1.0 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B0-U0-G1
 Type II Medium





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CATALOG NUMBER: GLEON-SA1D-727-U-T2-HSS

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 66° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 |
| 2.5° | 647.5 | 644.7 | 643.6 | 638.5 | 629.8 | 623.1 | 610.3 | 595.4 | 592.6 | 578.1 | 560.5 |
| 5° | 731.5 | 729.2 | 727.6 | 720.5 | 711.5 | 694.8 | 671.4 | 643.6 | 638.3 | 610.7 | 575.4 |
| 7.5° | 790.1 | 794.2 | 794.2 | 789.6 | 778.3 | 765.7 | 737.0 | 699.1 | 692.5 | 650.2 | 595.4 |
| 10° | 824.3 | 829.3 | 833.2 | 837.1 | 835.5 | 830.5 | 803.4 | 760.7 | 752.6 | 696.6 | 618.5 |
| 12.5° | 827.5 | 832.5 | 843.6 | 859.9 | 875.7 | 887.2 | 870.2 | 828.9 | 819.7 | 750.3 | 646.1 |
| 15° | 809.6 | 814.9 | 831.8 | 863.5 | 901.9 | 935.4 | 940.9 | 904.4 | 895.0 | 814.4 | 680.5 |
| 17.5° | 778.3 | 781.8 | 806.1 | 850.0 | 910.1 | 971.7 | 1005.0 | 985.4 | 976.7 | 887.6 | 718.9 |
| 20° | 755.2 | 757.7 | 779.0 | 826.1 | 905.1 | 994.4 | 1065.6 | 1071.5 | 1062.4 | 966.2 | 760.4 |
| 22.5° | 794.9 | 799.5 | 800.2 | 822.4 | 891.3 | 1005.7 | 1118.8 | 1156.3 | 1149.4 | 1049.5 | 801.3 |
| 25° | 903.5 | 908.8 | 891.3 | 877.5 | 903.0 | 1010.7 | 1164.5 | 1243.1 | 1237.6 | 1139.3 | 842.4 |
| 27.5° | 1047.0 | 1052.5 | 1030.0 | 988.9 | 964.3 | 1029.8 | 1205.2 | 1331.2 | 1331.0 | 1234.3 | 886.7 |
| 30° | 1188.0 | 1193.5 | 1170.5 | 1129.4 | 1072.9 | 1083.7 | 1240.3 | 1423.5 | 1424.9 | 1332.4 | 933.8 |
| 32.5° | 1335.8 | 1342.7 | 1319.1 | 1266.3 | 1207.2 | 1176.9 | 1289.7 | 1516.3 | 1524.1 | 1446.0 | 986.8 |
| 35° | 1503.9 | 1504.8 | 1471.5 | 1416.2 | 1348.2 | 1301.6 | 1368.9 | 1620.3 | 1638.9 | 1586.8 | 1054.1 |
| 37.5° | 1668.7 | 1675.4 | 1648.1 | 1560.8 | 1498.4 | 1445.6 | 1486.7 | 1750.3 | 1776.7 | 1758.7 | 1142.0 |
| 40° | 1790.9 | 1804.9 | 1801.0 | 1706.9 | 1647.6 | 1610.0 | 1632.9 | 1904.8 | 1938.3 | 1959.0 | 1252.9 |
| 42.5° | 1867.6 | 1878.1 | 1896.0 | 1839.3 | 1785.6 | 1791.8 | 1805.6 | 2084.8 | 2126.1 | 2187.2 | 1380.4 |
| 45° | 1955.5 | 1960.6 | 1975.5 | 1950.5 | 1914.2 | 1976.6 | 1988.8 | 2287.5 | 2330.9 | 2432.6 | 1521.8 |
| 47.5° | 2063.0 | 2074.9 | 2079.0 | 2056.1 | 2039.5 | 2140.1 | 2165.4 | 2471.9 | 2532.7 | 2695.5 | 1671.5 |
| 50° | 2199.8 | 2203.0 | 2210.1 | 2195.2 | 2178.7 | 2280.6 | 2323.8 | 2665.4 | 2720.8 | 2959.3 | 1819.1 |
| 52.5° | 2333.7 | 2345.1 | 2369.9 | 2360.5 | 2353.9 | 2400.3 | 2465.0 | 2839.9 | 2901.7 | 3179.3 | 1966.5 |
| 55° | 2372.2 | 2382.1 | 2467.8 | 2526.3 | 2580.5 | 2547.7 | 2600.0 | 2996.3 | 3063.1 | 3375.8 | 2108.4 |
| 57.5° | 2218.2 | 2238.2 | 2386.5 | 2538.9 | 2763.7 | 2776.8 | 2785.5 | 3156.8 | 3216.7 | 3526.4 | 2256.1 |
| 60° | 1828.8 | 1832.7 | 2076.1 | 2337.6 | 2733.4 | 2976.8 | 3056.5 | 3329.2 | 3379.5 | 3666.7 | 2432.9 |
| 62.5° | 1163.2 | 1202.9 | 1469.9 | 1839.1 | 2412.9 | 2947.9 | 3384.1 | 3590.0 | 3608.4 | 3835.0 | 2686.3 |
| 65° | 554.0 | 579.7 | 772.1 | 1136.3 | 1747.7 | 2577.5 | 3610.3 | 4061.9 | 4070.1 | 4168.6 | 3025.0 |
| 67.5° | 306.7 | 319.1 | 410.8 | 611.7 | 1021.7 | 1822.8 | 3518.9 | 4620.7 | 4628.5 | 4509.4 | 3322.1 |
| 69° | 239.9 | 250.5 | 322.6 | 461.0 | 692.7 | 1310.1 | 3184.3 | 4784.4 | 4807.6 | 4607.0 | 3332.7 |
| 70° | 203.7 | 214.0 | 277.8 | 389.4 | 557.0 | 1012.3 | 2834.4 | 4743.8 | 4768.4 | 4597.8 | 3253.9 |
| 72.5° | 124.7 | 130.6 | 185.1 | 274.1 | 373.3 | 509.3 | 1748.0 | 4011.8 | 4053.4 | 4217.5 | 2796.5 |
| 75° | 84.0 | 87.2 | 115.7 | 189.2 | 267.0 | 262.2 | 908.1 | 2827.8 | 2917.8 | 3280.8 | 2065.5 |
| 77.5° | 60.2 | 63.1 | 77.6 | 122.4 | 187.1 | 173.1 | 411.2 | 1757.4 | 1776.7 | 1967.7 | 1126.4 |
| 80° | 34.2 | 37.0 | 54.9 | 72.8 | 127.0 | 115.5 | 163.5 | 839.4 | 849.1 | 843.8 | 376.1 |
| 82.5° | 17.9 | 20.2 | 30.1 | 48.0 | 81.5 | 75.5 | 68.0 | 281.0 | 282.4 | 234.9 | 82.4 |
| 85° | 3.4 | 4.1 | 14.9 | 32.8 | 42.0 | 32.8 | 27.8 | 65.9 | 67.3 | 59.5 | 20.4 |
| 87.5° | 0.0 | 0.2 | 6.0 | 7.3 | 8.3 | 8.5 | 9.0 | 12.9 | 13.8 | 18.6 | 5.5 |
| 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: P321855

CATALOG NUMBER: GLEON-SA1D-727-U-T2-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 | 550.1 |
| 2.5° | 552.7 | 544.4 | 528.5 | 510.2 | 495.9 | 481.9 | 470.9 | 459.4 | 455.3 | 453.2 | 453.0 |
| 5° | 558.2 | 540.7 | 507.2 | 472.7 | 444.5 | 417.9 | 398.8 | 380.7 | 372.2 | 368.3 | 366.7 |
| 7.5° | 567.3 | 539.3 | 485.4 | 432.8 | 392.2 | 358.9 | 332.5 | 312.7 | 302.8 | 298.7 | 297.1 |
| 10° | 578.1 | 537.5 | 459.9 | 390.6 | 338.7 | 304.2 | 278.0 | 258.5 | 247.7 | 243.1 | 240.9 |
| 12.5° | 590.8 | 534.3 | 430.5 | 347.8 | 293.0 | 258.5 | 226.8 | 202.7 | 190.3 | 185.1 | 182.5 |
| 15° | 606.4 | 531.1 | 399.7 | 307.7 | 252.8 | 210.8 | 176.1 | 159.8 | 157.3 | 156.4 | 156.6 |
| 17.5° | 621.8 | 526.0 | 366.2 | 267.9 | 210.5 | 164.6 | 146.9 | 146.0 | 146.5 | 146.5 | 146.5 |
| 20° | 635.5 | 514.5 | 329.7 | 234.0 | 170.4 | 138.9 | 135.2 | 133.6 | 132.5 | 131.6 | 130.4 |
| 22.5° | 646.3 | 499.2 | 294.6 | 200.2 | 139.1 | 127.2 | 121.5 | 116.4 | 112.3 | 109.5 | 108.1 |
| 25° | 653.7 | 478.7 | 262.4 | 167.8 | 125.1 | 115.7 | 105.4 | 96.9 | 90.5 | 86.6 | 85.0 |
| 27.5° | 659.2 | 456.7 | 233.7 | 140.5 | 115.5 | 102.4 | 88.9 | 78.8 | 72.1 | 68.7 | 67.3 |
| 30° | 663.1 | 431.7 | 208.5 | 123.5 | 104.7 | 88.4 | 73.9 | 64.1 | 59.2 | 57.4 | 56.5 |
| 32.5° | 666.8 | 403.9 | 184.6 | 115.5 | 94.6 | 75.5 | 62.0 | 54.4 | 51.4 | 49.1 | 48.4 |
| 35° | 675.9 | 378.2 | 161.9 | 107.0 | 84.3 | 64.5 | 53.3 | 47.8 | 44.8 | 43.4 | 42.9 |
| 37.5° | 697.8 | 359.1 | 140.1 | 98.3 | 73.9 | 55.8 | 46.6 | 42.7 | 40.0 | 38.6 | 38.1 |
| 40° | 732.9 | 349.5 | 121.7 | 88.9 | 63.8 | 49.1 | 42.2 | 38.6 | 35.6 | 33.5 | 33.1 |
| 42.5° | 784.5 | 350.8 | 108.8 | 79.4 | 55.8 | 43.9 | 38.1 | 33.8 | 30.5 | 28.7 | 28.2 |
| 45° | 847.2 | 360.9 | 99.9 | 70.3 | 49.1 | 39.7 | 33.5 | 28.9 | 25.9 | 24.3 | 23.9 |
| 47.5° | 915.2 | 377.2 | 92.5 | 62.0 | 43.9 | 35.8 | 28.9 | 24.1 | 21.6 | 20.2 | 20.0 |
| 50° | 986.8 | 393.1 | 85.0 | 54.0 | 39.3 | 31.9 | 24.3 | 20.0 | 17.9 | 16.8 | 16.3 |
| 52.5° | 1059.4 | 411.4 | 78.1 | 46.6 | 35.4 | 27.3 | 20.2 | 16.3 | 14.7 | 13.8 | 13.3 |
| 55° | 1137.4 | 425.2 | 71.4 | 40.9 | 31.5 | 23.2 | 16.8 | 13.5 | 12.2 | 11.0 | 10.8 |
| 57.5° | 1229.3 | 446.6 | 64.5 | 35.4 | 26.9 | 19.3 | 13.8 | 10.8 | 9.6 | 8.5 | 8.3 |
| 60° | 1353.3 | 471.6 | 57.2 | 31.2 | 22.0 | 15.8 | 11.3 | 8.7 | 7.3 | 6.4 | 6.2 |
| 62.5° | 1516.7 | 499.4 | 48.0 | 27.3 | 17.9 | 12.9 | 9.0 | 6.9 | 5.3 | 4.1 | 4.1 |
| 65° | 1724.1 | 544.6 | 39.3 | 23.0 | 14.7 | 10.6 | 6.9 | 5.1 | 3.0 | 1.8 | 1.8 |
| 67.5° | 1845.1 | 552.4 | 31.7 | 18.8 | 11.9 | 9.0 | 5.7 | 3.4 | 0.9 | 0.2 | 0.0 |
| 69° | 1806.3 | 507.2 | 26.9 | 16.1 | 10.3 | 8.5 | 5.3 | 2.5 | 0.5 | 0.0 | 0.0 |
| 70° | 1733.3 | 463.8 | 23.6 | 14.2 | 9.4 | 8.0 | 5.1 | 1.8 | 0.5 | 0.0 | 0.0 |
| 72.5° | 1432.3 | 330.2 | 17.9 | 10.6 | 6.9 | 7.1 | 4.6 | 1.1 | 0.5 | 0.0 | 0.0 |
| 75° | 1043.3 | 200.7 | 12.9 | 7.3 | 4.4 | 5.3 | 3.2 | 0.5 | 0.2 | 0.0 | 0.0 |
| 77.5° | 580.4 | 94.6 | 8.0 | 4.1 | 2.8 | 3.2 | 1.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80° | 188.5 | 25.7 | 3.7 | 2.3 | 1.6 | 1.8 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 34.9 | 7.3 | 2.1 | 1.1 | 0.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 7.6 | 3.0 | 1.1 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 2.5 | 0.9 | 0.2 | 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 |

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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

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



Color Vector Graphics



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

TM-30-18

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

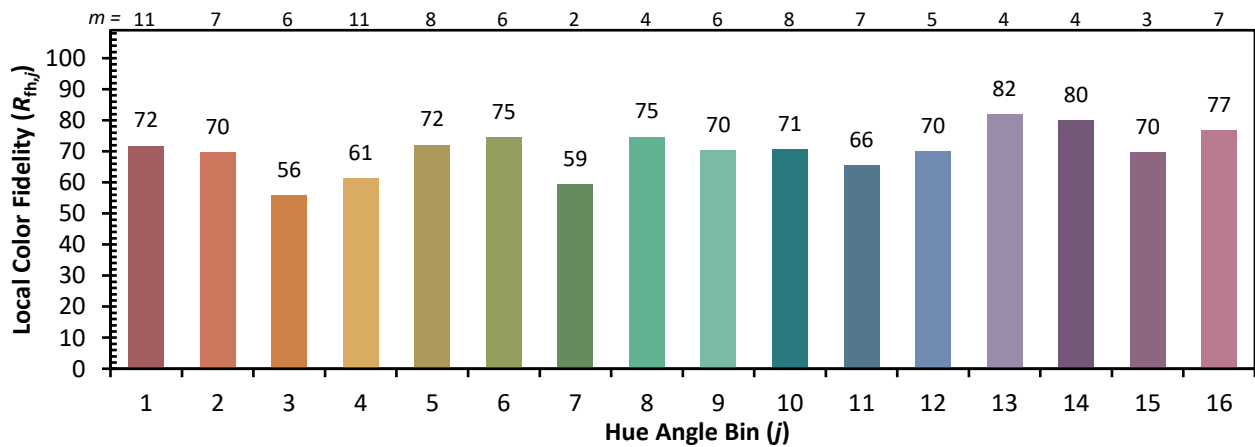
| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 54 | CES51 = 77 | CES76 = 48 |
| CES02 = 63 | CES27 = 74 | CES52 = 80 | CES77 = 75 |
| CES03 = 31 | CES28 = 80 | CES53 = 66 | CES78 = 56 |
| CES04 = 71 | CES29 = 44 | CES54 = 77 | CES79 = 81 |
| CES05 = 50 | CES30 = 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)