

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: P387014

Luminaire Tested: **GPC-SA2D-727-U-T3-HSS**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P387014
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-15)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: McGRAW-EDISON
Catalog Number: GPC-SA2D-727-U-T3-HSS
Description: GALLEON PEDESTRIAN LUMINAIRE
(2) 70 CRI, 2700K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9867 lumens
Efficiency: N/A
Efficacy: 76.5 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')
IES Classification: Type III - Short
BUG Rating: B1 - U0 - G2

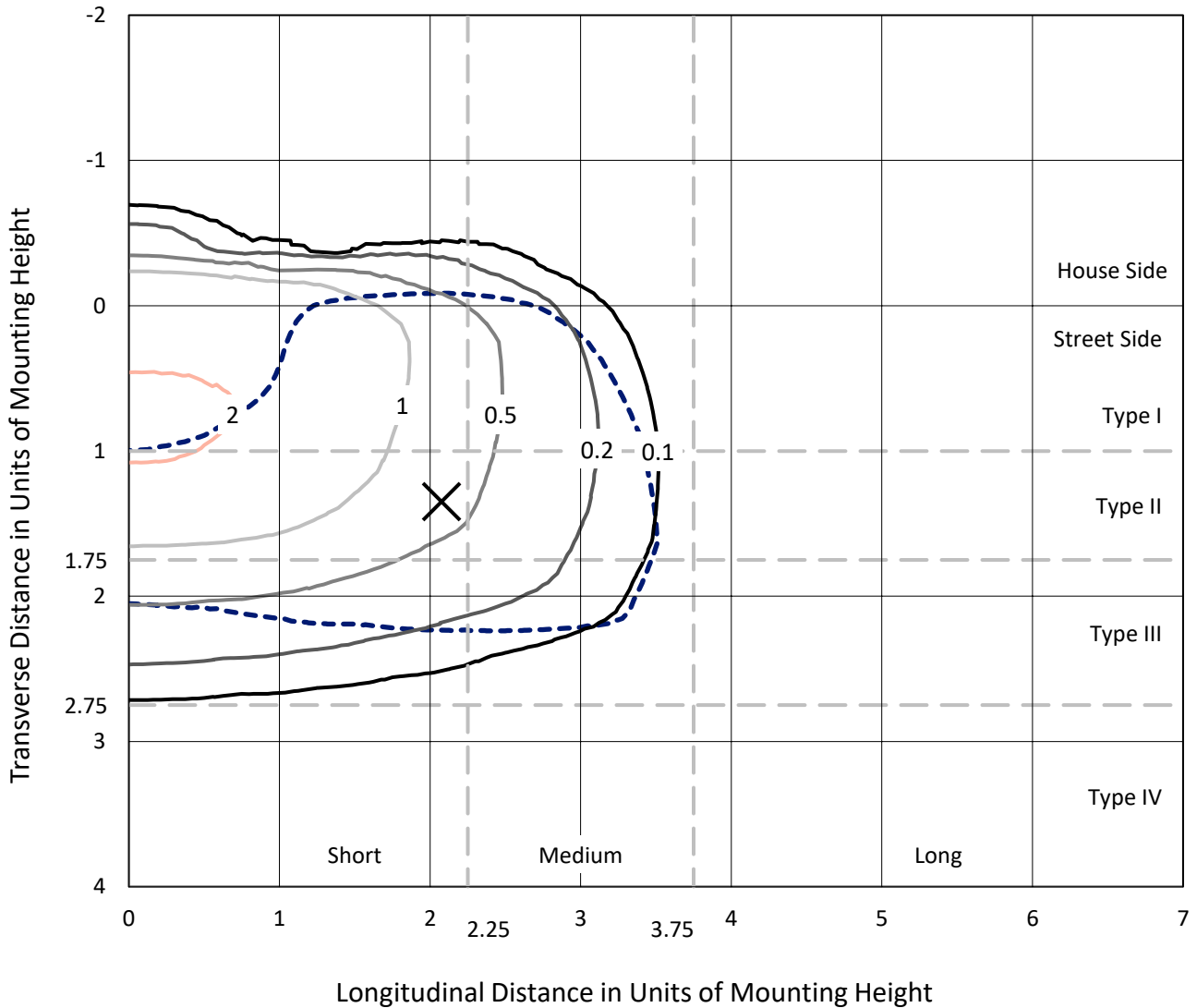
Input Watts (W): 129
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

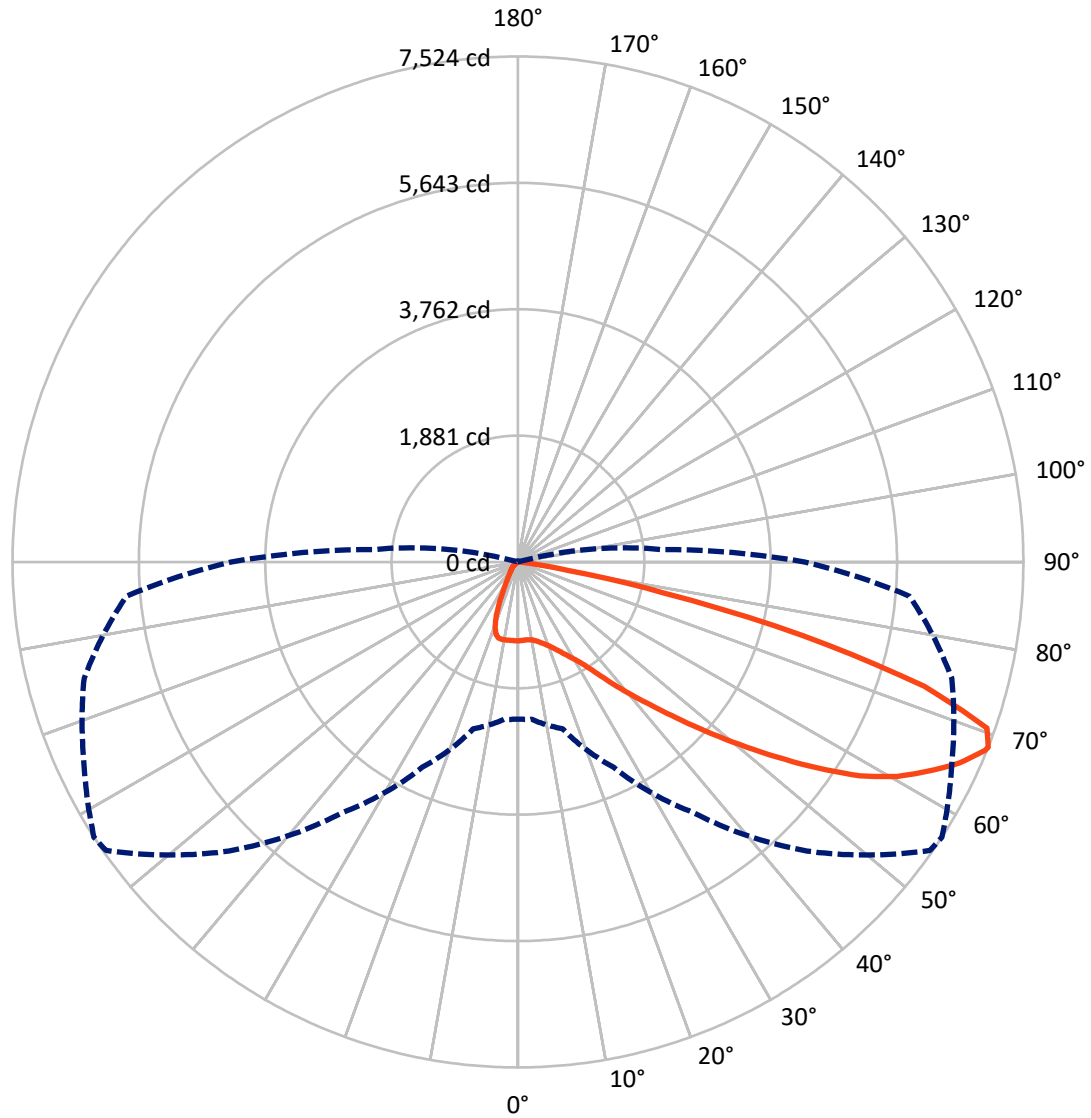
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 2.4 fc
 Type III - Short - N/A

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CATALOG NUMBER: GPC-SA2D-727-U-T3-HSS

Luminous Intensity Polar Plot



— Vertical Plane Through 57-Deg Lateral - - - Horizontal Cone Through 68-Deg Vertical

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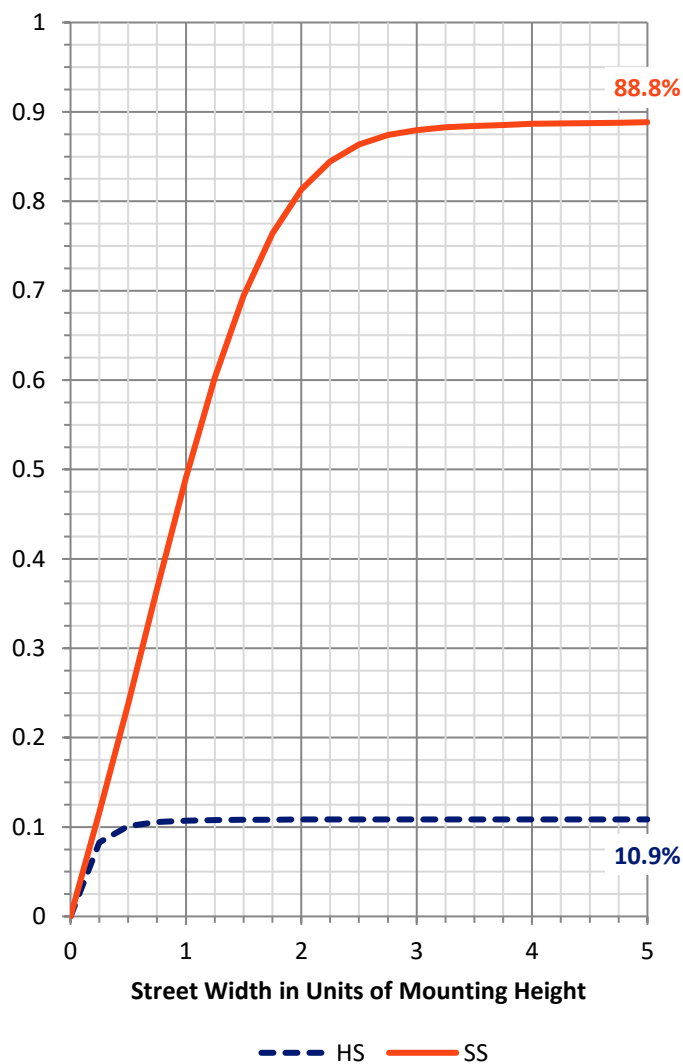
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 1082.0 | 0.0 | 1082.0 |
| | % Fixture | 11.0 | 0.0 | 11.0 |
| Street Side | Lumens | 8785.0 | 0.0 | 8785.0 |
| | % Fixture | 89.0 | 0.0 | 89.0 |
| Total | Lumens | 9867.0 | 0.0 | 9867.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 109.7 | 1.1 |
| 10°-20° | 304.1 | 3.1 |
| 20°-30° | 524.5 | 5.3 |
| 30°-40° | 905.3 | 9.2 |
| 40°-50° | 1548.5 | 15.7 |
| 50°-60° | 2477.5 | 25.1 |
| 60°-70° | 2862.5 | 29.0 |
| 70°-80° | 1093.8 | 11.1 |
| 80°-90° | 41.0 | 0.4 |
| 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° | 9867.0 | 100.0 |
| 0°-180° | 9867.0 | 100.0 |

Coefficient of Utilization



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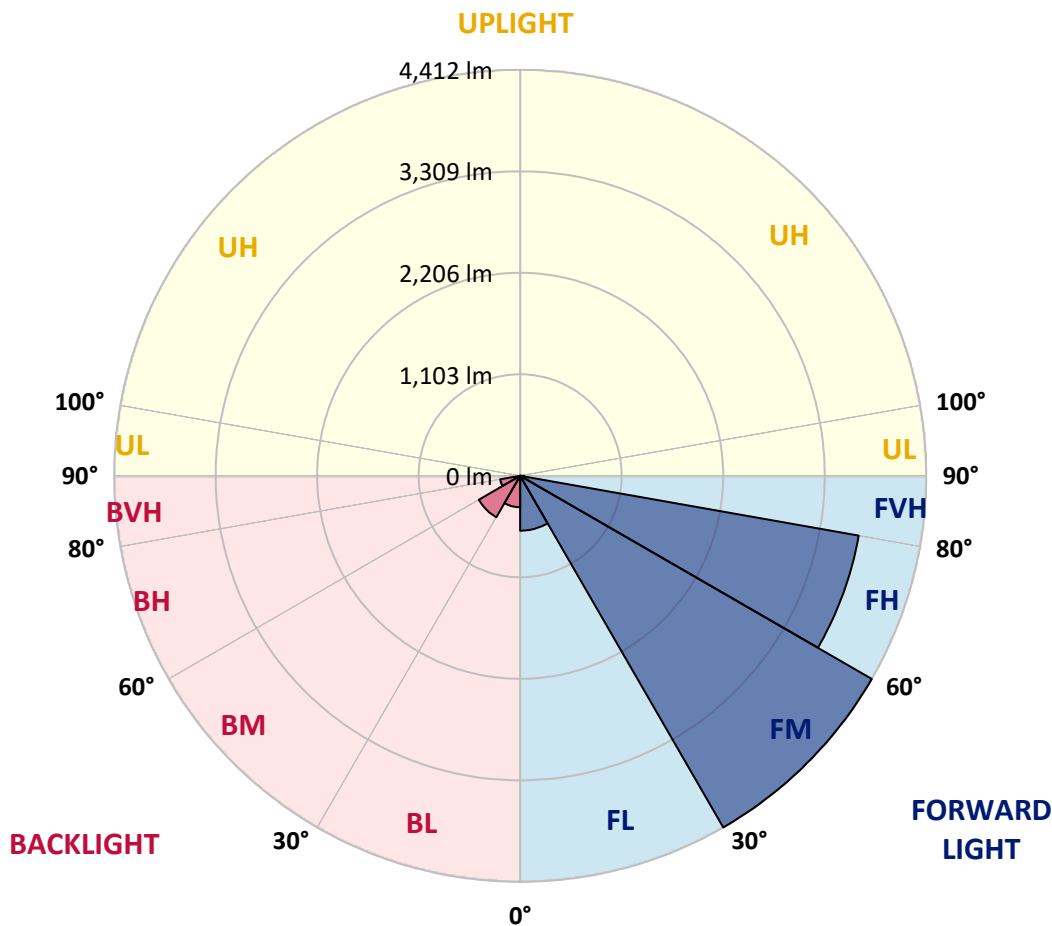
CATALOG NUMBER: GPC-SA2D-727-U-T3-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 596.4 | 6.0 | | | |
| FM (30°-60°) | 4412.4 | 44.7 | | | |
| FH (60°-80°) | 3736.0 | 37.9 | | | G2/5000 |
| FVH (80°-90°) | 40.3 | 0.4 | | | G1/100 |
| BL (0°-30°) | 341.9 | 3.5 | B1/500 | | |
| BM (30°-60°) | 518.9 | 5.3 | B1/1000 | | |
| BH (60°-80°) | 220.4 | 2.2 | B1/500 | | G1/500 |
| BVH (80°-90°) | 0.7 | 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 III Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 57° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 |
| 2.5° | 1144.9 | 1150.1 | 1153.8 | 1156.1 | 1158.9 | 1165.0 | 1166.9 | 1169.7 | 1171.1 | 1171.1 | 1174.3 |
| 5° | 1099.7 | 1105.3 | 1113.2 | 1119.7 | 1132.8 | 1149.6 | 1161.7 | 1166.4 | 1174.8 | 1182.3 | 1186.5 |
| 7.5° | 1057.7 | 1064.2 | 1073.5 | 1088.9 | 1111.3 | 1138.4 | 1163.6 | 1170.1 | 1186.5 | 1202.3 | 1210.3 |
| 10° | 1030.6 | 1035.8 | 1047.9 | 1069.8 | 1099.2 | 1137.0 | 1172.5 | 1180.4 | 1208.4 | 1235.0 | 1249.9 |
| 12.5° | 1021.3 | 1026.0 | 1038.6 | 1063.3 | 1099.7 | 1144.0 | 1193.0 | 1204.7 | 1245.7 | 1284.4 | 1305.4 |
| 15° | 1034.8 | 1035.8 | 1049.3 | 1072.6 | 1108.5 | 1161.3 | 1227.0 | 1241.0 | 1292.8 | 1343.2 | 1369.3 |
| 17.5° | 1087.1 | 1082.9 | 1089.9 | 1100.1 | 1128.6 | 1184.1 | 1263.0 | 1284.0 | 1353.0 | 1412.3 | 1437.0 |
| 20° | 1217.7 | 1217.7 | 1201.9 | 1173.9 | 1174.3 | 1219.6 | 1311.5 | 1335.3 | 1419.7 | 1488.3 | 1510.7 |
| 22.5° | 1441.2 | 1437.0 | 1405.3 | 1336.7 | 1273.7 | 1280.7 | 1370.7 | 1401.5 | 1500.0 | 1573.2 | 1580.7 |
| 25° | 1709.9 | 1704.8 | 1655.8 | 1559.2 | 1450.1 | 1379.6 | 1451.0 | 1486.5 | 1595.6 | 1660.5 | 1645.1 |
| 27.5° | 1994.5 | 1990.3 | 1941.8 | 1821.9 | 1666.5 | 1537.3 | 1546.6 | 1580.2 | 1693.1 | 1757.1 | 1708.1 |
| 30° | 2270.3 | 2271.7 | 2223.6 | 2100.4 | 1924.6 | 1738.4 | 1667.9 | 1687.5 | 1787.8 | 1852.7 | 1782.7 |
| 32.5° | 2532.5 | 2534.3 | 2492.8 | 2355.2 | 2191.0 | 1972.1 | 1835.9 | 1830.8 | 1898.0 | 1961.9 | 1881.6 |
| 35° | 2766.2 | 2770.9 | 2742.4 | 2635.6 | 2461.6 | 2232.5 | 2053.8 | 2041.7 | 2054.3 | 2126.6 | 2033.3 |
| 37.5° | 2991.6 | 2994.4 | 2972.9 | 2882.9 | 2737.3 | 2518.5 | 2329.1 | 2311.8 | 2284.7 | 2340.3 | 2233.4 |
| 40° | 3238.4 | 3231.4 | 3206.7 | 3125.0 | 3000.0 | 2834.3 | 2624.9 | 2595.0 | 2547.9 | 2597.3 | 2496.6 |
| 42.5° | 3467.9 | 3460.0 | 3464.2 | 3371.8 | 3266.4 | 3159.1 | 2969.6 | 2918.3 | 2890.8 | 2947.7 | 2819.4 |
| 45° | 3754.9 | 3750.7 | 3764.7 | 3684.4 | 3599.0 | 3521.1 | 3364.8 | 3308.8 | 3296.7 | 3363.4 | 3209.9 |
| 47.5° | 4038.1 | 4048.3 | 4091.7 | 4057.7 | 4023.1 | 3954.5 | 3783.3 | 3758.1 | 3765.6 | 3846.3 | 3621.9 |
| 50° | 4274.1 | 4286.3 | 4405.2 | 4444.4 | 4494.4 | 4454.2 | 4282.5 | 4267.1 | 4296.5 | 4369.3 | 4065.1 |
| 52.5° | 4444.9 | 4469.6 | 4617.5 | 4798.1 | 4980.0 | 5007.1 | 4835.9 | 4821.9 | 4861.5 | 4872.7 | 4407.6 |
| 55° | 4563.4 | 4585.3 | 4752.8 | 5083.1 | 5453.6 | 5570.2 | 5463.9 | 5409.7 | 5402.3 | 5291.7 | 4767.8 |
| 57.5° | 4584.4 | 4582.1 | 4822.8 | 5267.4 | 5825.0 | 6125.9 | 6058.7 | 6005.5 | 5852.5 | 5678.9 | 5180.7 |
| 60° | 4465.9 | 4479.4 | 4758.9 | 5331.4 | 6058.3 | 6546.3 | 6551.4 | 6482.4 | 6243.9 | 6055.5 | 5581.0 |
| 62.5° | 4101.0 | 4156.1 | 4438.4 | 5163.9 | 6055.5 | 6715.6 | 6912.5 | 6859.8 | 6574.7 | 6363.8 | 5986.9 |
| 65° | 3509.4 | 3529.0 | 3798.2 | 4590.0 | 5646.3 | 6644.7 | 7237.7 | 7218.1 | 6872.9 | 6663.4 | 6195.4 |
| 67.5° | 2562.8 | 2520.3 | 2803.1 | 3614.4 | 4780.4 | 6231.3 | 7471.0 | 7495.7 | 7102.9 | 6725.0 | 5973.3 |
| 68° | 2338.9 | 2351.5 | 2571.7 | 3373.2 | 4553.6 | 6085.3 | 7486.4 | 7524.2 | 7125.7 | 6684.8 | 5852.0 |
| 70° | 1394.1 | 1418.3 | 1614.8 | 2322.5 | 3464.2 | 5259.0 | 7320.3 | 7406.6 | 6989.5 | 6271.0 | 5061.7 |
| 72.5° | 356.0 | 384.9 | 570.6 | 1039.5 | 1978.7 | 3705.4 | 6179.6 | 6325.6 | 6068.5 | 5087.3 | 3417.1 |
| 75° | 146.5 | 154.0 | 203.9 | 342.5 | 737.2 | 1669.3 | 4073.0 | 4385.6 | 4207.0 | 3045.7 | 1544.3 |
| 77.5° | 101.2 | 106.4 | 131.1 | 189.9 | 319.1 | 565.9 | 1996.9 | 2222.7 | 2002.5 | 1039.5 | 336.9 |
| 80° | 72.8 | 77.0 | 93.8 | 126.4 | 183.4 | 202.0 | 650.8 | 752.6 | 597.7 | 228.1 | 83.5 |
| 82.5° | 43.4 | 46.7 | 70.0 | 90.0 | 111.5 | 96.6 | 161.9 | 183.8 | 173.1 | 113.4 | 37.3 |
| 85° | 21.5 | 25.2 | 47.1 | 64.4 | 60.2 | 40.6 | 49.5 | 55.1 | 68.1 | 69.1 | 20.1 |
| 87.5° | 1.4 | 2.8 | 27.5 | 38.7 | 16.8 | 9.3 | 14.5 | 17.7 | 24.3 | 34.1 | 8.4 |
| 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: P387014
 CATALOG NUMBER: GPC-SA2D-727-U-T3-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 | 1172.5 |
| 2.5° | 1175.7 | 1176.2 | 1172.9 | 1171.5 | 1172.5 | 1166.9 | 1164.5 | 1165.5 | 1165.5 | 1166.9 | 1164.5 |
| 5° | 1187.4 | 1187.4 | 1181.8 | 1174.3 | 1170.1 | 1159.4 | 1152.4 | 1150.5 | 1149.1 | 1148.2 | 1146.3 |
| 7.5° | 1212.6 | 1209.8 | 1200.0 | 1183.7 | 1169.7 | 1146.3 | 1128.6 | 1119.3 | 1114.6 | 1112.7 | 1111.3 |
| 10° | 1253.2 | 1248.0 | 1231.7 | 1201.4 | 1169.2 | 1127.7 | 1088.9 | 1061.4 | 1038.6 | 1029.2 | 1023.6 |
| 12.5° | 1307.8 | 1300.3 | 1272.8 | 1222.4 | 1165.9 | 1089.4 | 1005.4 | 924.7 | 849.6 | 818.8 | 803.4 |
| 15° | 1370.7 | 1360.0 | 1316.6 | 1240.1 | 1146.8 | 1003.1 | 820.7 | 679.3 | 575.3 | 536.1 | 519.3 |
| 17.5° | 1434.7 | 1420.7 | 1354.9 | 1251.3 | 1089.4 | 824.4 | 575.7 | 434.8 | 365.3 | 346.7 | 340.1 |
| 20° | 1499.1 | 1478.5 | 1388.0 | 1242.9 | 959.7 | 594.4 | 379.8 | 317.7 | 297.7 | 292.1 | 290.2 |
| 22.5° | 1560.2 | 1528.4 | 1417.9 | 1210.3 | 760.0 | 398.9 | 300.5 | 280.9 | 274.3 | 271.1 | 270.1 |
| 25° | 1613.4 | 1569.0 | 1444.0 | 1109.5 | 537.9 | 301.4 | 270.6 | 264.1 | 255.7 | 249.6 | 250.1 |
| 27.5° | 1663.3 | 1609.6 | 1459.9 | 943.4 | 358.8 | 257.5 | 250.5 | 241.7 | 226.3 | 217.4 | 217.4 |
| 30° | 1723.5 | 1663.7 | 1471.5 | 726.0 | 264.1 | 227.7 | 222.1 | 208.6 | 187.6 | 175.9 | 175.9 |
| 32.5° | 1814.0 | 1745.9 | 1464.1 | 509.5 | 218.8 | 200.2 | 187.1 | 168.4 | 145.6 | 134.4 | 133.9 |
| 35° | 1952.5 | 1872.8 | 1410.9 | 334.1 | 193.2 | 174.0 | 153.0 | 130.2 | 110.1 | 100.8 | 100.3 |
| 37.5° | 2139.2 | 2042.6 | 1291.4 | 238.9 | 173.1 | 149.8 | 124.6 | 99.4 | 84.4 | 78.4 | 77.9 |
| 40° | 2381.3 | 2239.9 | 1120.7 | 193.6 | 154.4 | 126.4 | 96.1 | 77.0 | 66.7 | 62.1 | 62.5 |
| 42.5° | 2672.0 | 2451.3 | 915.9 | 167.0 | 136.2 | 104.0 | 75.1 | 60.7 | 54.1 | 50.9 | 49.9 |
| 45° | 2994.8 | 2659.8 | 701.2 | 148.8 | 118.0 | 84.0 | 58.8 | 48.1 | 42.9 | 41.1 | 41.1 |
| 47.5° | 3349.9 | 2862.8 | 513.2 | 133.0 | 98.4 | 64.9 | 47.1 | 39.2 | 35.0 | 33.6 | 33.1 |
| 50° | 3672.3 | 3003.7 | 370.0 | 116.2 | 80.7 | 51.3 | 38.3 | 32.7 | 29.9 | 28.0 | 28.0 |
| 52.5° | 3941.0 | 3048.0 | 272.5 | 98.0 | 65.3 | 41.1 | 31.7 | 28.0 | 25.2 | 23.8 | 23.8 |
| 55° | 4177.6 | 3029.8 | 202.5 | 80.7 | 52.7 | 33.6 | 27.1 | 23.8 | 21.5 | 20.1 | 20.1 |
| 57.5° | 4404.3 | 2971.0 | 151.2 | 65.8 | 42.5 | 27.1 | 22.9 | 20.1 | 17.7 | 16.8 | 16.8 |
| 60° | 4589.5 | 2873.1 | 112.4 | 53.2 | 34.1 | 21.9 | 19.1 | 16.3 | 14.5 | 13.1 | 13.1 |
| 62.5° | 4739.8 | 2764.8 | 82.6 | 43.9 | 27.1 | 17.3 | 14.9 | 13.5 | 10.7 | 9.3 | 9.3 |
| 65° | 4740.7 | 2585.2 | 62.1 | 36.4 | 21.0 | 13.5 | 11.2 | 10.7 | 7.0 | 5.6 | 5.1 |
| 67.5° | 4397.8 | 2228.7 | 47.6 | 31.3 | 16.3 | 10.3 | 8.4 | 8.9 | 3.7 | 2.3 | 1.9 |
| 68° | 4273.2 | 2138.2 | 44.8 | 30.8 | 15.4 | 9.8 | 7.9 | 8.9 | 3.3 | 1.9 | 1.4 |
| 70° | 3602.8 | 1701.1 | 35.9 | 29.9 | 13.5 | 7.5 | 6.5 | 8.9 | 2.8 | 1.4 | 0.9 |
| 72.5° | 2304.3 | 987.2 | 26.6 | 23.8 | 10.3 | 5.6 | 4.2 | 7.9 | 2.8 | 0.9 | 0.5 |
| 75° | 980.7 | 306.1 | 18.2 | 16.8 | 6.1 | 4.2 | 2.8 | 5.1 | 1.9 | 0.5 | 0.0 |
| 77.5° | 206.7 | 69.1 | 10.7 | 10.3 | 4.2 | 2.8 | 1.9 | 1.4 | 0.5 | 0.0 | 0.0 |
| 80° | 53.2 | 20.1 | 5.6 | 5.1 | 2.3 | 1.4 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 16.8 | 7.9 | 3.3 | 2.3 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 8.4 | 4.7 | 1.9 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 4.7 | 1.4 | 0.5 | 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 |

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

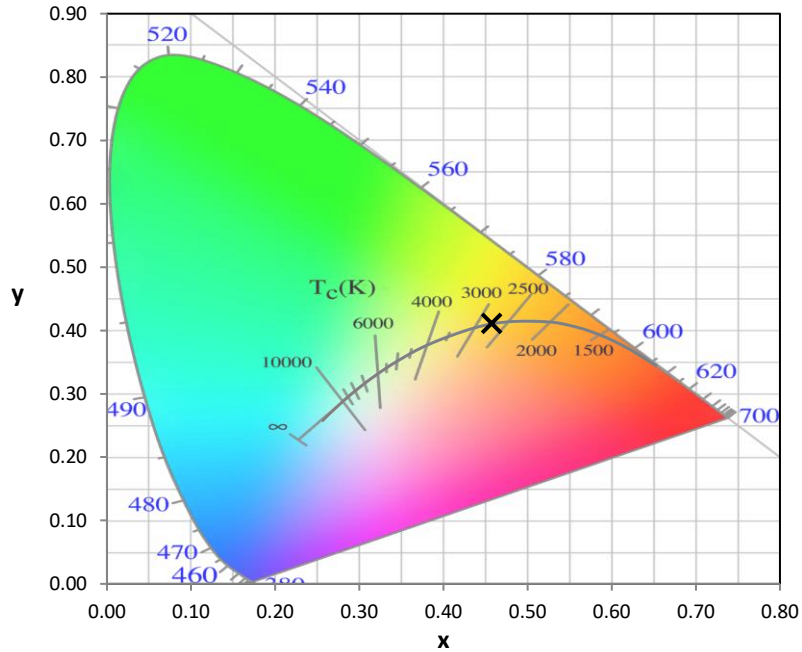
Stabilization Time: 56M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.3./42%
 Sphere Temperature (°C): 25.7

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

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Photopic Flux vs. Wavelength



Photopic Lumens: 6211.7

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

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

Scotopic Flux vs. Wavelength



Scotopic Lumens: 6474.3

S/P: 1.04

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

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

Melanopic Flux vs. Wavelength



Melanopic Lumens: 2145.7 M/P: 0.35

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

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

TM-30-18

Summary

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



Color Vector Graphics



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

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)