

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: STREETWORKS

Report Number: P359655

Luminaire Tested: NVN-SA5B-730-U-AFL

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2019
Report Number: P359655
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-29)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: STREETWORKS
Catalog Number: NVN-SA5B-730-U-AFL
Description: NAVION ROADWAY AND AREA LUMINAIRE
(5) 70 CRI, 3000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND AUTOMOTIVE FRONTLINE OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 26936 lumens
Efficiency: N/A
Efficacy: 128.3 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')
IES Classification: Type II - Short
BUG Rating: B3 - U0 - G3

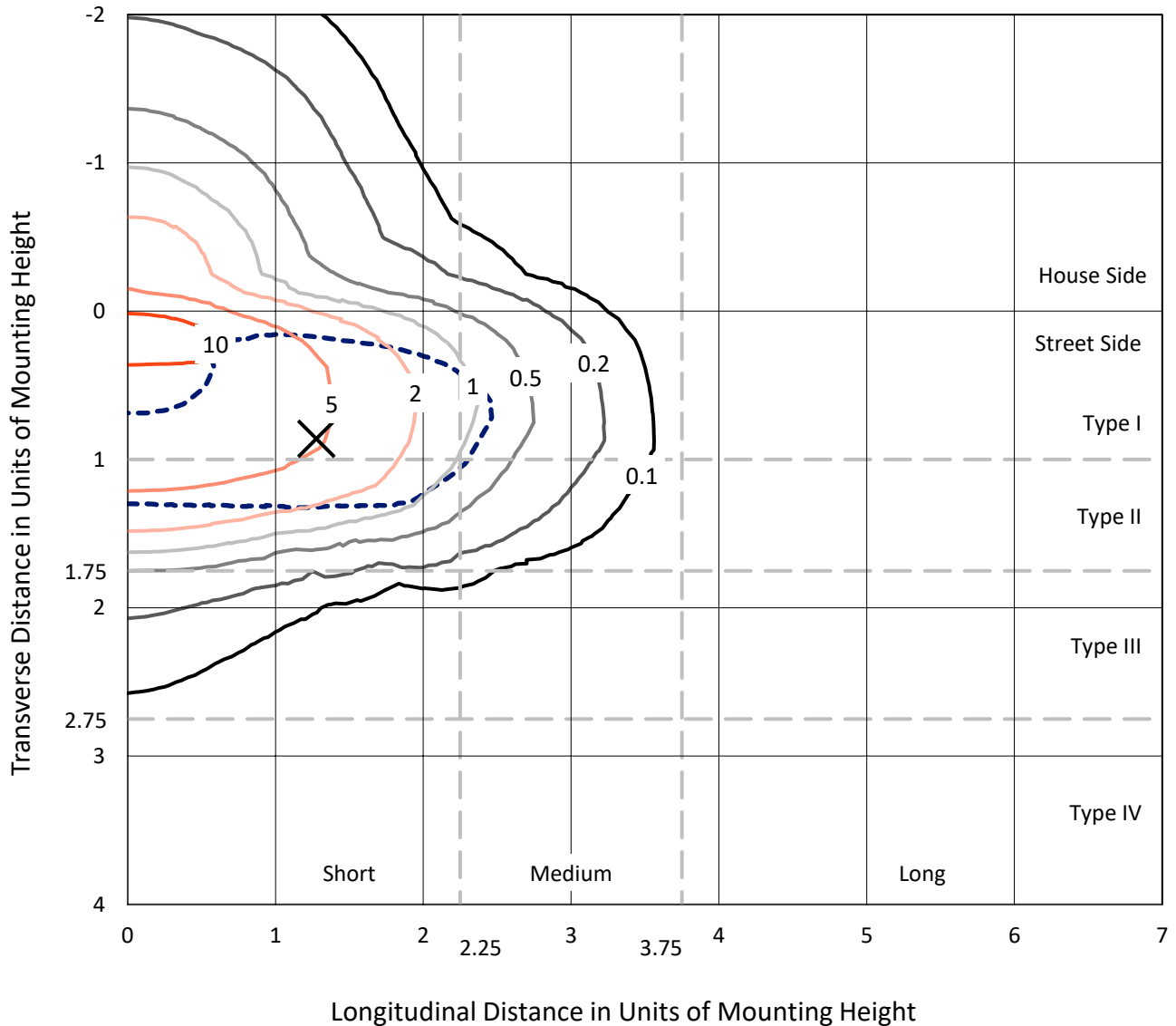
Input Watts (W): 210
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P359655
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Iso-Footcandle Lines of Horizontal Illumination

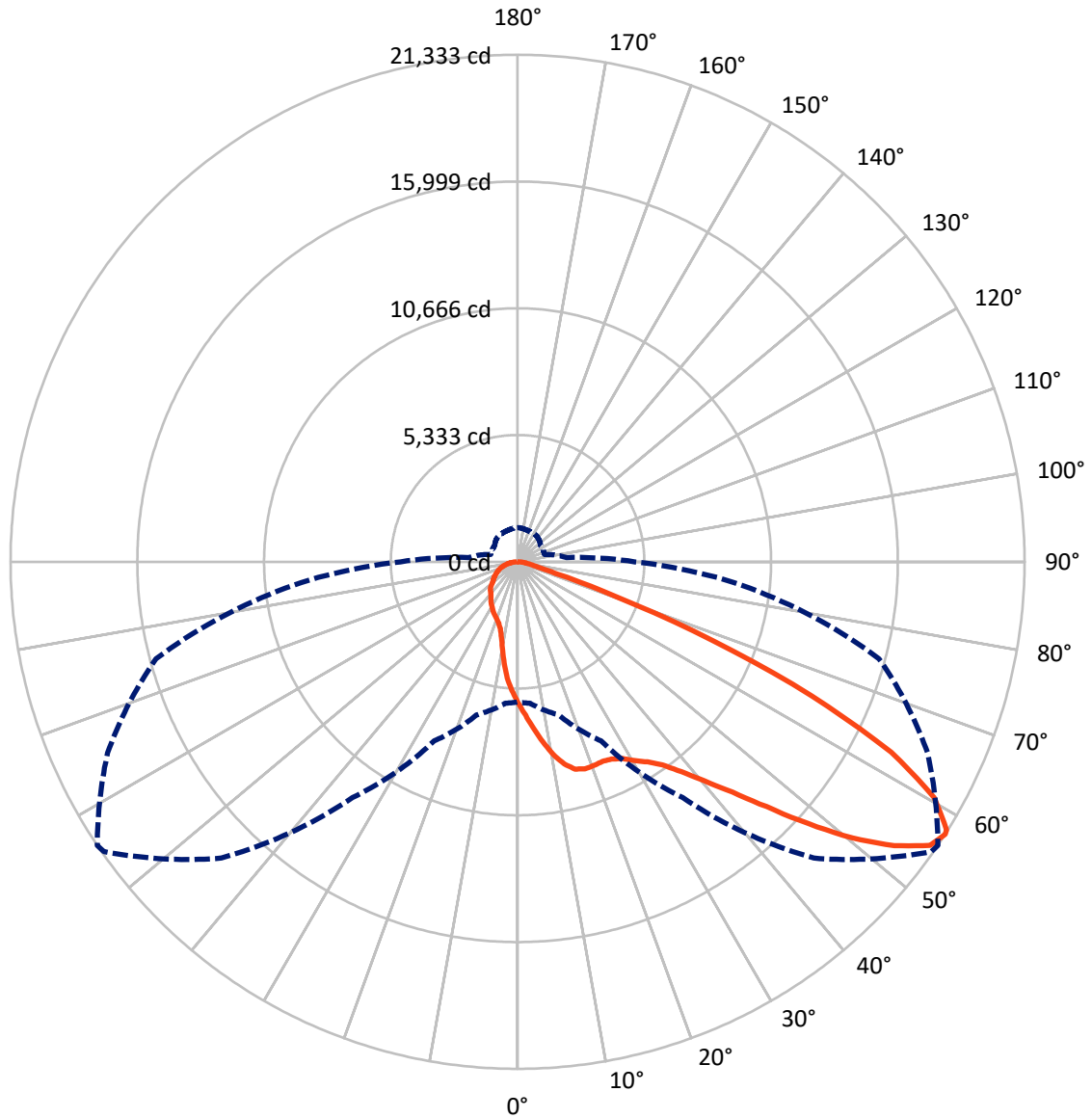
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 13.2 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 56-Deg Lateral - - - Horizontal Cone Through 57-Deg Vertical



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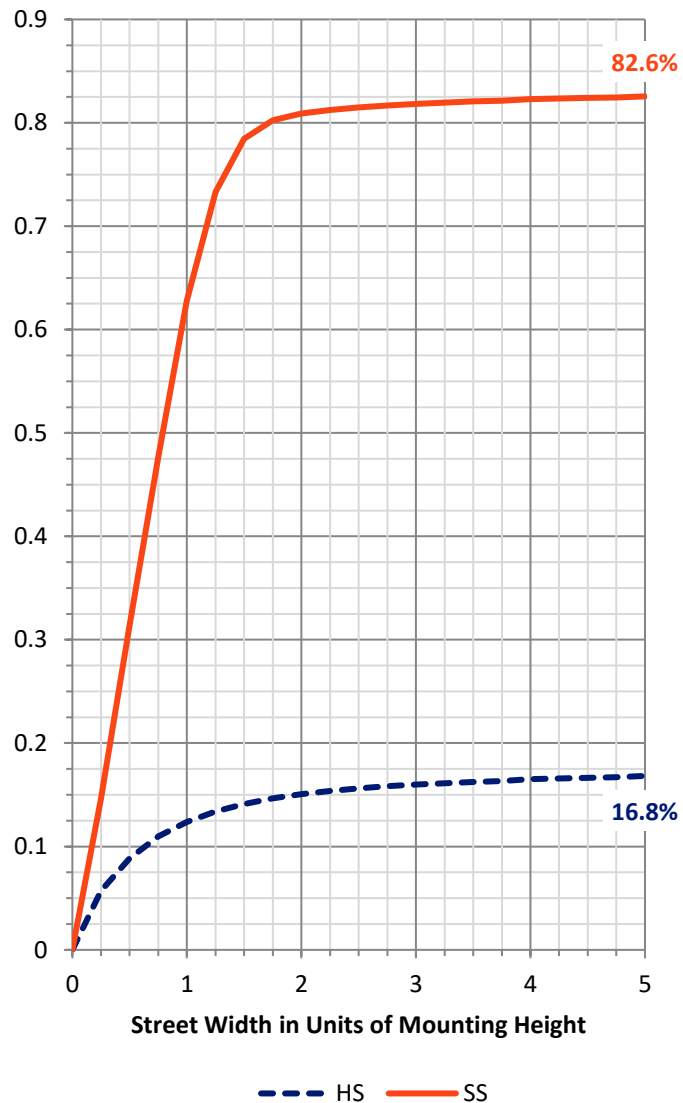
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 4643.2 | 0.0 | 4643.2 |
| | % Fixture | 17.2 | 0.0 | 17.2 |
| Street Side | Lumens | 22292.8 | 0.0 | 22292.8 |
| | % Fixture | 82.8 | 0.0 | 82.8 |
| Total | Lumens | 26936.0 | 0.0 | 26936.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 570.7 | 2.1 |
| 10°-20° | 1613.5 | 6.0 |
| 20°-30° | 2628.1 | 9.8 |
| 30°-40° | 3928.7 | 14.6 |
| 40°-50° | 5959.1 | 22.1 |
| 50°-60° | 6679.1 | 24.8 |
| 60°-70° | 3944.9 | 14.6 |
| 70°-80° | 1292.5 | 4.8 |
| 80°-90° | 319.3 | 1.2 |
| 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° | 26936.0 | 100.0 |
| 0°-180° | 26936.0 | 100.0 |

Coefficient of Utilization



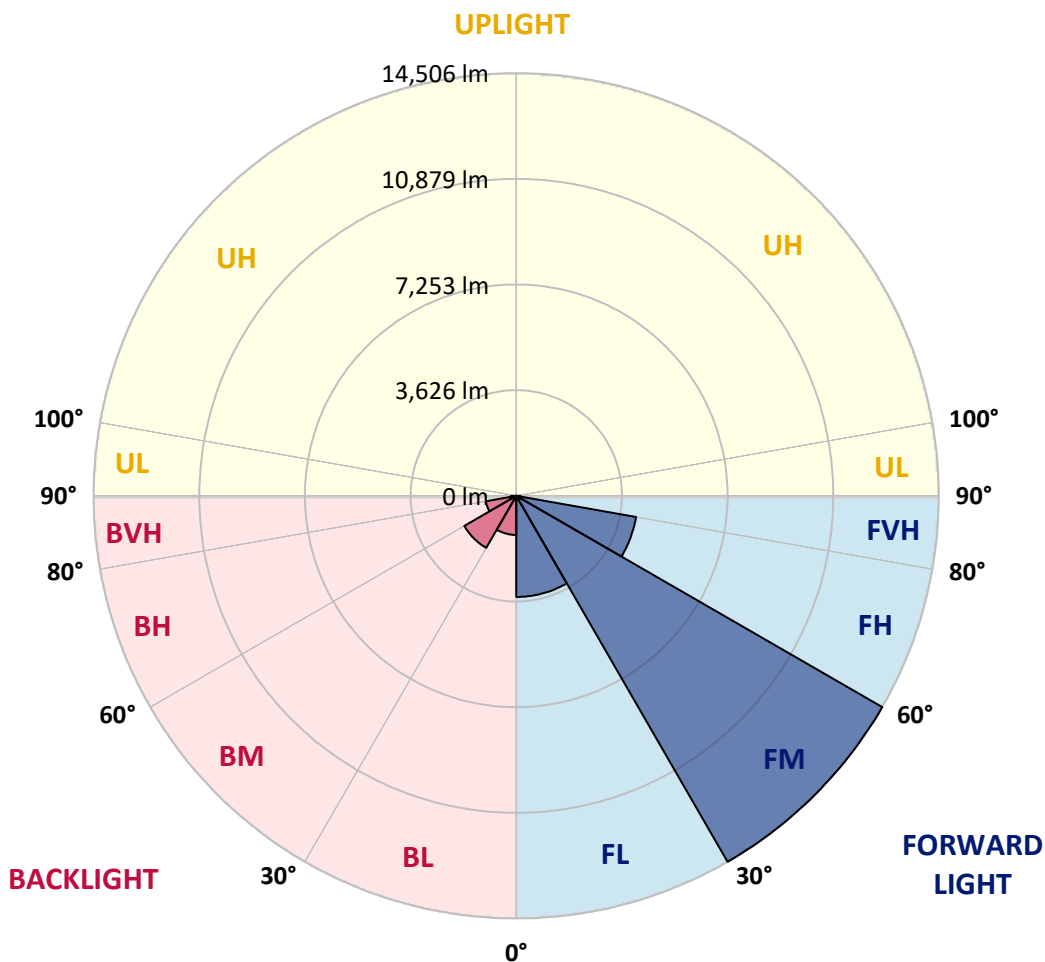
REPORT NUMBER: P359655
 CATALOG NUMBER: NVN-SA5B-730-U-AFL

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|---------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 3469.8 | 12.9 | | | |
| FM (30°-60°) | 14505.9 | 53.9 | | | |
| FH (60°-80°) | 4176.5 | 15.5 | | | G2/5000 |
| FVH (80°-90°) | 140.6 | 0.5 | | | G2/225 |
| BL (0°-30°) | 1342.6 | 5.0 | B3/2500 | | |
| BM (30°-60°) | 2061.0 | 7.7 | B2/2500 | | |
| BH (60°-80°) | 1060.9 | 3.9 | B3/2500 | | G3/2500 |
| BVH (80°-90°) | 178.7 | 0.7 | | | G2/225 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G3

Type II Short





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CATALOG NUMBER: NVN-SA5B-730-U-AFL

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 56° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0° | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 |
| 2.5° | 6860.3 | 6923.3 | 6895.5 | 6799.2 | 6725.2 | 6620.6 | 6503.9 | 6468.7 | 6345.6 | 6207.7 | 6042.0 |
| 5° | 7946.2 | 7914.7 | 7869.3 | 7719.4 | 7561.1 | 7376.9 | 7084.3 | 7038.1 | 6764.0 | 6452.1 | 6122.5 |
| 7.5° | 8564.5 | 8561.7 | 8534.9 | 8447.0 | 8302.5 | 8061.9 | 7709.2 | 7654.6 | 7240.8 | 6739.1 | 6228.1 |
| 10° | 8474.7 | 8468.2 | 8512.7 | 8604.3 | 8647.8 | 8597.8 | 8300.7 | 8246.1 | 7737.9 | 7056.6 | 6350.3 |
| 12.5° | 7964.7 | 7968.4 | 8039.7 | 8232.2 | 8494.2 | 8808.9 | 8760.8 | 8733.9 | 8253.5 | 7415.7 | 6498.4 |
| 15° | 7567.5 | 7575.9 | 7632.3 | 7799.9 | 8109.1 | 8680.2 | 9040.3 | 9049.6 | 8752.4 | 7811.9 | 6671.5 |
| 17.5° | 7393.5 | 7411.1 | 7437.0 | 7554.6 | 7837.9 | 8423.8 | 9107.0 | 9157.0 | 9189.4 | 8222.9 | 6838.1 |
| 20° | 7449.1 | 7465.7 | 7473.1 | 7548.1 | 7780.5 | 8268.3 | 9060.7 | 9150.5 | 9524.5 | 8609.9 | 7004.7 |
| 22.5° | 7698.1 | 7708.3 | 7712.9 | 7732.3 | 7912.8 | 8312.7 | 9030.1 | 9124.6 | 9767.0 | 8957.0 | 7130.6 |
| 25° | 8110.9 | 8103.5 | 8073.9 | 8048.9 | 8170.2 | 8488.6 | 9100.5 | 9190.3 | 9964.2 | 9271.8 | 7213.0 |
| 27.5° | 8605.3 | 8596.0 | 8538.6 | 8470.1 | 8539.5 | 8762.6 | 9303.2 | 9374.5 | 10141.0 | 9566.1 | 7254.7 |
| 30° | 9198.6 | 9174.6 | 9066.2 | 8984.8 | 9011.6 | 9173.6 | 9637.4 | 9702.2 | 10414.1 | 9900.3 | 7295.4 |
| 32.5° | 9884.6 | 9858.6 | 9702.2 | 9567.0 | 9567.0 | 9702.2 | 9981.8 | 10035.4 | 10645.5 | 10278.0 | 7361.1 |
| 35° | 10743.6 | 10711.2 | 10507.6 | 10280.8 | 10216.9 | 10285.4 | 10451.1 | 10489.0 | 11062.0 | 10753.8 | 7480.5 |
| 37.5° | 11756.3 | 11712.8 | 11449.0 | 11145.4 | 11005.6 | 11001.9 | 11121.3 | 11199.0 | 11727.6 | 11378.6 | 7683.3 |
| 40° | 12771.8 | 12741.3 | 12510.8 | 12271.9 | 11997.9 | 11910.0 | 12094.2 | 12118.3 | 12597.8 | 12154.4 | 7942.5 |
| 42.5° | 13556.8 | 13551.2 | 13508.7 | 13540.1 | 13259.6 | 13081.9 | 13226.3 | 13245.8 | 13660.5 | 12994.0 | 8218.3 |
| 45° | 13971.5 | 13980.8 | 14187.2 | 14644.5 | 14748.2 | 14618.6 | 14689.8 | 14695.4 | 14875.0 | 13841.0 | 8471.0 |
| 47.5° | 13639.2 | 13687.3 | 14209.4 | 15232.3 | 16081.2 | 16511.6 | 16393.1 | 16461.6 | 16052.5 | 14568.6 | 8669.1 |
| 50° | 12344.1 | 12403.4 | 13292.0 | 14970.3 | 16703.2 | 18343.6 | 18281.5 | 18265.8 | 17002.2 | 15101.8 | 8776.5 |
| 52.5° | 10739.9 | 10786.2 | 11519.3 | 13608.6 | 16246.9 | 19356.3 | 19925.6 | 19844.1 | 17846.5 | 15500.7 | 8796.9 |
| 55° | 8297.0 | 8369.2 | 9071.8 | 10890.8 | 14401.0 | 18969.3 | 21134.5 | 21061.4 | 18615.7 | 15710.0 | 8772.8 |
| 57° | 5898.5 | 5974.4 | 6672.4 | 8311.8 | 12114.6 | 17629.8 | 21254.9 | 21332.6 | 19031.3 | 15745.1 | 8799.6 |
| 57.5° | 5263.5 | 5341.3 | 6032.7 | 7624.9 | 11401.8 | 17145.7 | 21151.2 | 21280.8 | 19106.3 | 15739.6 | 8814.5 |
| 60° | 2650.3 | 2679.9 | 3120.5 | 4256.3 | 7207.5 | 13861.3 | 19798.7 | 20132.9 | 19173.9 | 15467.4 | 8878.3 |
| 62.5° | 1647.7 | 1626.4 | 1612.6 | 1960.6 | 3506.5 | 9192.1 | 17007.8 | 17651.1 | 17880.7 | 14808.3 | 8723.7 |
| 65° | 1448.7 | 1408.9 | 1256.2 | 1228.4 | 1548.7 | 4464.6 | 12807.9 | 13608.6 | 15117.5 | 13769.7 | 8355.3 |
| 67.5° | 1360.8 | 1321.9 | 1149.7 | 1046.0 | 1047.0 | 1769.9 | 7951.7 | 8853.3 | 11776.7 | 12013.7 | 7486.1 |
| 70° | 1270.1 | 1234.9 | 1073.8 | 951.6 | 891.4 | 980.3 | 3658.3 | 4342.4 | 7676.8 | 9443.0 | 6256.8 |
| 72.5° | 1153.4 | 1129.3 | 976.6 | 850.7 | 786.8 | 734.1 | 1400.6 | 1654.2 | 4444.3 | 6341.9 | 4345.2 |
| 75° | 1031.2 | 1009.0 | 878.5 | 758.1 | 680.4 | 577.6 | 788.7 | 849.8 | 2257.8 | 3244.6 | 2139.3 |
| 77.5° | 897.0 | 884.0 | 781.3 | 670.2 | 608.2 | 478.6 | 558.2 | 587.8 | 968.3 | 1391.3 | 1072.9 |
| 80° | 713.7 | 738.7 | 683.2 | 597.1 | 539.7 | 383.2 | 395.3 | 414.7 | 563.7 | 679.5 | 609.1 |
| 82.5° | 464.7 | 508.2 | 535.1 | 485.1 | 444.3 | 301.8 | 284.2 | 292.5 | 367.5 | 414.7 | 264.7 |
| 85° | 193.5 | 217.5 | 351.8 | 317.5 | 295.3 | 220.3 | 190.7 | 194.4 | 227.7 | 236.1 | 108.3 |
| 87.5° | 86.1 | 91.6 | 154.6 | 145.3 | 125.0 | 75.9 | 81.5 | 88.9 | 121.3 | 114.8 | 41.7 |
| 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: P359655
 CATALOG NUMBER: NVN-SA5B-730-U-AFL

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 | 5974.4 |
| 2.5° | 5980.0 | 5902.2 | 5768.9 | 5621.7 | 5501.4 | 5405.1 | 5307.9 | 5241.3 | 5163.5 | 5121.9 | 5100.6 |
| 5° | 5984.6 | 5831.9 | 5551.4 | 5263.5 | 5006.2 | 4771.0 | 4547.0 | 4374.8 | 4213.8 | 4126.7 | 4102.7 |
| 7.5° | 6004.1 | 5774.5 | 5320.9 | 4846.9 | 4389.6 | 3972.2 | 3650.0 | 3448.2 | 3302.9 | 3238.1 | 3219.6 |
| 10° | 6019.8 | 5706.9 | 5035.8 | 4334.1 | 3712.0 | 3289.0 | 3039.1 | 2926.1 | 2876.1 | 2867.8 | 2859.5 |
| 12.5° | 6056.8 | 5637.5 | 4735.9 | 3799.0 | 3185.3 | 2892.8 | 2805.8 | 2798.4 | 2812.3 | 2832.6 | 2832.6 |
| 15° | 6115.1 | 5569.0 | 4393.3 | 3339.9 | 2850.2 | 2747.5 | 2765.0 | 2805.8 | 2843.7 | 2875.2 | 2879.8 |
| 17.5° | 6157.7 | 5484.7 | 4024.9 | 2972.4 | 2671.6 | 2699.3 | 2762.3 | 2819.7 | 2858.5 | 2889.1 | 2891.9 |
| 20° | 6188.3 | 5354.2 | 3631.5 | 2691.9 | 2568.8 | 2654.9 | 2733.6 | 2784.5 | 2811.3 | 2841.9 | 2846.5 |
| 22.5° | 6172.5 | 5179.3 | 3282.5 | 2491.0 | 2485.5 | 2590.1 | 2665.1 | 2726.2 | 2705.8 | 2676.2 | 2695.6 |
| 25° | 6096.6 | 4938.6 | 2923.3 | 2341.1 | 2397.5 | 2503.1 | 2595.6 | 2554.9 | 2486.4 | 2473.5 | 2480.9 |
| 27.5° | 5961.5 | 4631.2 | 2591.0 | 2202.2 | 2295.7 | 2422.5 | 2417.0 | 2376.3 | 2352.2 | 2335.5 | 2345.7 |
| 30° | 5816.1 | 4298.0 | 2300.3 | 2081.0 | 2182.8 | 2287.4 | 2266.1 | 2265.2 | 2241.1 | 2214.3 | 2227.2 |
| 32.5° | 5672.7 | 3962.9 | 2069.9 | 1981.0 | 2097.6 | 2111.5 | 2157.8 | 2171.7 | 2124.5 | 2068.0 | 2064.3 |
| 35° | 5547.7 | 3646.3 | 1894.9 | 1890.3 | 1994.9 | 1996.7 | 2064.3 | 2044.9 | 1927.3 | 1869.0 | 1869.0 |
| 37.5° | 5454.2 | 3330.6 | 1761.6 | 1808.8 | 1859.7 | 1907.9 | 1942.1 | 1861.6 | 1842.1 | 1809.7 | 1808.8 |
| 40° | 5413.5 | 3052.9 | 1678.3 | 1746.8 | 1764.4 | 1825.5 | 1737.5 | 1769.0 | 1778.3 | 1761.6 | 1761.6 |
| 42.5° | 5370.9 | 2811.3 | 1606.1 | 1699.6 | 1696.8 | 1688.5 | 1644.0 | 1684.8 | 1721.8 | 1722.7 | 1719.9 |
| 45° | 5328.3 | 2603.1 | 1542.2 | 1598.7 | 1637.6 | 1547.8 | 1556.1 | 1599.6 | 1651.4 | 1670.0 | 1670.0 |
| 47.5° | 5281.1 | 2438.3 | 1483.9 | 1492.2 | 1552.4 | 1492.2 | 1485.7 | 1519.1 | 1580.2 | 1609.8 | 1616.3 |
| 50° | 5177.4 | 2290.2 | 1417.2 | 1398.7 | 1415.4 | 1435.8 | 1441.3 | 1457.0 | 1524.6 | 1571.8 | 1582.9 |
| 52.5° | 5033.9 | 2157.8 | 1332.1 | 1312.6 | 1312.6 | 1389.5 | 1415.4 | 1420.0 | 1477.4 | 1533.9 | 1545.0 |
| 55° | 4914.5 | 2073.6 | 1244.1 | 1240.4 | 1236.7 | 1340.4 | 1384.8 | 1392.2 | 1432.0 | 1476.5 | 1482.0 |
| 57° | 4922.8 | 2067.1 | 1176.6 | 1180.3 | 1179.3 | 1290.4 | 1356.1 | 1371.9 | 1392.2 | 1430.2 | 1436.7 |
| 57.5° | 4927.5 | 2071.7 | 1161.7 | 1163.6 | 1162.7 | 1276.5 | 1347.8 | 1365.4 | 1381.1 | 1420.9 | 1427.4 |
| 60° | 4996.9 | 2083.7 | 1101.6 | 1081.2 | 1085.8 | 1202.5 | 1300.6 | 1322.8 | 1333.0 | 1385.8 | 1394.1 |
| 62.5° | 4894.1 | 2030.0 | 1053.4 | 1004.4 | 1004.4 | 1124.7 | 1234.9 | 1270.1 | 1285.8 | 1357.1 | 1371.0 |
| 65° | 4596.1 | 1879.2 | 997.0 | 917.4 | 926.6 | 1047.0 | 1156.2 | 1213.6 | 1237.7 | 1326.5 | 1341.3 |
| 67.5° | 4136.0 | 1704.2 | 936.8 | 839.6 | 848.9 | 965.5 | 1074.7 | 1136.8 | 1174.7 | 1293.2 | 1305.2 |
| 70° | 3537.1 | 1490.4 | 855.3 | 757.2 | 768.3 | 876.6 | 978.5 | 1048.8 | 1105.3 | 1261.7 | 1265.4 |
| 72.5° | 2607.7 | 1221.9 | 741.5 | 666.5 | 678.5 | 773.0 | 881.3 | 962.7 | 1038.6 | 1183.0 | 1181.2 |
| 75° | 1550.5 | 955.3 | 615.6 | 574.9 | 583.2 | 671.1 | 793.3 | 892.4 | 1006.2 | 1152.5 | 1170.1 |
| 77.5° | 940.5 | 719.3 | 501.7 | 481.4 | 491.5 | 581.3 | 730.4 | 835.9 | 992.3 | 1086.8 | 1081.2 |
| 80° | 568.4 | 513.8 | 400.8 | 387.9 | 398.0 | 497.1 | 675.8 | 793.3 | 867.4 | 928.5 | 928.5 |
| 82.5° | 297.1 | 313.8 | 294.4 | 284.2 | 298.1 | 403.6 | 614.7 | 692.4 | 766.5 | 658.2 | 614.7 |
| 85° | 121.3 | 163.8 | 178.7 | 177.7 | 186.1 | 279.6 | 530.4 | 592.4 | 494.3 | 469.3 | 480.4 |
| 87.5° | 40.7 | 69.4 | 87.0 | 75.0 | 78.7 | 175.9 | 367.5 | 286.0 | 339.7 | 237.0 | 224.9 |
| 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: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

Data in this report applies to families of products SA1C-730-U-5WQ .

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-2-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-730-U-5WQ**
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

CCT (K): 2993
 CIE u': 0.2508
 CIE v': 0.5215
 Duv: 0.0000
 CIE x: 0.4374
 CIE y: 0.4043
 CIE z: 0.1583
 Peak Wavelength (nm): 593
 Dominant Wavelength (nm): 582
 Purity: 53

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.8 | | |
| R1: | 67.5 | R9: | -38.3 |
| R2: | 82.9 | R10: | 62.5 |
| R3: | 94.7 | R11: | 63.7 |
| R4: | 67.7 | R12: | 57.8 |
| R5: | 67.9 | R13: | 70.4 |
| R6: | 77.6 | R14: | 97.3 |
| R7: | 76.0 | | |
| R8: | 40.5 | | |

Rf: 75.7
 Rg: 93.9



Test Conditions

Stabilization Time: 53M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.0./44%
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-2-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: SP1-1908-441-2-R4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-2-R4

Photopic Flux vs. Wavelength



#####

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

REPORT NUMBER: SP1-1908-441-2-R4

Scotopic Flux vs. Wavelength



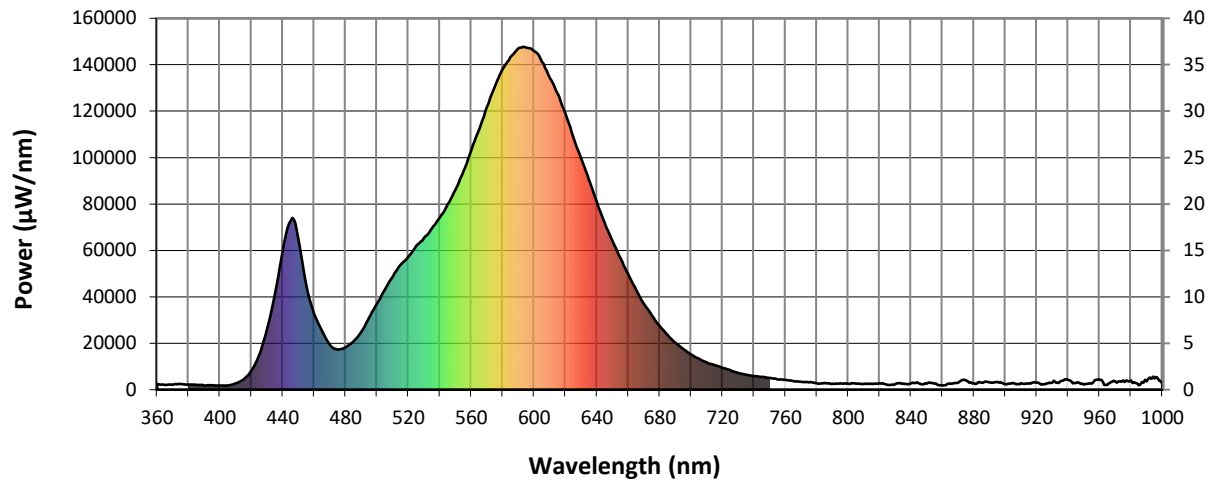
Scotopic Lumens: 8494.8

S/P: 1.23

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

REPORT NUMBER: SP1-1908-441-2-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 3101.5 M/P: 0.45

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

REPORT NUMBER: SP1-1908-441-2-R4

TM-30-18

Summary

$R_f = 75.7$
 $R_g = 93.9$
 CIE $R_a = 71.8$
 $R_9 = -38.3$



Color Vector Graphics



REPORT NUMBER: SP1-1908-441-2-R4

TM-30-18

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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 | |



REPORT NUMBER: SP1-1908-441-2-R4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-2-R4

TM-30-18

Measure Comparisons



(END OF REPORT)