

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: P362486

Luminaire Tested: NVN-SA4B-760-U-AFL

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2019
Report Number: P362486
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-SA4B-760-U-AFL
Description: NAVION ROADWAY AND AREA LUMINAIRE
(4) 70 CRI, 5700K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND AUTOMOTIVE FRONTLINE OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 23999 lumens
Efficiency: N/A
Efficacy: 140.3 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')
IES Classification: Type II - Short
BUG Rating: B3 - U0 - G2

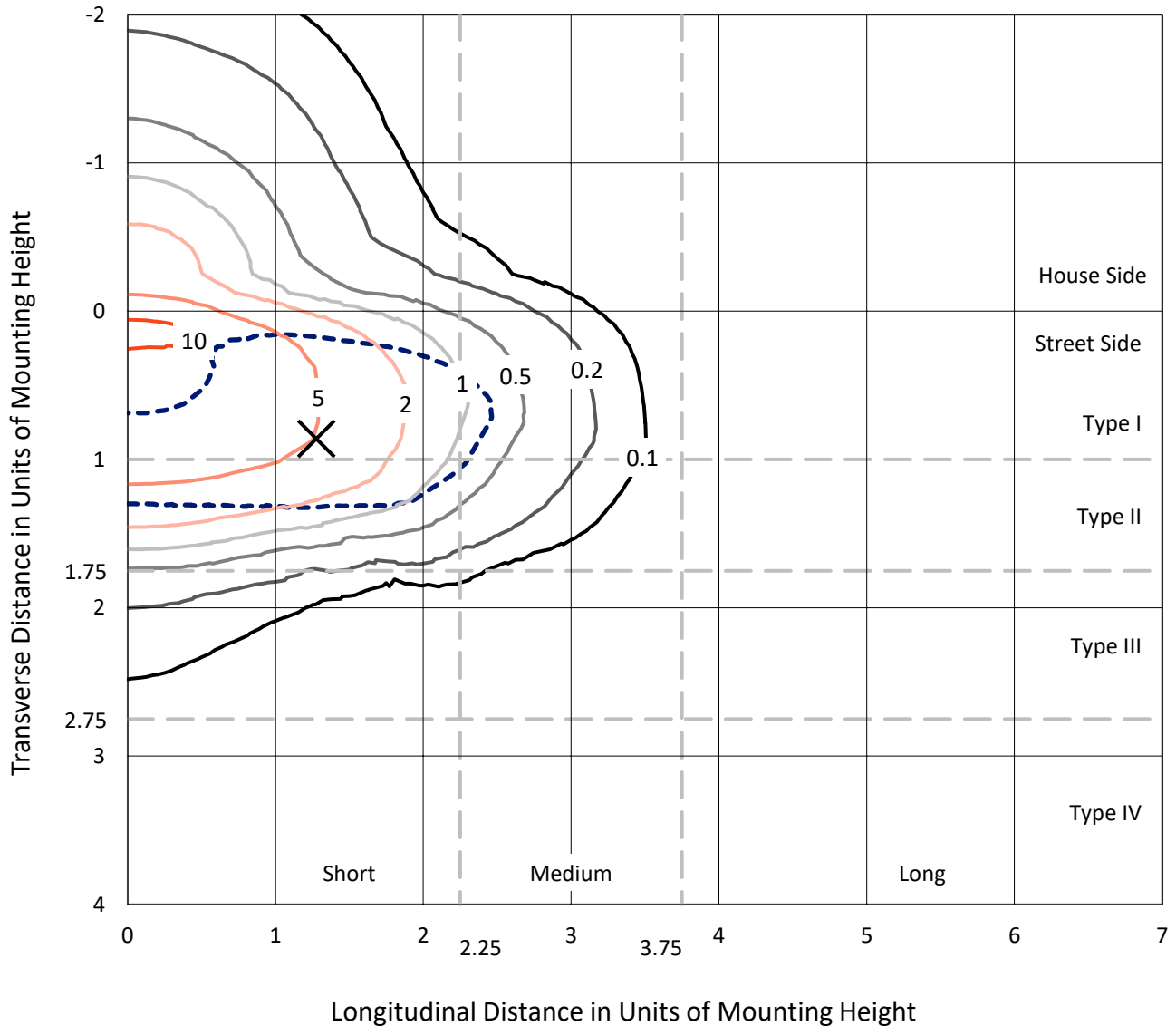
Input Watts (W): 171
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P362486
 CATALOG NUMBER: NVN-SA4B-760-U-AFL

Iso-Footcandle Lines of Horizontal Illumination

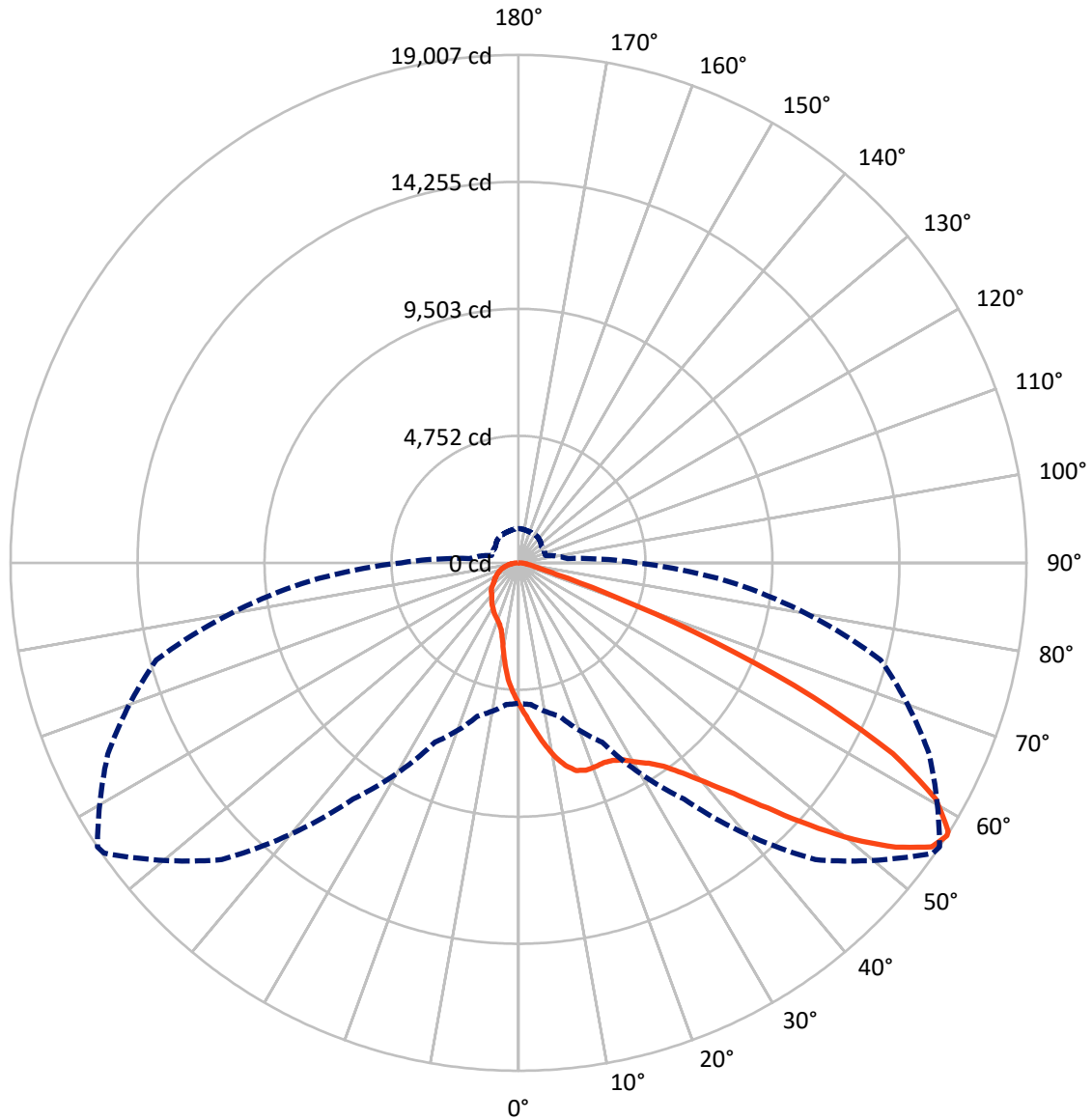
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 11.8 fc
 Type II - Short - N/A

REPORT NUMBER: P362486
CATALOG NUMBER: NVN-SA4B-760-U-AFL

Luminous Intensity Polar Plot



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

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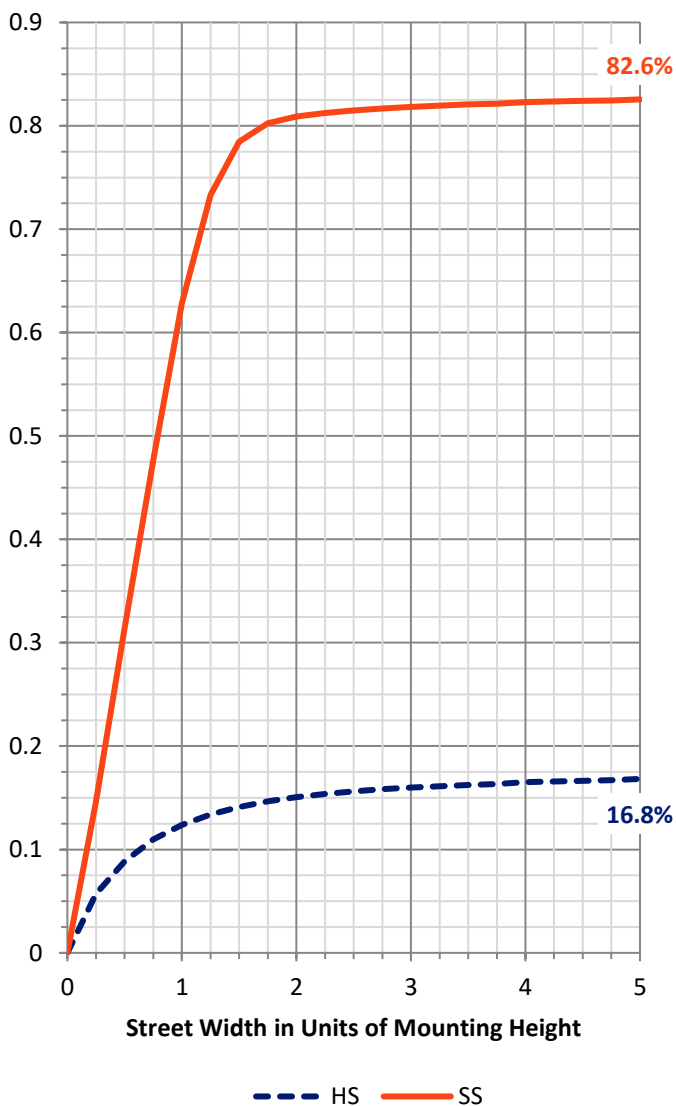
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 4136.9 | 0.0 | 4136.9 |
| | % Fixture | 17.2 | 0.0 | 17.2 |
| Street Side | Lumens | 19862.1 | 0.0 | 19862.1 |
| | % Fixture | 82.8 | 0.0 | 82.8 |
| Total | Lumens | 23999.0 | 0.0 | 23999.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 508.5 | 2.1 |
| 10°-20° | 1437.6 | 6.0 |
| 20°-30° | 2341.6 | 9.8 |
| 30°-40° | 3500.4 | 14.6 |
| 40°-50° | 5309.3 | 22.1 |
| 50°-60° | 5950.8 | 24.8 |
| 60°-70° | 3514.8 | 14.6 |
| 70°-80° | 1151.6 | 4.8 |
| 80°-90° | 284.5 | 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° | 23999.0 | 100.0 |
| 0°-180° | 23999.0 | 100.0 |

Coefficient of Utilization

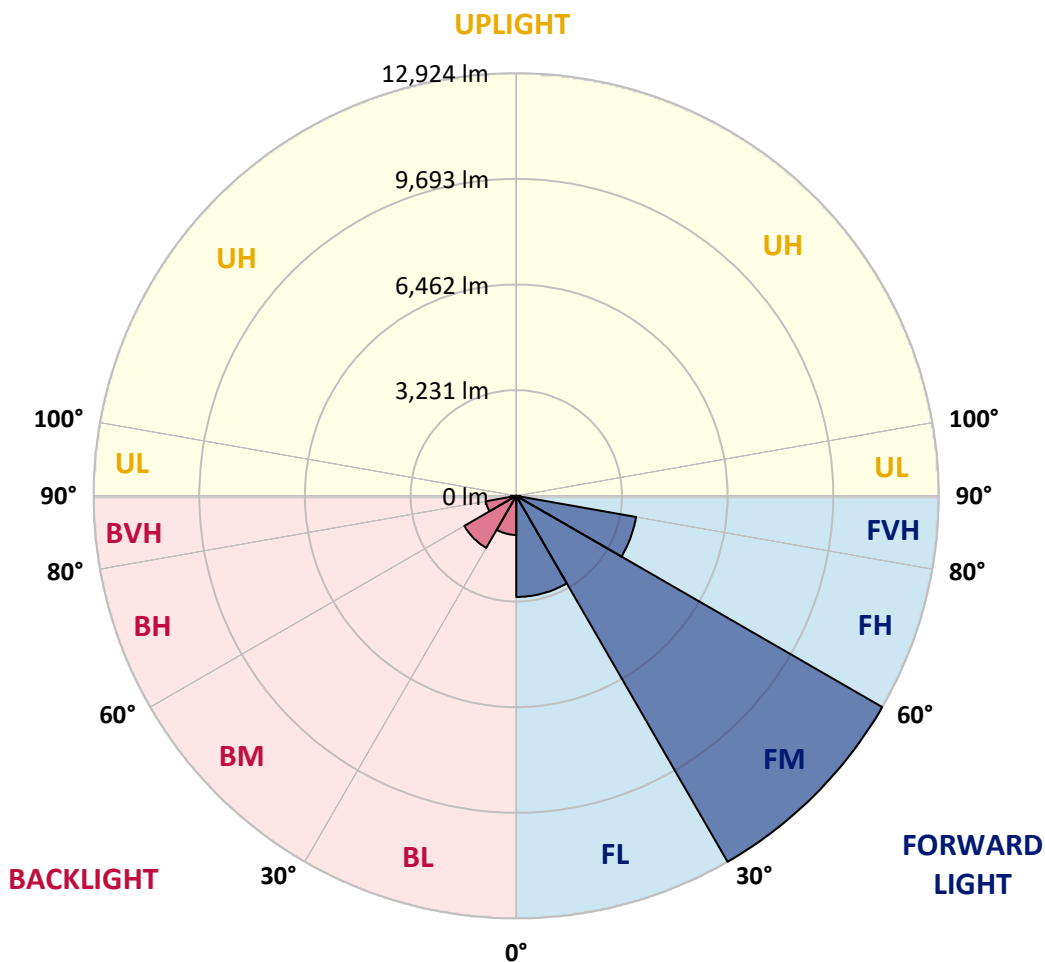


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 CATALOG NUMBER: NVN-SA4B-760-U-AFL

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|---------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 3091.4 | 12.9 | | | |
| FM (30°-60°) | 12924.3 | 53.9 | | | |
| FH (60°-80°) | 3721.1 | 15.5 | | | G2/5000 |
| FVH (80°-90°) | 125.3 | 0.5 | | | G2/225 |
| BL (0°-30°) | 1196.2 | 5.0 | B3/2500 | | |
| BM (30°-60°) | 1836.2 | 7.7 | B2/2500 | | |
| BH (60°-80°) | 945.2 | 3.9 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 159.2 | 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-G2
 Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 56° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0° | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 |
| 2.5° | 6112.3 | 6168.4 | 6143.6 | 6057.9 | 5991.9 | 5898.7 | 5794.8 | 5763.4 | 5653.7 | 5530.8 | 5383.2 |
| 5° | 7079.7 | 7051.7 | 7011.3 | 6877.7 | 6736.6 | 6572.5 | 6311.9 | 6270.6 | 6026.5 | 5748.6 | 5455.0 |
| 7.5° | 7630.7 | 7628.2 | 7604.3 | 7525.9 | 7397.3 | 7182.8 | 6868.6 | 6819.9 | 6451.3 | 6004.3 | 5549.0 |
| 10° | 7550.7 | 7544.9 | 7584.5 | 7666.1 | 7704.9 | 7660.4 | 7395.6 | 7347.0 | 6894.2 | 6287.1 | 5657.9 |
| 12.5° | 7096.2 | 7099.5 | 7163.0 | 7334.6 | 7568.0 | 7848.4 | 7805.5 | 7781.6 | 7353.6 | 6607.2 | 5789.8 |
| 15° | 6742.4 | 6749.8 | 6800.1 | 6949.4 | 7224.9 | 7733.8 | 8054.6 | 8062.9 | 7798.1 | 6960.1 | 5944.0 |
| 17.5° | 6587.4 | 6603.0 | 6626.1 | 6730.9 | 6983.2 | 7505.3 | 8114.0 | 8158.5 | 8187.4 | 7326.3 | 6092.5 |
| 20° | 6636.8 | 6651.7 | 6658.3 | 6725.1 | 6932.1 | 7366.8 | 8072.7 | 8152.8 | 8486.0 | 7671.1 | 6241.0 |
| 22.5° | 6858.7 | 6867.8 | 6871.9 | 6889.2 | 7050.0 | 7406.3 | 8045.5 | 8129.7 | 8702.0 | 7980.4 | 6353.1 |
| 25° | 7226.5 | 7219.9 | 7193.6 | 7171.3 | 7279.3 | 7563.0 | 8108.2 | 8188.2 | 8877.7 | 8260.8 | 6426.5 |
| 27.5° | 7667.0 | 7658.7 | 7607.6 | 7546.6 | 7608.4 | 7807.2 | 8288.8 | 8352.3 | 9035.2 | 8523.1 | 6463.6 |
| 30° | 8195.6 | 8174.2 | 8077.7 | 8005.1 | 8029.0 | 8173.4 | 8586.6 | 8644.3 | 9278.5 | 8820.8 | 6499.9 |
| 32.5° | 8806.8 | 8783.7 | 8644.3 | 8523.9 | 8523.9 | 8644.3 | 8893.4 | 8941.2 | 9484.7 | 9157.3 | 6558.5 |
| 35° | 9572.2 | 9543.3 | 9361.8 | 9159.8 | 9102.9 | 9163.9 | 9311.5 | 9345.4 | 9855.9 | 9581.2 | 6664.9 |
| 37.5° | 10474.5 | 10435.7 | 10200.6 | 9930.1 | 9805.6 | 9802.3 | 9908.7 | 9977.9 | 10448.9 | 10137.9 | 6845.5 |
| 40° | 11379.2 | 11352.0 | 11146.6 | 10933.8 | 10689.7 | 10611.4 | 10775.5 | 10796.9 | 11224.2 | 10829.1 | 7076.4 |
| 42.5° | 12078.6 | 12073.7 | 12035.7 | 12063.8 | 11813.9 | 11655.5 | 11784.2 | 11801.5 | 12171.0 | 11577.2 | 7322.2 |
| 45° | 12448.1 | 12456.3 | 12640.3 | 13047.7 | 13140.1 | 13024.6 | 13088.1 | 13093.1 | 13253.1 | 12331.8 | 7547.4 |
| 47.5° | 12152.0 | 12194.9 | 12660.1 | 13571.4 | 14327.7 | 14711.2 | 14605.7 | 14666.7 | 14302.2 | 12980.1 | 7723.9 |
| 50° | 10998.2 | 11051.0 | 11842.7 | 13338.0 | 14882.0 | 16343.4 | 16288.2 | 16274.2 | 15148.4 | 13455.1 | 7819.5 |
| 52.5° | 9568.9 | 9610.1 | 10263.3 | 12124.8 | 14475.4 | 17245.7 | 17753.0 | 17680.4 | 15900.5 | 13810.6 | 7837.7 |
| 55° | 7392.3 | 7456.7 | 8082.6 | 9703.3 | 12830.8 | 16901.0 | 18830.1 | 18764.9 | 16585.9 | 13997.0 | 7816.2 |
| 57° | 5255.4 | 5323.0 | 5944.9 | 7405.5 | 10793.6 | 15707.6 | 18937.3 | 19006.6 | 16956.2 | 14028.3 | 7840.2 |
| 57.5° | 4689.6 | 4758.9 | 5375.0 | 6793.5 | 10158.6 | 15276.2 | 18844.9 | 18960.4 | 17023.0 | 14023.4 | 7853.4 |
| 60° | 2361.3 | 2387.7 | 2780.3 | 3792.2 | 6421.6 | 12350.0 | 17640.0 | 17937.7 | 17083.3 | 13780.9 | 7910.3 |
| 62.5° | 1468.1 | 1449.1 | 1436.7 | 1746.8 | 3124.2 | 8189.9 | 15153.3 | 15726.5 | 15931.1 | 13193.7 | 7772.5 |
| 65° | 1290.7 | 1255.3 | 1119.2 | 1094.5 | 1379.8 | 3977.8 | 11411.4 | 12124.8 | 13469.2 | 12268.3 | 7444.3 |
| 67.5° | 1212.4 | 1177.8 | 1024.4 | 932.0 | 932.8 | 1576.9 | 7084.7 | 7888.0 | 10492.6 | 10703.7 | 6669.8 |
| 70° | 1131.6 | 1100.2 | 956.7 | 847.9 | 794.2 | 873.4 | 3259.5 | 3868.9 | 6839.7 | 8413.4 | 5574.6 |
| 72.5° | 1027.7 | 1006.2 | 870.1 | 758.0 | 701.0 | 654.0 | 1247.9 | 1473.8 | 3959.7 | 5650.4 | 3871.4 |
| 75° | 918.8 | 899.0 | 782.7 | 675.5 | 606.2 | 514.7 | 702.7 | 757.1 | 2011.6 | 2890.8 | 1906.0 |
| 77.5° | 799.2 | 787.6 | 696.1 | 597.1 | 541.9 | 426.4 | 497.3 | 523.7 | 862.7 | 1239.6 | 955.9 |
| 80° | 635.9 | 658.2 | 608.7 | 532.0 | 480.8 | 341.5 | 352.2 | 369.5 | 502.3 | 605.4 | 542.7 |
| 82.5° | 414.0 | 452.8 | 476.7 | 432.2 | 395.9 | 268.9 | 253.2 | 260.6 | 327.4 | 369.5 | 235.9 |
| 85° | 172.4 | 193.8 | 313.4 | 282.9 | 263.1 | 196.3 | 169.9 | 173.2 | 202.9 | 210.3 | 96.5 |
| 87.5° | 76.7 | 81.7 | 137.7 | 129.5 | 111.3 | 67.6 | 72.6 | 79.2 | 108.0 | 102.3 | 37.1 |
| 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: P362486
 CATALOG NUMBER: NVN-SA4B-760-U-AFL

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 | 5323.0 |
| 2.5° | 5327.9 | 5258.7 | 5139.9 | 5008.8 | 4901.5 | 4815.8 | 4729.2 | 4669.8 | 4600.5 | 4563.4 | 4544.4 |
| 5° | 5332.1 | 5196.0 | 4946.1 | 4689.6 | 4460.3 | 4250.8 | 4051.2 | 3897.8 | 3754.3 | 3676.8 | 3655.3 |
| 7.5° | 5349.4 | 5144.9 | 4740.7 | 4318.4 | 3911.0 | 3539.0 | 3252.0 | 3072.2 | 2942.7 | 2885.0 | 2868.5 |
| 10° | 5363.4 | 5084.6 | 4486.7 | 3861.5 | 3307.3 | 2930.4 | 2707.7 | 2607.1 | 2562.5 | 2555.1 | 2547.7 |
| 12.5° | 5396.4 | 5022.8 | 4219.5 | 3384.8 | 2838.0 | 2577.4 | 2499.8 | 2493.2 | 2505.6 | 2523.8 | 2523.8 |
| 15° | 5448.4 | 4961.8 | 3914.3 | 2975.7 | 2539.4 | 2447.9 | 2463.6 | 2499.8 | 2533.7 | 2561.7 | 2565.8 |
| 17.5° | 5486.3 | 4886.7 | 3586.1 | 2648.3 | 2380.3 | 2405.0 | 2461.1 | 2512.2 | 2546.9 | 2574.1 | 2576.5 |
| 20° | 5513.5 | 4770.4 | 3235.5 | 2398.4 | 2288.7 | 2365.4 | 2435.5 | 2480.9 | 2504.8 | 2532.0 | 2536.1 |
| 22.5° | 5499.5 | 4614.5 | 2924.6 | 2219.4 | 2214.5 | 2307.7 | 2374.5 | 2428.9 | 2410.8 | 2384.4 | 2401.7 |
| 25° | 5431.9 | 4400.1 | 2604.6 | 2085.8 | 2136.1 | 2230.2 | 2312.6 | 2276.3 | 2215.3 | 2203.8 | 2210.4 |
| 27.5° | 5311.5 | 4126.3 | 2308.5 | 1962.1 | 2045.4 | 2158.4 | 2153.4 | 2117.2 | 2095.7 | 2080.9 | 2089.9 |
| 30° | 5182.0 | 3829.4 | 2049.5 | 1854.1 | 1944.8 | 2038.0 | 2019.0 | 2018.2 | 1996.7 | 1972.8 | 1984.4 |
| 32.5° | 5054.1 | 3530.8 | 1844.2 | 1765.0 | 1868.9 | 1881.3 | 1922.5 | 1934.9 | 1892.8 | 1842.5 | 1839.2 |
| 35° | 4942.8 | 3248.7 | 1688.3 | 1684.2 | 1777.4 | 1779.0 | 1839.2 | 1821.9 | 1717.1 | 1665.2 | 1665.2 |
| 37.5° | 4859.5 | 2967.5 | 1569.5 | 1611.6 | 1656.9 | 1699.8 | 1730.3 | 1658.6 | 1641.3 | 1612.4 | 1611.6 |
| 40° | 4823.2 | 2720.1 | 1495.3 | 1556.3 | 1572.0 | 1626.4 | 1548.1 | 1576.1 | 1584.4 | 1569.5 | 1569.5 |
| 42.5° | 4785.3 | 2504.8 | 1431.0 | 1514.3 | 1511.8 | 1504.4 | 1464.8 | 1501.1 | 1534.1 | 1534.9 | 1532.4 |
| 45° | 4747.3 | 2319.2 | 1374.0 | 1424.4 | 1459.0 | 1379.0 | 1386.4 | 1425.2 | 1471.4 | 1487.9 | 1487.9 |
| 47.5° | 4705.3 | 2172.4 | 1322.1 | 1329.5 | 1383.1 | 1329.5 | 1323.7 | 1353.4 | 1407.9 | 1434.3 | 1440.0 |
| 50° | 4612.9 | 2040.5 | 1262.7 | 1246.2 | 1261.1 | 1279.2 | 1284.2 | 1298.2 | 1358.4 | 1400.4 | 1410.3 |
| 52.5° | 4485.0 | 1922.5 | 1186.8 | 1169.5 | 1169.5 | 1238.0 | 1261.1 | 1265.2 | 1316.3 | 1366.6 | 1376.5 |
| 55° | 4378.7 | 1847.5 | 1108.5 | 1105.2 | 1101.9 | 1194.3 | 1233.8 | 1240.4 | 1275.9 | 1315.5 | 1320.4 |
| 57° | 4386.1 | 1841.7 | 1048.3 | 1051.6 | 1050.7 | 1149.7 | 1208.3 | 1222.3 | 1240.4 | 1274.3 | 1280.0 |
| 57.5° | 4390.2 | 1845.8 | 1035.1 | 1036.7 | 1035.9 | 1137.3 | 1200.9 | 1216.5 | 1230.5 | 1266.0 | 1271.8 |
| 60° | 4452.1 | 1856.5 | 981.5 | 963.3 | 967.4 | 1071.4 | 1158.8 | 1178.6 | 1187.7 | 1234.7 | 1242.1 |
| 62.5° | 4360.5 | 1808.7 | 938.6 | 894.9 | 894.9 | 1002.1 | 1100.2 | 1131.6 | 1145.6 | 1209.1 | 1221.5 |
| 65° | 4094.9 | 1674.3 | 888.3 | 817.3 | 825.6 | 932.8 | 1030.1 | 1081.3 | 1102.7 | 1181.9 | 1195.1 |
| 67.5° | 3685.0 | 1518.4 | 834.7 | 748.1 | 756.3 | 860.2 | 957.5 | 1012.8 | 1046.6 | 1152.2 | 1162.9 |
| 70° | 3151.4 | 1327.9 | 762.1 | 674.7 | 684.6 | 781.0 | 871.8 | 934.5 | 984.8 | 1124.1 | 1127.4 |
| 72.5° | 2323.3 | 1088.7 | 660.6 | 593.8 | 604.5 | 688.7 | 785.2 | 857.8 | 925.4 | 1054.0 | 1052.4 |
| 75° | 1381.5 | 851.2 | 548.5 | 512.2 | 519.6 | 598.0 | 706.8 | 795.1 | 896.5 | 1026.8 | 1042.5 |
| 77.5° | 838.0 | 640.8 | 447.0 | 428.9 | 437.9 | 517.9 | 650.7 | 744.8 | 884.1 | 968.3 | 963.3 |
| 80° | 506.4 | 457.7 | 357.1 | 345.6 | 354.6 | 442.9 | 602.1 | 706.8 | 772.8 | 827.2 | 827.2 |
| 82.5° | 264.7 | 279.6 | 262.3 | 253.2 | 265.6 | 359.6 | 547.6 | 616.9 | 682.9 | 586.4 | 547.6 |
| 85° | 108.0 | 146.0 | 159.2 | 158.4 | 165.8 | 249.1 | 472.6 | 527.8 | 440.4 | 418.2 | 428.1 |
| 87.5° | 36.3 | 61.9 | 77.5 | 66.8 | 70.1 | 156.7 | 327.4 | 254.9 | 302.7 | 211.1 | 200.4 |
| 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: SP1-1908-441-9-R4

Test Date: 10/23/2019

Luminaire Tested: SA1C-760-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-9-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-760-U-5WQ**
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

| | | | | | |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K): | 5474 | CRI (Ra): | 71.7 | R9: | -27.1 |
| CIE u': | 0.2052 | R1: | 70.6 | R10: | 40.8 |
| CIE v': | 0.4804 | R2: | 74.6 | R11: | 74.6 |
| Duv: | 0.0025 | R3: | 78.3 | R12: | 50.4 |
| CIE x: | 0.3330 | R4: | 73.8 | R13: | 70.0 |
| CIE y: | 0.3466 | R5: | 72.4 | R14: | 87.8 |
| CIE z: | 0.3204 | R6: | 67.5 | | |
| Peak Wavelength (nm): | 442 | R7: | 77.5 | | |
| Dominant Wavelength (nm): | 554 | R8: | 58.9 | | |
| Purity: | 4.1 | | | | |
| Rf: | 72.1 | | | | |
| Rg: | 97.2 | | | | |



Test Conditions

Stabilization Time: 240M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 24.6/31%
 Sphere Temperature (°C): 25.9

REPORT NUMBER: SP1-1908-441-9-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: SP1-1908-441-9-R4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5700K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-9-R4

Photopic Flux vs. Wavelength



#####

| 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 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

REPORT NUMBER: SP1-1908-441-9-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 13759.3 S/P: 1.85

| 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 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

REPORT NUMBER: SP1-1908-441-9-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 5527.6 M/P: 0.74

| 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 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

Summary

$R_f = 72.1$
 $R_g = 97.2$
 CIE $R_a = 71.7$
 $R_g = -27.1$



Color Vector Graphics



REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

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

| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 54 | CES51 = 88 | CES76 = 43 |
| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
| CES11 = 55 | CES36 = 90 | CES61 = 88 | CES86 = 76 |
| CES12 = 61 | CES37 = 72 | CES62 = 81 | CES87 = 75 |
| CES13 = 41 | CES38 = 68 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
| CES16 = 46 | CES41 = 84 | CES66 = 66 | CES91 = 92 |
| CES17 = 48 | CES42 = 70 | CES67 = 64 | CES92 = 70 |
| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
| CES21 = 85 | CES46 = 78 | CES71 = 55 | CES96 = 79 |
| CES22 = 77 | CES47 = 76 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 | |



REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

Measure Comparisons



(END OF REPORT)