

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: P360974

Luminaire Tested: NVN-SA4B-722-U-T2R

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2019
Report Number: P360974
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-8)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: STREETWORKS
Catalog Number: NVN-SA4B-722-U-T2R
Description: NAVION ROADWAY AND AREA LUMINAIRE
(4) 70 CRI, 2200K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II
ROADWAY OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 18043 lumens
Efficiency: N/A
Efficacy: 105.5 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')
IES Classification: Type II - Short
BUG Rating: B2 - U0 - G2

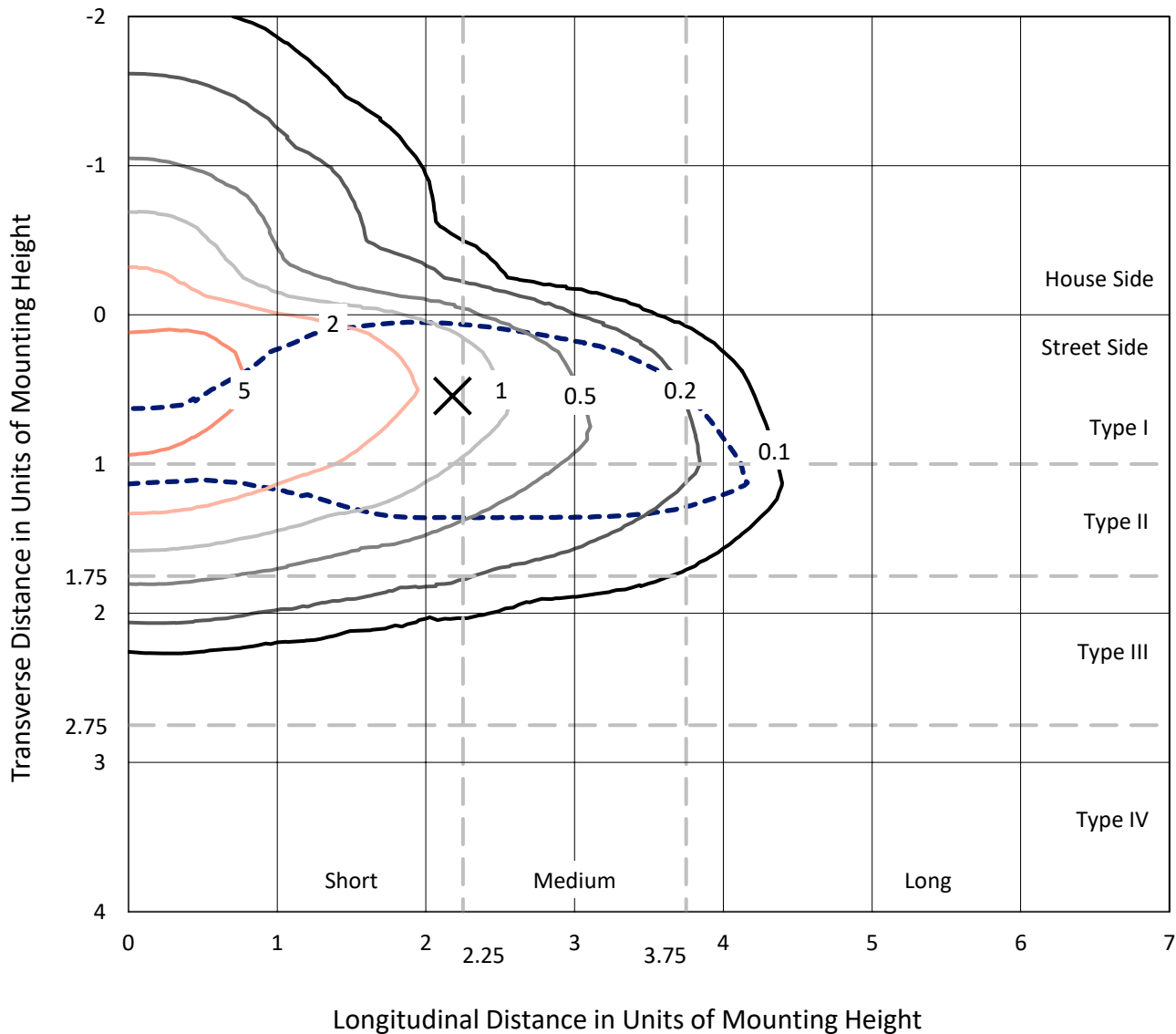
Input Watts (W): 171
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

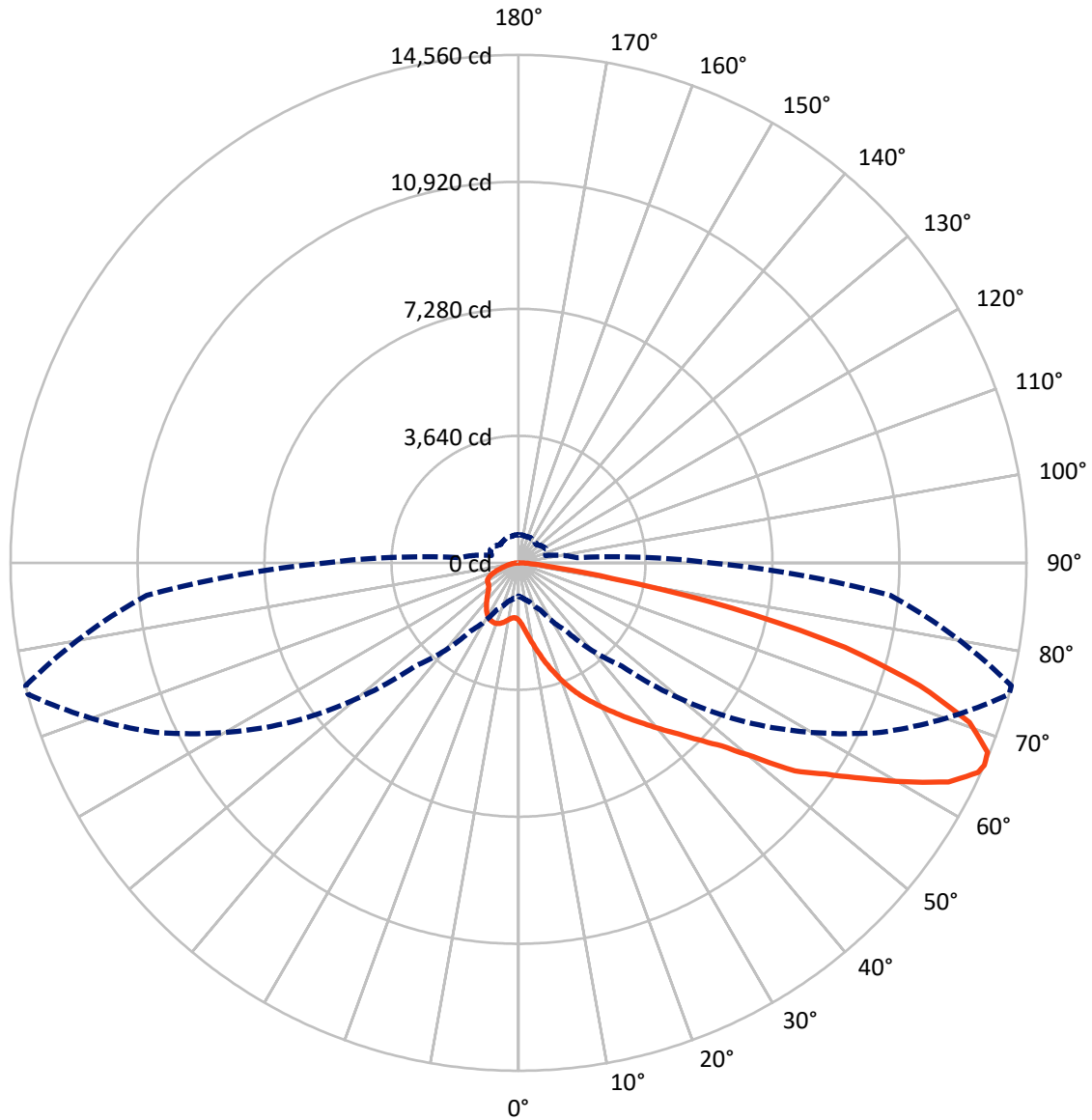
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 7 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 76-Deg Lateral - - - Horizontal Cone Through 66-Deg Vertical

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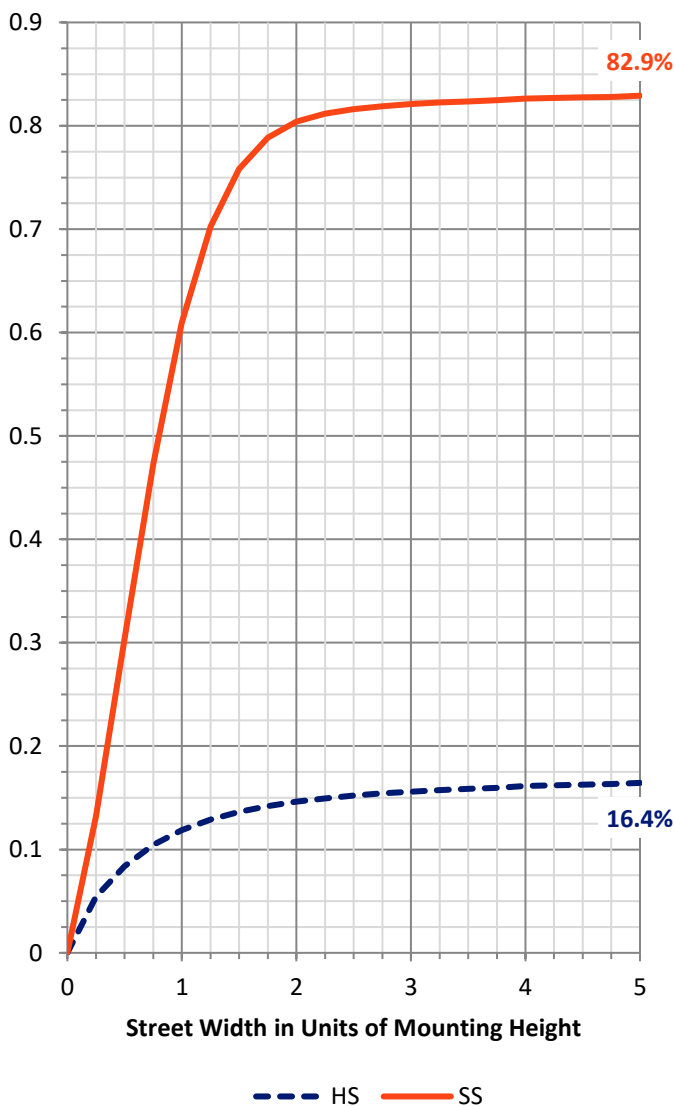
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 3036.0 | 0.0 | 3036.0 |
| | % Fixture | 16.8 | 0.0 | 16.8 |
| Street Side | Lumens | 15007.0 | 0.0 | 15007.0 |
| | % Fixture | 83.2 | 0.0 | 83.2 |
| Total | Lumens | 18043.0 | 0.0 | 18043.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 199.3 | 1.1 |
| 10°-20° | 786.8 | 4.4 |
| 20°-30° | 1529.0 | 8.5 |
| 30°-40° | 2495.7 | 13.8 |
| 40°-50° | 3409.8 | 18.9 |
| 50°-60° | 3971.7 | 22.0 |
| 60°-70° | 3560.7 | 19.7 |
| 70°-80° | 1799.4 | 10.0 |
| 80°-90° | 290.6 | 1.6 |
| 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° | 18043.0 | 100.0 |
| 0°-180° | 18043.0 | 100.0 |

Coefficient of Utilization

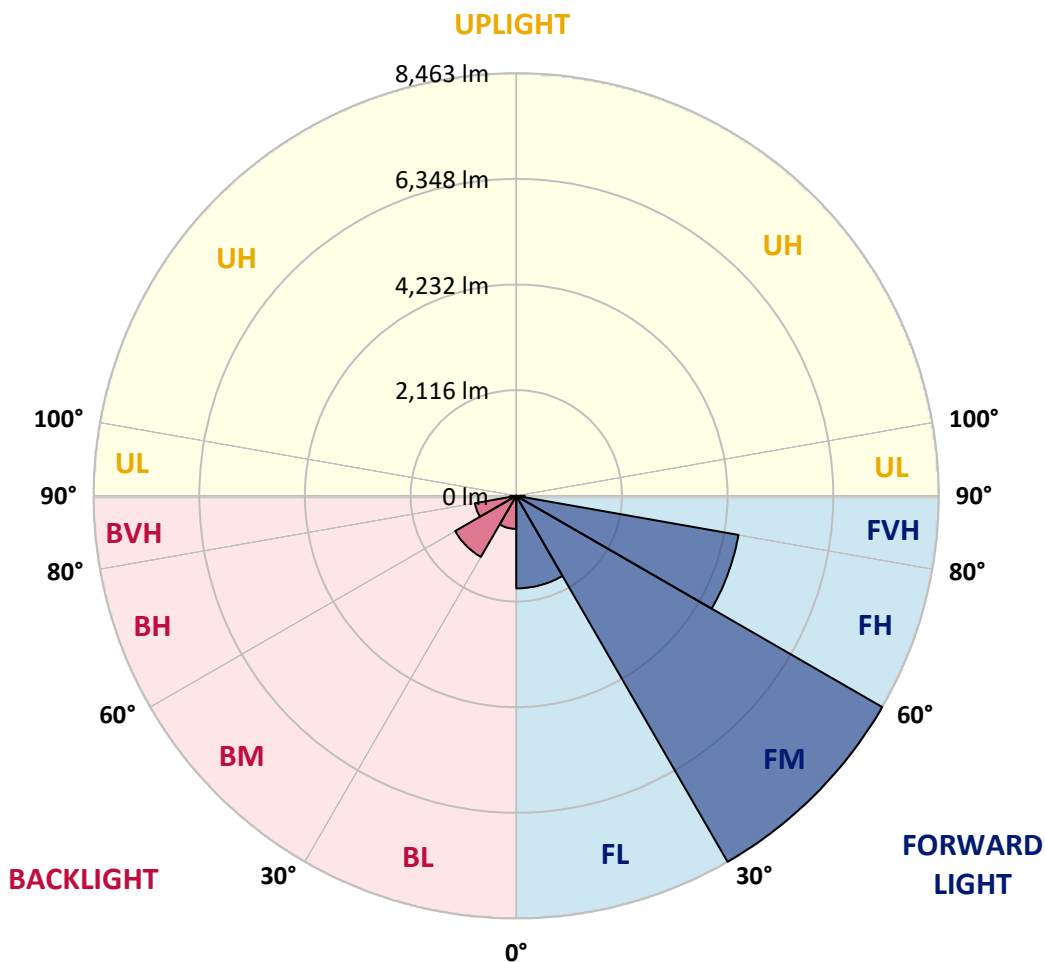


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1853.0 | 10.3 | | | |
| FM (30°-60°) | 8463.4 | 46.9 | | | |
| FH (60°-80°) | 4519.0 | 25.0 | | | G2/5000 |
| FVH (80°-90°) | 171.6 | 1.0 | | | G2/225 |
| BL (0°-30°) | 662.2 | 3.7 | B2/1000 | | |
| BM (30°-60°) | 1413.8 | 7.8 | B2/2500 | | |
| BH (60°-80°) | 841.1 | 4.7 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 119.0 | 0.7 | | | G2/225 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G2
 Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 76° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|
| 0° | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 |
| 2.5° | 2187.4 | 2154.3 | 2151.2 | 2102.9 | 2091.8 | 1999.3 | 1931.3 | 1860.3 | 1779.4 | 1763.5 | 1699.8 |
| 5° | 2809.7 | 2806.7 | 2764.4 | 2685.4 | 2623.5 | 2465.5 | 2309.3 | 2143.9 | 1962.6 | 1933.2 | 1789.8 |
| 7.5° | 3369.6 | 3364.7 | 3332.2 | 3247.1 | 3157.6 | 2963.5 | 2740.5 | 2486.9 | 2192.9 | 2149.4 | 1911.7 |
| 10° | 3794.7 | 3792.8 | 3781.8 | 3719.3 | 3643.4 | 3457.2 | 3210.9 | 2864.9 | 2460.6 | 2401.2 | 2064.3 |
| 12.5° | 4123.0 | 4126.7 | 4134.0 | 4112.0 | 4075.8 | 3917.2 | 3664.8 | 3265.5 | 2746.0 | 2687.2 | 2233.9 |
| 15° | 4345.4 | 4356.4 | 4394.4 | 4425.6 | 4444.6 | 4347.2 | 4102.8 | 3675.2 | 3065.8 | 2995.3 | 2422.0 |
| 17.5° | 4457.5 | 4469.7 | 4535.2 | 4629.6 | 4716.6 | 4706.8 | 4512.6 | 4066.0 | 3372.6 | 3304.7 | 2624.1 |
| 20° | 4554.2 | 4563.4 | 4636.9 | 4750.2 | 4904.0 | 4972.0 | 4863.0 | 4442.1 | 3708.9 | 3628.1 | 2838.5 |
| 22.5° | 4834.8 | 4846.4 | 4868.5 | 4932.8 | 5068.8 | 5193.7 | 5141.0 | 4798.0 | 4017.0 | 3941.7 | 3041.9 |
| 25° | 5376.3 | 5390.4 | 5342.6 | 5288.1 | 5313.8 | 5400.8 | 5410.6 | 5122.7 | 4329.4 | 4244.3 | 3260.6 |
| 27.5° | 6028.6 | 6048.8 | 5967.4 | 5827.1 | 5704.6 | 5670.9 | 5659.3 | 5388.5 | 4627.7 | 4529.1 | 3476.8 |
| 30° | 6667.5 | 6702.4 | 6596.4 | 6414.5 | 6189.7 | 6031.7 | 5914.7 | 5648.8 | 4921.8 | 4827.4 | 3680.8 |
| 32.5° | 7291.7 | 7277.6 | 7123.8 | 6946.2 | 6682.8 | 6485.0 | 6202.0 | 5928.2 | 5252.5 | 5144.1 | 3883.5 |
| 35° | 7719.2 | 7724.1 | 7581.4 | 7370.7 | 7119.6 | 6967.6 | 6586.6 | 6229.5 | 5590.0 | 5490.2 | 4113.8 |
| 37.5° | 8083.1 | 8060.4 | 7898.7 | 7702.1 | 7485.9 | 7420.9 | 7036.9 | 6561.5 | 5955.7 | 5846.7 | 4358.8 |
| 40° | 8204.4 | 8178.0 | 8072.1 | 7930.6 | 7757.2 | 7751.7 | 7533.6 | 6937.6 | 6369.2 | 6261.4 | 4635.1 |
| 42.5° | 8130.9 | 8097.2 | 8053.7 | 8015.1 | 7961.8 | 7986.3 | 8000.4 | 7378.7 | 6823.7 | 6703.0 | 4954.8 |
| 45° | 7859.5 | 7808.7 | 7839.3 | 7923.2 | 8039.0 | 8177.4 | 8421.8 | 7866.9 | 7332.7 | 7231.6 | 5330.3 |
| 47.5° | 7442.4 | 7396.4 | 7492.0 | 7671.5 | 7986.3 | 8336.7 | 8820.6 | 8405.9 | 7940.4 | 7839.9 | 5865.1 |
| 50° | 6855.5 | 6869.0 | 7005.6 | 7332.1 | 7808.0 | 8410.2 | 9311.8 | 9119.5 | 8823.6 | 8729.9 | 6594.6 |
| 52.5° | 5892.6 | 5895.1 | 6279.8 | 6815.7 | 7492.0 | 8372.2 | 9584.4 | 10031.6 | 10029.7 | 9916.4 | 7289.2 |
| 55° | 4998.3 | 5052.8 | 5357.3 | 6069.7 | 6979.9 | 8220.3 | 9774.9 | 10475.0 | 10821.7 | 10688.8 | 7936.7 |
| 57.5° | 4124.8 | 4156.7 | 4445.2 | 5160.7 | 6249.1 | 7815.4 | 9970.3 | 11007.3 | 11734.4 | 11650.5 | 8741.6 |
| 60° | 3131.3 | 3180.3 | 3478.6 | 4139.5 | 5314.4 | 7096.9 | 9988.7 | 11562.9 | 12825.4 | 12740.8 | 9640.2 |
| 62.5° | 2032.4 | 2116.9 | 2396.3 | 3015.5 | 4183.6 | 6063.5 | 9562.4 | 11926.2 | 13859.3 | 13829.3 | 10437.7 |
| 65° | 1168.1 | 1231.8 | 1426.0 | 1903.8 | 2886.3 | 4766.2 | 8548.6 | 11786.5 | 14495.8 | 14478.6 | 10736.0 |
| 66° | 954.3 | 994.2 | 1143.0 | 1487.9 | 2381.6 | 4185.5 | 7959.3 | 11491.9 | 14558.9 | 14559.5 | 10701.7 |
| 67.5° | 763.2 | 781.0 | 847.8 | 1065.2 | 1757.4 | 3317.5 | 6906.4 | 10842.0 | 14480.4 | 14501.9 | 10480.6 |
| 70° | 631.5 | 640.7 | 661.5 | 714.2 | 959.2 | 2000.6 | 4902.2 | 9153.2 | 13693.3 | 13709.9 | 9617.5 |
| 72.5° | 566.6 | 572.1 | 580.1 | 587.4 | 676.9 | 1117.9 | 2994.1 | 7322.3 | 12005.8 | 12027.2 | 8302.4 |
| 75° | 513.3 | 516.4 | 515.1 | 515.8 | 567.8 | 712.4 | 1547.3 | 5466.9 | 9707.5 | 9664.7 | 6360.0 |
| 77.5° | 450.8 | 453.9 | 447.8 | 449.0 | 502.3 | 547.6 | 770.0 | 3827.2 | 6551.1 | 6248.5 | 3583.4 |
| 80° | 381.0 | 383.5 | 381.0 | 385.3 | 437.4 | 413.5 | 447.8 | 2153.1 | 2896.7 | 2739.9 | 1274.1 |
| 82.5° | 287.9 | 298.3 | 305.7 | 322.8 | 360.2 | 294.0 | 299.5 | 838.6 | 882.1 | 839.8 | 390.8 |
| 85° | 126.2 | 153.7 | 230.3 | 246.9 | 270.7 | 176.4 | 196.6 | 341.8 | 358.9 | 347.9 | 142.1 |
| 87.5° | 33.1 | 36.1 | 113.9 | 143.3 | 150.1 | 79.6 | 102.3 | 155.6 | 164.2 | 155.6 | 47.2 |
| 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: P360974
 CATALOG NUMBER: NVN-SA4B-722-U-T2R

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 | 1647.7 |
| 2.5° | 1666.1 | 1636.1 | 1582.2 | 1534.4 | 1498.3 | 1473.8 | 1449.3 | 1437.0 | 1429.7 | 1422.3 | 1423.5 |
| 5° | 1719.4 | 1658.8 | 1566.3 | 1500.7 | 1464.0 | 1440.7 | 1428.4 | 1423.5 | 1420.5 | 1413.1 | 1413.1 |
| 7.5° | 1799.6 | 1713.9 | 1586.5 | 1519.1 | 1490.3 | 1472.5 | 1465.2 | 1462.7 | 1459.1 | 1450.5 | 1451.7 |
| 10° | 1900.7 | 1780.7 | 1628.7 | 1563.2 | 1536.9 | 1517.3 | 1506.8 | 1503.2 | 1496.4 | 1486.6 | 1487.9 |
| 12.5° | 2019.5 | 1863.3 | 1684.5 | 1615.9 | 1584.0 | 1557.7 | 1540.5 | 1530.1 | 1518.5 | 1505.6 | 1506.2 |
| 15° | 2149.4 | 1953.4 | 1744.5 | 1663.0 | 1619.6 | 1582.8 | 1555.2 | 1537.5 | 1519.1 | 1503.2 | 1502.6 |
| 17.5° | 2281.1 | 2040.4 | 1790.5 | 1688.8 | 1630.0 | 1581.6 | 1544.2 | 1516.6 | 1494.0 | 1474.4 | 1472.5 |
| 20° | 2423.2 | 2118.8 | 1816.2 | 1686.3 | 1610.4 | 1552.8 | 1503.2 | 1468.9 | 1443.8 | 1424.2 | 1421.1 |
| 22.5° | 2567.8 | 2192.3 | 1820.5 | 1661.2 | 1566.9 | 1496.4 | 1444.4 | 1406.4 | 1380.7 | 1360.5 | 1353.1 |
| 25° | 2700.1 | 2249.2 | 1802.7 | 1612.8 | 1506.2 | 1430.3 | 1379.4 | 1340.9 | 1320.0 | 1296.1 | 1288.8 |
| 27.5° | 2820.7 | 2289.1 | 1767.2 | 1551.0 | 1438.2 | 1363.5 | 1315.7 | 1282.7 | 1260.0 | 1241.6 | 1235.5 |
| 30° | 2929.2 | 2310.5 | 1709.0 | 1477.4 | 1368.4 | 1300.4 | 1260.0 | 1237.3 | 1217.7 | 1194.5 | 1190.2 |
| 32.5° | 3032.1 | 2310.5 | 1634.3 | 1397.2 | 1299.2 | 1244.7 | 1220.8 | 1206.7 | 1184.7 | 1162.0 | 1155.9 |
| 35° | 3135.0 | 2296.4 | 1546.1 | 1313.3 | 1235.5 | 1204.9 | 1203.6 | 1187.1 | 1153.4 | 1122.8 | 1114.8 |
| 37.5° | 3243.4 | 2267.6 | 1446.8 | 1234.9 | 1183.4 | 1187.1 | 1197.5 | 1160.8 | 1113.0 | 1069.5 | 1057.9 |
| 40° | 3365.9 | 2227.8 | 1343.9 | 1166.9 | 1139.9 | 1179.1 | 1181.0 | 1122.8 | 1029.7 | 989.9 | 979.5 |
| 42.5° | 3509.9 | 2188.0 | 1248.4 | 1106.9 | 1105.6 | 1155.3 | 1149.7 | 1040.7 | 985.0 | 964.8 | 959.2 |
| 45° | 3699.1 | 2165.3 | 1157.7 | 1049.9 | 1078.7 | 1116.7 | 1096.4 | 995.4 | 972.1 | 960.5 | 955.6 |
| 47.5° | 3997.4 | 2177.0 | 1074.4 | 1004.6 | 1051.7 | 1078.1 | 997.2 | 977.0 | 960.5 | 946.4 | 941.5 |
| 50° | 4371.1 | 2170.2 | 1007.0 | 973.3 | 1021.1 | 1037.6 | 952.5 | 953.1 | 944.5 | 928.6 | 921.3 |
| 52.5° | 4652.2 | 2117.6 | 963.5 | 955.6 | 994.2 | 966.0 | 924.3 | 929.8 | 925.5 | 902.3 | 894.3 |
| 55° | 4923.6 | 2072.2 | 941.5 | 948.8 | 974.6 | 876.5 | 891.2 | 904.7 | 900.4 | 877.8 | 874.1 |
| 57.5° | 5261.1 | 2063.6 | 928.0 | 950.7 | 958.0 | 831.8 | 859.4 | 877.2 | 874.1 | 864.3 | 862.5 |
| 60° | 5674.6 | 2066.1 | 915.7 | 953.7 | 939.6 | 798.8 | 829.4 | 852.0 | 853.9 | 852.0 | 850.8 |
| 62.5° | 5901.8 | 1999.3 | 885.1 | 945.1 | 907.2 | 770.0 | 798.1 | 831.2 | 831.8 | 835.5 | 834.9 |
| 65° | 5708.9 | 1799.6 | 828.2 | 915.1 | 852.7 | 746.1 | 771.2 | 807.3 | 798.1 | 814.7 | 814.7 |
| 66° | 5521.4 | 1684.5 | 800.0 | 895.5 | 829.4 | 736.9 | 762.6 | 795.1 | 783.4 | 806.1 | 806.1 |
| 67.5° | 5138.6 | 1490.3 | 749.1 | 853.9 | 796.3 | 724.0 | 752.8 | 774.9 | 758.9 | 792.6 | 790.2 |
| 70° | 4439.1 | 1152.8 | 646.8 | 759.5 | 741.8 | 705.0 | 739.3 | 734.4 | 711.2 | 762.6 | 752.8 |
| 72.5° | 3742.6 | 875.9 | 519.4 | 635.8 | 659.1 | 681.1 | 720.3 | 683.0 | 653.6 | 689.7 | 668.3 |
| 75° | 2904.1 | 658.5 | 410.4 | 494.3 | 556.8 | 643.8 | 697.7 | 623.6 | 581.3 | 577.6 | 566.0 |
| 77.5° | 1569.9 | 452.1 | 325.3 | 377.3 | 442.3 | 597.2 | 682.4 | 559.9 | 496.2 | 481.5 | 472.3 |
| 80° | 621.7 | 294.0 | 236.4 | 286.1 | 309.3 | 529.8 | 645.6 | 485.7 | 409.2 | 394.5 | 380.4 |
| 82.5° | 256.7 | 174.0 | 152.5 | 191.7 | 201.5 | 453.3 | 579.5 | 398.2 | 316.1 | 437.4 | 464.3 |
| 85° | 110.3 | 95.6 | 90.7 | 99.2 | 113.9 | 317.9 | 461.2 | 303.8 | 341.2 | 304.4 | 242.0 |
| 87.5° | 33.1 | 40.4 | 38.6 | 38.0 | 41.7 | 76.0 | 245.6 | 169.1 | 250.5 | 94.9 | 71.1 |
| 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: SP1-1908-441-10-R4

Test Date: 10/25/2019

Luminaire Tested: SA1C-722-U-5WQ

Data in this report applies to families of products SA1C-722-U-5WQ.

Test Information

Test Method: LM-79-2008 Report
 Number: SP1-1908-441-10-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-722-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): | 2237 | CRI (Ra): | 72.0 | R9: | -17.4 |
| CIE u': | 0.2876 | R1: | 68.9 | R10: | 61.3 |
| CIE v': | 0.5346 | R2: | 83.0 | R11: | 59.8 |
| Duv: | -0.0006 | R3: | 95.2 | R12: | 50.5 |
| CIE x: | 0.5005 | R4: | 66.2 | R13: | 71.1 |
| CIE y: | 0.4134 | R5: | 65.9 | R14: | 96.9 |
| CIE z: | 0.0860 | R6: | 76.3 | | |
| Peak Wavelength (nm): | 603 | R7: | 76.7 | | |
| Dominant Wavelength (nm): | 587 | R8: | 43.8 | | |
| Purity: | 74.5 | | | | |
| Rf: | 69.8 | | | | |
| Rg: | 99.2 | | | | |



Test Conditions

Stabilization Time: 71M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 24.7/41%
 Sphere Temperature (°C): 25.6

REPORT NUMBER: SP1-1908-441-10-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: SP1-1908-441-10-R4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 2200K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-10-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 | 1768 | NR | 490 | 5206 | NR | 620 | 130919 | NR | 750 | 8553 | NR | 880 | 2713 | NR |
| 365 | 1569 | NR | 495 | 7286 | NR | 625 | 125335 | NR | 755 | 7696 | NR | 885 | 2316 | NR |
| 370 | 1594 | NR | 500 | 10654 | NR | 630 | 118388 | NR | 760 | 6978 | NR | 890 | 2539 | NR |
| 375 | 1744 | NR | 505 | 15189 | NR | 635 | 111855 | NR | 765 | 6377 | NR | 895 | 1933 | NR |
| 380 | 1659 | NR | 510 | 20541 | NR | 640 | 104062 | NR | 770 | 5600 | NR | 900 | 2216 | NR |
| 385 | 1504 | NR | 515 | 26492 | NR | 645 | 96365 | NR | 775 | 5000 | NR | 905 | 2067 | NR |
| 390 | 1541 | NR | 520 | 32294 | NR | 650 | 88651 | NR | 780 | 4709 | NR | 910 | 1959 | NR |
| 395 | 1355 | NR | 525 | 38123 | NR | 655 | 81152 | NR | 785 | 4305 | NR | 915 | 1874 | NR |
| 400 | 1243 | NR | 530 | 43232 | NR | 660 | 73523 | NR | 790 | 4040 | NR | 920 | 1484 | NR |
| 405 | 1417 | NR | 535 | 48012 | NR | 665 | 66123 | NR | 795 | 3642 | NR | 925 | 1914 | NR |
| 410 | 2147 | NR | 540 | 52623 | NR | 670 | 58677 | NR | 800 | 3594 | NR | 930 | 1948 | NR |
| 415 | 3837 | NR | 545 | 57516 | NR | 675 | 52349 | NR | 805 | 3190 | NR | 935 | 2079 | NR |
| 420 | 7159 | NR | 550 | 62613 | NR | 680 | 46159 | NR | 810 | 3241 | NR | 940 | 2263 | NR |
| 425 | 12599 | NR | 555 | 68554 | NR | 685 | 40525 | NR | 815 | 2732 | NR | 945 | 1688 | NR |
| 430 | 19019 | NR | 560 | 75325 | NR | 690 | 35615 | NR | 820 | 2612 | NR | 950 | 1560 | NR |
| 435 | 24875 | NR | 565 | 82533 | NR | 695 | 31158 | NR | 825 | 2966 | NR | 955 | 2826 | NR |
| 440 | 29103 | NR | 570 | 90909 | NR | 700 | 27409 | NR | 830 | 2574 | NR | 960 | 1477 | NR |
| 445 | 29901 | NR | 575 | 99621 | NR | 705 | 24204 | NR | 835 | 2633 | NR | 965 | 1568 | NR |
| 450 | 24862 | NR | 580 | 108484 | NR | 710 | 21558 | NR | 840 | 2526 | NR | 970 | 2030 | NR |
| 455 | 15942 | NR | 585 | 116679 | NR | 715 | 19222 | NR | 845 | 2631 | NR | 975 | 1986 | NR |
| 460 | 9916 | NR | 590 | 123752 | NR | 720 | 17310 | NR | 850 | 2079 | NR | 980 | 2540 | NR |
| 465 | 7051 | NR | 595 | 129324 | NR | 725 | 15280 | NR | 855 | 2309 | NR | 985 | 1139 | NR |
| 470 | 5227 | NR | 600 | 134082 | NR | 730 | 13282 | NR | 860 | 2528 | NR | 990 | 2018 | NR |
| 475 | 4257 | NR | 605 | 135698 | NR | 735 | 11753 | NR | 865 | 2121 | NR | 995 | 3445 | NR |
| 480 | 4052 | NR | 610 | 135144 | NR | 740 | 10654 | NR | 870 | 2751 | NR | 1000 | 3704 | NR |
| 485 | 4298 | NR | 615 | 134180 | NR | 745 | 9451 | NR | 875 | 2317 | NR | | | |

REPORT NUMBER: SP1-1908-441-10-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 4696.9

S/P: 0.85

| 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 | 1768 | NR | 490 | 5206 | NR | 620 | 130919 | NR | 750 | 8553 | NR | 880 | 2713 | NR |
| 365 | 1569 | NR | 495 | 7286 | NR | 625 | 125335 | NR | 755 | 7696 | NR | 885 | 2316 | NR |
| 370 | 1594 | NR | 500 | 10654 | NR | 630 | 118388 | NR | 760 | 6978 | NR | 890 | 2539 | NR |
| 375 | 1744 | NR | 505 | 15189 | NR | 635 | 111855 | NR | 765 | 6377 | NR | 895 | 1933 | NR |
| 380 | 1659 | NR | 510 | 20541 | NR | 640 | 104062 | NR | 770 | 5600 | NR | 900 | 2216 | NR |
| 385 | 1504 | NR | 515 | 26492 | NR | 645 | 96365 | NR | 775 | 5000 | NR | 905 | 2067 | NR |
| 390 | 1541 | NR | 520 | 32294 | NR | 650 | 88651 | NR | 780 | 4709 | NR | 910 | 1959 | NR |
| 395 | 1355 | NR | 525 | 38123 | NR | 655 | 81152 | NR | 785 | 4305 | NR | 915 | 1874 | NR |
| 400 | 1243 | NR | 530 | 43232 | NR | 660 | 73523 | NR | 790 | 4040 | NR | 920 | 1484 | NR |
| 405 | 1417 | NR | 535 | 48012 | NR | 665 | 66123 | NR | 795 | 3642 | NR | 925 | 1914 | NR |
| 410 | 2147 | NR | 540 | 52623 | NR | 670 | 58677 | NR | 800 | 3594 | NR | 930 | 1948 | NR |
| 415 | 3837 | NR | 545 | 57516 | NR | 675 | 52349 | NR | 805 | 3190 | NR | 935 | 2079 | NR |
| 420 | 7159 | NR | 550 | 62613 | NR | 680 | 46159 | NR | 810 | 3241 | NR | 940 | 2263 | NR |
| 425 | 12599 | NR | 555 | 68554 | NR | 685 | 40525 | NR | 815 | 2732 | NR | 945 | 1688 | NR |
| 430 | 19019 | NR | 560 | 75325 | NR | 690 | 35615 | NR | 820 | 2612 | NR | 950 | 1560 | NR |
| 435 | 24875 | NR | 565 | 82533 | NR | 695 | 31158 | NR | 825 | 2966 | NR | 955 | 2826 | NR |
| 440 | 29103 | NR | 570 | 90909 | NR | 700 | 27409 | NR | 830 | 2574 | NR | 960 | 1477 | NR |
| 445 | 29901 | NR | 575 | 99621 | NR | 705 | 24204 | NR | 835 | 2633 | NR | 965 | 1568 | NR |
| 450 | 24862 | NR | 580 | 108484 | NR | 710 | 21558 | NR | 840 | 2526 | NR | 970 | 2030 | NR |
| 455 | 15942 | NR | 585 | 116679 | NR | 715 | 19222 | NR | 845 | 2631 | NR | 975 | 1986 | NR |
| 460 | 9916 | NR | 590 | 123752 | NR | 720 | 17310 | NR | 850 | 2079 | NR | 980 | 2540 | NR |
| 465 | 7051 | NR | 595 | 129324 | NR | 725 | 15280 | NR | 855 | 2309 | NR | 985 | 1139 | NR |
| 470 | 5227 | NR | 600 | 134082 | NR | 730 | 13282 | NR | 860 | 2528 | NR | 990 | 2018 | NR |
| 475 | 4257 | NR | 605 | 135698 | NR | 735 | 11753 | NR | 865 | 2121 | NR | 995 | 3445 | NR |
| 480 | 4052 | NR | 610 | 135144 | NR | 740 | 10654 | NR | 870 | 2751 | NR | 1000 | 3704 | NR |
| 485 | 4298 | NR | 615 | 134180 | NR | 745 | 9451 | NR | 875 | 2317 | NR | | | |

REPORT NUMBER: SP1-1908-441-10-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 1470.8 M/P: 0.27

| 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 | 1768 | NR | 490 | 5206 | NR | 620 | 130919 | NR | 750 | 8553 | NR | 880 | 2713 | NR |
| 365 | 1569 | NR | 495 | 7286 | NR | 625 | 125335 | NR | 755 | 7696 | NR | 885 | 2316 | NR |
| 370 | 1594 | NR | 500 | 10654 | NR | 630 | 118388 | NR | 760 | 6978 | NR | 890 | 2539 | NR |
| 375 | 1744 | NR | 505 | 15189 | NR | 635 | 111855 | NR | 765 | 6377 | NR | 895 | 1933 | NR |
| 380 | 1659 | NR | 510 | 20541 | NR | 640 | 104062 | NR | 770 | 5600 | NR | 900 | 2216 | NR |
| 385 | 1504 | NR | 515 | 26492 | NR | 645 | 96365 | NR | 775 | 5000 | NR | 905 | 2067 | NR |
| 390 | 1541 | NR | 520 | 32294 | NR | 650 | 88651 | NR | 780 | 4709 | NR | 910 | 1959 | NR |
| 395 | 1355 | NR | 525 | 38123 | NR | 655 | 81152 | NR | 785 | 4305 | NR | 915 | 1874 | NR |
| 400 | 1243 | NR | 530 | 43232 | NR | 660 | 73523 | NR | 790 | 4040 | NR | 920 | 1484 | NR |
| 405 | 1417 | NR | 535 | 48012 | NR | 665 | 66123 | NR | 795 | 3642 | NR | 925 | 1914 | NR |
| 410 | 2147 | NR | 540 | 52623 | NR | 670 | 58677 | NR | 800 | 3594 | NR | 930 | 1948 | NR |
| 415 | 3837 | NR | 545 | 57516 | NR | 675 | 52349 | NR | 805 | 3190 | NR | 935 | 2079 | NR |
| 420 | 7159 | NR | 550 | 62613 | NR | 680 | 46159 | NR | 810 | 3241 | NR | 940 | 2263 | NR |
| 425 | 12599 | NR | 555 | 68554 | NR | 685 | 40525 | NR | 815 | 2732 | NR | 945 | 1688 | NR |
| 430 | 19019 | NR | 560 | 75325 | NR | 690 | 35615 | NR | 820 | 2612 | NR | 950 | 1560 | NR |
| 435 | 24875 | NR | 565 | 82533 | NR | 695 | 31158 | NR | 825 | 2966 | NR | 955 | 2826 | NR |
| 440 | 29103 | NR | 570 | 90909 | NR | 700 | 27409 | NR | 830 | 2574 | NR | 960 | 1477 | NR |
| 445 | 29901 | NR | 575 | 99621 | NR | 705 | 24204 | NR | 835 | 2633 | NR | 965 | 1568 | NR |
| 450 | 24862 | NR | 580 | 108484 | NR | 710 | 21558 | NR | 840 | 2526 | NR | 970 | 2030 | NR |
| 455 | 15942 | NR | 585 | 116679 | NR | 715 | 19222 | NR | 845 | 2631 | NR | 975 | 1986 | NR |
| 460 | 9916 | NR | 590 | 123752 | NR | 720 | 17310 | NR | 850 | 2079 | NR | 980 | 2540 | NR |
| 465 | 7051 | NR | 595 | 129324 | NR | 725 | 15280 | NR | 855 | 2309 | NR | 985 | 1139 | NR |
| 470 | 5227 | NR | 600 | 134082 | NR | 730 | 13282 | NR | 860 | 2528 | NR | 990 | 2018 | NR |
| 475 | 4257 | NR | 605 | 135698 | NR | 735 | 11753 | NR | 865 | 2121 | NR | 995 | 3445 | NR |
| 480 | 4052 | NR | 610 | 135144 | NR | 740 | 10654 | NR | 870 | 2751 | NR | 1000 | 3704 | NR |
| 485 | 4298 | NR | 615 | 134180 | NR | 745 | 9451 | NR | 875 | 2317 | NR | | | |

REPORT NUMBER: SP1-1908-441-10-R4

TM-30-18

Summary

$R_f = 69.8$
 $R_g = 99.2$
 $CIE R_a = 72.0$
 $R_g = -17.4$



Color Vector Graphics



REPORT NUMBER: SP1-1908-441-10-R4

TM-30-18

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

| | | | |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 56 | CES51 = 74 | CES76 = 56 |
| CES02 = 65 | CES27 = 76 | CES52 = 76 | CES77 = 81 |
| CES03 = 32 | CES28 = 83 | CES53 = 65 | CES78 = 63 |
| CES04 = 72 | CES29 = 46 | CES54 = 78 | CES79 = 84 |
| CES05 = 52 | CES30 = 48 | CES55 = 75 | CES80 = 84 |
| CES06 = 52 | CES31 = 51 | CES56 = 65 | CES81 = 63 |
| CES07 = 44 | CES32 = 51 | CES57 = 62 | CES82 = 92 |
| CES08 = 42 | CES33 = 53 | CES58 = 66 | CES83 = 83 |
| CES09 = 29 | CES34 = 70 | CES59 = 84 | CES84 = 92 |
| CES10 = 78 | CES35 = 85 | CES60 = 90 | CES85 = 81 |
| CES11 = 61 | CES36 = 78 | CES61 = 84 | CES86 = 56 |
| CES12 = 68 | CES37 = 80 | CES62 = 70 | CES87 = 78 |
| CES13 = 45 | CES38 = 53 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 84 | CES65 = 67 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 90 |
| CES17 = 51 | CES42 = 79 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 64 | CES68 = 69 | CES93 = 79 |
| CES19 = 74 | CES44 = 98 | CES69 = 80 | CES94 = 52 |
| CES20 = 68 | CES45 = 73 | CES70 = 63 | CES95 = 76 |
| CES21 = 89 | CES46 = 67 | CES71 = 63 | CES96 = 78 |
| CES22 = 81 | CES47 = 60 | CES72 = 87 | CES97 = 77 |
| CES23 = 92 | CES48 = 48 | CES73 = 56 | CES98 = 71 |
| CES24 = 92 | CES49 = 64 | CES74 = 87 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 | |



REPORT NUMBER: SP1-1908-441-10-R4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-10-R4

TM-30-18

Measure Comparisons



(END OF REPORT)