

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: P361485

Luminaire Tested: NVN-SA5C-760-U-T4FT

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2019
Report Number: P361485
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-16)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: STREETWORKS
Catalog Number: NVN-SA5C-760-U-T4FT
Description: NAVION ROADWAY AND AREA LUMINAIRE
(5) 70 CRI, 5700K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV FORWARD THROW OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 36012 lumens
Efficiency: N/A
Efficacy: 129.1 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B3 - U0 - G5

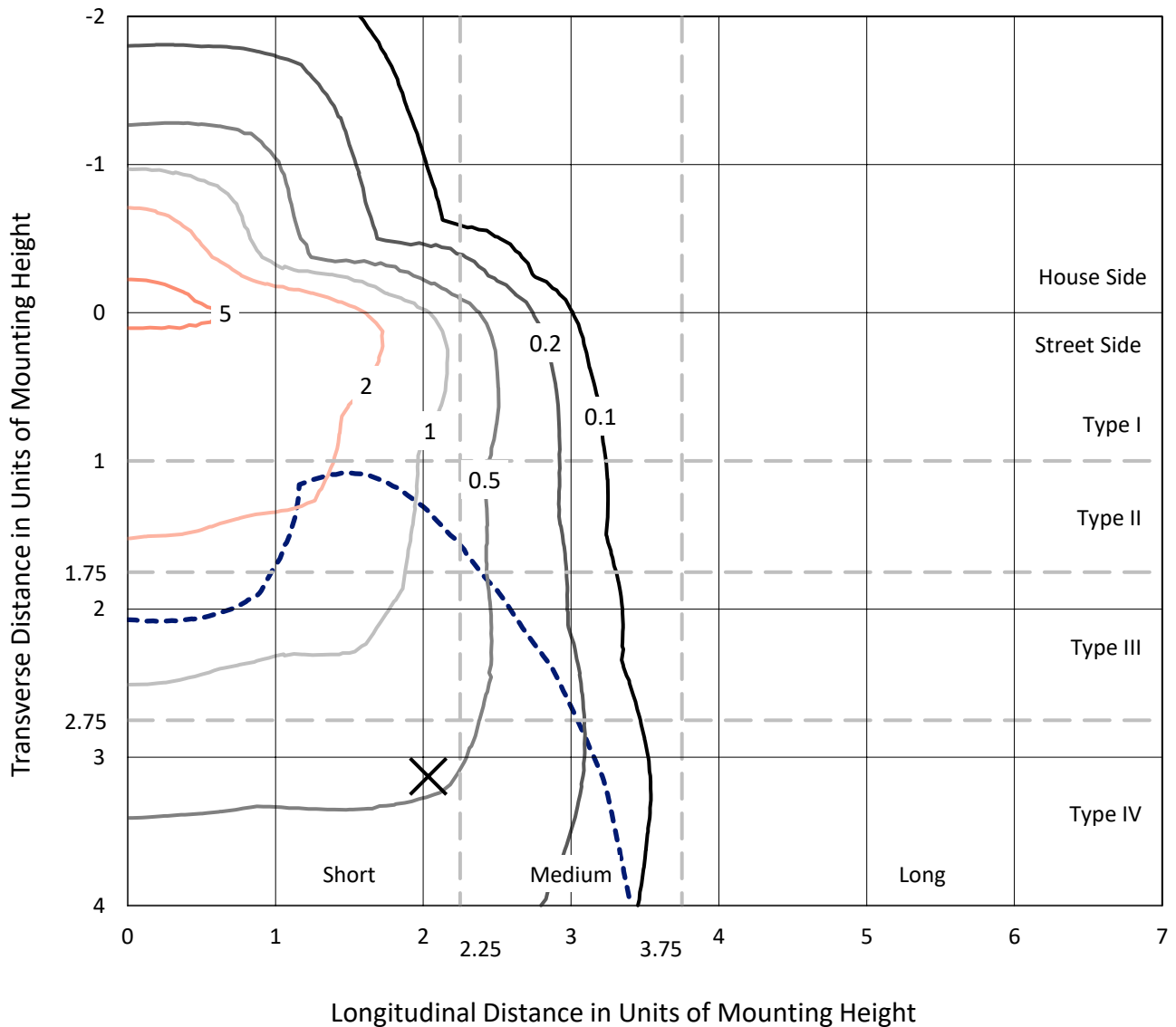
Input Watts (W): 279
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

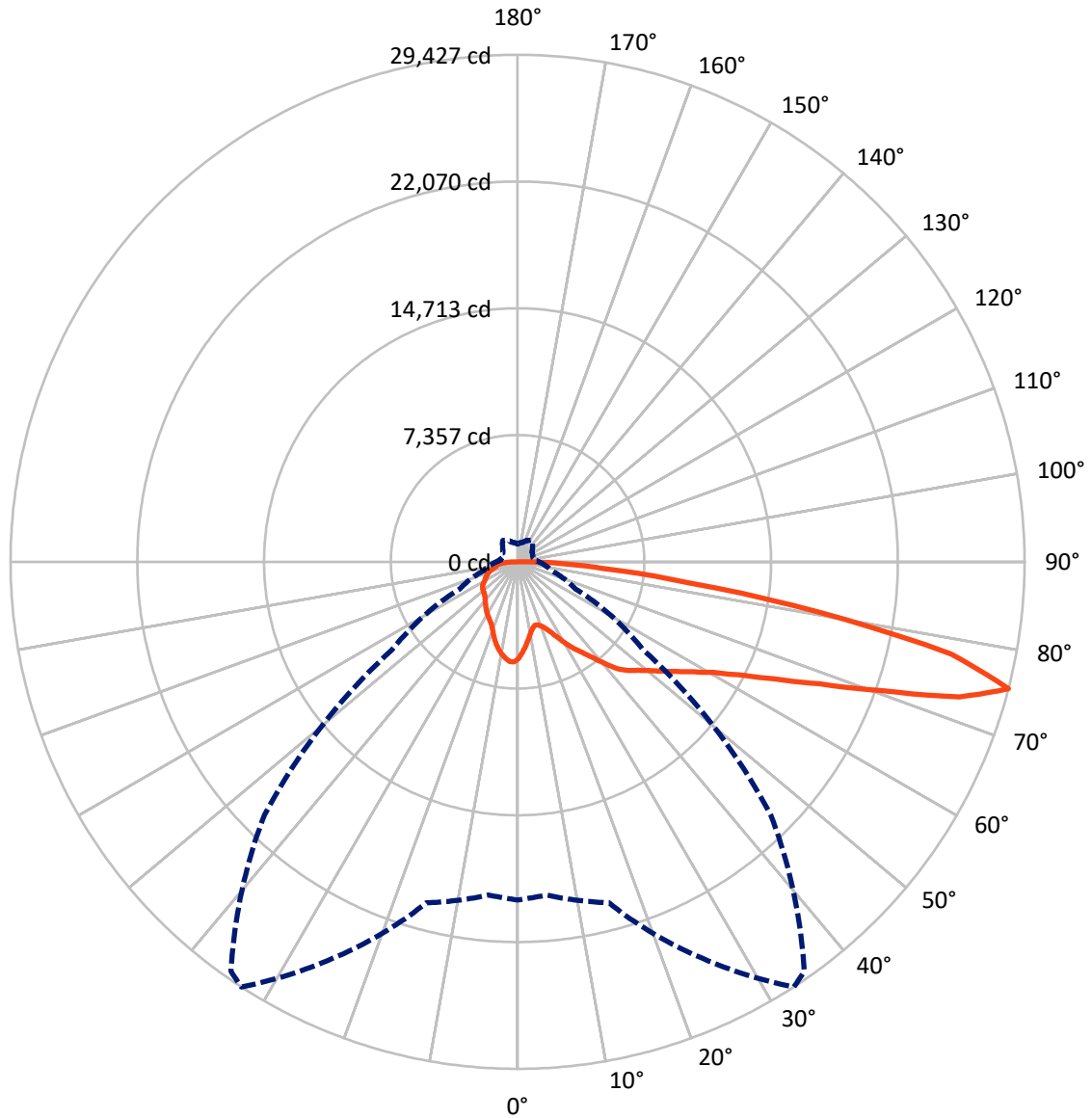
✕ Max cd
 - - - 1/2 Max cd



Based on 30 foot mounting height. Maximum calculated value = 6.3 fc
 Type IV - Short - N/A

REPORT NUMBER: P361485
CATALOG NUMBER: NVN-SA5C-760-U-T4FT

Luminous Intensity Polar Plot



— Vertical Plane Through 33-Deg Lateral - - - Horizontal Cone Through 75-Deg Vertical

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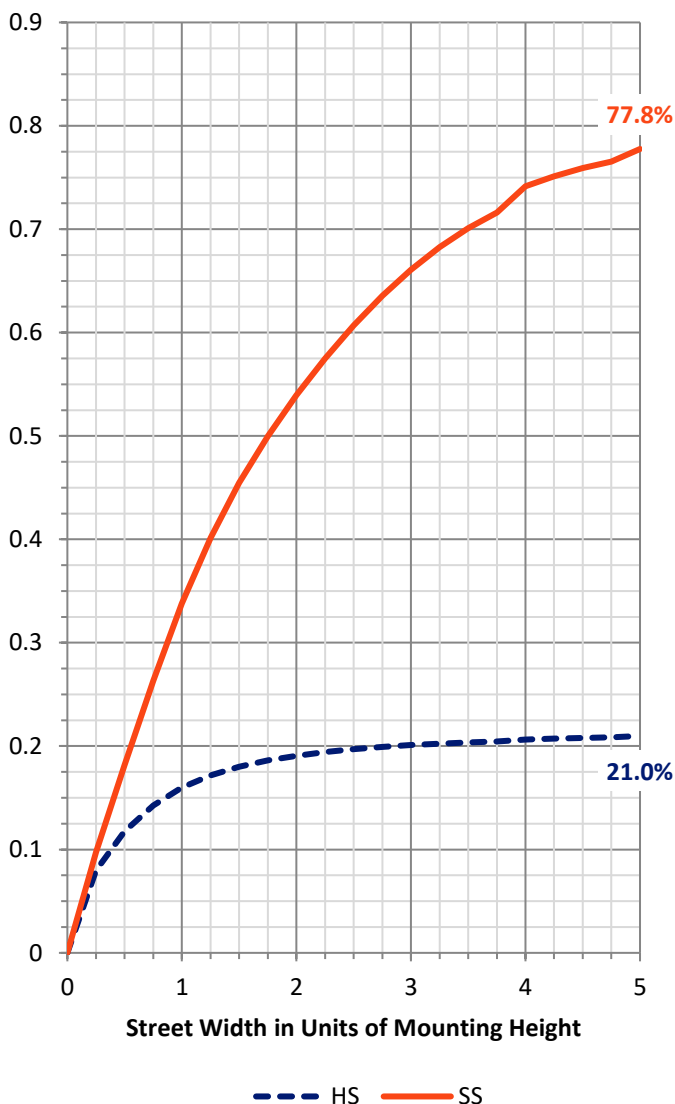
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 7732.7 | 0.0 | 7732.7 |
| | % Fixture | 21.5 | 0.0 | 21.5 |
| Street Side | Lumens | 28279.3 | 0.0 | 28279.3 |
| | % Fixture | 78.5 | 0.0 | 78.5 |
| Total | Lumens | 36012.0 | 0.0 | 36012.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 509.1 | 1.4 |
| 10°-20° | 1378.7 | 3.8 |
| 20°-30° | 2251.7 | 6.3 |
| 30°-40° | 3353.3 | 9.3 |
| 40°-50° | 4809.6 | 13.4 |
| 50°-60° | 6602.8 | 18.3 |
| 60°-70° | 8266.4 | 23.0 |
| 70°-80° | 7478.2 | 20.8 |
| 80°-90° | 1362.2 | 3.8 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 36012.0 | 100.0 |
| 0°-180° | 36012.0 | 100.0 |

Coefficient of Utilization

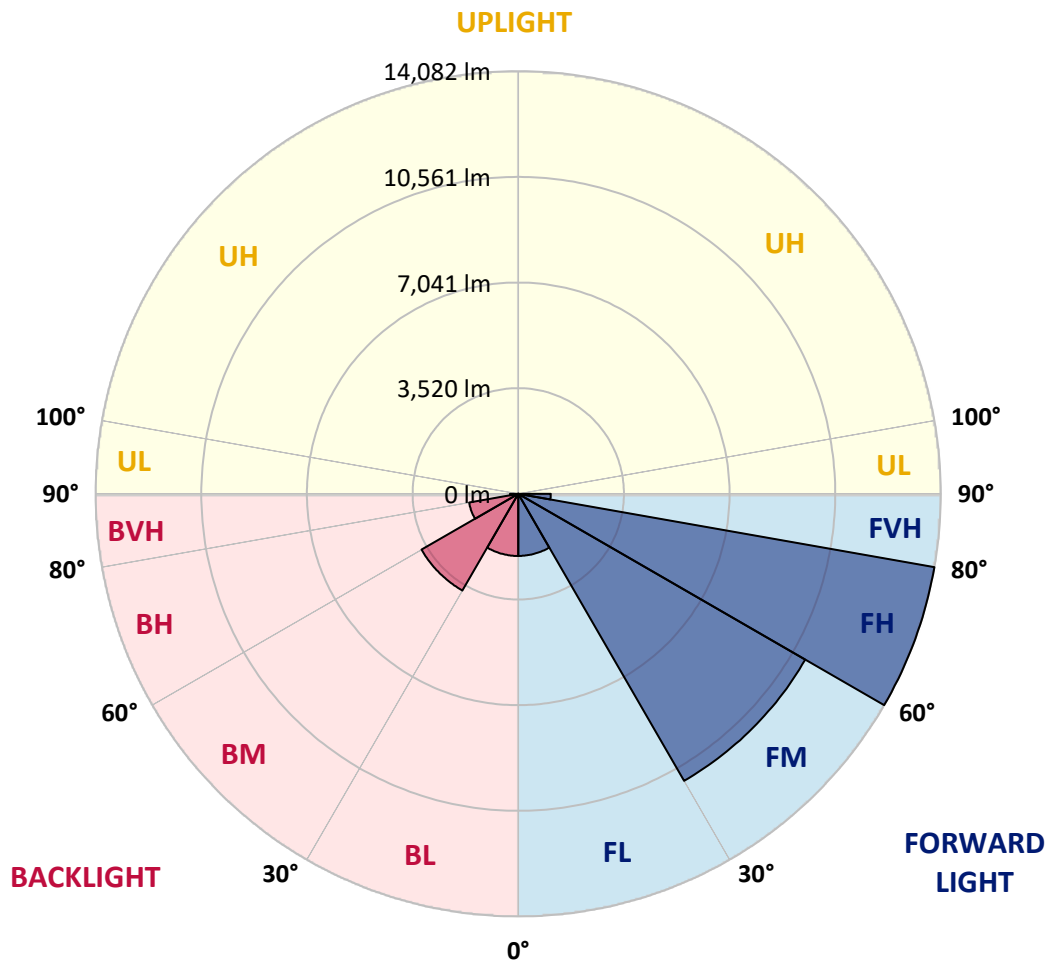


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|---------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 2068.3 | 5.7 | | | |
| FM (30°-60°) | 11044.1 | 30.7 | | | |
| FH (60°-80°) | 14081.9 | 39.1 | | | G5 |
| FVH (80°-90°) | 1084.9 | 3.0 | | | G5 |
| BL (0°-30°) | 2071.2 | 5.8 | B3/2500 | | |
| BM (30°-60°) | 3721.5 | 10.3 | B3/5000 | | |
| BH (60°-80°) | 1662.7 | 4.6 | B3/2500 | | G3/2500 |
| BVH (80°-90°) | 277.3 | 0.8 | | | G3/500 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G5
 Type IV Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 33° | 35° | 45° | 55° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 |
| 2.5° | 5227.1 | 5207.2 | 5244.5 | 5249.5 | 5281.8 | 5294.3 | 5339.0 | 5408.7 | 5465.9 | 5531.8 | 5591.6 |
| 5° | 4753.1 | 4739.5 | 4791.7 | 4829.0 | 4899.9 | 4929.8 | 5035.5 | 5183.5 | 5315.4 | 5464.7 | 5600.3 |
| 7.5° | 4302.8 | 4295.4 | 4353.8 | 4438.4 | 4520.5 | 4561.6 | 4744.4 | 4959.6 | 5179.8 | 5421.1 | 5628.9 |
| 10° | 3923.4 | 3920.9 | 3976.9 | 4060.3 | 4180.9 | 4226.9 | 4463.3 | 4746.9 | 5055.4 | 5387.6 | 5677.4 |
| 12.5° | 3710.7 | 3719.4 | 3745.5 | 3815.2 | 3927.2 | 3973.2 | 4235.7 | 4569.0 | 4950.9 | 5376.4 | 5748.3 |
| 15° | 3763.0 | 3776.6 | 3731.9 | 3729.4 | 3809.0 | 3845.1 | 4091.4 | 4442.1 | 4876.3 | 5395.0 | 5851.5 |
| 17.5° | 3985.6 | 3988.1 | 3869.9 | 3795.3 | 3843.8 | 3862.5 | 4046.6 | 4370.0 | 4832.7 | 5437.3 | 5980.9 |
| 20° | 4299.1 | 4292.9 | 4083.9 | 3959.5 | 3985.6 | 3990.6 | 4110.0 | 4371.2 | 4829.0 | 5510.7 | 6148.8 |
| 22.5° | 4714.6 | 4668.5 | 4387.4 | 4218.2 | 4212.0 | 4204.6 | 4273.0 | 4463.3 | 4883.8 | 5630.1 | 6349.1 |
| 25° | 5256.9 | 5213.4 | 4826.5 | 4595.2 | 4545.4 | 4526.7 | 4536.7 | 4659.8 | 4992.0 | 5758.2 | 6573.0 |
| 27.5° | 5860.3 | 5784.4 | 5411.2 | 5084.0 | 4980.8 | 4954.7 | 4894.9 | 4937.2 | 5110.2 | 5881.4 | 6839.2 |
| 30° | 6365.3 | 6324.2 | 5998.3 | 5610.2 | 5488.3 | 5451.0 | 5294.3 | 5248.2 | 5280.6 | 6049.3 | 7175.1 |
| 32.5° | 6647.7 | 6620.3 | 6422.5 | 6109.0 | 5995.8 | 5943.6 | 5722.2 | 5630.1 | 5554.2 | 6314.3 | 7630.4 |
| 35° | 6989.8 | 6972.3 | 6852.9 | 6625.3 | 6457.3 | 6402.6 | 6230.9 | 6135.2 | 5939.9 | 6678.8 | 8218.8 |
| 37.5° | 7425.1 | 7406.5 | 7409.0 | 7224.9 | 7024.6 | 6973.6 | 6860.4 | 6759.6 | 6439.9 | 7157.7 | 8858.2 |
| 40° | 7917.7 | 7881.7 | 7868.0 | 7859.3 | 7732.4 | 7703.8 | 7644.1 | 7507.2 | 7066.9 | 7729.9 | 9488.9 |
| 42.5° | 8659.1 | 8531.0 | 8257.3 | 8360.6 | 8486.2 | 8471.3 | 8519.8 | 8323.3 | 7763.5 | 8406.6 | 10104.6 |
| 45° | 9374.4 | 9164.2 | 8691.5 | 8713.9 | 8988.8 | 9072.1 | 9435.4 | 9296.0 | 8518.6 | 9148.0 | 10741.5 |
| 47.5° | 9700.3 | 9541.1 | 9139.3 | 9140.6 | 9413.0 | 9585.9 | 10382.0 | 10282.5 | 9312.2 | 9990.2 | 11519.0 |
| 50° | 10064.8 | 9905.6 | 9544.8 | 9680.4 | 9918.0 | 10102.1 | 11296.3 | 11245.3 | 10067.3 | 10911.9 | 12450.7 |
| 52.5° | 10462.9 | 10192.9 | 9964.0 | 10206.6 | 10540.0 | 10754.0 | 12211.9 | 12072.5 | 10760.2 | 11839.9 | 13521.7 |
| 55° | 10467.8 | 10394.5 | 10568.6 | 10746.5 | 11245.3 | 11507.8 | 13171.0 | 12802.7 | 11324.9 | 12751.7 | 14393.8 |
| 57.5° | 11063.7 | 10944.3 | 11313.7 | 11395.8 | 12047.7 | 12343.7 | 14125.1 | 13438.4 | 11899.6 | 13450.8 | 14864.0 |
| 60° | 11852.4 | 11750.4 | 12052.6 | 12269.1 | 13040.3 | 13435.9 | 15143.9 | 14091.5 | 12351.2 | 13978.3 | 14841.6 |
| 62.5° | 13214.5 | 13098.8 | 13095.1 | 13398.6 | 14437.3 | 14897.6 | 16287.0 | 14732.1 | 12530.3 | 14082.8 | 14208.4 |
| 65° | 15208.5 | 15024.4 | 14677.4 | 14821.7 | 16366.7 | 16825.7 | 17564.6 | 15196.1 | 12294.0 | 13523.0 | 12577.6 |
| 67.5° | 17149.1 | 17142.9 | 16716.2 | 17012.3 | 18914.3 | 19282.5 | 19020.0 | 15242.1 | 11556.3 | 11573.7 | 9684.2 |
| 70° | 19083.4 | 19108.3 | 19036.2 | 20066.2 | 22356.3 | 22739.4 | 20570.0 | 14623.9 | 9898.1 | 8358.1 | 5801.8 |
| 72.5° | 20616.0 | 20609.8 | 20973.0 | 23628.8 | 26823.3 | 26737.5 | 21876.1 | 12750.5 | 7106.7 | 4511.8 | 2772.8 |
| 75° | 19623.3 | 19406.9 | 20489.1 | 25392.8 | 29426.9 | 29007.7 | 20765.3 | 8894.2 | 3688.3 | 2053.8 | 1492.7 |
| 77.5° | 12799.0 | 13004.3 | 14592.8 | 20976.7 | 25739.8 | 25229.8 | 15234.7 | 4149.8 | 1737.8 | 1347.2 | 1082.2 |
| 80° | 4635.0 | 4851.4 | 6833.0 | 11882.2 | 17733.8 | 17650.4 | 7502.3 | 1705.5 | 1175.5 | 1017.6 | 788.7 |
| 82.5° | 1594.7 | 1674.4 | 2695.6 | 5276.8 | 10012.6 | 10385.7 | 2822.5 | 969.0 | 854.6 | 721.5 | 539.9 |
| 85° | 625.7 | 716.5 | 1232.8 | 2538.9 | 5050.4 | 5087.8 | 1143.2 | 579.7 | 594.6 | 472.7 | 296.1 |
| 87.5° | 237.6 | 288.6 | 589.6 | 1179.3 | 2306.3 | 2118.4 | 409.3 | 276.2 | 338.4 | 281.1 | 140.6 |
| 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: P361485
 CATALOG NUMBER: NVN-SA5C-760-U-T4FT

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 | 5628.9 |
| 2.5° | 5637.6 | 5663.7 | 5718.4 | 5755.8 | 5795.6 | 5806.8 | 5811.7 | 5821.7 | 5831.6 | 5827.9 | 5829.2 |
| 5° | 5672.4 | 5723.4 | 5811.7 | 5849.1 | 5866.5 | 5846.6 | 5808.0 | 5776.9 | 5754.5 | 5742.1 | 5738.3 |
| 7.5° | 5729.6 | 5801.8 | 5896.3 | 5890.1 | 5850.3 | 5762.0 | 5662.5 | 5587.8 | 5525.6 | 5503.2 | 5490.8 |
| 10° | 5805.5 | 5890.1 | 5956.0 | 5885.1 | 5769.4 | 5616.4 | 5467.2 | 5351.5 | 5258.2 | 5222.1 | 5215.9 |
| 12.5° | 5902.5 | 5988.4 | 6000.8 | 5850.3 | 5658.7 | 5449.7 | 5247.0 | 5094.0 | 4954.7 | 4909.9 | 4899.9 |
| 15° | 6028.2 | 6109.0 | 6031.9 | 5789.3 | 5521.9 | 5240.8 | 4978.3 | 4770.6 | 4623.8 | 4569.0 | 4549.1 |
| 17.5° | 6160.0 | 6237.2 | 6038.1 | 5688.6 | 5342.8 | 4993.2 | 4663.6 | 4450.9 | 4282.9 | 4219.5 | 4212.0 |
| 20° | 6318.0 | 6352.9 | 6012.0 | 5544.3 | 5096.5 | 4672.3 | 4325.2 | 4124.9 | 4035.4 | 3990.6 | 3985.6 |
| 22.5° | 6513.3 | 6476.0 | 5952.3 | 5349.0 | 4784.2 | 4301.6 | 4019.2 | 3925.9 | 3903.5 | 3893.6 | 3897.3 |
| 25° | 6719.8 | 6605.4 | 5864.0 | 5094.0 | 4389.9 | 3930.9 | 3795.3 | 3821.4 | 3851.3 | 3847.5 | 3847.5 |
| 27.5° | 6947.5 | 6737.2 | 5728.4 | 4755.6 | 3953.3 | 3627.4 | 3643.5 | 3739.3 | 3784.1 | 3782.9 | 3781.6 |
| 30° | 7239.8 | 6886.5 | 5555.5 | 4348.9 | 3545.3 | 3413.4 | 3511.7 | 3628.6 | 3689.6 | 3687.1 | 3688.3 |
| 32.5° | 7599.3 | 7050.7 | 5320.4 | 3894.8 | 3250.4 | 3255.4 | 3368.6 | 3484.3 | 3555.2 | 3549.0 | 3550.2 |
| 35° | 8019.8 | 7234.8 | 5001.9 | 3447.0 | 3055.1 | 3129.8 | 3219.3 | 3300.2 | 3367.4 | 3358.7 | 3350.0 |
| 37.5° | 8477.5 | 7415.2 | 4579.0 | 3046.4 | 2895.9 | 3012.8 | 3087.5 | 3101.2 | 3132.3 | 3109.9 | 3093.7 |
| 40° | 8912.9 | 7553.3 | 4034.1 | 2718.0 | 2735.4 | 2913.3 | 2961.8 | 2907.1 | 2851.1 | 2843.7 | 2821.3 |
| 42.5° | 9292.3 | 7599.3 | 3483.1 | 2455.6 | 2566.3 | 2808.8 | 2838.7 | 2724.3 | 2623.5 | 2576.2 | 2556.3 |
| 45° | 9692.9 | 7615.5 | 2969.3 | 2235.4 | 2403.3 | 2715.5 | 2747.9 | 2594.9 | 2453.1 | 2351.1 | 2317.5 |
| 47.5° | 10216.6 | 7732.4 | 2570.0 | 2072.4 | 2278.9 | 2653.3 | 2699.4 | 2491.6 | 2307.5 | 2162.0 | 2130.9 |
| 50° | 10902.0 | 7963.8 | 2245.3 | 1948.0 | 2198.1 | 2612.3 | 2664.5 | 2390.9 | 2188.1 | 2012.7 | 1981.6 |
| 52.5° | 11663.3 | 8176.5 | 1982.9 | 1847.3 | 2119.7 | 2540.1 | 2619.8 | 2318.7 | 2076.2 | 1874.6 | 1841.0 |
| 55° | 12195.7 | 8013.5 | 1771.4 | 1742.8 | 2017.7 | 2436.9 | 2557.6 | 2257.8 | 1915.7 | 1740.3 | 1710.4 |
| 57.5° | 12297.7 | 7456.2 | 1610.9 | 1634.6 | 1894.5 | 2307.5 | 2461.8 | 2122.2 | 1828.6 | 1681.8 | 1650.7 |
| 60° | 12019.1 | 6680.0 | 1491.5 | 1535.0 | 1762.7 | 2144.6 | 2282.6 | 2026.4 | 1745.3 | 1619.6 | 1593.5 |
| 62.5° | 11318.7 | 5885.1 | 1403.2 | 1445.5 | 1639.5 | 1979.1 | 2170.7 | 1925.6 | 1660.7 | 1548.7 | 1522.6 |
| 65° | 9904.3 | 4941.0 | 1318.6 | 1365.9 | 1525.1 | 1836.1 | 2069.9 | 1832.3 | 1577.3 | 1491.5 | 1466.6 |
| 67.5° | 7476.1 | 3700.8 | 1239.0 | 1281.3 | 1423.1 | 1711.7 | 1960.5 | 1740.3 | 1496.5 | 1441.7 | 1411.9 |
| 70° | 4402.3 | 2317.5 | 1148.2 | 1192.9 | 1316.1 | 1582.3 | 1843.5 | 1639.5 | 1395.7 | 1370.8 | 1332.3 |
| 72.5° | 2048.8 | 1394.5 | 1044.9 | 1088.5 | 1181.8 | 1409.4 | 1693.0 | 1507.7 | 1276.3 | 1221.6 | 1169.3 |
| 75° | 1222.8 | 1020.0 | 923.0 | 961.6 | 1027.5 | 1225.3 | 1503.9 | 1373.3 | 1163.1 | 1090.9 | 1036.2 |
| 77.5° | 914.3 | 780.0 | 788.7 | 829.7 | 883.2 | 1072.3 | 1332.3 | 1267.6 | 1076.0 | 1020.0 | 982.7 |
| 80° | 658.0 | 592.1 | 643.1 | 687.9 | 743.9 | 975.3 | 1276.3 | 1171.8 | 972.8 | 898.1 | 863.3 |
| 82.5° | 439.1 | 425.4 | 483.9 | 529.9 | 584.7 | 853.4 | 1199.2 | 1026.3 | 831.0 | 736.4 | 659.3 |
| 85° | 242.6 | 256.3 | 325.9 | 345.8 | 393.1 | 600.8 | 982.7 | 824.7 | 625.7 | 503.8 | 481.4 |
| 87.5° | 100.8 | 118.2 | 175.4 | 169.2 | 209.0 | 358.3 | 646.9 | 497.6 | 398.1 | 297.3 | 231.4 |
| 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

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| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/28/2019 | 12/28/2019 |
| Power Meter | IN0071 | 12/5/2018 | 12/5/2019 |
| AC Power Source | IN0063 | 12/5/2018 | 12/5/2019 |
| DC Power Source | IN0208 | 12/5/2018 | 12/5/2019 |
| Sphere Thermometer | IN0085 | 12/5/2018 | 12/5/2019 |
| Room Thermometer | IN0046 | 12/5/2018 | 12/5/2019 |

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CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5700K 4-step quadrangle

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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 | 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 | | | |

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Summary

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



Color Vector Graphics



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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 | |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)