

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: P361023

Luminaire Tested: NVN-SA5B-750-U-T3R

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2019
Report Number: P361023
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-10)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: STREETWORKS
Catalog Number: NVN-SA5B-750-U-T3R
Description: NAVION ROADWAY AND AREA LUMINAIRE
(5) 70 CRI, 5000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III
ROADWAY OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 29363 lumens
Efficiency: N/A
Efficacy: 139.8 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')
IES Classification: Type IV - Medium
BUG Rating: B3 - U0 - G4

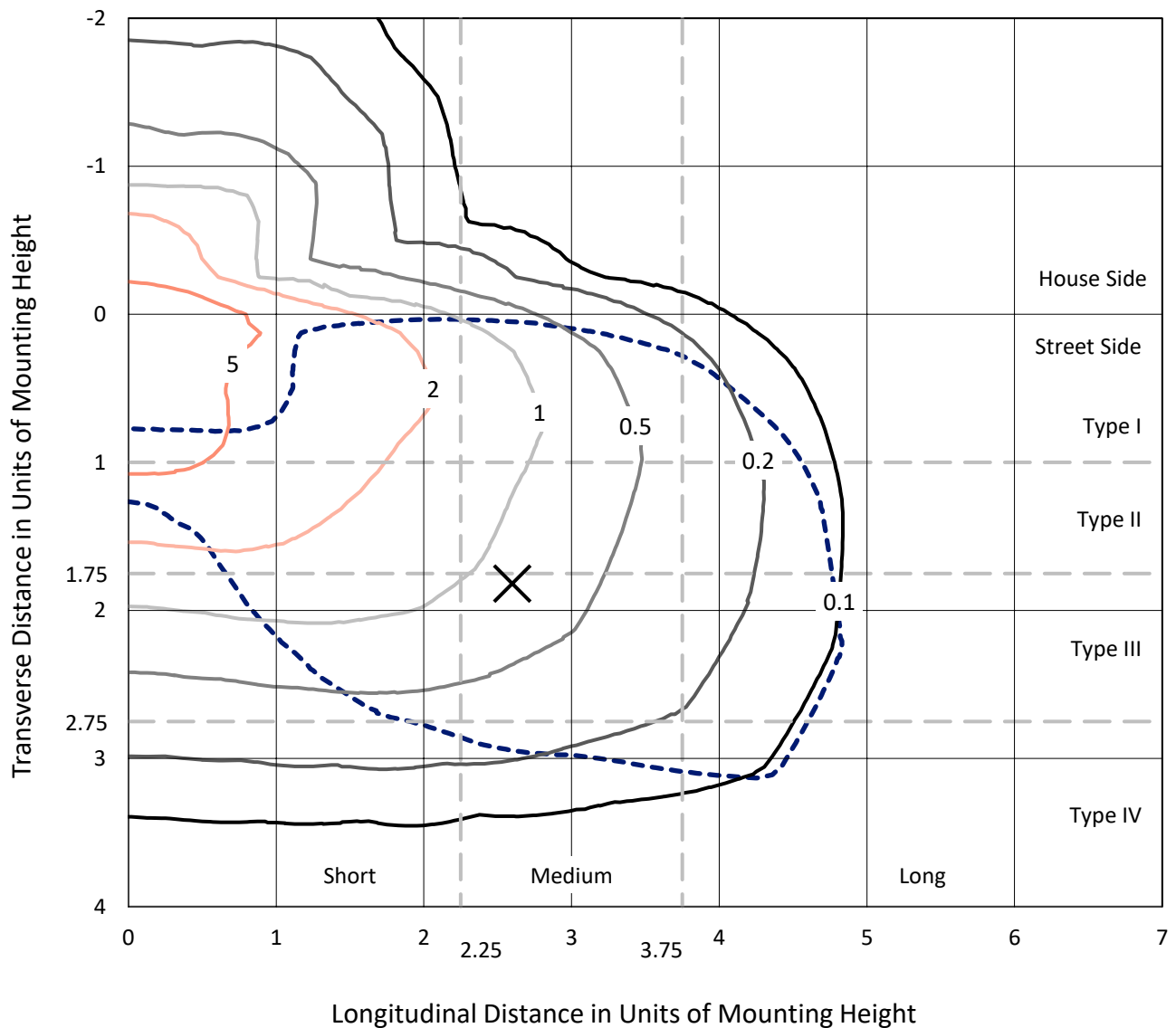
Input Watts (W): 210
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

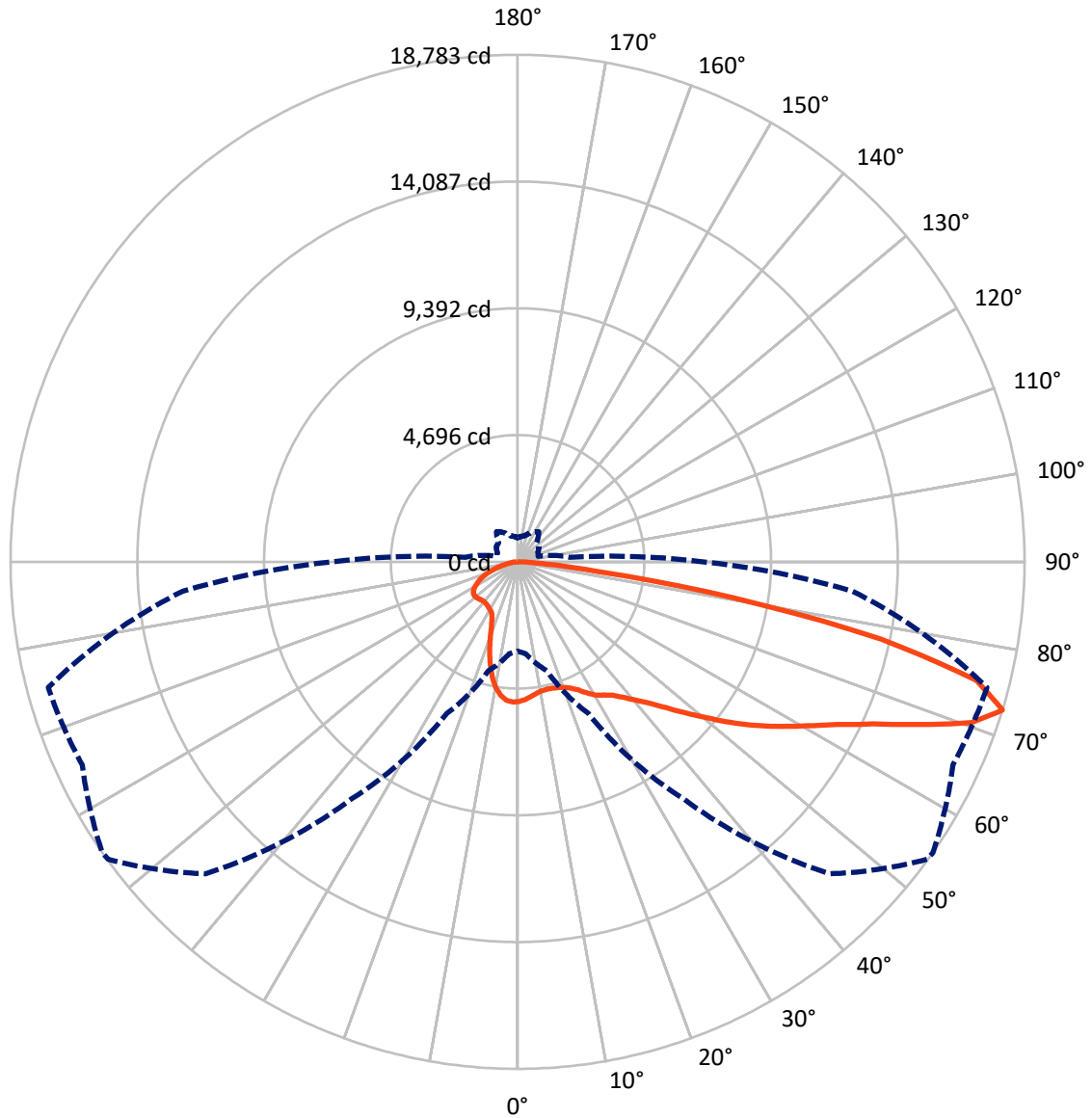
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 8.3 fc
 Type IV - Medium - N/A

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CATALOG NUMBER: NVN-SA5B-750-U-T3R

Luminous Intensity Polar Plot



— Vertical Plane Through 55-Deg Lateral - - - Horizontal Cone Through 72.5-Deg Vertical

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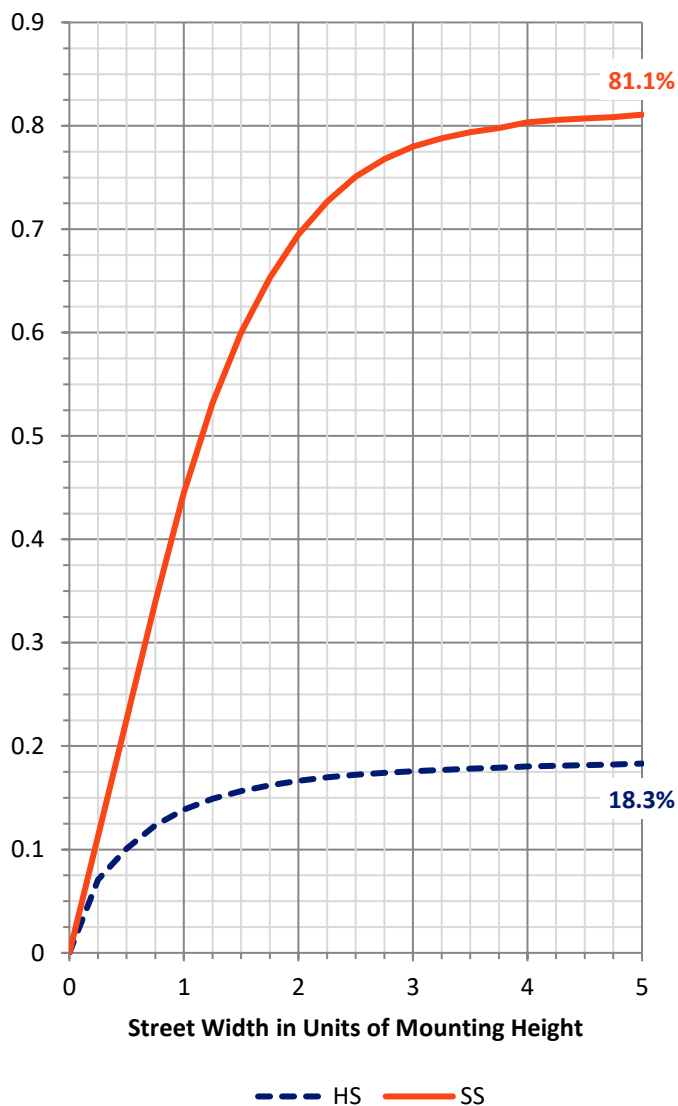
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 5457.6 | 0.0 | 5457.6 |
| | % Fixture | 18.6 | 0.0 | 18.6 |
| Street Side | Lumens | 23905.4 | 0.0 | 23905.4 |
| | % Fixture | 81.4 | 0.0 | 81.4 |
| Total | Lumens | 29363.0 | 0.0 | 29363.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 468.6 | 1.6 |
| 10°-20° | 1247.7 | 4.2 |
| 20°-30° | 2057.1 | 7.0 |
| 30°-40° | 3043.0 | 10.4 |
| 40°-50° | 4247.4 | 14.5 |
| 50°-60° | 5530.3 | 18.8 |
| 60°-70° | 6796.5 | 23.1 |
| 70°-80° | 5327.6 | 18.1 |
| 80°-90° | 644.7 | 2.2 |
| 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° | 29363.0 | 100.0 |
| 0°-180° | 29363.0 | 100.0 |

Coefficient of Utilization

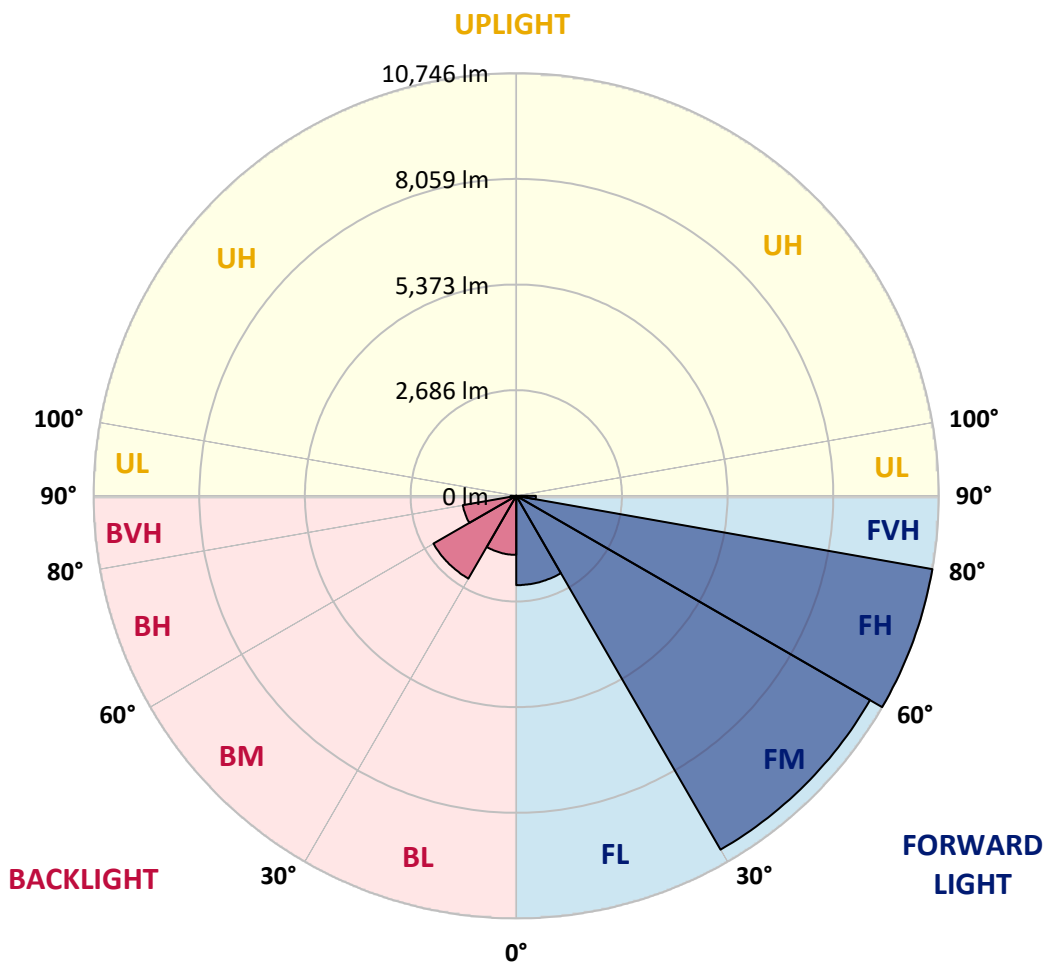


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|---------|-----------|-------------------------|------|----------|
| | | | B | U | G |
| FL (0°-30°) | 2271.8 | 7.7 | | | |
| FM (30°-60°) | 10389.2 | 35.4 | | | |
| FH (60°-80°) | 10745.9 | 36.6 | | | G4/12000 |
| FVH (80°-90°) | 498.5 | 1.7 | | | G3/500 |
| BL (0°-30°) | 1501.6 | 5.1 | B3/2500 | | |
| BM (30°-60°) | 2431.5 | 8.3 | B2/2500 | | |
| BH (60°-80°) | 1378.3 | 4.7 | B3/2500 | | G3/2500 |
| BVH (80°-90°) | 146.3 | 0.5 | | | G2/225 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G4
 Type IV Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 54° | 55° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 |
| 2.5° | 5010.4 | 4998.5 | 5013.4 | 5034.2 | 5057.0 | 5087.8 | 5105.6 | 5113.5 | 5144.3 | 5156.2 | 5182.0 |
| 5° | 4778.3 | 4772.4 | 4797.2 | 4832.9 | 4883.5 | 4954.9 | 5012.4 | 5023.3 | 5104.6 | 5162.1 | 5214.7 |
| 7.5° | 4609.7 | 4609.7 | 4638.5 | 4681.1 | 4737.7 | 4833.9 | 4915.2 | 4930.1 | 5067.9 | 5191.9 | 5289.1 |
| 10° | 4475.8 | 4480.8 | 4514.5 | 4565.1 | 4631.5 | 4733.7 | 4841.8 | 4858.7 | 5058.0 | 5261.3 | 5416.0 |
| 12.5° | 4386.6 | 4398.5 | 4429.2 | 4474.8 | 4557.2 | 4681.1 | 4818.0 | 4840.8 | 5078.8 | 5360.5 | 5568.8 |
| 15° | 4443.1 | 4462.9 | 4465.9 | 4484.8 | 4530.4 | 4665.3 | 4831.9 | 4855.7 | 5123.5 | 5461.7 | 5742.3 |
| 17.5° | 4691.1 | 4698.0 | 4667.3 | 4627.6 | 4605.8 | 4692.0 | 4873.5 | 4898.3 | 5177.0 | 5561.8 | 5908.9 |
| 20° | 5067.9 | 5064.0 | 4997.5 | 4890.4 | 4779.3 | 4793.2 | 4942.0 | 4967.8 | 5249.4 | 5650.1 | 6075.6 |
| 22.5° | 5544.0 | 5530.1 | 5427.9 | 5230.6 | 5041.1 | 4961.8 | 5062.0 | 5083.8 | 5358.5 | 5776.0 | 6254.1 |
| 25° | 6121.2 | 6090.4 | 5955.6 | 5690.8 | 5412.1 | 5207.8 | 5242.5 | 5263.3 | 5517.2 | 5916.9 | 6417.7 |
| 27.5° | 6730.1 | 6699.4 | 6527.8 | 6207.5 | 5836.5 | 5518.2 | 5491.4 | 5509.3 | 5697.7 | 6021.0 | 6538.7 |
| 30° | 7366.8 | 7334.1 | 7177.4 | 6818.4 | 6286.8 | 5839.5 | 5723.5 | 5730.4 | 5824.6 | 6077.5 | 6637.9 |
| 32.5° | 8006.5 | 7975.8 | 7800.2 | 7383.7 | 6775.7 | 6184.7 | 5891.1 | 5882.2 | 5901.0 | 6136.1 | 6750.0 |
| 35° | 8655.1 | 8667.0 | 8461.7 | 8000.6 | 7317.2 | 6568.5 | 6089.4 | 6070.6 | 6028.9 | 6256.1 | 6908.6 |
| 37.5° | 9349.4 | 9341.4 | 9075.6 | 8593.7 | 7883.5 | 6985.0 | 6374.1 | 6371.1 | 6227.3 | 6483.2 | 7157.6 |
| 40° | 9813.5 | 9818.5 | 9656.8 | 9200.6 | 8455.8 | 7446.2 | 6739.0 | 6732.1 | 6543.7 | 6823.3 | 7483.9 |
| 42.5° | 9995.0 | 10027.7 | 10069.4 | 9779.8 | 9054.8 | 7980.7 | 7174.4 | 7164.5 | 6985.0 | 7311.3 | 7867.7 |
| 45° | 10007.9 | 10073.4 | 10331.2 | 10294.5 | 9661.8 | 8592.7 | 7730.8 | 7703.0 | 7574.1 | 7959.9 | 8325.9 |
| 47.5° | 9896.8 | 9964.3 | 10392.7 | 10601.0 | 10204.3 | 9238.3 | 8381.4 | 8359.6 | 8248.5 | 8771.2 | 8821.8 |
| 50° | 9653.8 | 9718.3 | 10265.8 | 10750.7 | 10650.6 | 9859.1 | 9131.2 | 9073.7 | 9014.2 | 9708.4 | 9389.0 |
| 52.5° | 9198.6 | 9322.6 | 10096.2 | 10786.4 | 10917.4 | 10410.6 | 9919.6 | 9882.0 | 9914.7 | 10697.2 | 9957.3 |
| 55° | 8120.6 | 8259.4 | 9658.8 | 10756.7 | 11114.7 | 10873.7 | 10708.1 | 10706.1 | 10875.7 | 11734.6 | 10567.3 |
| 57.5° | 7516.6 | 7614.8 | 8768.2 | 10706.1 | 11348.8 | 11333.9 | 11488.6 | 11507.5 | 11837.7 | 12864.2 | 11206.0 |
| 60° | 7175.4 | 7278.6 | 8316.9 | 10518.7 | 11711.8 | 11929.0 | 12285.0 | 12322.7 | 12815.6 | 14114.8 | 11974.6 |
| 62.5° | 6865.0 | 6978.1 | 8037.3 | 10136.8 | 12139.2 | 12779.9 | 13239.1 | 13272.8 | 13851.0 | 15400.1 | 12717.4 |
| 65° | 6334.4 | 6462.3 | 7627.7 | 9885.9 | 12528.0 | 13889.7 | 14452.0 | 14474.8 | 15040.1 | 16747.0 | 13285.7 |
| 67.5° | 5584.6 | 5701.7 | 6855.1 | 9331.5 | 12815.6 | 15237.5 | 16064.6 | 16077.5 | 16219.3 | 17698.1 | 13576.3 |
| 70° | 4708.9 | 4753.5 | 5754.2 | 8187.0 | 12475.4 | 16498.0 | 17832.0 | 17834.9 | 17294.4 | 18307.0 | 13528.7 |
| 72.5° | 3308.5 | 3413.7 | 4177.3 | 6197.5 | 10721.0 | 16344.3 | 18749.3 | 18783.1 | 17794.3 | 17999.6 | 12447.7 |
| 75° | 2029.2 | 2140.2 | 2620.2 | 3755.8 | 6801.5 | 12854.3 | 17323.2 | 17557.2 | 16857.0 | 16048.8 | 10168.6 |
| 77.5° | 1356.7 | 1398.4 | 1709.8 | 2189.8 | 3081.4 | 7395.6 | 13318.4 | 13758.8 | 14003.7 | 11703.8 | 6503.0 |
| 80° | 756.7 | 836.1 | 1133.6 | 1360.7 | 1370.6 | 2938.6 | 7985.7 | 8088.8 | 7791.3 | 4660.3 | 2006.3 |
| 82.5° | 400.7 | 444.3 | 756.7 | 799.4 | 747.8 | 983.8 | 2976.3 | 2979.3 | 2489.3 | 1249.6 | 596.1 |
| 85° | 310.4 | 347.1 | 518.7 | 487.9 | 381.8 | 436.4 | 981.8 | 1035.4 | 847.0 | 511.8 | 194.4 |
| 87.5° | 154.7 | 192.4 | 352.1 | 309.4 | 149.8 | 125.0 | 351.1 | 374.9 | 334.2 | 200.3 | 70.4 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



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 CATALOG NUMBER: NVN-SA5B-750-U-T3R

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 | 5179.0 |
| 2.5° | 5191.9 | 5200.8 | 5211.7 | 5199.8 | 5195.9 | 5180.0 | 5153.2 | 5147.3 | 5133.4 | 5134.4 | 5142.3 |
| 5° | 5237.5 | 5252.4 | 5246.4 | 5200.8 | 5146.3 | 5069.9 | 4990.6 | 4923.1 | 4878.5 | 4875.5 | 4872.5 |
| 7.5° | 5324.8 | 5334.7 | 5288.1 | 5158.2 | 5005.4 | 4828.9 | 4662.3 | 4516.5 | 4428.2 | 4406.4 | 4401.5 |
| 10° | 5461.7 | 5459.7 | 5331.7 | 5069.9 | 4765.4 | 4450.1 | 4182.3 | 3980.0 | 3861.9 | 3827.2 | 3818.3 |
| 12.5° | 5614.4 | 5591.6 | 5346.6 | 4909.2 | 4426.3 | 3988.9 | 3649.7 | 3424.6 | 3301.6 | 3261.9 | 3252.0 |
| 15° | 5772.1 | 5715.5 | 5309.9 | 4669.2 | 4009.7 | 3492.0 | 3136.0 | 2927.7 | 2861.2 | 2839.4 | 2835.5 |
| 17.5° | 5918.9 | 5809.8 | 5204.8 | 4343.9 | 3534.7 | 2997.1 | 2719.4 | 2636.1 | 2652.0 | 2680.7 | 2681.7 |
| 20° | 6062.7 | 5873.2 | 5036.2 | 3933.3 | 3033.8 | 2589.5 | 2495.3 | 2556.8 | 2632.1 | 2690.7 | 2698.6 |
| 22.5° | 6204.5 | 5917.9 | 4819.0 | 3459.3 | 2585.5 | 2360.4 | 2426.9 | 2538.9 | 2625.2 | 2688.7 | 2699.6 |
| 25° | 6323.5 | 5928.8 | 4519.5 | 2953.5 | 2274.1 | 2274.1 | 2394.1 | 2500.2 | 2585.5 | 2648.0 | 2658.9 |
| 27.5° | 6367.1 | 5855.4 | 4097.0 | 2485.4 | 2117.4 | 2234.4 | 2348.5 | 2436.8 | 2509.2 | 2575.6 | 2587.5 |
| 30° | 6384.0 | 5719.5 | 3609.0 | 2109.5 | 2053.0 | 2191.8 | 2287.0 | 2362.4 | 2430.8 | 2493.3 | 2504.2 |
| 32.5° | 6387.0 | 5555.9 | 3091.3 | 1896.3 | 2008.3 | 2147.2 | 2210.6 | 2277.1 | 2350.5 | 2375.3 | 2379.2 |
| 35° | 6405.8 | 5362.5 | 2545.9 | 1787.2 | 1966.7 | 2105.5 | 2156.1 | 2203.7 | 2084.7 | 2093.6 | 2101.6 |
| 37.5° | 6460.4 | 5171.1 | 2089.7 | 1725.7 | 1939.9 | 2083.7 | 2144.2 | 1971.6 | 1878.4 | 1856.6 | 1853.6 |
| 40° | 6562.5 | 4966.8 | 1751.5 | 1676.1 | 1930.0 | 2094.6 | 2067.8 | 1840.7 | 1680.1 | 1560.0 | 1542.2 |
| 42.5° | 6704.3 | 4746.6 | 1535.3 | 1643.4 | 1936.9 | 2147.2 | 1961.7 | 1714.8 | 1448.0 | 1370.6 | 1360.7 |
| 45° | 6864.0 | 4515.5 | 1418.2 | 1620.5 | 1960.7 | 2187.8 | 1939.9 | 1547.2 | 1339.9 | 1281.4 | 1276.4 |
| 47.5° | 7018.7 | 4232.9 | 1357.7 | 1610.6 | 1993.4 | 2155.1 | 1847.7 | 1495.6 | 1288.3 | 1257.6 | 1260.5 |
| 50° | 7196.3 | 3978.0 | 1321.0 | 1599.7 | 2022.2 | 2134.3 | 1743.5 | 1468.8 | 1268.5 | 1306.2 | 1345.8 |
| 52.5° | 7346.0 | 3714.2 | 1288.3 | 1577.9 | 2033.1 | 2097.6 | 1716.7 | 1473.8 | 1268.5 | 1340.9 | 1378.6 |
| 55° | 7523.5 | 3514.8 | 1250.6 | 1532.3 | 2012.3 | 1993.4 | 1697.9 | 1503.5 | 1283.3 | 1237.7 | 1241.7 |
| 57.5° | 7752.6 | 3449.4 | 1209.0 | 1460.9 | 1942.9 | 1841.7 | 1689.0 | 1532.3 | 1274.4 | 1245.7 | 1255.6 |
| 60° | 8070.0 | 3518.8 | 1192.1 | 1367.6 | 1834.8 | 1722.7 | 1690.0 | 1517.4 | 1211.9 | 1162.3 | 1163.3 |
| 62.5° | 8372.5 | 3596.1 | 1191.1 | 1309.1 | 1701.9 | 1616.6 | 1667.2 | 1468.8 | 1180.2 | 1151.4 | 1162.3 |
| 65° | 8471.7 | 3517.8 | 1143.5 | 1243.7 | 1552.1 | 1489.6 | 1625.5 | 1417.2 | 1156.4 | 1112.8 | 1110.8 |
| 67.5° | 8338.8 | 3274.8 | 1047.3 | 1137.6 | 1380.5 | 1341.9 | 1571.0 | 1355.7 | 1118.7 | 1083.0 | 1077.1 |
| 70° | 7944.0 | 2732.3 | 928.3 | 997.7 | 1185.2 | 1175.2 | 1484.7 | 1284.3 | 1068.1 | 1037.4 | 1011.6 |
| 72.5° | 6881.9 | 1946.8 | 782.5 | 830.1 | 965.0 | 996.7 | 1365.7 | 1191.1 | 996.7 | 930.3 | 890.6 |
| 75° | 5652.1 | 1441.0 | 642.7 | 652.6 | 732.9 | 819.2 | 1202.0 | 1082.0 | 912.4 | 799.4 | 768.6 |
| 77.5° | 3461.3 | 881.7 | 511.8 | 515.7 | 525.6 | 653.6 | 989.8 | 960.0 | 805.3 | 666.5 | 644.6 |
| 80° | 1120.7 | 481.0 | 369.9 | 388.8 | 359.0 | 479.0 | 765.6 | 817.2 | 691.3 | 557.4 | 533.6 |
| 82.5° | 426.5 | 280.7 | 249.9 | 262.8 | 248.9 | 321.3 | 558.4 | 654.6 | 566.3 | 458.2 | 372.9 |
| 85° | 206.3 | 158.7 | 147.8 | 165.6 | 153.7 | 164.6 | 357.0 | 482.0 | 429.4 | 298.5 | 277.7 |
| 87.5° | 73.4 | 70.4 | 56.5 | 76.4 | 65.5 | 58.5 | 109.1 | 243.0 | 283.6 | 205.3 | 183.5 |
| 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: SP1-1908-441-4-R4

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

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

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-4-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-750-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): 4884
 CIE u': 0.2101
 CIE v': 0.4904
 Duv: 0.0037
 CIE x: 0.3493
 CIE y: 0.3624
 CIE z: 0.2884
 Peak Wavelength (nm): 444
 Dominant Wavelength (nm): 571
 Purity: 13.7
 Rf: 74.9
 Rg: 96.3

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 73.5 | | |
| R1: | 70.5 | R9: | -28.4 |
| R2: | 77.7 | R10: | 48.6 |
| R3: | 84.6 | R11: | 73.2 |
| R4: | 74.7 | R12: | 50.7 |
| R5: | 71.9 | R13: | 71.2 |
| R6: | 70.7 | R14: | 91.4 |
| R7: | 81.2 | | |
| R8: | 56.9 | | |



Test Conditions

Stabilization Time: 240M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.0./44%
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-4-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 |

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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 5000K 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 | 2945 | NR | 490 | 37941 | NR | 620 | 88803 | NR | 750 | 3908 | NR | 880 | 2997 | NR |
| 365 | 2596 | NR | 495 | 48525 | NR | 625 | 80578 | NR | 755 | 3988 | NR | 885 | 2927 | NR |
| 370 | 2732 | NR | 500 | 60609 | NR | 630 | 73127 | NR | 760 | 3335 | NR | 890 | 2649 | NR |
| 375 | 2894 | NR | 505 | 72036 | NR | 635 | 66244 | NR | 765 | 3438 | NR | 895 | 2828 | NR |
| 380 | 2822 | NR | 510 | 82168 | NR | 640 | 59440 | NR | 770 | 3427 | NR | 900 | 1407 | NR |
| 385 | 2394 | NR | 515 | 90898 | NR | 645 | 52864 | NR | 775 | 2759 | NR | 905 | 2224 | NR |
| 390 | 2370 | NR | 520 | 97142 | NR | 650 | 47085 | NR | 780 | 2340 | NR | 910 | 2905 | NR |
| 395 | 2267 | NR | 525 | 103255 | NR | 655 | 41789 | NR | 785 | 2412 | NR | 915 | 3350 | NR |
| 400 | 2262 | NR | 530 | 106697 | NR | 660 | 37064 | NR | 790 | 1999 | NR | 920 | 3114 | NR |
| 405 | 3000 | NR | 535 | 110081 | NR | 665 | 32299 | NR | 795 | 2054 | NR | 925 | 2834 | NR |
| 410 | 5324 | NR | 540 | 112494 | NR | 670 | 28142 | NR | 800 | 2331 | NR | 930 | 2271 | NR |
| 415 | 10725 | NR | 545 | 115513 | NR | 675 | 24505 | NR | 805 | 2648 | NR | 935 | 2228 | NR |
| 420 | 22128 | NR | 550 | 117203 | NR | 680 | 21162 | NR | 810 | 2485 | NR | 940 | 2833 | NR |
| 425 | 44095 | NR | 555 | 119753 | NR | 685 | 18400 | NR | 815 | 2409 | NR | 945 | 2941 | NR |
| 430 | 77002 | NR | 560 | 122602 | NR | 690 | 16065 | NR | 820 | 2221 | NR | 950 | 2323 | NR |
| 435 | 119881 | NR | 565 | 124314 | NR | 695 | 13860 | NR | 825 | 1562 | NR | 955 | 1667 | NR |
| 440 | 164454 | NR | 570 | 126775 | NR | 700 | 12177 | NR | 830 | 2249 | NR | 960 | 749 | NR |
| 445 | 179997 | NR | 575 | 127511 | NR | 705 | 10757 | NR | 835 | 2573 | NR | 965 | 2669 | NR |
| 450 | 142822 | NR | 580 | 127577 | NR | 710 | 9601 | NR | 840 | 2764 | NR | 970 | 3968 | NR |
| 455 | 90008 | NR | 585 | 126153 | NR | 715 | 8944 | NR | 845 | 3109 | NR | 975 | 3886 | NR |
| 460 | 60557 | NR | 590 | 123678 | NR | 720 | 7947 | NR | 850 | 2963 | NR | 980 | 2788 | NR |
| 465 | 43305 | NR | 595 | 119774 | NR | 725 | 7062 | NR | 855 | 2336 | NR | 985 | 3496 | NR |
| 470 | 31089 | NR | 600 | 115733 | NR | 730 | 6004 | NR | 860 | 2118 | NR | 990 | 2913 | NR |
| 475 | 26278 | NR | 605 | 109231 | NR | 735 | 5594 | NR | 865 | 3144 | NR | 995 | 4659 | NR |
| 480 | 27060 | NR | 610 | 102408 | NR | 740 | 5165 | NR | 870 | 3069 | NR | 1000 | 1308 | NR |
| 485 | 30698 | NR | 615 | 96015 | NR | 745 | 4687 | NR | 875 | 3311 | NR | | | |

REPORT NUMBER: SP1-1908-441-4-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 13493.5 S/P: 1.77

| 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 | 2945 | NR | 490 | 37941 | NR | 620 | 88803 | NR | 750 | 3908 | NR | 880 | 2997 | NR |
| 365 | 2596 | NR | 495 | 48525 | NR | 625 | 80578 | NR | 755 | 3988 | NR | 885 | 2927 | NR |
| 370 | 2732 | NR | 500 | 60609 | NR | 630 | 73127 | NR | 760 | 3335 | NR | 890 | 2649 | NR |
| 375 | 2894 | NR | 505 | 72036 | NR | 635 | 66244 | NR | 765 | 3438 | NR | 895 | 2828 | NR |
| 380 | 2822 | NR | 510 | 82168 | NR | 640 | 59440 | NR | 770 | 3427 | NR | 900 | 1407 | NR |
| 385 | 2394 | NR | 515 | 90898 | NR | 645 | 52864 | NR | 775 | 2759 | NR | 905 | 2224 | NR |
| 390 | 2370 | NR | 520 | 97142 | NR | 650 | 47085 | NR | 780 | 2340 | NR | 910 | 2905 | NR |
| 395 | 2267 | NR | 525 | 103255 | NR | 655 | 41789 | NR | 785 | 2412 | NR | 915 | 3350 | NR |
| 400 | 2262 | NR | 530 | 106697 | NR | 660 | 37064 | NR | 790 | 1999 | NR | 920 | 3114 | NR |
| 405 | 3000 | NR | 535 | 110081 | NR | 665 | 32299 | NR | 795 | 2054 | NR | 925 | 2834 | NR |
| 410 | 5324 | NR | 540 | 112494 | NR | 670 | 28142 | NR | 800 | 2331 | NR | 930 | 2271 | NR |
| 415 | 10725 | NR | 545 | 115513 | NR | 675 | 24505 | NR | 805 | 2648 | NR | 935 | 2228 | NR |
| 420 | 22128 | NR | 550 | 117203 | NR | 680 | 21162 | NR | 810 | 2485 | NR | 940 | 2833 | NR |
| 425 | 44095 | NR | 555 | 119753 | NR | 685 | 18400 | NR | 815 | 2409 | NR | 945 | 2941 | NR |
| 430 | 77002 | NR | 560 | 122602 | NR | 690 | 16065 | NR | 820 | 2221 | NR | 950 | 2323 | NR |
| 435 | 119881 | NR | 565 | 124314 | NR | 695 | 13860 | NR | 825 | 1562 | NR | 955 | 1667 | NR |
| 440 | 164454 | NR | 570 | 126775 | NR | 700 | 12177 | NR | 830 | 2249 | NR | 960 | 749 | NR |
| 445 | 179997 | NR | 575 | 127511 | NR | 705 | 10757 | NR | 835 | 2573 | NR | 965 | 2669 | NR |
| 450 | 142822 | NR | 580 | 127577 | NR | 710 | 9601 | NR | 840 | 2764 | NR | 970 | 3968 | NR |
| 455 | 90008 | NR | 585 | 126153 | NR | 715 | 8944 | NR | 845 | 3109 | NR | 975 | 3886 | NR |
| 460 | 60557 | NR | 590 | 123678 | NR | 720 | 7947 | NR | 850 | 2963 | NR | 980 | 2788 | NR |
| 465 | 43305 | NR | 595 | 119774 | NR | 725 | 7062 | NR | 855 | 2336 | NR | 985 | 3496 | NR |
| 470 | 31089 | NR | 600 | 115733 | NR | 730 | 6004 | NR | 860 | 2118 | NR | 990 | 2913 | NR |
| 475 | 26278 | NR | 605 | 109231 | NR | 735 | 5594 | NR | 865 | 3144 | NR | 995 | 4659 | NR |
| 480 | 27060 | NR | 610 | 102408 | NR | 740 | 5165 | NR | 870 | 3069 | NR | 1000 | 1308 | NR |
| 485 | 30698 | NR | 615 | 96015 | NR | 745 | 4687 | NR | 875 | 3311 | NR | | | |

REPORT NUMBER: SP1-1908-441-4-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 5378.9

M/P: 0.71

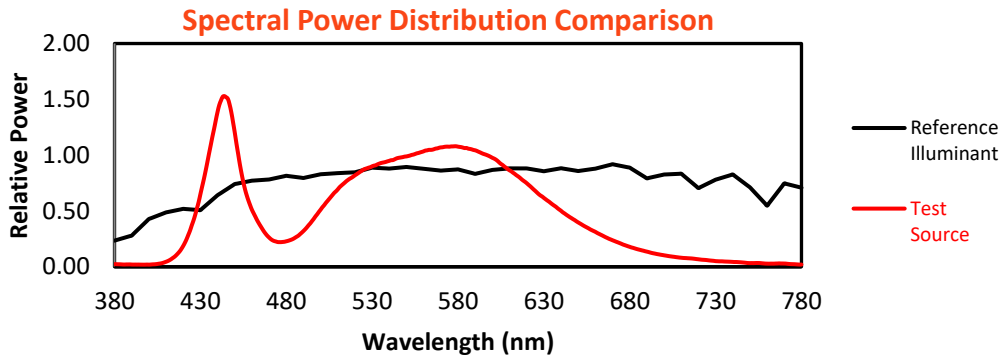
| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 2945 | NR | 490 | 37941 | NR | 620 | 88803 | NR | 750 | 3908 | NR | 880 | 2997 | NR |
| 365 | 2596 | NR | 495 | 48525 | NR | 625 | 80578 | NR | 755 | 3988 | NR | 885 | 2927 | NR |
| 370 | 2732 | NR | 500 | 60609 | NR | 630 | 73127 | NR | 760 | 3335 | NR | 890 | 2649 | NR |
| 375 | 2894 | NR | 505 | 72036 | NR | 635 | 66244 | NR | 765 | 3438 | NR | 895 | 2828 | NR |
| 380 | 2822 | NR | 510 | 82168 | NR | 640 | 59440 | NR | 770 | 3427 | NR | 900 | 1407 | NR |
| 385 | 2394 | NR | 515 | 90898 | NR | 645 | 52864 | NR | 775 | 2759 | NR | 905 | 2224 | NR |
| 390 | 2370 | NR | 520 | 97142 | NR | 650 | 47085 | NR | 780 | 2340 | NR | 910 | 2905 | NR |
| 395 | 2267 | NR | 525 | 103255 | NR | 655 | 41789 | NR | 785 | 2412 | NR | 915 | 3350 | NR |
| 400 | 2262 | NR | 530 | 106697 | NR | 660 | 37064 | NR | 790 | 1999 | NR | 920 | 3114 | NR |
| 405 | 3000 | NR | 535 | 110081 | NR | 665 | 32299 | NR | 795 | 2054 | NR | 925 | 2834 | NR |
| 410 | 5324 | NR | 540 | 112494 | NR | 670 | 28142 | NR | 800 | 2331 | NR | 930 | 2271 | NR |
| 415 | 10725 | NR | 545 | 115513 | NR | 675 | 24505 | NR | 805 | 2648 | NR | 935 | 2228 | NR |
| 420 | 22128 | NR | 550 | 117203 | NR | 680 | 21162 | NR | 810 | 2485 | NR | 940 | 2833 | NR |
| 425 | 44095 | NR | 555 | 119753 | NR | 685 | 18400 | NR | 815 | 2409 | NR | 945 | 2941 | NR |
| 430 | 77002 | NR | 560 | 122602 | NR | 690 | 16065 | NR | 820 | 2221 | NR | 950 | 2323 | NR |
| 435 | 119881 | NR | 565 | 124314 | NR | 695 | 13860 | NR | 825 | 1562 | NR | 955 | 1667 | NR |
| 440 | 164454 | NR | 570 | 126775 | NR | 700 | 12177 | NR | 830 | 2249 | NR | 960 | 749 | NR |
| 445 | 179997 | NR | 575 | 127511 | NR | 705 | 10757 | NR | 835 | 2573 | NR | 965 | 2669 | NR |
| 450 | 142822 | NR | 580 | 127577 | NR | 710 | 9601 | NR | 840 | 2764 | NR | 970 | 3968 | NR |
| 455 | 90008 | NR | 585 | 126153 | NR | 715 | 8944 | NR | 845 | 3109 | NR | 975 | 3886 | NR |
| 460 | 60557 | NR | 590 | 123678 | NR | 720 | 7947 | NR | 850 | 2963 | NR | 980 | 2788 | NR |
| 465 | 43305 | NR | 595 | 119774 | NR | 725 | 7062 | NR | 855 | 2336 | NR | 985 | 3496 | NR |
| 470 | 31089 | NR | 600 | 115733 | NR | 730 | 6004 | NR | 860 | 2118 | NR | 990 | 2913 | NR |
| 475 | 26278 | NR | 605 | 109231 | NR | 735 | 5594 | NR | 865 | 3144 | NR | 995 | 4659 | NR |
| 480 | 27060 | NR | 610 | 102408 | NR | 740 | 5165 | NR | 870 | 3069 | NR | 1000 | 1308 | NR |
| 485 | 30698 | NR | 615 | 96015 | NR | 745 | 4687 | NR | 875 | 3311 | NR | | | |

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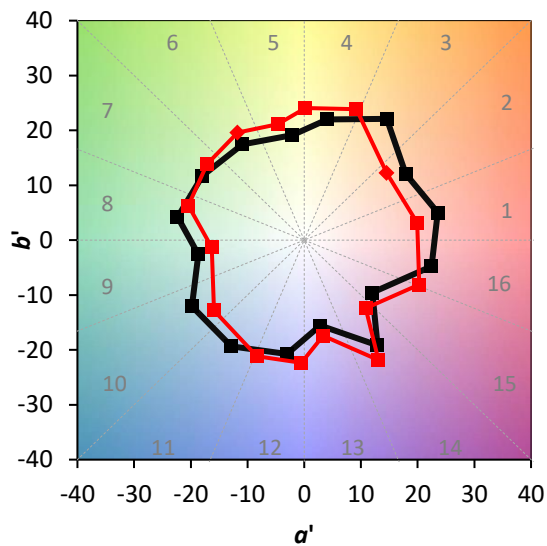
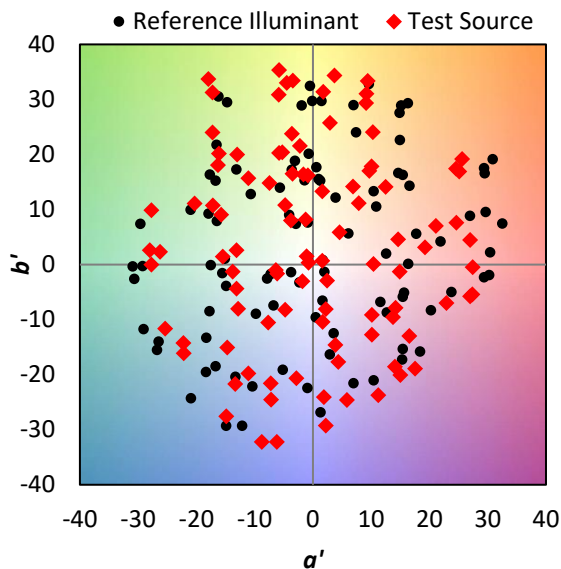
TM-30-18

Summary

$R_f = 74.9$
 $R_g = 96.3$
 $CIE R_a = 73.5$
 $R_g = -28.4$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 90 | CES76 = 52 |
| CES02 = 60 | CES27 = 84 | CES52 = 91 | CES77 = 71 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 58 | CES54 = 83 | CES79 = 80 |
| CES05 = 46 | CES30 = 67 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 63 | CES56 = 73 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 72 | CES82 = 90 |
| CES08 = 38 | CES33 = 69 | CES58 = 73 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 88 | CES84 = 88 |
| CES10 = 73 | CES35 = 83 | CES60 = 93 | CES85 = 84 |
| CES11 = 56 | CES36 = 95 | CES61 = 88 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 85 | CES87 = 78 |
| CES13 = 41 | CES38 = 76 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 93 | CES64 = 74 | CES89 = 75 |
| CES15 = 70 | CES40 = 86 | CES65 = 67 | CES90 = 77 |
| CES16 = 46 | CES41 = 87 | CES66 = 69 | CES91 = 89 |
| CES17 = 49 | CES42 = 78 | CES67 = 67 | CES92 = 66 |
| CES18 = 55 | CES43 = 75 | CES68 = 73 | CES93 = 80 |
| CES19 = 71 | CES44 = 99 | CES69 = 81 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 63 | CES95 = 71 |
| CES21 = 85 | CES46 = 81 | CES71 = 60 | CES96 = 78 |
| CES22 = 77 | CES47 = 80 | CES72 = 86 | CES97 = 85 |
| CES23 = 91 | CES48 = 72 | CES73 = 53 | CES98 = 75 |
| CES24 = 90 | CES49 = 81 | CES74 = 96 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 58 | |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)