

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: P362627

Luminaire Tested: NVN-SA1B-760-U-T2R-HSS

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2019  
Report Number: P362627  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-9)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: NVN-SA1B-760-U-T2R-HSS  
Description: NAVION ROADWAY AND AREA LUMINAIRE  
(1) 70 CRI, 5700K, 800mA LIGHTSQUARE WITH 16 LEDS AND TYPE II ROADWAY OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4761 lumens  
Efficiency: N/A  
Efficacy: 108.2 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B0 - U0 - G1

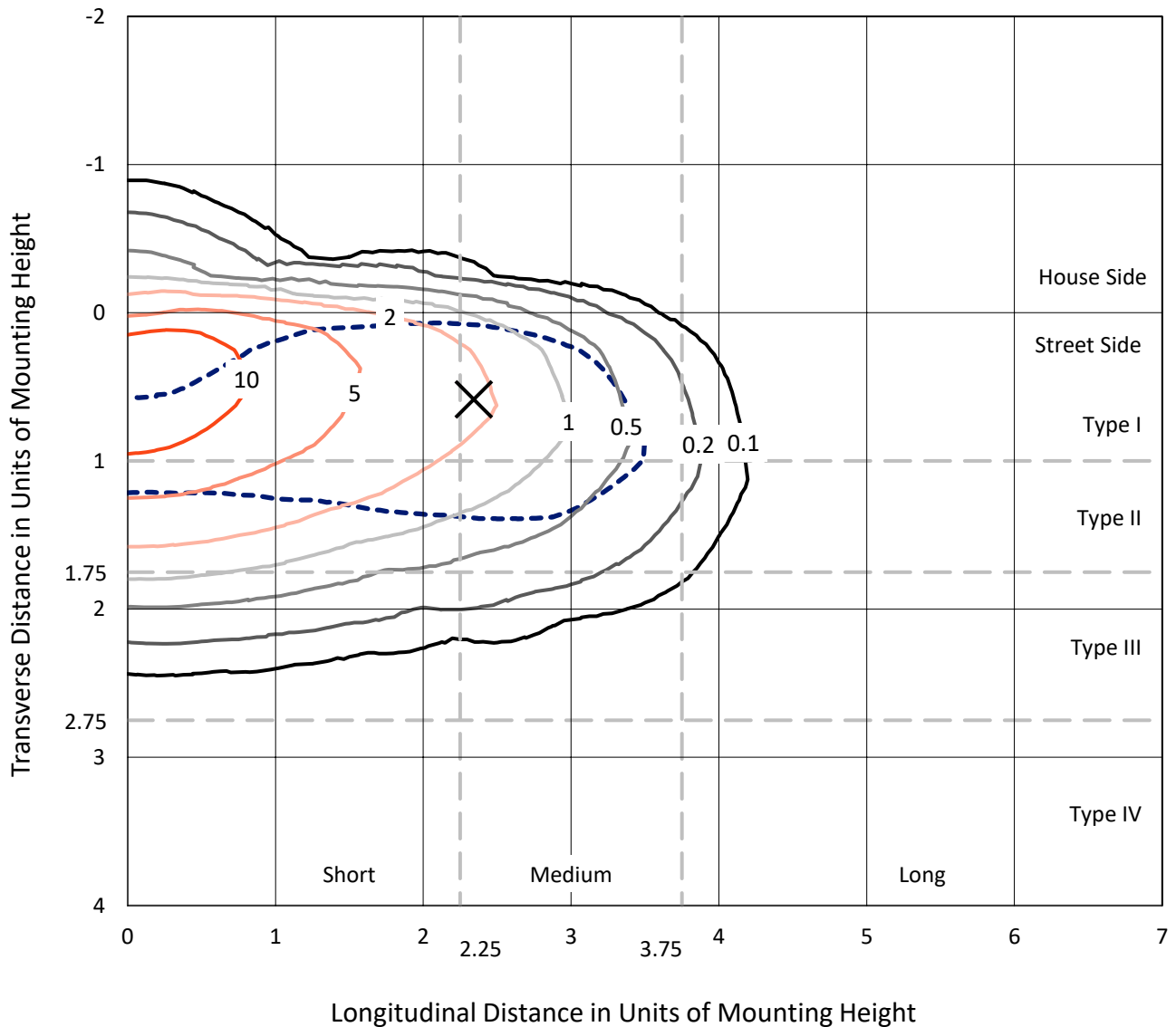
Input Watts (W): 44  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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### Iso-Footcandle Lines of Horizontal Illumination

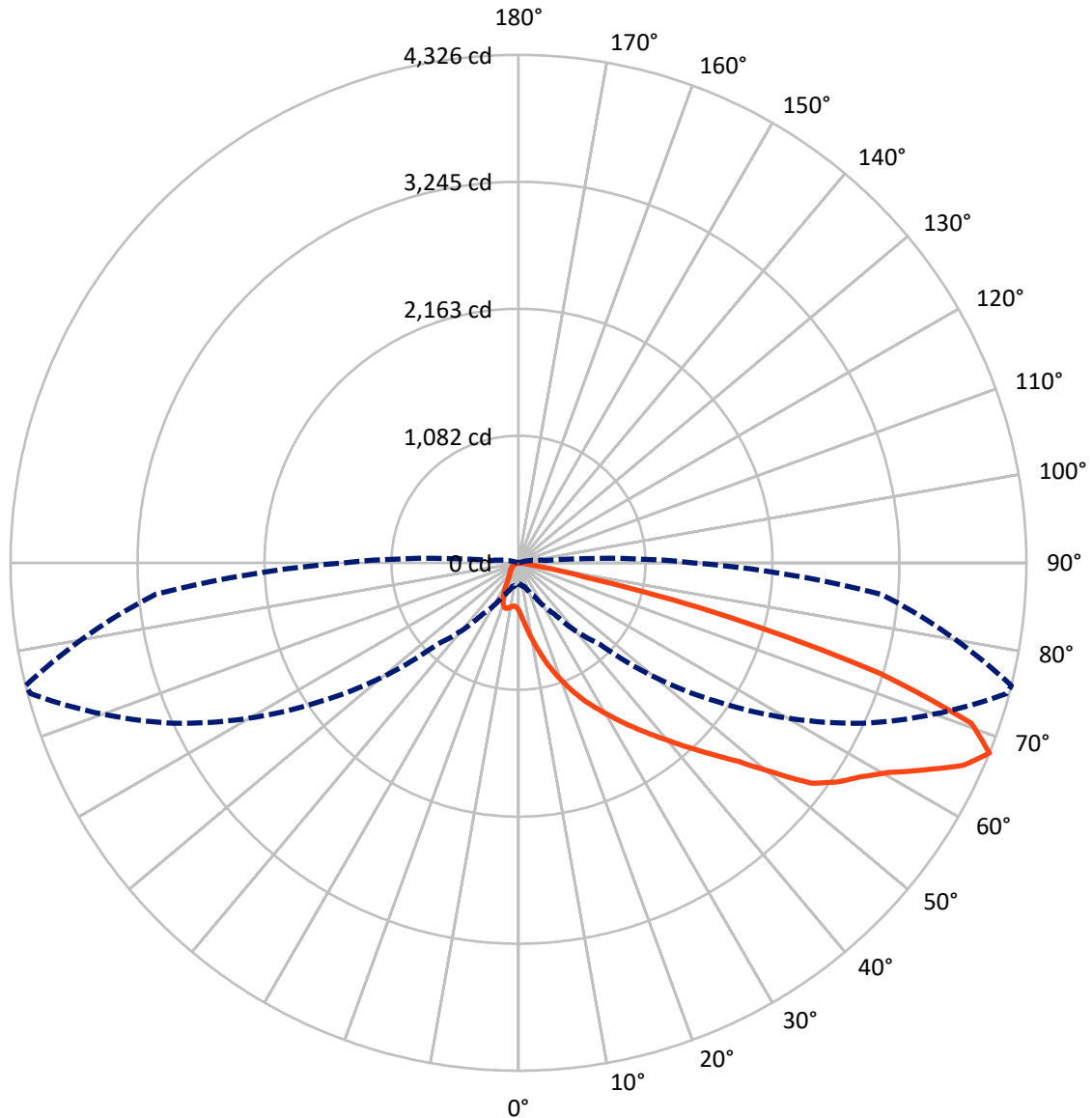
× Max cd  
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 14.2 fc  
 Type II - Medium - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 76-Deg Lateral      - - - Horizontal Cone Through 67.5-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 236.4    | 0.0    | 236.4  |
|                    | % Fixture | 5.0      | 0.0    | 5.0    |
| <b>Street Side</b> | Lumens    | 4524.6   | 0.0    | 4524.6 |
|                    | % Fixture | 95.0     | 0.0    | 95.0   |
| <b>Total</b>       | Lumens    | 4761.0   | 0.0    | 4761.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 50.2   | 1.1       |
| 10°-20°   | 199.1  | 4.2       |
| 20°-30°   | 405.1  | 8.5       |
| 30°-40°   | 703.1  | 14.8      |
| 40°-50°   | 993.3  | 20.9      |
| 50°-60°   | 1126.5 | 23.7      |
| 60°-70°   | 934.3  | 19.6      |
| 70°-80°   | 338.4  | 7.1       |
| 80°-90°   | 11.0   | 0.2       |
| 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°    | 4761.0 | 100.0     |
| 0°-180°   | 4761.0 | 100.0     |

**Coefficient of Utilization**

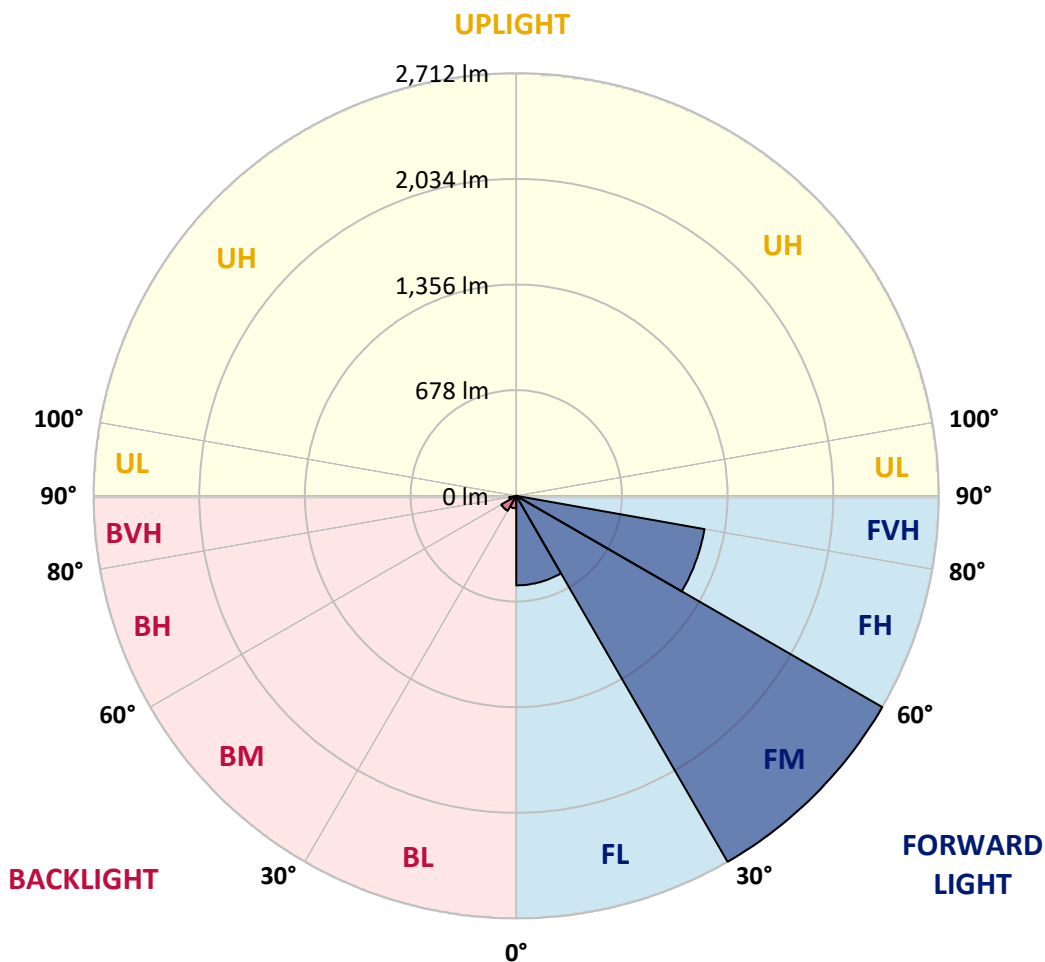


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 574.6  | 12.1      |                         |      |         |
| FM (30°-60°)   | 2712.2 | 57.0      |                         |      |         |
| FH (60°-80°)   | 1227.1 | 25.8      |                         |      | G1/1800 |
| FVH (80°-90°)  | 10.6   | 0.2       |                         |      | G1/100  |
| BL (0°-30°)    | 79.7   | 1.7       | B0/110                  |      |         |
| BM (30°-60°)   | 110.6  | 2.3       | B0/220                  |      |         |
| BH (60°-80°)   | 45.7   | 1.0       | B0/110                  |      | G0/110  |
| BVH (80°-90°)  | 0.3    | 0.0       |                         |      | G0/10   |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G1**  
 Type II Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 76°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 403.9  | 403.9  | 403.9  | 403.9  | 403.9  | 403.9  | 403.9  | 403.9  | 403.9  | 403.9  | 403.9  |
| 2.5°  | 602.9  | 589.3  | 592.5  | 583.7  | 567.8  | 535.3  | 507.6  | 481.3  | 450.6  | 449.6  | 424.3  |
| 5°    | 813.0  | 801.5  | 800.0  | 782.3  | 753.5  | 698.2  | 644.4  | 583.1  | 514.6  | 509.6  | 456.0  |
| 7.5°  | 1003.6 | 994.4  | 991.1  | 970.0  | 916.4  | 862.6  | 792.5  | 702.4  | 595.4  | 586.2  | 498.8  |
| 10°   | 1150.1 | 1145.7 | 1146.5 | 1131.5 | 1085.6 | 1035.5 | 943.5  | 828.6  | 687.0  | 672.8  | 550.1  |
| 12.5° | 1261.1 | 1262.1 | 1269.6 | 1260.4 | 1234.8 | 1197.6 | 1099.4 | 963.2  | 788.3  | 768.9  | 608.7  |
| 15°   | 1342.6 | 1347.8 | 1361.6 | 1373.1 | 1371.2 | 1339.1 | 1249.0 | 1099.8 | 896.0  | 874.5  | 674.0  |
| 17.5° | 1395.4 | 1401.2 | 1421.3 | 1446.7 | 1470.1 | 1462.6 | 1393.3 | 1231.6 | 1004.9 | 980.1  | 743.9  |
| 20°   | 1441.7 | 1448.6 | 1470.1 | 1503.7 | 1547.3 | 1556.7 | 1511.2 | 1359.5 | 1113.6 | 1083.3 | 816.1  |
| 22.5° | 1542.1 | 1541.8 | 1555.0 | 1574.6 | 1616.1 | 1640.3 | 1611.5 | 1478.2 | 1221.0 | 1189.5 | 889.7  |
| 25°   | 1723.5 | 1716.7 | 1712.1 | 1696.6 | 1705.8 | 1720.8 | 1704.8 | 1589.2 | 1329.1 | 1297.1 | 964.4  |
| 27.5° | 1939.2 | 1943.4 | 1906.3 | 1864.8 | 1832.6 | 1817.2 | 1790.9 | 1692.0 | 1432.9 | 1397.9 | 1037.4 |
| 30°   | 2166.8 | 2168.1 | 2124.3 | 2071.3 | 2000.6 | 1942.0 | 1896.5 | 1790.3 | 1539.8 | 1501.6 | 1108.3 |
| 32.5° | 2372.1 | 2364.0 | 2320.6 | 2248.4 | 2159.1 | 2093.2 | 1998.7 | 1900.0 | 1652.8 | 1615.9 | 1187.2 |
| 35°   | 2534.8 | 2525.2 | 2472.5 | 2406.7 | 2314.1 | 2247.8 | 2134.1 | 2009.5 | 1771.7 | 1735.6 | 1266.3 |
| 37.5° | 2653.7 | 2642.5 | 2588.2 | 2520.6 | 2440.7 | 2402.2 | 2291.2 | 2128.7 | 1901.5 | 1862.7 | 1349.5 |
| 40°   | 2695.0 | 2685.2 | 2651.2 | 2601.8 | 2537.5 | 2528.8 | 2457.9 | 2265.7 | 2042.7 | 2001.4 | 1443.8 |
| 42.5° | 2670.4 | 2660.8 | 2648.7 | 2632.0 | 2605.3 | 2613.7 | 2615.1 | 2422.0 | 2199.6 | 2158.9 | 1547.9 |
| 45°   | 2572.8 | 2564.2 | 2576.8 | 2601.2 | 2634.3 | 2675.6 | 2758.7 | 2589.9 | 2374.8 | 2331.4 | 1668.3 |
| 47.5° | 2429.1 | 2422.8 | 2457.4 | 2518.4 | 2615.4 | 2729.3 | 2889.9 | 2766.4 | 2571.5 | 2531.3 | 1818.5 |
| 50°   | 2224.6 | 2223.6 | 2292.8 | 2404.0 | 2553.2 | 2755.1 | 3025.5 | 2967.1 | 2844.8 | 2802.5 | 2027.3 |
| 52.5° | 1906.3 | 1908.4 | 2044.6 | 2222.5 | 2444.1 | 2737.6 | 3112.7 | 3224.9 | 3162.7 | 3118.7 | 2208.1 |
| 55°   | 1603.2 | 1615.7 | 1712.3 | 1968.9 | 2276.8 | 2672.5 | 3142.7 | 3345.3 | 3338.2 | 3296.5 | 2308.7 |
| 57.5° | 1306.3 | 1329.1 | 1422.1 | 1661.8 | 2032.5 | 2522.5 | 3126.2 | 3397.4 | 3468.8 | 3436.9 | 2441.4 |
| 60°   | 984.6  | 995.1  | 1102.3 | 1326.3 | 1719.0 | 2248.8 | 3006.7 | 3425.8 | 3647.4 | 3625.2 | 2633.9 |
| 62.5° | 626.5  | 652.5  | 747.7  | 963.8  | 1338.4 | 1868.7 | 2805.2 | 3425.4 | 3870.8 | 3882.9 | 2882.4 |
| 65°   | 330.0  | 360.5  | 411.0  | 597.3  | 919.8  | 1444.2 | 2502.1 | 3393.3 | 4144.9 | 4161.8 | 3076.6 |
| 67.5° | 177.9  | 186.7  | 213.4  | 310.0  | 533.4  | 978.4  | 2056.7 | 3234.7 | 4303.6 | 4326.0 | 3103.7 |
| 70°   | 130.2  | 135.0  | 145.0  | 171.5  | 268.5  | 568.3  | 1500.7 | 2875.3 | 4099.0 | 4090.7 | 2757.6 |
| 72.5° | 99.9   | 107.4  | 114.9  | 125.6  | 154.4  | 303.3  | 934.4  | 2251.5 | 3270.6 | 3215.5 | 2061.3 |
| 75°   | 78.9   | 80.1   | 90.7   | 100.3  | 115.8  | 172.7  | 414.9  | 1311.3 | 1996.2 | 1865.8 | 1068.9 |
| 77.5° | 63.0   | 63.8   | 70.1   | 78.4   | 93.0   | 113.5  | 128.5  | 515.9  | 637.3  | 568.7  | 232.0  |
| 80°   | 37.3   | 39.4   | 52.2   | 60.5   | 77.2   | 71.6   | 46.9   | 112.0  | 99.5   | 90.1   | 39.0   |
| 82.5° | 20.9   | 22.5   | 29.4   | 47.8   | 53.8   | 34.2   | 23.4   | 30.2   | 23.4   | 22.7   | 11.1   |
| 85°   | 0.0    | 1.0    | 19.0   | 29.6   | 21.9   | 7.5    | 9.8    | 10.0   | 6.9    | 6.5    | 4.4    |
| 87.5° | 0.0    | 0.0    | 5.8    | 5.6    | 0.8    | 1.3    | 2.3    | 3.3    | 2.7    | 2.7    | 2.3    |
| 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-SA1B-760-U-T2R-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 403.9  | 403.9 | 403.9 | 403.9 | 403.9 | 403.9 | 403.9 | 403.9 | 403.9 | 403.9 | 403.9 |
| 2.5°  | 411.8  | 400.5 | 379.3 | 358.4 | 340.9 | 326.5 | 313.5 | 308.3 | 304.2 | 303.5 | 300.2 |
| 5°    | 430.2  | 407.4 | 366.7 | 333.4 | 311.0 | 295.2 | 281.6 | 273.3 | 266.8 | 264.3 | 262.0 |
| 7.5°  | 457.9  | 423.5 | 365.1 | 326.7 | 300.0 | 273.3 | 248.2 | 221.1 | 204.2 | 197.8 | 194.0 |
| 10°   | 491.7  | 444.8 | 371.3 | 324.8 | 278.1 | 221.8 | 180.2 | 145.8 | 131.8 | 127.3 | 126.0 |
| 12.5° | 531.1  | 471.3 | 382.2 | 313.1 | 231.3 | 157.5 | 124.3 | 112.6 | 109.5 | 108.1 | 108.1 |
| 15°   | 576.4  | 500.2 | 389.9 | 279.3 | 171.1 | 119.1 | 107.6 | 102.2 | 98.9  | 97.0  | 97.2  |
| 17.5° | 622.7  | 528.6 | 386.1 | 230.3 | 126.2 | 106.0 | 97.4  | 91.6  | 87.0  | 85.1  | 84.7  |
| 20°   | 669.4  | 554.9 | 365.3 | 171.5 | 106.8 | 96.2  | 86.6  | 80.1  | 75.5  | 73.6  | 73.2  |
| 22.5° | 717.8  | 577.2 | 328.6 | 125.8 | 96.0  | 85.3  | 75.9  | 69.5  | 65.1  | 63.4  | 62.6  |
| 25°   | 765.0  | 595.4 | 277.2 | 101.8 | 85.7  | 75.1  | 66.1  | 60.1  | 56.1  | 54.4  | 54.2  |
| 27.5° | 809.0  | 606.8 | 217.8 | 89.9  | 76.8  | 65.9  | 57.8  | 52.4  | 49.0  | 47.8  | 47.6  |
| 30°   | 848.6  | 607.9 | 161.0 | 81.1  | 68.8  | 58.0  | 50.5  | 45.7  | 42.8  | 41.5  | 41.1  |
| 32.5° | 888.7  | 599.1 | 117.2 | 73.2  | 61.5  | 51.1  | 43.8  | 40.1  | 38.0  | 36.9  | 36.9  |
| 35°   | 926.4  | 578.9 | 91.4  | 66.3  | 54.4  | 44.4  | 38.6  | 35.9  | 34.6  | 33.6  | 33.6  |
| 37.5° | 963.4  | 549.9 | 77.6  | 60.3  | 47.8  | 38.8  | 34.0  | 32.3  | 31.3  | 30.2  | 30.2  |
| 40°   | 1000.9 | 513.4 | 70.5  | 54.7  | 42.3  | 34.4  | 30.2  | 28.8  | 27.7  | 26.9  | 26.7  |
| 42.5° | 1047.0 | 471.3 | 65.9  | 49.4  | 37.5  | 30.5  | 26.7  | 25.0  | 24.2  | 23.4  | 22.9  |
| 45°   | 1100.4 | 435.0 | 62.2  | 44.2  | 33.6  | 27.1  | 23.2  | 21.5  | 20.2  | 19.2  | 19.0  |
| 47.5° | 1177.4 | 408.7 | 57.2  | 38.6  | 29.8  | 23.6  | 20.0  | 18.1  | 16.3  | 15.2  | 15.0  |
| 50°   | 1275.7 | 387.0 | 50.7  | 33.6  | 26.1  | 20.0  | 16.7  | 14.4  | 12.7  | 11.7  | 11.7  |
| 52.5° | 1324.5 | 358.6 | 44.9  | 29.2  | 21.9  | 16.9  | 13.6  | 10.8  | 10.0  | 9.0   | 9.0   |
| 55°   | 1344.1 | 336.9 | 39.0  | 24.8  | 18.1  | 14.0  | 10.6  | 8.3   | 7.7   | 7.1   | 6.9   |
| 57.5° | 1399.2 | 330.6 | 34.0  | 21.1  | 15.0  | 11.1  | 8.1   | 6.3   | 5.8   | 5.0   | 5.0   |
| 60°   | 1487.8 | 333.8 | 29.4  | 17.9  | 12.1  | 8.6   | 6.0   | 4.8   | 4.4   | 3.5   | 3.5   |
| 62.5° | 1583.6 | 329.8 | 24.8  | 15.4  | 9.4   | 6.3   | 4.2   | 3.5   | 3.5   | 2.1   | 1.9   |
| 65°   | 1601.9 | 293.7 | 21.3  | 12.7  | 7.3   | 4.6   | 2.7   | 2.3   | 3.1   | 0.4   | 0.0   |
| 67.5° | 1486.8 | 227.8 | 18.4  | 9.8   | 5.4   | 3.5   | 2.1   | 1.0   | 2.7   | 0.0   | 0.0   |
| 70°   | 1188.9 | 144.8 | 14.8  | 7.1   | 4.2   | 2.9   | 1.7   | 0.4   | 2.1   | 0.0   | 0.0   |
| 72.5° | 840.7  | 84.1  | 11.7  | 5.0   | 3.5   | 2.3   | 1.3   | 0.0   | 1.3   | 0.0   | 0.0   |
| 75°   | 425.1  | 44.9  | 7.3   | 3.8   | 2.7   | 1.7   | 0.8   | 0.0   | 0.2   | 0.0   | 0.0   |
| 77.5° | 92.0   | 20.9  | 4.6   | 2.7   | 1.9   | 1.0   | 0.4   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 20.0   | 9.2   | 2.9   | 1.7   | 1.0   | 0.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 7.3    | 4.8   | 1.5   | 0.8   | 0.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 4.0    | 2.5   | 0.8   | 0.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 2.1    | 0.8   | 0.2   | 0.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 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  
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1121 Highway 74 South  
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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  
 CIE u': 0.2052  
 CIE v': 0.4804  
 Duv: 0.0025  
 CIE x: 0.3330  
 CIE y: 0.3466  
 CIE z: 0.3204  
 Peak Wavelength (nm): 442  
 Dominant Wavelength (nm): 554  
 Purity: 4.1

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 71.7 |      |       |
| R1:       | 70.6 | R9:  | -27.1 |
| R2:       | 74.6 | R10: | 40.8  |
| R3:       | 78.3 | R11: | 74.6  |
| R4:       | 73.8 | R12: | 50.4  |
| R5:       | 72.4 | R13: | 70.0  |
| R6:       | 67.5 | R14: | 87.8  |
| R7:       | 77.5 |      |       |
| R8:       | 58.9 |      |       |

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 (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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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            |        |               |               |

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**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)