

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: P359398

Luminaire Tested: NVN-SA6C-740-U-T4W

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2019  
Report Number: P359398  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-18)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: NVN-SA6C-740-U-T4W  
Description: NAVION ROADWAY AND AREA LUMINAIRE  
(6) 70 CRI, 4000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV WIDE OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 42298 lumens  
Efficiency: N/A  
Efficacy: 127.0 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B4 - U0 - G5

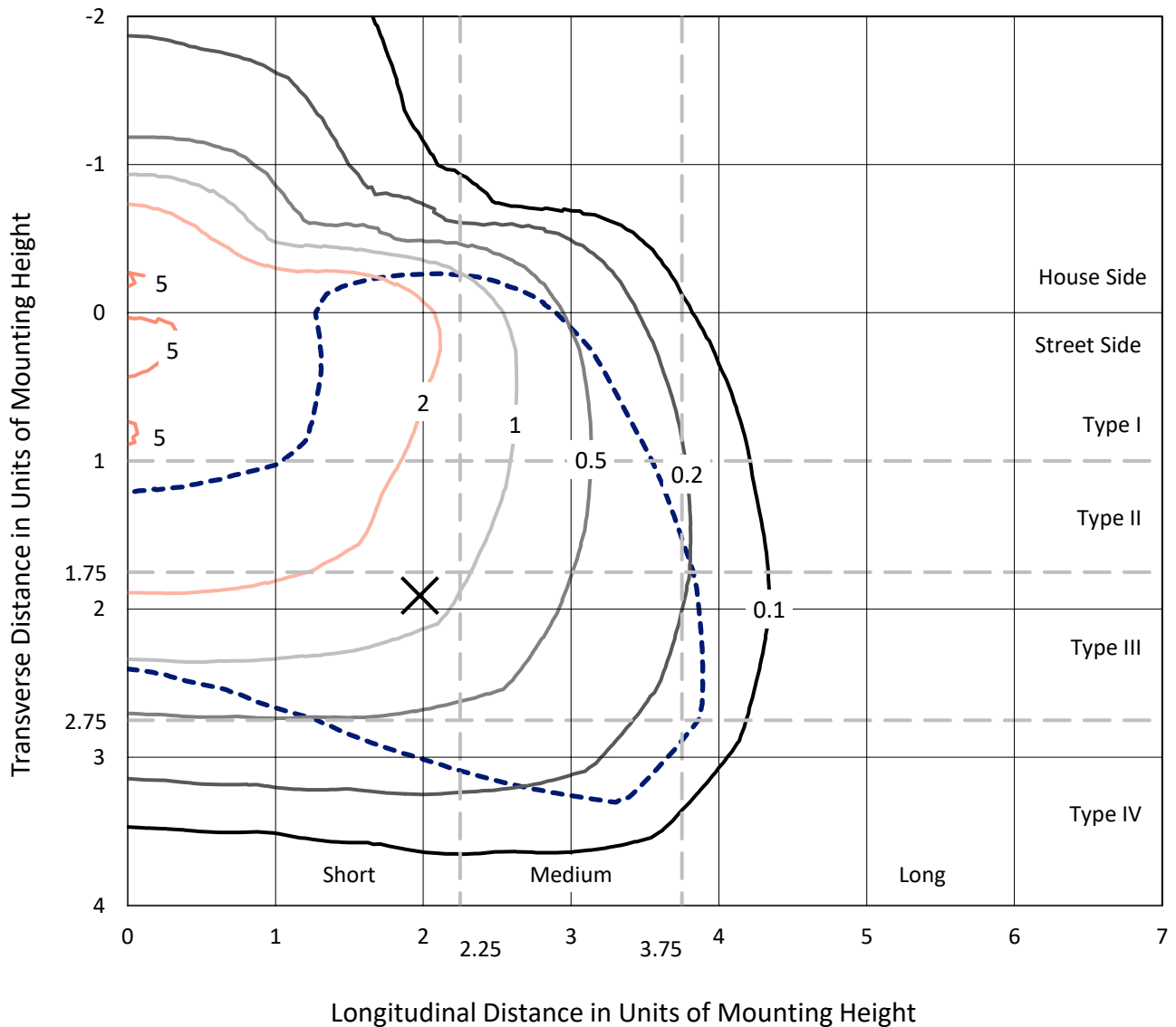
Input Watts (W): 333  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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### Iso-Footcandle Lines of Horizontal Illumination

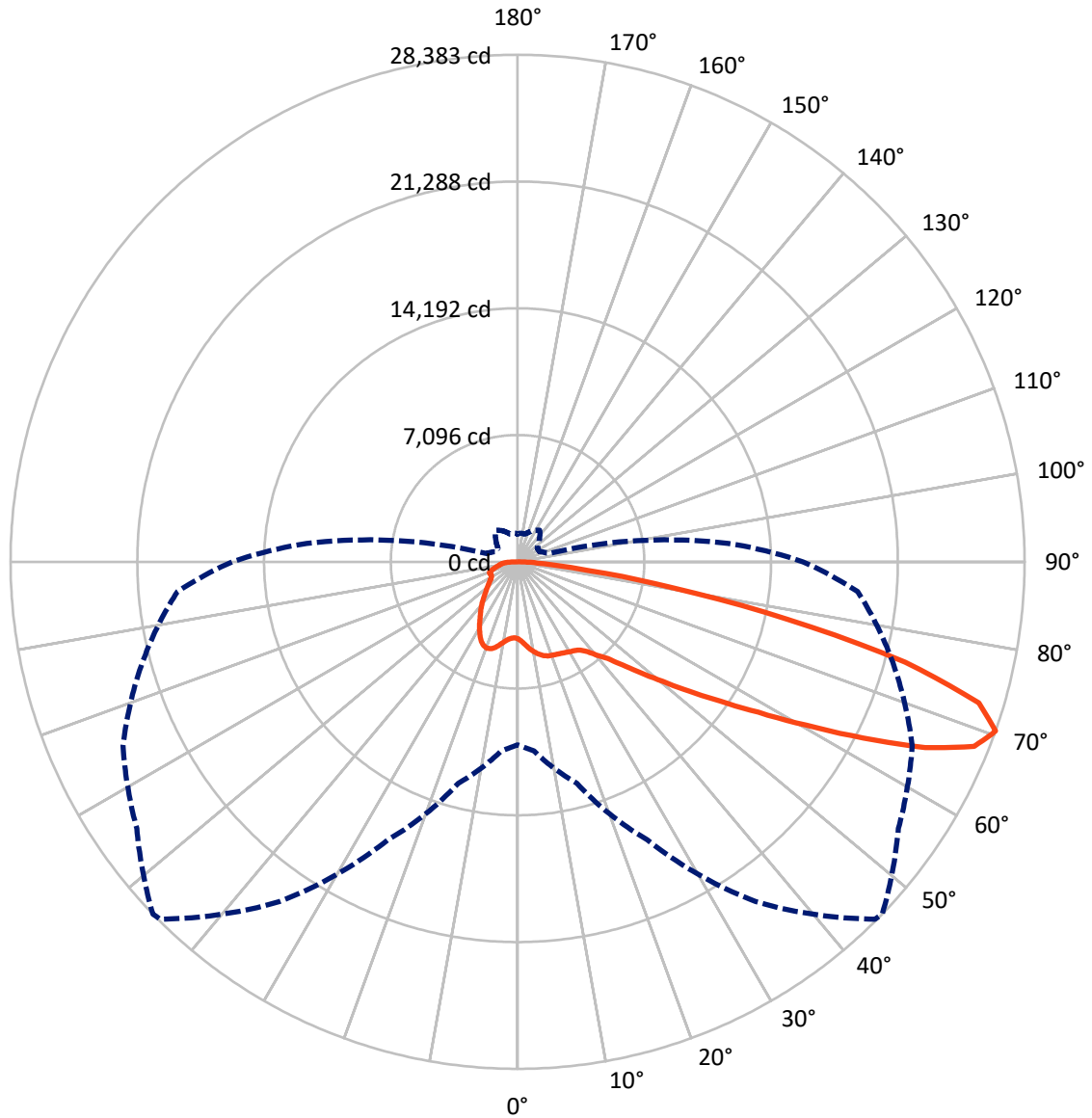
× Max cd  
 - - - 1/2 Max cd



Based on 30 foot mounting height. Maximum calculated value = 6 fc  
 Type IV - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 46-Deg Lateral      - - - Horizontal Cone Through 70-Deg Vertical

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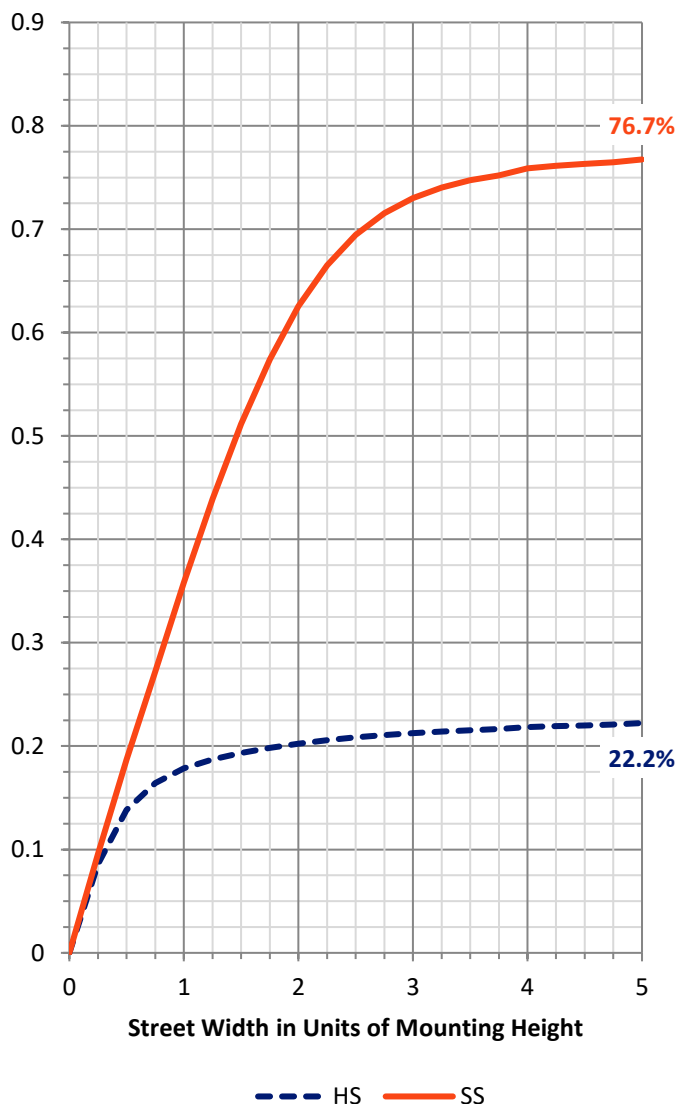
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 9694.6   | 0.0    | 9694.6  |
|                    | % Fixture | 22.9     | 0.0    | 22.9    |
| <b>Street Side</b> | Lumens    | 32603.4  | 0.0    | 32603.4 |
|                    | % Fixture | 77.1     | 0.0    | 77.1    |
| <b>Total</b>       | Lumens    | 42298.0  | 0.0    | 42298.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 439.3   | 1.0       |
| 10°-20°   | 1463.6  | 3.5       |
| 20°-30°   | 2440.4  | 5.8       |
| 30°-40°   | 3463.1  | 8.2       |
| 40°-50°   | 5094.1  | 12.0      |
| 50°-60°   | 8626.8  | 20.4      |
| 60°-70°   | 12245.6 | 29.0      |
| 70°-80°   | 7439.3  | 17.6      |
| 80°-90°   | 1085.7  | 2.6       |
| 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°    | 42298.0 | 100.0     |
| 0°-180°   | 42298.0 | 100.0     |

**Coefficient of Utilization**

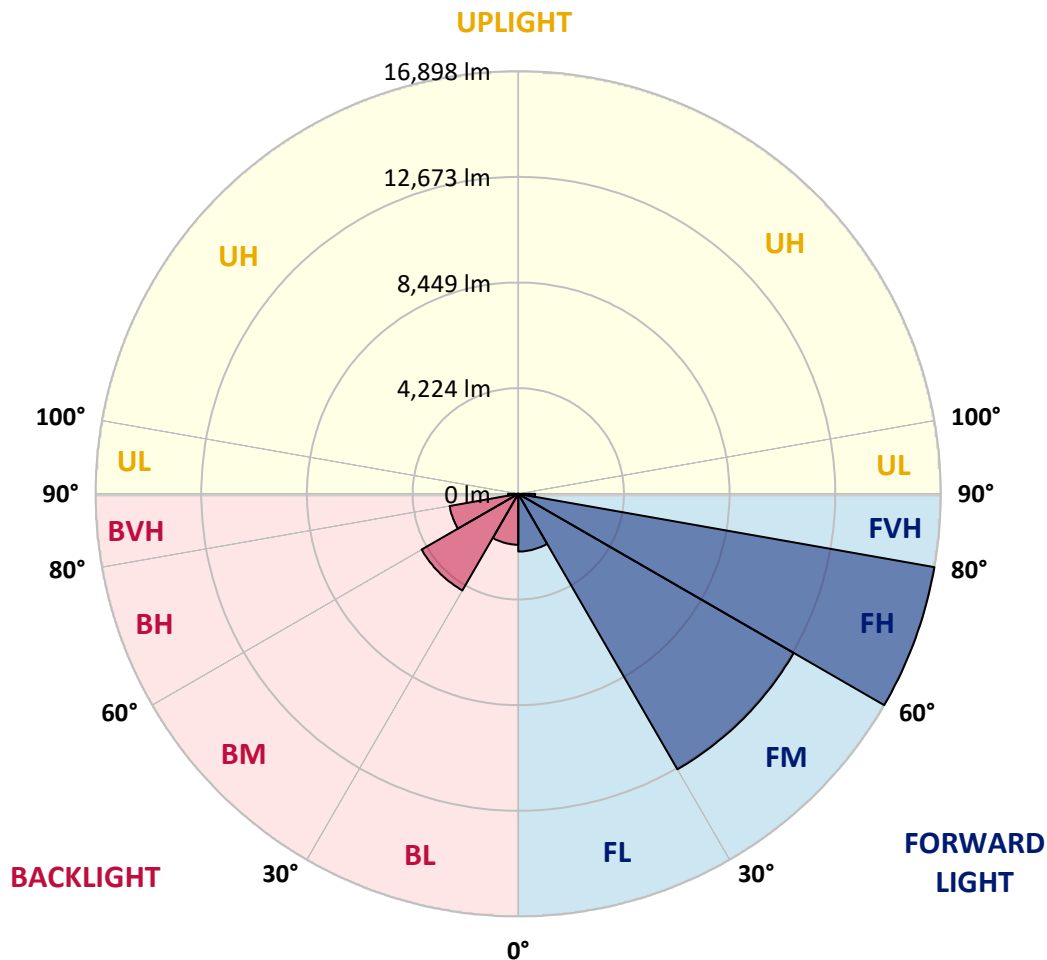


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|---------|-----------|-------------------------|------|---------|
|                |         |           | B                       | U    | G       |
| FL (0°-30°)    | 2308.0  | 5.5       |                         |      |         |
| FM (30°-60°)   | 12721.4 | 30.1      |                         |      |         |
| FH (60°-80°)   | 16897.8 | 39.9      |                         |      | G5      |
| FVH (80°-90°)  | 676.3   | 1.6       |                         |      | G4/750  |
| BL (0°-30°)    | 2035.4  | 4.8       | B3/2500                 |      |         |
| BM (30°-60°)   | 4462.7  | 10.6      | B3/5000                 |      |         |
| BH (60°-80°)   | 2787.1  | 6.6       | B4/5000                 |      | G4/5000 |
| BVH (80°-90°)  | 409.4   | 1.0       |                         |      | G3/500  |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B4-U0-G5**  
 Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 46°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 4309.3  | 4309.3  | 4309.3  | 4309.3  | 4309.3  | 4309.3  | 4309.3  | 4309.3  | 4309.3  | 4309.3  | 4309.3  |
| 2.5°  | 4525.0  | 4527.9  | 4533.7  | 4519.2  | 4478.7  | 4467.1  | 4462.8  | 4420.8  | 4393.3  | 4352.8  | 4318.0  |
| 5°    | 4886.9  | 4889.8  | 4881.1  | 4840.6  | 4750.8  | 4684.3  | 4678.5  | 4582.9  | 4496.1  | 4403.4  | 4333.9  |
| 7.5°  | 5264.7  | 5269.1  | 5241.6  | 5164.8  | 5038.9  | 4923.1  | 4915.9  | 4785.6  | 4653.9  | 4513.4  | 4409.2  |
| 10°   | 5599.1  | 5581.7  | 5536.9  | 5429.7  | 5280.6  | 5138.8  | 5133.0  | 4996.9  | 4844.9  | 4675.6  | 4536.6  |
| 12.5° | 5822.0  | 5807.5  | 5749.6  | 5619.4  | 5455.8  | 5325.5  | 5313.9  | 5188.0  | 5040.3  | 4855.1  | 4688.6  |
| 15°   | 5945.1  | 5955.2  | 5877.0  | 5729.4  | 5570.1  | 5460.1  | 5450.0  | 5360.3  | 5228.5  | 5041.8  | 4850.7  |
| 17.5° | 5961.0  | 5969.7  | 5894.4  | 5748.2  | 5617.9  | 5542.6  | 5538.3  | 5479.0  | 5383.4  | 5203.9  | 5004.2  |
| 20°   | 5868.3  | 5874.1  | 5811.9  | 5691.7  | 5606.3  | 5583.2  | 5581.7  | 5555.7  | 5484.7  | 5325.5  | 5131.5  |
| 22.5° | 5733.7  | 5738.1  | 5693.2  | 5606.3  | 5577.4  | 5613.6  | 5623.7  | 5613.6  | 5562.9  | 5413.8  | 5231.4  |
| 25°   | 5700.4  | 5697.5  | 5651.2  | 5562.9  | 5587.5  | 5664.2  | 5677.3  | 5681.6  | 5646.9  | 5516.6  | 5358.8  |
| 27.5° | 5861.1  | 5851.0  | 5762.7  | 5620.8  | 5636.7  | 5729.4  | 5746.7  | 5788.7  | 5767.0  | 5652.7  | 5503.6  |
| 30°   | 6325.8  | 6308.4  | 6127.5  | 5840.8  | 5762.7  | 5810.4  | 5832.2  | 5898.7  | 5903.1  | 5807.5  | 5696.1  |
| 32.5° | 7110.3  | 7088.6  | 6764.4  | 6251.9  | 5975.5  | 5893.0  | 5913.2  | 6013.1  | 6066.7  | 5992.8  | 5872.7  |
| 35°   | 8101.9  | 8077.3  | 7651.7  | 6951.1  | 6331.6  | 6050.7  | 6065.2  | 6144.8  | 6251.9  | 6147.7  | 5988.5  |
| 37.5° | 9135.4  | 9076.1  | 8666.4  | 7773.3  | 6897.5  | 6388.0  | 6388.0  | 6398.1  | 6448.8  | 6231.7  | 6124.6  |
| 40°   | 10163.2 | 10103.9 | 9733.3  | 8740.3  | 7630.0  | 6919.3  | 6886.0  | 6661.6  | 6621.1  | 6434.3  | 6398.1  |
| 42.5° | 11118.6 | 11101.2 | 10882.6 | 9833.2  | 8489.8  | 7441.8  | 7395.5  | 7014.8  | 7023.5  | 6907.7  | 6909.1  |
| 45°   | 12134.8 | 12134.8 | 11956.7 | 10936.2 | 9491.5  | 8281.4  | 8235.1  | 7674.9  | 7761.7  | 7708.2  | 7837.0  |
| 47.5° | 12964.2 | 12990.3 | 12965.7 | 12085.5 | 10656.8 | 9348.2  | 9264.3  | 8589.7  | 8832.9  | 9016.8  | 9391.7  |
| 50°   | 13811.0 | 13851.5 | 13855.9 | 13346.4 | 12065.3 | 10616.3 | 10520.7 | 9804.2  | 10347.0 | 10874.0 | 11610.7 |
| 52.5° | 15040.0 | 15131.2 | 14767.8 | 14604.3 | 13790.8 | 12121.7 | 12027.6 | 11366.1 | 12272.3 | 13012.0 | 14281.5 |
| 55°   | 16179.2 | 16099.6 | 15840.5 | 15941.8 | 15637.8 | 13835.6 | 13764.7 | 13184.2 | 14417.5 | 15378.7 | 17027.5 |
| 57.5° | 16795.9 | 16790.1 | 17050.6 | 17484.9 | 17629.6 | 15949.0 | 15889.7 | 15325.1 | 16836.4 | 17558.7 | 19605.5 |
| 60°   | 17519.6 | 17529.8 | 18175.4 | 19161.1 | 19757.5 | 18580.7 | 18554.6 | 18126.1 | 19185.7 | 19594.0 | 21627.8 |
| 62.5° | 17621.0 | 17803.3 | 18915.1 | 20611.6 | 21749.3 | 21655.3 | 21713.2 | 20649.2 | 21287.6 | 21218.1 | 23137.5 |
| 65°   | 16455.7 | 16696.0 | 18708.1 | 21050.2 | 23729.6 | 25017.9 | 25071.5 | 23186.8 | 22945.0 | 22606.3 | 23677.5 |
| 67.5° | 14067.2 | 14423.3 | 16609.1 | 20096.3 | 24382.4 | 27503.3 | 27578.6 | 25154.0 | 24320.2 | 23076.7 | 22377.6 |
| 70°   | 10237.0 | 10632.2 | 12832.5 | 17163.5 | 23218.6 | 28298.0 | 28383.4 | 26023.9 | 24372.3 | 21737.8 | 19103.2 |
| 72.5° | 6183.9  | 6493.7  | 8307.5  | 12635.6 | 19596.8 | 26850.5 | 27002.5 | 24920.9 | 22251.6 | 18412.8 | 14106.3 |
| 75°   | 2715.6  | 2918.2  | 4016.9  | 7281.1  | 14029.6 | 22215.5 | 22405.1 | 21331.0 | 18079.8 | 13381.1 | 8337.9  |
| 77.5° | 1156.6  | 1214.5  | 1647.3  | 3162.9  | 7931.1  | 15180.4 | 15441.0 | 15585.7 | 12266.5 | 7281.1  | 3523.3  |
| 80°   | 720.9   | 744.0   | 932.2   | 1431.6  | 3711.5  | 8526.0  | 8806.9  | 9170.2  | 6091.3  | 2676.5  | 1230.4  |
| 82.5° | 438.6   | 464.7   | 619.5   | 865.6   | 1932.5  | 3864.9  | 3999.6  | 4255.8  | 2363.8  | 1156.6  | 636.9   |
| 85°   | 263.5   | 282.3   | 379.3   | 547.2   | 1100.1  | 1519.9  | 1518.5  | 1679.2  | 1113.2  | 744.0   | 335.8   |
| 87.5° | 125.9   | 140.4   | 202.7   | 283.7   | 554.4   | 570.3   | 534.1   | 605.1   | 676.0   | 487.8   | 169.4   |
| 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-SA6C-740-U-T4W

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 4309.3  | 4309.3  | 4309.3 | 4309.3 | 4309.3 | 4309.3 | 4309.3 | 4309.3 | 4309.3 | 4309.3 | 4309.3 |
| 2.5°  | 4306.4  | 4300.7  | 4281.8 | 4267.4 | 4264.5 | 4255.8 | 4248.5 | 4252.9 | 4258.7 | 4260.1 | 4260.1 |
| 5°    | 4305.0  | 4289.1  | 4264.5 | 4254.3 | 4267.4 | 4284.7 | 4306.4 | 4335.4 | 4352.8 | 4365.8 | 4374.5 |
| 7.5°  | 4374.5  | 4344.1  | 4316.6 | 4310.8 | 4336.8 | 4383.2 | 4432.4 | 4493.2 | 4535.2 | 4564.1 | 4569.9 |
| 10°   | 4490.3  | 4452.6  | 4425.1 | 4430.9 | 4477.3 | 4543.8 | 4613.3 | 4691.5 | 4755.2 | 4794.3 | 4797.2 |
| 12.5° | 4623.5  | 4587.3  | 4561.2 | 4585.8 | 4662.5 | 4743.6 | 4816.0 | 4884.0 | 4941.9 | 4981.0 | 4981.0 |
| 15°   | 4776.9  | 4750.8  | 4720.4 | 4776.9 | 4881.1 | 4953.5 | 4983.9 | 5017.2 | 5049.0 | 5078.0 | 5072.2 |
| 17.5° | 4924.5  | 4899.9  | 4884.0 | 4950.6 | 5059.2 | 5092.5 | 5072.2 | 5047.6 | 5047.6 | 5063.5 | 5066.4 |
| 20°   | 5051.9  | 5030.2  | 5040.3 | 5105.5 | 5161.9 | 5127.2 | 5051.9 | 4973.8 | 4941.9 | 4950.6 | 4959.3 |
| 22.5° | 5163.4  | 5153.3  | 5183.7 | 5214.1 | 5173.5 | 5051.9 | 4913.0 | 4807.3 | 4768.2 | 4765.3 | 4768.2 |
| 25°   | 5293.7  | 5292.2  | 5329.9 | 5274.9 | 5095.4 | 4871.0 | 4684.3 | 4581.5 | 4559.8 | 4577.1 | 4606.1 |
| 27.5° | 5455.8  | 5471.7  | 5490.5 | 5289.3 | 4936.1 | 4597.4 | 4407.8 | 4336.8 | 4358.6 | 4400.5 | 4428.0 |
| 30°   | 5662.8  | 5706.2  | 5665.7 | 5253.1 | 4707.4 | 4284.7 | 4103.8 | 4083.5 | 4142.9 | 4202.2 | 4231.2 |
| 32.5° | 5864.0  | 5932.0  | 5833.6 | 5159.0 | 4412.1 | 3953.2 | 3812.8 | 3807.0 | 3879.4 | 3937.3 | 3977.9 |
| 35°   | 6026.1  | 6160.7  | 5959.5 | 4972.3 | 4070.5 | 3647.8 | 3545.0 | 3506.0 | 3532.0 | 3600.0 | 3646.4 |
| 37.5° | 6237.5  | 6461.8  | 6046.4 | 4687.1 | 3699.9 | 3395.9 | 3275.8 | 3186.0 | 3162.9 | 3190.4 | 3213.5 |
| 40°   | 6624.0  | 6920.7  | 6086.9 | 4289.1 | 3338.0 | 3144.1 | 3022.5 | 2890.7 | 2799.5 | 2733.0 | 2734.4 |
| 42.5° | 7255.1  | 7518.5  | 6060.9 | 3805.6 | 3003.7 | 2898.0 | 2760.5 | 2608.5 | 2460.8 | 2310.3 | 2298.7 |
| 45°   | 8280.0  | 8407.3  | 5982.7 | 3293.2 | 2709.8 | 2640.3 | 2511.5 | 2359.5 | 2162.6 | 1991.8 | 1975.9 |
| 47.5° | 9920.0  | 9637.7  | 5861.1 | 2845.9 | 2450.7 | 2421.7 | 2303.0 | 2127.9 | 1919.4 | 1781.9 | 1770.3 |
| 50°   | 12156.5 | 11413.9 | 5801.8 | 2489.8 | 2222.0 | 2230.7 | 2133.7 | 1948.4 | 1751.5 | 1650.2 | 1638.6 |
| 52.5° | 14831.5 | 13482.4 | 5916.1 | 2214.7 | 2038.1 | 2068.5 | 1996.2 | 1822.5 | 1657.4 | 1577.8 | 1566.2 |
| 55°   | 17606.5 | 15624.8 | 6039.2 | 2015.0 | 1864.4 | 1923.8 | 1899.2 | 1755.9 | 1606.8 | 1532.9 | 1522.8 |
| 57.5° | 19981.9 | 17224.3 | 5793.1 | 1852.9 | 1709.5 | 1802.2 | 1823.9 | 1713.9 | 1580.7 | 1514.1 | 1502.6 |
| 60°   | 21477.2 | 17868.5 | 5147.5 | 1700.9 | 1586.5 | 1705.2 | 1780.5 | 1702.3 | 1590.9 | 1585.1 | 1576.4 |
| 62.5° | 22186.5 | 17812.0 | 4179.1 | 1580.7 | 1509.8 | 1663.2 | 1812.3 | 1767.5 | 1706.7 | 1758.8 | 1763.1 |
| 65°   | 21868.0 | 16960.9 | 3112.2 | 1501.1 | 1454.8 | 1679.2 | 1907.9 | 1890.5 | 1739.9 | 1792.1 | 1799.3 |
| 67.5° | 19772.0 | 14930.0 | 2304.5 | 1431.6 | 1394.0 | 1724.0 | 2081.6 | 1931.0 | 1674.8 | 1712.4 | 1689.3 |
| 70°   | 15980.9 | 11836.6 | 1777.6 | 1353.5 | 1331.7 | 1718.2 | 2159.7 | 1906.4 | 1603.9 | 1612.6 | 1550.3 |
| 72.5° | 11020.2 | 8071.5  | 1446.1 | 1281.1 | 1242.0 | 1566.2 | 2104.7 | 1845.6 | 1544.5 | 1477.9 | 1395.4 |
| 75°   | 5992.8  | 4332.5  | 1229.0 | 1205.8 | 1084.2 | 1375.2 | 2003.4 | 1802.2 | 1491.0 | 1402.7 | 1356.3 |
| 77.5° | 2358.0  | 1797.8  | 1066.8 | 1103.0 | 948.1  | 1214.5 | 1890.5 | 1719.7 | 1417.1 | 1301.3 | 1278.2 |
| 80°   | 962.6   | 917.7   | 884.4  | 953.9  | 815.0  | 1062.5 | 1754.4 | 1622.7 | 1328.8 | 1207.3 | 1160.9 |
| 82.5° | 545.7   | 570.3   | 687.6  | 752.7  | 661.5  | 978.5  | 1689.3 | 1544.5 | 1223.2 | 1081.3 | 1026.3 |
| 85°   | 279.4   | 334.4   | 479.1  | 539.9  | 486.4  | 832.3  | 1556.1 | 1352.0 | 981.4  | 828.0  | 832.3  |
| 87.5° | 134.6   | 186.7   | 302.5  | 338.7  | 315.6  | 602.2  | 1162.4 | 980.0  | 764.3  | 605.1  | 586.3  |
| 90°   | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

MCGRAW, INVUE, LUMARK AND STREETWORKS

DATA VALID FOR LUMINAIRES UTILIZING SA LIGHT ENGINES

Report Number: SP1-2101-121-2

Luminaire Tested: IFLD-S-SA2A-740-U-T3R-HSS

Test Date: 03/05/2021

**Test Information**

Test Method: LM-79-08  
 Report Number: SP1-2101-121-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry: 4π  
 Issue Date: 03/05/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2A-740-U-T3R-HSS**  
 Description: STREETWORKS INF FLOOD

SHIELD, DRIVER PROGRAMMED @ 615mA.

**Spectral Parameters**

|                           |         |           |      |      |       |
|---------------------------|---------|-----------|------|------|-------|
| CCT (K):                  | 3905    | CRI (Ra): | 71.2 | R9:  | -29.7 |
| CIE u':                   | 0.2273  | R1:       | 68.9 | R10: | 46.2  |
| CIE v':                   | 0.5024  | R2:       | 77.0 | R11: | 68.8  |
| Duv:                      | -0.0008 | R3:       | 84.0 | R12: | 45.6  |
| CIE x:                    | 0.3841  | R4:       | 71.6 | R13: | 69.5  |
| CIE y:                    | 0.3774  | R5:       | 68.9 | R14: | 90.7  |
| CIE z:                    | 0.2385  | R6:       | 68.3 |      |       |
| Peak Wavelength (nm):     | 443     | R7:       | 78.7 |      |       |
| Dominant Wavelength (nm): | 579     | R8:       | 52.2 |      |       |
| Purity:                   | 28.7    |           |      |      |       |
| Rf:                       | 71.7    |           |      |      |       |
| Rg:                       | 96.9    |           |      |      |       |



**Test Conditions**

Stabilization Time: 211M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.8/312%  
 Sphere Temperature (°C): 24.1

REPORT NUMBER: SP1-2101-121-2

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 1/31/2021        | 7/31/2021            |
| Power Meter                    | IN0071                | 12/1/2020        | 12/1/2021            |
| AC Power Source                | IN0063                | 12/1/2020        | 12/1/2021            |
| DC Power Source                | IN0208                | 12/1/2020        | 12/1/2021            |
| Sphere Thermometer             | IN0085                | 12/1/2020        | 12/1/2021            |
| Room Thermometer               | IN0046                | 12/1/2020        | 12/1/2021            |

REPORT NUMBER: SP1-2101-121-2

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP1-2101-121-2

**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    | 2304          | 0.0           | 490    | 19043         | 2.7           | 620    | 97577         | 25.4          | 750    | 4830          | 0.0           | 880    | 3505          | 0.0           |
| 365    | 2150          | 0.0           | 495    | 26606         | 4.8           | 625    | 90158         | 19.9          | 755    | 4664          | 0.0           | 885    | 2991          | 0.0           |
| 370    | 2146          | 0.0           | 500    | 36376         | 8.0           | 630    | 82240         | 14.9          | 760    | 4006          | 0.0           | 890    | 2327          | 0.0           |
| 375    | 2332          | 0.0           | 505    | 47714         | 13.3          | 635    | 74361         | 11.2          | 765    | 3715          | 0.0           | 895    | 2775          | 0.0           |
| 380    | 2527          | 0.0           | 510    | 58741         | 20.2          | 640    | 66994         | 8.0           | 770    | 3696          | 0.0           | 900    | 2141          | 0.0           |
| 385    | 2304          | 0.0           | 515    | 68716         | 28.5          | 645    | 60405         | 5.8           | 775    | 3117          | 0.0           | 905    | 2421          | 0.0           |
| 390    | 2064          | 0.0           | 520    | 77136         | 37.4          | 650    | 53806         | 3.9           | 780    | 3062          | 0.0           | 910    | 2200          | 0.0           |
| 395    | 1856          | 0.0           | 525    | 83567         | 44.9          | 655    | 47610         | 2.7           | 785    | 2907          | 0.0           | 915    | 2716          | 0.0           |
| 400    | 1856          | 0.0           | 530    | 89283         | 52.6          | 660    | 42018         | 1.8           | 790    | 2655          | 0.0           | 920    | 2656          | 0.0           |
| 405    | 2374          | 0.0           | 535    | 94097         | 58.4          | 665    | 36742         | 1.2           | 795    | 2467          | 0.0           | 925    | 2671          | 0.0           |
| 410    | 4084          | 0.0           | 540    | 96845         | 63.1          | 670    | 32105         | 0.7           | 800    | 2609          | 0.0           | 930    | 3292          | 0.0           |
| 415    | 8543          | 0.0           | 545    | 100829        | 67.1          | 675    | 27946         | 0.5           | 805    | 2293          | 0.0           | 935    | 3188          | 0.0           |
| 420    | 18394         | 0.1           | 550    | 105648        | 71.8          | 680    | 24146         | 0.3           | 810    | 2188          | 0.0           | 940    | 1997          | 0.0           |
| 425    | 37987         | 0.2           | 555    | 110017        | 75.1          | 685    | 21191         | 0.2           | 815    | 2386          | 0.0           | 945    | 2623          | 0.0           |
| 430    | 67605         | 0.5           | 560    | 114586        | 77.9          | 690    | 18544         | 0.1           | 820    | 2712          | 0.0           | 950    | 2969          | 0.0           |
| 435    | 102160        | 1.2           | 565    | 118987        | 79.1          | 695    | 16058         | 0.1           | 825    | 2473          | 0.0           | 955    | 2277          | 0.0           |
| 440    | 135103        | 2.1           | 570    | 122326        | 79.5          | 700    | 14133         | 0.0           | 830    | 1969          | 0.0           | 960    | 4267          | 0.0           |
| 445    | 140126        | 2.9           | 575    | 125968        | 78.4          | 705    | 12309         | 0.0           | 835    | 1917          | 0.0           | 965    | 2034          | 0.0           |
| 450    | 102339        | 2.7           | 580    | 127613        | 75.8          | 710    | 11142         | 0.0           | 840    | 2248          | 0.0           | 970    | 3586          | 0.0           |
| 455    | 58751         | 2.0           | 585    | 129466        | 71.9          | 715    | 10143         | 0.0           | 845    | 2266          | 0.0           | 975    | 2505          | 0.0           |
| 460    | 36892         | 1.5           | 590    | 128813        | 66.6          | 720    | 9072          | 0.0           | 850    | 2558          | 0.0           | 980    | 2666          | 0.0           |
| 465    | 24637         | 1.3           | 595    | 126387        | 59.9          | 725    | 8130          | 0.0           | 855    | 2767          | 0.0           | 985    | 2934          | 0.0           |
| 470    | 16738         | 1.0           | 600    | 123477        | 53.2          | 730    | 7149          | 0.0           | 860    | 2826          | 0.0           | 990    | 4120          | 0.0           |
| 475    | 13456         | 1.1           | 605    | 118718        | 46.0          | 735    | 6311          | 0.0           | 865    | 2385          | 0.0           | 995    | 3858          | 0.0           |
| 480    | 13081         | 1.2           | 610    | 112091        | 38.5          | 740    | 5711          | 0.0           | 870    | 3194          | 0.0           | 1000   | 3405          | 0.0           |
| 485    | 14734         | 1.7           | 615    | 105039        | 31.7          | 745    | 5111          | 0.0           | 875    | 3189          | 0.0           |        |               |               |

REPORT NUMBER: SP1-2101-121-2

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 10425.8 S/P: 1.47**

| 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    | 2304          | 0.0           | 490    | 19043         | 29.3          | 620    | 97577         | 1.2           | 750    | 4830          | 0.0           | 880    | 3505          | 0.0           |
| 365    | 2150          | 0.0           | 495    | 26606         | 43.0          | 625    | 90158         | 0.8           | 755    | 4664          | 0.0           | 885    | 2991          | 0.0           |
| 370    | 2146          | 0.0           | 500    | 36376         | 60.8          | 630    | 82240         | 0.5           | 760    | 4006          | 0.0           | 890    | 2327          | 0.0           |
| 375    | 2332          | 0.0           | 505    | 47714         | 81.1          | 635    | 74361         | 0.3           | 765    | 3715          | 0.0           | 895    | 2775          | 0.0           |
| 380    | 2527          | 0.0           | 510    | 58741         | 99.6          | 640    | 66994         | 0.2           | 770    | 3696          | 0.0           | 900    | 2141          | 0.0           |
| 385    | 2304          | 0.0           | 515    | 68716         | 113.9         | 645    | 60405         | 0.1           | 775    | 3117          | 0.0           | 905    | 2421          | 0.0           |
| 390    | 2064          | 0.0           | 520    | 77136         | 122.6         | 650    | 53806         | 0.1           | 780    | 3062          | 0.0           | 910    | 2200          | 0.0           |
| 395    | 1856          | 0.0           | 525    | 83567         | 125.0         | 655    | 47610         | 0.0           | 785    | 2907          | 0.0           | 915    | 2716          | 0.0           |
| 400    | 1856          | 0.0           | 530    | 89283         | 123.1         | 660    | 42018         | 0.0           | 790    | 2655          | 0.0           | 920    | 2656          | 0.0           |
| 405    | 2374          | 0.1           | 535    | 94097         | 117.3         | 665    | 36742         | 0.0           | 795    | 2467          | 0.0           | 925    | 2671          | 0.0           |
| 410    | 4084          | 0.2           | 540    | 96845         | 107.0         | 670    | 32105         | 0.0           | 800    | 2609          | 0.0           | 930    | 3292          | 0.0           |
| 415    | 8543          | 0.9           | 545    | 100829        | 96.7          | 675    | 27946         | 0.0           | 805    | 2293          | 0.0           | 935    | 3188          | 0.0           |
| 420    | 18394         | 3.0           | 550    | 105648        | 86.4          | 680    | 24146         | 0.0           | 810    | 2188          | 0.0           | 940    | 1997          | 0.0           |
| 425    | 37987         | 9.3           | 555    | 110017        | 75.2          | 685    | 21191         | 0.0           | 815    | 2386          | 0.0           | 945    | 2623          | 0.0           |
| 430    | 67605         | 23.0          | 560    | 114586        | 64.0          | 690    | 18544         | 0.0           | 820    | 2712          | 0.0           | 950    | 2969          | 0.0           |
| 435    | 102160        | 45.7          | 565    | 118987        | 53.4          | 695    | 16058         | 0.0           | 825    | 2473          | 0.0           | 955    | 2277          | 0.0           |
| 440    | 135103        | 75.5          | 570    | 122326        | 43.2          | 700    | 14133         | 0.0           | 830    | 1969          | 0.0           | 960    | 4267          | 0.0           |
| 445    | 140126        | 93.8          | 575    | 125968        | 34.3          | 705    | 12309         | 0.0           | 835    | 1917          | 0.0           | 965    | 2034          | 0.0           |
| 450    | 102339        | 79.3          | 580    | 127613        | 26.3          | 710    | 11142         | 0.0           | 840    | 2248          | 0.0           | 970    | 3586          | 0.0           |
| 455    | 58751         | 51.3          | 585    | 129466        | 19.8          | 715    | 10143         | 0.0           | 845    | 2266          | 0.0           | 975    | 2505          | 0.0           |
| 460    | 36892         | 35.6          | 590    | 128813        | 14.3          | 720    | 9072          | 0.0           | 850    | 2558          | 0.0           | 980    | 2666          | 0.0           |
| 465    | 24637         | 26.0          | 595    | 126387        | 10.1          | 725    | 8130          | 0.0           | 855    | 2767          | 0.0           | 985    | 2934          | 0.0           |
| 470    | 16738         | 19.3          | 600    | 123477        | 7.0           | 730    | 7149          | 0.0           | 860    | 2826          | 0.0           | 990    | 4120          | 0.0           |
| 475    | 13456         | 16.8          | 605    | 118718        | 4.7           | 735    | 6311          | 0.0           | 865    | 2385          | 0.0           | 995    | 3858          | 0.0           |
| 480    | 13081         | 17.7          | 610    | 112091        | 3.0           | 740    | 5711          | 0.0           | 870    | 3194          | 0.0           | 1000   | 3405          | 0.0           |
| 485    | 14734         | 21.4          | 615    | 105039        | 1.9           | 745    | 5111          | 0.0           | 875    | 3189          | 0.0           |        |               |               |

REPORT NUMBER: SP1-2101-121-2

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 3927.2 M/P: 0.55**

| 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    | 2304          | 0.0           | 490    | 19043         | 15.8          | 620    | 97577         | 0.1           | 750    | 4830          | 0.0           | 880    | 3505          | 0.0           |
| 365    | 2150          | 0.0           | 495    | 26606         | 22.0          | 625    | 90158         | 0.0           | 755    | 4664          | 0.0           | 885    | 2991          | 0.0           |
| 370    | 2146          | 0.0           | 500    | 36376         | 29.2          | 630    | 82240         | 0.0           | 760    | 4006          | 0.0           | 890    | 2327          | 0.0           |
| 375    | 2332          | 0.0           | 505    | 47714         | 36.6          | 635    | 74361         | 0.0           | 765    | 3715          | 0.0           | 895    | 2775          | 0.0           |
| 380    | 2527          | 0.0           | 510    | 58741         | 42.2          | 640    | 66994         | 0.0           | 770    | 3696          | 0.0           | 900    | 2141          | 0.0           |
| 385    | 2304          | 0.0           | 515    | 68716         | 44.9          | 645    | 60405         | 0.0           | 775    | 3117          | 0.0           | 905    | 2421          | 0.0           |
| 390    | 2064          | 0.0           | 520    | 77136         | 44.9          | 650    | 53806         | 0.0           | 780    | 3062          | 0.0           | 910    | 2200          | 0.0           |
| 395    | 1856          | 0.0           | 525    | 83567         | 42.4          | 655    | 47610         | 0.0           | 785    | 2907          | 0.0           | 915    | 2716          | 0.0           |
| 400    | 1856          | 0.0           | 530    | 89283         | 38.6          | 660    | 42018         | 0.0           | 790    | 2655          | 0.0           | 920    | 2656          | 0.0           |
| 405    | 2374          | 0.0           | 535    | 94097         | 33.9          | 665    | 36742         | 0.0           | 795    | 2467          | 0.0           | 925    | 2671          | 0.0           |
| 410    | 4084          | 0.2           | 540    | 96845         | 28.3          | 670    | 32105         | 0.0           | 800    | 2609          | 0.0           | 930    | 3292          | 0.0           |
| 415    | 8543          | 0.6           | 545    | 100829        | 23.4          | 675    | 27946         | 0.0           | 805    | 2293          | 0.0           | 935    | 3188          | 0.0           |
| 420    | 18394         | 2.1           | 550    | 105648        | 19.0          | 680    | 24146         | 0.0           | 810    | 2188          | 0.0           | 940    | 1997          | 0.0           |
| 425    | 37987         | 5.9           | 555    | 110017        | 14.8          | 685    | 21191         | 0.0           | 815    | 2386          | 0.0           | 945    | 2623          | 0.0           |
| 430    | 67605         | 14.3          | 560    | 114586        | 11.3          | 690    | 18544         | 0.0           | 820    | 2712          | 0.0           | 950    | 2969          | 0.0           |
| 435    | 102160        | 27.3          | 565    | 118987        | 8.4           | 695    | 16058         | 0.0           | 825    | 2473          | 0.0           | 955    | 2277          | 0.0           |
| 440    | 135103        | 45.1          | 570    | 122326        | 6.0           | 700    | 14133         | 0.0           | 830    | 1969          | 0.0           | 960    | 4267          | 0.0           |
| 445    | 140126        | 55.3          | 575    | 125968        | 4.2           | 705    | 12309         | 0.0           | 835    | 1917          | 0.0           | 965    | 2034          | 0.0           |
| 450    | 102339        | 47.2          | 580    | 127613        | 2.9           | 710    | 11142         | 0.0           | 840    | 2248          | 0.0           | 970    | 3586          | 0.0           |
| 455    | 58751         | 30.8          | 585    | 129466        | 1.9           | 715    | 10143         | 0.0           | 845    | 2266          | 0.0           | 975    | 2505          | 0.0           |
| 460    | 36892         | 21.7          | 590    | 128813        | 1.3           | 720    | 9072          | 0.0           | 850    | 2558          | 0.0           | 980    | 2666          | 0.0           |
| 465    | 24637         | 16.1          | 595    | 126387        | 0.8           | 725    | 8130          | 0.0           | 855    | 2767          | 0.0           | 985    | 2934          | 0.0           |
| 470    | 16738         | 12.0          | 600    | 123477        | 0.5           | 730    | 7149          | 0.0           | 860    | 2826          | 0.0           | 990    | 4120          | 0.0           |
| 475    | 13456         | 10.3          | 605    | 118718        | 0.3           | 735    | 6311          | 0.0           | 865    | 2385          | 0.0           | 995    | 3858          | 0.0           |
| 480    | 13081         | 10.5          | 610    | 112091        | 0.2           | 740    | 5711          | 0.0           | 870    | 3194          | 0.0           | 1000   | 3405          | 0.0           |
| 485    | 14734         | 12.1          | 615    | 105039        | 0.1           | 745    | 5111          | 0.0           | 875    | 3189          | 0.0           |        |               |               |

**Summary**

$R_f = 71.7$   
 $R_g = 96.9$   
 CIE  $R_a = 71.2$   
 $R_g = -29.7$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 55 | CES51 = 86 | CES76 = 45 |
| CES02 = 61 | CES27 = 80 | CES52 = 87 | CES77 = 68 |
| CES03 = 30 | CES28 = 79 | CES53 = 74 | CES78 = 49 |
| CES04 = 70 | CES29 = 51 | CES54 = 81 | CES79 = 77 |
| CES05 = 47 | CES30 = 60 | CES55 = 80 | CES80 = 75 |
| CES06 = 50 | CES31 = 56 | CES56 = 69 | CES81 = 75 |
| CES07 = 40 | CES32 = 52 | CES57 = 67 | CES82 = 90 |
| CES08 = 39 | CES33 = 62 | CES58 = 69 | CES83 = 85 |
| CES09 = 29 | CES34 = 65 | CES59 = 86 | CES84 = 87 |
| CES10 = 74 | CES35 = 81 | CES60 = 91 | CES85 = 83 |
| CES11 = 57 | CES36 = 92 | CES61 = 85 | CES86 = 72 |
| CES12 = 63 | CES37 = 74 | CES62 = 81 | CES87 = 77 |
| CES13 = 42 | CES38 = 69 | CES63 = 72 | CES88 = 77 |
| CES14 = 74 | CES39 = 92 | CES64 = 69 | CES89 = 72 |
| CES15 = 71 | CES40 = 86 | CES65 = 64 | CES90 = 75 |
| CES16 = 46 | CES41 = 84 | CES66 = 63 | CES91 = 91 |
| CES17 = 49 | CES42 = 75 | CES67 = 60 | CES92 = 66 |
| CES18 = 56 | CES43 = 70 | CES68 = 67 | CES93 = 80 |
| CES19 = 72 | CES44 = 98 | CES69 = 77 | CES94 = 56 |
| CES20 = 65 | CES45 = 80 | CES70 = 57 | CES95 = 72 |
| CES21 = 86 | CES46 = 77 | CES71 = 53 | CES96 = 78 |
| CES22 = 78 | CES47 = 74 | CES72 = 84 | CES97 = 83 |
| CES23 = 92 | CES48 = 66 | CES73 = 47 | CES98 = 73 |
| CES24 = 91 | CES49 = 76 | CES74 = 96 | CES99 = 63 |
| CES25 = 72 | CES50 = 85 | CES75 = 52 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)