

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: P359158

Luminaire Tested: NVN-SA6C-740-U-T2R

Issue Date: 3/3/2020

### Test Information

Test Method: LM-79-2019  
Report Number: P359158  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-8)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: NVN-SA6C-740-U-T2R  
Description: NAVION ROADWAY AND AREA LUMINAIRE  
(6) 70 CRI, 4000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II  
ROADWAY OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

### Summary

Lumens per Lamp: N/A  
Luminaire Lumens: 44856 lumens  
Efficiency: N/A  
Efficacy: 134.7 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B3 - U0 - G4

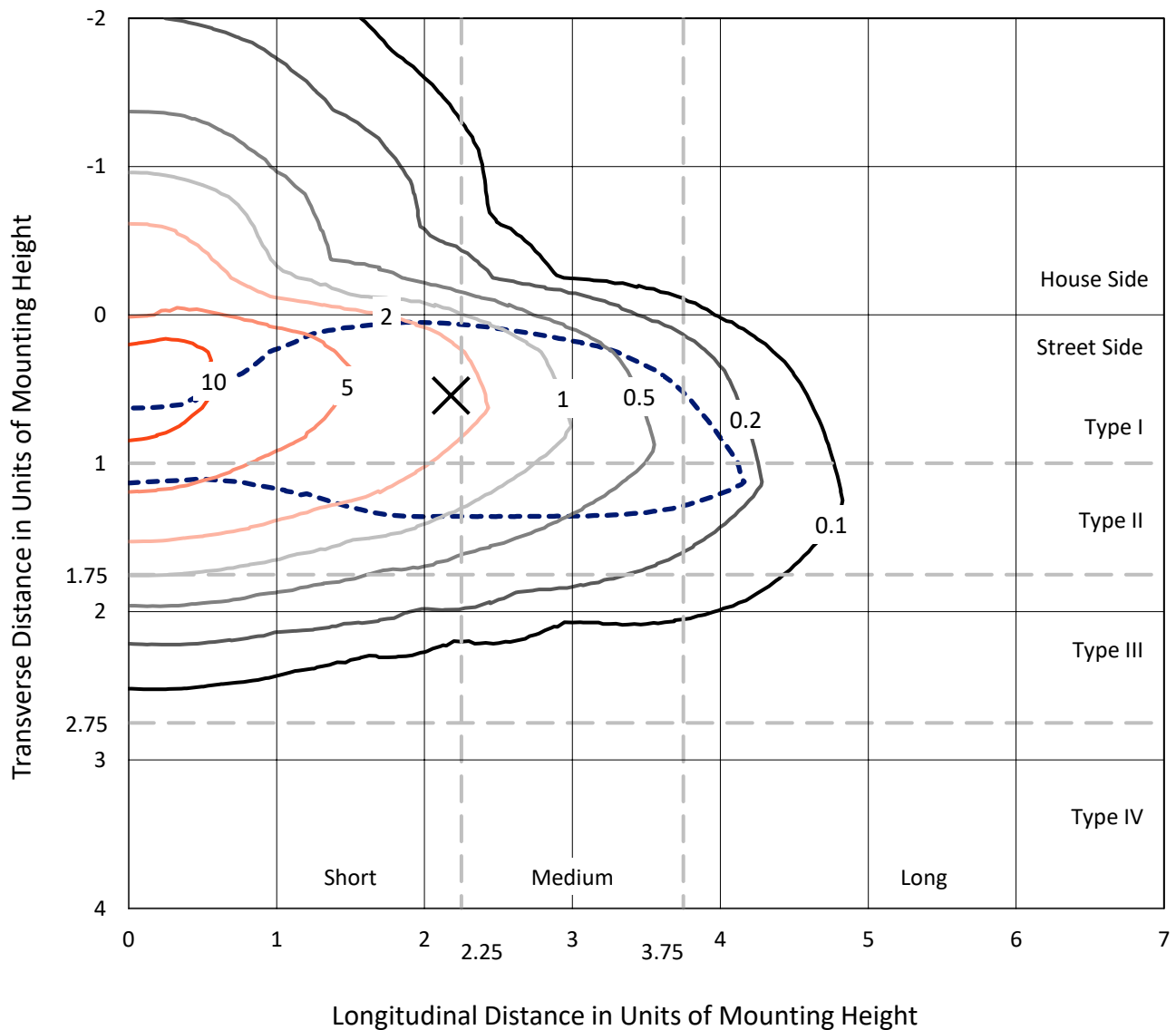
Input Watts (W): 333  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



REPORT NUMBER: P359158  
 CATALOG NUMBER: NVN-SA6C-740-U-T2R

## Iso-Footcandle Lines of Horizontal Illumination

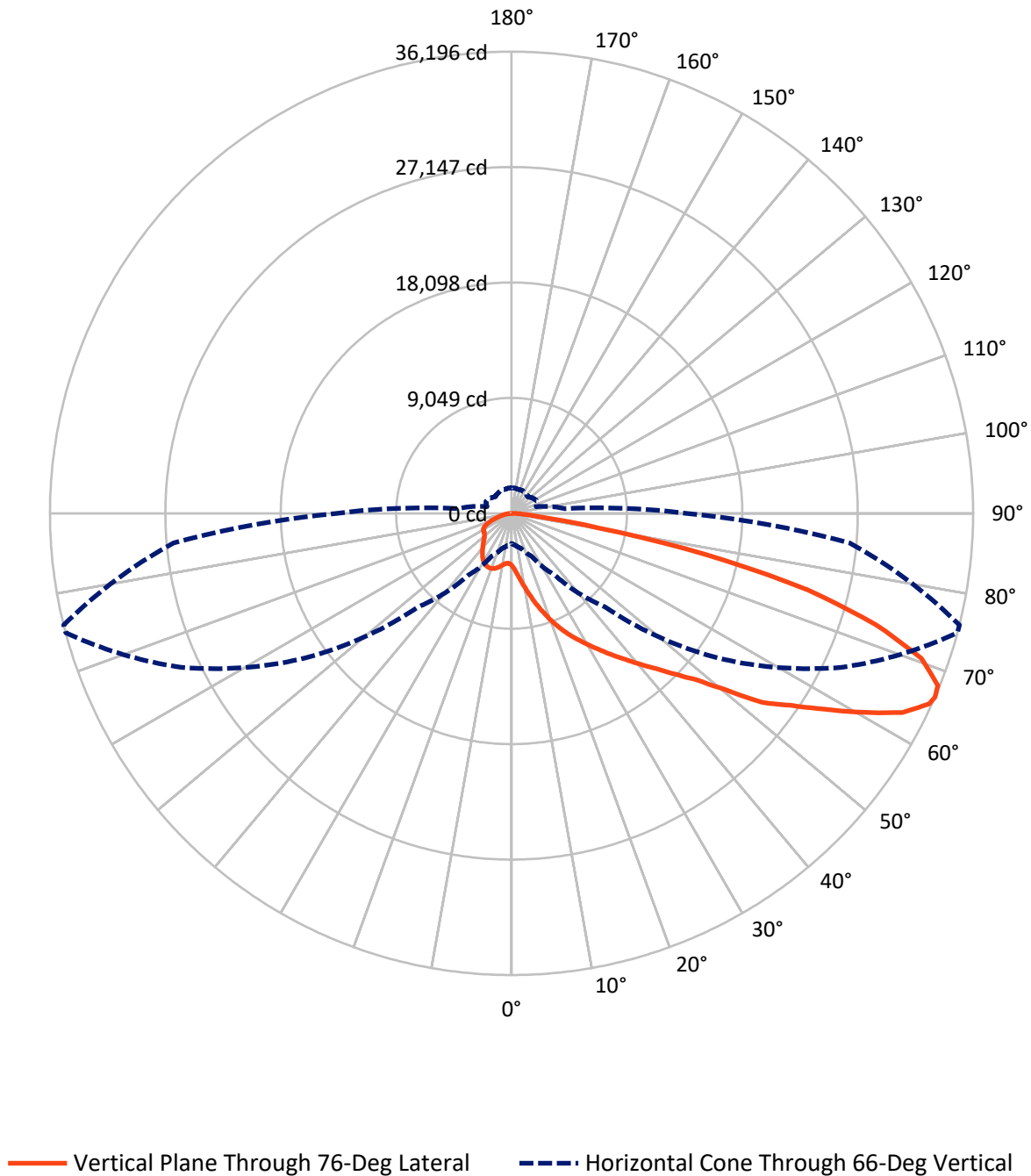
✕ Max cd  
 - - - 1/2 Max cd



Based on 30 foot mounting height. Maximum calculated value = 12.1 fc  
 Type II - Short - N/A

REPORT NUMBER: P359158  
CATALOG NUMBER: NVN-SA6C-740-U-T2R

## Luminous Intensity Polar Plot



REPORT NUMBER: P359158

CATALOG NUMBER: NVN-SA6C-740-U-T2R

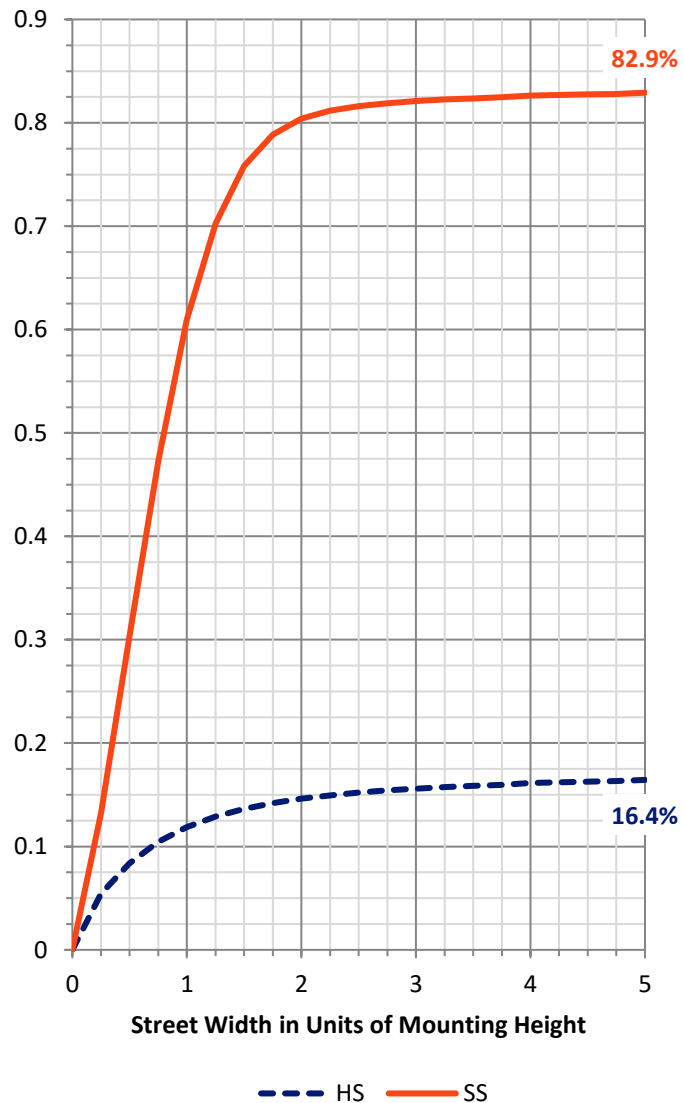
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 7547.7   | 0.0    | 7547.7  |
|                    | % Fixture | 16.8     | 0.0    | 16.8    |
| <b>Street Side</b> | Lumens    | 37308.3  | 0.0    | 37308.3 |
|                    | % Fixture | 83.2     | 0.0    | 83.2    |
| <b>Total</b>       | Lumens    | 44856.0  | 0.0    | 44856.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 495.4   | 1.1       |
| 10°-20°   | 1956.2  | 4.4       |
| 20°-30°   | 3801.3  | 8.5       |
| 30°-40°   | 6204.5  | 13.8      |
| 40°-50°   | 8476.9  | 18.9      |
| 50°-60°   | 9873.8  | 22.0      |
| 60°-70°   | 8852.1  | 19.7      |
| 70°-80°   | 4473.5  | 10.0      |
| 80°-90°   | 722.4   | 1.6       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 44856.0 | 100.0     |
| 0°-180°   | 44856.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P359158

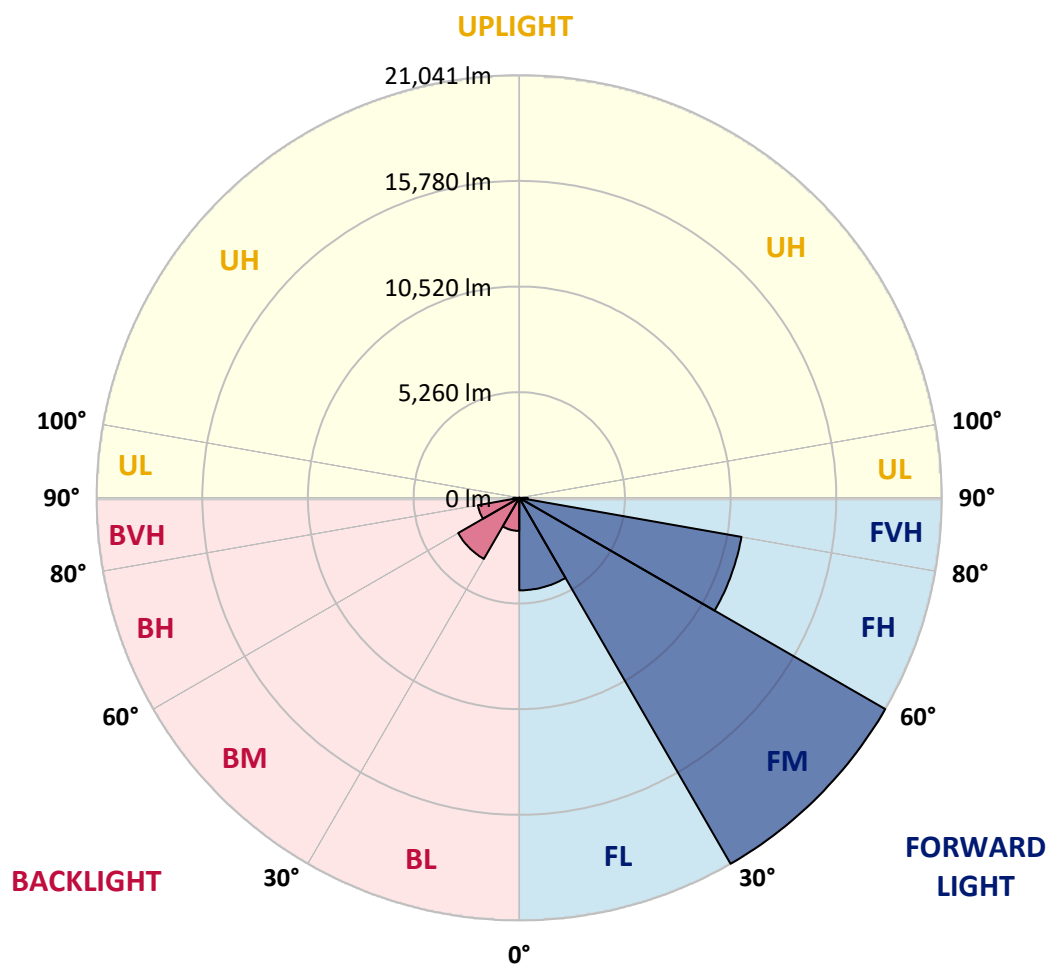
CATALOG NUMBER: NVN-SA6C-740-U-T2R

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|---------|-----------|-------------------------|------|----------|
|      |             |         |           | B                       | U    | G        |
| FL   | (0°-30°)    | 4606.6  | 10.3      |                         |      |          |
| FM   | (30°-60°)   | 21040.6 | 46.9      |                         |      |          |
| FH   | (60°-80°)   | 11234.5 | 25.0      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 426.6   | 1.0       |                         |      | G3/500   |
| BL   | (0°-30°)    | 1646.2  | 3.7       | B3/2500                 |      |          |
| BM   | (30°-60°)   | 3514.7  | 7.8       | B3/5000                 |      |          |
| BH   | (60°-80°)   | 2091.1  | 4.7       | B3/2500                 |      | G3/2500  |
| BVH  | (80°-90°)   | 295.8   | 0.7       |                         |      | G3/500   |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |          |

**BUG Rating: B3-U0-G4**

Type II Short





REPORT NUMBER: P359158

CATALOG NUMBER: NVN-SA6C-740-U-T2R

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 76°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 4096.4  | 4096.4  | 4096.4  | 4096.4  | 4096.4  | 4096.4  | 4096.4  | 4096.4  | 4096.4  | 4096.4  | 4096.4  |
| 2.5°  | 5438.0  | 5355.7  | 5348.1  | 5227.8  | 5200.4  | 4970.5  | 4801.4  | 4624.8  | 4423.8  | 4384.2  | 4225.8  |
| 5°    | 6985.1  | 6977.5  | 6872.5  | 6676.0  | 6522.2  | 6129.3  | 5741.0  | 5329.8  | 4879.1  | 4806.0  | 4449.7  |
| 7.5°  | 8377.0  | 8364.8  | 8284.1  | 8072.4  | 7850.1  | 7367.4  | 6813.1  | 6182.6  | 5451.7  | 5343.5  | 4752.7  |
| 10°   | 9433.8  | 9429.3  | 9401.8  | 9246.5  | 9057.7  | 8594.8  | 7982.6  | 7122.2  | 6117.1  | 5969.4  | 5131.9  |
| 12.5° | 10250.0 | 10259.2 | 10277.5 | 10222.6 | 10132.8 | 9738.4  | 9111.0  | 8118.1  | 6826.8  | 6680.6  | 5553.7  |
| 15°   | 10802.8 | 10830.2 | 10924.7 | 11002.3 | 11049.5 | 10807.4 | 10199.8 | 9136.9  | 7621.7  | 7446.6  | 6021.2  |
| 17.5° | 11081.5 | 11112.0 | 11274.9 | 11509.4 | 11725.7 | 11701.3 | 11218.6 | 10108.4 | 8384.6  | 8215.6  | 6523.7  |
| 20°   | 11322.1 | 11344.9 | 11527.7 | 11809.4 | 12191.6 | 12360.7 | 12089.6 | 11043.4 | 9220.6  | 9019.6  | 7056.7  |
| 22.5° | 12019.6 | 12048.5 | 12103.3 | 12263.2 | 12601.3 | 12911.9 | 12781.0 | 11928.2 | 9986.6  | 9799.3  | 7562.3  |
| 25°   | 13365.7 | 13400.7 | 13282.0 | 13146.4 | 13210.4 | 13426.6 | 13451.0 | 12735.3 | 10763.2 | 10551.6 | 8105.9  |
| 27.5° | 14987.5 | 15037.8 | 14835.2 | 14486.5 | 14181.9 | 14098.2 | 14069.3 | 13396.2 | 11504.8 | 11259.7 | 8643.5  |
| 30°   | 16575.8 | 16662.6 | 16399.2 | 15946.9 | 15388.0 | 14995.1 | 14704.3 | 14043.4 | 12235.8 | 12001.3 | 9150.6  |
| 32.5° | 18127.6 | 18092.5 | 17710.3 | 17268.7 | 16613.9 | 16122.0 | 15418.5 | 14737.8 | 13058.1 | 12788.6 | 9654.6  |
| 35°   | 19190.5 | 19202.7 | 18847.8 | 18324.0 | 17699.6 | 17322.0 | 16374.8 | 15487.0 | 13897.2 | 13649.0 | 10227.2 |
| 37.5° | 20095.0 | 20038.7 | 19636.7 | 19147.8 | 18610.3 | 18448.9 | 17494.1 | 16312.4 | 14806.3 | 14535.2 | 10836.3 |
| 40°   | 20396.5 | 20331.1 | 20067.6 | 19715.8 | 19284.9 | 19271.2 | 18729.1 | 17247.4 | 15834.2 | 15566.2 | 11523.1 |
| 42.5° | 20213.8 | 20130.1 | 20021.9 | 19926.0 | 19793.5 | 19854.4 | 19889.4 | 18343.8 | 16964.1 | 16664.1 | 12318.0 |
| 45°   | 19539.2 | 19412.8 | 19488.9 | 19697.6 | 19985.4 | 20329.5 | 20937.1 | 19557.5 | 18229.6 | 17978.3 | 13251.5 |
| 47.5° | 18502.2 | 18388.0 | 18625.5 | 19071.7 | 19854.4 | 20725.5 | 21928.5 | 20897.6 | 19740.2 | 19490.5 | 14580.9 |
| 50°   | 17043.3 | 17076.8 | 17416.4 | 18228.1 | 19411.3 | 20908.2 | 23149.8 | 22671.6 | 21936.1 | 21703.1 | 16394.6 |
| 52.5° | 14649.5 | 14655.5 | 15611.9 | 16944.3 | 18625.5 | 20813.8 | 23827.4 | 24939.1 | 24934.5 | 24652.8 | 18121.5 |
| 55°   | 12426.1 | 12561.7 | 13318.5 | 15089.5 | 17352.4 | 20436.1 | 24301.0 | 26041.6 | 26903.5 | 26573.1 | 19731.1 |
| 57.5° | 10254.6 | 10333.8 | 11051.0 | 12829.7 | 15535.7 | 19429.6 | 24786.8 | 27364.9 | 29172.5 | 28963.9 | 21732.1 |
| 60°   | 7784.6  | 7906.4  | 8648.0  | 10291.2 | 13211.9 | 17643.3 | 24832.5 | 28746.1 | 31884.6 | 31674.5 | 23966.0 |
| 62.5° | 5052.7  | 5262.8  | 5957.2  | 7496.8  | 10400.8 | 15074.3 | 23772.6 | 29649.2 | 34455.1 | 34380.5 | 25948.7 |
| 65°   | 2904.0  | 3062.4  | 3545.1  | 4732.9  | 7175.5  | 11849.0 | 21252.4 | 29301.9 | 36037.3 | 35994.7 | 26690.3 |
| 66°   | 2372.5  | 2471.5  | 2841.6  | 3698.9  | 5920.7  | 10405.4 | 19787.4 | 28569.5 | 36194.2 | 36195.7 | 26605.0 |
| 67.5° | 1897.4  | 1941.6  | 2107.6  | 2648.2  | 4368.9  | 8247.6  | 17169.7 | 26953.8 | 35999.3 | 36052.6 | 26055.3 |
| 70°   | 1570.0  | 1592.9  | 1644.6  | 1775.6  | 2384.7  | 4973.5  | 12187.1 | 22755.4 | 34042.5 | 34083.6 | 23909.7 |
| 72.5° | 1408.6  | 1422.3  | 1442.1  | 1460.4  | 1682.7  | 2779.1  | 7443.5  | 18203.7 | 29847.1 | 29900.4 | 20640.2 |
| 75°   | 1276.1  | 1283.7  | 1280.7  | 1282.2  | 1411.6  | 1771.0  | 3846.6  | 13591.1 | 24133.5 | 24026.9 | 15811.4 |
| 77.5° | 1120.8  | 1128.4  | 1113.2  | 1116.2  | 1248.7  | 1361.4  | 1914.2  | 9514.5  | 16286.5 | 15534.2 | 8908.5  |
| 80°   | 947.2   | 953.3   | 947.2   | 957.8   | 1087.3  | 1027.9  | 1113.2  | 5352.7  | 7201.4  | 6811.5  | 3167.4  |
| 82.5° | 715.7   | 741.6   | 759.9   | 802.5   | 895.4   | 730.9   | 744.7   | 2084.7  | 2192.8  | 2087.8  | 971.6   |
| 85°   | 313.7   | 382.2   | 572.6   | 613.7   | 673.1   | 438.6   | 488.8   | 849.7   | 892.4   | 865.0   | 353.3   |
| 87.5° | 82.2    | 89.8    | 283.2   | 356.3   | 373.1   | 198.0   | 254.3   | 386.8   | 408.1   | 386.8   | 117.3   |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |



REPORT NUMBER: P359158

CATALOG NUMBER: NVN-SA6C-740-U-T2R

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 4096.4  | 4096.4 | 4096.4 | 4096.4 | 4096.4 | 4096.4 | 4096.4 | 4096.4 | 4096.4 | 4096.4 | 4096.4 |
| 2.5°  | 4142.0  | 4067.4 | 3933.4 | 3814.6 | 3724.8 | 3663.9 | 3603.0 | 3572.5 | 3554.2 | 3536.0 | 3539.0 |
| 5°    | 4274.5  | 4123.8 | 3893.8 | 3730.9 | 3639.5 | 3581.7 | 3551.2 | 3539.0 | 3531.4 | 3513.1 | 3513.1 |
| 7.5°  | 4474.0  | 4260.8 | 3944.1 | 3776.6 | 3705.0 | 3660.8 | 3642.6 | 3636.5 | 3627.3 | 3606.0 | 3609.1 |
| 10°   | 4725.3  | 4426.8 | 4049.2 | 3886.2 | 3820.7 | 3772.0 | 3746.1 | 3737.0 | 3720.2 | 3695.9 | 3698.9 |
| 12.5° | 5020.7  | 4632.4 | 4187.7 | 4017.2 | 3938.0 | 3872.5 | 3829.9 | 3804.0 | 3775.1 | 3743.1 | 3744.6 |
| 15°   | 5343.5  | 4856.2 | 4337.0 | 4134.4 | 4026.3 | 3934.9 | 3866.4 | 3822.3 | 3776.6 | 3737.0 | 3735.5 |
| 17.5° | 5671.0  | 5072.5 | 4451.2 | 4198.4 | 4052.2 | 3931.9 | 3839.0 | 3770.5 | 3714.1 | 3665.4 | 3660.8 |
| 20°   | 6024.2  | 5267.4 | 4515.1 | 4192.3 | 4003.5 | 3860.3 | 3737.0 | 3651.7 | 3589.3 | 3540.5 | 3532.9 |
| 22.5° | 6383.6  | 5450.1 | 4525.8 | 4129.9 | 3895.4 | 3720.2 | 3590.8 | 3496.4 | 3432.4 | 3382.2 | 3363.9 |
| 25°   | 6712.6  | 5591.8 | 4481.6 | 4009.6 | 3744.6 | 3555.8 | 3429.4 | 3333.4 | 3281.7 | 3222.3 | 3204.0 |
| 27.5° | 7012.5  | 5690.7 | 4393.3 | 3855.8 | 3575.6 | 3389.8 | 3271.0 | 3188.8 | 3132.4 | 3086.7 | 3071.5 |
| 30°   | 7282.1  | 5744.0 | 4248.6 | 3673.0 | 3402.0 | 3232.9 | 3132.4 | 3076.1 | 3027.4 | 2969.5 | 2958.8 |
| 32.5° | 7537.9  | 5744.0 | 4062.9 | 3473.5 | 3229.9 | 3094.4 | 3035.0 | 2999.9 | 2945.1 | 2888.8 | 2873.5 |
| 35°   | 7793.8  | 5709.0 | 3843.6 | 3264.9 | 3071.5 | 2995.4 | 2992.3 | 2951.2 | 2867.5 | 2791.3 | 2771.5 |
| 37.5° | 8063.3  | 5637.5 | 3596.9 | 3070.0 | 2942.1 | 2951.2 | 2977.1 | 2885.7 | 2766.9 | 2658.8 | 2629.9 |
| 40°   | 8367.9  | 5538.5 | 3341.0 | 2901.0 | 2834.0 | 2931.4 | 2936.0 | 2791.3 | 2559.8 | 2460.9 | 2435.0 |
| 42.5° | 8725.7  | 5439.5 | 3103.5 | 2751.7 | 2748.7 | 2872.0 | 2858.3 | 2587.3 | 2448.7 | 2398.4 | 2384.7 |
| 45°   | 9196.3  | 5383.1 | 2878.1 | 2610.1 | 2681.7 | 2776.1 | 2725.8 | 2474.6 | 2416.7 | 2387.8 | 2375.6 |
| 47.5° | 9937.9  | 5412.1 | 2671.0 | 2497.4 | 2614.7 | 2680.1 | 2479.1 | 2428.9 | 2387.8 | 2352.7 | 2340.6 |
| 50°   | 10866.8 | 5395.3 | 2503.5 | 2419.7 | 2538.5 | 2579.6 | 2368.0 | 2369.5 | 2348.2 | 2308.6 | 2290.3 |
| 52.5° | 11565.8 | 5264.4 | 2395.4 | 2375.6 | 2471.5 | 2401.5 | 2297.9 | 2311.6 | 2301.0 | 2243.1 | 2223.3 |
| 55°   | 12240.4 | 5151.7 | 2340.6 | 2358.8 | 2422.8 | 2179.1 | 2215.7 | 2249.2 | 2238.5 | 2182.2 | 2173.1 |
| 57.5° | 13079.4 | 5130.4 | 2307.1 | 2363.4 | 2381.7 | 2068.0 | 2136.5 | 2180.7 | 2173.1 | 2148.7 | 2144.1 |
| 60°   | 14107.3 | 5136.4 | 2276.6 | 2371.0 | 2336.0 | 1985.7 | 2061.9 | 2118.2 | 2122.8 | 2118.2 | 2115.2 |
| 62.5° | 14672.3 | 4970.5 | 2200.5 | 2349.7 | 2255.3 | 1914.2 | 1984.2 | 2066.5 | 2068.0 | 2077.1 | 2075.6 |
| 65°   | 14192.6 | 4474.0 | 2058.8 | 2275.1 | 2119.8 | 1854.8 | 1917.2 | 2007.1 | 1984.2 | 2025.3 | 2025.3 |
| 66°   | 13726.6 | 4187.7 | 1988.8 | 2226.4 | 2061.9 | 1831.9 | 1895.9 | 1976.6 | 1947.7 | 2004.0 | 2004.0 |
| 67.5° | 12774.9 | 3705.0 | 1862.4 | 2122.8 | 1979.7 | 1800.0 | 1871.5 | 1926.4 | 1886.8 | 1970.5 | 1964.4 |
| 70°   | 11035.8 | 2865.9 | 1608.1 | 1888.3 | 1844.1 | 1752.8 | 1838.0 | 1825.9 | 1768.0 | 1895.9 | 1871.5 |
| 72.5° | 9304.4  | 2177.6 | 1291.3 | 1580.7 | 1638.5 | 1693.4 | 1790.8 | 1697.9 | 1624.8 | 1714.7 | 1661.4 |
| 75°   | 7219.7  | 1637.0 | 1020.3 | 1228.9 | 1384.2 | 1600.5 | 1734.5 | 1550.2 | 1445.1 | 1436.0 | 1407.1 |
| 77.5° | 3903.0  | 1123.8 | 808.6  | 938.1  | 1099.5 | 1484.7 | 1696.4 | 1391.9 | 1233.5 | 1196.9 | 1174.1 |
| 80°   | 1545.7  | 730.9  | 587.8  | 711.2  | 769.0  | 1317.2 | 1605.0 | 1207.6 | 1017.2 | 980.7  | 945.7  |
| 82.5° | 638.1   | 432.5  | 379.2  | 476.6  | 501.0  | 1126.9 | 1440.6 | 989.8  | 785.8  | 1087.3 | 1154.3 |
| 85°   | 274.1   | 237.6  | 225.4  | 246.7  | 283.2  | 790.3  | 1146.7 | 755.3  | 848.2  | 756.8  | 601.5  |
| 87.5° | 82.2    | 100.5  | 95.9   | 94.4   | 103.6  | 188.8  | 610.6  | 420.3  | 622.8  | 236.0  | 176.6  |
| 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:  $4\pi$   
 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 |      |       |
| CIE u':                   | 0.2273  | R1:       | 68.9 | R9:  | -29.7 |
| CIE v':                   | 0.5024  | R2:       | 77.0 | R10: | 46.2  |
| Duv:                      | -0.0008 | R3:       | 84.0 | R11: | 68.8  |
| CIE x:                    | 0.3841  | R4:       | 71.6 | R12: | 45.6  |
| CIE y:                    | 0.3774  | R5:       | 68.9 | R13: | 69.5  |
| CIE z:                    | 0.2385  | R6:       | 68.3 | R14: | 90.7  |
| 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

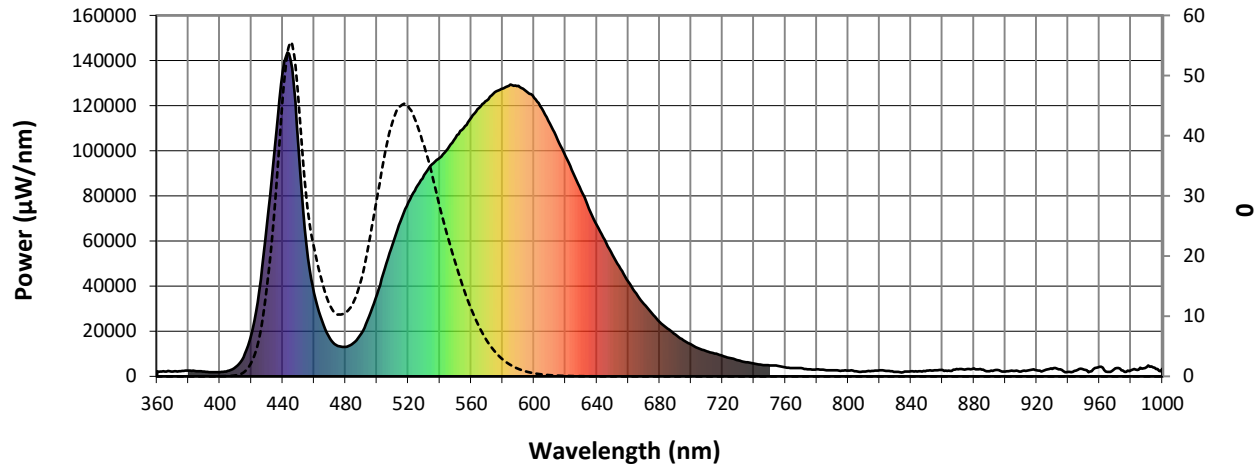


#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(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<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(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**

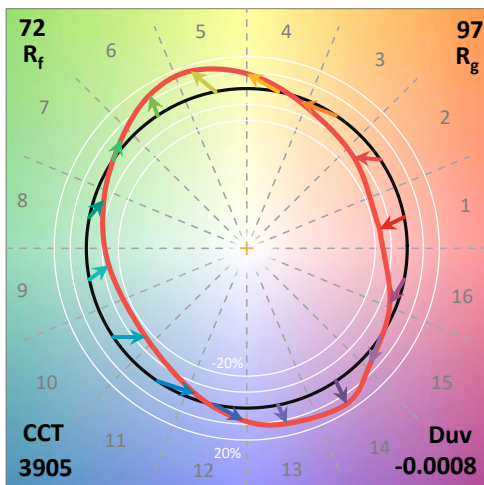
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 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)