

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: P361465

Luminaire Tested: NVN-SA3D-750-U-T4FT

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2019
Report Number: P361465
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-16)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: STREETWORKS
Catalog Number: NVN-SA3D-750-U-T4FT
Description: NAVION ROADWAY AND AREA LUMINAIRE
(3) 70 CRI, 5000K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV
FORWARD THROW OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 23798 lumens
Efficiency: N/A
Efficacy: 124.6 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 1.5' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B3 - U0 - G4

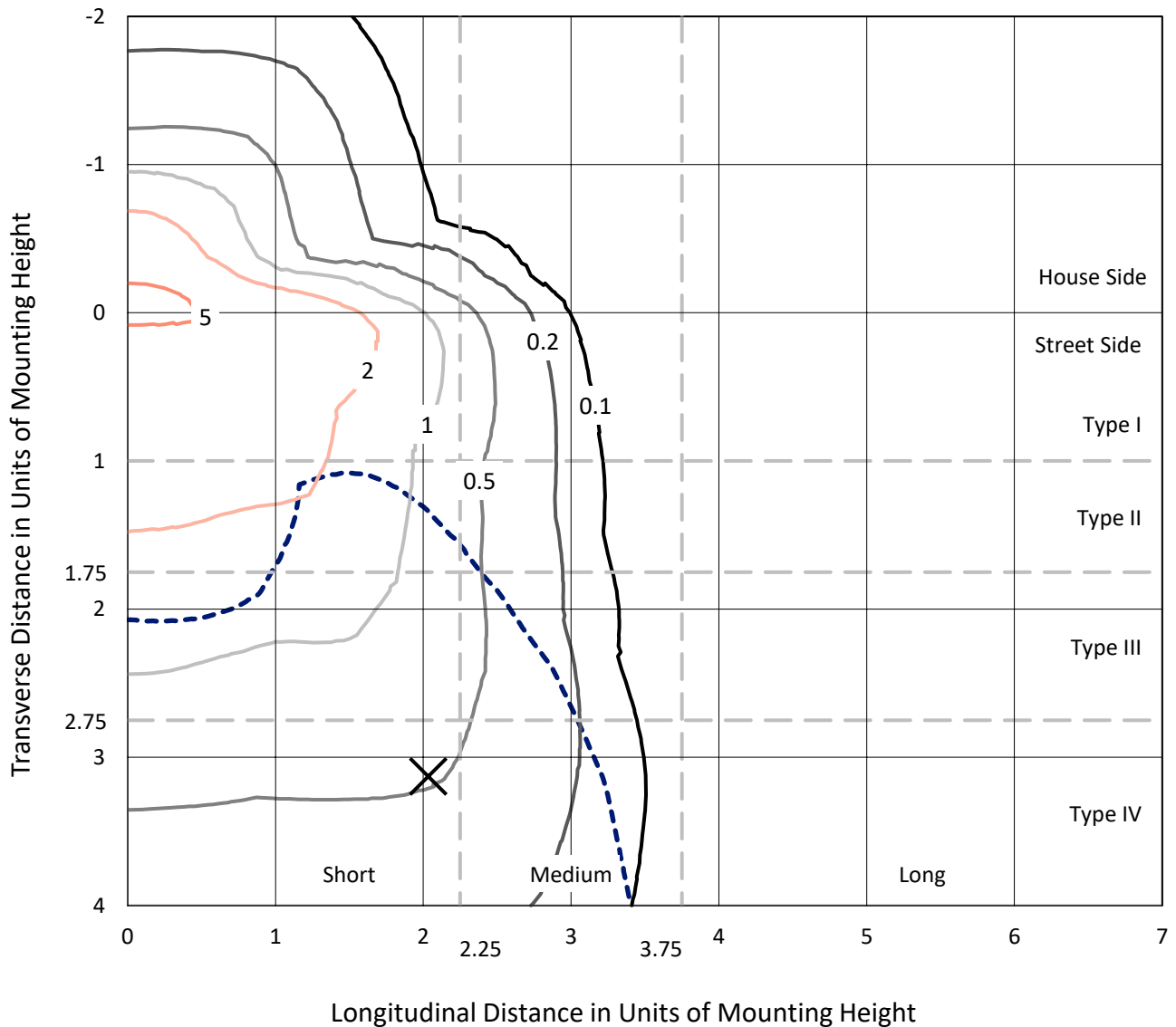
Input Watts (W): 191
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

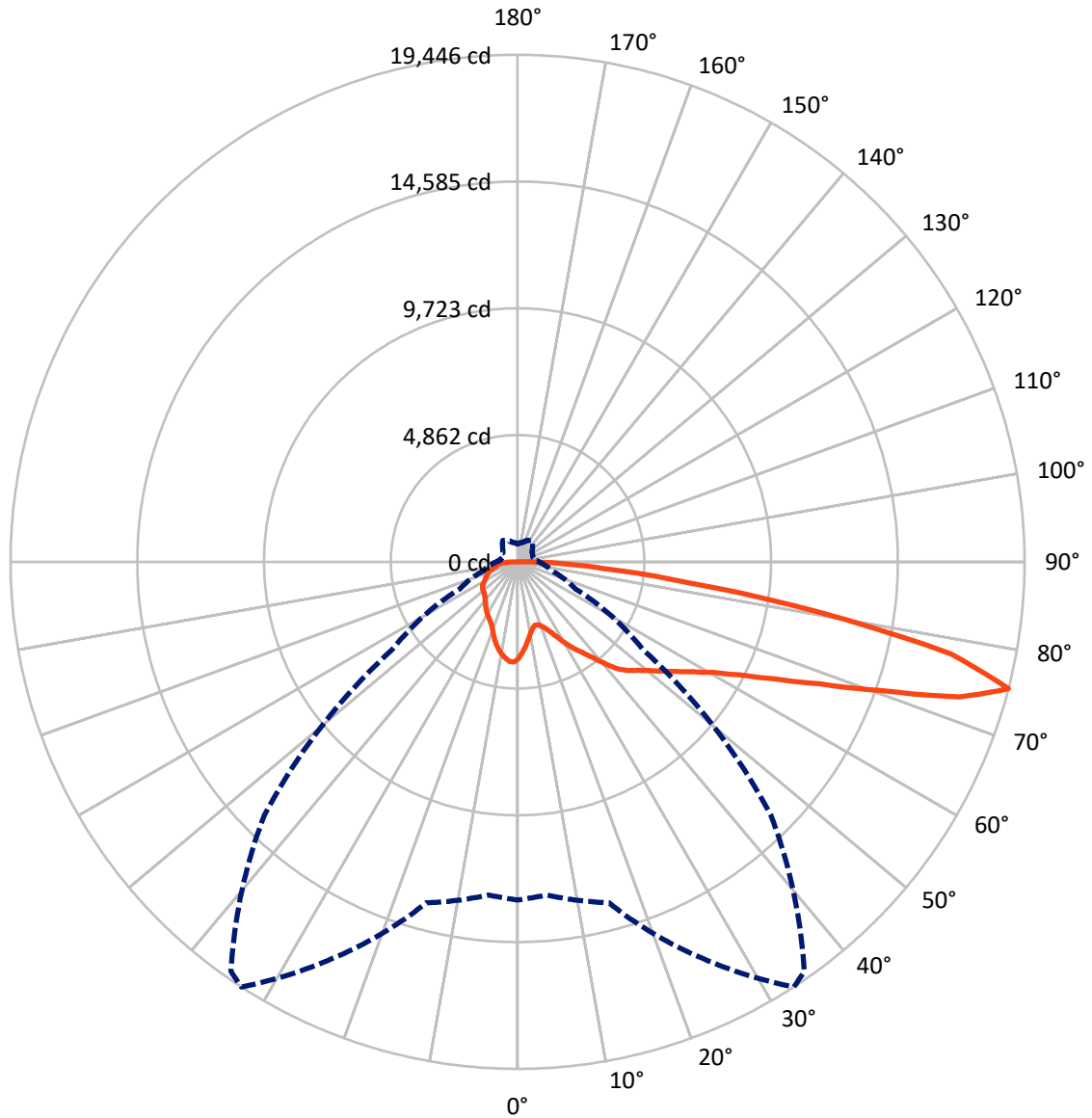
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 6 fc
 Type IV - Short - N/A

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Luminous Intensity Polar Plot



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

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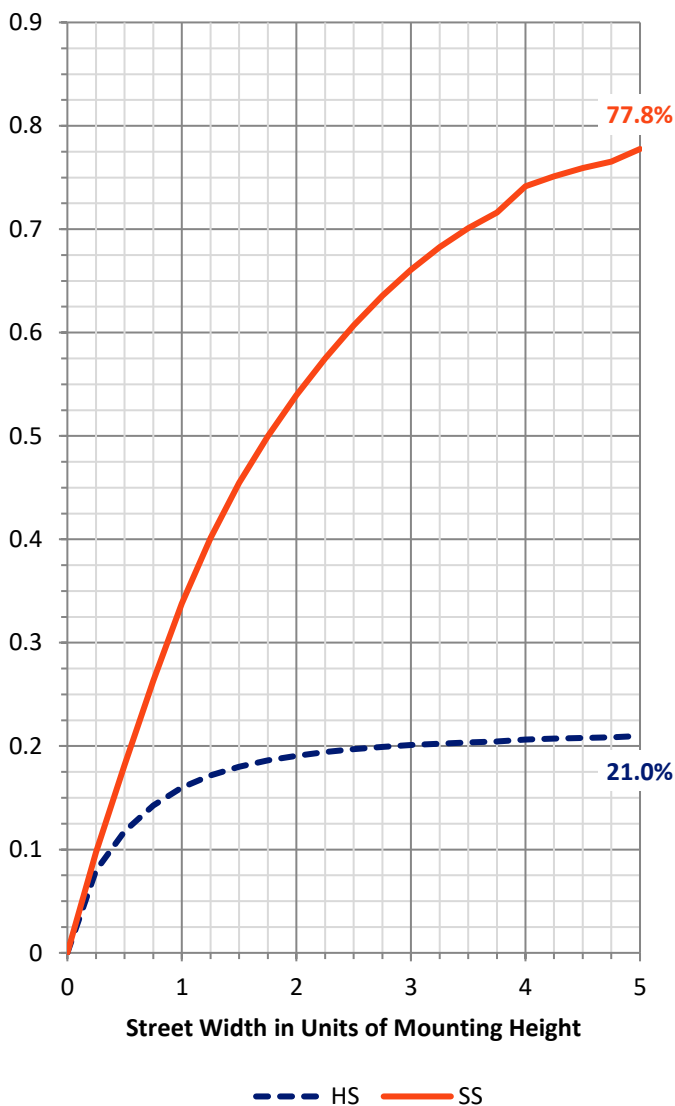
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 5110.1 | 0.0 | 5110.1 |
| | % Fixture | 21.5 | 0.0 | 21.5 |
| Street Side | Lumens | 18687.9 | 0.0 | 18687.9 |
| | % Fixture | 78.5 | 0.0 | 78.5 |
| Total | Lumens | 23798.0 | 0.0 | 23798.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 336.4 | 1.4 |
| 10°-20° | 911.1 | 3.8 |
| 20°-30° | 1488.0 | 6.3 |
| 30°-40° | 2216.0 | 9.3 |
| 40°-50° | 3178.3 | 13.4 |
| 50°-60° | 4363.4 | 18.3 |
| 60°-70° | 5462.7 | 23.0 |
| 70°-80° | 4941.9 | 20.8 |
| 80°-90° | 900.2 | 3.8 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 23798.0 | 100.0 |
| 0°-180° | 23798.0 | 100.0 |

Coefficient of Utilization

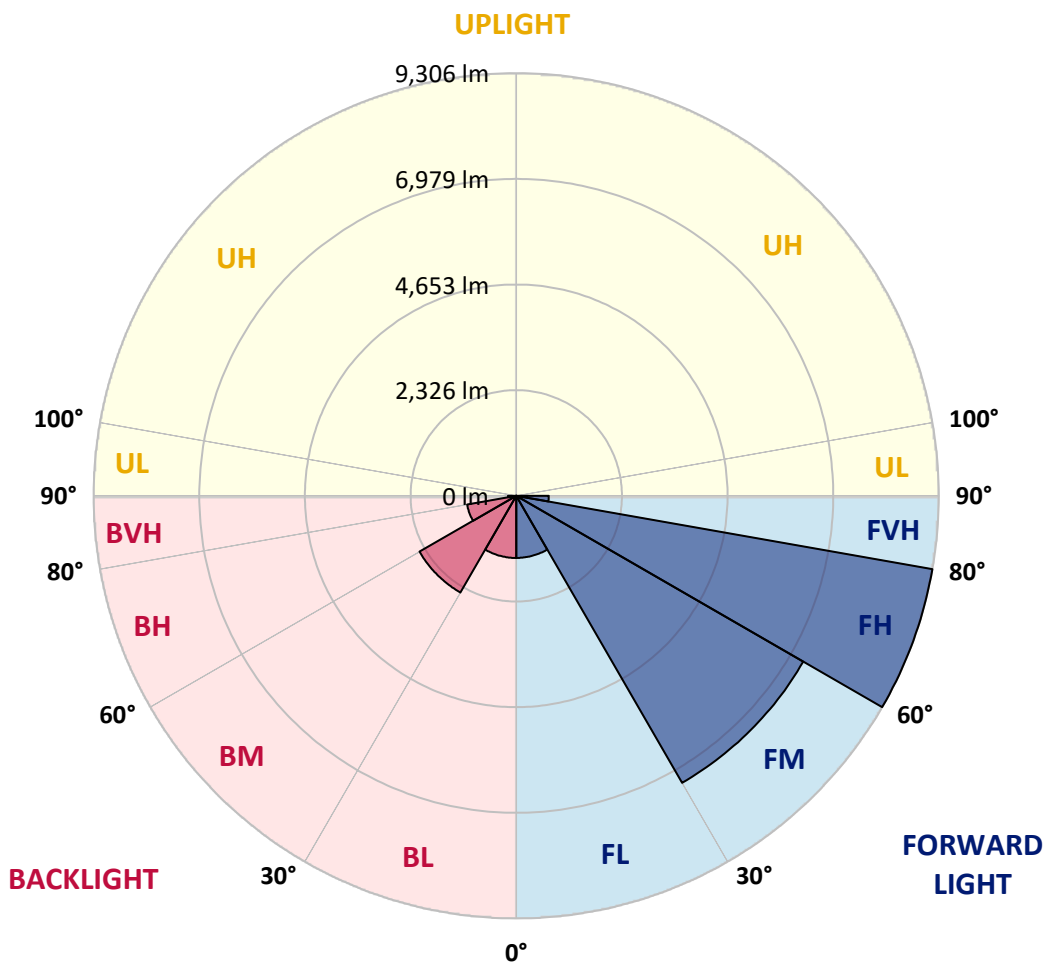


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|----------|
| | | | B | U | G |
| FL (0°-30°) | 1366.8 | 5.7 | | | |
| FM (30°-60°) | 7298.3 | 30.7 | | | |
| FH (60°-80°) | 9305.8 | 39.1 | | | G4/12000 |
| FVH (80°-90°) | 716.9 | 3.0 | | | G4/750 |
| BL (0°-30°) | 1368.7 | 5.8 | B3/2500 | | |
| BM (30°-60°) | 2459.3 | 10.3 | B2/2500 | | |
| BH (60°-80°) | 1098.8 | 4.6 | B3/2500 | | G3/2500 |
| BVH (80°-90°) | 183.3 | 0.8 | | | G2/225 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G4
 Type IV Short





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CATALOG NUMBER: NVN-SA3D-750-U-T4FT

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 33° | 35° | 45° | 55° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|
| 0° | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 |
| 2.5° | 3454.2 | 3441.1 | 3465.7 | 3469.0 | 3490.4 | 3498.6 | 3528.2 | 3574.3 | 3612.1 | 3655.6 | 3695.1 |
| 5° | 3141.0 | 3132.0 | 3166.5 | 3191.2 | 3238.0 | 3257.8 | 3327.6 | 3425.5 | 3512.6 | 3611.3 | 3700.9 |
| 7.5° | 2843.5 | 2838.5 | 2877.2 | 2933.1 | 2987.3 | 3014.4 | 3135.3 | 3277.5 | 3423.0 | 3582.5 | 3719.8 |
| 10° | 2592.7 | 2591.1 | 2628.1 | 2683.2 | 2762.9 | 2793.3 | 2949.5 | 3136.9 | 3340.8 | 3560.3 | 3751.8 |
| 12.5° | 2452.2 | 2457.9 | 2475.2 | 2521.2 | 2595.2 | 2625.6 | 2799.1 | 3019.4 | 3271.7 | 3552.9 | 3798.7 |
| 15° | 2486.7 | 2495.7 | 2466.1 | 2464.5 | 2517.1 | 2540.9 | 2703.7 | 2935.5 | 3222.4 | 3565.2 | 3866.9 |
| 17.5° | 2633.8 | 2635.5 | 2557.4 | 2508.1 | 2540.1 | 2552.5 | 2674.1 | 2887.8 | 3193.7 | 3593.2 | 3952.4 |
| 20° | 2841.0 | 2836.9 | 2698.8 | 2616.6 | 2633.8 | 2637.1 | 2716.0 | 2888.7 | 3191.2 | 3641.7 | 4063.4 |
| 22.5° | 3115.6 | 3085.1 | 2899.4 | 2787.6 | 2783.4 | 2778.5 | 2823.7 | 2949.5 | 3227.4 | 3720.6 | 4195.7 |
| 25° | 3474.0 | 3445.2 | 3189.5 | 3036.6 | 3003.8 | 2991.4 | 2998.0 | 3079.4 | 3298.9 | 3805.3 | 4343.7 |
| 27.5° | 3872.7 | 3822.5 | 3575.9 | 3359.7 | 3291.5 | 3274.2 | 3234.8 | 3262.7 | 3377.0 | 3886.6 | 4519.6 |
| 30° | 4206.4 | 4179.3 | 3963.9 | 3707.4 | 3626.9 | 3602.2 | 3498.6 | 3468.2 | 3489.6 | 3997.6 | 4741.6 |
| 32.5° | 4393.0 | 4374.9 | 4244.2 | 4037.1 | 3962.3 | 3927.7 | 3781.4 | 3720.6 | 3670.4 | 4172.7 | 5042.4 |
| 35° | 4619.1 | 4607.6 | 4528.7 | 4378.2 | 4267.2 | 4231.1 | 4117.6 | 4054.3 | 3925.3 | 4413.6 | 5431.3 |
| 37.5° | 4906.8 | 4894.5 | 4896.1 | 4774.4 | 4642.1 | 4608.4 | 4533.6 | 4467.0 | 4255.7 | 4730.1 | 5853.8 |
| 40° | 5232.3 | 5208.5 | 5199.4 | 5193.7 | 5109.8 | 5090.9 | 5051.5 | 4961.1 | 4670.0 | 5108.2 | 6270.6 |
| 42.5° | 5722.3 | 5637.6 | 5456.7 | 5525.0 | 5608.0 | 5598.1 | 5630.2 | 5500.3 | 5130.4 | 5555.4 | 6677.5 |
| 45° | 6194.9 | 6056.0 | 5743.6 | 5758.4 | 5940.1 | 5995.2 | 6235.2 | 6143.2 | 5629.4 | 6045.3 | 7098.4 |
| 47.5° | 6410.3 | 6305.1 | 6039.6 | 6040.4 | 6220.4 | 6334.7 | 6860.8 | 6795.0 | 6153.8 | 6601.9 | 7612.2 |
| 50° | 6651.2 | 6546.0 | 6307.6 | 6397.2 | 6554.2 | 6675.8 | 7465.0 | 7431.3 | 6652.8 | 7211.0 | 8227.9 |
| 52.5° | 6914.2 | 6735.8 | 6584.6 | 6744.9 | 6965.2 | 7106.6 | 8070.0 | 7978.0 | 7110.7 | 7824.2 | 8935.6 |
| 55° | 6917.5 | 6869.0 | 6984.1 | 7101.7 | 7431.3 | 7604.8 | 8703.8 | 8460.5 | 7483.9 | 8426.8 | 9511.9 |
| 57.5° | 7311.3 | 7232.4 | 7476.5 | 7530.8 | 7961.5 | 8157.2 | 9334.3 | 8880.6 | 7863.7 | 8888.8 | 9822.6 |
| 60° | 7832.5 | 7765.1 | 7964.8 | 8107.8 | 8617.5 | 8878.9 | 10007.6 | 9312.1 | 8162.1 | 9237.3 | 9807.8 |
| 62.5° | 8732.6 | 8656.2 | 8653.7 | 8854.3 | 9540.7 | 9844.8 | 10763.1 | 9735.5 | 8280.5 | 9306.4 | 9389.4 |
| 65° | 10050.3 | 9928.7 | 9699.3 | 9794.7 | 10815.7 | 11119.0 | 11607.3 | 10042.1 | 8124.3 | 8936.5 | 8311.7 |
| 67.5° | 11332.7 | 11328.6 | 11046.7 | 11242.3 | 12499.2 | 12742.5 | 12569.1 | 10072.5 | 7636.8 | 7648.3 | 6399.6 |
| 70° | 12611.0 | 12627.5 | 12579.8 | 13260.4 | 14773.8 | 15027.0 | 13593.4 | 9664.0 | 6541.0 | 5523.3 | 3834.0 |
| 72.5° | 13623.8 | 13619.7 | 13859.7 | 15614.8 | 17725.8 | 17669.1 | 14456.5 | 8426.0 | 4696.4 | 2981.6 | 1832.3 |
| 75° | 12967.8 | 12824.7 | 13539.9 | 16780.4 | 19446.3 | 19169.3 | 13722.4 | 5877.6 | 2437.4 | 1357.2 | 986.5 |
| 77.5° | 8458.0 | 8593.7 | 9643.4 | 13862.2 | 17009.8 | 16672.7 | 10067.6 | 2742.3 | 1148.4 | 890.3 | 715.2 |
| 80° | 3062.9 | 3206.0 | 4515.5 | 7852.2 | 11719.1 | 11664.0 | 4957.8 | 1127.0 | 776.8 | 672.4 | 521.2 |
| 82.5° | 1053.9 | 1106.5 | 1781.4 | 3487.1 | 6616.7 | 6863.3 | 1865.2 | 640.4 | 564.7 | 476.8 | 356.8 |
| 85° | 413.5 | 473.5 | 814.6 | 1677.8 | 3337.5 | 3362.2 | 755.5 | 383.1 | 392.9 | 312.4 | 195.6 |
| 87.5° | 157.0 | 190.7 | 389.7 | 779.3 | 1524.1 | 1399.9 | 270.5 | 182.5 | 223.6 | 185.8 | 92.9 |
| 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-SA3D-750-U-T4FT

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 | 3719.8 |
| 2.5° | 3725.5 | 3742.8 | 3778.9 | 3803.6 | 3829.9 | 3837.3 | 3840.6 | 3847.2 | 3853.8 | 3851.3 | 3852.1 |
| 5° | 3748.5 | 3782.2 | 3840.6 | 3865.3 | 3876.8 | 3863.6 | 3838.1 | 3817.6 | 3802.8 | 3794.6 | 3792.1 |
| 7.5° | 3786.3 | 3834.0 | 3896.5 | 3892.4 | 3866.1 | 3807.7 | 3742.0 | 3692.6 | 3651.5 | 3636.7 | 3628.5 |
| 10° | 3836.5 | 3892.4 | 3936.0 | 3889.1 | 3812.7 | 3711.5 | 3612.9 | 3536.4 | 3474.8 | 3451.0 | 3446.8 |
| 12.5° | 3900.6 | 3957.3 | 3965.6 | 3866.1 | 3739.5 | 3601.4 | 3467.4 | 3366.3 | 3274.2 | 3244.6 | 3238.0 |
| 15° | 3983.6 | 4037.1 | 3986.1 | 3825.8 | 3649.1 | 3463.3 | 3289.8 | 3152.5 | 3055.5 | 3019.4 | 3006.2 |
| 17.5° | 4070.8 | 4121.7 | 3990.2 | 3759.2 | 3530.7 | 3299.7 | 3081.9 | 2941.3 | 2830.3 | 2788.4 | 2783.4 |
| 20° | 4175.2 | 4198.2 | 3973.0 | 3663.9 | 3367.9 | 3087.6 | 2858.3 | 2725.9 | 2666.7 | 2637.1 | 2633.8 |
| 22.5° | 4304.2 | 4279.6 | 3933.5 | 3534.8 | 3161.6 | 2842.6 | 2656.0 | 2594.4 | 2579.6 | 2573.0 | 2575.5 |
| 25° | 4440.7 | 4365.1 | 3875.1 | 3366.3 | 2901.0 | 2597.7 | 2508.1 | 2525.3 | 2545.1 | 2542.6 | 2542.6 |
| 27.5° | 4591.1 | 4452.2 | 3785.5 | 3142.7 | 2612.5 | 2397.1 | 2407.8 | 2471.1 | 2500.7 | 2499.8 | 2499.0 |
| 30° | 4784.3 | 4550.8 | 3671.3 | 2873.9 | 2342.8 | 2255.7 | 2320.6 | 2397.9 | 2438.2 | 2436.5 | 2437.4 |
| 32.5° | 5021.9 | 4659.4 | 3515.9 | 2573.8 | 2148.0 | 2151.3 | 2226.1 | 2302.6 | 2349.4 | 2345.3 | 2346.1 |
| 35° | 5299.7 | 4781.0 | 3305.4 | 2277.9 | 2018.9 | 2068.3 | 2127.5 | 2180.9 | 2225.3 | 2219.5 | 2213.8 |
| 37.5° | 5602.2 | 4900.2 | 3026.0 | 2013.2 | 1913.7 | 1991.0 | 2040.3 | 2049.4 | 2069.9 | 2055.1 | 2044.4 |
| 40° | 5890.0 | 4991.5 | 2665.9 | 1796.2 | 1807.7 | 1925.2 | 1957.3 | 1921.1 | 1884.1 | 1879.2 | 1864.4 |
| 42.5° | 6140.7 | 5021.9 | 2301.7 | 1622.7 | 1695.9 | 1856.2 | 1875.9 | 1800.3 | 1733.7 | 1702.5 | 1689.3 |
| 45° | 6405.4 | 5032.6 | 1962.2 | 1477.2 | 1588.2 | 1794.5 | 1815.9 | 1714.8 | 1621.1 | 1553.7 | 1531.5 |
| 47.5° | 6751.5 | 5109.8 | 1698.3 | 1369.5 | 1506.0 | 1753.4 | 1783.8 | 1646.6 | 1524.9 | 1428.7 | 1408.2 |
| 50° | 7204.4 | 5262.7 | 1483.8 | 1287.3 | 1452.6 | 1726.3 | 1760.8 | 1580.0 | 1446.0 | 1330.1 | 1309.5 |
| 52.5° | 7707.5 | 5403.3 | 1310.3 | 1220.7 | 1400.8 | 1678.6 | 1731.2 | 1532.3 | 1372.0 | 1238.8 | 1216.6 |
| 55° | 8059.3 | 5295.6 | 1170.6 | 1151.7 | 1333.4 | 1610.4 | 1690.1 | 1492.0 | 1266.0 | 1150.0 | 1130.3 |
| 57.5° | 8126.8 | 4927.3 | 1064.6 | 1080.2 | 1252.0 | 1524.9 | 1626.8 | 1402.4 | 1208.4 | 1111.4 | 1090.9 |
| 60° | 7942.6 | 4414.4 | 985.6 | 1014.4 | 1164.8 | 1417.2 | 1508.5 | 1339.1 | 1153.3 | 1070.3 | 1053.0 |
| 62.5° | 7479.8 | 3889.1 | 927.3 | 955.2 | 1083.5 | 1307.9 | 1434.5 | 1272.5 | 1097.4 | 1023.4 | 1006.2 |
| 65° | 6545.1 | 3265.2 | 871.4 | 902.6 | 1007.8 | 1213.3 | 1367.9 | 1210.9 | 1042.4 | 985.6 | 969.2 |
| 67.5° | 4940.5 | 2445.6 | 818.8 | 846.7 | 940.4 | 1131.1 | 1295.5 | 1150.0 | 988.9 | 952.8 | 933.0 |
| 70° | 2909.2 | 1531.5 | 758.7 | 788.3 | 869.7 | 1045.6 | 1218.3 | 1083.5 | 922.3 | 905.9 | 880.4 |
| 72.5° | 1353.9 | 921.5 | 690.5 | 719.3 | 780.9 | 931.4 | 1118.8 | 996.3 | 843.4 | 807.2 | 772.7 |
| 75° | 808.1 | 674.1 | 610.0 | 635.4 | 679.0 | 809.7 | 993.9 | 907.5 | 768.6 | 720.9 | 684.8 |
| 77.5° | 604.2 | 515.4 | 521.2 | 548.3 | 583.7 | 708.6 | 880.4 | 837.7 | 711.1 | 674.1 | 649.4 |
| 80° | 434.9 | 391.3 | 425.0 | 454.6 | 491.6 | 644.5 | 843.4 | 774.4 | 642.8 | 593.5 | 570.5 |
| 82.5° | 290.2 | 281.1 | 319.8 | 350.2 | 386.4 | 563.9 | 792.5 | 678.2 | 549.1 | 486.7 | 435.7 |
| 85° | 160.3 | 169.3 | 215.4 | 228.5 | 259.8 | 397.0 | 649.4 | 545.0 | 413.5 | 332.9 | 318.1 |
| 87.5° | 66.6 | 78.1 | 115.9 | 111.8 | 138.1 | 236.7 | 427.5 | 328.8 | 263.1 | 196.5 | 152.9 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-4-R4

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

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

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-4-R4
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/28/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: MCGRAW-EDISON
 Catalog Number: **SA1C-750-U-5WQ**
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

| | | | | | |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K): | 4884 | CRI (Ra): | 73.5 | R9: | -28.4 |
| CIE u': | 0.2101 | R1: | 70.5 | R10: | 48.6 |
| CIE v': | 0.4904 | R2: | 77.7 | R11: | 73.2 |
| Duv: | 0.0037 | R3: | 84.6 | R12: | 50.7 |
| CIE x: | 0.3493 | R4: | 74.7 | R13: | 71.2 |
| CIE y: | 0.3624 | R5: | 71.9 | R14: | 91.4 |
| CIE z: | 0.2884 | R6: | 70.7 | | |
| Peak Wavelength (nm): | 444 | R7: | 81.2 | | |
| Dominant Wavelength (nm): | 571 | R8: | 56.9 | | |
| Purity: | 13.7 | | | | |
| Rf: | 74.9 | | | | |
| Rg: | 96.3 | | | | |



Test Conditions

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

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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 5000K 4-step quadrangle

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Photopic Flux vs. Wavelength



#####

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

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

Scotopic Flux vs. Wavelength

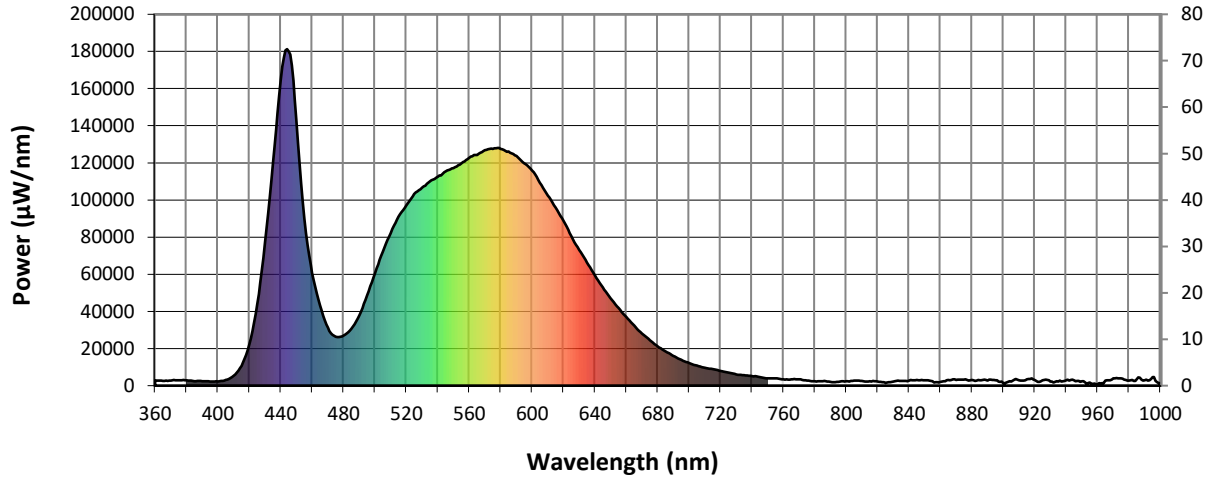


Scotopic Lumens: 13493.5 S/P: 1.77

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

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

Melanopic Flux vs. Wavelength



Melanopic Lumens: 5378.9 M/P: 0.71

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

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

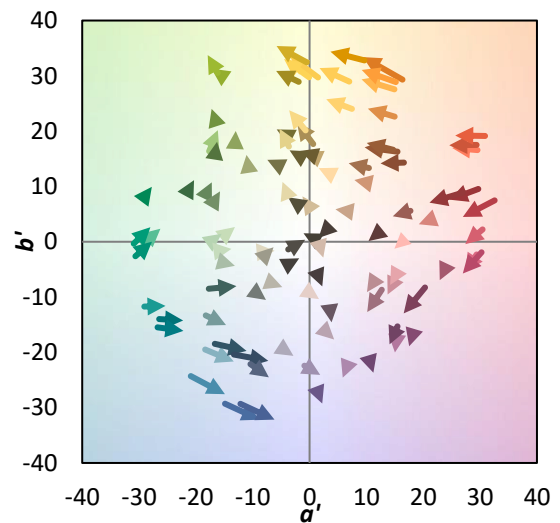
TM-30-18

Summary

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



Color Vector Graphics



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

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



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)