

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: P359305

Luminaire Tested: NVN-SA3D-740-U-T3

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2019
Report Number: P359305
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-14)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: STREETWORKS
Catalog Number: NVN-SA3D-740-U-T3
Description: NAVION ROADWAY AND AREA LUMINAIRE
(3) 70 CRI, 4000K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 23619 lumens
Efficiency: N/A
Efficacy: 123.7 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 1.5' x H: 0')
IES Classification: Type III - Short
BUG Rating: B3 - U0 - G4

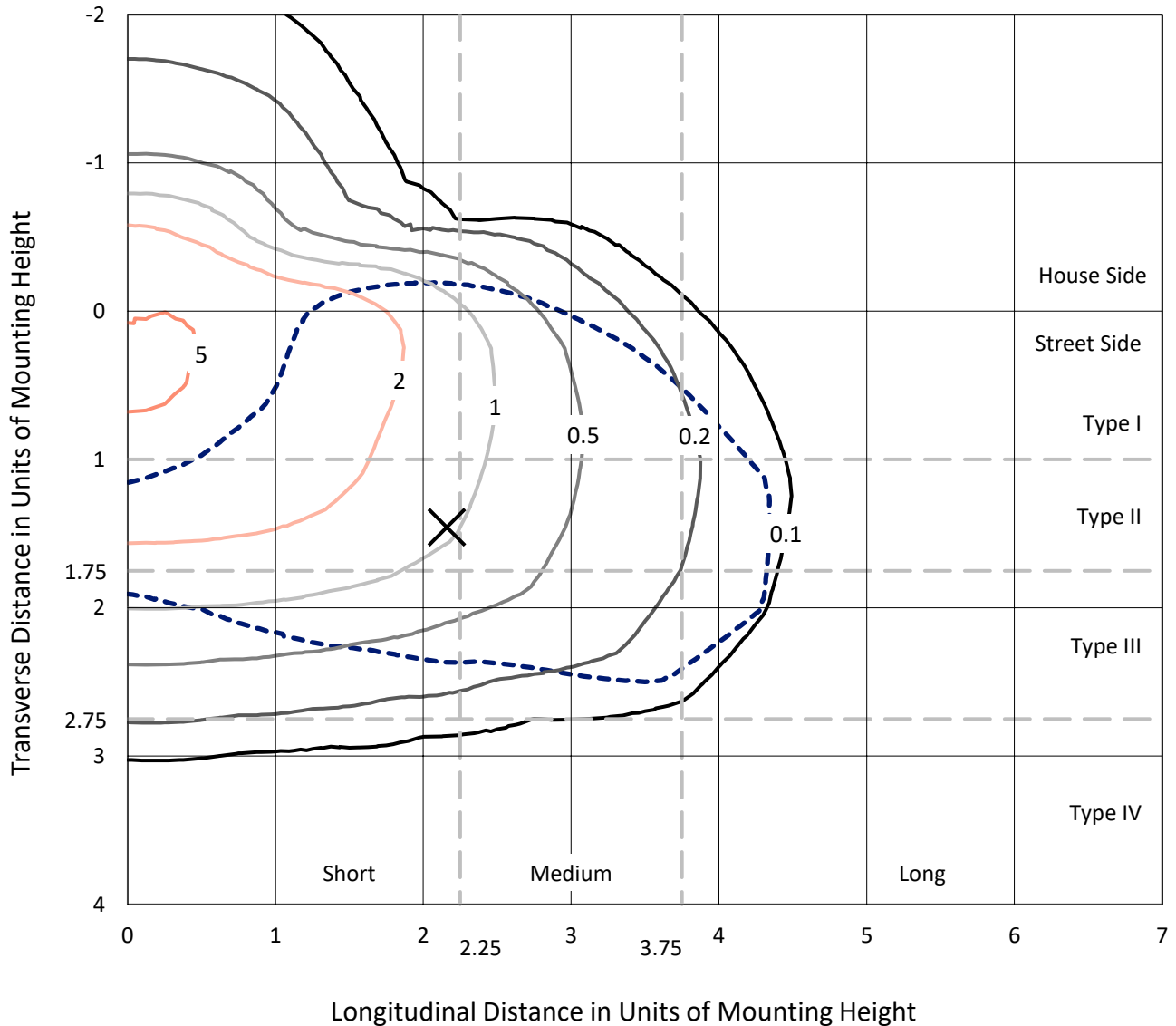
Input Watts (W): 191
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P359305
 CATALOG NUMBER: NVN-SA3D-740-U-T3

Iso-Footcandle Lines of Horizontal Illumination

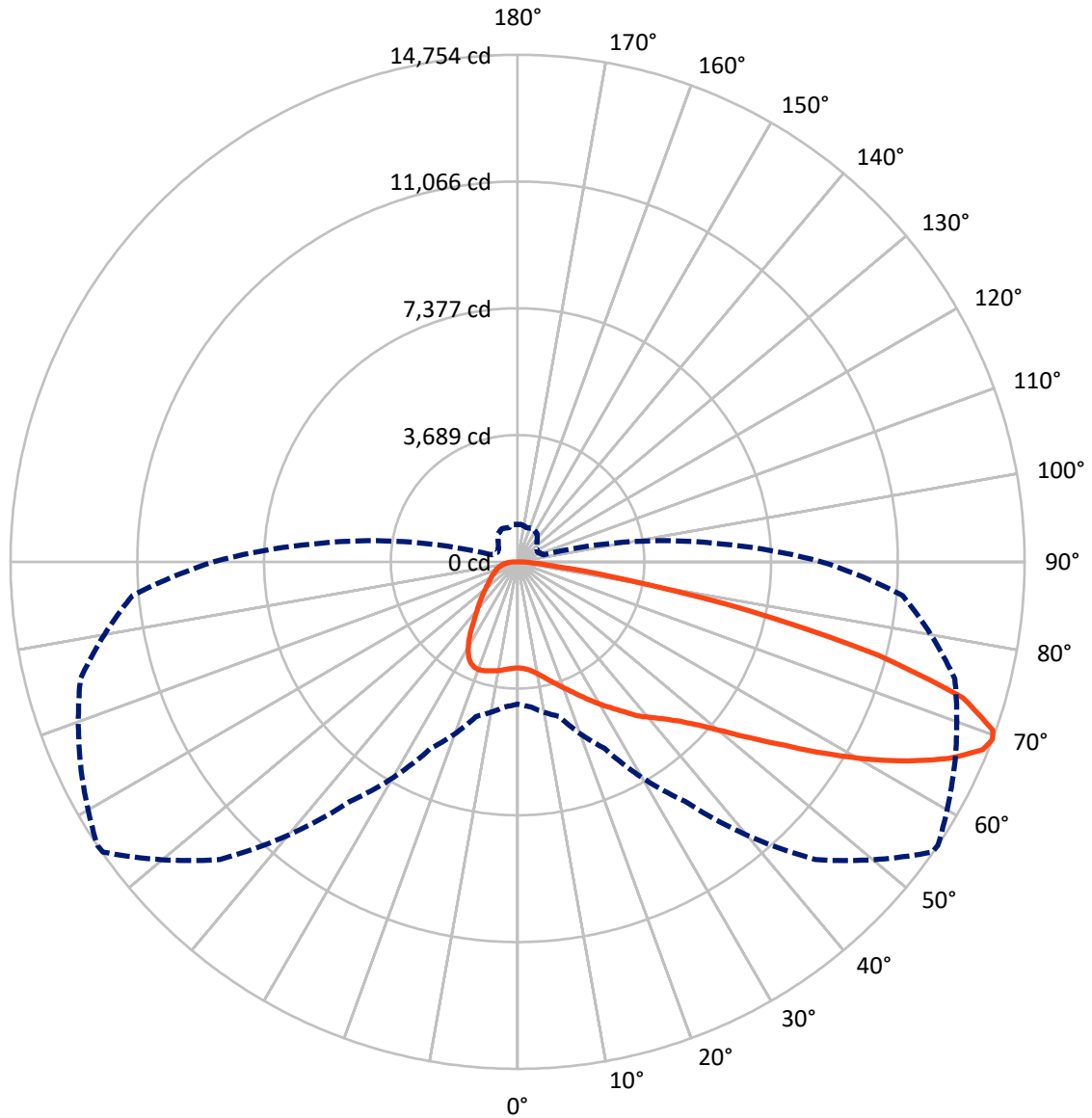
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 5.4 fc
 Type III - Short - N/A

REPORT NUMBER: P359305
CATALOG NUMBER: NVN-SA3D-740-U-T3

Luminous Intensity Polar Plot



— Vertical Plane Through 56-Deg Lateral - - - Horizontal Cone Through 69-Deg Vertical

REPORT NUMBER: P359305
 CATALOG NUMBER: NVN-SA3D-740-U-T3

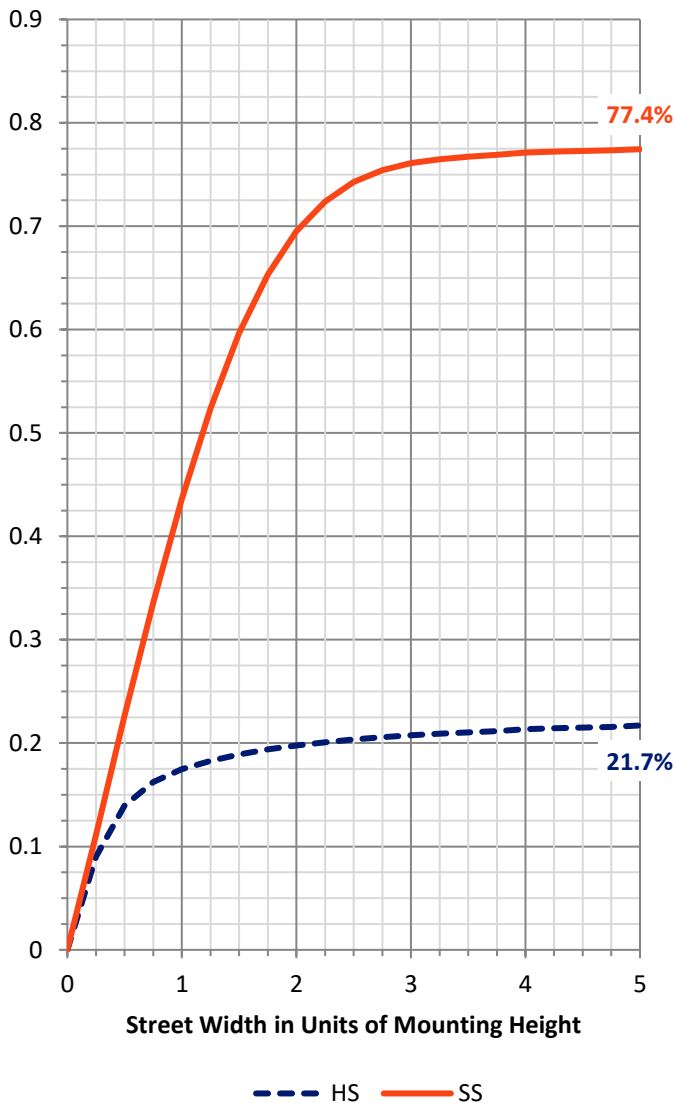
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 5259.9 | 0.0 | 5259.9 |
| | % Fixture | 22.3 | 0.0 | 22.3 |
| Street Side | Lumens | 18359.1 | 0.0 | 18359.1 |
| | % Fixture | 77.7 | 0.0 | 77.7 |
| Total | Lumens | 23619.0 | 0.0 | 23619.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 303.3 | 1.3 |
| 10°-20° | 975.2 | 4.1 |
| 20°-30° | 1702.3 | 7.2 |
| 30°-40° | 2445.4 | 10.4 |
| 40°-50° | 3384.2 | 14.3 |
| 50°-60° | 4958.4 | 21.0 |
| 60°-70° | 6045.2 | 25.6 |
| 70°-80° | 3342.2 | 14.2 |
| 80°-90° | 462.9 | 2.0 |
| 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° | 23619.0 | 100.0 |
| 0°-180° | 23619.0 | 100.0 |

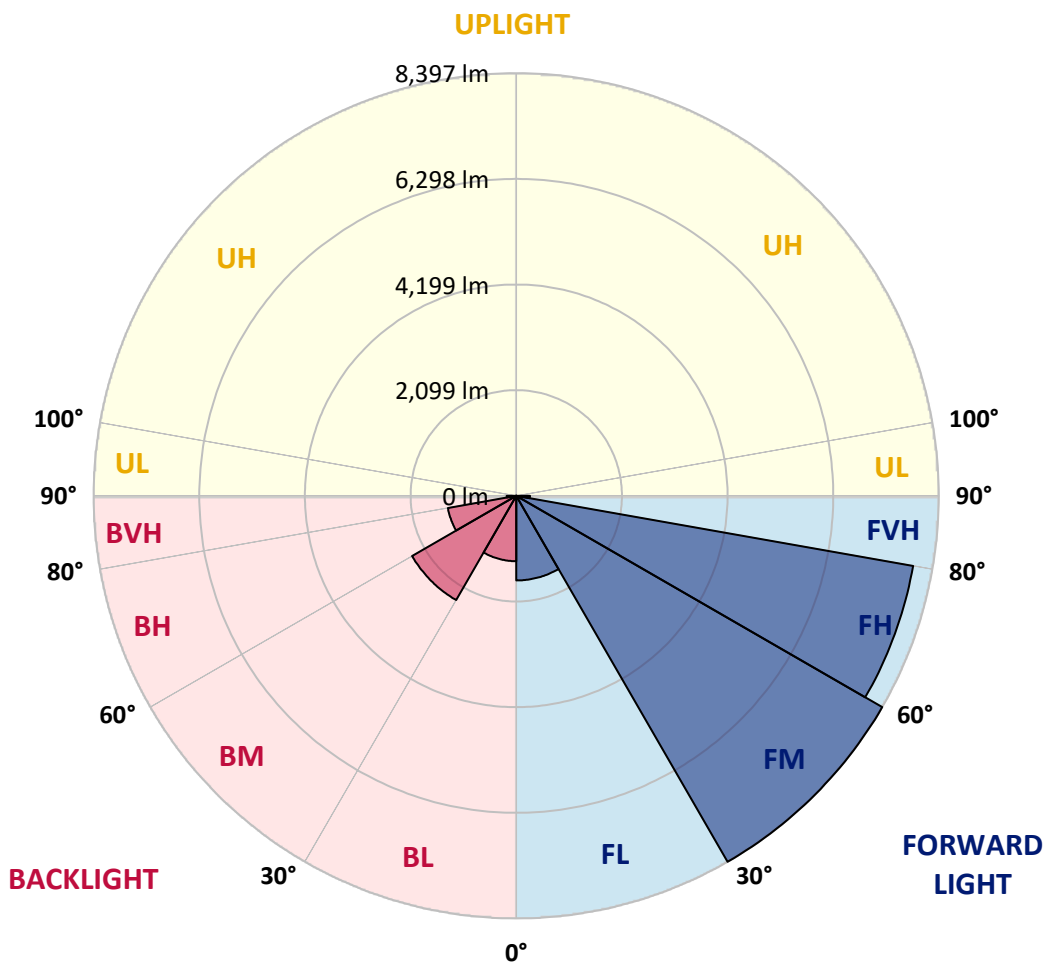


REPORT NUMBER: P359305
 CATALOG NUMBER: NVN-SA3D-740-U-T3

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|------|-------------|--------|-----------|-------------------------|------|----------|
| | | | | B | U | G |
| FL | (0°-30°) | 1681.0 | 7.1 | | | |
| FM | (30°-60°) | 8397.4 | 35.6 | | | |
| FH | (60°-80°) | 8008.0 | 33.9 | | | G4/12000 |
| FVH | (80°-90°) | 272.7 | 1.2 | | | G3/500 |
| BL | (0°-30°) | 1299.8 | 5.5 | B3/2500 | | |
| BM | (30°-60°) | 2390.5 | 10.1 | B2/2500 | | |
| BH | (60°-80°) | 1379.3 | 5.8 | B3/2500 | | G3/2500 |
| BVH | (80°-90°) | 190.2 | 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 III Short





REPORT NUMBER: P359305

CATALOG NUMBER: NVN-SA3D-740-U-T3

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 56° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 |
| 2.5° | 3107.4 | 3110.6 | 3108.2 | 3114.7 | 3107.4 | 3112.2 | 3108.2 | 3108.2 | 3105.7 | 3098.4 | 3090.3 |
| 5° | 3156.2 | 3162.7 | 3158.6 | 3165.1 | 3156.2 | 3157.8 | 3150.5 | 3150.5 | 3143.2 | 3127.7 | 3111.4 |
| 7.5° | 3232.7 | 3240.0 | 3236.7 | 3243.2 | 3231.0 | 3231.0 | 3221.3 | 3220.5 | 3205.8 | 3180.6 | 3161.9 |
| 10° | 3323.8 | 3333.6 | 3330.3 | 3340.1 | 3330.3 | 3333.6 | 3323.8 | 3323.8 | 3304.3 | 3268.5 | 3244.9 |
| 12.5° | 3456.4 | 3468.6 | 3459.7 | 3458.9 | 3454.8 | 3461.3 | 3453.2 | 3451.5 | 3433.6 | 3384.8 | 3352.3 |
| 15° | 3633.8 | 3646.8 | 3628.1 | 3626.5 | 3603.7 | 3601.2 | 3601.2 | 3598.8 | 3587.4 | 3528.8 | 3475.1 |
| 17.5° | 3838.0 | 3842.1 | 3825.8 | 3799.8 | 3770.5 | 3751.8 | 3749.3 | 3755.8 | 3755.8 | 3687.5 | 3602.1 |
| 20° | 4038.2 | 4045.5 | 4032.5 | 4003.2 | 3965.8 | 3938.1 | 3918.6 | 3931.6 | 3930.8 | 3849.4 | 3728.2 |
| 22.5° | 4256.2 | 4273.3 | 4253.8 | 4216.4 | 4172.4 | 4141.5 | 4107.3 | 4118.7 | 4119.5 | 4019.5 | 3851.9 |
| 25° | 4538.6 | 4523.1 | 4510.9 | 4458.0 | 4395.4 | 4363.6 | 4331.9 | 4343.3 | 4340.0 | 4202.5 | 3979.6 |
| 27.5° | 4788.4 | 4791.6 | 4775.4 | 4719.2 | 4646.8 | 4576.8 | 4575.2 | 4582.5 | 4570.3 | 4392.9 | 4100.0 |
| 30° | 5078.8 | 5080.5 | 5057.7 | 5007.2 | 4928.3 | 4838.0 | 4816.9 | 4829.1 | 4803.0 | 4573.6 | 4226.9 |
| 32.5° | 5367.7 | 5375.8 | 5350.6 | 5289.6 | 5226.1 | 5116.3 | 5074.0 | 5082.1 | 5017.0 | 4758.3 | 4357.9 |
| 35° | 5620.7 | 5632.1 | 5624.0 | 5583.3 | 5514.2 | 5419.8 | 5369.3 | 5364.4 | 5283.9 | 4984.5 | 4531.3 |
| 37.5° | 5878.7 | 5889.3 | 5880.3 | 5846.1 | 5818.5 | 5718.4 | 5691.5 | 5691.5 | 5551.6 | 5215.5 | 4751.8 |
| 40° | 6143.9 | 6160.2 | 6149.6 | 6102.4 | 6078.8 | 6033.3 | 5969.0 | 5953.5 | 5802.2 | 5493.0 | 5111.4 |
| 42.5° | 6390.5 | 6411.6 | 6453.9 | 6426.3 | 6378.3 | 6384.8 | 6255.4 | 6247.3 | 6136.6 | 5903.1 | 5563.0 |
| 45° | 6740.3 | 6771.3 | 6842.9 | 6821.7 | 6811.9 | 6776.1 | 6622.4 | 6615.0 | 6572.7 | 6454.7 | 6123.6 |
| 47.5° | 7121.9 | 7164.3 | 7293.6 | 7297.7 | 7402.7 | 7335.1 | 7126.0 | 7100.8 | 7110.5 | 7115.4 | 6807.9 |
| 50° | 7473.4 | 7519.8 | 7732.2 | 7832.3 | 8079.6 | 8094.3 | 7759.8 | 7737.1 | 7775.3 | 7887.6 | 7605.3 |
| 52.5° | 7754.2 | 7812.7 | 8078.0 | 8387.2 | 8811.1 | 8931.5 | 8540.1 | 8523.1 | 8551.5 | 8745.2 | 8506.8 |
| 55° | 7960.0 | 8023.5 | 8312.3 | 8875.4 | 9552.3 | 9764.7 | 9438.4 | 9422.1 | 9440.0 | 9686.6 | 9487.2 |
| 57.5° | 8008.0 | 8023.5 | 8442.5 | 9204.1 | 10178.0 | 10688.2 | 10537.7 | 10505.1 | 10417.3 | 10632.1 | 10569.4 |
| 60° | 7782.6 | 7844.5 | 8335.1 | 9319.6 | 10662.2 | 11598.7 | 11686.6 | 11645.9 | 11399.3 | 11575.1 | 11524.6 |
| 62.5° | 7325.4 | 7436.0 | 7934.0 | 9143.9 | 10851.7 | 12342.4 | 12813.5 | 12764.7 | 12339.9 | 12453.8 | 12211.4 |
| 65° | 6578.4 | 6625.6 | 7148.8 | 8537.7 | 10610.9 | 12818.4 | 13818.3 | 13793.9 | 13259.4 | 13081.2 | 12338.3 |
| 67.5° | 5242.4 | 5331.1 | 5775.3 | 7270.8 | 9625.6 | 12762.2 | 14595.4 | 14592.9 | 13859.8 | 13313.9 | 11888.3 |
| 69° | 4141.5 | 4233.5 | 4656.6 | 5989.3 | 8517.4 | 12248.8 | 14725.6 | 14754.0 | 14029.1 | 13172.3 | 11245.6 |
| 70° | 3301.8 | 3408.4 | 3698.9 | 5044.7 | 7533.7 | 11571.8 | 14617.3 | 14668.6 | 13996.5 | 12938.8 | 10652.4 |
| 72.5° | 1405.2 | 1491.4 | 1698.1 | 2600.4 | 4591.5 | 8641.0 | 13365.1 | 13558.8 | 13242.3 | 11842.0 | 8803.8 |
| 75° | 613.5 | 640.3 | 733.9 | 1060.2 | 2038.2 | 4702.9 | 10470.1 | 10828.1 | 11322.9 | 10009.6 | 6558.1 |
| 77.5° | 449.1 | 460.5 | 511.8 | 622.4 | 914.6 | 1776.2 | 6733.0 | 6941.3 | 8165.9 | 7283.9 | 4022.7 |
| 80° | 347.4 | 355.6 | 395.4 | 457.3 | 597.2 | 718.5 | 3070.7 | 3249.7 | 4591.5 | 3741.2 | 1675.3 |
| 82.5° | 276.6 | 282.3 | 310.0 | 336.9 | 412.5 | 435.3 | 1019.5 | 1131.0 | 1694.8 | 1033.3 | 443.4 |
| 85° | 257.1 | 263.6 | 273.4 | 245.7 | 264.4 | 255.5 | 441.0 | 461.3 | 511.8 | 406.0 | 185.5 |
| 87.5° | 116.4 | 137.5 | 270.9 | 191.2 | 140.8 | 112.3 | 180.6 | 188.8 | 212.4 | 213.2 | 82.2 |
| 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: P359305
 CATALOG NUMBER: NVN-SA3D-740-U-T3

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 | 3087.8 |
| 2.5° | 3095.2 | 3092.7 | 3096.8 | 3087.0 | 3099.2 | 3098.4 | 3094.3 | 3096.0 | 3104.1 | 3103.3 | 3104.1 |
| 5° | 3113.9 | 3112.2 | 3117.1 | 3109.8 | 3124.4 | 3129.3 | 3130.1 | 3137.5 | 3146.4 | 3148.9 | 3148.9 |
| 7.5° | 3161.1 | 3161.1 | 3163.5 | 3153.7 | 3163.5 | 3162.7 | 3158.6 | 3165.9 | 3174.9 | 3175.7 | 3174.9 |
| 10° | 3242.4 | 3243.2 | 3239.2 | 3213.9 | 3205.8 | 3183.8 | 3163.5 | 3164.3 | 3175.7 | 3184.7 | 3187.1 |
| 12.5° | 3344.9 | 3341.7 | 3323.8 | 3277.4 | 3243.2 | 3198.5 | 3177.3 | 3176.5 | 3187.9 | 3195.2 | 3197.7 |
| 15° | 3462.1 | 3453.2 | 3406.8 | 3331.1 | 3270.9 | 3227.0 | 3192.8 | 3184.7 | 3178.1 | 3170.0 | 3170.8 |
| 17.5° | 3572.8 | 3552.4 | 3475.1 | 3370.2 | 3306.7 | 3248.1 | 3182.2 | 3129.3 | 3092.7 | 3071.6 | 3065.0 |
| 20° | 3685.1 | 3645.2 | 3533.7 | 3406.8 | 3326.2 | 3219.6 | 3092.7 | 2985.3 | 2918.6 | 2887.7 | 2882.0 |
| 22.5° | 3787.6 | 3723.3 | 3588.2 | 3445.0 | 3310.8 | 3123.6 | 2924.3 | 2768.1 | 2675.3 | 2633.8 | 2637.1 |
| 25° | 3887.7 | 3798.2 | 3645.2 | 3471.9 | 3232.7 | 2954.4 | 2690.0 | 2497.9 | 2390.5 | 2344.1 | 2342.5 |
| 27.5° | 3975.5 | 3873.8 | 3707.0 | 3449.9 | 3087.0 | 2713.5 | 2412.5 | 2225.4 | 2135.8 | 2096.0 | 2089.5 |
| 30° | 4076.4 | 3969.0 | 3789.2 | 3366.1 | 2873.8 | 2435.3 | 2141.5 | 2009.7 | 1946.3 | 1906.4 | 1899.1 |
| 32.5° | 4199.3 | 4098.4 | 3856.7 | 3213.9 | 2601.3 | 2144.8 | 1930.0 | 1838.1 | 1780.3 | 1735.5 | 1727.4 |
| 35° | 4378.3 | 4269.3 | 3873.8 | 2995.9 | 2301.8 | 1915.3 | 1774.6 | 1680.2 | 1602.1 | 1544.3 | 1538.6 |
| 37.5° | 4602.9 | 4483.3 | 3834.8 | 2713.5 | 2011.4 | 1766.4 | 1645.2 | 1528.9 | 1427.2 | 1345.8 | 1332.8 |
| 40° | 4926.7 | 4746.1 | 3726.5 | 2388.1 | 1797.4 | 1651.7 | 1519.1 | 1386.5 | 1260.4 | 1165.2 | 1146.4 |
| 42.5° | 5315.6 | 5054.4 | 3560.6 | 2064.2 | 1640.3 | 1535.4 | 1393.8 | 1229.4 | 1109.0 | 1041.5 | 1031.7 |
| 45° | 5810.3 | 5375.0 | 3330.3 | 1781.1 | 1485.7 | 1419.0 | 1258.7 | 1107.4 | 1032.5 | 982.9 | 974.8 |
| 47.5° | 6375.0 | 5734.7 | 3088.6 | 1550.8 | 1354.7 | 1310.0 | 1150.5 | 1052.9 | 993.5 | 954.4 | 947.1 |
| 50° | 7069.1 | 6140.7 | 2832.3 | 1362.1 | 1222.9 | 1179.0 | 1099.3 | 1022.8 | 975.6 | 945.5 | 938.1 |
| 52.5° | 7851.8 | 6598.8 | 2647.6 | 1213.2 | 1113.9 | 1082.2 | 1072.4 | 1006.5 | 968.3 | 945.5 | 938.1 |
| 55° | 8694.7 | 7065.0 | 2448.3 | 1087.9 | 1019.5 | 1028.5 | 1054.5 | 1008.1 | 982.1 | 954.4 | 943.8 |
| 57.5° | 9538.5 | 7546.7 | 2226.2 | 982.1 | 944.7 | 988.6 | 1042.3 | 1011.4 | 989.4 | 962.6 | 952.8 |
| 60° | 10205.7 | 7851.8 | 1882.0 | 893.4 | 885.3 | 944.7 | 1013.0 | 987.0 | 958.5 | 959.3 | 957.7 |
| 62.5° | 10517.3 | 7835.5 | 1502.0 | 814.5 | 825.9 | 885.3 | 965.8 | 948.7 | 925.1 | 956.9 | 959.3 |
| 65° | 10342.4 | 7445.0 | 1169.2 | 742.9 | 762.4 | 823.4 | 917.0 | 930.0 | 938.1 | 999.2 | 1007.3 |
| 67.5° | 9608.5 | 6685.0 | 905.6 | 680.2 | 704.6 | 781.1 | 921.9 | 1013.0 | 1023.6 | 1087.9 | 1087.0 |
| 69° | 8849.3 | 5972.2 | 786.8 | 647.7 | 676.1 | 791.7 | 985.3 | 1065.9 | 1026.0 | 1094.4 | 1084.6 |
| 70° | 8213.1 | 5408.4 | 723.3 | 625.7 | 663.1 | 810.4 | 1027.6 | 1065.1 | 1013.8 | 1072.4 | 1056.1 |
| 72.5° | 6325.4 | 3890.9 | 613.5 | 585.0 | 619.2 | 775.4 | 1039.9 | 1041.5 | 985.3 | 996.7 | 969.1 |
| 75° | 4338.4 | 2458.9 | 535.4 | 529.7 | 552.5 | 698.9 | 1000.8 | 995.1 | 911.3 | 895.0 | 872.2 |
| 77.5° | 2392.2 | 1249.0 | 454.8 | 476.8 | 492.3 | 619.2 | 909.7 | 901.5 | 832.4 | 798.2 | 790.1 |
| 80° | 922.7 | 546.8 | 384.0 | 423.9 | 433.7 | 536.2 | 797.4 | 790.1 | 732.3 | 688.4 | 676.1 |
| 82.5° | 348.2 | 286.4 | 317.3 | 367.0 | 363.7 | 442.6 | 675.3 | 671.3 | 615.1 | 550.8 | 531.3 |
| 85° | 161.1 | 171.7 | 251.4 | 302.7 | 279.1 | 327.9 | 540.3 | 547.6 | 479.2 | 402.8 | 402.8 |
| 87.5° | 68.3 | 96.0 | 178.2 | 228.6 | 188.0 | 221.3 | 396.3 | 378.4 | 347.4 | 240.8 | 226.2 |
| 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 ($R_{f,i}$)

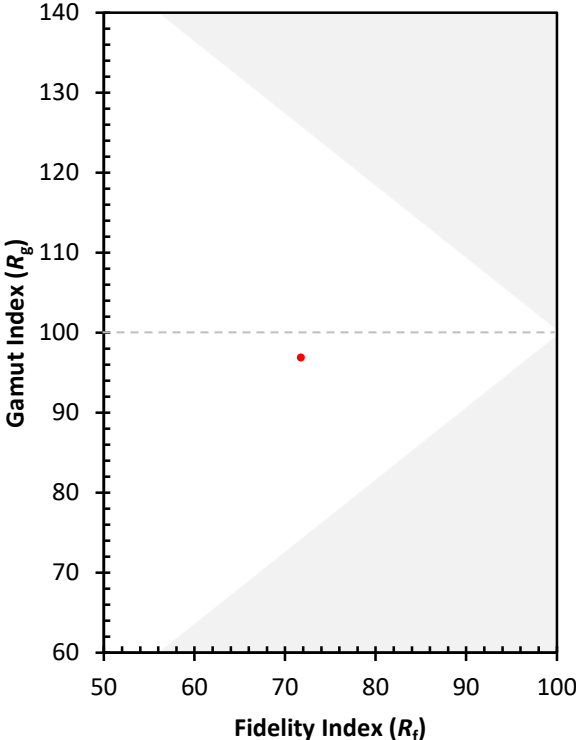
| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 55 | CES51 = 86 | CES76 = 45 |
| CES02 = 61 | CES27 = 80 | CES52 = 87 | CES77 = 68 |
| CES03 = 30 | CES28 = 79 | CES53 = 74 | CES78 = 49 |
| CES04 = 70 | CES29 = 51 | CES54 = 81 | CES79 = 77 |
| CES05 = 47 | CES30 = 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)