

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: P362126

Luminaire Tested: NVN-SA4B-722-U-SL4

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2019
Report Number: P362126
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-24)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: STREETWORKS
Catalog Number: NVN-SA4B-722-U-SL4
Description: NAVION ROADWAY AND AREA LUMINAIRE
(4) 70 CRI, 2200K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV SPILL
LIGHT ELIMINATOR OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 16426 lumens
Efficiency: N/A
Efficacy: 96.1 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B2 - U0 - G4

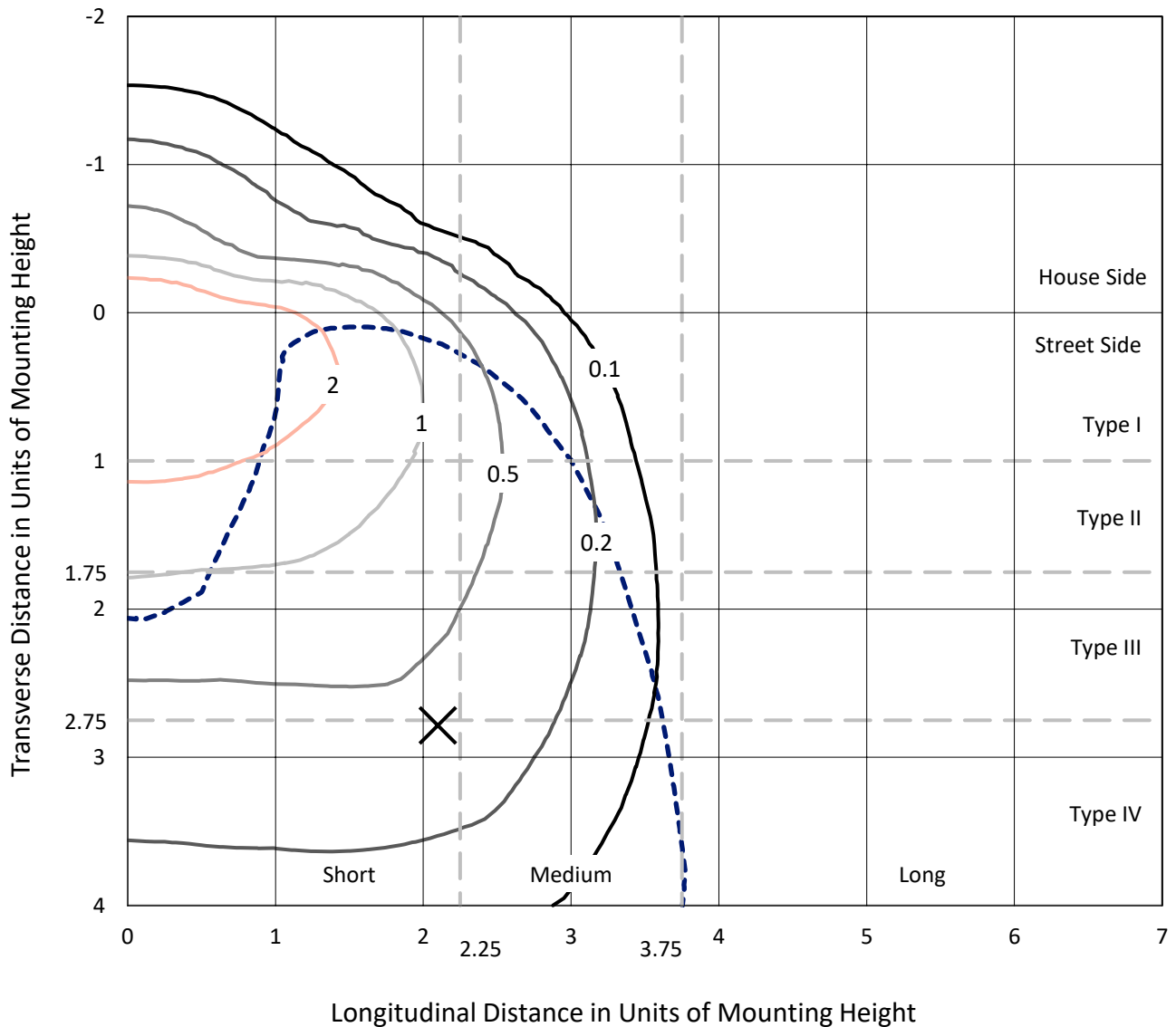
Input Watts (W): 171
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

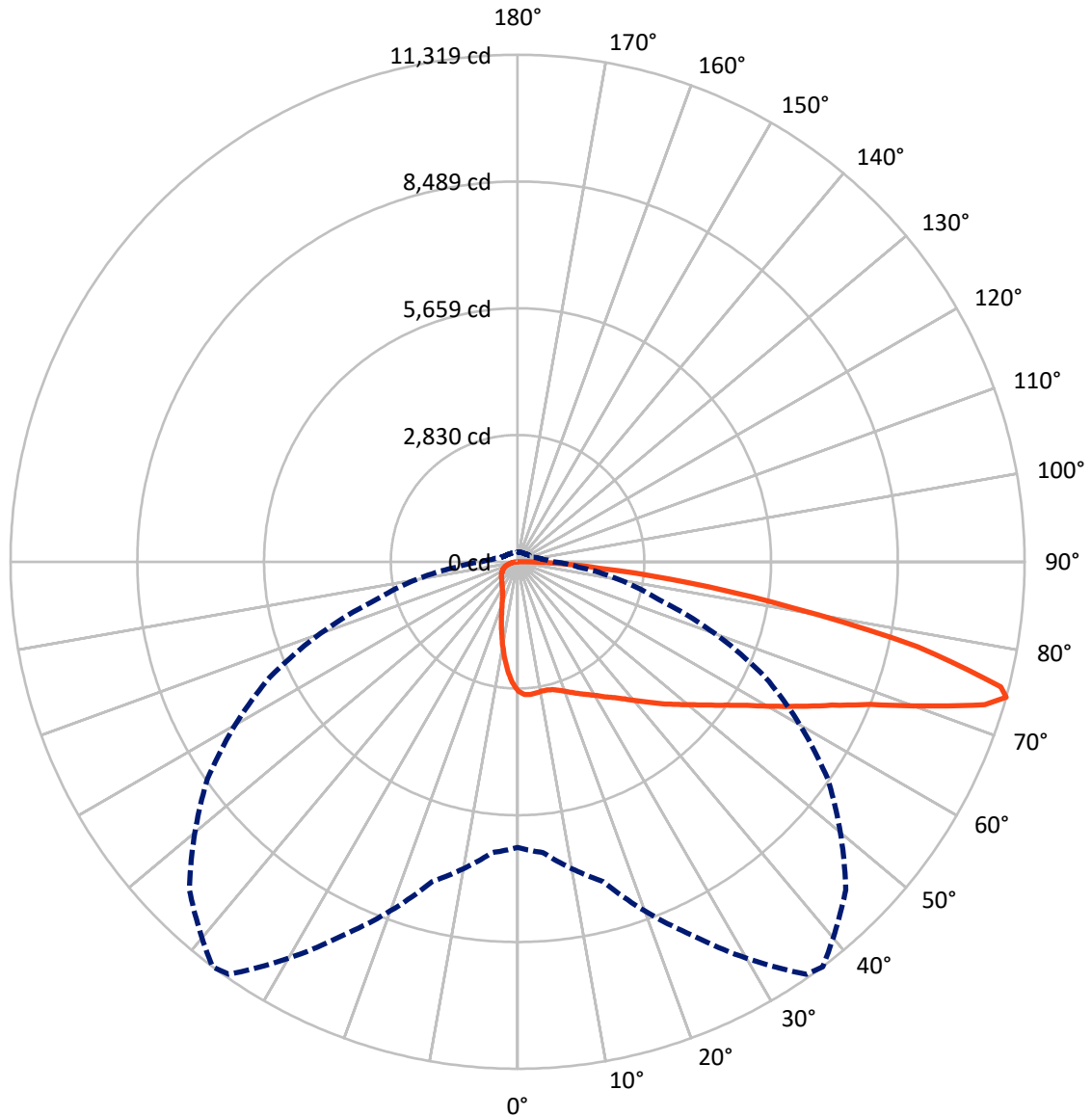
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 4.7 fc
 Type IV - Short - N/A

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CATALOG NUMBER: NVN-SA4B-722-U-SL4

Luminous Intensity Polar Plot



— Vertical Plane Through 37-Deg Lateral - - - Horizontal Cone Through 74-Deg Vertical

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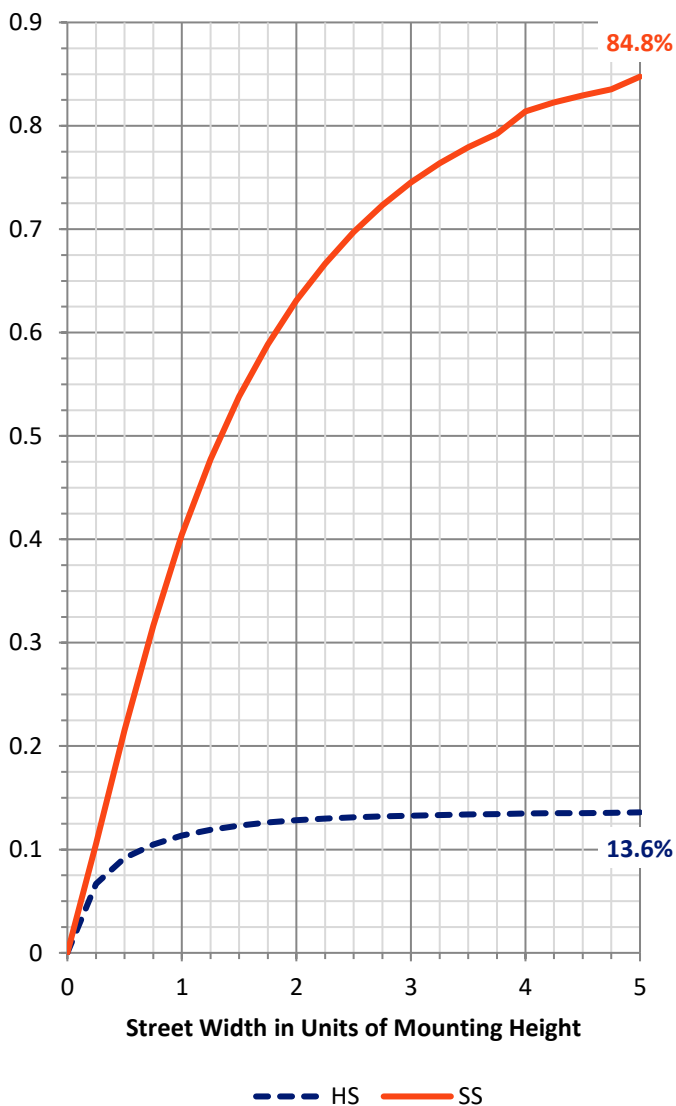
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 2260.1 | 0.0 | 2260.1 |
| | % Fixture | 13.8 | 0.0 | 13.8 |
| Street Side | Lumens | 14165.9 | 0.0 | 14165.9 |
| | % Fixture | 86.2 | 0.0 | 86.2 |
| Total | Lumens | 16426.0 | 0.0 | 16426.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 254.9 | 1.6 |
| 10°-20° | 653.3 | 4.0 |
| 20°-30° | 1006.6 | 6.1 |
| 30°-40° | 1463.7 | 8.9 |
| 40°-50° | 2154.4 | 13.1 |
| 50°-60° | 3025.4 | 18.4 |
| 60°-70° | 3829.3 | 23.3 |
| 70°-80° | 3371.8 | 20.5 |
| 80°-90° | 666.7 | 4.1 |
| 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° | 16426.0 | 100.0 |
| 0°-180° | 16426.0 | 100.0 |

Coefficient of Utilization

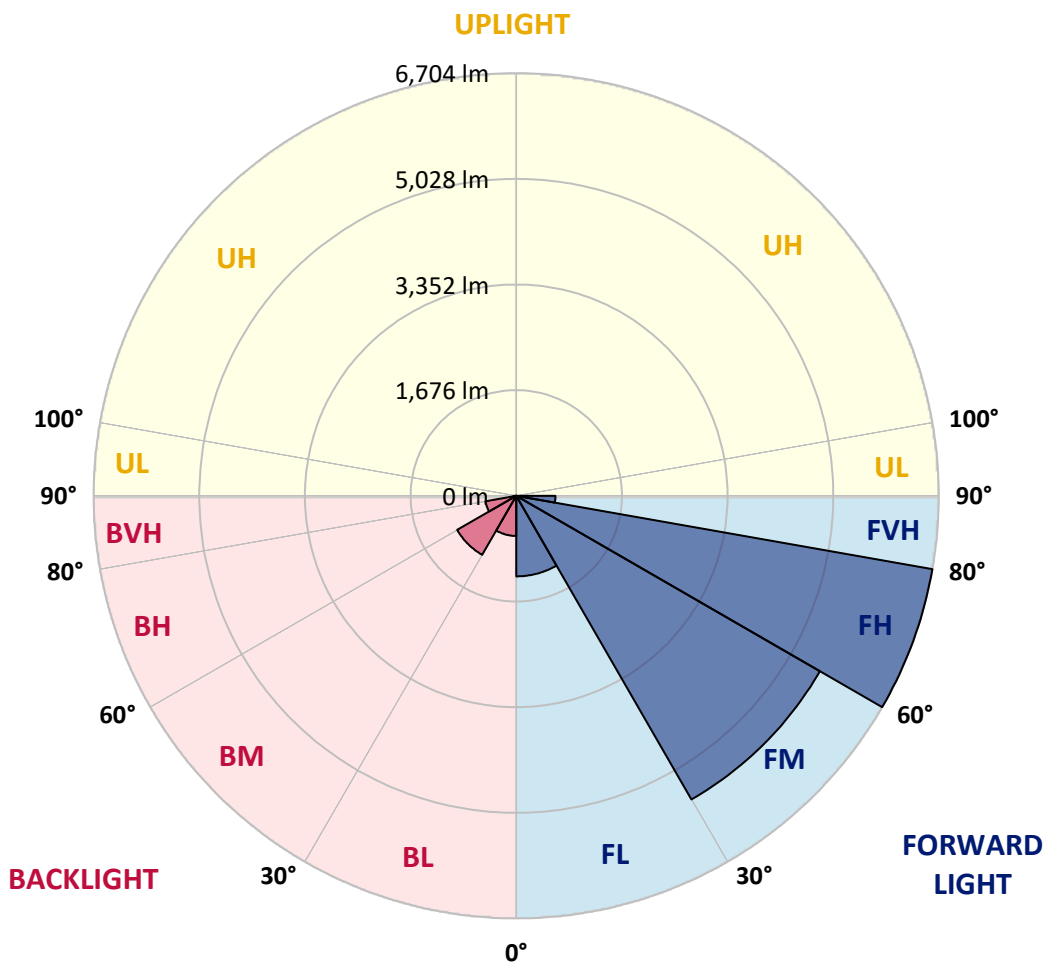


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 CATALOG NUMBER: NVN-SA4B-722-U-SL4

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1278.1 | 7.8 | | | |
| FM (30°-60°) | 5562.0 | 33.9 | | | |
| FH (60°-80°) | 6704.3 | 40.8 | | | G3/7500 |
| FVH (80°-90°) | 621.5 | 3.8 | | | G4/750 |
| BL (0°-30°) | 636.6 | 3.9 | B2/1000 | | |
| BM (30°-60°) | 1081.5 | 6.6 | B2/2500 | | |
| BH (60°-80°) | 496.8 | 3.0 | B1/500 | | G1/500 |
| BVH (80°-90°) | 45.1 | 0.3 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G4
 Type IV Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 37° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|---------|---------|---------|--------|--------|--------|--------|
| 0° | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 |
| 2.5° | 2993.1 | 2993.7 | 2993.1 | 2988.5 | 2977.5 | 2968.3 | 2960.7 | 2949.7 | 2925.4 | 2906.9 | 2879.2 |
| 5° | 3021.5 | 3018.0 | 3015.7 | 3007.0 | 2989.7 | 2979.3 | 2964.8 | 2944.0 | 2904.0 | 2867.0 | 2821.9 |
| 7.5° | 3008.2 | 3004.1 | 2998.9 | 2988.5 | 2968.8 | 2960.2 | 2939.9 | 2912.7 | 2864.7 | 2816.1 | 2751.3 |
| 10° | 2967.1 | 2965.9 | 2963.6 | 2961.3 | 2944.5 | 2937.6 | 2919.1 | 2890.1 | 2842.7 | 2783.7 | 2707.9 |
| 12.5° | 2921.4 | 2924.3 | 2933.5 | 2945.7 | 2938.2 | 2934.7 | 2923.1 | 2903.5 | 2854.9 | 2791.2 | 2699.8 |
| 15° | 2892.5 | 2900.6 | 2925.4 | 2957.3 | 2963.6 | 2962.5 | 2959.6 | 2946.9 | 2895.4 | 2824.8 | 2718.3 |
| 17.5° | 2882.6 | 2895.9 | 2943.4 | 2996.0 | 3014.5 | 3018.6 | 3019.8 | 2997.8 | 2940.5 | 2865.8 | 2737.4 |
| 20° | 2900.6 | 2917.3 | 2986.8 | 3059.1 | 3088.6 | 3090.9 | 3085.7 | 3047.5 | 2983.3 | 2901.1 | 2747.8 |
| 22.5° | 2955.0 | 2970.0 | 3056.8 | 3138.4 | 3171.9 | 3175.4 | 3159.8 | 3101.9 | 3028.4 | 2942.8 | 2762.3 |
| 25° | 3059.7 | 3078.2 | 3165.0 | 3246.6 | 3263.9 | 3264.5 | 3241.9 | 3170.2 | 3087.5 | 3001.2 | 2793.5 |
| 27.5° | 3196.2 | 3214.7 | 3292.9 | 3372.7 | 3363.4 | 3358.2 | 3327.6 | 3255.8 | 3164.4 | 3081.7 | 2849.1 |
| 30° | 3348.4 | 3368.7 | 3442.7 | 3499.4 | 3477.4 | 3467.0 | 3442.1 | 3349.6 | 3271.4 | 3191.6 | 2934.1 |
| 32.5° | 3505.8 | 3524.3 | 3589.1 | 3627.9 | 3600.1 | 3595.5 | 3557.9 | 3473.4 | 3410.9 | 3359.4 | 3071.8 |
| 35° | 3667.2 | 3680.5 | 3744.2 | 3766.2 | 3729.1 | 3728.0 | 3717.6 | 3640.0 | 3600.7 | 3625.0 | 3272.0 |
| 37.5° | 3832.1 | 3835.6 | 3890.0 | 3891.1 | 3880.1 | 3884.8 | 3895.8 | 3847.2 | 3858.2 | 3934.0 | 3532.4 |
| 40° | 3979.1 | 3988.3 | 4027.7 | 4039.8 | 4058.9 | 4075.1 | 4130.1 | 4098.3 | 4183.3 | 4317.6 | 3856.4 |
| 42.5° | 4087.9 | 4105.8 | 4168.9 | 4200.1 | 4262.0 | 4287.5 | 4365.0 | 4394.5 | 4565.8 | 4767.2 | 4241.8 |
| 45° | 4179.9 | 4207.6 | 4308.9 | 4373.1 | 4477.8 | 4522.4 | 4633.5 | 4732.4 | 4998.0 | 5254.9 | 4647.4 |
| 47.5° | 4279.4 | 4314.7 | 4441.4 | 4564.1 | 4706.4 | 4756.7 | 4958.7 | 5106.8 | 5459.2 | 5745.6 | 5029.8 |
| 50° | 4425.8 | 4453.0 | 4576.8 | 4769.5 | 4947.1 | 5011.9 | 5291.4 | 5503.7 | 5927.8 | 6213.1 | 5361.4 |
| 52.5° | 4630.0 | 4619.6 | 4724.3 | 4994.5 | 5232.9 | 5312.8 | 5646.6 | 5926.1 | 6402.9 | 6636.1 | 5641.4 |
| 55° | 4835.4 | 4818.1 | 4891.6 | 5230.0 | 5566.2 | 5650.1 | 6037.8 | 6350.2 | 6854.8 | 7016.8 | 5856.1 |
| 57.5° | 5064.0 | 5031.0 | 5092.9 | 5495.6 | 5945.8 | 6045.9 | 6475.8 | 6801.0 | 7299.1 | 7324.6 | 5992.6 |
| 60° | 5299.5 | 5254.9 | 5324.4 | 5824.8 | 6427.8 | 6545.8 | 6988.4 | 7240.7 | 7718.1 | 7571.1 | 6036.6 |
| 62.5° | 5505.5 | 5474.2 | 5581.3 | 6192.3 | 6971.1 | 7100.7 | 7491.8 | 7708.2 | 8131.2 | 7673.5 | 5878.1 |
| 65° | 5685.4 | 5690.6 | 5875.8 | 6605.4 | 7576.9 | 7715.2 | 8069.3 | 8284.5 | 8456.4 | 7612.7 | 5507.2 |
| 67.5° | 5900.1 | 5929.6 | 6245.5 | 7149.3 | 8339.5 | 8491.1 | 8909.4 | 8912.9 | 8638.0 | 7256.3 | 4777.0 |
| 70° | 6213.1 | 6273.8 | 6754.1 | 7903.8 | 9423.8 | 9632.1 | 9955.0 | 9282.0 | 8382.9 | 6290.0 | 3758.6 |
| 72.5° | 6490.8 | 6604.2 | 7295.1 | 8767.1 | 10745.3 | 10903.3 | 10566.5 | 9069.1 | 7316.5 | 4713.9 | 2341.6 |
| 74° | 6378.0 | 6518.6 | 7393.5 | 9192.3 | 11242.9 | 11318.7 | 10360.0 | 8447.7 | 6100.3 | 3264.5 | 1360.9 |
| 75° | 6135.0 | 6287.7 | 7250.0 | 9188.3 | 11179.9 | 11137.6 | 9861.2 | 7737.7 | 5024.1 | 2226.5 | 905.5 |
| 77.5° | 4951.1 | 5112.6 | 6108.9 | 7874.9 | 9166.9 | 9127.0 | 7575.1 | 5190.7 | 2200.4 | 730.2 | 460.0 |
| 80° | 2878.6 | 3001.8 | 3792.2 | 5000.9 | 6181.3 | 6253.6 | 4981.8 | 2568.4 | 865.6 | 410.2 | 311.9 |
| 82.5° | 1278.7 | 1363.8 | 1831.9 | 2552.8 | 3730.3 | 3823.4 | 2608.9 | 1345.8 | 534.6 | 249.4 | 187.5 |
| 85° | 839.0 | 902.0 | 1112.1 | 1215.7 | 1776.3 | 1840.0 | 1277.0 | 1047.9 | 353.0 | 137.1 | 137.7 |
| 87.5° | 603.5 | 664.2 | 826.3 | 721.5 | 815.3 | 771.9 | 694.9 | 969.7 | 141.8 | 78.1 | 46.3 |
| 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: P362126
 CATALOG NUMBER: NVN-SA4B-722-U-SL4

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 | 2894.2 |
| 2.5° | 2867.0 | 2857.7 | 2836.9 | 2797.6 | 2775.6 | 2757.1 | 2726.4 | 2708.5 | 2700.4 | 2699.8 | 2703.3 |
| 5° | 2795.8 | 2774.4 | 2720.6 | 2654.7 | 2602.0 | 2554.0 | 2494.4 | 2458.5 | 2433.0 | 2418.0 | 2422.1 |
| 7.5° | 2713.1 | 2679.5 | 2595.1 | 2489.8 | 2405.3 | 2312.1 | 2220.1 | 2165.2 | 2122.3 | 2090.5 | 2096.3 |
| 10° | 2656.4 | 2610.1 | 2486.9 | 2335.3 | 2194.7 | 2059.3 | 1932.6 | 1856.8 | 1796.6 | 1750.3 | 1753.8 |
| 12.5° | 2637.3 | 2574.8 | 2404.1 | 2201.6 | 2004.3 | 1819.1 | 1653.7 | 1537.4 | 1475.5 | 1422.8 | 1426.8 |
| 15° | 2640.2 | 2556.3 | 2334.7 | 2081.3 | 1833.0 | 1599.9 | 1399.1 | 1263.1 | 1179.2 | 1142.8 | 1143.3 |
| 17.5° | 2642.5 | 2534.9 | 2261.8 | 1952.2 | 1663.5 | 1395.0 | 1176.9 | 1039.2 | 959.9 | 926.4 | 926.9 |
| 20° | 2635.0 | 2500.2 | 2171.5 | 1804.1 | 1486.4 | 1207.0 | 995.8 | 878.9 | 818.7 | 792.7 | 792.7 |
| 22.5° | 2625.1 | 2459.1 | 2069.7 | 1655.4 | 1311.7 | 1043.8 | 866.2 | 777.1 | 742.4 | 725.0 | 724.4 |
| 25° | 2629.8 | 2428.4 | 1965.5 | 1502.6 | 1150.9 | 913.6 | 780.0 | 720.9 | 697.8 | 686.8 | 686.2 |
| 27.5° | 2654.7 | 2414.0 | 1869.5 | 1350.5 | 1010.2 | 815.8 | 722.1 | 680.4 | 665.4 | 658.5 | 658.5 |
| 30° | 2699.8 | 2414.0 | 1769.4 | 1220.9 | 893.4 | 743.5 | 677.6 | 649.2 | 638.8 | 634.2 | 634.2 |
| 32.5° | 2778.5 | 2427.3 | 1672.8 | 1092.4 | 800.2 | 686.8 | 640.5 | 621.4 | 613.3 | 611.0 | 611.0 |
| 35° | 2913.9 | 2472.4 | 1578.4 | 970.9 | 725.0 | 640.5 | 605.2 | 594.2 | 588.4 | 587.9 | 589.6 |
| 37.5° | 3104.2 | 2564.4 | 1489.9 | 881.2 | 671.8 | 602.9 | 575.7 | 567.0 | 563.6 | 566.5 | 568.8 |
| 40° | 3343.8 | 2689.4 | 1409.5 | 800.2 | 631.3 | 572.8 | 548.5 | 542.7 | 541.0 | 545.0 | 548.5 |
| 42.5° | 3633.1 | 2858.3 | 1343.5 | 741.8 | 600.0 | 547.4 | 525.4 | 518.4 | 516.7 | 521.3 | 526.0 |
| 45° | 3946.1 | 3040.0 | 1297.2 | 698.4 | 575.7 | 528.3 | 505.1 | 497.6 | 494.1 | 496.4 | 501.7 |
| 47.5° | 4230.8 | 3211.9 | 1278.7 | 667.7 | 552.6 | 512.1 | 487.2 | 477.9 | 472.1 | 471.0 | 475.0 |
| 50° | 4470.9 | 3339.7 | 1287.4 | 649.2 | 534.1 | 494.1 | 469.8 | 459.4 | 450.7 | 445.5 | 448.4 |
| 52.5° | 4645.6 | 3420.2 | 1295.5 | 641.1 | 519.6 | 474.5 | 450.7 | 440.9 | 429.3 | 420.6 | 420.6 |
| 55° | 4772.4 | 3438.7 | 1277.6 | 634.7 | 508.6 | 453.1 | 429.3 | 420.1 | 408.5 | 398.7 | 397.5 |
| 57.5° | 4822.1 | 3386.6 | 1211.0 | 625.5 | 501.1 | 432.8 | 406.8 | 399.8 | 390.0 | 378.4 | 377.8 |
| 60° | 4755.0 | 3225.7 | 1082.6 | 605.8 | 491.2 | 416.0 | 384.2 | 379.6 | 374.9 | 363.9 | 363.4 |
| 62.5° | 4485.4 | 2872.8 | 916.5 | 565.9 | 471.6 | 398.1 | 363.4 | 365.7 | 366.3 | 358.7 | 357.6 |
| 65° | 3996.4 | 2387.9 | 754.5 | 513.8 | 442.1 | 376.7 | 342.0 | 353.0 | 359.3 | 358.2 | 356.4 |
| 67.5° | 3285.9 | 1858.5 | 639.4 | 458.8 | 403.3 | 347.2 | 318.8 | 331.5 | 336.7 | 340.8 | 339.6 |
| 70° | 2438.8 | 1310.5 | 528.8 | 401.0 | 356.4 | 312.4 | 288.7 | 295.1 | 291.6 | 296.2 | 298.0 |
| 72.5° | 1359.7 | 786.3 | 431.1 | 343.1 | 307.8 | 271.9 | 255.2 | 254.0 | 246.5 | 246.5 | 246.5 |
| 74° | 815.8 | 576.9 | 379.0 | 307.2 | 278.3 | 245.3 | 230.9 | 225.7 | 218.7 | 219.3 | 218.7 |
| 75° | 656.1 | 495.9 | 347.7 | 283.5 | 257.5 | 229.7 | 215.2 | 208.3 | 203.1 | 203.1 | 202.5 |
| 77.5° | 414.3 | 376.7 | 280.0 | 225.7 | 206.0 | 189.2 | 179.4 | 170.1 | 170.1 | 169.5 | 169.0 |
| 80° | 313.0 | 299.7 | 218.1 | 170.7 | 158.0 | 145.2 | 138.9 | 134.8 | 134.8 | 136.6 | 136.0 |
| 82.5° | 214.7 | 225.7 | 153.3 | 119.2 | 112.8 | 103.6 | 102.4 | 103.0 | 101.3 | 98.9 | 98.4 |
| 85° | 156.8 | 169.5 | 103.6 | 75.2 | 68.9 | 63.1 | 67.7 | 70.0 | 67.1 | 61.9 | 59.6 |
| 87.5° | 60.2 | 111.1 | 55.5 | 31.2 | 28.9 | 24.9 | 28.9 | 30.1 | 32.4 | 25.5 | 26.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Signify Classified - Internal
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: SP1-1908-441-10-R4

Test Date: 10/25/2019

Luminaire Tested: SA1C-722-U-5WQ

Data in this report applies to families of products SA1C-722-U-5WQ.

Test Information

Test Method: LM-79-2008 Report
 Number: SP1-1908-441-10-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-722-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): 2237
 CIE u': 0.2876
 CIE v': 0.5346
 Duv: -0.0006
 CIE x: 0.5005
 CIE y: 0.4134
 CIE z: 0.0860
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 587
 Purity: 74.5
 Rf: 69.8
 Rg: 99.2

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 72.0 | | |
| R1: | 68.9 | R9: | -17.4 |
| R2: | 83.0 | R10: | 61.3 |
| R3: | 95.2 | R11: | 59.8 |
| R4: | 66.2 | R12: | 50.5 |
| R5: | 65.9 | R13: | 71.1 |
| R6: | 76.3 | R14: | 96.9 |
| R7: | 76.7 | | |
| R8: | 43.8 | | |



Test Conditions

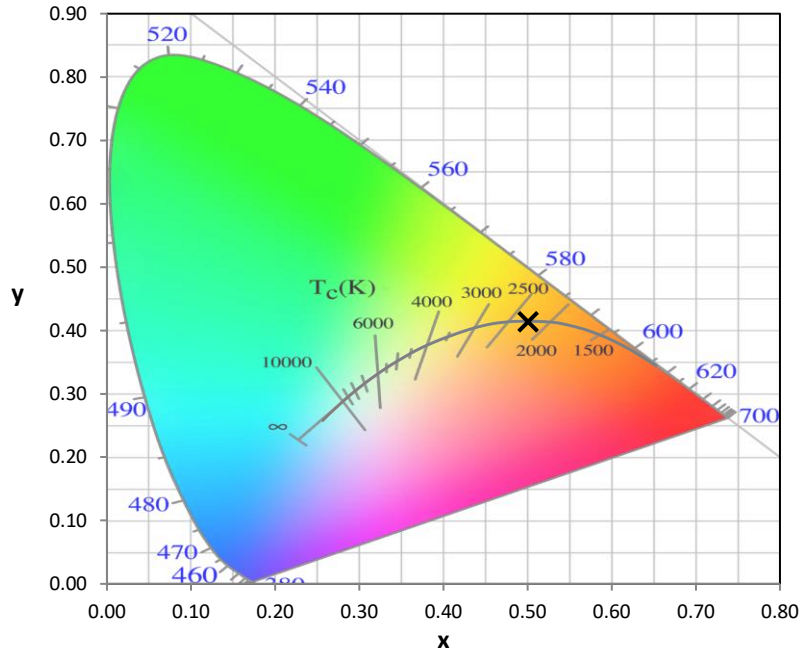
Stabilization Time: 71M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 24.7/41%
 Sphere Temperature (°C): 25.6

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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 2200K 4-step quadrangle

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Photopic Flux vs. Wavelength



#####

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 1768 | NR | 490 | 5206 | NR | 620 | 130919 | NR | 750 | 8553 | NR | 880 | 2713 | NR |
| 365 | 1569 | NR | 495 | 7286 | NR | 625 | 125335 | NR | 755 | 7696 | NR | 885 | 2316 | NR |
| 370 | 1594 | NR | 500 | 10654 | NR | 630 | 118388 | NR | 760 | 6978 | NR | 890 | 2539 | NR |
| 375 | 1744 | NR | 505 | 15189 | NR | 635 | 111855 | NR | 765 | 6377 | NR | 895 | 1933 | NR |
| 380 | 1659 | NR | 510 | 20541 | NR | 640 | 104062 | NR | 770 | 5600 | NR | 900 | 2216 | NR |
| 385 | 1504 | NR | 515 | 26492 | NR | 645 | 96365 | NR | 775 | 5000 | NR | 905 | 2067 | NR |
| 390 | 1541 | NR | 520 | 32294 | NR | 650 | 88651 | NR | 780 | 4709 | NR | 910 | 1959 | NR |
| 395 | 1355 | NR | 525 | 38123 | NR | 655 | 81152 | NR | 785 | 4305 | NR | 915 | 1874 | NR |
| 400 | 1243 | NR | 530 | 43232 | NR | 660 | 73523 | NR | 790 | 4040 | NR | 920 | 1484 | NR |
| 405 | 1417 | NR | 535 | 48012 | NR | 665 | 66123 | NR | 795 | 3642 | NR | 925 | 1914 | NR |
| 410 | 2147 | NR | 540 | 52623 | NR | 670 | 58677 | NR | 800 | 3594 | NR | 930 | 1948 | NR |
| 415 | 3837 | NR | 545 | 57516 | NR | 675 | 52349 | NR | 805 | 3190 | NR | 935 | 2079 | NR |
| 420 | 7159 | NR | 550 | 62613 | NR | 680 | 46159 | NR | 810 | 3241 | NR | 940 | 2263 | NR |
| 425 | 12599 | NR | 555 | 68554 | NR | 685 | 40525 | NR | 815 | 2732 | NR | 945 | 1688 | NR |
| 430 | 19019 | NR | 560 | 75325 | NR | 690 | 35615 | NR | 820 | 2612 | NR | 950 | 1560 | NR |
| 435 | 24875 | NR | 565 | 82533 | NR | 695 | 31158 | NR | 825 | 2966 | NR | 955 | 2826 | NR |
| 440 | 29103 | NR | 570 | 90909 | NR | 700 | 27409 | NR | 830 | 2574 | NR | 960 | 1477 | NR |
| 445 | 29901 | NR | 575 | 99621 | NR | 705 | 24204 | NR | 835 | 2633 | NR | 965 | 1568 | NR |
| 450 | 24862 | NR | 580 | 108484 | NR | 710 | 21558 | NR | 840 | 2526 | NR | 970 | 2030 | NR |
| 455 | 15942 | NR | 585 | 116679 | NR | 715 | 19222 | NR | 845 | 2631 | NR | 975 | 1986 | NR |
| 460 | 9916 | NR | 590 | 123752 | NR | 720 | 17310 | NR | 850 | 2079 | NR | 980 | 2540 | NR |
| 465 | 7051 | NR | 595 | 129324 | NR | 725 | 15280 | NR | 855 | 2309 | NR | 985 | 1139 | NR |
| 470 | 5227 | NR | 600 | 134082 | NR | 730 | 13282 | NR | 860 | 2528 | NR | 990 | 2018 | NR |
| 475 | 4257 | NR | 605 | 135698 | NR | 735 | 11753 | NR | 865 | 2121 | NR | 995 | 3445 | NR |
| 480 | 4052 | NR | 610 | 135144 | NR | 740 | 10654 | NR | 870 | 2751 | NR | 1000 | 3704 | NR |
| 485 | 4298 | NR | 615 | 134180 | NR | 745 | 9451 | NR | 875 | 2317 | NR | | | |

REPORT NUMBER: SP1-1908-441-10-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 4696.9

S/P: 0.85

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 1768 | NR | 490 | 5206 | NR | 620 | 130919 | NR | 750 | 8553 | NR | 880 | 2713 | NR |
| 365 | 1569 | NR | 495 | 7286 | NR | 625 | 125335 | NR | 755 | 7696 | NR | 885 | 2316 | NR |
| 370 | 1594 | NR | 500 | 10654 | NR | 630 | 118388 | NR | 760 | 6978 | NR | 890 | 2539 | NR |
| 375 | 1744 | NR | 505 | 15189 | NR | 635 | 111855 | NR | 765 | 6377 | NR | 895 | 1933 | NR |
| 380 | 1659 | NR | 510 | 20541 | NR | 640 | 104062 | NR | 770 | 5600 | NR | 900 | 2216 | NR |
| 385 | 1504 | NR | 515 | 26492 | NR | 645 | 96365 | NR | 775 | 5000 | NR | 905 | 2067 | NR |
| 390 | 1541 | NR | 520 | 32294 | NR | 650 | 88651 | NR | 780 | 4709 | NR | 910 | 1959 | NR |
| 395 | 1355 | NR | 525 | 38123 | NR | 655 | 81152 | NR | 785 | 4305 | NR | 915 | 1874 | NR |
| 400 | 1243 | NR | 530 | 43232 | NR | 660 | 73523 | NR | 790 | 4040 | NR | 920 | 1484 | NR |
| 405 | 1417 | NR | 535 | 48012 | NR | 665 | 66123 | NR | 795 | 3642 | NR | 925 | 1914 | NR |
| 410 | 2147 | NR | 540 | 52623 | NR | 670 | 58677 | NR | 800 | 3594 | NR | 930 | 1948 | NR |
| 415 | 3837 | NR | 545 | 57516 | NR | 675 | 52349 | NR | 805 | 3190 | NR | 935 | 2079 | NR |
| 420 | 7159 | NR | 550 | 62613 | NR | 680 | 46159 | NR | 810 | 3241 | NR | 940 | 2263 | NR |
| 425 | 12599 | NR | 555 | 68554 | NR | 685 | 40525 | NR | 815 | 2732 | NR | 945 | 1688 | NR |
| 430 | 19019 | NR | 560 | 75325 | NR | 690 | 35615 | NR | 820 | 2612 | NR | 950 | 1560 | NR |
| 435 | 24875 | NR | 565 | 82533 | NR | 695 | 31158 | NR | 825 | 2966 | NR | 955 | 2826 | NR |
| 440 | 29103 | NR | 570 | 90909 | NR | 700 | 27409 | NR | 830 | 2574 | NR | 960 | 1477 | NR |
| 445 | 29901 | NR | 575 | 99621 | NR | 705 | 24204 | NR | 835 | 2633 | NR | 965 | 1568 | NR |
| 450 | 24862 | NR | 580 | 108484 | NR | 710 | 21558 | NR | 840 | 2526 | NR | 970 | 2030 | NR |
| 455 | 15942 | NR | 585 | 116679 | NR | 715 | 19222 | NR | 845 | 2631 | NR | 975 | 1986 | NR |
| 460 | 9916 | NR | 590 | 123752 | NR | 720 | 17310 | NR | 850 | 2079 | NR | 980 | 2540 | NR |
| 465 | 7051 | NR | 595 | 129324 | NR | 725 | 15280 | NR | 855 | 2309 | NR | 985 | 1139 | NR |
| 470 | 5227 | NR | 600 | 134082 | NR | 730 | 13282 | NR | 860 | 2528 | NR | 990 | 2018 | NR |
| 475 | 4257 | NR | 605 | 135698 | NR | 735 | 11753 | NR | 865 | 2121 | NR | 995 | 3445 | NR |
| 480 | 4052 | NR | 610 | 135144 | NR | 740 | 10654 | NR | 870 | 2751 | NR | 1000 | 3704 | NR |
| 485 | 4298 | NR | 615 | 134180 | NR | 745 | 9451 | NR | 875 | 2317 | NR | | | |

REPORT NUMBER: SP1-1908-441-10-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 1470.8 M/P: 0.27

| 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 | 1768 | NR | 490 | 5206 | NR | 620 | 130919 | NR | 750 | 8553 | NR | 880 | 2713 | NR |
| 365 | 1569 | NR | 495 | 7286 | NR | 625 | 125335 | NR | 755 | 7696 | NR | 885 | 2316 | NR |
| 370 | 1594 | NR | 500 | 10654 | NR | 630 | 118388 | NR | 760 | 6978 | NR | 890 | 2539 | NR |
| 375 | 1744 | NR | 505 | 15189 | NR | 635 | 111855 | NR | 765 | 6377 | NR | 895 | 1933 | NR |
| 380 | 1659 | NR | 510 | 20541 | NR | 640 | 104062 | NR | 770 | 5600 | NR | 900 | 2216 | NR |
| 385 | 1504 | NR | 515 | 26492 | NR | 645 | 96365 | NR | 775 | 5000 | NR | 905 | 2067 | NR |
| 390 | 1541 | NR | 520 | 32294 | NR | 650 | 88651 | NR | 780 | 4709 | NR | 910 | 1959 | NR |
| 395 | 1355 | NR | 525 | 38123 | NR | 655 | 81152 | NR | 785 | 4305 | NR | 915 | 1874 | NR |
| 400 | 1243 | NR | 530 | 43232 | NR | 660 | 73523 | NR | 790 | 4040 | NR | 920 | 1484 | NR |
| 405 | 1417 | NR | 535 | 48012 | NR | 665 | 66123 | NR | 795 | 3642 | NR | 925 | 1914 | NR |
| 410 | 2147 | NR | 540 | 52623 | NR | 670 | 58677 | NR | 800 | 3594 | NR | 930 | 1948 | NR |
| 415 | 3837 | NR | 545 | 57516 | NR | 675 | 52349 | NR | 805 | 3190 | NR | 935 | 2079 | NR |
| 420 | 7159 | NR | 550 | 62613 | NR | 680 | 46159 | NR | 810 | 3241 | NR | 940 | 2263 | NR |
| 425 | 12599 | NR | 555 | 68554 | NR | 685 | 40525 | NR | 815 | 2732 | NR | 945 | 1688 | NR |
| 430 | 19019 | NR | 560 | 75325 | NR | 690 | 35615 | NR | 820 | 2612 | NR | 950 | 1560 | NR |
| 435 | 24875 | NR | 565 | 82533 | NR | 695 | 31158 | NR | 825 | 2966 | NR | 955 | 2826 | NR |
| 440 | 29103 | NR | 570 | 90909 | NR | 700 | 27409 | NR | 830 | 2574 | NR | 960 | 1477 | NR |
| 445 | 29901 | NR | 575 | 99621 | NR | 705 | 24204 | NR | 835 | 2633 | NR | 965 | 1568 | NR |
| 450 | 24862 | NR | 580 | 108484 | NR | 710 | 21558 | NR | 840 | 2526 | NR | 970 | 2030 | NR |
| 455 | 15942 | NR | 585 | 116679 | NR | 715 | 19222 | NR | 845 | 2631 | NR | 975 | 1986 | NR |
| 460 | 9916 | NR | 590 | 123752 | NR | 720 | 17310 | NR | 850 | 2079 | NR | 980 | 2540 | NR |
| 465 | 7051 | NR | 595 | 129324 | NR | 725 | 15280 | NR | 855 | 2309 | NR | 985 | 1139 | NR |
| 470 | 5227 | NR | 600 | 134082 | NR | 730 | 13282 | NR | 860 | 2528 | NR | 990 | 2018 | NR |
| 475 | 4257 | NR | 605 | 135698 | NR | 735 | 11753 | NR | 865 | 2121 | NR | 995 | 3445 | NR |
| 480 | 4052 | NR | 610 | 135144 | NR | 740 | 10654 | NR | 870 | 2751 | NR | 1000 | 3704 | NR |
| 485 | 4298 | NR | 615 | 134180 | NR | 745 | 9451 | NR | 875 | 2317 | NR | | | |

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Summary

$R_f = 69.8$
 $R_g = 99.2$
 CIE $R_a = 72.0$
 $R_9 = -17.4$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 56 | CES51 = 74 | CES76 = 56 |
| CES02 = 65 | CES27 = 76 | CES52 = 76 | CES77 = 81 |
| CES03 = 32 | CES28 = 83 | CES53 = 65 | CES78 = 63 |
| CES04 = 72 | CES29 = 46 | CES54 = 78 | CES79 = 84 |
| CES05 = 52 | CES30 = 48 | CES55 = 75 | CES80 = 84 |
| CES06 = 52 | CES31 = 51 | CES56 = 65 | CES81 = 63 |
| CES07 = 44 | CES32 = 51 | CES57 = 62 | CES82 = 92 |
| CES08 = 42 | CES33 = 53 | CES58 = 66 | CES83 = 83 |
| CES09 = 29 | CES34 = 70 | CES59 = 84 | CES84 = 92 |
| CES10 = 78 | CES35 = 85 | CES60 = 90 | CES85 = 81 |
| CES11 = 61 | CES36 = 78 | CES61 = 84 | CES86 = 56 |
| CES12 = 68 | CES37 = 80 | CES62 = 70 | CES87 = 78 |
| CES13 = 45 | CES38 = 53 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 84 | CES65 = 67 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 90 |
| CES17 = 51 | CES42 = 79 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 64 | CES68 = 69 | CES93 = 79 |
| CES19 = 74 | CES44 = 98 | CES69 = 80 | CES94 = 52 |
| CES20 = 68 | CES45 = 73 | CES70 = 63 | CES95 = 76 |
| CES21 = 89 | CES46 = 67 | CES71 = 63 | CES96 = 78 |
| CES22 = 81 | CES47 = 60 | CES72 = 87 | CES97 = 77 |
| CES23 = 92 | CES48 = 48 | CES73 = 56 | CES98 = 71 |
| CES24 = 92 | CES49 = 64 | CES74 = 87 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 | |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)