

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: P363465

Luminaire Tested: NVN-SA5A-750-U-SL2-HSS

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2019
Report Number: P363465
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-21)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: STREETWORKS
Catalog Number: NVN-SA5A-750-U-SL2-HSS
Description: NAVION ROADWAY AND AREA LUMINAIRE
(5) 70 CRI, 5000K, 615mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL
LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 19203 lumens
Efficiency: N/A
Efficacy: 118.5 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B2 - U0 - G3

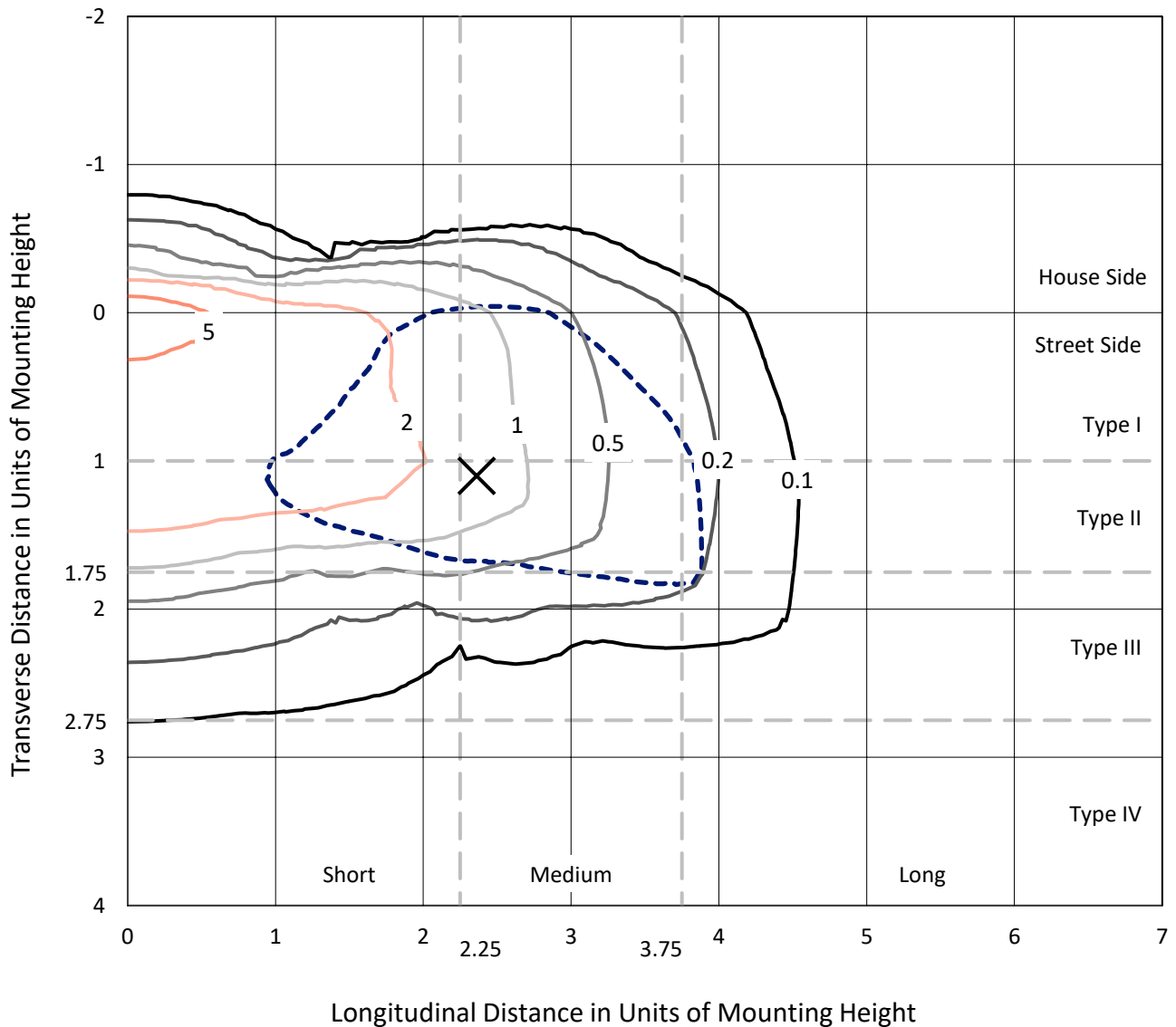
Input Watts (W): 162
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

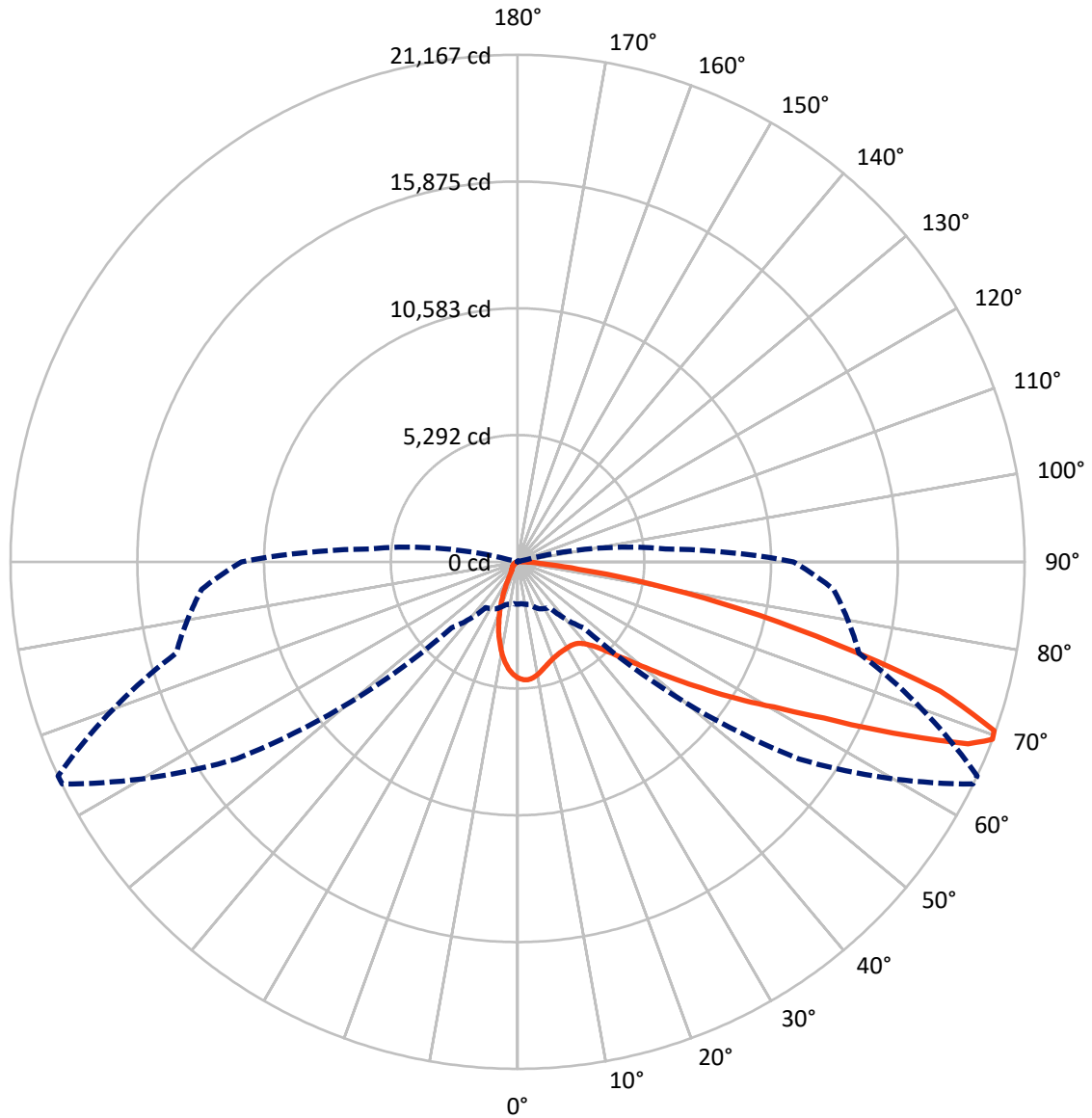
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 7.8 fc
 Type III - Medium - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 65-Deg Lateral - - - Horizontal Cone Through 69-Deg Vertical

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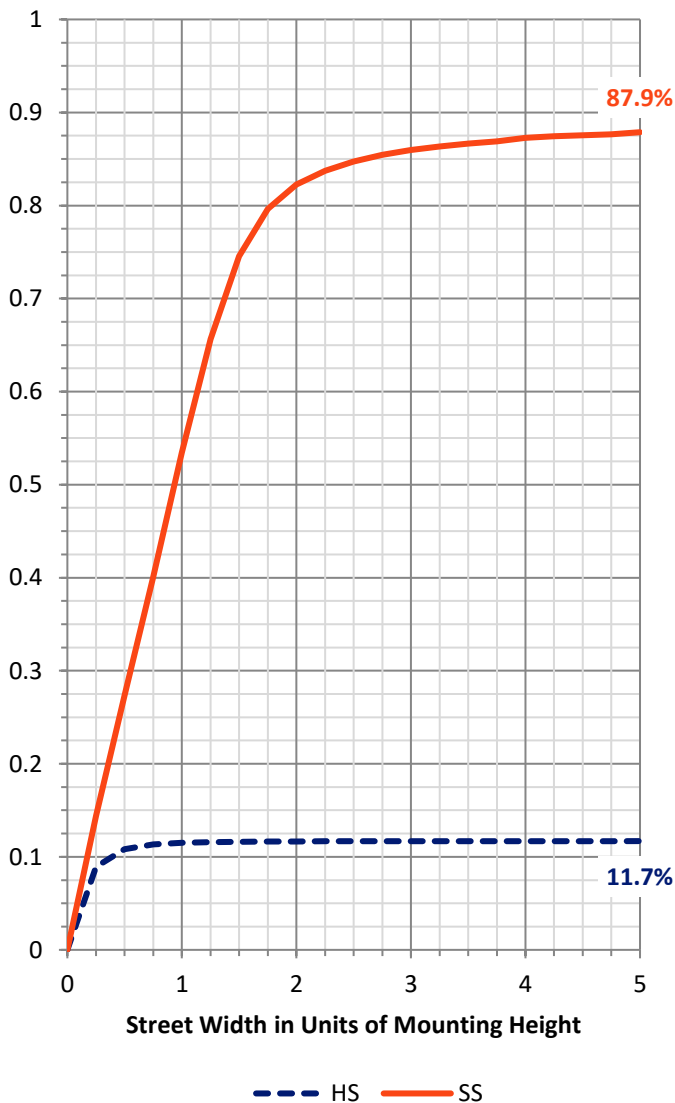
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 2263.6 | 0.0 | 2263.6 |
| | % Fixture | 11.8 | 0.0 | 11.8 |
| Street Side | Lumens | 16939.4 | 0.0 | 16939.4 |
| | % Fixture | 88.2 | 0.0 | 88.2 |
| Total | Lumens | 19203.0 | 0.0 | 19203.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 405.8 | 2.1 |
| 10°-20° | 888.3 | 4.6 |
| 20°-30° | 1230.3 | 6.4 |
| 30°-40° | 1715.4 | 8.9 |
| 40°-50° | 2666.3 | 13.9 |
| 50°-60° | 4280.5 | 22.3 |
| 60°-70° | 4841.9 | 25.2 |
| 70°-80° | 2843.7 | 14.8 |
| 80°-90° | 330.8 | 1.7 |
| 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° | 19203.0 | 100.0 |
| 0°-180° | 19203.0 | 100.0 |

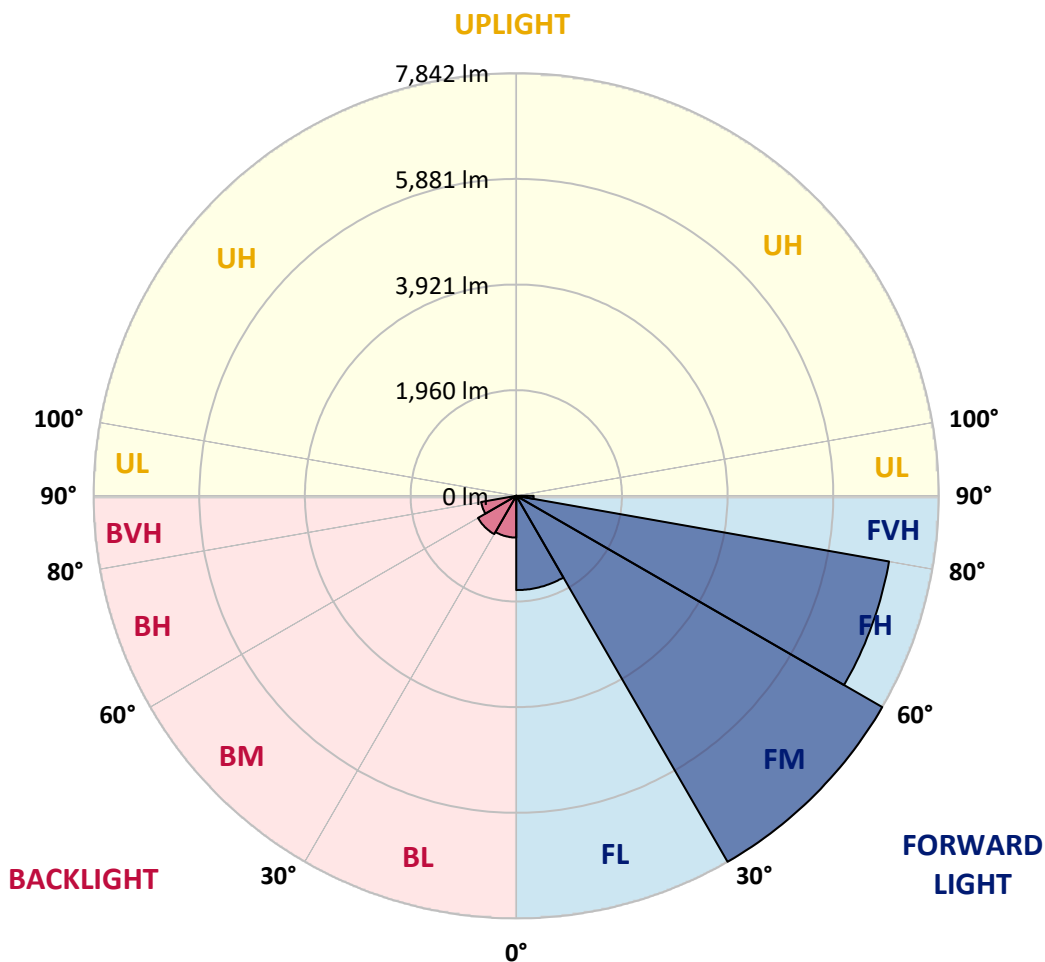


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1749.8 | 9.1 | | | |
| FM (30°-60°) | 7841.9 | 40.8 | | | |
| FH (60°-80°) | 7024.3 | 36.6 | | | G3/7500 |
| FVH (80°-90°) | 323.4 | 1.7 | | | G3/500 |
| BL (0°-30°) | 774.5 | 4.0 | B2/1000 | | |
| BM (30°-60°) | 820.3 | 4.3 | B1/1000 | | |
| BH (60°-80°) | 661.4 | 3.4 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 7.4 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G3
 Type III Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 64° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|
| 0° | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 |
| 2.5° | 4895.7 | 4883.5 | 4893.3 | 4914.4 | 4924.9 | 4924.9 | 4933.1 | 4923.3 | 4926.6 | 4903.0 | 4868.9 |
| 5° | 4589.4 | 4570.7 | 4597.5 | 4656.8 | 4729.9 | 4792.5 | 4885.1 | 4933.9 | 4938.8 | 4939.6 | 4899.8 |
| 7.5° | 4259.5 | 4242.4 | 4282.2 | 4352.1 | 4446.3 | 4562.5 | 4724.2 | 4865.6 | 4873.8 | 4950.1 | 4920.9 |
| 10° | 3991.3 | 3979.1 | 4025.4 | 4100.2 | 4210.7 | 4340.7 | 4539.0 | 4735.6 | 4759.2 | 4928.2 | 4917.6 |
| 12.5° | 3778.4 | 3768.7 | 3812.5 | 3898.7 | 4011.6 | 4155.5 | 4362.7 | 4591.0 | 4622.7 | 4878.6 | 4901.4 |
| 15° | 3623.2 | 3621.6 | 3658.2 | 3741.0 | 3866.2 | 4000.3 | 4212.3 | 4456.9 | 4493.5 | 4825.0 | 4898.9 |
| 17.5° | 3542.0 | 3544.4 | 3571.2 | 3641.9 | 3749.2 | 3882.4 | 4085.6 | 4344.0 | 4383.8 | 4777.1 | 4911.1 |
| 20° | 3533.8 | 3536.3 | 3550.9 | 3590.7 | 3677.7 | 3795.5 | 3982.4 | 4248.9 | 4290.3 | 4741.3 | 4930.6 |
| 22.5° | 3605.3 | 3603.7 | 3607.8 | 3603.7 | 3652.5 | 3741.9 | 3914.1 | 4175.8 | 4223.7 | 4717.7 | 4946.1 |
| 25° | 3742.7 | 3740.2 | 3738.6 | 3708.5 | 3676.0 | 3724.0 | 3885.7 | 4134.3 | 4179.8 | 4700.7 | 4955.0 |
| 27.5° | 3933.6 | 3932.0 | 3929.6 | 3880.0 | 3782.5 | 3752.4 | 3888.9 | 4118.9 | 4157.1 | 4686.9 | 4953.4 |
| 30° | 4184.7 | 4196.1 | 4192.8 | 4123.8 | 3971.8 | 3839.4 | 3923.1 | 4110.8 | 4144.1 | 4660.1 | 4936.3 |
| 32.5° | 4479.7 | 4502.4 | 4520.3 | 4446.3 | 4256.2 | 4011.6 | 4001.9 | 4119.7 | 4144.1 | 4639.7 | 4905.4 |
| 35° | 4786.0 | 4815.3 | 4881.1 | 4855.1 | 4604.8 | 4270.8 | 4137.6 | 4173.3 | 4193.6 | 4651.1 | 4890.8 |
| 37.5° | 5087.5 | 5122.4 | 5265.4 | 5341.0 | 5061.5 | 4613.7 | 4348.8 | 4305.8 | 4316.3 | 4720.2 | 4907.1 |
| 40° | 5437.7 | 5490.5 | 5707.4 | 5829.3 | 5606.7 | 5072.8 | 4664.9 | 4533.3 | 4537.4 | 4872.1 | 4982.6 |
| 42.5° | 5897.6 | 5952.0 | 6186.9 | 6377.8 | 6221.0 | 5653.0 | 5094.0 | 4881.1 | 4877.0 | 5156.5 | 5160.6 |
| 45° | 6458.3 | 6515.1 | 6758.1 | 6970.2 | 6899.5 | 6340.4 | 5643.3 | 5388.9 | 5384.0 | 5605.1 | 5497.8 |
| 47.5° | 7093.7 | 7149.7 | 7366.7 | 7585.3 | 7661.7 | 7143.2 | 6342.9 | 6082.0 | 6070.7 | 6228.3 | 6018.7 |
| 50° | 7638.9 | 7675.5 | 7875.4 | 8169.5 | 8514.0 | 8129.7 | 7213.1 | 6962.0 | 6949.9 | 7056.3 | 6783.3 |
| 52.5° | 7837.2 | 7858.3 | 8061.4 | 8473.4 | 9333.1 | 9465.6 | 8356.4 | 8033.0 | 8024.1 | 8070.4 | 7801.4 |
| 55° | 7435.8 | 7474.0 | 7723.4 | 8334.5 | 9776.8 | 10975.3 | 9799.5 | 9359.1 | 9291.7 | 9191.7 | 8865.9 |
| 57.5° | 6342.1 | 6403.0 | 6671.1 | 7483.7 | 9569.6 | 12173.0 | 11920.3 | 10859.1 | 10760.0 | 10148.9 | 9731.3 |
| 60° | 4751.9 | 4826.6 | 5049.3 | 5926.0 | 8463.7 | 12599.6 | 14237.7 | 12530.5 | 12307.1 | 10911.1 | 10526.8 |
| 62.5° | 3260.8 | 3298.2 | 3449.3 | 4020.6 | 6233.2 | 11900.8 | 16176.5 | 14769.2 | 14361.3 | 11739.9 | 11387.3 |
| 65° | 2490.5 | 2503.5 | 2565.3 | 2761.9 | 3711.8 | 9667.1 | 16947.6 | 17722.8 | 17229.6 | 12731.3 | 12280.3 |
| 67.5° | 2007.0 | 1996.5 | 2081.8 | 2362.9 | 2485.6 | 5897.6 | 16048.1 | 20517.2 | 20286.5 | 14056.5 | 13179.0 |
| 69° | 1769.8 | 1755.1 | 1842.1 | 2168.7 | 2334.5 | 3898.7 | 14346.6 | 21151.9 | 21166.5 | 14756.2 | 13240.7 |
| 70° | 1592.6 | 1602.4 | 1688.5 | 2053.3 | 2283.3 | 3060.1 | 12721.5 | 20990.2 | 21105.5 | 15017.8 | 12870.2 |
| 72.5° | 1063.6 | 1089.6 | 1262.7 | 1704.8 | 2195.5 | 2315.8 | 7681.2 | 18012.1 | 18455.8 | 14428.7 | 11041.9 |
| 75° | 599.7 | 619.2 | 824.8 | 1285.5 | 2068.8 | 2205.3 | 4057.1 | 13270.0 | 13699.0 | 12065.8 | 8514.9 |
| 77.5° | 294.1 | 304.7 | 466.4 | 829.6 | 1729.9 | 2101.3 | 2301.2 | 9013.8 | 9503.7 | 7875.4 | 4816.1 |
| 80° | 124.3 | 130.0 | 233.2 | 511.9 | 1236.7 | 2005.4 | 1708.8 | 5547.4 | 5608.3 | 3085.3 | 1283.0 |
| 82.5° | 47.9 | 49.6 | 98.3 | 319.3 | 785.7 | 1563.4 | 1429.3 | 2630.3 | 2566.9 | 581.0 | 292.5 |
| 85° | 5.7 | 6.5 | 35.8 | 191.8 | 437.2 | 804.4 | 1161.2 | 1133.5 | 1049.0 | 115.4 | 150.3 |
| 87.5° | 0.0 | 0.0 | 2.4 | 58.5 | 130.0 | 377.0 | 603.7 | 470.5 | 424.2 | 37.4 | 78.0 |
| 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-SA5A-750-U-SL2-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 | 4852.6 |
| 2.5° | 4840.4 | 4832.3 | 4788.4 | 4725.1 | 4664.9 | 4590.2 | 4518.7 | 4475.6 | 4441.5 | 4418.7 | 4445.5 |
| 5° | 4853.4 | 4817.7 | 4684.4 | 4513.8 | 4346.4 | 4157.9 | 3982.4 | 3833.7 | 3775.2 | 3710.2 | 3739.4 |
| 7.5° | 4849.4 | 4781.9 | 4542.2 | 4238.3 | 3931.2 | 3613.5 | 3312.8 | 3081.2 | 2961.0 | 2843.2 | 2873.2 |
| 10° | 4829.1 | 4715.3 | 4352.1 | 3901.9 | 3442.0 | 2985.4 | 2558.8 | 2234.6 | 2053.3 | 1889.2 | 1912.8 |
| 12.5° | 4784.4 | 4625.9 | 4127.8 | 3516.8 | 2901.7 | 2299.6 | 1799.8 | 1384.6 | 1162.0 | 1063.6 | 1075.8 |
| 15° | 4757.6 | 4539.0 | 3890.6 | 3126.7 | 2324.7 | 1601.6 | 1100.2 | 818.3 | 716.7 | 684.2 | 688.2 |
| 17.5° | 4744.6 | 4455.3 | 3645.2 | 2680.6 | 1734.8 | 1019.8 | 711.0 | 627.3 | 605.4 | 599.7 | 601.3 |
| 20° | 4731.6 | 4370.8 | 3392.5 | 2239.4 | 1195.3 | 685.8 | 584.2 | 559.9 | 551.7 | 544.4 | 546.0 |
| 22.5° | 4709.6 | 4289.5 | 3121.1 | 1792.5 | 806.1 | 556.6 | 526.5 | 503.0 | 485.9 | 477.0 | 478.6 |
| 25° | 4682.8 | 4204.2 | 2844.0 | 1335.0 | 588.3 | 496.5 | 468.0 | 434.7 | 414.4 | 398.2 | 399.0 |
| 27.5° | 4639.7 | 4099.4 | 2558.0 | 971.8 | 494.0 | 444.5 | 406.3 | 369.7 | 335.6 | 316.9 | 316.9 |
| 30° | 4579.6 | 3980.8 | 2240.2 | 695.6 | 442.8 | 393.3 | 347.0 | 301.5 | 264.9 | 247.8 | 246.2 |
| 32.5° | 4513.0 | 3857.2 | 1919.3 | 527.4 | 402.2 | 345.3 | 292.5 | 244.6 | 212.1 | 198.3 | 197.5 |
| 35° | 4456.1 | 3724.0 | 1599.1 | 442.0 | 361.6 | 299.0 | 241.3 | 200.7 | 174.7 | 163.3 | 162.5 |
| 37.5° | 4419.5 | 3590.7 | 1287.1 | 394.9 | 325.0 | 256.0 | 202.3 | 165.8 | 147.1 | 138.1 | 137.3 |
| 40° | 4413.8 | 3491.6 | 1001.9 | 359.2 | 290.9 | 217.8 | 169.0 | 140.6 | 123.5 | 113.8 | 112.9 |
| 42.5° | 4487.8 | 3434.7 | 768.7 | 329.1 | 256.0 | 184.5 | 143.8 | 120.3 | 102.4 | 92.6 | 91.8 |
| 45° | 4682.0 | 3452.6 | 591.5 | 302.3 | 221.0 | 156.0 | 121.9 | 99.9 | 83.7 | 76.4 | 74.8 |
| 47.5° | 5036.3 | 3576.1 | 470.5 | 275.5 | 187.7 | 132.4 | 104.0 | 82.9 | 69.1 | 61.8 | 60.9 |
| 50° | 5666.8 | 3866.2 | 393.3 | 246.2 | 156.8 | 112.9 | 86.1 | 67.4 | 56.1 | 49.6 | 48.8 |
| 52.5° | 6503.8 | 4383.0 | 351.0 | 217.8 | 130.0 | 95.9 | 70.7 | 53.6 | 43.9 | 39.0 | 38.2 |
| 55° | 7426.8 | 5008.6 | 323.4 | 186.9 | 106.4 | 79.6 | 56.1 | 42.3 | 34.1 | 30.1 | 28.4 |
| 57.5° | 8328.0 | 5550.6 | 297.4 | 156.8 | 88.6 | 65.0 | 44.7 | 33.3 | 26.8 | 22.8 | 21.9 |
| 60° | 9156.0 | 6048.7 | 267.3 | 125.9 | 72.3 | 51.2 | 34.9 | 26.0 | 21.1 | 17.1 | 17.1 |
| 62.5° | 10042.5 | 6433.9 | 225.9 | 98.3 | 59.3 | 39.0 | 28.4 | 23.6 | 17.1 | 14.6 | 13.8 |
| 65° | 10981.8 | 6719.9 | 177.1 | 76.4 | 46.3 | 29.3 | 23.6 | 24.4 | 13.8 | 10.6 | 9.8 |
| 67.5° | 11675.7 | 6663.0 | 130.8 | 60.1 | 35.8 | 22.8 | 22.8 | 26.0 | 12.2 | 8.1 | 7.3 |
| 69° | 11523.0 | 6200.7 | 109.7 | 52.0 | 30.9 | 19.5 | 21.1 | 26.0 | 11.4 | 7.3 | 6.5 |
| 70° | 11080.1 | 5688.8 | 96.7 | 46.3 | 27.6 | 17.9 | 20.3 | 25.2 | 10.6 | 7.3 | 6.5 |
| 72.5° | 9227.5 | 4284.6 | 75.6 | 34.9 | 21.9 | 14.6 | 17.1 | 21.9 | 10.6 | 7.3 | 5.7 |
| 75° | 6940.9 | 2742.4 | 57.7 | 25.2 | 16.3 | 11.4 | 13.0 | 16.3 | 10.6 | 6.5 | 5.7 |
| 77.5° | 3776.8 | 988.9 | 41.4 | 17.1 | 11.4 | 8.9 | 8.9 | 12.2 | 9.8 | 4.9 | 3.3 |
| 80° | 971.0 | 248.6 | 26.0 | 11.4 | 8.9 | 6.5 | 5.7 | 8.1 | 5.7 | 0.8 | 0.0 |
| 82.5° | 239.7 | 56.1 | 13.8 | 8.1 | 6.5 | 2.4 | 2.4 | 4.1 | 2.4 | 0.0 | 0.0 |
| 85° | 131.6 | 27.6 | 8.9 | 5.7 | 3.3 | 0.0 | 0.0 | 0.8 | 0.0 | 0.0 | 0.0 |
| 87.5° | 67.4 | 8.1 | 2.4 | 1.6 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 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: SP1-1908-441-4-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)