

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: P363526

Luminaire Tested: NVN-SA6C-827-U-SL2-HSS

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2019
Report Number: P363526
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-SA6C-827-U-SL2-HSS
Description: NAVION ROADWAY AND AREA LUMINAIRE
(6) 80 CRI, 2700K, 1050mA 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: 25667 lumens
Efficiency: N/A
Efficacy: 77.1 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B3 - U0 - G4

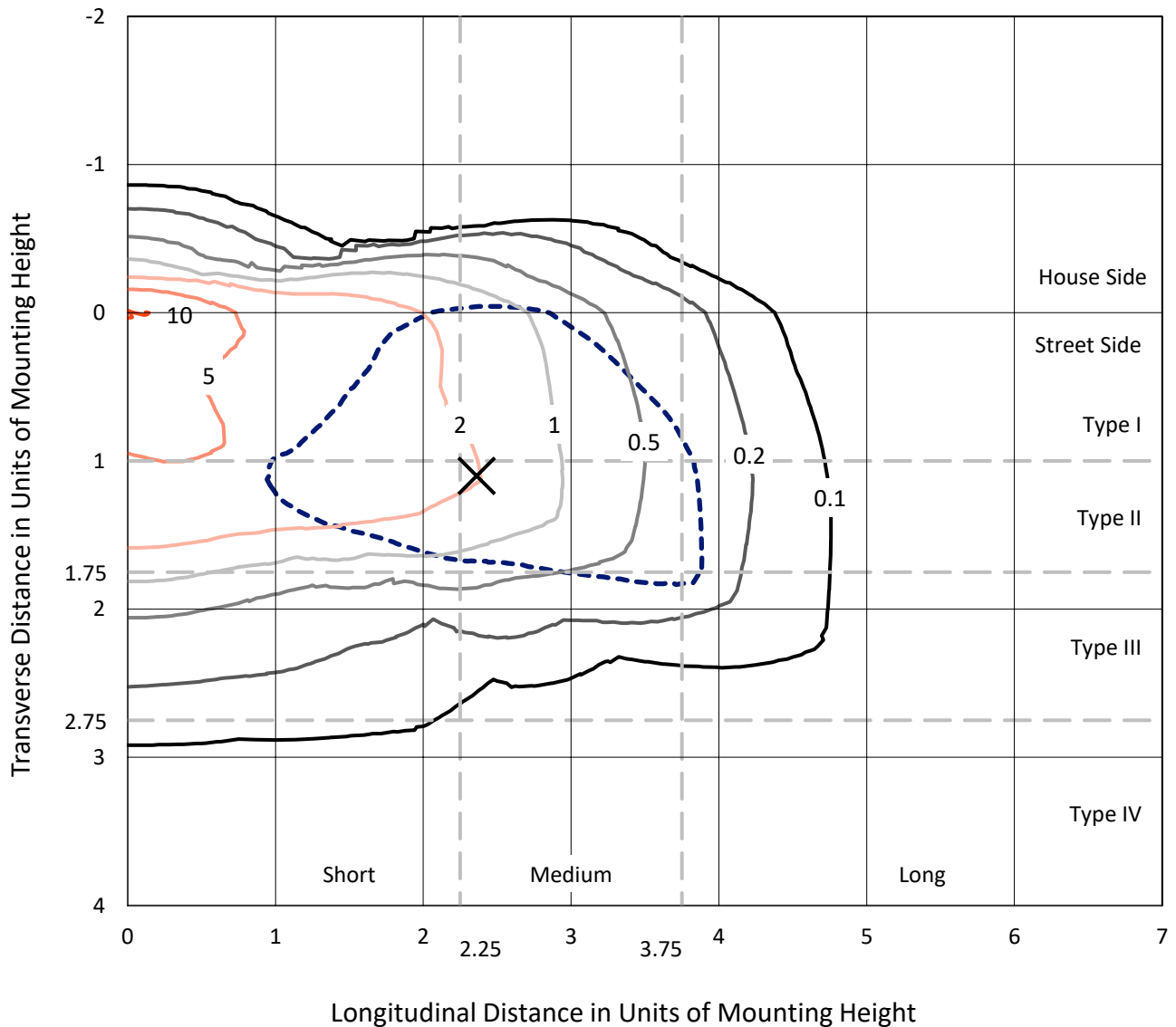
Input Watts (W): 333
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

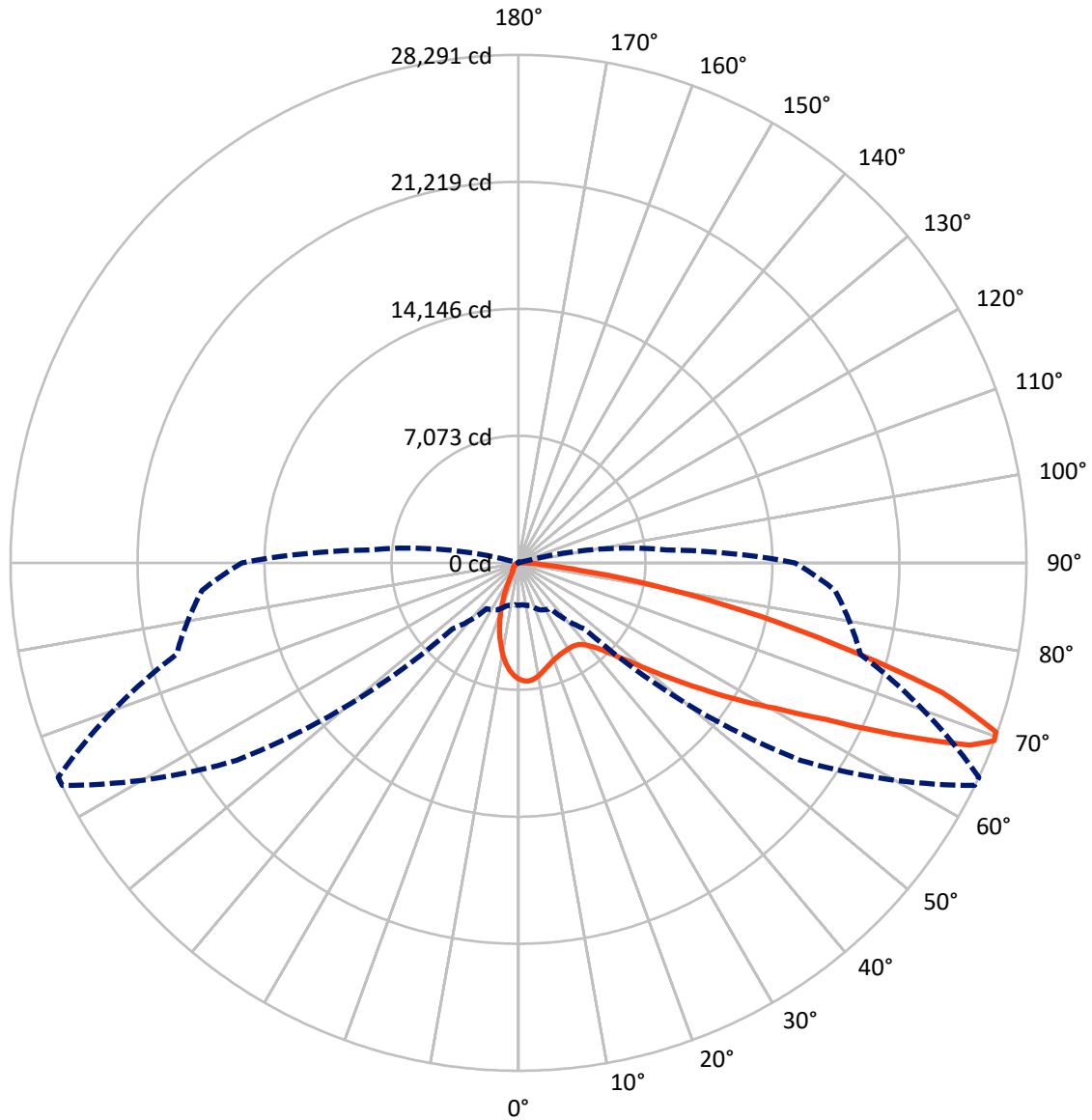
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 10.4 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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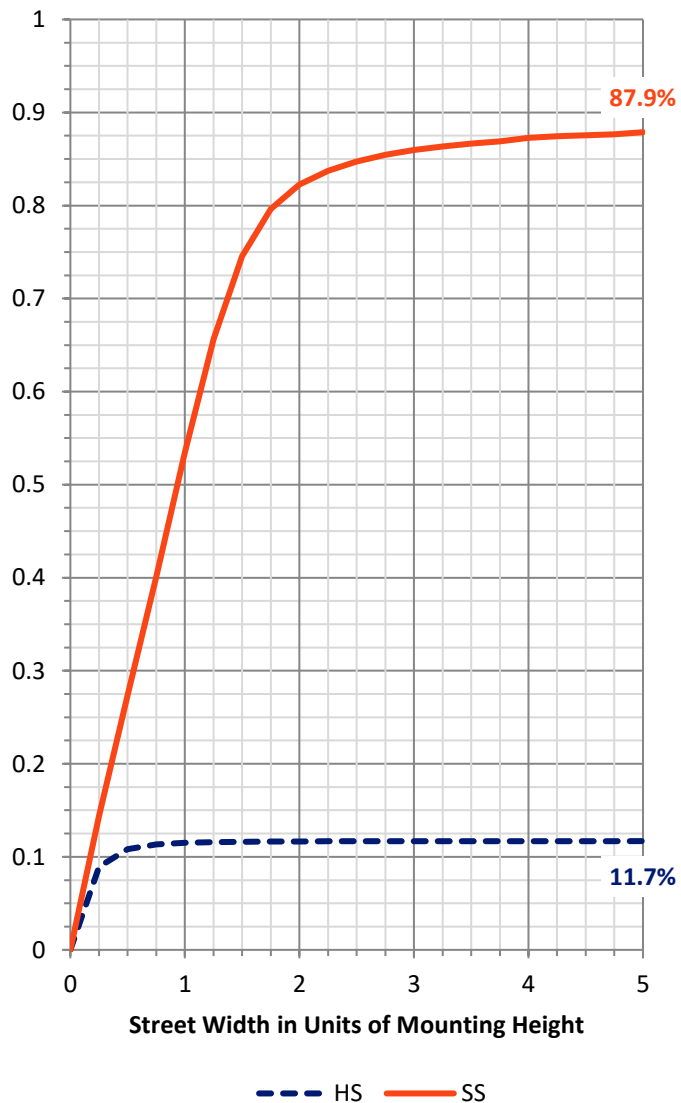
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 3025.5 | 0.0 | 3025.5 |
| | % Fixture | 11.8 | 0.0 | 11.8 |
| Street Side | Lumens | 22641.5 | 0.0 | 22641.5 |
| | % Fixture | 88.2 | 0.0 | 88.2 |
| Total | Lumens | 25667.0 | 0.0 | 25667.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 542.4 | 2.1 |
| 10°-20° | 1187.3 | 4.6 |
| 20°-30° | 1644.4 | 6.4 |
| 30°-40° | 2292.8 | 8.9 |
| 40°-50° | 3563.8 | 13.9 |
| 50°-60° | 5721.4 | 22.3 |
| 60°-70° | 6471.8 | 25.2 |
| 70°-80° | 3800.9 | 14.8 |
| 80°-90° | 442.2 | 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° | 25667.0 | 100.0 |
| 0°-180° | 25667.0 | 100.0 |

Coefficient of Utilization

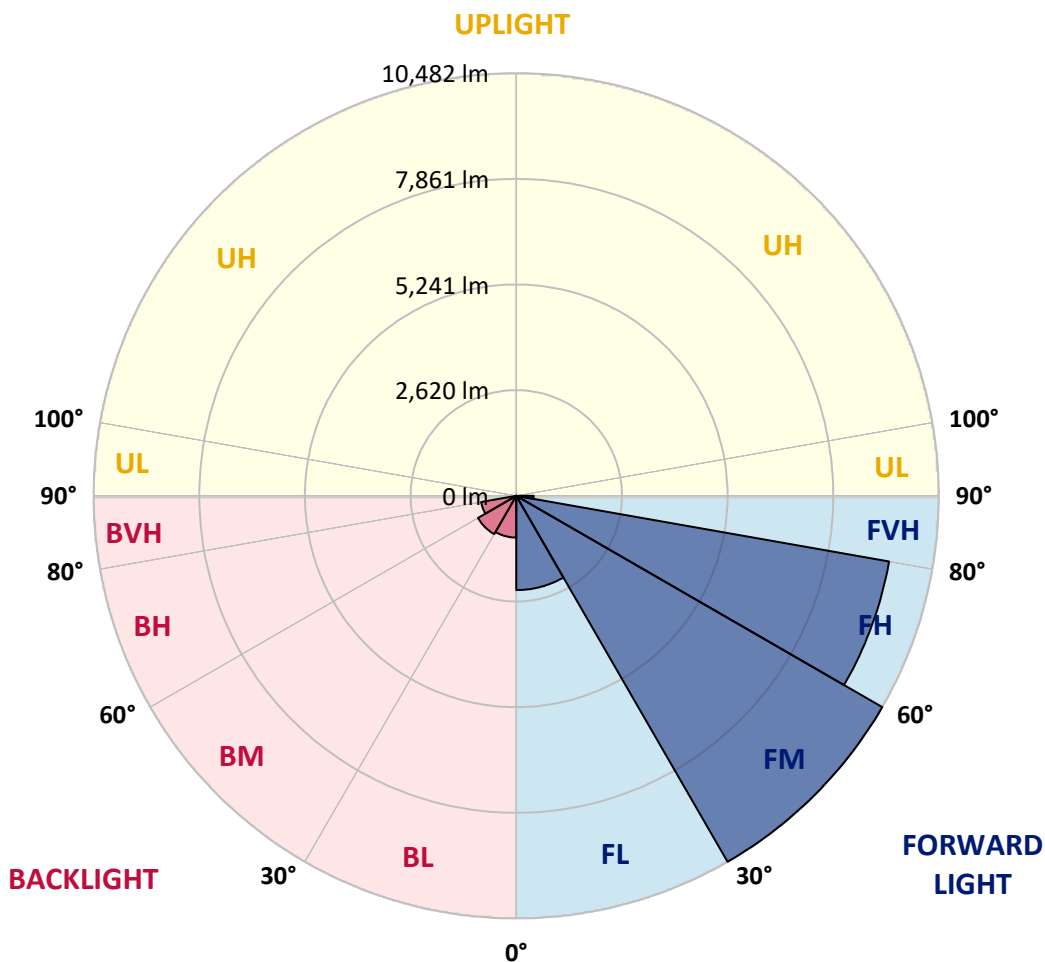


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|---------|-----------|-------------------------|------|----------|
| | | | B | U | G |
| FL (0°-30°) | 2338.9 | 9.1 | | | |
| FM (30°-60°) | 10481.7 | 40.8 | | | |
| FH (60°-80°) | 9388.7 | 36.6 | | | G4/12000 |
| FVH (80°-90°) | 432.2 | 1.7 | | | G3/500 |
| BL (0°-30°) | 1035.2 | 4.0 | B3/2500 | | |
| BM (30°-60°) | 1096.4 | 4.3 | B2/2500 | | |
| BH (60°-80°) | 884.0 | 3.4 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 9.9 | 0.0 | | | G0/10 |
| 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 Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 64° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 |
| 2.5° | 6543.7 | 6527.4 | 6540.4 | 6568.6 | 6582.8 | 6582.8 | 6593.6 | 6580.6 | 6584.9 | 6553.4 | 6507.8 |
| 5° | 6134.2 | 6109.2 | 6145.1 | 6224.3 | 6322.1 | 6405.7 | 6529.5 | 6594.7 | 6601.2 | 6602.3 | 6549.1 |
| 7.5° | 5693.3 | 5670.4 | 5723.7 | 5817.1 | 5943.1 | 6098.4 | 6314.5 | 6503.5 | 6514.3 | 6616.4 | 6577.3 |
| 10° | 5334.8 | 5318.6 | 5380.5 | 5480.4 | 5628.1 | 5801.9 | 6066.9 | 6329.7 | 6361.2 | 6587.1 | 6573.0 |
| 12.5° | 5050.3 | 5037.3 | 5095.9 | 5211.0 | 5362.0 | 5554.2 | 5831.2 | 6136.4 | 6178.7 | 6520.9 | 6551.3 |
| 15° | 4842.9 | 4840.7 | 4889.6 | 5000.3 | 5167.6 | 5346.8 | 5630.3 | 5957.2 | 6006.0 | 6449.2 | 6548.0 |
| 17.5° | 4734.2 | 4737.5 | 4773.3 | 4867.8 | 5011.2 | 5189.3 | 5460.8 | 5806.2 | 5859.4 | 6385.1 | 6564.3 |
| 20° | 4723.4 | 4726.6 | 4746.2 | 4799.4 | 4915.6 | 5073.1 | 5322.9 | 5679.1 | 5734.5 | 6337.3 | 6590.4 |
| 22.5° | 4819.0 | 4816.8 | 4822.2 | 4816.8 | 4881.9 | 5001.4 | 5231.7 | 5581.4 | 5645.5 | 6305.8 | 6611.0 |
| 25° | 5002.5 | 4999.2 | 4997.1 | 4956.9 | 4913.4 | 4977.5 | 5193.7 | 5526.0 | 5586.8 | 6283.0 | 6622.9 |
| 27.5° | 5257.7 | 5255.6 | 5252.3 | 5186.1 | 5055.7 | 5015.5 | 5198.0 | 5505.4 | 5556.4 | 6264.5 | 6620.8 |
| 30° | 5593.3 | 5608.5 | 5604.2 | 5511.9 | 5308.8 | 5131.7 | 5243.6 | 5494.5 | 5539.0 | 6228.7 | 6598.0 |
| 32.5° | 5987.6 | 6018.0 | 6041.9 | 5943.1 | 5688.9 | 5362.0 | 5349.0 | 5506.4 | 5539.0 | 6201.5 | 6556.7 |
| 35° | 6397.0 | 6436.1 | 6524.1 | 6489.4 | 6154.8 | 5708.5 | 5530.3 | 5578.1 | 5605.3 | 6216.7 | 6537.1 |
| 37.5° | 6800.0 | 6846.7 | 7037.8 | 7138.8 | 6765.2 | 6166.8 | 5812.7 | 5755.2 | 5769.3 | 6309.1 | 6558.9 |
| 40° | 7268.1 | 7338.7 | 7628.7 | 7791.6 | 7494.0 | 6780.4 | 6235.2 | 6059.3 | 6064.7 | 6512.2 | 6659.9 |
| 42.5° | 7882.8 | 7955.6 | 8269.4 | 8524.7 | 8315.1 | 7555.9 | 6808.7 | 6524.1 | 6518.7 | 6892.3 | 6897.7 |
| 45° | 8632.2 | 8708.2 | 9033.0 | 9316.4 | 9221.9 | 8474.7 | 7542.9 | 7202.9 | 7196.4 | 7491.8 | 7348.4 |
| 47.5° | 9481.5 | 9556.5 | 9846.4 | 10138.6 | 10240.7 | 9547.8 | 8478.0 | 8129.3 | 8114.1 | 8324.8 | 8044.6 |
| 50° | 10210.3 | 10259.2 | 10526.3 | 10919.5 | 11380.0 | 10866.3 | 9641.2 | 9305.6 | 9289.3 | 9431.6 | 9066.6 |
| 52.5° | 10475.3 | 10503.5 | 10775.0 | 11325.7 | 12474.8 | 12651.8 | 11169.3 | 10737.0 | 10725.1 | 10787.0 | 10427.5 |
| 55° | 9938.8 | 9989.8 | 10323.2 | 11140.0 | 13067.8 | 14669.7 | 13098.2 | 12509.5 | 12419.4 | 12285.8 | 11850.3 |
| 57.5° | 8476.9 | 8558.3 | 8916.8 | 10002.8 | 12790.8 | 16270.6 | 15932.9 | 14514.4 | 14381.9 | 13565.2 | 13006.9 |
| 60° | 6351.4 | 6451.3 | 6748.9 | 7920.8 | 11312.7 | 16840.8 | 19030.4 | 16748.5 | 16449.8 | 14583.9 | 14070.2 |
| 62.5° | 4358.5 | 4408.4 | 4610.4 | 5373.9 | 8331.4 | 15906.8 | 21621.8 | 19740.7 | 19195.5 | 15691.7 | 15220.4 |
| 65° | 3328.8 | 3346.2 | 3428.8 | 3691.6 | 4961.2 | 12921.1 | 22652.5 | 23688.6 | 23029.3 | 17016.8 | 16414.0 |
| 67.5° | 2682.6 | 2668.5 | 2782.5 | 3158.3 | 3322.3 | 7882.8 | 21450.2 | 27423.6 | 27115.2 | 18788.2 | 17615.2 |
| 69° | 2365.5 | 2345.9 | 2462.2 | 2898.8 | 3120.3 | 5211.0 | 19175.9 | 28271.9 | 28291.4 | 19723.3 | 17697.7 |
| 70° | 2128.7 | 2141.8 | 2256.9 | 2744.5 | 3051.9 | 4090.2 | 17003.7 | 28055.7 | 28210.0 | 20073.0 | 17202.5 |
| 72.5° | 1421.7 | 1456.4 | 1687.8 | 2278.6 | 2934.6 | 3095.3 | 10266.8 | 24075.2 | 24668.2 | 19285.6 | 14758.8 |
| 75° | 801.5 | 827.6 | 1102.4 | 1718.2 | 2765.2 | 2947.6 | 5422.8 | 17736.8 | 18310.3 | 16127.3 | 11381.1 |
| 77.5° | 393.2 | 407.3 | 623.4 | 1108.9 | 2312.3 | 2808.6 | 3075.8 | 12047.9 | 12702.8 | 10526.3 | 6437.2 |
| 80° | 166.2 | 173.8 | 311.7 | 684.2 | 1653.0 | 2680.5 | 2284.0 | 7414.7 | 7496.2 | 4123.9 | 1714.9 |
| 82.5° | 64.1 | 66.3 | 131.4 | 426.8 | 1050.2 | 2089.6 | 1910.4 | 3515.7 | 3430.9 | 776.6 | 391.0 |
| 85° | 7.6 | 8.7 | 47.8 | 256.3 | 584.3 | 1075.2 | 1552.0 | 1515.1 | 1402.1 | 154.2 | 200.9 |
| 87.5° | 0.0 | 0.0 | 3.3 | 78.2 | 173.8 | 503.9 | 807.0 | 628.8 | 566.9 | 50.0 | 104.3 |
| 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-SA6C-827-U-SL2-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 | 6486.1 |
| 2.5° | 6469.8 | 6458.9 | 6400.3 | 6315.6 | 6235.2 | 6135.3 | 6039.7 | 5982.2 | 5936.5 | 5906.1 | 5942.0 |
| 5° | 6487.2 | 6439.4 | 6261.3 | 6033.2 | 5809.5 | 5557.5 | 5322.9 | 5124.1 | 5045.9 | 4959.1 | 4998.2 |
| 7.5° | 6481.8 | 6391.6 | 6071.2 | 5665.0 | 5254.5 | 4829.8 | 4428.0 | 4118.4 | 3957.7 | 3800.2 | 3840.4 |
| 10° | 6454.6 | 6302.5 | 5817.1 | 5215.4 | 4600.7 | 3990.3 | 3420.1 | 2986.7 | 2744.5 | 2525.1 | 2556.6 |
| 12.5° | 6394.9 | 6183.1 | 5517.3 | 4700.6 | 3878.4 | 3073.6 | 2405.7 | 1850.7 | 1553.1 | 1421.7 | 1438.0 |
| 15° | 6359.0 | 6066.9 | 5200.2 | 4179.3 | 3107.3 | 2140.7 | 1470.6 | 1093.7 | 957.9 | 914.5 | 919.9 |
| 17.5° | 6341.6 | 5955.0 | 4872.2 | 3583.0 | 2318.8 | 1363.0 | 950.3 | 838.5 | 809.1 | 801.5 | 803.7 |
| 20° | 6324.3 | 5842.0 | 4534.4 | 2993.2 | 1597.6 | 916.7 | 780.9 | 748.3 | 737.5 | 727.7 | 729.8 |
| 22.5° | 6294.9 | 5733.4 | 4171.7 | 2395.9 | 1077.4 | 744.0 | 703.8 | 672.3 | 649.5 | 637.5 | 639.7 |
| 25° | 6259.1 | 5619.4 | 3801.3 | 1784.4 | 786.3 | 663.6 | 625.6 | 581.1 | 553.9 | 532.2 | 533.3 |
| 27.5° | 6201.5 | 5479.3 | 3419.0 | 1299.0 | 660.3 | 594.1 | 543.0 | 494.2 | 448.6 | 423.6 | 423.6 |
| 30° | 6121.2 | 5320.7 | 2994.3 | 929.7 | 591.9 | 525.7 | 463.8 | 402.9 | 354.1 | 331.3 | 329.1 |
| 32.5° | 6032.1 | 5155.6 | 2565.3 | 704.9 | 537.6 | 461.6 | 391.0 | 326.9 | 283.5 | 265.0 | 263.9 |
| 35° | 5956.1 | 4977.5 | 2137.4 | 590.8 | 483.3 | 399.7 | 322.6 | 268.3 | 233.5 | 218.3 | 217.2 |
| 37.5° | 5907.2 | 4799.4 | 1720.4 | 527.8 | 434.4 | 342.1 | 270.4 | 221.6 | 196.6 | 184.6 | 183.5 |
| 40° | 5899.6 | 4666.9 | 1339.1 | 480.0 | 388.8 | 291.1 | 225.9 | 187.9 | 165.1 | 152.1 | 151.0 |
| 42.5° | 5998.4 | 4590.9 | 1027.4 | 439.9 | 342.1 | 246.5 | 192.2 | 160.7 | 136.8 | 123.8 | 122.7 |
| 45° | 6258.0 | 4614.8 | 790.7 | 404.0 | 295.4 | 208.5 | 162.9 | 133.6 | 111.9 | 102.1 | 99.9 |
| 47.5° | 6731.6 | 4779.9 | 628.8 | 368.2 | 250.9 | 177.0 | 139.0 | 110.8 | 92.3 | 82.5 | 81.5 |
| 50° | 7574.4 | 5167.6 | 525.7 | 329.1 | 209.6 | 151.0 | 115.1 | 90.1 | 74.9 | 66.3 | 65.2 |
| 52.5° | 8693.0 | 5858.3 | 469.2 | 291.1 | 173.8 | 128.2 | 94.5 | 71.7 | 58.6 | 52.1 | 51.0 |
| 55° | 9926.8 | 6694.6 | 432.3 | 249.8 | 142.3 | 106.4 | 74.9 | 56.5 | 45.6 | 40.2 | 38.0 |
| 57.5° | 11131.3 | 7419.0 | 397.5 | 209.6 | 118.4 | 86.9 | 59.7 | 44.5 | 35.8 | 30.4 | 29.3 |
| 60° | 12238.0 | 8084.8 | 357.3 | 168.3 | 96.7 | 68.4 | 46.7 | 34.8 | 28.2 | 22.8 | 22.8 |
| 62.5° | 13422.9 | 8599.6 | 301.9 | 131.4 | 79.3 | 52.1 | 38.0 | 31.5 | 22.8 | 19.5 | 18.5 |
| 65° | 14678.4 | 8981.9 | 236.8 | 102.1 | 61.9 | 39.1 | 31.5 | 32.6 | 18.5 | 14.1 | 13.0 |
| 67.5° | 15605.9 | 8905.9 | 174.9 | 80.4 | 47.8 | 30.4 | 30.4 | 34.8 | 16.3 | 10.9 | 9.8 |
| 69° | 15401.8 | 8287.9 | 146.6 | 69.5 | 41.3 | 26.1 | 28.2 | 34.8 | 15.2 | 9.8 | 8.7 |
| 70° | 14809.8 | 7603.7 | 129.2 | 61.9 | 36.9 | 23.9 | 27.2 | 33.7 | 14.1 | 9.8 | 8.7 |
| 72.5° | 12333.6 | 5726.9 | 101.0 | 46.7 | 29.3 | 19.5 | 22.8 | 29.3 | 14.1 | 9.8 | 7.6 |
| 75° | 9277.3 | 3665.5 | 77.1 | 33.7 | 21.7 | 15.2 | 17.4 | 21.7 | 14.1 | 8.7 | 7.6 |
| 77.5° | 5048.1 | 1321.8 | 55.4 | 22.8 | 15.2 | 11.9 | 11.9 | 16.3 | 13.0 | 6.5 | 4.3 |
| 80° | 1297.9 | 332.3 | 34.8 | 15.2 | 11.9 | 8.7 | 7.6 | 10.9 | 7.6 | 1.1 | 0.0 |
| 82.5° | 320.4 | 74.9 | 18.5 | 10.9 | 8.7 | 3.3 | 3.3 | 5.4 | 3.3 | 0.0 | 0.0 |
| 85° | 175.9 | 36.9 | 11.9 | 7.6 | 4.3 | 0.0 | 0.0 | 1.1 | 0.0 | 0.0 | 0.0 |
| 87.5° | 90.1 | 10.9 | 3.3 | 2.2 | 1.1 | 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 |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Invue

Report Number: SP1-2407-157-9

Test Date: 10/03/2024

Luminaire Tested: EMM2-HTN-SA1A-827-U-5WQ

Data applicable to all product families utilizing light square engine

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-9
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/03/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Invue
 Catalog Number: **EMM2-HTN-SA1A-827-U-5WQ**
 Description: Epic Modern Light Square 40W 5WQ Optic

Spectral Parameters

CCT (K): 2764
 CIE u': 0.2591
 CIE v': 0.5290
 Duv: 0.0020
 CIE x: 0.4581
 CIE y: 0.4156
 CIE z: 0.1263
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 583
 Purity: 62.2537
 Rf: 84.7
 Rg: 94.6

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 80.9 | | |
| R1: | 78.8 | R9: | -1.5 |
| R2: | 89.9 | R10: | 77.9 |
| R3: | 96.2 | R11: | 78.9 |
| R4: | 79.1 | R12: | 71.6 |
| R5: | 79.1 | R13: | 81.2 |
| R6: | 88.8 | R14: | 98.5 |
| R7: | 81.3 | R15: | 69.9 |
| R8: | 54.3 | | |



Test Conditions

Stabilization Time: 81M
 Operation Time: 2H 21M
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-157-9

| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC Power Source | IN0208 | 10/24/2023 | 10/24/2024 |
| Sphere Thermometer | IN0085 | 10/24/2023 | 10/24/2024 |
| Room Thermometer | IN0046 | 10/24/2023 | 10/24/2024 |

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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 2700K 4-step quadrangle

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Photopic Flux vs. Wavelength



Photopic Lumens: 4337.9

| 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 | 0 | 0.0 | 490 | 18018 | 2.6 | 620 | 87426 | 22.8 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 3.9 | 625 | 83013 | 18.2 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 5.8 | 630 | 78077 | 14.1 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 8.5 | 635 | 72080 | 10.7 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 11.5 | 640 | 66249 | 7.9 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 15.2 | 645 | 59973 | 5.7 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 18.7 | 650 | 53972 | 3.9 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 21.9 | 655 | 48369 | 2.7 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 24.9 | 660 | 42641 | 1.8 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 27.6 | 665 | 37602 | 1.1 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.0 | 540 | 46032 | 30.0 | 670 | 32798 | 0.7 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.0 | 545 | 48553 | 32.5 | 675 | 28558 | 0.5 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 0.0 | 550 | 51408 | 34.9 | 680 | 24782 | 0.3 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 0.0 | 555 | 54711 | 37.4 | 685 | 21386 | 0.2 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 0.0 | 560 | 58847 | 40.0 | 690 | 18413 | 0.1 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 0.1 | 565 | 63386 | 42.4 | 695 | 15721 | 0.1 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 0.2 | 570 | 68196 | 44.3 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 0.6 | 575 | 73613 | 46.0 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 0.9 | 580 | 79207 | 47.1 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 0.9 | 585 | 84248 | 47.0 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 0.9 | 590 | 88397 | 45.7 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 1.0 | 595 | 91428 | 43.4 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 0.9 | 600 | 93452 | 40.3 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 1.0 | 605 | 93959 | 36.4 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 1.3 | 610 | 93079 | 32.0 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 1.8 | 615 | 90707 | 27.3 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

REPORT NUMBER: SP1-2407-157-9

Scotopic Flux vs. Wavelength



Scotopic Lumens: 5286.7

S/P: 1.22

| 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 | 0 | 0.0 | 490 | 18018 | 75.9 | 620 | 87426 | 0.4 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 93.2 | 625 | 83013 | 0.2 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 107.8 | 630 | 78077 | 0.1 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 118.7 | 635 | 72080 | 0.1 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 122.2 | 640 | 66249 | 0.1 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 120.8 | 645 | 59973 | 0.0 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 113.9 | 650 | 53972 | 0.0 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 104.1 | 655 | 48369 | 0.0 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 92.4 | 660 | 42641 | 0.0 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 80.5 | 665 | 37602 | 0.0 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.1 | 540 | 46032 | 68.2 | 670 | 32798 | 0.0 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.3 | 545 | 48553 | 57.1 | 675 | 28558 | 0.0 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 1.1 | 550 | 51408 | 46.7 | 680 | 24782 | 0.0 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 2.5 | 555 | 54711 | 37.4 | 685 | 21386 | 0.0 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 5.9 | 560 | 58847 | 29.4 | 690 | 18413 | 0.0 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 12.5 | 565 | 63386 | 22.5 | 695 | 15721 | 0.0 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 26.3 | 570 | 68196 | 16.9 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 55.2 | 575 | 73613 | 12.4 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 85.4 | 580 | 79207 | 9.0 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 75.1 | 585 | 84248 | 6.3 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 63.2 | 590 | 88397 | 4.4 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 63.2 | 595 | 91428 | 3.0 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 54.2 | 600 | 93452 | 2.0 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 48.8 | 605 | 93959 | 1.3 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 54.2 | 610 | 93079 | 0.9 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 63.3 | 615 | 90707 | 0.5 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

REPORT NUMBER: SP1-2407-157-9

Melanopic Flux vs. Wavelength



Melanopic Lumens: 9797

M/P: 2.26

| 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 | 0 | 0.0 | 490 | 18018 | 27.7 | 620 | 87426 | 1.1 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 36.0 | 625 | 83013 | 0.7 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 44.2 | 630 | 78077 | 0.4 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 51.8 | 635 | 72080 | 0.3 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 57.0 | 640 | 66249 | 0.2 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 60.5 | 645 | 59973 | 0.1 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 61.4 | 650 | 53972 | 0.1 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 60.6 | 655 | 48369 | 0.0 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 58.2 | 660 | 42641 | 0.0 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 55.0 | 665 | 37602 | 0.0 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.0 | 540 | 46032 | 50.9 | 670 | 32798 | 0.0 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.1 | 545 | 48553 | 46.6 | 675 | 28558 | 0.0 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 0.3 | 550 | 51408 | 42.0 | 680 | 24782 | 0.0 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 0.8 | 555 | 54711 | 37.4 | 685 | 21386 | 0.0 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 1.9 | 560 | 58847 | 32.9 | 690 | 18413 | 0.0 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 4.1 | 565 | 63386 | 28.4 | 695 | 15721 | 0.0 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 8.7 | 570 | 68196 | 24.1 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 18.5 | 575 | 73613 | 20.0 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 28.3 | 580 | 79207 | 16.3 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 24.7 | 585 | 84248 | 12.9 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 20.4 | 590 | 88397 | 9.8 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 20.1 | 595 | 91428 | 7.3 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 17.2 | 600 | 93452 | 5.3 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 15.7 | 605 | 93959 | 3.7 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 18.0 | 610 | 93079 | 2.5 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 21.9 | 615 | 90707 | 1.7 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

Summary

$R_f = 84.7$
 $R_g = 94.6$
 CIE $R_a = 80.9$
 $R_g = -1.5$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 84 | CES51 = 95 | CES76 = 81 |
| CES02 = 63 | CES27 = 95 | CES52 = 94 | CES77 = 84 |
| CES03 = 31 | CES28 = 94 | CES53 = 89 | CES78 = 81 |
| CES04 = 71 | CES29 = 87 | CES54 = 91 | CES79 = 89 |
| CES05 = 50 | CES30 = 94 | CES55 = 90 | CES80 = 89 |
| CES06 = 52 | CES31 = 89 | CES56 = 86 | CES81 = 69 |
| CES07 = 43 | CES32 = 82 | CES57 = 85 | CES82 = 96 |
| CES08 = 41 | CES33 = 91 | CES58 = 86 | CES83 = 93 |
| CES09 = 29 | CES34 = 92 | CES59 = 91 | CES84 = 92 |
| CES10 = 77 | CES35 = 96 | CES60 = 94 | CES85 = 76 |
| CES11 = 60 | CES36 = 90 | CES61 = 89 | CES86 = 65 |
| CES12 = 66 | CES37 = 96 | CES62 = 94 | CES87 = 84 |
| CES13 = 44 | CES38 = 98 | CES63 = 87 | CES88 = 86 |
| CES14 = 74 | CES39 = 98 | CES64 = 82 | CES89 = 73 |
| CES15 = 72 | CES40 = 95 | CES65 = 78 | CES90 = 88 |
| CES16 = 48 | CES41 = 96 | CES66 = 81 | CES91 = 82 |
| CES17 = 50 | CES42 = 97 | CES67 = 80 | CES92 = 64 |
| CES18 = 57 | CES43 = 91 | CES68 = 83 | CES93 = 78 |
| CES19 = 73 | CES44 = 99 | CES69 = 88 | CES94 = 59 |
| CES20 = 67 | CES45 = 93 | CES70 = 80 | CES95 = 74 |
| CES21 = 87 | CES46 = 89 | CES71 = 79 | CES96 = 83 |
| CES22 = 79 | CES47 = 92 | CES72 = 92 | CES97 = 88 |
| CES23 = 92 | CES48 = 83 | CES73 = 75 | CES98 = 83 |
| CES24 = 91 | CES49 = 90 | CES74 = 91 | CES99 = 74 |
| CES25 = 72 | CES50 = 94 | CES75 = 81 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)