

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: P359714

Luminaire Tested: NVN-SA4D-730-U-T2R-HSS

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2019
Report Number: P359714
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-9)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: STREETWORKS
Catalog Number: NVN-SA4D-730-U-T2R-HSS
Description: NAVION ROADWAY AND AREA LUMINAIRE
(4) 70 CRI, 3000K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II
ROADWAY OPTICS WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 23515 lumens
Efficiency: N/A
Efficacy: 91.1 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')
IES Classification: Type II - Medium
BUG Rating: B1 - U0 - G3

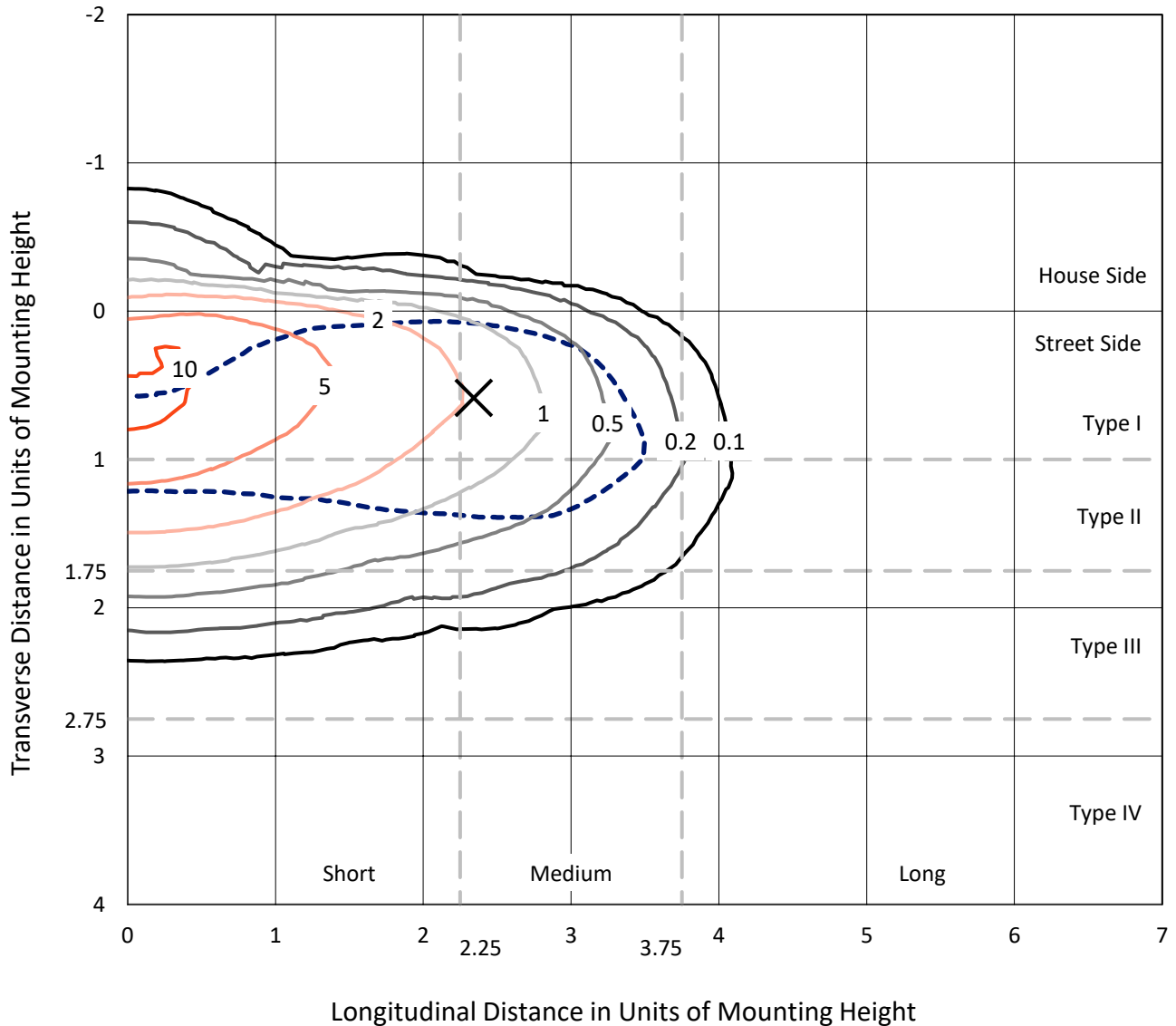
Input Watts (W): 258
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

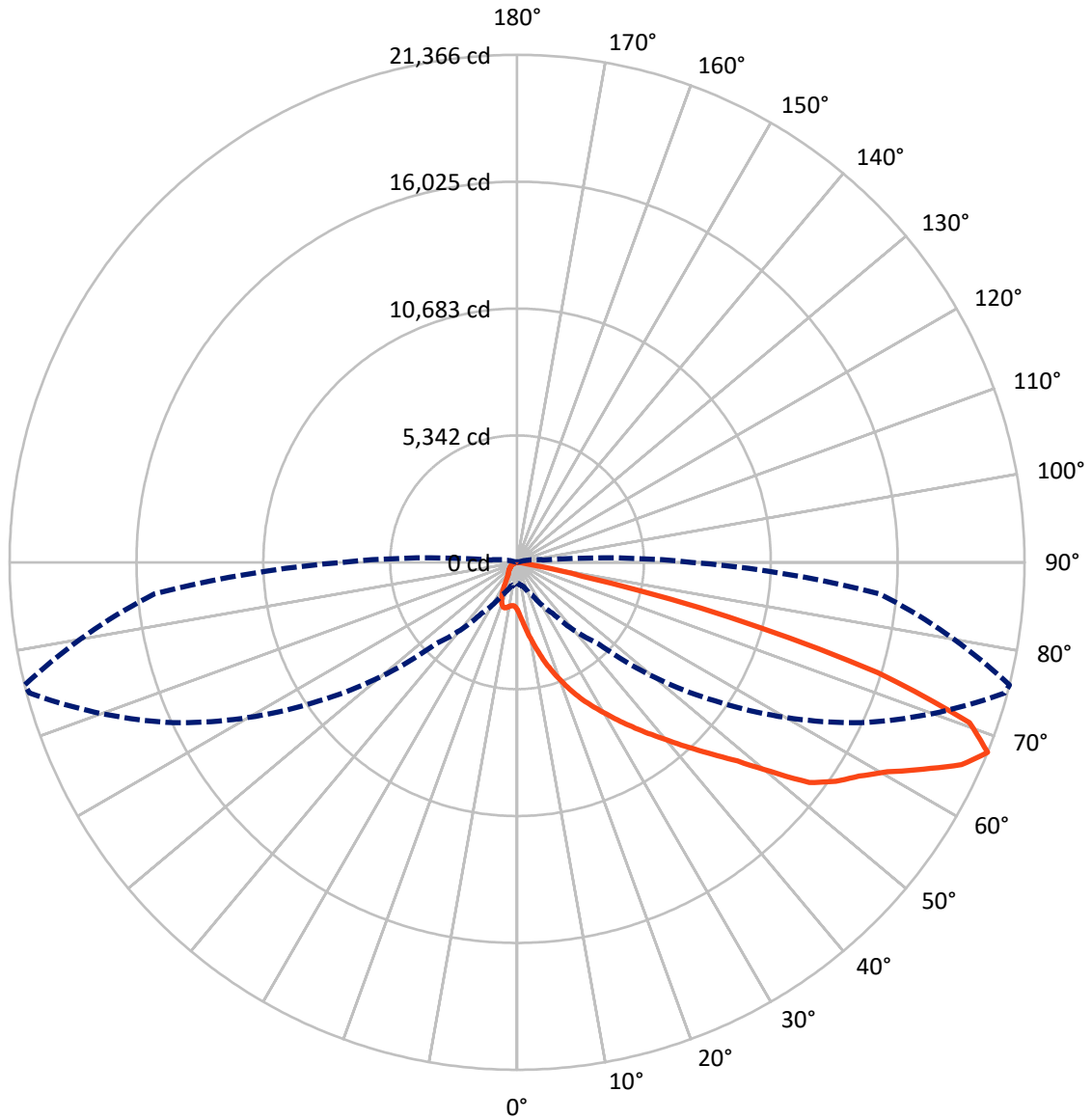
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 11.2 fc
 Type II - Medium - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 76-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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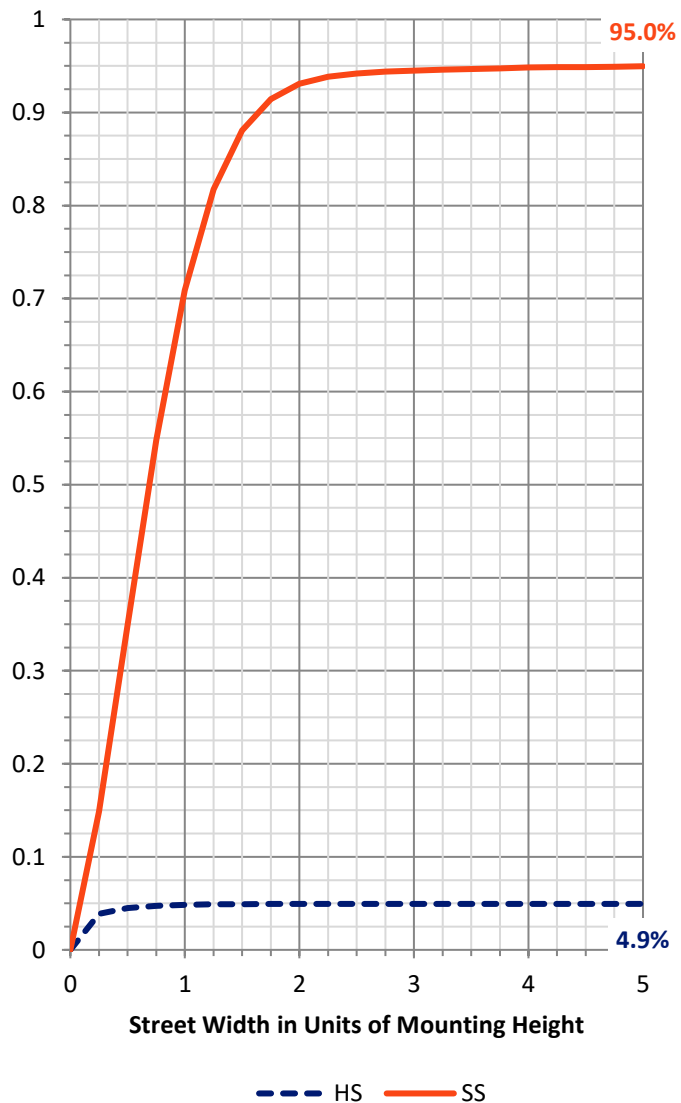
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 1167.7 | 0.0 | 1167.7 |
| | % Fixture | 5.0 | 0.0 | 5.0 |
| Street Side | Lumens | 22347.3 | 0.0 | 22347.3 |
| | % Fixture | 95.0 | 0.0 | 95.0 |
| Total | Lumens | 23515.0 | 0.0 | 23515.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 248.0 | 1.1 |
| 10°-20° | 983.3 | 4.2 |
| 20°-30° | 2000.7 | 8.5 |
| 30°-40° | 3472.5 | 14.8 |
| 40°-50° | 4906.2 | 20.9 |
| 50°-60° | 5563.9 | 23.7 |
| 60°-70° | 4614.7 | 19.6 |
| 70°-80° | 1671.6 | 7.1 |
| 80°-90° | 54.2 | 0.2 |
| 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° | 23515.0 | 100.0 |
| 0°-180° | 23515.0 | 100.0 |

Coefficient of Utilization

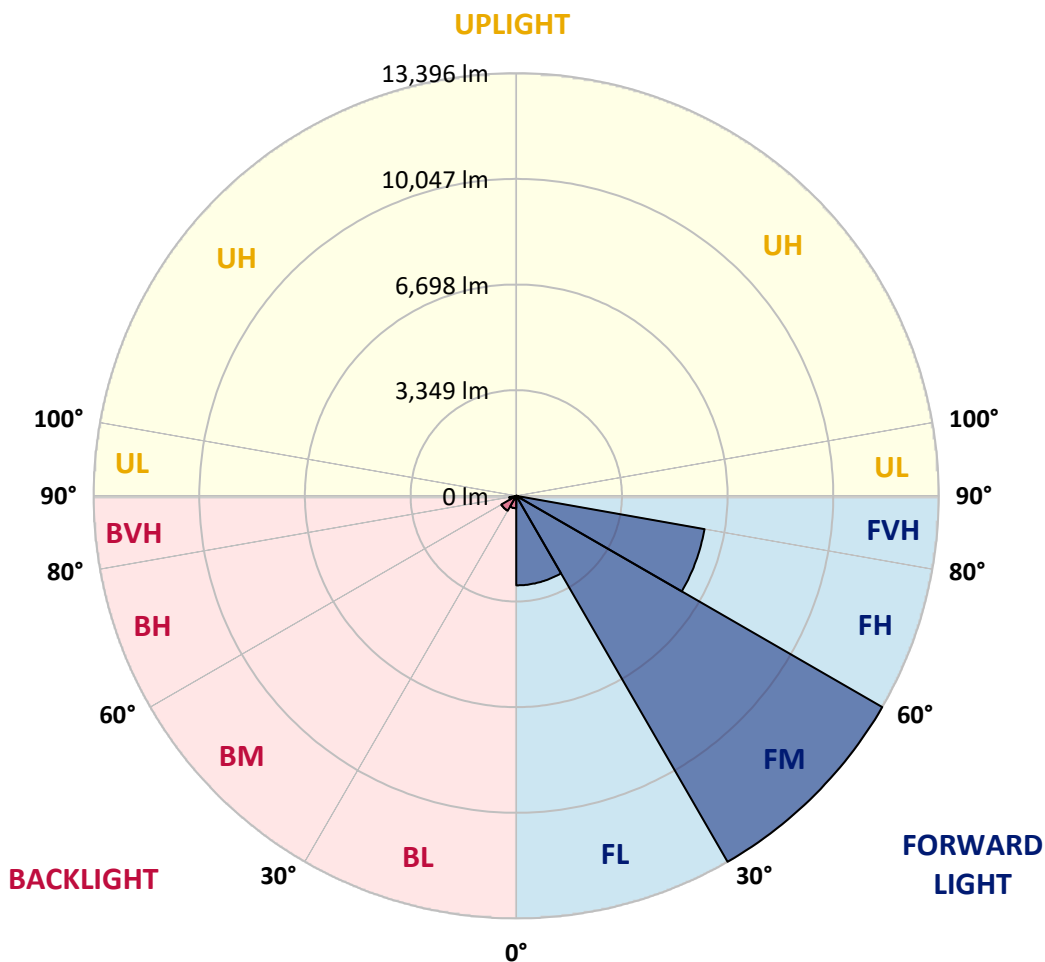


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|---------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 2838.2 | 12.1 | | | |
| FM (30°-60°) | 13396.0 | 57.0 | | | |
| FH (60°-80°) | 6060.6 | 25.8 | | | G3/7500 |
| FVH (80°-90°) | 52.5 | 0.2 | | | G1/100 |
| BL (0°-30°) | 393.8 | 1.7 | B1/500 | | |
| BM (30°-60°) | 546.5 | 2.3 | B1/1000 | | |
| BH (60°-80°) | 225.7 | 1.0 | B1/500 | | G1/500 |
| BVH (80°-90°) | 1.7 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G3
 Type II Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 76° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 |
| 2.5° | 2977.7 | 2910.7 | 2926.2 | 2882.9 | 2804.6 | 2643.9 | 2506.8 | 2377.0 | 2225.6 | 2220.4 | 2095.7 |
| 5° | 4015.3 | 3958.6 | 3951.4 | 3863.8 | 3721.6 | 3448.6 | 3182.7 | 2879.8 | 2541.9 | 2517.1 | 2252.3 |
| 7.5° | 4957.0 | 4911.7 | 4895.2 | 4791.1 | 4526.3 | 4260.5 | 3914.3 | 3469.2 | 2940.6 | 2895.3 | 2463.6 |
| 10° | 5680.3 | 5658.7 | 5662.8 | 5588.6 | 5361.9 | 5114.6 | 4660.3 | 4092.5 | 3392.9 | 3322.9 | 2717.0 |
| 12.5° | 6228.5 | 6233.6 | 6270.7 | 6225.4 | 6098.6 | 5915.2 | 5429.9 | 4757.1 | 3893.7 | 3797.9 | 3006.6 |
| 15° | 6631.3 | 6657.1 | 6725.1 | 6781.7 | 6772.5 | 6613.8 | 6168.7 | 5432.0 | 4425.3 | 4319.2 | 3329.1 |
| 17.5° | 6892.0 | 6920.8 | 7019.8 | 7145.5 | 7260.9 | 7223.8 | 6881.7 | 6083.2 | 4963.2 | 4840.6 | 3674.2 |
| 20° | 7120.7 | 7154.7 | 7260.9 | 7426.7 | 7642.1 | 7688.5 | 7463.8 | 6714.8 | 5500.0 | 5350.6 | 4030.7 |
| 22.5° | 7616.3 | 7615.3 | 7680.2 | 7777.1 | 7982.1 | 8101.6 | 7959.4 | 7301.0 | 6030.6 | 5875.0 | 4394.4 |
| 25° | 8512.7 | 8478.7 | 8456.1 | 8379.8 | 8425.2 | 8499.3 | 8420.0 | 7849.2 | 6564.3 | 6406.7 | 4763.3 |
| 27.5° | 9578.1 | 9598.7 | 9415.3 | 9210.3 | 9051.6 | 8975.4 | 8845.5 | 8357.1 | 7077.5 | 6904.4 | 5123.9 |
| 30° | 10702.2 | 10708.4 | 10492.0 | 10230.3 | 9881.0 | 9591.5 | 9366.9 | 8842.4 | 7605.0 | 7416.4 | 5474.2 |
| 32.5° | 11716.1 | 11675.9 | 11461.6 | 11105.1 | 10664.1 | 10338.5 | 9871.8 | 9384.4 | 8163.4 | 7981.1 | 5863.7 |
| 35° | 12519.8 | 12472.4 | 12211.7 | 11887.1 | 11429.6 | 11102.0 | 10540.5 | 9925.3 | 8750.7 | 8572.5 | 6254.2 |
| 37.5° | 13107.1 | 13051.4 | 12783.5 | 12449.7 | 12055.1 | 11864.5 | 11316.3 | 10513.7 | 9391.6 | 9200.0 | 6665.3 |
| 40° | 13311.1 | 13262.6 | 13094.7 | 12850.5 | 12533.1 | 12489.9 | 12139.6 | 11190.6 | 10089.2 | 9885.2 | 7131.0 |
| 42.5° | 13189.5 | 13142.1 | 13082.3 | 12999.9 | 12868.0 | 12909.2 | 12916.4 | 11962.3 | 10864.0 | 10663.1 | 7645.2 |
| 45° | 12707.3 | 12665.0 | 12726.9 | 12847.4 | 13011.2 | 13215.2 | 13625.3 | 12791.8 | 11729.5 | 11515.2 | 8239.7 |
| 47.5° | 11997.4 | 11966.5 | 12137.5 | 12438.4 | 12917.5 | 13480.0 | 14273.4 | 13663.4 | 12701.1 | 12502.2 | 8981.5 |
| 50° | 10987.6 | 10982.5 | 11324.6 | 11873.7 | 12610.4 | 13607.8 | 14943.1 | 14654.6 | 14050.9 | 13841.7 | 10012.9 |
| 52.5° | 9415.3 | 9425.6 | 10098.4 | 10977.3 | 12071.6 | 13521.3 | 15373.8 | 15928.1 | 15621.1 | 15403.7 | 10906.2 |
| 55° | 7918.2 | 7980.0 | 8457.1 | 9724.4 | 11245.2 | 13199.8 | 15522.2 | 16522.7 | 16487.6 | 16281.6 | 11402.9 |
| 57.5° | 6452.0 | 6564.3 | 7023.9 | 8207.7 | 10038.7 | 12459.0 | 15440.8 | 16780.2 | 17132.6 | 16975.0 | 12058.2 |
| 60° | 4863.2 | 4914.8 | 5444.4 | 6551.0 | 8490.1 | 11107.1 | 14850.4 | 16920.4 | 18014.6 | 17905.4 | 13009.2 |
| 62.5° | 3094.1 | 3222.9 | 3692.8 | 4760.2 | 6610.7 | 9229.9 | 13855.1 | 16918.3 | 19118.1 | 19177.9 | 14236.3 |
| 65° | 1630.0 | 1780.4 | 2029.8 | 2949.9 | 4542.8 | 7133.1 | 12358.0 | 16759.6 | 20472.0 | 20555.4 | 15195.6 |
| 67.5° | 878.9 | 922.2 | 1054.0 | 1531.1 | 2634.6 | 4832.3 | 10158.2 | 15976.6 | 21256.1 | 21366.3 | 15329.5 |
| 70° | 642.9 | 666.6 | 716.1 | 846.9 | 1326.1 | 2806.7 | 7412.3 | 14201.3 | 20245.3 | 20204.1 | 13620.2 |
| 72.5° | 493.5 | 530.6 | 567.7 | 620.3 | 762.5 | 1498.1 | 4614.9 | 11120.5 | 16153.8 | 15881.8 | 10180.9 |
| 75° | 389.5 | 395.7 | 448.2 | 495.6 | 571.8 | 853.1 | 2049.4 | 6476.8 | 9859.4 | 9215.4 | 5279.5 |
| 77.5° | 311.2 | 315.3 | 346.2 | 387.4 | 459.5 | 560.5 | 634.7 | 2548.0 | 3147.7 | 2808.7 | 1145.7 |
| 80° | 184.4 | 194.7 | 257.6 | 298.8 | 381.2 | 353.4 | 231.8 | 553.3 | 491.5 | 445.1 | 192.7 |
| 82.5° | 103.0 | 111.3 | 145.3 | 235.9 | 265.8 | 169.0 | 115.4 | 149.4 | 115.4 | 112.3 | 54.6 |
| 85° | 0.0 | 5.2 | 93.8 | 146.3 | 108.2 | 37.1 | 48.4 | 49.5 | 34.0 | 31.9 | 21.6 |
| 87.5° | 0.0 | 0.0 | 28.8 | 27.8 | 4.1 | 6.2 | 11.3 | 16.5 | 13.4 | 13.4 | 11.3 |
| 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: P359714

CATALOG NUMBER: NVN-SA4D-730-U-T2R-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 | 1994.8 |
| 2.5° | 2033.9 | 1978.3 | 1873.2 | 1770.1 | 1683.6 | 1612.5 | 1548.6 | 1522.9 | 1502.2 | 1499.2 | 1482.7 |
| 5° | 2124.6 | 2012.3 | 1811.4 | 1646.5 | 1536.2 | 1457.9 | 1391.0 | 1349.8 | 1317.8 | 1305.5 | 1294.1 |
| 7.5° | 2261.6 | 2091.6 | 1803.1 | 1613.5 | 1481.6 | 1349.8 | 1226.1 | 1092.2 | 1008.7 | 976.8 | 958.2 |
| 10° | 2428.5 | 2196.7 | 1834.0 | 1604.3 | 1373.5 | 1095.3 | 890.2 | 720.2 | 651.2 | 628.5 | 622.3 |
| 12.5° | 2623.3 | 2327.6 | 1887.6 | 1546.6 | 1142.7 | 777.9 | 614.1 | 556.4 | 540.9 | 533.7 | 533.7 |
| 15° | 2846.9 | 2470.8 | 1925.7 | 1379.6 | 844.9 | 588.3 | 531.7 | 504.9 | 488.4 | 479.1 | 480.1 |
| 17.5° | 3075.6 | 2610.9 | 1907.2 | 1137.5 | 623.4 | 523.4 | 481.2 | 452.3 | 429.7 | 420.4 | 418.3 |
| 20° | 3306.4 | 2740.7 | 1804.1 | 846.9 | 527.5 | 475.0 | 427.6 | 395.7 | 373.0 | 363.7 | 361.7 |
| 22.5° | 3545.4 | 2851.0 | 1622.8 | 621.3 | 474.0 | 421.4 | 375.0 | 343.1 | 321.5 | 313.2 | 309.1 |
| 25° | 3778.3 | 2940.6 | 1369.3 | 502.8 | 423.5 | 370.9 | 326.6 | 296.7 | 277.2 | 268.9 | 267.9 |
| 27.5° | 3995.7 | 2997.3 | 1075.7 | 444.1 | 379.2 | 325.6 | 285.4 | 258.6 | 242.1 | 235.9 | 234.9 |
| 30° | 4191.5 | 3002.4 | 795.4 | 400.8 | 340.0 | 286.4 | 249.3 | 225.6 | 211.2 | 205.0 | 203.0 |
| 32.5° | 4389.3 | 2959.2 | 579.1 | 361.7 | 304.0 | 252.4 | 216.4 | 197.8 | 187.5 | 182.4 | 182.4 |
| 35° | 4575.8 | 2859.2 | 451.3 | 327.7 | 268.9 | 219.5 | 190.6 | 177.2 | 171.0 | 165.9 | 165.9 |
| 37.5° | 4758.1 | 2716.0 | 383.3 | 297.8 | 235.9 | 191.6 | 167.9 | 159.7 | 154.6 | 149.4 | 149.4 |
| 40° | 4943.6 | 2535.7 | 348.3 | 270.0 | 209.2 | 170.0 | 149.4 | 142.2 | 137.0 | 132.9 | 131.9 |
| 42.5° | 5171.3 | 2327.6 | 325.6 | 244.2 | 185.5 | 150.4 | 131.9 | 123.6 | 119.5 | 115.4 | 113.3 |
| 45° | 5435.1 | 2148.3 | 307.0 | 218.4 | 165.9 | 133.9 | 114.4 | 106.1 | 99.9 | 94.8 | 93.8 |
| 47.5° | 5815.3 | 2018.5 | 282.3 | 190.6 | 147.3 | 116.4 | 98.9 | 89.6 | 80.4 | 75.2 | 74.2 |
| 50° | 6300.6 | 1911.3 | 250.4 | 165.9 | 128.8 | 98.9 | 82.4 | 71.1 | 62.9 | 57.7 | 57.7 |
| 52.5° | 6541.7 | 1771.2 | 221.5 | 144.2 | 108.2 | 83.5 | 67.0 | 53.6 | 49.5 | 44.3 | 44.3 |
| 55° | 6638.5 | 1664.0 | 192.7 | 122.6 | 89.6 | 69.0 | 52.5 | 41.2 | 38.1 | 35.0 | 34.0 |
| 57.5° | 6910.5 | 1633.1 | 167.9 | 104.1 | 74.2 | 54.6 | 40.2 | 30.9 | 28.8 | 24.7 | 24.7 |
| 60° | 7348.4 | 1648.6 | 145.3 | 88.6 | 59.8 | 42.2 | 29.9 | 23.7 | 21.6 | 17.5 | 17.5 |
| 62.5° | 7821.4 | 1629.0 | 122.6 | 76.2 | 46.4 | 30.9 | 20.6 | 17.5 | 17.5 | 10.3 | 9.3 |
| 65° | 7912.0 | 1450.7 | 105.1 | 62.9 | 36.1 | 22.7 | 13.4 | 11.3 | 15.5 | 2.1 | 0.0 |
| 67.5° | 7343.3 | 1125.1 | 90.7 | 48.4 | 26.8 | 17.5 | 10.3 | 5.2 | 13.4 | 0.0 | 0.0 |
| 70° | 5872.0 | 715.1 | 73.2 | 35.0 | 20.6 | 14.4 | 8.2 | 2.1 | 10.3 | 0.0 | 0.0 |
| 72.5° | 4152.3 | 415.2 | 57.7 | 24.7 | 17.5 | 11.3 | 6.2 | 0.0 | 6.2 | 0.0 | 0.0 |
| 75° | 2099.8 | 221.5 | 36.1 | 18.5 | 13.4 | 8.2 | 4.1 | 0.0 | 1.0 | 0.0 | 0.0 |
| 77.5° | 454.4 | 103.0 | 22.7 | 13.4 | 9.3 | 5.2 | 2.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80° | 98.9 | 45.3 | 14.4 | 8.2 | 5.2 | 3.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 36.1 | 23.7 | 7.2 | 4.1 | 2.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 19.6 | 12.4 | 4.1 | 2.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 10.3 | 4.1 | 1.0 | 1.0 | 0.0 | 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: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

Data in this report applies to families of products SA1C-730-U-5WQ .

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-2-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-730-U-5WQ**
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

CCT (K): 2993
 CIE u': 0.2508
 CIE v': 0.5215
 Duv: 0.0000
 CIE x: 0.4374
 CIE y: 0.4043
 CIE z: 0.1583
 Peak Wavelength (nm): 593
 Dominant Wavelength (nm): 582
 Purity: 53

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.8 | | |
| R1: | 67.5 | R9: | -38.3 |
| R2: | 82.9 | R10: | 62.5 |
| R3: | 94.7 | R11: | 63.7 |
| R4: | 67.7 | R12: | 57.8 |
| R5: | 67.9 | R13: | 70.4 |
| R6: | 77.6 | R14: | 97.3 |
| R7: | 76.0 | | |
| R8: | 40.5 | | |

Rf: 75.7
 Rg: 93.9



Test Conditions

Stabilization Time: 53M
 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 3000K 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

REPORT NUMBER: SP1-1908-441-2-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 8494.8

S/P: 1.23

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

REPORT NUMBER: SP1-1908-441-2-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 3101.5 M/P: 0.45

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

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Summary

$R_f = 75.7$
 $R_g = 93.9$
 CIE $R_a = 71.8$
 $R_9 = -38.3$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 | |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)