

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: P359945

Luminaire Tested: NVN-SA1C-730-U-T4W-HSS

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2019
Report Number: P359945
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-19)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: STREETWORKS
Catalog Number: NVN-SA1C-730-U-T4W-HSS
Description: NAVION ROADWAY AND AREA LUMINAIRE
(1) 70 CRI, 3000K, 1050mA LIGHTSQUARE WITH 16 LEDS AND TYPE IV WIDE OPTICS WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4769 lumens
Efficiency: N/A
Efficacy: 80.8 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B1 - U0 - G2

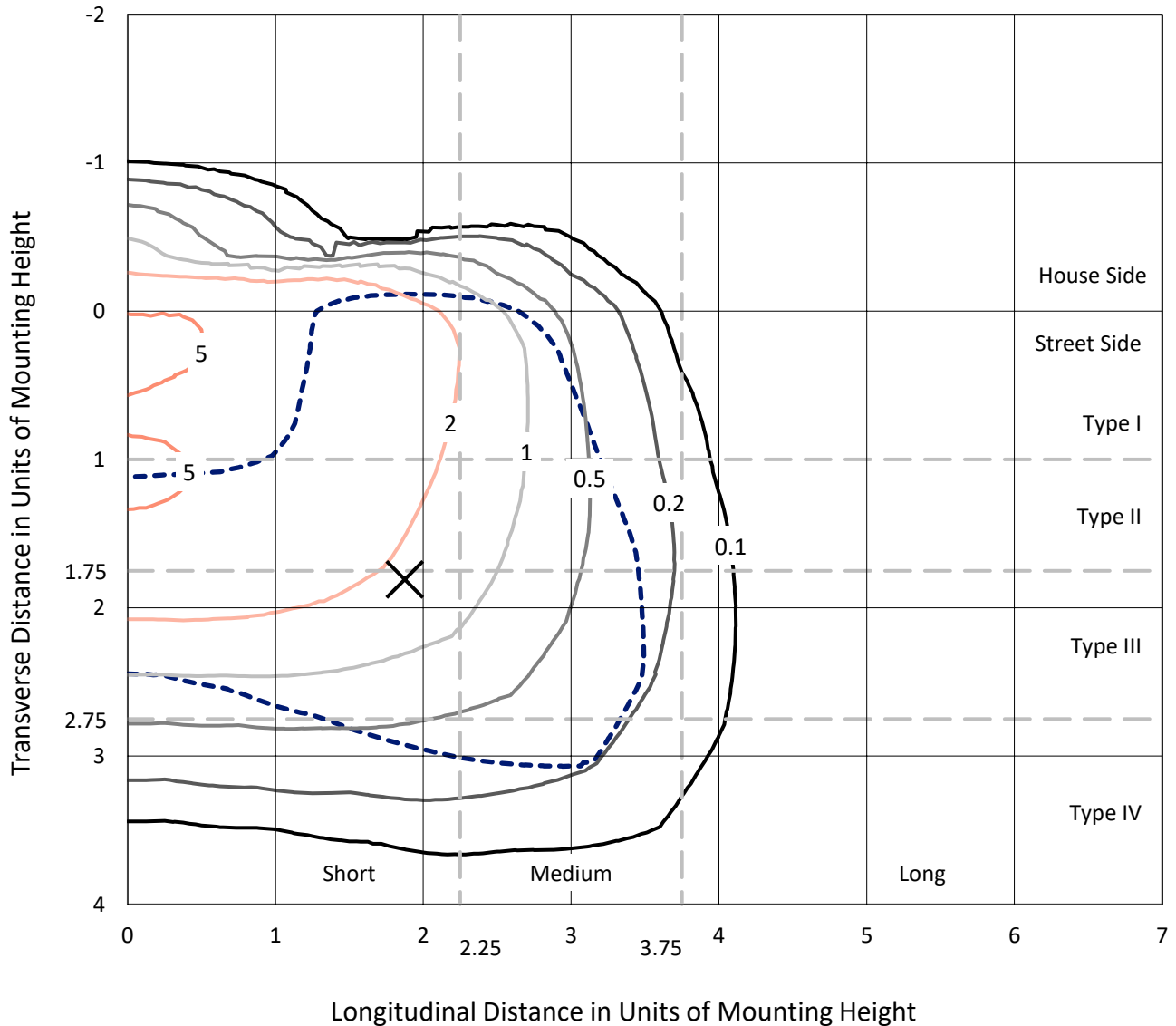
Input Watts (W): 59
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

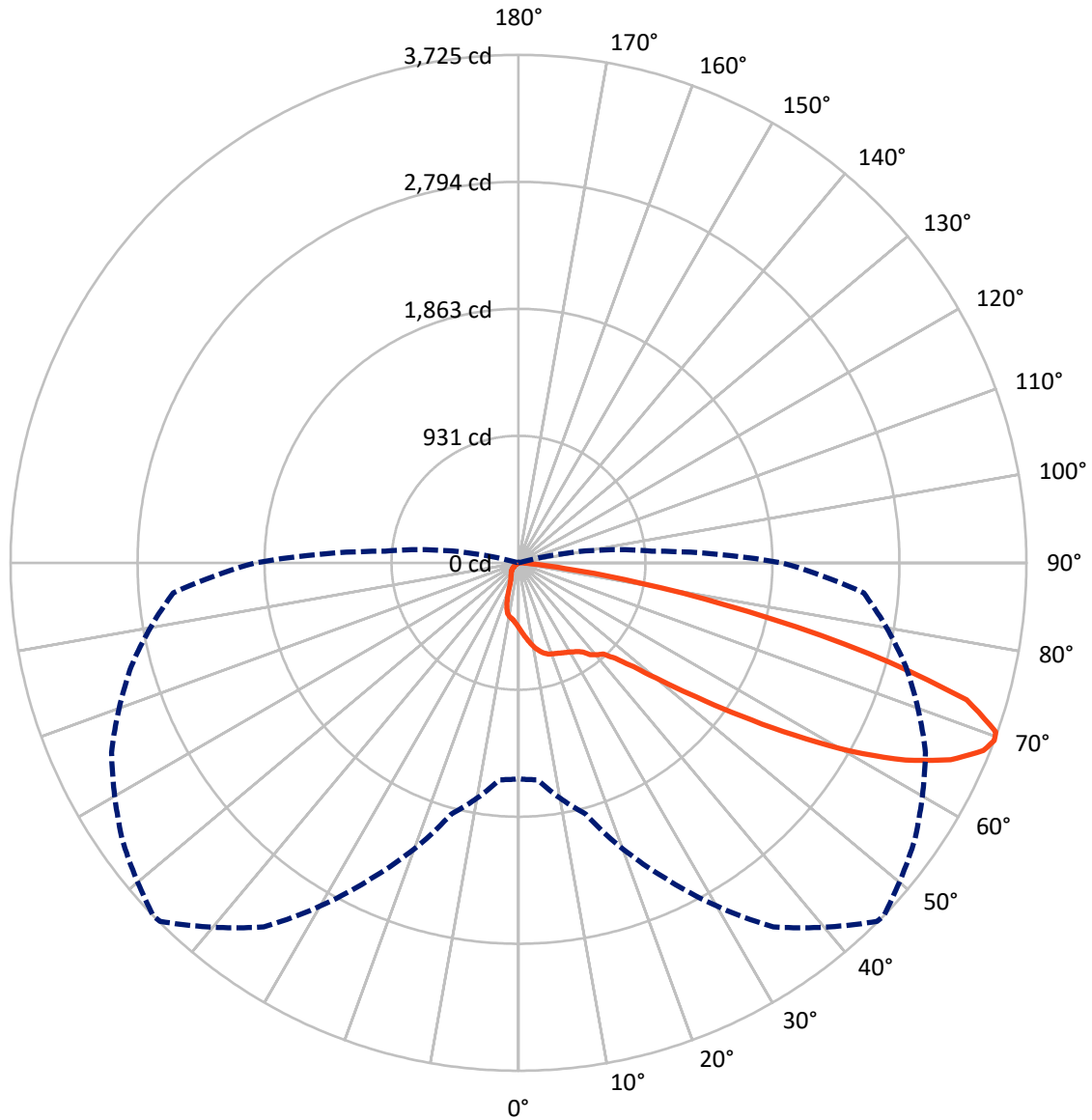
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 7 fc
 Type IV - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 46-Deg Lateral - - - Horizontal Cone Through 69-Deg Vertical

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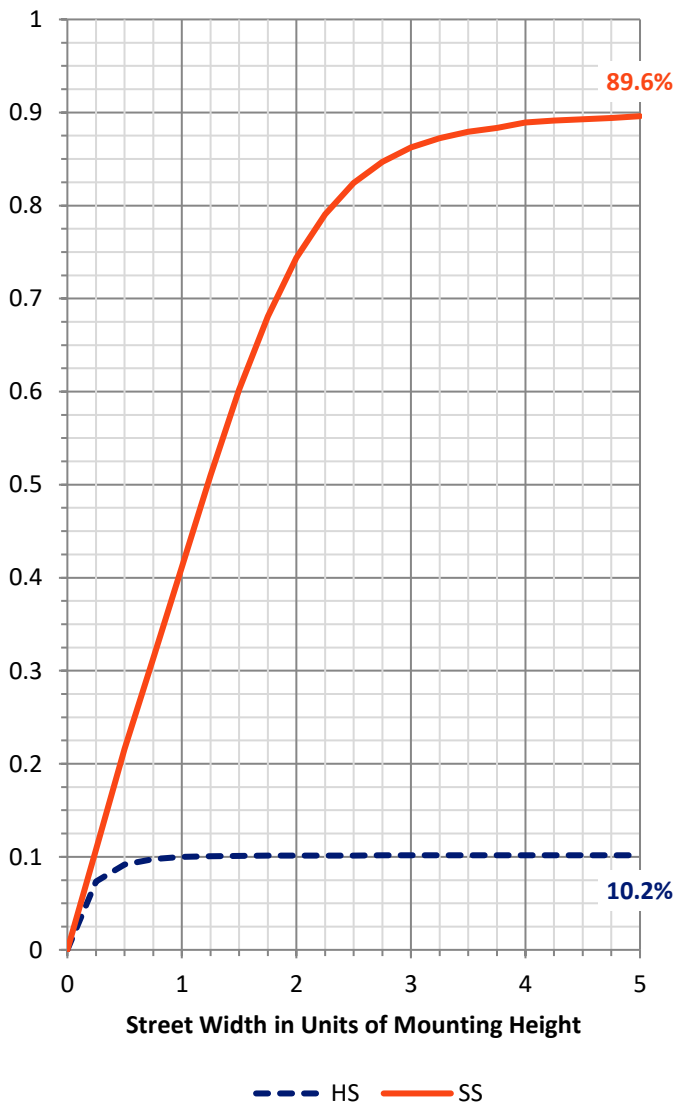
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 489.4 | 0.0 | 489.4 |
| | % Fixture | 10.3 | 0.0 | 10.3 |
| Street Side | Lumens | 4279.6 | 0.0 | 4279.6 |
| | % Fixture | 89.7 | 0.0 | 89.7 |
| Total | Lumens | 4769.0 | 0.0 | 4769.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 47.6 | 1.0 |
| 10°-20° | 144.3 | 3.0 |
| 20°-30° | 226.9 | 4.8 |
| 30°-40° | 325.4 | 6.8 |
| 40°-50° | 562.4 | 11.8 |
| 50°-60° | 1111.1 | 23.3 |
| 60°-70° | 1552.9 | 32.6 |
| 70°-80° | 750.2 | 15.7 |
| 80°-90° | 48.2 | 1.0 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 4769.0 | 100.0 |
| 0°-180° | 4769.0 | 100.0 |

Coefficient of Utilization



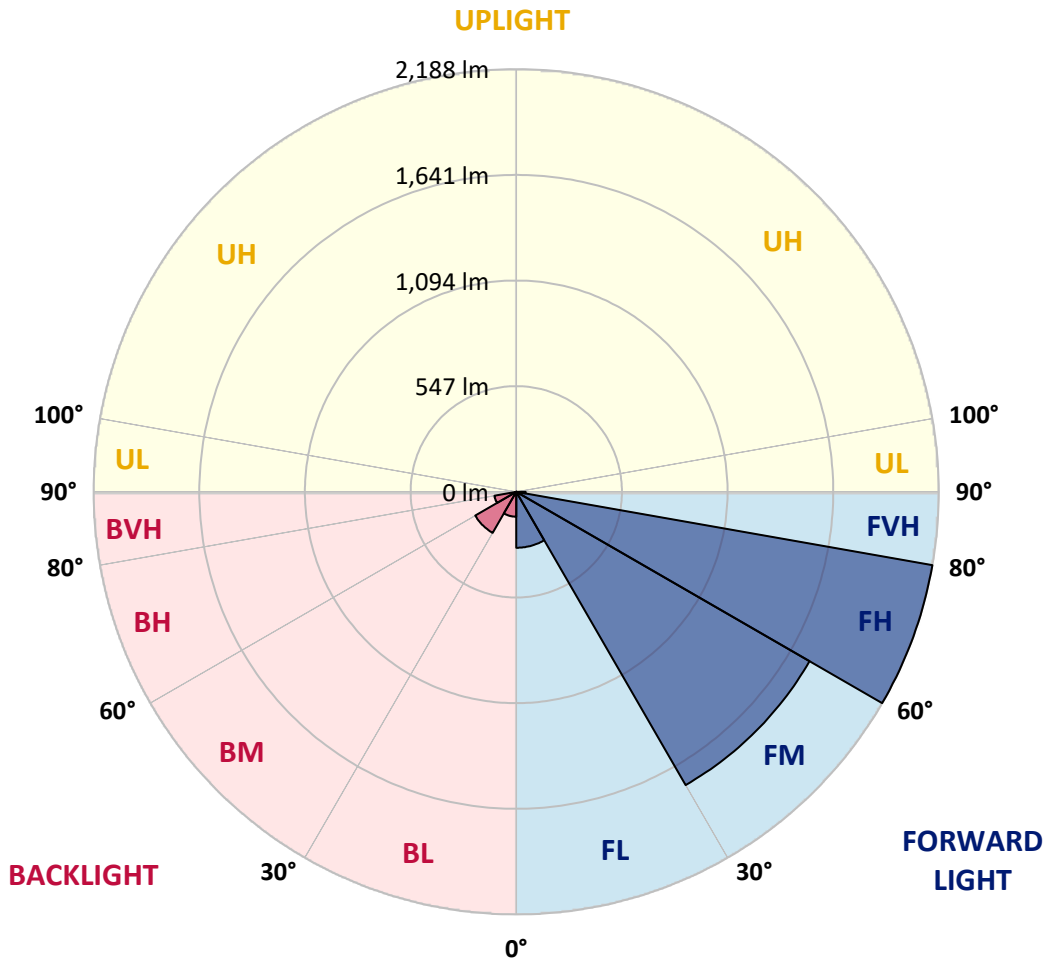
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 289.8 | 6.1 | | | |
| FM (30°-60°) | 1753.7 | 36.8 | | | |
| FH (60°-80°) | 2188.3 | 45.9 | | | G2/5000 |
| FVH (80°-90°) | 47.8 | 1.0 | | | G1/100 |
| BL (0°-30°) | 129.0 | 2.7 | B1/500 | | |
| BM (30°-60°) | 245.3 | 5.1 | B1/1000 | | |
| BH (60°-80°) | 114.8 | 2.4 | B1/500 | | G1/500 |
| BVH (80°-90°) | 0.4 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G2

Type IV Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 46° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 |
| 2.5° | 530.8 | 530.2 | 527.0 | 525.7 | 518.1 | 513.6 | 511.8 | 506.2 | 498.2 | 490.1 | 481.2 |
| 5° | 591.2 | 591.0 | 585.2 | 579.6 | 565.3 | 551.8 | 549.4 | 536.4 | 518.3 | 501.3 | 484.3 |
| 7.5° | 652.9 | 650.0 | 644.2 | 633.5 | 612.7 | 591.2 | 589.2 | 570.9 | 545.1 | 520.5 | 496.2 |
| 10° | 705.2 | 703.4 | 695.8 | 679.5 | 655.2 | 630.8 | 628.3 | 605.7 | 576.7 | 546.5 | 515.4 |
| 12.5° | 745.9 | 744.6 | 734.5 | 714.2 | 688.2 | 663.0 | 659.6 | 639.5 | 608.4 | 574.7 | 538.0 |
| 15° | 770.8 | 770.1 | 757.8 | 736.1 | 710.6 | 688.7 | 685.8 | 668.1 | 639.3 | 603.9 | 562.6 |
| 17.5° | 776.6 | 776.8 | 764.0 | 742.1 | 721.1 | 705.5 | 703.2 | 689.8 | 665.7 | 630.6 | 587.2 |
| 20° | 763.6 | 766.3 | 754.9 | 735.9 | 722.9 | 714.6 | 712.8 | 704.8 | 684.4 | 651.4 | 606.9 |
| 22.5° | 745.3 | 746.6 | 738.8 | 726.0 | 720.7 | 722.2 | 721.3 | 716.9 | 699.6 | 669.2 | 626.3 |
| 25° | 734.1 | 734.1 | 729.4 | 718.7 | 722.2 | 731.8 | 732.1 | 731.2 | 717.5 | 691.2 | 650.0 |
| 27.5° | 733.6 | 732.3 | 726.9 | 718.9 | 728.7 | 743.5 | 744.4 | 750.4 | 741.9 | 717.8 | 679.5 |
| 30° | 751.5 | 750.0 | 738.6 | 728.0 | 740.6 | 756.4 | 758.7 | 771.9 | 767.6 | 746.6 | 712.4 |
| 32.5° | 793.3 | 787.7 | 762.5 | 745.3 | 754.7 | 773.7 | 776.6 | 797.6 | 804.3 | 782.2 | 744.1 |
| 35° | 850.6 | 832.9 | 796.5 | 777.9 | 778.8 | 798.7 | 801.4 | 832.2 | 852.1 | 814.8 | 768.7 |
| 37.5° | 929.5 | 920.8 | 861.5 | 811.9 | 815.9 | 846.1 | 853.9 | 887.5 | 881.9 | 832.7 | 796.7 |
| 40° | 1102.6 | 1088.9 | 1025.9 | 907.2 | 851.5 | 884.6 | 887.0 | 904.9 | 905.4 | 873.2 | 854.8 |
| 42.5° | 1338.3 | 1332.7 | 1266.3 | 1080.0 | 921.5 | 910.3 | 914.8 | 944.9 | 978.7 | 958.6 | 957.7 |
| 45° | 1599.2 | 1596.3 | 1525.9 | 1309.4 | 1063.0 | 994.6 | 1000.2 | 1040.6 | 1105.3 | 1109.7 | 1138.1 |
| 47.5° | 1809.2 | 1807.8 | 1767.3 | 1565.4 | 1279.7 | 1137.5 | 1139.2 | 1182.2 | 1295.8 | 1351.9 | 1397.3 |
| 50° | 2000.6 | 2007.0 | 1975.1 | 1842.5 | 1574.8 | 1361.3 | 1357.0 | 1385.7 | 1568.1 | 1660.0 | 1716.4 |
| 52.5° | 2266.6 | 2275.8 | 2186.1 | 2101.0 | 1884.5 | 1639.0 | 1635.6 | 1665.6 | 1895.5 | 1964.3 | 1974.4 |
| 55° | 2501.7 | 2486.0 | 2415.1 | 2390.5 | 2262.2 | 1982.0 | 1981.1 | 2007.5 | 2212.1 | 2241.4 | 2259.9 |
| 57.5° | 2605.4 | 2599.4 | 2633.6 | 2689.9 | 2657.7 | 2387.4 | 2385.4 | 2365.3 | 2495.4 | 2498.5 | 2555.5 |
| 60° | 2670.9 | 2678.3 | 2783.2 | 2956.9 | 3037.2 | 2823.6 | 2810.7 | 2687.9 | 2765.9 | 2759.0 | 2820.1 |
| 62.5° | 2621.7 | 2636.3 | 2825.0 | 3114.5 | 3321.2 | 3204.4 | 3186.1 | 2983.5 | 2997.2 | 2973.2 | 3030.0 |
| 65° | 2360.6 | 2383.1 | 2692.4 | 3084.8 | 3462.0 | 3502.0 | 3483.5 | 3244.5 | 3180.7 | 3141.4 | 3109.8 |
| 67.5° | 1916.7 | 1930.1 | 2253.0 | 2826.1 | 3398.5 | 3679.6 | 3675.8 | 3473.2 | 3319.4 | 3113.0 | 2868.4 |
| 69° | 1584.0 | 1597.2 | 1908.0 | 2553.8 | 3258.8 | 3717.6 | 3725.0 | 3546.5 | 3293.0 | 2940.4 | 2541.5 |
| 70° | 1341.6 | 1355.7 | 1645.3 | 2320.3 | 3096.7 | 3699.9 | 3713.1 | 3539.6 | 3217.4 | 2740.5 | 2254.6 |
| 72.5° | 703.7 | 715.7 | 1012.9 | 1598.5 | 2524.5 | 3397.4 | 3437.4 | 3240.4 | 2727.3 | 1990.3 | 1333.1 |
| 75° | 221.1 | 228.1 | 395.6 | 835.6 | 1728.4 | 2641.6 | 2650.8 | 2541.9 | 1936.6 | 1094.8 | 555.2 |
| 77.5° | 84.3 | 82.3 | 131.7 | 307.9 | 873.8 | 1663.4 | 1719.5 | 1588.5 | 1016.3 | 387.1 | 128.1 |
| 80° | 45.4 | 45.6 | 68.4 | 127.5 | 373.9 | 854.8 | 902.2 | 769.9 | 361.1 | 120.7 | 29.5 |
| 82.5° | 19.7 | 20.6 | 38.5 | 67.5 | 171.7 | 315.3 | 339.0 | 282.2 | 138.0 | 81.2 | 11.0 |
| 85° | 4.2 | 4.7 | 18.6 | 36.7 | 70.0 | 88.5 | 92.8 | 91.5 | 87.9 | 63.1 | 4.2 |
| 87.5° | 0.0 | 0.0 | 8.3 | 13.2 | 17.7 | 20.1 | 17.7 | 23.0 | 48.5 | 42.5 | 2.2 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



REPORT NUMBER: P359945
 CATALOG NUMBER: NVN-SA1C-730-U-T4W-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 | 477.8 |
| 2.5° | 478.3 | 474.3 | 467.3 | 459.7 | 454.4 | 448.8 | 444.3 | 442.3 | 440.0 | 438.5 | 440.5 |
| 5° | 477.4 | 469.6 | 456.1 | 443.2 | 433.8 | 426.2 | 419.9 | 417.5 | 415.0 | 413.2 | 413.0 |
| 7.5° | 485.2 | 474.3 | 453.7 | 434.7 | 420.1 | 409.9 | 401.4 | 397.8 | 394.9 | 393.5 | 392.4 |
| 10° | 500.2 | 486.1 | 458.6 | 433.8 | 415.0 | 397.6 | 379.2 | 365.1 | 356.0 | 351.7 | 350.2 |
| 12.5° | 519.6 | 502.0 | 468.0 | 438.5 | 411.2 | 377.7 | 338.8 | 305.2 | 283.5 | 276.4 | 272.1 |
| 15° | 542.5 | 520.5 | 480.3 | 444.5 | 397.3 | 336.1 | 270.1 | 226.3 | 206.2 | 202.1 | 197.7 |
| 17.5° | 564.4 | 540.2 | 495.1 | 445.6 | 366.9 | 268.5 | 197.9 | 168.1 | 160.3 | 163.0 | 163.7 |
| 20° | 583.6 | 559.7 | 509.6 | 435.8 | 311.7 | 201.5 | 153.2 | 145.8 | 148.7 | 153.8 | 154.7 |
| 22.5° | 603.1 | 578.5 | 523.0 | 409.9 | 241.0 | 152.9 | 138.0 | 139.8 | 142.7 | 147.8 | 148.7 |
| 25° | 626.8 | 601.3 | 535.5 | 362.2 | 180.9 | 130.1 | 131.0 | 133.7 | 136.6 | 141.3 | 141.8 |
| 27.5° | 654.0 | 630.1 | 543.8 | 300.3 | 134.2 | 119.6 | 122.5 | 126.6 | 129.5 | 133.9 | 134.8 |
| 30° | 690.3 | 668.1 | 546.5 | 236.1 | 112.5 | 110.2 | 111.6 | 116.5 | 120.7 | 124.8 | 125.4 |
| 32.5° | 724.2 | 705.7 | 537.5 | 178.2 | 104.2 | 101.5 | 101.5 | 104.4 | 109.3 | 113.1 | 114.0 |
| 35° | 755.5 | 743.5 | 508.9 | 130.4 | 97.9 | 93.5 | 91.2 | 91.2 | 94.4 | 97.5 | 98.4 |
| 37.5° | 796.9 | 796.5 | 462.6 | 104.0 | 91.9 | 86.8 | 82.1 | 78.5 | 77.4 | 78.0 | 78.5 |
| 40° | 867.8 | 868.5 | 402.3 | 93.2 | 86.8 | 79.8 | 72.7 | 66.2 | 60.1 | 58.1 | 57.9 |
| 42.5° | 978.5 | 968.4 | 339.0 | 88.1 | 82.3 | 72.7 | 61.9 | 53.2 | 43.8 | 40.9 | 40.7 |
| 45° | 1154.2 | 1094.5 | 271.9 | 83.4 | 77.6 | 64.6 | 51.2 | 39.4 | 31.8 | 29.5 | 29.5 |
| 47.5° | 1410.3 | 1260.2 | 210.6 | 78.3 | 71.3 | 55.5 | 38.7 | 28.4 | 23.3 | 22.1 | 22.4 |
| 50° | 1675.0 | 1422.6 | 161.4 | 71.8 | 63.7 | 45.8 | 28.6 | 20.6 | 17.7 | 17.7 | 17.9 |
| 52.5° | 1909.8 | 1541.5 | 125.9 | 64.8 | 54.3 | 36.0 | 21.7 | 16.1 | 14.8 | 14.5 | 14.8 |
| 55° | 2129.6 | 1618.2 | 96.4 | 56.8 | 43.2 | 26.8 | 16.5 | 13.2 | 12.3 | 11.9 | 11.6 |
| 57.5° | 2341.6 | 1656.2 | 72.2 | 45.8 | 31.3 | 19.5 | 13.2 | 11.2 | 10.3 | 9.6 | 9.4 |
| 60° | 2482.6 | 1625.4 | 49.6 | 33.8 | 21.7 | 14.1 | 11.0 | 9.6 | 8.5 | 7.8 | 7.6 |
| 62.5° | 2562.2 | 1541.1 | 32.0 | 24.4 | 15.4 | 10.5 | 8.7 | 8.0 | 6.5 | 5.8 | 5.8 |
| 65° | 2530.0 | 1402.0 | 22.4 | 17.4 | 11.2 | 7.8 | 6.5 | 6.5 | 4.7 | 3.8 | 3.6 |
| 67.5° | 2242.1 | 1184.4 | 17.0 | 13.0 | 8.0 | 5.8 | 4.9 | 5.6 | 2.9 | 1.8 | 1.8 |
| 69° | 1929.0 | 981.6 | 14.5 | 10.7 | 6.7 | 4.7 | 4.2 | 5.1 | 2.0 | 1.3 | 1.1 |
| 70° | 1676.6 | 846.8 | 13.2 | 9.4 | 5.6 | 4.0 | 3.8 | 4.9 | 2.0 | 1.1 | 0.9 |
| 72.5° | 1003.1 | 472.2 | 10.1 | 6.7 | 3.6 | 3.1 | 3.1 | 5.6 | 2.0 | 1.1 | 0.9 |
| 75° | 405.4 | 166.4 | 7.4 | 4.7 | 2.7 | 2.7 | 3.8 | 7.2 | 1.8 | 0.9 | 0.7 |
| 77.5° | 91.9 | 36.4 | 4.2 | 2.9 | 1.8 | 2.7 | 4.5 | 5.6 | 1.1 | 0.4 | 0.0 |
| 80° | 22.4 | 8.9 | 2.7 | 1.8 | 1.1 | 2.0 | 3.4 | 3.1 | 0.2 | 0.0 | 0.0 |
| 82.5° | 7.4 | 3.1 | 1.1 | 0.9 | 0.2 | 0.7 | 1.6 | 0.9 | 0.0 | 0.0 | 0.0 |
| 85° | 3.1 | 1.8 | 0.4 | 0.2 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 2.0 | 0.7 | 0.0 | 0.0 | 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

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

| 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 ($\mu\text{W}/\text{nm}$) | 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

Melanopic Flux vs. Wavelength



Melanopic Lumens: 3101.5 M/P: 0.45

| 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 | | | |

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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)