

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: P363810

Luminaire Tested: NVN-SA2C-827-U-SL4-HSS

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2019
Report Number: P363810
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-25)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: STREETWORKS
Catalog Number: NVN-SA2C-827-U-SL4-HSS
Description: NAVION ROADWAY AND AREA LUMINAIRE
(2) 80 CRI, 2700K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV
SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 8669 lumens
Efficiency: N/A
Efficacy: 76.7 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 1' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B1 - U0 - G2

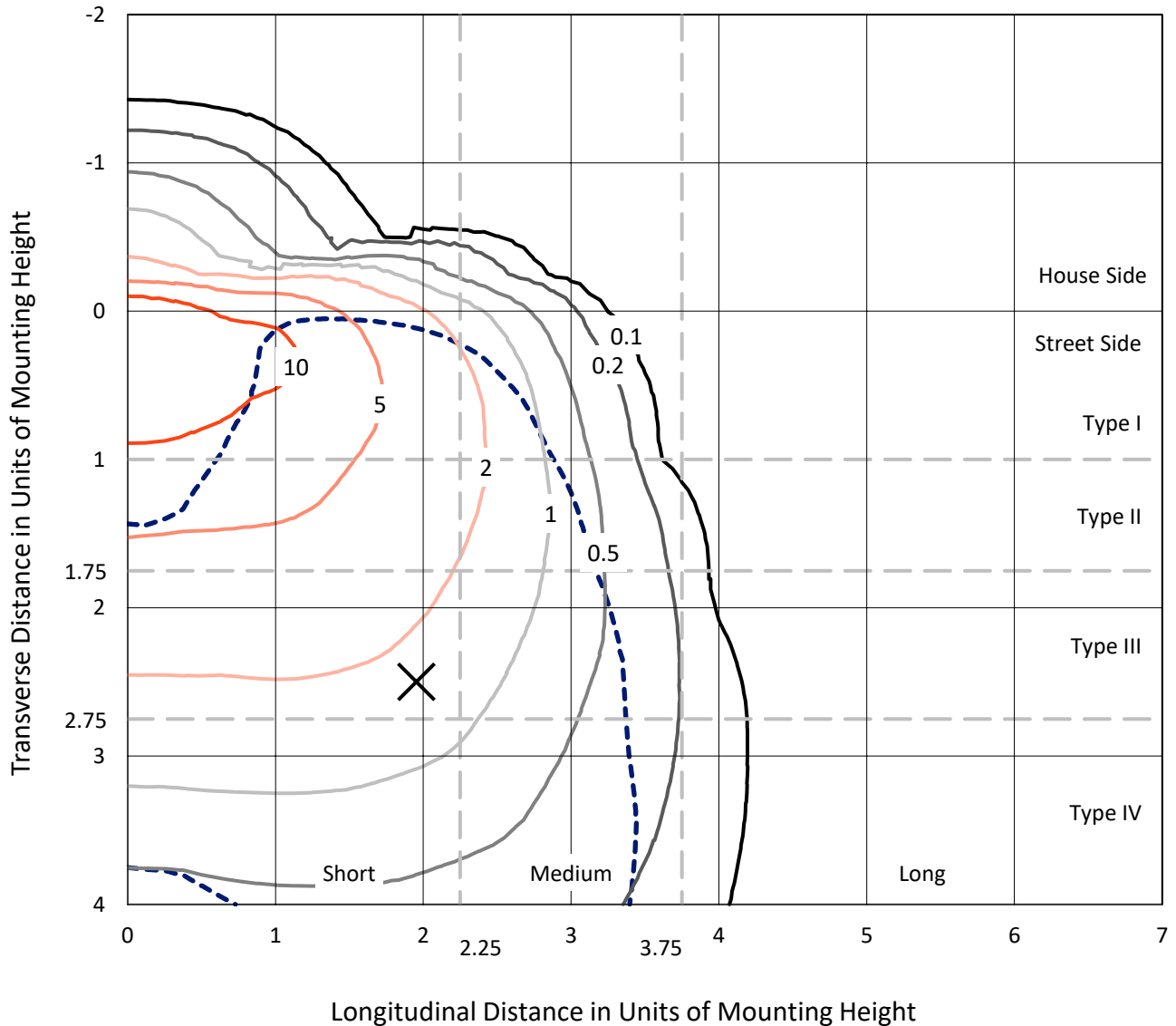
Input Watts (W): 113
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

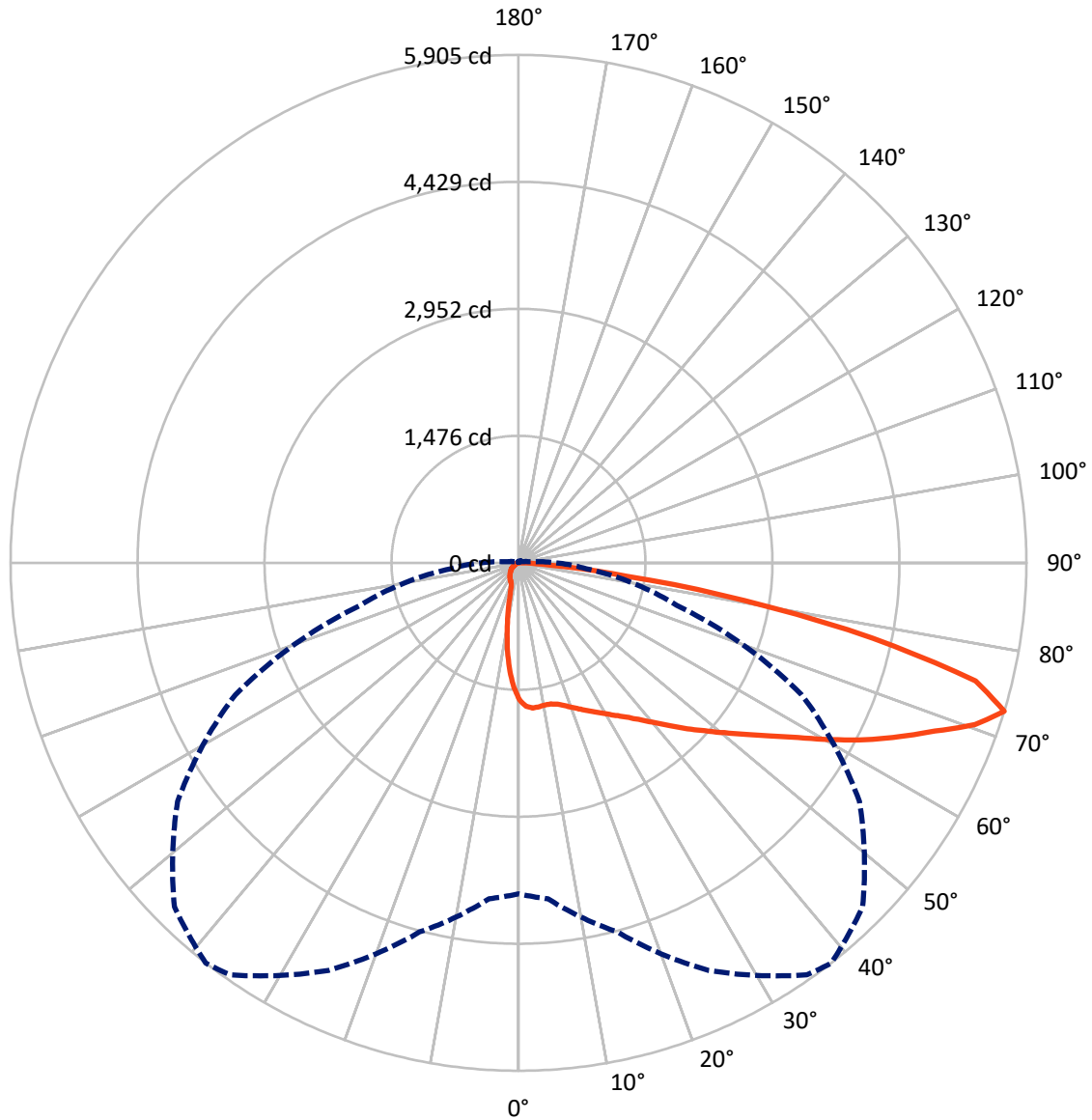
× Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 16.8 fc
 Type IV - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 38-Deg Lateral - - - Horizontal Cone Through 72.5-Deg Vertical

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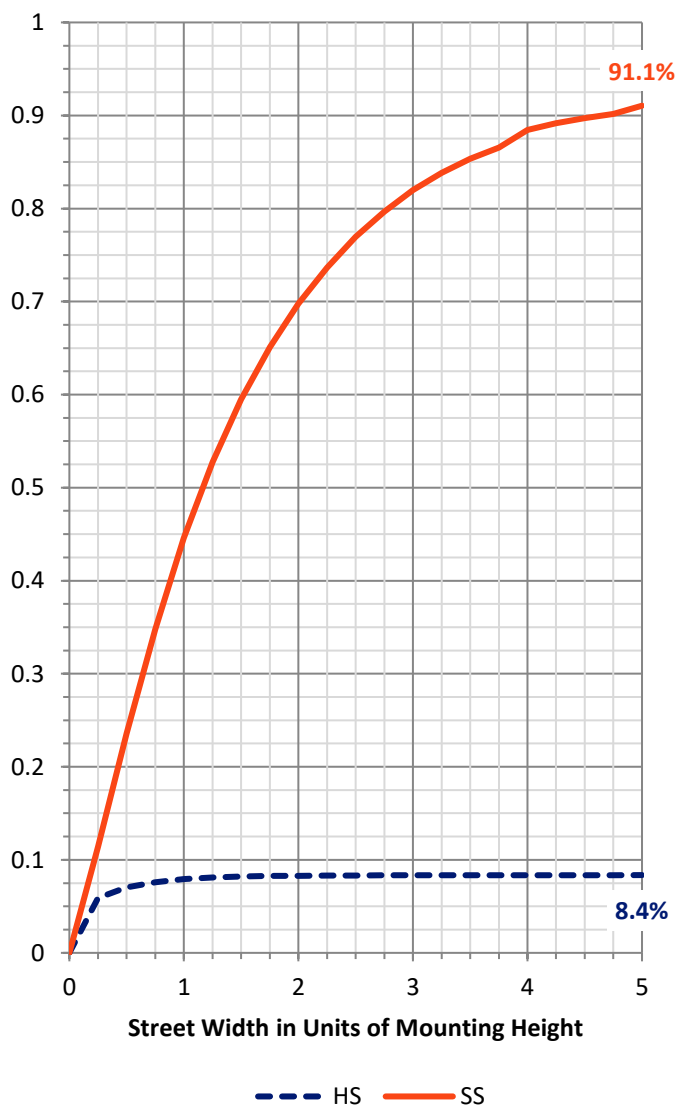
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 729.5 | 0.0 | 729.5 |
| | % Fixture | 8.4 | 0.0 | 8.4 |
| Street Side | Lumens | 7939.5 | 0.0 | 7939.5 |
| | % Fixture | 91.6 | 0.0 | 91.6 |
| Total | Lumens | 8669.0 | 0.0 | 8669.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 135.9 | 1.6 |
| 10°-20° | 332.2 | 3.8 |
| 20°-30° | 528.4 | 6.1 |
| 30°-40° | 794.3 | 9.2 |
| 40°-50° | 1211.8 | 14.0 |
| 50°-60° | 1712.7 | 19.8 |
| 60°-70° | 2148.3 | 24.8 |
| 70°-80° | 1606.3 | 18.5 |
| 80°-90° | 199.2 | 2.3 |
| 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° | 8669.0 | 100.0 |
| 0°-180° | 8669.0 | 100.0 |

Coefficient of Utilization

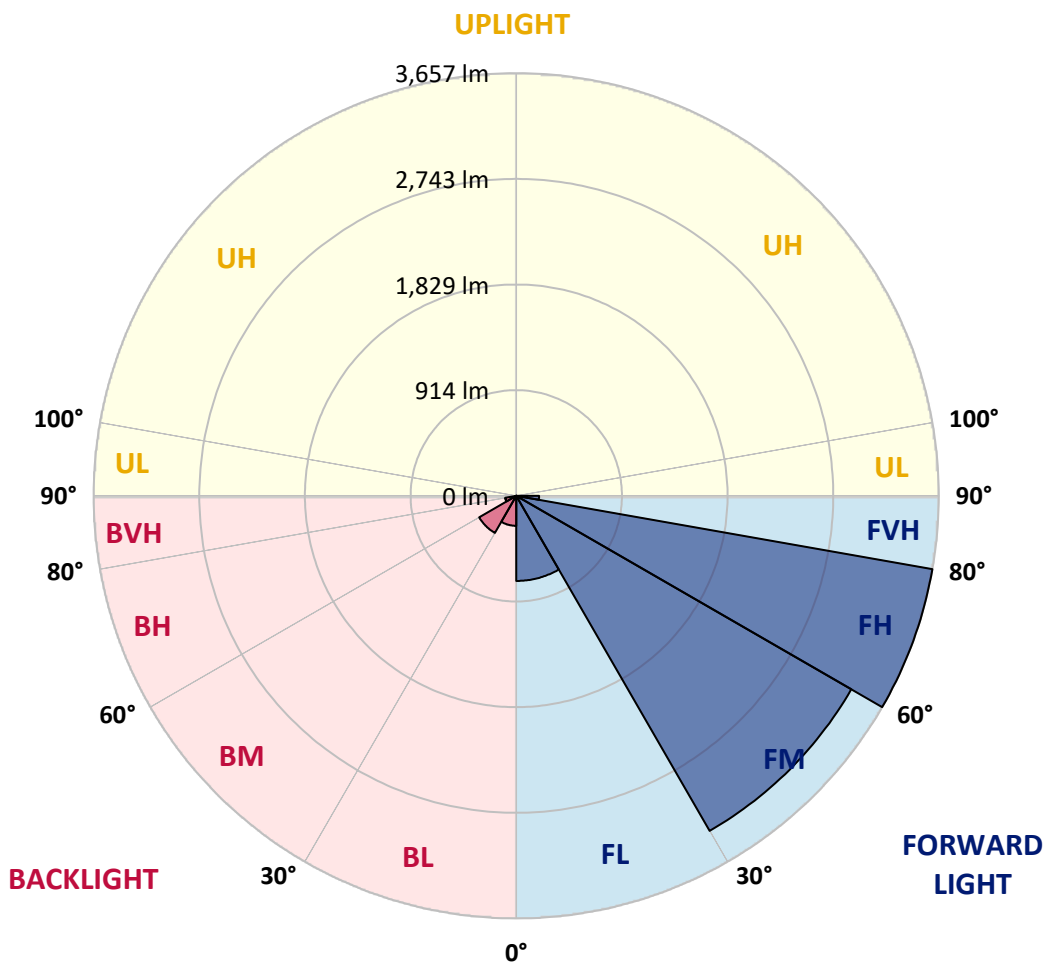


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 736.7 | 8.5 | | | |
| FM (30°-60°) | 3348.3 | 38.6 | | | |
| FH (60°-80°) | 3657.1 | 42.2 | | | G2/5000 |
| FVH (80°-90°) | 197.3 | 2.3 | | | G2/225 |
| BL (0°-30°) | 259.8 | 3.0 | B1/500 | | |
| BM (30°-60°) | 370.5 | 4.3 | B1/1000 | | |
| BH (60°-80°) | 97.4 | 1.1 | B0/110 | | G0/110 |
| BVH (80°-90°) | 1.9 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G2
 Type IV Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 38° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 |
| 2.5° | 1692.1 | 1692.5 | 1688.5 | 1682.0 | 1673.8 | 1669.4 | 1662.2 | 1650.7 | 1638.5 | 1616.5 | 1592.8 |
| 5° | 1726.7 | 1726.7 | 1721.7 | 1713.0 | 1699.7 | 1695.7 | 1682.0 | 1663.7 | 1638.5 | 1602.8 | 1562.9 |
| 7.5° | 1723.1 | 1723.8 | 1717.0 | 1708.0 | 1694.6 | 1691.0 | 1674.5 | 1654.0 | 1622.6 | 1579.4 | 1528.3 |
| 10° | 1704.4 | 1706.2 | 1700.8 | 1696.4 | 1684.2 | 1680.2 | 1664.8 | 1644.2 | 1612.9 | 1566.8 | 1508.2 |
| 12.5° | 1685.3 | 1687.1 | 1688.9 | 1692.8 | 1685.3 | 1683.8 | 1671.6 | 1654.3 | 1624.4 | 1576.6 | 1510.3 |
| 15° | 1673.0 | 1676.6 | 1689.6 | 1705.1 | 1706.9 | 1705.4 | 1697.5 | 1681.3 | 1651.1 | 1601.4 | 1525.8 |
| 17.5° | 1673.0 | 1678.8 | 1705.8 | 1735.3 | 1745.8 | 1746.9 | 1740.0 | 1717.3 | 1681.3 | 1628.0 | 1540.2 |
| 20° | 1687.1 | 1695.0 | 1737.1 | 1778.9 | 1796.2 | 1796.2 | 1782.9 | 1751.2 | 1709.0 | 1652.2 | 1549.9 |
| 22.5° | 1723.1 | 1733.5 | 1786.5 | 1834.7 | 1853.1 | 1849.1 | 1831.1 | 1785.0 | 1737.9 | 1679.5 | 1562.2 |
| 25° | 1794.0 | 1801.9 | 1857.0 | 1905.6 | 1916.8 | 1907.8 | 1885.1 | 1826.1 | 1774.6 | 1716.6 | 1584.5 |
| 27.5° | 1885.5 | 1886.5 | 1943.4 | 1984.5 | 1977.6 | 1971.5 | 1943.1 | 1877.5 | 1827.5 | 1769.5 | 1623.0 |
| 30° | 1985.9 | 1985.9 | 2036.0 | 2067.3 | 2046.4 | 2041.4 | 2012.9 | 1939.8 | 1895.2 | 1841.5 | 1677.7 |
| 32.5° | 2083.1 | 2087.4 | 2128.1 | 2147.9 | 2124.5 | 2119.5 | 2091.8 | 2018.7 | 1985.2 | 1951.3 | 1763.1 |
| 35° | 2177.1 | 2180.3 | 2218.8 | 2229.6 | 2207.3 | 2208.8 | 2189.0 | 2127.0 | 2114.4 | 2110.1 | 1891.6 |
| 37.5° | 2268.2 | 2268.9 | 2308.1 | 2315.0 | 2303.8 | 2316.1 | 2317.9 | 2263.1 | 2286.5 | 2321.5 | 2072.7 |
| 40° | 2351.3 | 2352.1 | 2390.9 | 2408.6 | 2427.7 | 2443.5 | 2457.5 | 2428.4 | 2505.8 | 2586.8 | 2288.3 |
| 42.5° | 2417.9 | 2425.5 | 2474.8 | 2508.3 | 2558.7 | 2589.0 | 2627.1 | 2625.7 | 2766.8 | 2888.5 | 2549.0 |
| 45° | 2476.6 | 2489.6 | 2558.4 | 2617.0 | 2703.4 | 2751.7 | 2811.5 | 2858.3 | 3060.6 | 3224.4 | 2812.9 |
| 47.5° | 2554.0 | 2566.3 | 2644.8 | 2740.9 | 2856.1 | 2919.5 | 3018.5 | 3119.6 | 3383.5 | 3554.2 | 3070.7 |
| 50° | 2663.1 | 2657.7 | 2735.1 | 2873.0 | 3021.0 | 3104.2 | 3245.3 | 3396.9 | 3704.0 | 3841.5 | 3222.2 |
| 52.5° | 2779.4 | 2777.2 | 2834.5 | 3016.7 | 3215.4 | 3312.6 | 3499.1 | 3683.4 | 4010.3 | 4039.5 | 3291.7 |
| 55° | 2923.4 | 2907.9 | 2956.2 | 3180.5 | 3446.2 | 3550.6 | 3770.2 | 3967.1 | 4254.4 | 4151.1 | 3326.7 |
| 57.5° | 3074.3 | 3048.7 | 3094.8 | 3363.0 | 3706.5 | 3830.0 | 4070.5 | 4243.6 | 4416.8 | 4227.4 | 3326.3 |
| 60° | 3230.2 | 3199.9 | 3254.6 | 3591.3 | 4029.8 | 4172.7 | 4395.9 | 4430.5 | 4568.4 | 4266.0 | 3301.8 |
| 62.5° | 3360.5 | 3342.5 | 3423.9 | 3835.4 | 4390.9 | 4531.3 | 4641.8 | 4600.4 | 4696.2 | 4295.8 | 3244.6 |
| 65° | 3498.4 | 3499.5 | 3630.9 | 4120.2 | 4774.7 | 4869.4 | 4878.7 | 4820.8 | 4803.1 | 4289.7 | 3050.9 |
| 67.5° | 3684.9 | 3702.2 | 3921.4 | 4506.8 | 5148.0 | 5221.1 | 5220.4 | 5059.5 | 4881.2 | 4046.3 | 2621.4 |
| 70° | 3882.2 | 3922.9 | 4256.2 | 4949.3 | 5555.6 | 5629.7 | 5591.6 | 5211.4 | 4596.1 | 3271.9 | 1855.2 |
| 72.5° | 3849.1 | 3919.6 | 4442.4 | 5228.3 | 5848.3 | 5904.8 | 5656.7 | 4838.0 | 3632.7 | 1901.7 | 789.9 |
| 75° | 2969.5 | 3051.2 | 4073.3 | 4951.8 | 5541.2 | 5490.4 | 4860.4 | 3764.8 | 1985.2 | 530.7 | 177.9 |
| 77.5° | 1568.6 | 1612.2 | 2690.8 | 3772.4 | 4320.7 | 4214.5 | 3423.9 | 2088.5 | 605.2 | 131.4 | 79.9 |
| 80° | 821.6 | 831.7 | 1172.6 | 2140.4 | 2666.7 | 2667.4 | 2029.1 | 917.3 | 249.5 | 67.3 | 53.6 |
| 82.5° | 440.0 | 448.6 | 619.6 | 989.0 | 1397.3 | 1266.6 | 776.9 | 504.8 | 145.1 | 38.2 | 51.5 |
| 85° | 105.8 | 107.6 | 351.4 | 451.8 | 549.4 | 392.4 | 230.8 | 423.8 | 39.2 | 22.3 | 41.8 |
| 87.5° | 40.7 | 41.4 | 130.3 | 195.5 | 140.1 | 90.7 | 108.0 | 158.1 | 5.0 | 8.6 | 6.5 |
| 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: P363810
 CATALOG NUMBER: NVN-SA2C-827-U-SL4-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 | 1594.2 |
| 2.5° | 1578.4 | 1569.0 | 1546.0 | 1516.8 | 1490.9 | 1472.2 | 1444.1 | 1425.7 | 1413.5 | 1413.1 | 1408.4 |
| 5° | 1538.4 | 1519.3 | 1469.6 | 1410.6 | 1356.9 | 1308.7 | 1251.8 | 1206.8 | 1173.3 | 1167.9 | 1156.4 |
| 7.5° | 1495.6 | 1464.2 | 1387.9 | 1295.7 | 1205.7 | 1114.3 | 1008.1 | 942.2 | 885.7 | 858.7 | 855.8 |
| 10° | 1469.3 | 1425.3 | 1317.0 | 1183.8 | 1042.6 | 893.9 | 755.0 | 658.8 | 589.4 | 569.6 | 554.8 |
| 12.5° | 1463.9 | 1405.9 | 1262.3 | 1078.6 | 877.0 | 680.5 | 526.7 | 424.5 | 369.0 | 351.4 | 346.7 |
| 15° | 1469.3 | 1396.9 | 1216.2 | 974.6 | 709.3 | 482.8 | 353.5 | 294.1 | 273.3 | 268.2 | 267.9 |
| 17.5° | 1472.5 | 1386.1 | 1164.0 | 859.0 | 546.5 | 344.9 | 270.7 | 253.5 | 250.2 | 249.9 | 250.6 |
| 20° | 1472.2 | 1369.5 | 1101.7 | 730.1 | 406.5 | 271.1 | 244.8 | 241.2 | 240.5 | 240.9 | 240.5 |
| 22.5° | 1469.6 | 1350.1 | 1033.3 | 597.3 | 307.1 | 242.3 | 233.7 | 231.5 | 231.1 | 231.1 | 231.1 |
| 25° | 1474.3 | 1334.6 | 958.0 | 470.2 | 253.1 | 229.0 | 223.6 | 221.8 | 221.4 | 221.4 | 220.7 |
| 27.5° | 1491.2 | 1326.0 | 875.6 | 361.8 | 228.6 | 217.1 | 212.8 | 212.4 | 211.3 | 211.0 | 211.7 |
| 30° | 1518.6 | 1326.0 | 785.2 | 281.5 | 213.9 | 204.9 | 201.6 | 200.9 | 200.5 | 200.2 | 200.5 |
| 32.5° | 1566.8 | 1336.1 | 686.6 | 234.0 | 199.8 | 191.2 | 189.0 | 190.1 | 189.0 | 189.0 | 189.0 |
| 35° | 1654.0 | 1366.3 | 583.2 | 204.1 | 185.1 | 177.9 | 175.7 | 177.1 | 176.4 | 176.4 | 176.1 |
| 37.5° | 1781.1 | 1422.5 | 479.2 | 186.1 | 172.1 | 164.5 | 161.7 | 163.8 | 163.1 | 163.1 | 162.7 |
| 40° | 1935.9 | 1504.2 | 380.2 | 172.5 | 159.5 | 151.6 | 149.1 | 150.1 | 148.3 | 148.3 | 149.1 |
| 42.5° | 2127.0 | 1607.9 | 293.8 | 159.1 | 146.9 | 139.3 | 137.9 | 136.8 | 133.6 | 131.8 | 132.1 |
| 45° | 2339.5 | 1715.9 | 229.0 | 146.2 | 135.0 | 128.9 | 126.7 | 123.8 | 118.4 | 114.8 | 115.2 |
| 47.5° | 2529.2 | 1799.1 | 186.1 | 133.6 | 124.2 | 119.5 | 116.3 | 110.9 | 103.0 | 98.6 | 99.0 |
| 50° | 2628.9 | 1811.7 | 158.4 | 121.0 | 114.1 | 109.4 | 104.8 | 96.5 | 87.1 | 82.4 | 82.1 |
| 52.5° | 2654.5 | 1752.6 | 137.9 | 109.4 | 104.0 | 98.6 | 92.5 | 81.4 | 70.9 | 65.9 | 65.2 |
| 55° | 2663.8 | 1662.6 | 119.5 | 98.6 | 93.2 | 87.1 | 79.2 | 66.6 | 56.9 | 51.8 | 51.5 |
| 57.5° | 2632.9 | 1528.3 | 105.1 | 88.9 | 82.4 | 74.9 | 65.2 | 53.3 | 43.9 | 40.0 | 40.0 |
| 60° | 2564.1 | 1346.5 | 94.0 | 78.5 | 71.3 | 62.6 | 52.6 | 41.4 | 32.8 | 29.5 | 29.5 |
| 62.5° | 2426.9 | 1111.0 | 83.5 | 67.7 | 60.8 | 51.8 | 42.5 | 31.3 | 23.0 | 21.2 | 21.6 |
| 65° | 2168.1 | 842.8 | 73.1 | 58.0 | 51.8 | 42.8 | 33.1 | 22.3 | 15.5 | 15.5 | 16.2 |
| 67.5° | 1768.1 | 585.4 | 62.3 | 49.3 | 44.6 | 34.9 | 25.2 | 15.5 | 10.8 | 12.2 | 13.7 |
| 70° | 1170.4 | 328.3 | 53.3 | 40.7 | 38.2 | 27.7 | 18.7 | 10.4 | 8.6 | 11.5 | 14.0 |
| 72.5° | 441.8 | 127.8 | 44.6 | 32.8 | 33.1 | 21.2 | 13.3 | 7.9 | 7.9 | 12.6 | 16.6 |
| 75° | 123.1 | 62.6 | 32.0 | 24.1 | 25.9 | 15.5 | 9.7 | 6.8 | 7.6 | 14.4 | 19.4 |
| 77.5° | 72.4 | 46.1 | 20.9 | 14.0 | 17.6 | 10.8 | 6.5 | 5.4 | 6.5 | 12.2 | 18.7 |
| 80° | 58.3 | 24.5 | 12.2 | 7.2 | 9.7 | 6.1 | 4.3 | 3.2 | 1.8 | 4.7 | 9.7 |
| 82.5° | 58.3 | 14.8 | 5.8 | 5.0 | 5.0 | 3.2 | 2.2 | 1.4 | 0.4 | 0.0 | 2.5 |
| 85° | 39.2 | 6.1 | 3.6 | 3.2 | 2.5 | 1.1 | 0.7 | 0.4 | 0.0 | 0.0 | 0.0 |
| 87.5° | 6.5 | 2.5 | 1.4 | 0.7 | 0.4 | 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 (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 | 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 ($\mu\text{W}/\text{nm}$) | 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 | 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 $R_a = 80.9$
 $R_9 = -1.5$



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)