

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: McGRAW-EDISON

Report Number: P634981

Luminaire Tested: GWS-SA3C-827-U-T3R-W-GRSWH

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P634981
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-17)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA3C-827-U-T3R-W-GRSWH
Description: GALLEON WALL SLIM LUMINAIRE. (3) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III ROADWAY OPTICS W/ FACTORY INSTALLED GLARE SHIELD, WH
Light Source: (48) 2700K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 8990.5 lumens
Efficiency: N/A
Efficacy: 96.7 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 0.5' x H: 0')
IES Classification: Type II - Short
BUG Rating: B2 - U0 - G1

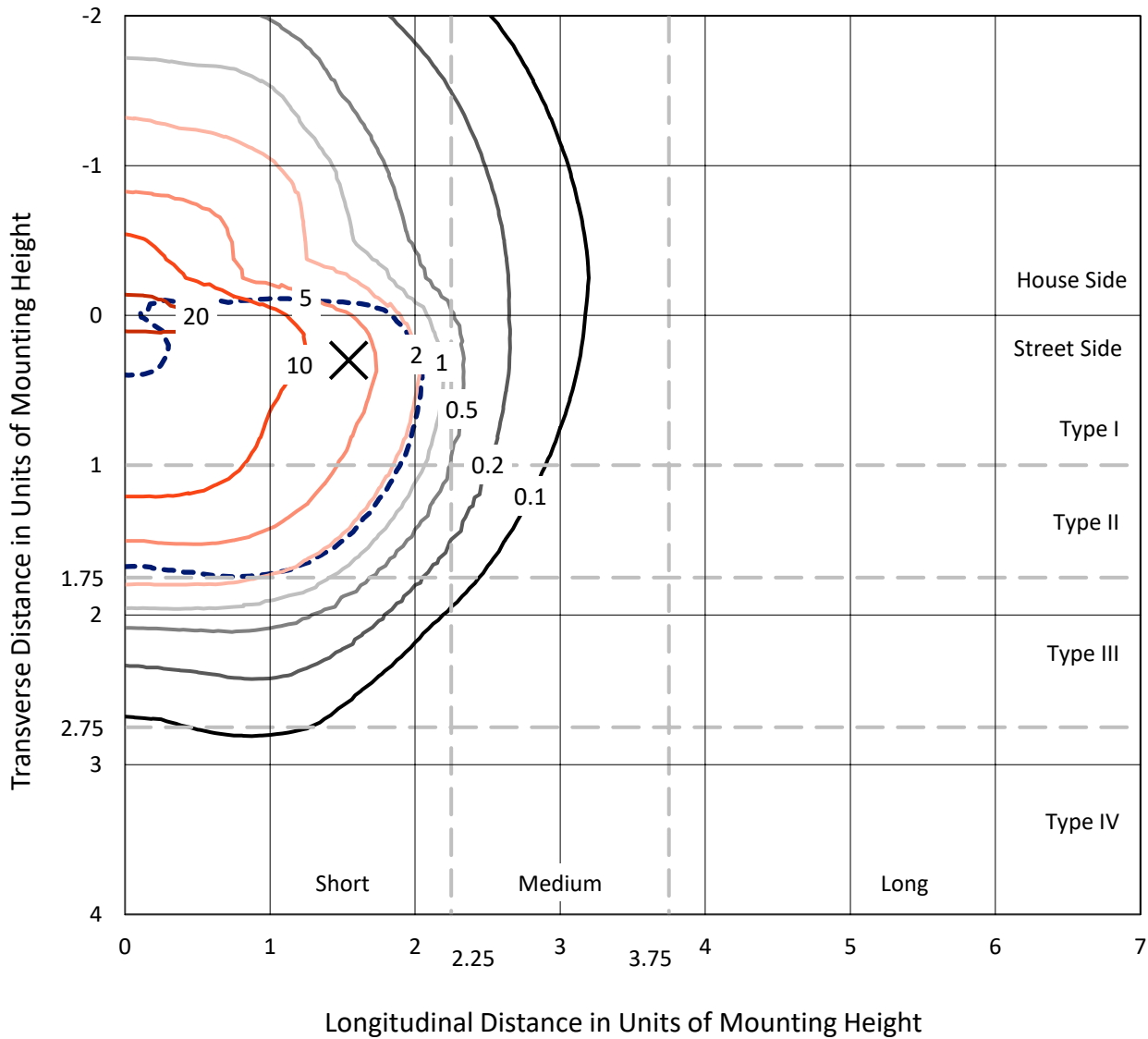
Input Watts (W): 93
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

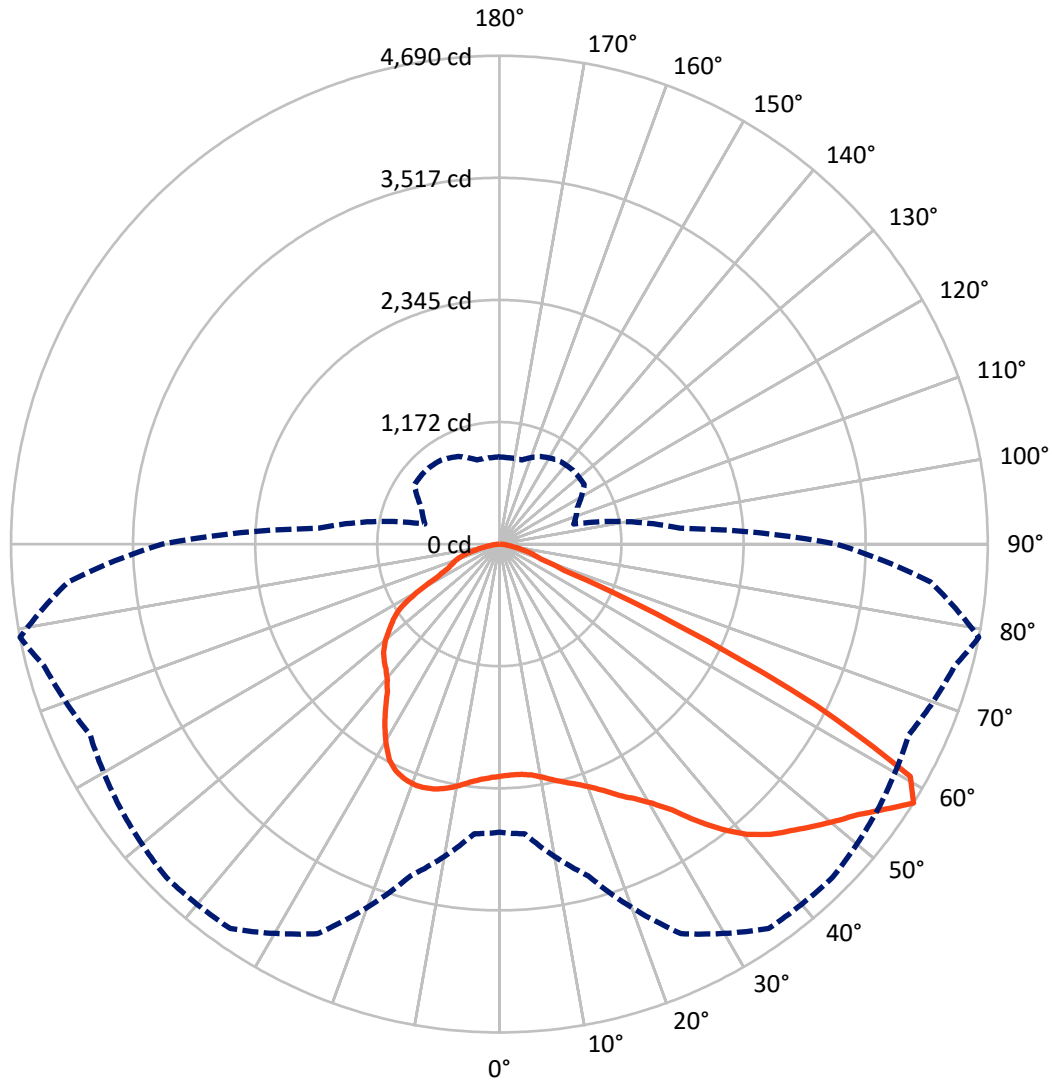
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 22.5 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 79-Deg Lateral - - - Horizontal Cone Through 57.5-Deg Vertical

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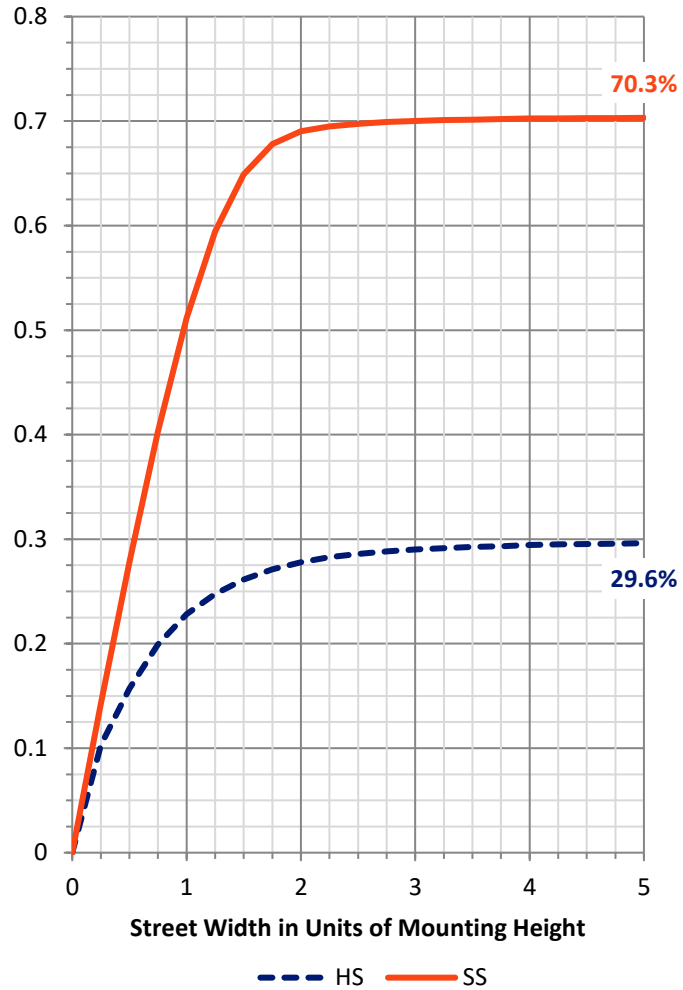
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 2672.5 | 0.0 | 2672.5 |
| | % Fixture | 29.7 | 0.0 | 29.7 |
| Street Side | Lumens | 6318.0 | 0.0 | 6318.0 |
| | % Fixture | 70.3 | 0.0 | 70.3 |
| Total | Lumens | 8990.5 | 0.0 | 8990.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 206.3 | 2.3 |
| 10°-20° | 573.4 | 6.4 |
| 20°-30° | 972.0 | 10.8 |
| 30°-40° | 1487.7 | 16.5 |
| 40°-50° | 1983.7 | 22.1 |
| 50°-60° | 2291.0 | 25.5 |
| 60°-70° | 1190.5 | 13.2 |
| 70°-80° | 253.1 | 2.8 |
| 80°-90° | 32.8 | 0.4 |
| 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° | 8990.5 | 100.0 |
| 0°-180° | 8990.5 | 100.0 |

Coefficient of Utilization



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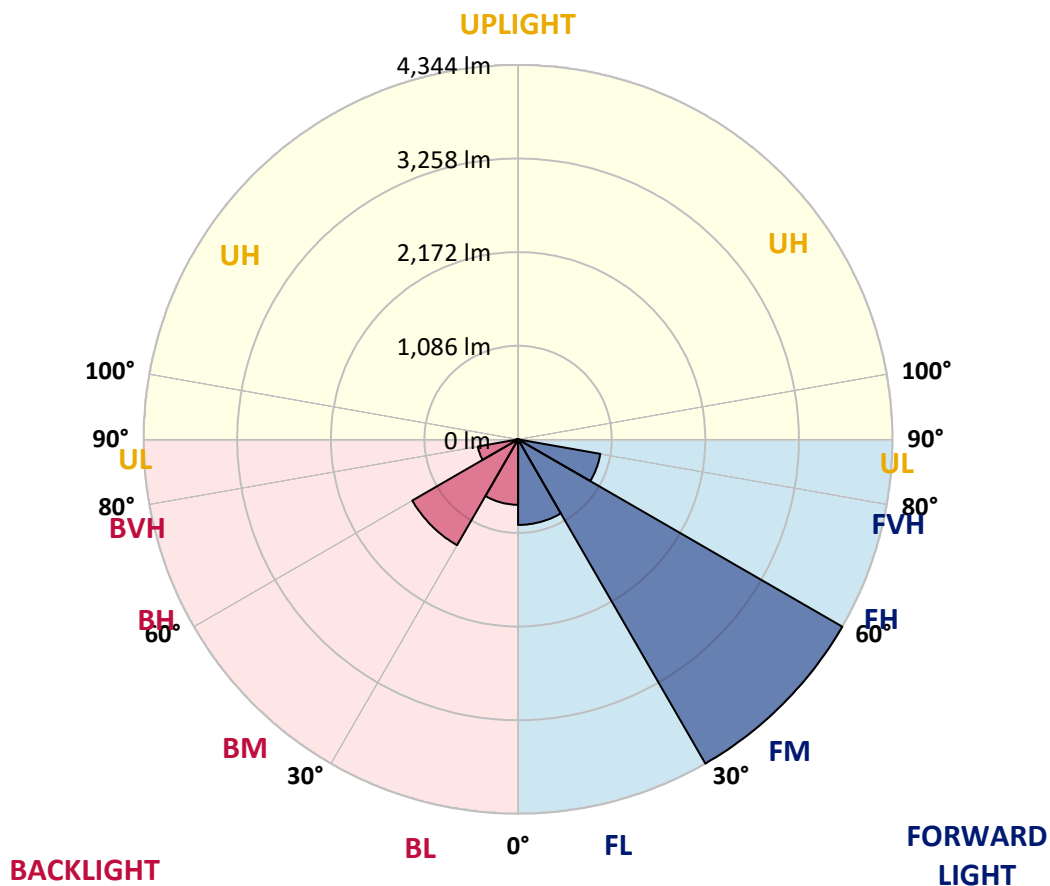
CATALOG NUMBER: GWS-SA3C-827-U-T3R-W-GRSWH

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 992.8 | 11.0 | | | |
| FM (30°-60°) | 4344.5 | 48.3 | | | |
| FH (60°-80°) | 969.4 | 10.8 | | | G1/1800 |
| FVH (80°-90°) | 11.4 | 0.1 | | | G1/100 |
| BL (0°-30°) | 759.0 | 8.4 | B2/1000 | | |
| BM (30°-60°) | 1418.0 | 15.8 | B2/2500 | | |
| BH (60°-80°) | 474.2 | 5.3 | B1/500 | | G1/500 |
| BVH (80°-90°) | 21.4 | 0.2 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G1

Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 79° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 |
| 2.5° | 2126.6 | 2122.2 | 2123.7 | 2129.6 | 2151.6 | 2167.8 | 2184.7 | 2200.1 | 2214.8 | 2219.2 | 2222.9 |
| 5° | 2050.9 | 2042.8 | 2045.0 | 2054.6 | 2080.3 | 2107.5 | 2137.6 | 2174.4 | 2209.7 | 2221.4 | 2236.9 |
| 7.5° | 1997.2 | 1995.8 | 1999.4 | 2014.1 | 2041.3 | 2067.1 | 2106.0 | 2158.2 | 2219.2 | 2239.1 | 2266.3 |
| 10° | 1925.9 | 1923.0 | 1937.7 | 1967.8 | 2012.7 | 2053.8 | 2100.1 | 2161.9 | 2247.2 | 2276.6 | 2318.5 |
| 12.5° | 1869.3 | 1867.9 | 1883.3 | 1925.2 | 1982.5 | 2048.0 | 2111.9 | 2181.0 | 2284.7 | 2325.1 | 2376.5 |
| 15° | 1902.4 | 1895.8 | 1896.5 | 1925.9 | 1977.4 | 2054.6 | 2141.3 | 2215.6 | 2322.1 | 2373.6 | 2439.8 |
| 17.5° | 1998.7 | 1986.9 | 1978.1 | 1983.3 | 2012.7 | 2092.8 | 2186.2 | 2261.9 | 2365.5 | 2425.8 | 2506.7 |
| 20° | 2131.8 | 2125.1 | 2100.9 | 2084.7 | 2091.3 | 2161.9 | 2256.7 | 2327.3 | 2422.1 | 2489.7 | 2576.5 |
| 22.5° | 2310.4 | 2294.2 | 2261.1 | 2235.4 | 2215.6 | 2270.7 | 2358.2 | 2419.2 | 2500.8 | 2571.3 | 2661.8 |
| 25° | 2531.6 | 2508.1 | 2455.9 | 2415.5 | 2372.9 | 2429.5 | 2507.4 | 2553.7 | 2608.8 | 2674.3 | 2760.3 |
| 27.5° | 2757.3 | 2737.5 | 2679.4 | 2625.0 | 2572.1 | 2607.4 | 2700.0 | 2726.4 | 2720.6 | 2768.3 | 2841.9 |
| 30° | 2997.7 | 2972.7 | 2917.6 | 2858.8 | 2790.4 | 2813.2 | 2896.2 | 2909.5 | 2847.0 | 2886.7 | 2936.7 |
| 32.5° | 3251.3 | 3227.0 | 3179.3 | 3110.9 | 3033.7 | 3042.5 | 3065.3 | 3077.8 | 3018.3 | 3041.1 | 3079.3 |
| 35° | 3509.3 | 3486.5 | 3438.0 | 3370.4 | 3313.8 | 3260.1 | 3202.8 | 3252.8 | 3218.2 | 3262.3 | 3259.4 |
| 37.5° | 3745.3 | 3722.5 | 3692.4 | 3640.2 | 3543.1 | 3437.3 | 3305.0 | 3366.7 | 3420.4 | 3476.2 | 3466.7 |
| 40° | 3904.8 | 3889.4 | 3896.7 | 3888.6 | 3763.7 | 3554.2 | 3354.9 | 3422.6 | 3568.9 | 3664.4 | 3659.3 |
| 42.5° | 4042.3 | 4026.8 | 4069.5 | 4100.3 | 3953.3 | 3662.2 | 3379.2 | 3443.9 | 3663.7 | 3812.9 | 3805.6 |
| 45° | 4103.3 | 4098.9 | 4169.4 | 4267.2 | 4126.8 | 3776.9 | 3441.7 | 3488.0 | 3735.7 | 3926.8 | 3898.9 |
| 47.5° | 4030.5 | 4045.9 | 4184.9 | 4350.3 | 4270.9 | 3912.9 | 3569.6 | 3581.4 | 3829.8 | 4050.3 | 3971.7 |
| 50° | 3885.7 | 3919.5 | 4106.9 | 4352.5 | 4376.0 | 4066.5 | 3746.7 | 3717.3 | 3956.2 | 4181.9 | 4009.9 |
| 52.5° | 3674.7 | 3710.0 | 4015.8 | 4335.6 | 4436.3 | 4244.4 | 3982.7 | 3940.8 | 4115.8 | 4313.5 | 4016.5 |
| 55° | 3190.3 | 3238.1 | 3807.0 | 4297.3 | 4495.1 | 4406.1 | 4248.8 | 4163.5 | 4321.6 | 4494.3 | 4081.9 |
| 57.5° | 2767.6 | 2792.6 | 3298.3 | 4127.5 | 4506.8 | 4525.2 | 4438.5 | 4337.0 | 4525.9 | 4689.9 | 4155.5 |
| 60° | 2031.0 | 2036.9 | 2492.0 | 3415.2 | 4145.9 | 4456.1 | 4423.0 | 4272.3 | 4428.9 | 4533.3 | 3818.8 |
| 62.5° | 1147.5 | 1148.2 | 1511.3 | 2279.5 | 3096.9 | 3632.1 | 3652.7 | 3519.6 | 3388.0 | 3418.9 | 2658.1 |
| 65° | 430.8 | 471.2 | 690.2 | 1120.3 | 1785.5 | 2144.3 | 2229.5 | 2260.4 | 2041.3 | 1905.3 | 1425.3 |
| 67.5° | 288.2 | 297.7 | 402.8 | 576.3 | 794.6 | 917.4 | 1026.2 | 1029.1 | 752.7 | 671.1 | 561.6 |
| 70° | 219.8 | 229.3 | 316.8 | 412.4 | 402.8 | 372.0 | 402.1 | 391.1 | 404.3 | 415.3 | 427.1 |
| 72.5° | 163.9 | 173.5 | 245.5 | 291.1 | 241.8 | 238.2 | 269.8 | 299.9 | 327.8 | 339.6 | 358.0 |
| 75° | 108.8 | 116.1 | 165.4 | 155.8 | 133.8 | 158.0 | 197.0 | 227.1 | 243.3 | 257.3 | 271.2 |
| 77.5° | 69.1 | 74.2 | 88.2 | 71.3 | 74.2 | 92.6 | 114.7 | 141.9 | 157.3 | 171.3 | 178.6 |
| 80° | 31.6 | 30.9 | 30.1 | 33.8 | 41.9 | 54.4 | 69.1 | 85.3 | 97.0 | 102.9 | 107.3 |
| 82.5° | 12.5 | 14.0 | 15.4 | 18.4 | 22.8 | 29.4 | 39.0 | 50.0 | 59.5 | 61.0 | 64.7 |
| 85° | 5.1 | 5.9 | 6.6 | 8.1 | 10.3 | 13.2 | 16.2 | 22.8 | 28.7 | 30.9 | 33.1 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 1.5 | 2.2 | 3.7 | 6.6 | 7.4 | 8.1 |
| 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: GWS-SA3C-827-U-T3R-W-GRSWH

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 | 2228.1 |
| 2.5° | 2242.8 | 2233.2 | 2249.4 | 2260.4 | 2270.7 | 2259.7 | 2256.0 | 2246.4 | 2245.0 | 2245.0 | 2250.1 |
| 5° | 2263.3 | 2256.7 | 2273.6 | 2280.2 | 2279.5 | 2255.3 | 2240.6 | 2221.4 | 2211.9 | 2211.9 | 2213.4 |
| 7.5° | 2300.1 | 2296.4 | 2306.0 | 2295.7 | 2272.2 | 2222.9 | 2174.4 | 2134.0 | 2106.8 | 2092.8 | 2097.2 |
| 10° | 2361.1 | 2356.7 | 2348.6 | 2310.4 | 2242.8 | 2140.6 | 2041.3 | 1967.8 | 1923.7 | 1898.7 | 1900.2 |
| 12.5° | 2420.6 | 2413.3 | 2384.6 | 2300.1 | 2161.2 | 1998.7 | 1868.6 | 1786.3 | 1737.7 | 1708.3 | 1701.7 |
| 15° | 2486.1 | 2467.0 | 2405.2 | 2247.2 | 2028.1 | 1825.2 | 1689.2 | 1600.3 | 1548.1 | 1530.5 | 1529.7 |
| 17.5° | 2548.6 | 2514.7 | 2403.0 | 2153.1 | 1868.6 | 1643.7 | 1506.9 | 1451.8 | 1443.0 | 1451.1 | 1453.3 |
| 20° | 2611.8 | 2557.4 | 2378.7 | 2023.0 | 1678.9 | 1462.8 | 1392.3 | 1415.0 | 1448.1 | 1470.2 | 1475.3 |
| 22.5° | 2677.2 | 2592.7 | 2323.6 | 1855.4 | 1479.0 | 1340.8 | 1370.2 | 1420.2 | 1461.4 | 1490.8 | 1493.7 |
| 25° | 2750.7 | 2625.7 | 2241.3 | 1650.3 | 1318.7 | 1307.0 | 1365.1 | 1418.0 | 1462.1 | 1495.9 | 1501.8 |
| 27.5° | 2792.6 | 2626.5 | 2125.9 | 1439.3 | 1245.2 | 1293.8 | 1352.6 | 1402.5 | 1446.7 | 1483.4 | 1490.0 |
| 30° | 2833.8 | 2606.6 | 1942.8 | 1268.0 | 1223.9 | 1278.3 | 1331.2 | 1377.6 | 1419.5 | 1455.5 | 1463.6 |
| 32.5° | 2891.8 | 2588.2 | 1731.9 | 1169.5 | 1211.4 | 1263.6 | 1307.0 | 1348.2 | 1380.5 | 1396.7 | 1401.1 |
| 35° | 2963.9 | 2564.7 | 1507.7 | 1126.9 | 1203.3 | 1251.9 | 1290.1 | 1312.1 | 1270.2 | 1261.4 | 1271.0 |
| 37.5° | 3064.6 | 2542.7 | 1284.2 | 1108.5 | 1198.2 | 1247.4 | 1281.3 | 1224.7 | 1173.2 | 1152.6 | 1160.0 |
| 40° | 3173.4 | 2530.2 | 1132.8 | 1093.8 | 1200.4 | 1251.9 | 1244.5 | 1160.7 | 1086.5 | 1043.1 | 1041.6 |
| 42.5° | 3266.0 | 2511.1 | 1035.7 | 1084.3 | 1206.3 | 1268.8 | 1194.5 | 1104.1 | 993.8 | 968.1 | 968.8 |
| 45° | 3328.5 | 2462.5 | 984.3 | 1074.0 | 1211.4 | 1272.4 | 1171.0 | 1026.2 | 947.5 | 931.4 | 930.6 |
| 47.5° | 3354.2 | 2374.3 | 951.2 | 1057.8 | 1210.7 | 1242.3 | 1123.2 | 993.8 | 915.2 | 910.8 | 913.7 |
| 50° | 3337.3 | 2229.5 | 917.4 | 1026.2 | 1193.0 | 1210.7 | 1068.1 | 965.2 | 893.1 | 917.4 | 935.0 |
| 52.5° | 3274.8 | 2042.1 | 877.0 | 982.8 | 1161.4 | 1174.7 | 1040.2 | 947.5 | 877.0 | 909.3 | 923.3 |
| 55° | 3258.6 | 1889.9 | 825.5 | 926.2 | 1114.4 | 1110.7 | 1010.7 | 938.7 | 865.9 | 853.4 | 855.6 |
| 57.5° | 3237.3 | 1741.4 | 740.2 | 824.8 | 995.3 | 1001.2 | 982.8 | 928.4 | 837.3 | 833.6 | 837.3 |
| 60° | 2812.4 | 1334.9 | 660.1 | 711.6 | 817.4 | 849.0 | 951.2 | 909.3 | 791.0 | 775.5 | 774.8 |
| 62.5° | 1837.0 | 808.6 | 587.3 | 620.4 | 666.0 | 702.7 | 867.4 | 854.2 | 740.2 | 730.7 | 737.3 |
| 65° | 988.0 | 576.3 | 534.4 | 554.3 | 579.2 | 607.2 | 718.9 | 760.8 | 668.9 | 635.1 | 635.9 |
| 67.5° | 505.0 | 490.3 | 494.7 | 508.7 | 527.8 | 541.8 | 580.0 | 616.7 | 570.4 | 541.8 | 541.0 |
| 70° | 432.2 | 444.0 | 450.6 | 458.7 | 471.2 | 469.0 | 472.7 | 479.3 | 475.6 | 461.6 | 460.9 |
| 72.5° | 368.3 | 386.7 | 388.1 | 389.6 | 394.0 | 383.7 | 377.1 | 366.1 | 366.8 | 369.0 | 369.7 |
| 75° | 280.1 | 297.7 | 302.1 | 299.9 | 304.3 | 291.1 | 282.3 | 271.2 | 258.0 | 255.8 | 257.3 |
| 77.5° | 182.3 | 196.3 | 202.9 | 201.4 | 203.6 | 193.3 | 188.9 | 177.2 | 161.7 | 155.8 | 155.8 |
| 80° | 110.3 | 118.3 | 123.5 | 125.0 | 127.2 | 119.8 | 112.5 | 102.2 | 95.6 | 88.9 | 88.9 |
| 82.5° | 66.9 | 72.0 | 75.7 | 75.7 | 77.9 | 69.8 | 64.0 | 56.6 | 53.7 | 47.8 | 47.8 |
| 85° | 33.8 | 37.5 | 39.0 | 38.2 | 36.8 | 30.1 | 27.9 | 24.3 | 22.8 | 19.8 | 19.8 |
| 87.5° | 8.1 | 10.3 | 10.3 | 7.4 | 7.4 | 3.7 | 2.2 | 0.7 | 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 |

REPORT NUMBER: SP1-2407-157-9

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

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



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)