

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: P630995

Luminaire Tested: GWS-SA1E-827-U-SL3-W-HSS

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P630995
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-34)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA1E-827-U-SL3-W-HSS
Description: GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD
Light Source: (16) 2700K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4511.6 lumens
Efficiency: N/A
Efficacy: 77.3 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type III - Short
BUG Rating: B1 - U0 - G1

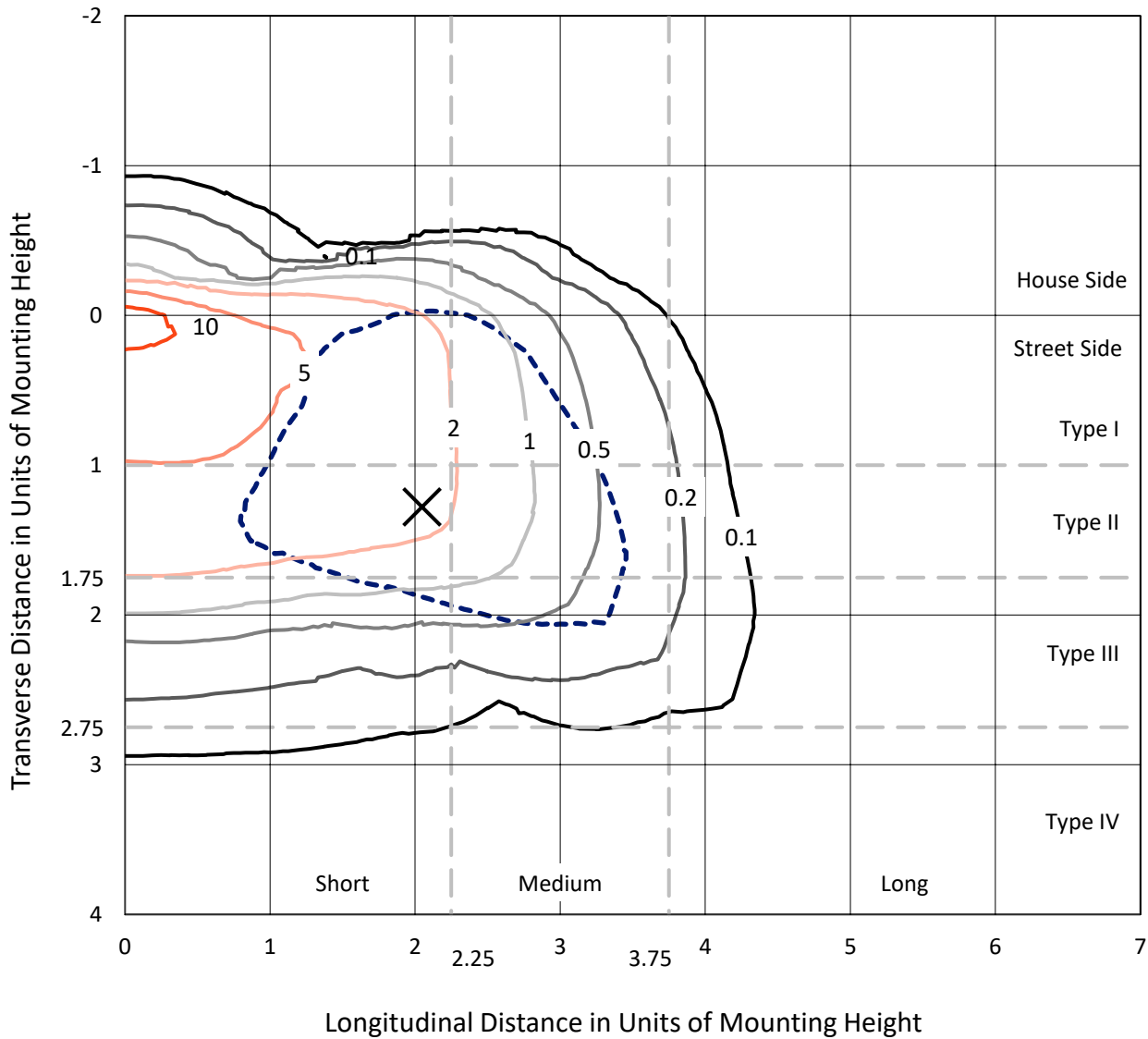
Input Watts (W): 58.4
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P630995
 CATALOG NUMBER: GWS-SA1E-827-U-SL3-W-HSS

Iso-Footcandle Lines of Horizontal Illumination

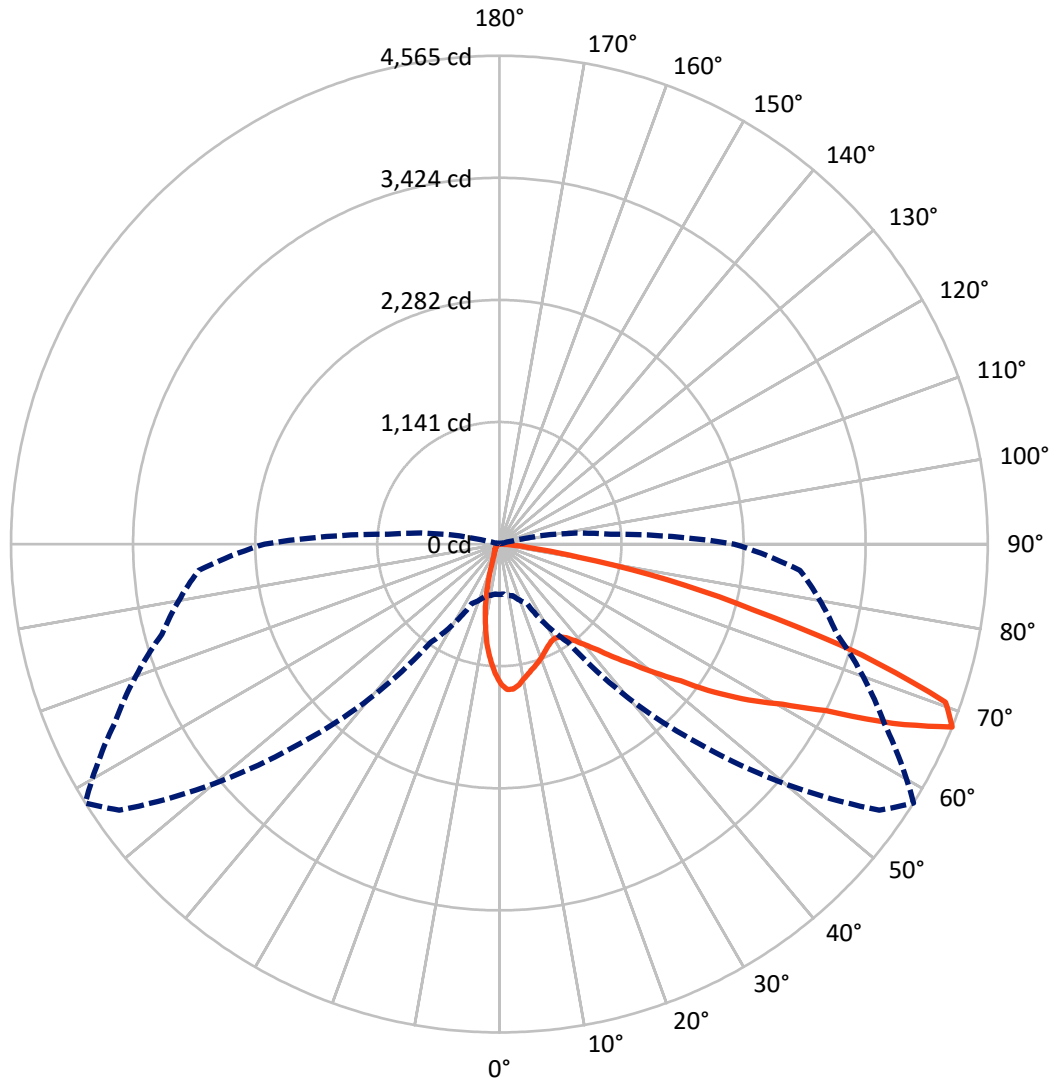
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 13 fc
 Type III - Short - N/A

REPORT NUMBER: P630995
CATALOG NUMBER: GWS-SA1E-827-U-SL3-W-HSS

Luminous Intensity Polar Plot



— Vertical Plane Through 58-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

REPORT NUMBER: P630995
 CATALOG NUMBER: GWS-SA1E-827-U-SL3-W-HSS

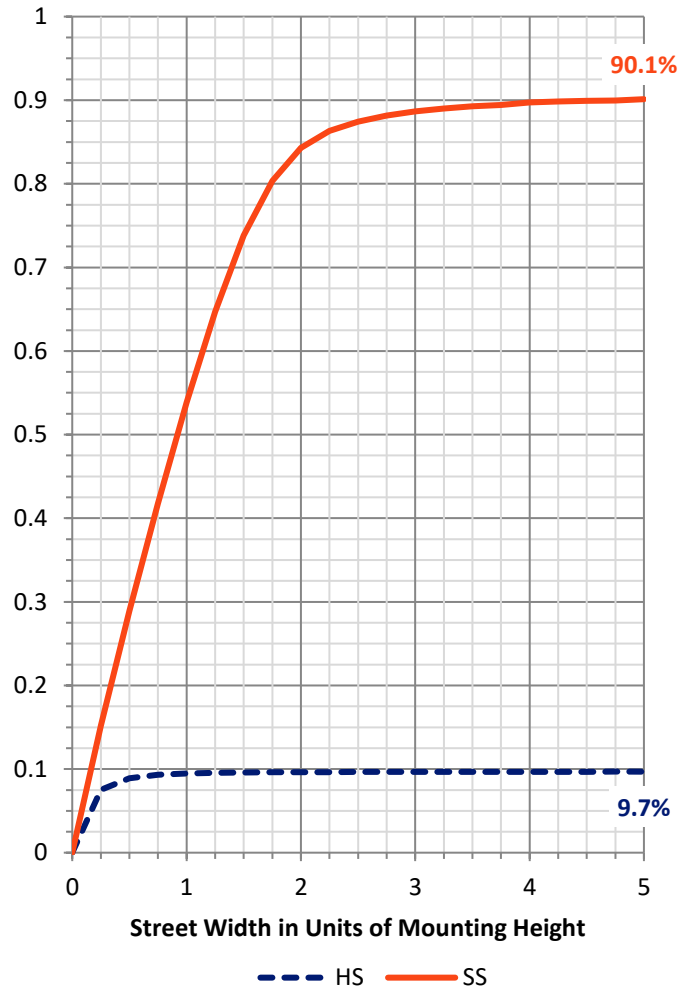
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 440.8 | 0.0 | 440.8 |
| | % Fixture | 9.8 | 0.0 | 9.8 |
| Street Side | Lumens | 4070.9 | 0.0 | 4070.9 |
| | % Fixture | 90.2 | 0.0 | 90.2 |
| Total | Lumens | 4511.6 | 0.0 | 4511.6 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 105.7 | 2.3 |
| 10°-20° | 220.1 | 4.9 |
| 20°-30° | 296.9 | 6.6 |
| 30°-40° | 417.1 | 9.2 |
| 40°-50° | 644.2 | 14.3 |
| 50°-60° | 1030.2 | 22.8 |
| 60°-70° | 1219.9 | 27.0 |
| 70°-80° | 539.6 | 12.0 |
| 80°-90° | 37.7 | 0.8 |
| 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° | 4511.6 | 100.0 |
| 0°-180° | 4511.6 | 100.0 |

Coefficient of Utilization

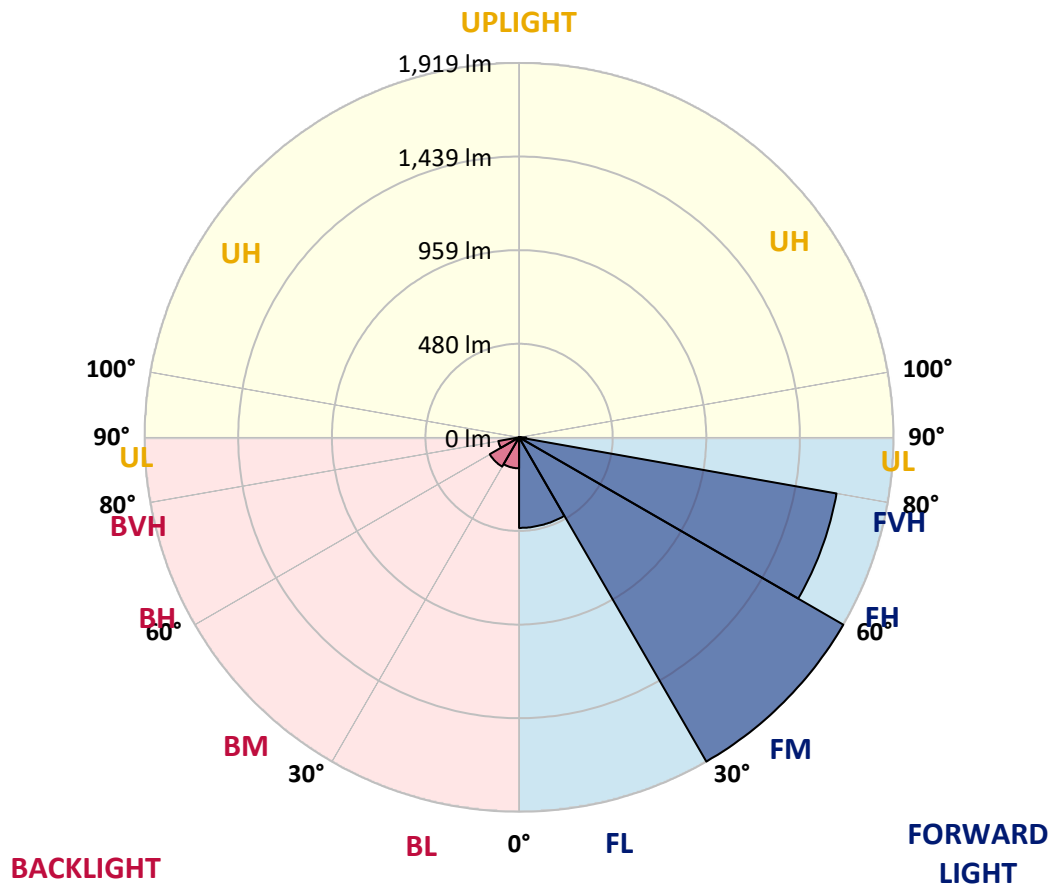


REPORT NUMBER: P630995
 CATALOG NUMBER: GWS-SA1E-827-U-SL3-W-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 464.1 | 10.3 | | | |
| FM (30°-60°) | 1918.7 | 42.5 | | | |
| FH (60°-80°) | 1651.9 | 36.6 | | | G1/1800 |
| FVH (80°-90°) | 36.1 | 0.8 | | | G1/100 |
| BL (0°-30°) | 158.6 | 3.5 | B1/500 | | |
| BM (30°-60°) | 172.9 | 3.8 | B0/220 | | |
| BH (60°-80°) | 107.6 | 2.4 | B0/110 | | G0/110 |
| BVH (80°-90°) | 1.6 | 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-G1
 Type III Short





REPORT NUMBER: P630995

CATALOG NUMBER: GWS-SA1E-827-U-SL3-W-HSS

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 58° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 |
| 2.5° | 1368.8 | 1371.2 | 1374.4 | 1378.4 | 1377.6 | 1374.0 | 1369.6 | 1359.7 | 1353.3 | 1333.3 | 1308.9 |
| 5° | 1324.9 | 1324.5 | 1332.5 | 1340.1 | 1353.7 | 1360.9 | 1370.8 | 1361.7 | 1358.5 | 1334.5 | 1295.0 |
| 7.5° | 1239.1 | 1243.5 | 1252.6 | 1264.6 | 1284.2 | 1305.4 | 1329.3 | 1326.5 | 1336.1 | 1320.1 | 1271.0 |
| 10° | 1154.8 | 1152.4 | 1166.8 | 1184.8 | 1214.7 | 1241.9 | 1276.6 | 1276.2 | 1301.4 | 1299.8 | 1243.9 |
| 12.5° | 1080.9 | 1080.5 | 1091.7 | 1112.1 | 1147.2 | 1185.2 | 1232.3 | 1233.5 | 1264.6 | 1277.4 | 1220.7 |
| 15° | 1018.6 | 1019.4 | 1030.2 | 1051.4 | 1087.7 | 1134.0 | 1188.8 | 1198.7 | 1233.9 | 1259.8 | 1197.9 |
| 17.5° | 974.3 | 974.7 | 981.1 | 999.5 | 1035.0 | 1084.5 | 1150.4 | 1164.0 | 1209.1 | 1246.7 | 1179.6 |
| 20° | 954.0 | 952.4 | 953.6 | 962.7 | 990.3 | 1035.4 | 1111.3 | 1128.9 | 1186.4 | 1237.5 | 1162.8 |
| 22.5° | 956.8 | 954.4 | 948.8 | 947.6 | 959.9 | 994.3 | 1069.8 | 1091.3 | 1161.6 | 1231.9 | 1147.6 |
| 25° | 981.5 | 976.3 | 968.3 | 956.4 | 951.6 | 968.7 | 1033.4 | 1055.8 | 1138.4 | 1232.3 | 1136.0 |
| 27.5° | 1019.4 | 1013.9 | 1003.9 | 987.9 | 969.1 | 961.9 | 1008.7 | 1029.8 | 1122.1 | 1241.5 | 1130.5 |
| 30° | 1067.8 | 1063.4 | 1053.8 | 1034.6 | 1009.5 | 979.9 | 1003.5 | 1021.0 | 1114.1 | 1260.2 | 1132.8 |
| 32.5° | 1124.9 | 1121.7 | 1113.7 | 1096.1 | 1067.4 | 1022.2 | 1021.0 | 1034.6 | 1120.5 | 1287.4 | 1142.0 |
| 35° | 1180.0 | 1181.2 | 1181.6 | 1172.0 | 1141.2 | 1086.5 | 1069.4 | 1074.1 | 1146.8 | 1328.1 | 1162.8 |
| 37.5° | 1239.5 | 1236.7 | 1251.0 | 1257.8 | 1228.3 | 1170.0 | 1144.0 | 1144.4 | 1197.1 | 1388.4 | 1201.9 |
| 40° | 1284.6 | 1285.4 | 1316.5 | 1344.5 | 1332.1 | 1275.8 | 1238.7 | 1238.3 | 1274.6 | 1471.1 | 1265.0 |
| 42.5° | 1326.9 | 1332.1 | 1378.0 | 1425.9 | 1443.1 | 1393.2 | 1366.4 | 1356.5 | 1383.2 | 1582.9 | 1359.7 |
| 45° | 1372.0 | 1379.6 | 1443.9 | 1512.2 | 1557.3 | 1527.8 | 1506.6 | 1510.6 | 1513.8 | 1713.0 | 1487.0 |
| 47.5° | 1424.7 | 1429.5 | 1509.0 | 1605.2 | 1689.5 | 1681.9 | 1683.1 | 1678.3 | 1676.7 | 1877.2 | 1655.5 |
| 50° | 1488.6 | 1499.8 | 1591.3 | 1706.3 | 1821.3 | 1871.6 | 1888.3 | 1890.3 | 1864.4 | 2056.1 | 1830.0 |
| 52.5° | 1624.4 | 1638.0 | 1716.2 | 1816.9 | 1965.0 | 2070.8 | 2139.1 | 2125.5 | 2085.6 | 2229.4 | 2021.3 |
| 55° | 1784.5 | 1794.9 | 1870.4 | 1974.6 | 2140.7 | 2289.3 | 2451.4 | 2445.8 | 2348.0 | 2411.8 | 2178.6 |
| 57.5° | 1799.7 | 1811.3 | 1928.3 | 2088.0 | 2366.3 | 2559.2 | 2729.7 | 2747.7 | 2604.3 | 2541.2 | 2319.2 |
| 60° | 1629.2 | 1652.8 | 1812.5 | 2027.3 | 2452.6 | 2922.2 | 3034.8 | 3038.4 | 2792.4 | 2672.6 | 2490.9 |
| 62.5° | 1305.7 | 1316.9 | 1477.9 | 1758.2 | 2319.6 | 3133.8 | 3500.8 | 3424.9 | 3034.0 | 2875.8 | 2762.8 |
| 65° | 684.4 | 729.9 | 870.1 | 1180.4 | 1881.2 | 3059.9 | 4061.4 | 4040.6 | 3468.4 | 3166.9 | 2974.5 |
| 67.5° | 469.6 | 469.2 | 502.3 | 615.3 | 1121.7 | 2634.7 | 4336.5 | 4564.9 | 3970.8 | 3266.8 | 2821.1 |
| 70° | 357.4 | 358.6 | 388.1 | 461.6 | 581.0 | 1753.8 | 4034.6 | 4425.2 | 4064.2 | 2966.1 | 2281.7 |
| 72.5° | 237.2 | 239.6 | 288.7 | 373.0 | 464.0 | 859.7 | 3135.4 | 3540.7 | 3419.7 | 2382.3 | 1606.0 |
| 75° | 141.8 | 143.8 | 178.9 | 271.1 | 412.5 | 481.2 | 1992.2 | 2447.8 | 2353.9 | 1642.0 | 860.9 |
| 77.5° | 58.3 | 59.9 | 91.8 | 168.9 | 301.9 | 373.8 | 1101.7 | 1601.6 | 1410.0 | 652.9 | 235.2 |
| 80° | 24.4 | 25.2 | 44.3 | 118.2 | 217.6 | 234.4 | 510.3 | 752.7 | 577.8 | 140.6 | 71.9 |
| 82.5° | 8.8 | 9.2 | 16.4 | 65.1 | 135.4 | 176.5 | 257.6 | 297.5 | 162.9 | 45.9 | 38.7 |
| 85° | 0.4 | 0.4 | 4.0 | 22.0 | 51.5 | 49.9 | 147.3 | 142.6 | 53.9 | 19.2 | 23.2 |
| 87.5° | 0.0 | 0.0 | 0.4 | 0.4 | 0.8 | 2.0 | 14.0 | 24.8 | 11.6 | 4.8 | 10.0 |
| 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: P630995

CATALOG NUMBER: GWS-SA1E-827-U-SL3-W-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 | 1301.4 |
| 2.5° | 1293.0 | 1271.8 | 1248.6 | 1227.1 | 1192.7 | 1172.4 | 1147.2 | 1136.0 | 1120.1 | 1116.1 | 1118.5 |
| 5° | 1266.6 | 1230.3 | 1174.8 | 1124.5 | 1059.4 | 1007.1 | 954.4 | 932.0 | 903.2 | 884.1 | 876.1 |
| 7.5° | 1229.5 | 1182.0 | 1095.3 | 1003.9 | 914.4 | 819.0 | 746.3 | 698.4 | 654.9 | 630.9 | 626.1 |
| 10° | 1191.9 | 1130.1 | 1005.9 | 874.9 | 736.3 | 622.1 | 523.9 | 451.2 | 392.1 | 365.4 | 344.6 |
| 12.5° | 1153.2 | 1076.1 | 914.8 | 743.9 | 583.0 | 427.3 | 305.9 | 235.2 | 192.9 | 176.1 | 178.9 |
| 15° | 1117.7 | 1024.2 | 824.6 | 612.9 | 410.5 | 258.0 | 168.9 | 142.6 | 132.6 | 129.4 | 129.0 |
| 17.5° | 1083.7 | 975.1 | 734.7 | 485.6 | 270.7 | 158.1 | 129.4 | 123.0 | 120.2 | 118.6 | 118.6 |
| 20° | 1053.0 | 928.0 | 646.9 | 365.8 | 174.9 | 125.4 | 117.0 | 113.8 | 111.4 | 110.2 | 110.2 |
| 22.5° | 1024.2 | 882.5 | 561.0 | 258.8 | 129.0 | 112.6 | 107.4 | 104.2 | 101.4 | 99.8 | 99.8 |
| 25° | 998.3 | 841.3 | 479.2 | 178.1 | 111.0 | 103.0 | 97.4 | 93.8 | 89.0 | 86.3 | 86.3 |
| 27.5° | 979.5 | 804.6 | 400.5 | 129.8 | 100.2 | 92.6 | 86.3 | 81.5 | 76.3 | 73.1 | 72.3 |
| 30° | 968.3 | 773.5 | 321.0 | 106.6 | 90.2 | 82.7 | 75.5 | 69.5 | 63.5 | 60.3 | 59.9 |
| 32.5° | 961.9 | 744.7 | 248.4 | 93.0 | 81.9 | 73.1 | 65.1 | 58.7 | 52.7 | 49.1 | 48.7 |
| 35° | 964.3 | 722.4 | 186.1 | 83.9 | 73.9 | 64.7 | 55.9 | 49.5 | 44.3 | 41.1 | 40.3 |
| 37.5° | 985.1 | 712.4 | 139.8 | 76.7 | 67.1 | 57.5 | 48.3 | 42.3 | 37.5 | 35.1 | 34.7 |
| 40° | 1025.4 | 714.4 | 109.8 | 71.1 | 61.5 | 50.3 | 41.5 | 35.9 | 32.3 | 30.3 | 29.9 |
| 42.5° | 1088.1 | 731.1 | 90.6 | 66.3 | 55.5 | 43.9 | 35.9 | 31.5 | 28.0 | 26.0 | 25.6 |
| 45° | 1181.6 | 765.9 | 79.1 | 60.7 | 49.1 | 37.9 | 31.1 | 27.2 | 24.0 | 21.6 | 21.2 |
| 47.5° | 1316.9 | 826.2 | 71.5 | 55.5 | 43.5 | 32.7 | 26.8 | 22.8 | 20.0 | 18.0 | 17.6 |
| 50° | 1461.1 | 898.5 | 65.1 | 50.3 | 38.7 | 28.4 | 22.8 | 18.8 | 16.4 | 14.4 | 14.0 |
| 52.5° | 1614.8 | 976.3 | 60.3 | 45.5 | 34.3 | 24.4 | 19.2 | 15.6 | 13.2 | 11.2 | 10.8 |
| 55° | 1762.6 | 1054.6 | 54.7 | 42.3 | 29.1 | 20.8 | 16.0 | 12.8 | 10.4 | 8.8 | 8.8 |
| 57.5° | 1906.3 | 1126.5 | 48.7 | 37.1 | 24.0 | 17.6 | 13.2 | 10.4 | 8.4 | 7.2 | 6.8 |
| 60° | 2078.0 | 1225.9 | 41.9 | 31.5 | 20.0 | 14.8 | 10.8 | 8.4 | 6.8 | 5.6 | 5.6 |
| 62.5° | 2333.2 | 1329.3 | 35.9 | 26.4 | 16.8 | 12.4 | 8.8 | 6.8 | 5.6 | 4.8 | 4.4 |
| 65° | 2416.6 | 1273.4 | 30.3 | 21.6 | 13.6 | 10.0 | 7.2 | 6.0 | 4.8 | 4.4 | 4.0 |
| 67.5° | 2193.8 | 1043.8 | 25.2 | 17.6 | 11.2 | 8.4 | 6.4 | 5.2 | 4.4 | 4.0 | 3.6 |
| 70° | 1711.8 | 740.7 | 19.6 | 13.2 | 9.2 | 6.8 | 5.6 | 4.8 | 4.0 | 3.6 | 3.6 |
| 72.5° | 1164.4 | 438.0 | 15.6 | 10.0 | 7.6 | 6.0 | 4.8 | 4.4 | 4.0 | 3.6 | 3.2 |
| 75° | 573.4 | 155.7 | 12.0 | 7.6 | 6.0 | 5.2 | 4.4 | 4.0 | 3.6 | 3.2 | 3.2 |
| 77.5° | 154.5 | 43.1 | 9.2 | 6.0 | 4.8 | 4.0 | 4.0 | 4.0 | 3.6 | 2.8 | 2.8 |
| 80° | 52.3 | 18.0 | 6.8 | 4.4 | 4.0 | 3.2 | 2.8 | 3.6 | 3.2 | 2.8 | 2.4 |
| 82.5° | 28.8 | 8.8 | 4.8 | 3.6 | 2.8 | 2.4 | 2.4 | 2.4 | 2.4 | 2.0 | 2.0 |
| 85° | 18.4 | 4.8 | 3.2 | 2.8 | 2.8 | 2.0 | 1.6 | 1.6 | 1.2 | 1.2 | 1.2 |
| 87.5° | 8.4 | 2.8 | 2.8 | 2.4 | 2.4 | 2.0 | 1.2 | 0.8 | 0.4 | 0.4 | 0.4 |
| 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

REPORT NUMBER: SP1-2407-157-9

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)