

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: P631491

Luminaire Tested: GWS-SA1F-827-U-SL3-W

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P631491
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-31)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA1F-827-U-SL3-W
Description: GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III SPILL LIGHT ELIMINATOR OPTICS
Light Source: (16) 2700K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 6068.3 lumens
Efficiency: N/A
Efficacy: 90.3 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B1 - U0 - G2

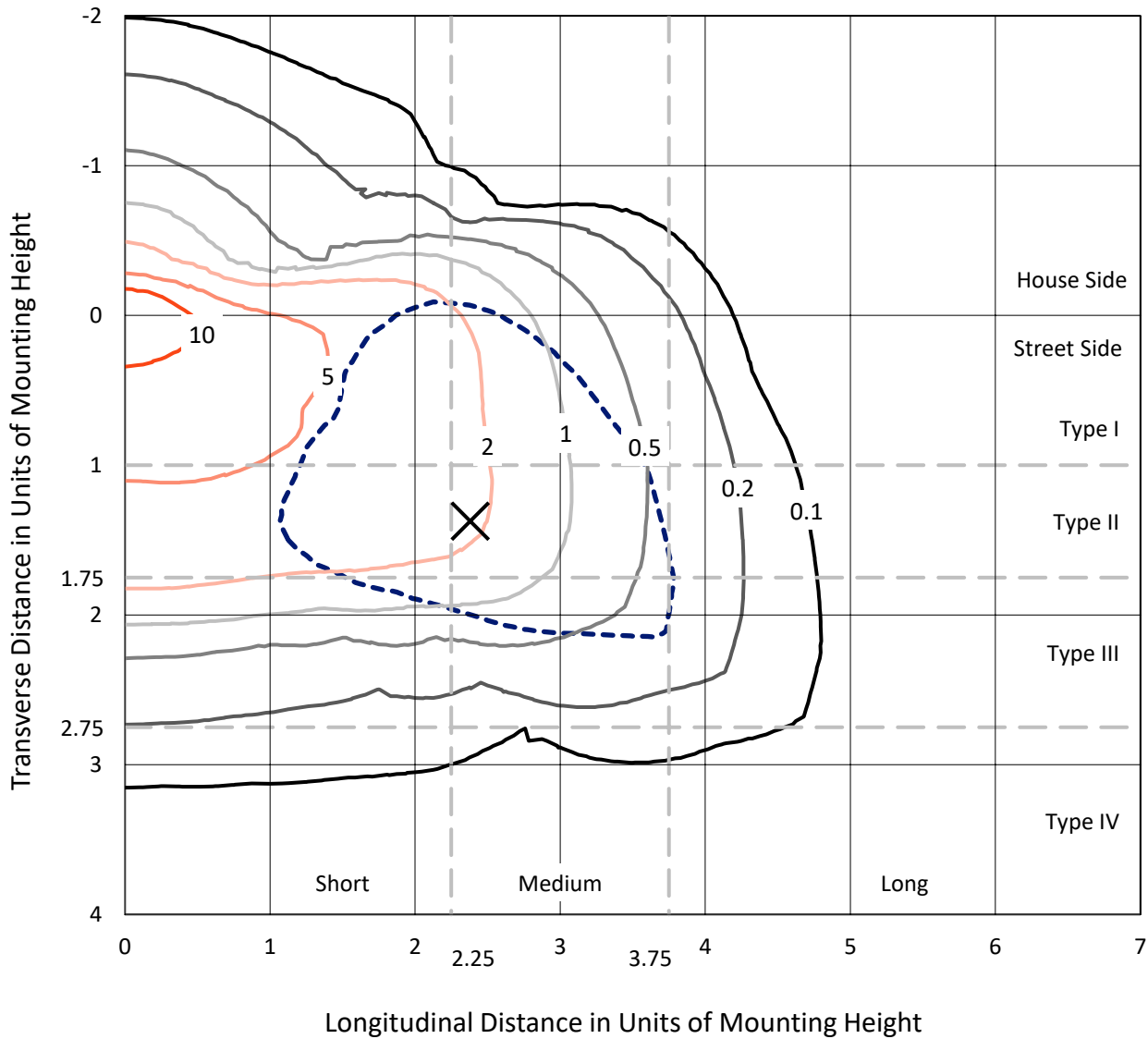
Input Watts (W): 67.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P631491
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Iso-Footcandle Lines of Horizontal Illumination

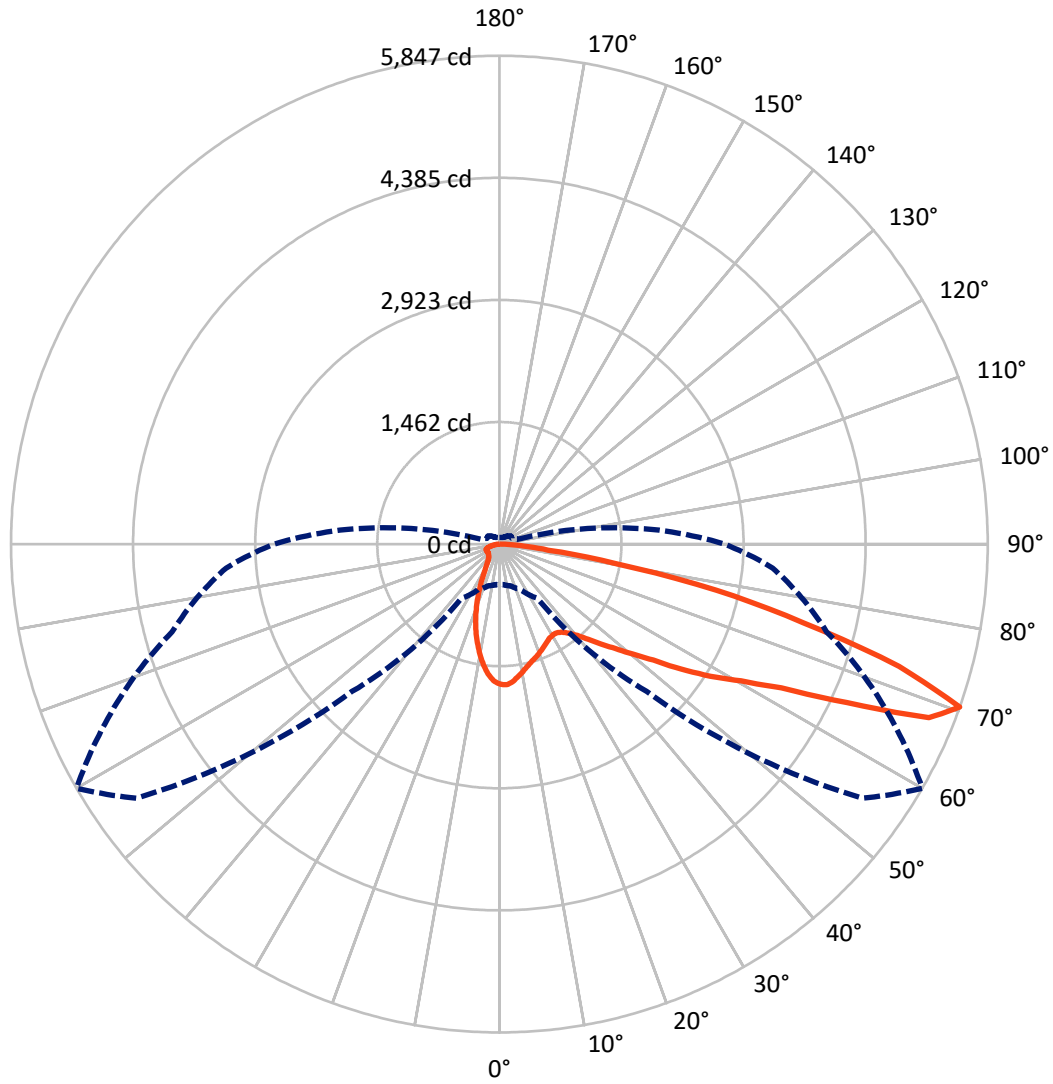
✕ Max cd
 - - - 1/2 Max cd



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

REPORT NUMBER: P631491
CATALOG NUMBER: GWS-SA1F-827-U-SL3-W

Luminous Intensity Polar Plot



— Vertical Plane Through 60-Deg Lateral - - - Horizontal Cone Through 70-Deg Vertical

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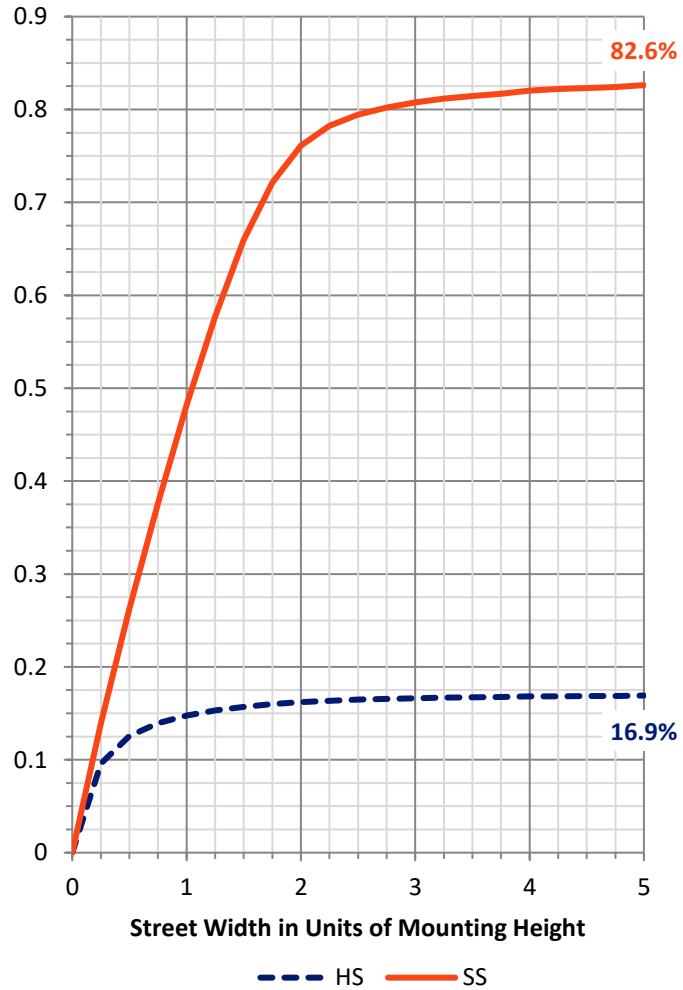
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 1037.8 | 0.0 | 1037.8 |
| | % Fixture | 17.1 | 0.0 | 17.1 |
| Street Side | Lumens | 5030.5 | 0.0 | 5030.5 |
| | % Fixture | 82.9 | 0.0 | 82.9 |
| Total | Lumens | 6068.3 | 0.0 | 6068.3 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 144.7 | 2.4 |
| 10°-20° | 324.3 | 5.3 |
| 20°-30° | 415.3 | 6.8 |
| 30°-40° | 545.8 | 9.0 |
| 40°-50° | 791.8 | 13.0 |
| 50°-60° | 1235.4 | 20.4 |
| 60°-70° | 1617.4 | 26.7 |
| 70°-80° | 894.4 | 14.7 |
| 80°-90° | 99.3 | 1.6 |
| 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° | 6068.3 | 100.0 |
| 0°-180° | 6068.3 | 100.0 |

Coefficient of Utilization



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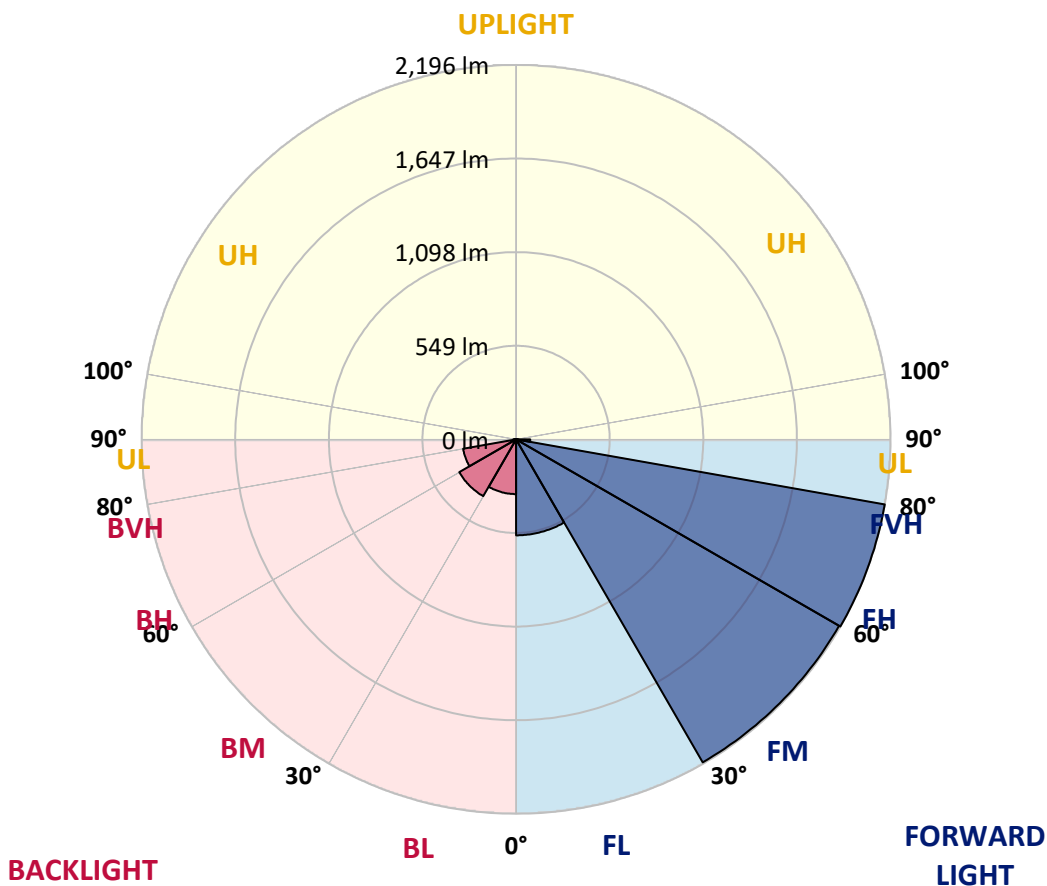
CATALOG NUMBER: GWS-SA1F-827-U-SL3-W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 563.2 | 9.3 | | | |
| FM (30°-60°) | 2188.2 | 36.1 | | | |
| FH (60°-80°) | 2196.4 | 36.2 | | | G2/5000 |
| FVH (80°-90°) | 82.7 | 1.4 | | | G1/100 |
| BL (0°-30°) | 321.1 | 5.3 | B1/500 | | |
| BM (30°-60°) | 384.8 | 6.3 | B1/1000 | | |
| BH (60°-80°) | 315.4 | 5.2 | B1/500 | | G1/500 |
| BVH (80°-90°) | 16.6 | 0.3 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G2

Type III Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 60° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 |
| 2.5° | 1655.6 | 1657.4 | 1662.3 | 1669.4 | 1676.5 | 1680.1 | 1688.9 | 1686.3 | 1684.5 | 1681.0 | 1676.5 |
| 5° | 1582.4 | 1585.9 | 1590.4 | 1604.1 | 1619.7 | 1632.1 | 1652.1 | 1654.3 | 1655.2 | 1657.0 | 1649.9 |
| 7.5° | 1489.1 | 1490.0 | 1500.7 | 1518.9 | 1539.3 | 1560.6 | 1593.9 | 1603.3 | 1611.2 | 1620.1 | 1614.4 |
| 10° | 1386.1 | 1388.4 | 1396.4 | 1422.5 | 1457.6 | 1489.1 | 1534.0 | 1549.5 | 1566.4 | 1585.9 | 1577.9 |
| 12.5° | 1301.8 | 1302.2 | 1315.1 | 1343.1 | 1381.3 | 1423.9 | 1479.8 | 1498.5 | 1520.7 | 1551.3 | 1544.2 |
| 15° | 1234.7 | 1234.7 | 1246.7 | 1270.7 | 1314.7 | 1364.8 | 1431.4 | 1455.4 | 1485.6 | 1526.9 | 1514.5 |
| 17.5° | 1181.5 | 1181.9 | 1189.5 | 1214.8 | 1253.8 | 1309.3 | 1388.4 | 1420.8 | 1454.1 | 1508.7 | 1490.0 |
| 20° | 1153.5 | 1151.3 | 1152.6 | 1168.1 | 1201.4 | 1255.2 | 1345.3 | 1383.0 | 1427.9 | 1496.3 | 1467.8 |
| 22.5° | 1152.2 | 1148.2 | 1142.4 | 1143.7 | 1163.3 | 1207.7 | 1299.1 | 1344.9 | 1401.2 | 1486.0 | 1445.2 |
| 25° | 1174.8 | 1170.4 | 1160.2 | 1148.6 | 1146.8 | 1173.5 | 1255.6 | 1307.6 | 1373.7 | 1481.6 | 1423.4 |
| 27.5° | 1213.0 | 1209.9 | 1196.6 | 1179.2 | 1161.0 | 1160.2 | 1222.8 | 1276.9 | 1353.7 | 1486.0 | 1407.9 |
| 30° | 1263.6 | 1258.3 | 1249.8 | 1227.6 | 1200.1 | 1171.7 | 1209.9 | 1260.5 | 1340.4 | 1500.2 | 1401.2 |
| 32.5° | 1320.9 | 1317.8 | 1309.8 | 1287.6 | 1258.3 | 1213.0 | 1220.1 | 1264.0 | 1340.4 | 1525.1 | 1402.6 |
| 35° | 1381.7 | 1381.3 | 1381.3 | 1366.6 | 1334.2 | 1277.8 | 1260.5 | 1294.2 | 1360.8 | 1565.1 | 1416.8 |
| 37.5° | 1440.8 | 1440.3 | 1454.5 | 1459.8 | 1423.0 | 1362.2 | 1329.3 | 1354.6 | 1405.7 | 1624.1 | 1451.9 |
| 40° | 1488.7 | 1490.5 | 1521.6 | 1548.2 | 1527.8 | 1471.4 | 1425.2 | 1438.1 | 1478.5 | 1708.0 | 1513.1 |
| 42.5° | 1537.1 | 1542.0 | 1588.6 | 1635.7 | 1643.7 | 1594.8 | 1548.2 | 1555.7 | 1582.8 | 1819.0 | 1604.6 |
| 45° | 1589.9 | 1592.2 | 1657.4 | 1723.1 | 1761.8 | 1732.9 | 1694.7 | 1704.9 | 1711.1 | 1956.2 | 1740.9 |
| 47.5° | 1641.0 | 1646.8 | 1731.1 | 1821.3 | 1894.5 | 1891.8 | 1870.5 | 1867.4 | 1868.8 | 2123.2 | 1902.1 |
| 50° | 1710.7 | 1719.1 | 1818.1 | 1926.9 | 2034.4 | 2083.7 | 2089.9 | 2066.3 | 2056.6 | 2308.8 | 2102.7 |
| 52.5° | 1843.0 | 1843.0 | 1931.8 | 2038.8 | 2183.1 | 2305.2 | 2346.9 | 2308.3 | 2277.2 | 2505.0 | 2315.9 |
| 55° | 2008.6 | 2015.7 | 2086.3 | 2172.9 | 2355.8 | 2538.3 | 2679.5 | 2636.9 | 2549.0 | 2718.6 | 2539.2 |
| 57.5° | 2082.3 | 2091.2 | 2203.1 | 2337.6 | 2581.8 | 2803.4 | 2999.2 | 2984.1 | 2855.8 | 2940.6 | 2771.0 |
| 60° | 1949.1 | 1967.8 | 2121.8 | 2347.4 | 2786.5 | 3230.9 | 3369.0 | 3325.1 | 3141.7 | 3173.7 | 3022.3 |
| 62.5° | 1625.9 | 1646.3 | 1817.3 | 2132.0 | 2758.1 | 3693.1 | 3952.0 | 3789.9 | 3498.7 | 3468.0 | 3357.0 |
| 65° | 970.1 | 969.2 | 1174.8 | 1592.2 | 2407.8 | 3821.4 | 4874.6 | 4572.2 | 4050.1 | 3872.1 | 3701.6 |
| 67.5° | 616.7 | 615.4 | 658.4 | 843.6 | 1602.4 | 3507.1 | 5467.8 | 5546.3 | 4799.1 | 4169.1 | 3730.0 |
| 70° | 486.6 | 486.2 | 517.3 | 601.6 | 792.5 | 2495.7 | 5302.6 | 5846.5 | 5251.5 | 4055.9 | 3284.2 |
| 72.5° | 354.7 | 355.6 | 403.6 | 503.9 | 611.4 | 1252.9 | 4293.8 | 5002.5 | 4830.2 | 3580.4 | 2666.2 |
| 75° | 254.9 | 256.2 | 285.0 | 385.8 | 563.9 | 685.1 | 2855.3 | 3761.5 | 3674.9 | 2870.0 | 1834.1 |
| 77.5° | 162.1 | 163.8 | 189.1 | 270.4 | 455.5 | 553.2 | 1731.1 | 2655.5 | 2445.1 | 1617.0 | 652.2 |
| 80° | 99.0 | 104.8 | 126.1 | 201.6 | 364.1 | 415.1 | 865.3 | 1399.0 | 1224.5 | 443.5 | 219.3 |
| 82.5° | 51.1 | 55.5 | 75.9 | 124.8 | 250.9 | 364.5 | 489.7 | 587.8 | 379.2 | 185.6 | 116.8 |
| 85° | 16.0 | 18.6 | 26.6 | 50.6 | 119.4 | 226.0 | 324.1 | 292.1 | 174.0 | 87.5 | 54.2 |
| 87.5° | 4.0 | 4.0 | 4.4 | 4.4 | 4.9 | 10.2 | 62.6 | 66.2 | 46.2 | 27.5 | 22.2 |
| 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: P631491
 CATALOG NUMBER: GWS-SA1F-827-U-SL3-W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 | 1679.2 |
| 2.5° | 1667.6 | 1657.0 | 1652.5 | 1652.1 | 1641.0 | 1625.0 | 1614.4 | 1606.8 | 1602.4 | 1601.5 | 1601.5 |
| 5° | 1637.9 | 1624.1 | 1605.9 | 1592.2 | 1562.4 | 1532.2 | 1506.9 | 1492.7 | 1476.3 | 1474.1 | 1473.6 |
| 7.5° | 1598.4 | 1578.4 | 1543.8 | 1505.1 | 1453.2 | 1403.0 | 1360.4 | 1331.5 | 1302.7 | 1297.3 | 1295.6 |
| 10° | 1555.7 | 1528.7 | 1469.6 | 1401.7 | 1324.0 | 1248.9 | 1183.7 | 1132.6 | 1098.9 | 1074.9 | 1070.5 |
| 12.5° | 1513.6 | 1477.6 | 1391.0 | 1289.8 | 1183.2 | 1080.7 | 982.6 | 899.1 | 838.7 | 803.6 | 797.4 |
| 15° | 1474.1 | 1423.9 | 1305.3 | 1176.1 | 1037.6 | 897.3 | 758.3 | 650.0 | 565.2 | 535.0 | 527.9 |
| 17.5° | 1438.1 | 1375.5 | 1222.3 | 1058.5 | 885.8 | 702.4 | 544.3 | 448.0 | 398.3 | 383.2 | 379.6 |
| 20° | 1402.1 | 1325.8 | 1138.0 | 934.6 | 724.6 | 519.0 | 397.8 | 352.5 | 333.9 | 328.1 | 326.3 |
| 22.5° | 1363.5 | 1271.1 | 1046.0 | 812.5 | 561.6 | 388.5 | 325.4 | 305.5 | 299.7 | 300.1 | 299.7 |
| 25° | 1324.9 | 1215.6 | 949.7 | 679.8 | 418.2 | 315.2 | 284.2 | 276.6 | 277.9 | 281.9 | 282.8 |
| 27.5° | 1292.9 | 1166.4 | 855.1 | 534.1 | 326.8 | 271.3 | 256.6 | 256.2 | 261.1 | 266.4 | 267.3 |
| 30° | 1269.8 | 1122.4 | 761.9 | 410.7 | 269.1 | 241.1 | 235.3 | 238.0 | 243.8 | 247.7 | 249.1 |
| 32.5° | 1253.4 | 1084.7 | 662.4 | 322.8 | 235.8 | 219.8 | 217.1 | 219.8 | 223.3 | 227.3 | 228.2 |
| 35° | 1247.6 | 1057.1 | 564.8 | 263.3 | 213.1 | 204.2 | 202.5 | 203.8 | 205.6 | 207.8 | 208.7 |
| 37.5° | 1260.5 | 1043.4 | 462.6 | 229.1 | 199.4 | 194.0 | 191.4 | 190.5 | 190.9 | 191.8 | 192.2 |
| 40° | 1298.7 | 1049.6 | 379.2 | 209.1 | 190.5 | 185.6 | 181.1 | 179.4 | 178.9 | 179.8 | 179.4 |
| 42.5° | 1364.4 | 1075.8 | 318.8 | 197.6 | 183.4 | 176.3 | 171.4 | 169.6 | 169.6 | 171.8 | 171.8 |
| 45° | 1460.7 | 1127.3 | 275.3 | 189.1 | 177.2 | 168.3 | 162.9 | 162.1 | 163.8 | 167.4 | 167.8 |
| 47.5° | 1601.9 | 1202.8 | 249.1 | 182.9 | 171.4 | 161.2 | 155.8 | 155.4 | 158.9 | 164.7 | 165.2 |
| 50° | 1769.3 | 1311.6 | 234.9 | 178.5 | 167.4 | 155.4 | 150.1 | 150.5 | 154.5 | 160.7 | 162.1 |
| 52.5° | 1970.9 | 1459.8 | 235.8 | 176.7 | 165.2 | 151.8 | 146.5 | 145.6 | 149.6 | 155.8 | 157.2 |
| 55° | 2179.1 | 1640.1 | 253.1 | 177.2 | 162.1 | 150.1 | 143.0 | 139.9 | 143.4 | 147.8 | 148.3 |
| 57.5° | 2408.2 | 1843.5 | 296.1 | 176.3 | 158.1 | 148.3 | 139.9 | 132.8 | 135.0 | 137.6 | 139.0 |
| 60° | 2666.6 | 2082.8 | 388.9 | 178.0 | 156.3 | 144.3 | 133.6 | 124.3 | 123.9 | 125.6 | 126.1 |
| 62.5° | 3012.0 | 2408.2 | 493.3 | 181.1 | 160.3 | 139.4 | 124.3 | 114.5 | 112.8 | 113.7 | 114.1 |
| 65° | 3276.2 | 2563.6 | 460.4 | 178.5 | 168.7 | 135.9 | 115.4 | 105.2 | 101.7 | 100.8 | 100.8 |
| 67.5° | 3168.8 | 2358.0 | 320.6 | 171.4 | 172.7 | 136.3 | 108.3 | 95.5 | 91.0 | 88.8 | 88.4 |
| 70° | 2696.4 | 1915.4 | 222.9 | 164.3 | 168.3 | 135.4 | 100.8 | 87.5 | 81.7 | 78.6 | 78.1 |
| 72.5° | 2130.3 | 1462.5 | 180.3 | 150.1 | 152.7 | 122.1 | 89.7 | 78.6 | 73.7 | 69.7 | 69.7 |
| 75° | 1371.0 | 892.4 | 150.5 | 133.6 | 124.8 | 95.0 | 77.7 | 70.2 | 65.3 | 61.3 | 61.3 |
| 77.5° | 461.3 | 331.2 | 116.8 | 113.2 | 93.2 | 71.5 | 65.3 | 60.4 | 56.4 | 52.8 | 52.4 |
| 80° | 187.4 | 157.2 | 85.7 | 85.7 | 65.3 | 54.6 | 51.1 | 48.8 | 46.2 | 41.7 | 41.7 |
| 82.5° | 108.8 | 95.5 | 59.9 | 51.9 | 43.5 | 37.7 | 35.5 | 33.3 | 33.3 | 30.2 | 30.2 |
| 85° | 52.4 | 52.8 | 36.0 | 32.0 | 24.9 | 21.8 | 20.9 | 19.5 | 19.1 | 17.3 | 16.9 |
| 87.5° | 28.4 | 28.9 | 18.2 | 14.2 | 9.8 | 8.4 | 7.1 | 6.7 | 6.2 | 5.8 | 5.8 |
| 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

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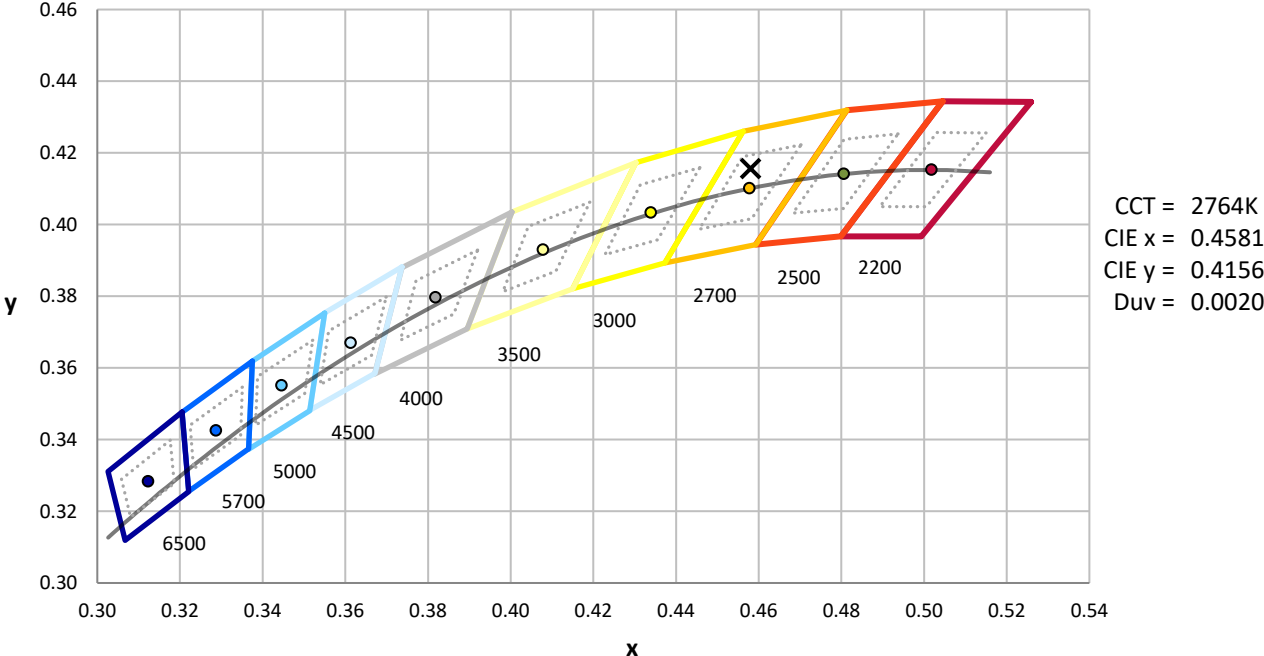
| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 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

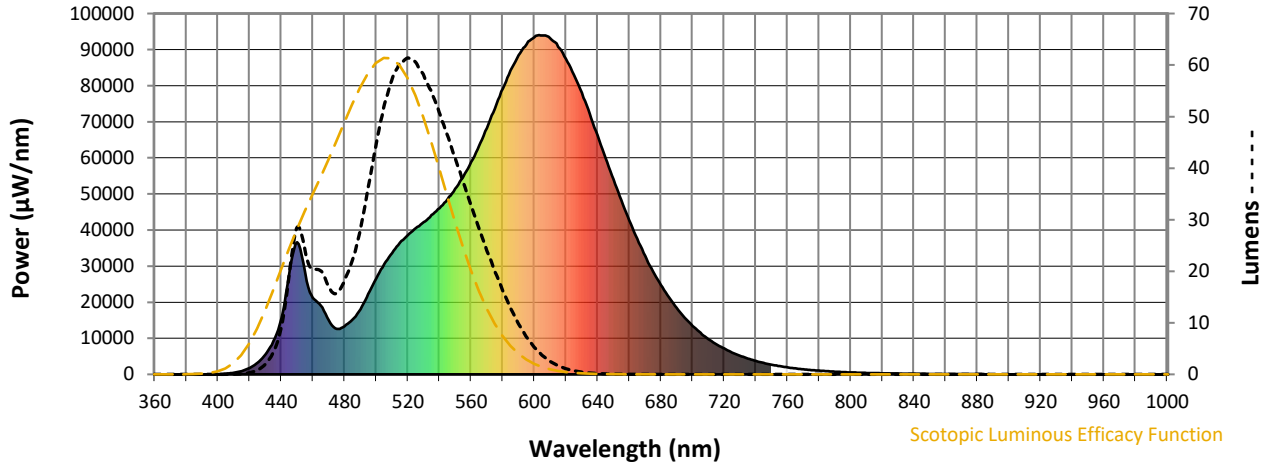


Photopic Lumens: 4337.9

| 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 (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 | 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)