

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: P633060

Luminaire Tested: GWS-SA2D-830-U-T4FT-W

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P633060
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-54)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA2D-830-U-T4FT-W
Description: GALLEON WALL SLIM LUMINAIRE. (2) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV FORWARD THROW OPTICS
Light Source: (32) 3000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 8959.2 lumens
Efficiency: N/A
Efficacy: 109.1 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B2 - U0 - G2

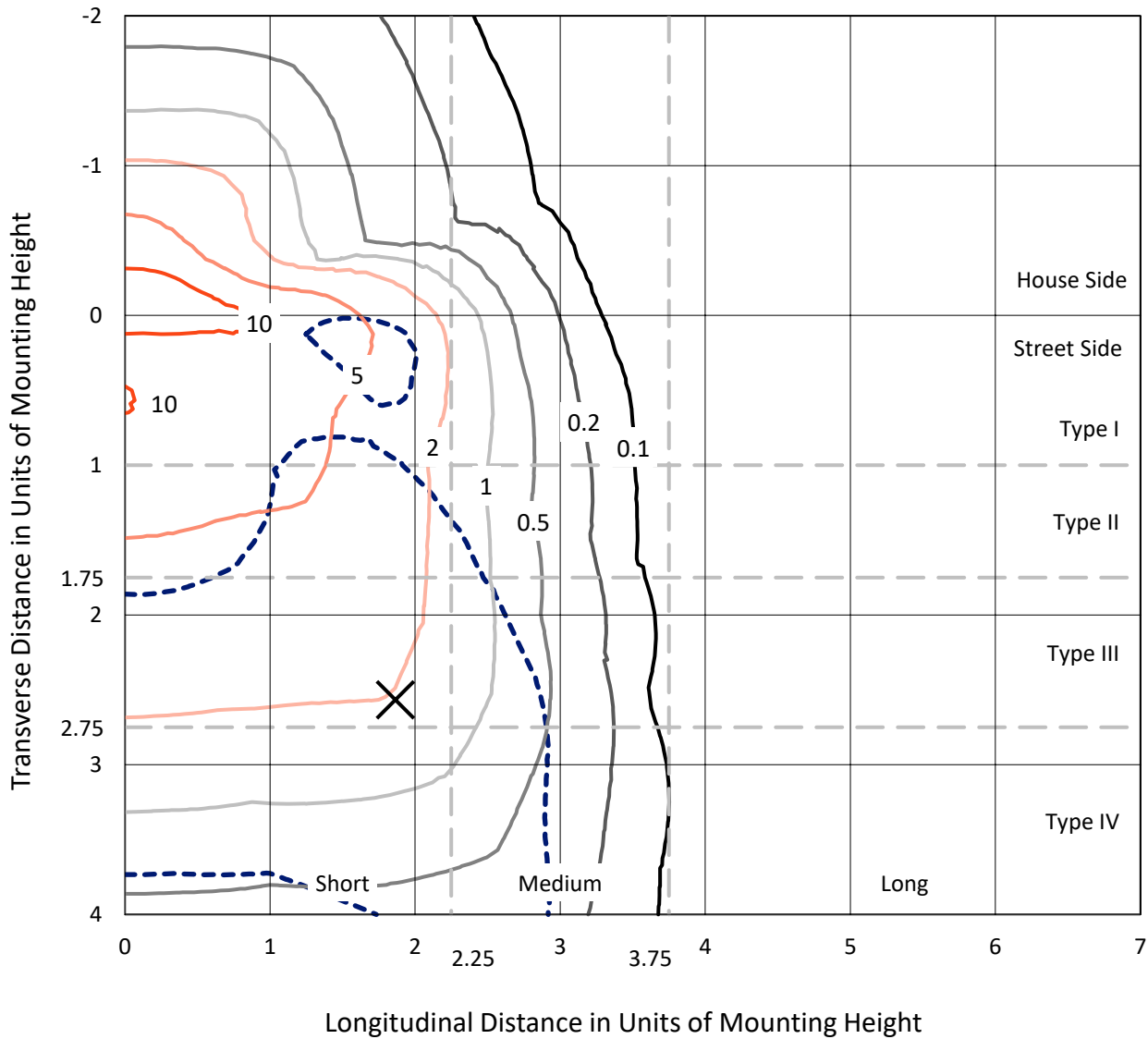
Input Watts (W): 82.1
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P633060
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Iso-Footcandle Lines of Horizontal Illumination

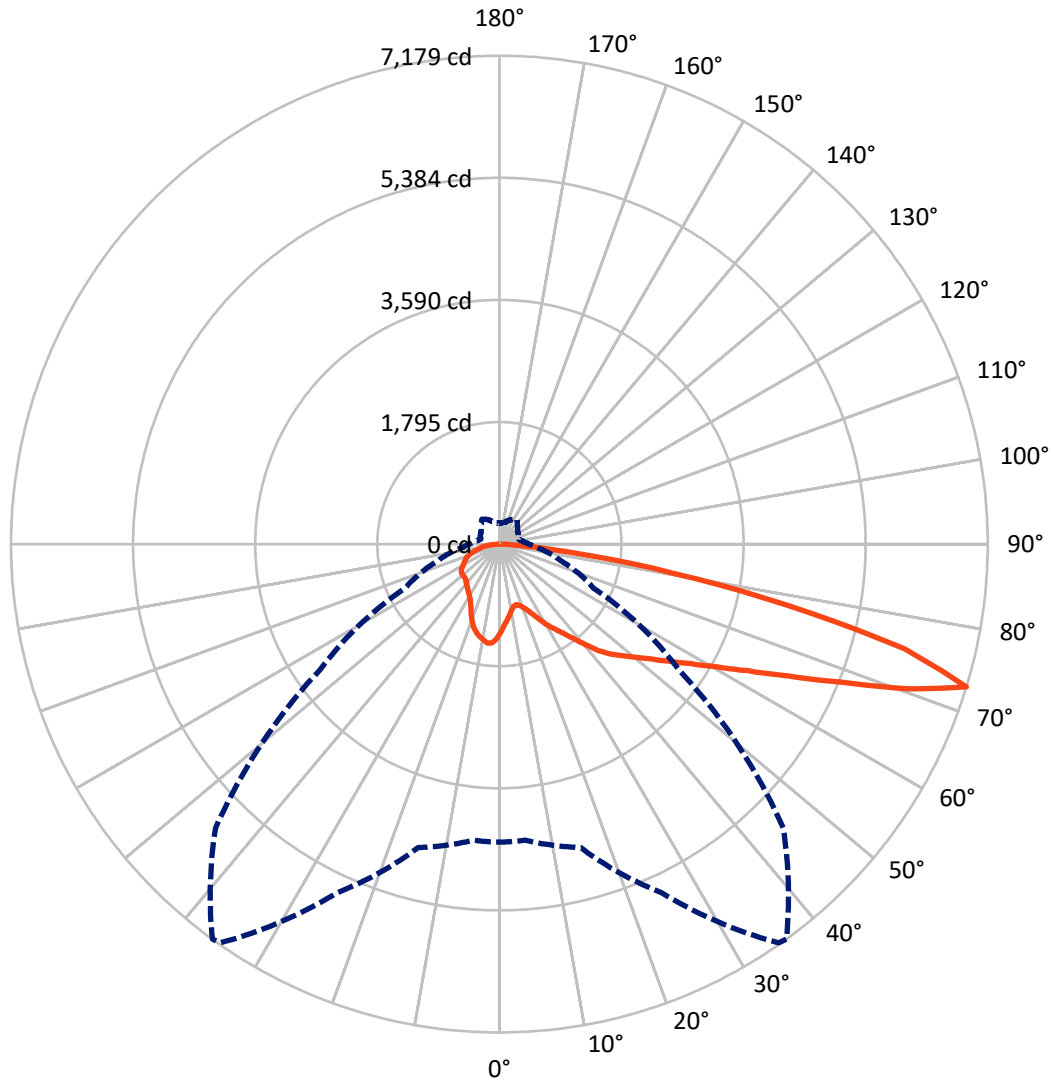
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 14 fc
 Type IV - Short - N/A

REPORT NUMBER: P633060
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Luminous Intensity Polar Plot



— Vertical Plane Through 36-Deg Lateral - - - Horizontal Cone Through 72.5-Deg Vertical

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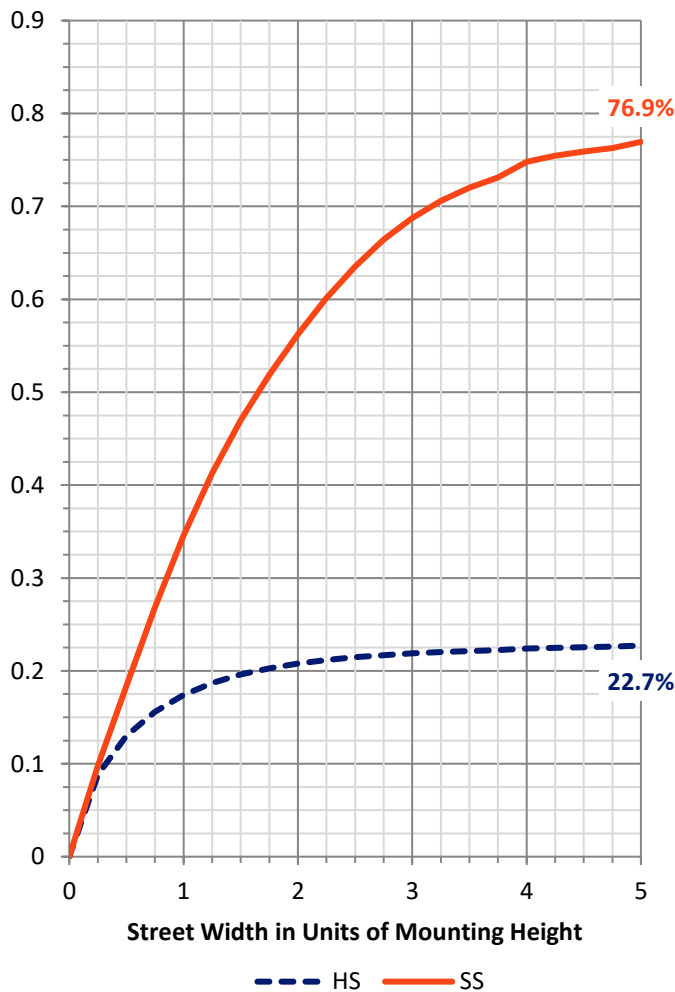
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 2065.5 | 0.0 | 2065.5 |
| | % Fixture | 23.1 | 0.0 | 23.1 |
| Street Side | Lumens | 6893.7 | 0.0 | 6893.7 |
| | % Fixture | 76.9 | 0.0 | 76.9 |
| Total | Lumens | 8959.2 | 0.0 | 8959.2 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 122.6 | 1.4 |
| 10°-20° | 345.8 | 3.9 |
| 20°-30° | 572.7 | 6.4 |
| 30°-40° | 857.7 | 9.6 |
| 40°-50° | 1251.2 | 14.0 |
| 50°-60° | 1780.9 | 19.9 |
| 60°-70° | 2250.0 | 25.1 |
| 70°-80° | 1603.3 | 17.9 |
| 80°-90° | 175.0 | 2.0 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 8959.2 | 100.0 |
| 0°-180° | 8959.2 | 100.0 |

Coefficient of Utilization



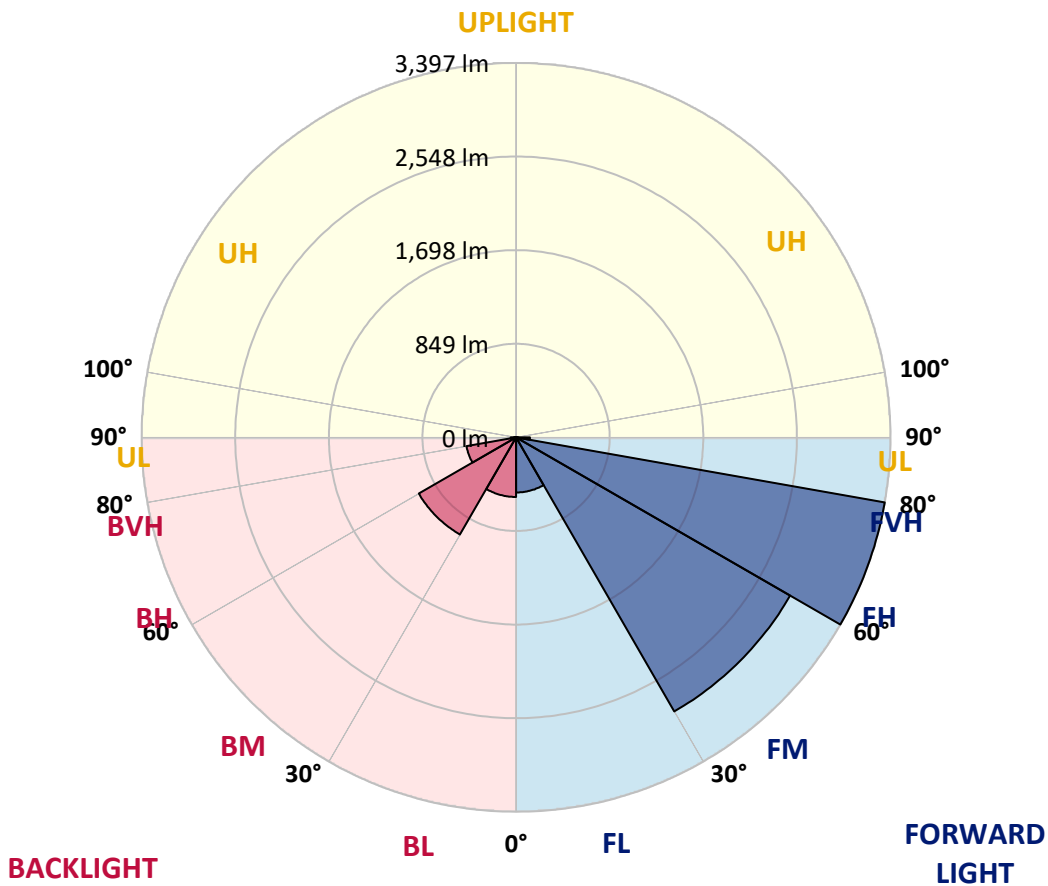
REPORT NUMBER: P633060

CATALOG NUMBER: GWS-SA2D-830-U-T4FT-W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 500.2 | 5.6 | | | |
| FM (30°-60°) | 2871.2 | 32.0 | | | |
| FH (60°-80°) | 3396.7 | 37.9 | | | G2/5000 |
| FVH (80°-90°) | 125.6 | 1.4 | | | G2/225 |
| BL (0°-30°) | 540.9 | 6.0 | B2/1000 | | |
| BM (30°-60°) | 1018.6 | 11.4 | B2/2500 | | |
| BH (60°-80°) | 456.6 | 5.1 | B1/500 | | G1/500 |
| BVH (80°-90°) | 49.4 | 0.6 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G2
 Type IV Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 36° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 |
| 2.5° | 1196.2 | 1194.2 | 1190.2 | 1202.2 | 1214.1 | 1212.8 | 1229.4 | 1245.4 | 1262.7 | 1280.6 | 1304.6 |
| 5° | 1100.4 | 1099.1 | 1095.8 | 1113.7 | 1131.7 | 1131.0 | 1158.3 | 1184.2 | 1219.5 | 1258.0 | 1305.9 |
| 7.5° | 1004.7 | 1001.4 | 1006.0 | 1028.6 | 1053.9 | 1056.6 | 1093.8 | 1136.3 | 1187.5 | 1245.4 | 1313.2 |
| 10° | 920.2 | 919.6 | 921.6 | 946.8 | 984.7 | 987.4 | 1035.3 | 1094.5 | 1162.3 | 1239.4 | 1329.8 |
| 12.5° | 898.3 | 897.0 | 891.7 | 904.3 | 932.9 | 936.9 | 989.4 | 1061.9 | 1145.0 | 1242.7 | 1352.4 |
| 15° | 934.2 | 930.9 | 912.3 | 906.3 | 920.2 | 923.6 | 968.1 | 1042.6 | 1135.0 | 1248.7 | 1381.0 |
| 17.5° | 996.0 | 994.1 | 958.8 | 934.2 | 943.5 | 946.2 | 979.4 | 1039.3 | 1132.4 | 1260.7 | 1416.3 |
| 20° | 1086.5 | 1077.8 | 1022.6 | 985.4 | 985.4 | 989.4 | 1009.3 | 1053.9 | 1135.7 | 1275.3 | 1456.2 |
| 22.5° | 1206.2 | 1188.9 | 1111.1 | 1060.5 | 1047.2 | 1052.6 | 1061.2 | 1090.5 | 1149.6 | 1299.9 | 1506.0 |
| 25° | 1340.5 | 1324.5 | 1232.1 | 1160.9 | 1142.3 | 1144.3 | 1137.0 | 1142.3 | 1180.2 | 1333.8 | 1567.9 |
| 27.5° | 1483.4 | 1472.8 | 1374.4 | 1284.0 | 1254.7 | 1254.7 | 1228.8 | 1216.1 | 1222.8 | 1372.4 | 1637.0 |
| 30° | 1611.1 | 1596.5 | 1513.4 | 1414.3 | 1375.7 | 1375.7 | 1326.5 | 1299.3 | 1283.3 | 1419.6 | 1729.5 |
| 32.5° | 1678.3 | 1669.6 | 1614.4 | 1538.6 | 1491.4 | 1484.1 | 1441.5 | 1409.6 | 1372.4 | 1489.4 | 1854.5 |
| 35° | 1766.0 | 1764.0 | 1730.8 | 1671.6 | 1611.8 | 1601.1 | 1571.9 | 1546.6 | 1482.1 | 1576.5 | 2020.7 |
| 37.5° | 1876.4 | 1873.1 | 1867.8 | 1832.5 | 1760.7 | 1758.7 | 1732.8 | 1702.2 | 1618.4 | 1702.2 | 2222.2 |
| 40° | 2000.1 | 1994.1 | 1987.4 | 1986.8 | 1943.6 | 1936.2 | 1934.2 | 1899.7 | 1782.6 | 1853.8 | 2432.3 |
| 42.5° | 2170.3 | 2149.7 | 2087.2 | 2115.1 | 2147.0 | 2140.4 | 2165.6 | 2113.8 | 1987.4 | 2034.0 | 2631.1 |
| 45° | 2379.7 | 2329.2 | 2205.5 | 2213.5 | 2294.0 | 2307.3 | 2395.0 | 2382.4 | 2212.8 | 2242.1 | 2840.5 |
| 47.5° | 2505.4 | 2461.5 | 2346.5 | 2339.8 | 2440.3 | 2456.9 | 2647.7 | 2671.6 | 2455.5 | 2492.8 | 3099.2 |
| 50° | 2608.5 | 2577.9 | 2483.5 | 2492.8 | 2599.2 | 2615.8 | 2898.4 | 2949.6 | 2684.3 | 2749.4 | 3399.7 |
| 52.5° | 2732.8 | 2688.9 | 2615.8 | 2659.7 | 2790.0 | 2809.9 | 3177.0 | 3232.2 | 2890.4 | 3031.4 | 3710.9 |
| 55° | 2802.6 | 2784.7 | 2786.0 | 2853.2 | 3016.7 | 3044.0 | 3468.9 | 3459.6 | 3079.2 | 3272.7 | 3945.0 |
| 57.5° | 2963.5 | 2956.9 | 3018.1 | 3043.3 | 3281.4 | 3316.6 | 3760.8 | 3681.0 | 3250.8 | 3459.6 | 4057.3 |
| 60° | 3247.5 | 3230.8 | 3284.0 | 3322.6 | 3608.5 | 3658.4 | 4086.6 | 3897.8 | 3367.1 | 3598.5 | 4019.4 |
| 62.5° | 3646.4 | 3625.8 | 3627.8 | 3689.0 | 4046.7 | 4099.2 | 4449.0 | 4078.6 | 3403.1 | 3619.8 | 3779.4 |
| 65° | 4142.4 | 4112.5 | 4078.6 | 4161.7 | 4628.5 | 4672.4 | 4843.3 | 4210.3 | 3317.3 | 3415.0 | 3278.0 |
| 67.5° | 4665.7 | 4641.1 | 4601.2 | 4775.4 | 5381.8 | 5408.4 | 5285.4 | 4199.0 | 3045.3 | 2867.1 | 2299.3 |
| 70° | 4696.3 | 4702.3 | 4891.1 | 5521.5 | 6365.3 | 6371.9 | 5703.7 | 3971.6 | 2466.2 | 1858.4 | 1145.7 |
| 72.5° | 4381.1 | 4371.2 | 4617.2 | 5657.8 | 7156.5 | 7179.1 | 5901.2 | 3217.5 | 1524.0 | 926.9 | 537.3 |
| 75° | 3558.6 | 3575.9 | 3834.6 | 4950.3 | 6133.9 | 6153.8 | 4810.7 | 1897.0 | 724.1 | 453.5 | 343.8 |
| 77.5° | 1532.0 | 1628.4 | 2138.4 | 3487.5 | 4393.1 | 4331.3 | 2479.5 | 768.6 | 386.3 | 323.2 | 263.3 |
| 80° | 442.2 | 480.1 | 762.0 | 1658.3 | 2632.4 | 2585.9 | 981.4 | 287.9 | 269.3 | 242.7 | 188.8 |
| 82.5° | 143.0 | 158.3 | 279.3 | 660.3 | 1179.6 | 1178.2 | 372.4 | 170.2 | 176.2 | 164.9 | 121.7 |
| 85° | 39.9 | 45.9 | 85.8 | 200.1 | 365.0 | 357.7 | 107.7 | 80.5 | 93.8 | 95.1 | 60.5 |
| 87.5° | 0.0 | 0.0 | 0.7 | 1.3 | 1.3 | 1.3 | 2.7 | 12.0 | 27.3 | 34.6 | 24.6 |
| 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: P633060
 CATALOG NUMBER: GWS-SA2D-830-U-T4FT-W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 | 1311.2 |
| 2.5° | 1319.2 | 1317.2 | 1344.5 | 1365.7 | 1385.7 | 1399.0 | 1403.0 | 1405.6 | 1411.0 | 1413.6 | 1411.0 |
| 5° | 1328.5 | 1338.5 | 1383.7 | 1416.9 | 1443.5 | 1459.5 | 1460.2 | 1458.8 | 1462.8 | 1459.5 | 1457.5 |
| 7.5° | 1348.5 | 1367.7 | 1424.9 | 1460.2 | 1477.4 | 1478.1 | 1462.2 | 1443.5 | 1434.2 | 1426.2 | 1423.6 |
| 10° | 1375.1 | 1403.6 | 1466.1 | 1489.4 | 1484.1 | 1459.5 | 1424.3 | 1395.0 | 1378.4 | 1366.4 | 1363.7 |
| 12.5° | 1411.6 | 1443.5 | 1502.7 | 1502.1 | 1468.8 | 1424.9 | 1383.7 | 1348.5 | 1324.5 | 1310.6 | 1305.9 |
| 15° | 1446.2 | 1486.8 | 1529.3 | 1498.1 | 1445.5 | 1392.3 | 1339.1 | 1291.9 | 1260.0 | 1238.1 | 1234.1 |
| 17.5° | 1488.8 | 1532.0 | 1548.6 | 1485.4 | 1416.3 | 1347.8 | 1276.6 | 1214.8 | 1171.6 | 1145.7 | 1143.7 |
| 20° | 1538.0 | 1576.5 | 1557.9 | 1463.5 | 1378.4 | 1288.6 | 1192.2 | 1123.0 | 1076.5 | 1051.2 | 1053.2 |
| 22.5° | 1595.1 | 1623.1 | 1560.6 | 1433.6 | 1325.8 | 1204.8 | 1097.1 | 1030.6 | 999.4 | 986.1 | 986.7 |
| 25° | 1656.3 | 1674.3 | 1555.9 | 1393.0 | 1245.4 | 1102.4 | 999.4 | 968.8 | 966.1 | 962.8 | 964.1 |
| 27.5° | 1728.8 | 1724.8 | 1541.9 | 1335.8 | 1137.0 | 983.4 | 930.9 | 938.9 | 949.5 | 948.2 | 949.5 |
| 30° | 1825.9 | 1788.0 | 1524.0 | 1256.7 | 1008.0 | 883.7 | 890.3 | 912.9 | 926.9 | 928.2 | 932.2 |
| 32.5° | 1936.9 | 1857.8 | 1495.4 | 1149.0 | 885.0 | 827.8 | 852.4 | 879.7 | 896.3 | 899.6 | 905.0 |
| 35° | 2069.2 | 1937.6 | 1444.9 | 1014.7 | 796.6 | 794.6 | 817.2 | 835.8 | 853.8 | 855.1 | 855.1 |
| 37.5° | 2221.5 | 2017.4 | 1364.4 | 866.4 | 742.0 | 766.0 | 787.3 | 791.3 | 795.9 | 791.9 | 793.9 |
| 40° | 2361.1 | 2094.5 | 1250.0 | 731.4 | 697.5 | 740.7 | 758.7 | 745.4 | 730.7 | 720.8 | 722.8 |
| 42.5° | 2478.2 | 2147.0 | 1098.4 | 637.0 | 652.3 | 718.1 | 732.1 | 704.8 | 676.2 | 657.6 | 660.3 |
| 45° | 2609.8 | 2195.6 | 920.2 | 573.2 | 613.7 | 702.2 | 711.5 | 676.2 | 639.7 | 611.7 | 607.7 |
| 47.5° | 2791.3 | 2294.6 | 762.0 | 528.6 | 586.5 | 693.5 | 708.8 | 660.9 | 613.1 | 571.2 | 566.5 |
| 50° | 3015.4 | 2434.9 | 629.7 | 499.4 | 573.8 | 688.9 | 708.1 | 644.3 | 587.1 | 537.9 | 534.6 |
| 52.5° | 3260.1 | 2571.9 | 531.9 | 476.7 | 561.2 | 674.9 | 704.8 | 625.7 | 559.9 | 506.7 | 502.7 |
| 55° | 3423.0 | 2625.8 | 466.1 | 455.5 | 540.6 | 652.9 | 691.5 | 607.7 | 518.6 | 470.1 | 464.1 |
| 57.5° | 3470.9 | 2556.6 | 420.2 | 436.2 | 514.0 | 622.4 | 666.2 | 569.8 | 493.4 | 454.8 | 450.1 |
| 60° | 3388.4 | 2382.4 | 391.6 | 420.2 | 484.7 | 583.1 | 622.4 | 547.9 | 473.4 | 438.8 | 435.5 |
| 62.5° | 3155.7 | 2113.8 | 369.7 | 403.6 | 454.8 | 541.9 | 594.4 | 521.3 | 451.5 | 424.2 | 419.6 |
| 65° | 2687.6 | 1733.4 | 351.7 | 386.3 | 426.2 | 502.7 | 563.9 | 494.7 | 427.5 | 406.9 | 401.6 |
| 67.5° | 1879.7 | 1217.5 | 332.5 | 365.7 | 397.6 | 464.8 | 531.9 | 470.1 | 402.9 | 387.6 | 382.3 |
| 70° | 918.9 | 645.6 | 309.2 | 341.8 | 367.0 | 426.2 | 500.0 | 440.2 | 370.4 | 361.7 | 354.4 |
| 72.5° | 437.5 | 361.1 | 281.9 | 309.2 | 325.1 | 375.0 | 446.8 | 397.0 | 331.8 | 313.2 | 300.5 |
| 75° | 293.2 | 256.7 | 246.0 | 270.6 | 274.6 | 314.5 | 383.0 | 342.4 | 292.6 | 271.3 | 260.6 |
| 77.5° | 222.1 | 196.2 | 206.8 | 228.7 | 220.8 | 258.7 | 315.2 | 305.2 | 264.0 | 244.7 | 239.4 |
| 80° | 156.3 | 143.0 | 164.2 | 177.5 | 171.5 | 220.1 | 283.9 | 261.3 | 217.4 | 196.2 | 192.2 |
| 82.5° | 98.4 | 95.7 | 121.0 | 123.0 | 125.0 | 174.2 | 233.4 | 205.5 | 168.9 | 139.0 | 129.0 |
| 85° | 49.2 | 54.5 | 72.5 | 72.5 | 71.8 | 89.8 | 133.0 | 115.7 | 91.1 | 72.5 | 70.5 |
| 87.5° | 16.6 | 23.3 | 31.3 | 25.3 | 19.3 | 15.3 | 17.3 | 21.3 | 22.6 | 21.9 | 21.9 |
| 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

MCGRAW EDISON

Report Number: SP1-2408-195-9

Test Date: 08/07/2024

Luminaire Tested: GALN-SB1A-830-U-5WQ

Data in this report applies to families of products including GALN-SB1A-830-U-5WQ.

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2408-195-9
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 08/07/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: MCGRAW EDISON
 Catalog Number: **GALN-SB1A-830-U-5WQ**
 Description: GALLEON AREA AND ROADWAY LUMINAIRE. (1) 80 CRI, 3000K, 350MA HIGH DENSITY LIGHTSQUARE WITH 26 LEDS AND TYPE V WIDE OPTICS

Spectral Parameters

CCT (K): 3050
 CIE u': 0.2476
 CIE v': 0.5251
 Duv: 0.0034
 CIE x: 0.4383
 CIE y: 0.4131
 CIE z: 0.1487
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 581
 Purity: 55.55201
 Rf: 81.5
 Rg: 99.2

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 81.0 | | |
| R1: | 79.6 | R9: | 7.1 |
| R2: | 85.6 | R10: | 67.0 |
| R3: | 92.0 | R11: | 82.7 |
| R4: | 82.6 | R12: | 63.2 |
| R5: | 78.9 | R13: | 80.3 |
| R6: | 81.7 | R14: | 95.0 |
| R7: | 85.2 | R15: | 71.7 |
| R8: | 62.0 | | |



Test Conditions

Stabilization Time: 20M
 Operation Time: 1H 20M
 Sphere Temperature (°C): 24.2

REPORT NUMBER: SP1-2408-195-9

| 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



CCT = 3050K
 CIE x = 0.4383
 CIE y = 0.4131
 Duv = 0.0034

Point lies inside the ANSI 3000K 4-step quadrangle

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Photopic Flux vs. Wavelength



Photopic Lumens: NR

| λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2408-195-9

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.27

| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2408-195-9

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.32

| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

Summary

$R_f = 81.5$
 $R_g = 99.2$
 $CIE R_a = 81.0$
 $R_9 = 7.1$



Color Vector Graphics

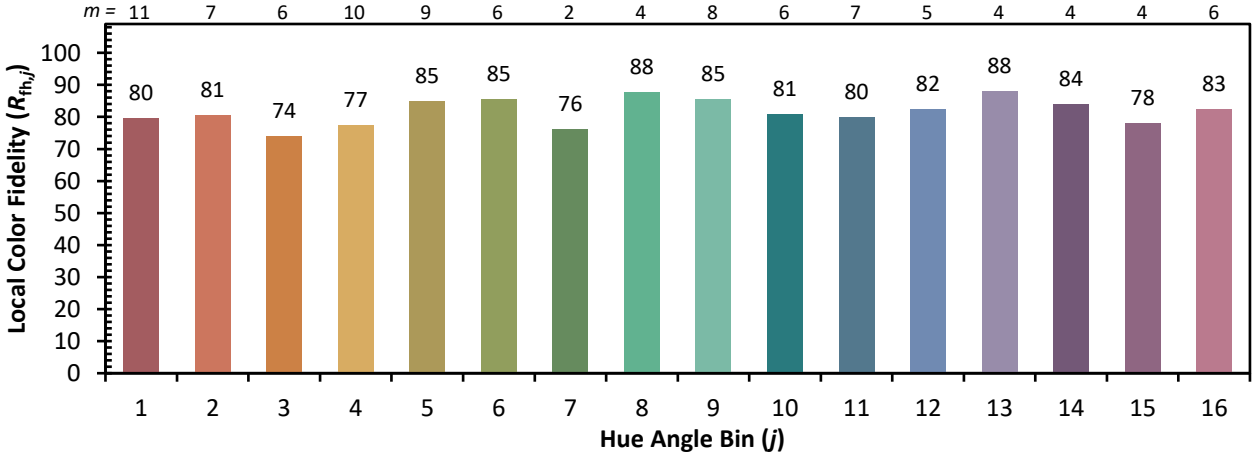


Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 94 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 91 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 78 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)