

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: P631567

Luminaire Tested: GWS-SA1F-830-U-T3-W-GRSWH

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P631567
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-25)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA1F-830-U-T3-W-GRSWH
Description: GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS W/ FACTORY INSTALLED GLARE SHIELD, WH
Light Source: (16) 3000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5712.2 lumens
Efficiency: N/A
Efficacy: 85.0 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type II - Short
BUG Rating: B1 - U0 - G1

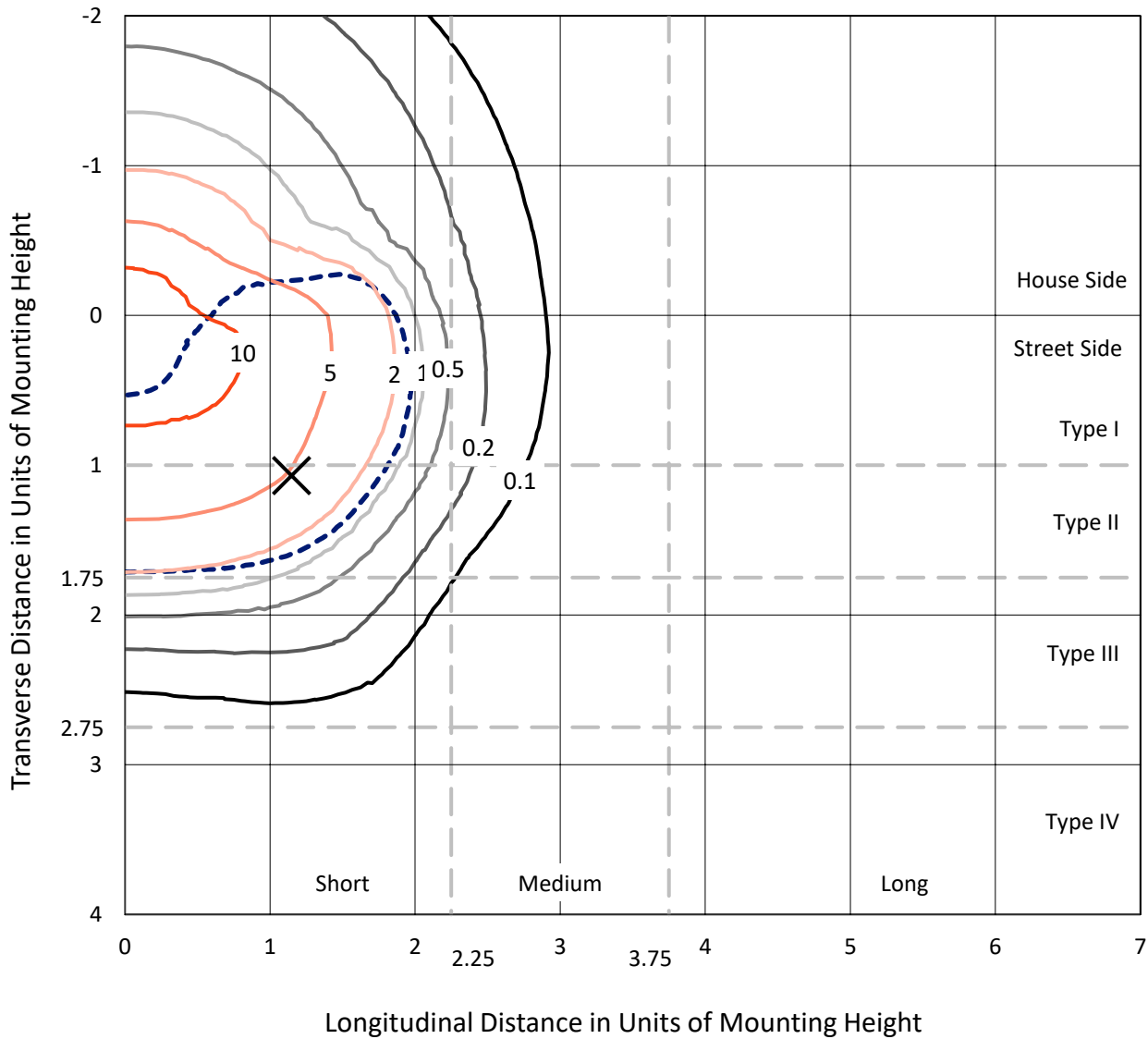
Input Watts (W): 67.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P631567
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Iso-Footcandle Lines of Horizontal Illumination

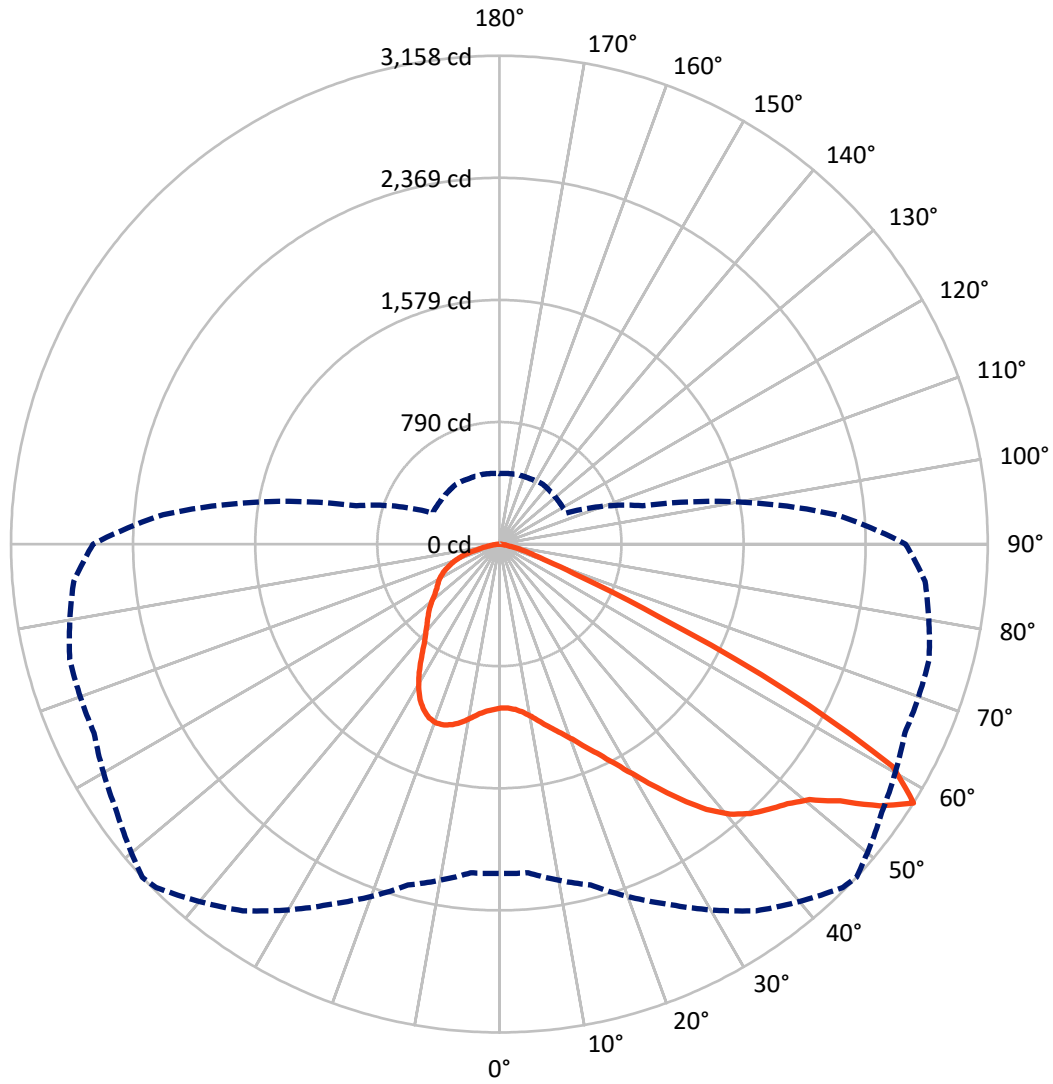
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 11.8 fc
 Type II - Short - N/A

REPORT NUMBER: P631567
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Luminous Intensity Polar Plot



— Vertical Plane Through 47-Deg Lateral - - - Horizontal Cone Through 57.5-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 1807.9 | 0.0 | 1807.9 |
| | % Fixture | 31.6 | 0.0 | 31.6 |
| Street Side | Lumens | 3904.3 | 0.0 | 3904.3 |
| | % Fixture | 68.4 | 0.0 | 68.4 |
| Total | Lumens | 5712.2 | 0.0 | 5712.2 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 104.5 | 1.8 |
| 10°-20° | 343.7 | 6.0 |
| 20°-30° | 618.8 | 10.8 |
| 30°-40° | 934.6 | 16.4 |
| 40°-50° | 1258.6 | 22.0 |
| 50°-60° | 1512.3 | 26.5 |
| 60°-70° | 736.5 | 12.9 |
| 70°-80° | 181.5 | 3.2 |
| 80°-90° | 21.8 | 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° | 5712.2 | 100.0 |
| 0°-180° | 5712.2 | 100.0 |

Coefficient of Utilization



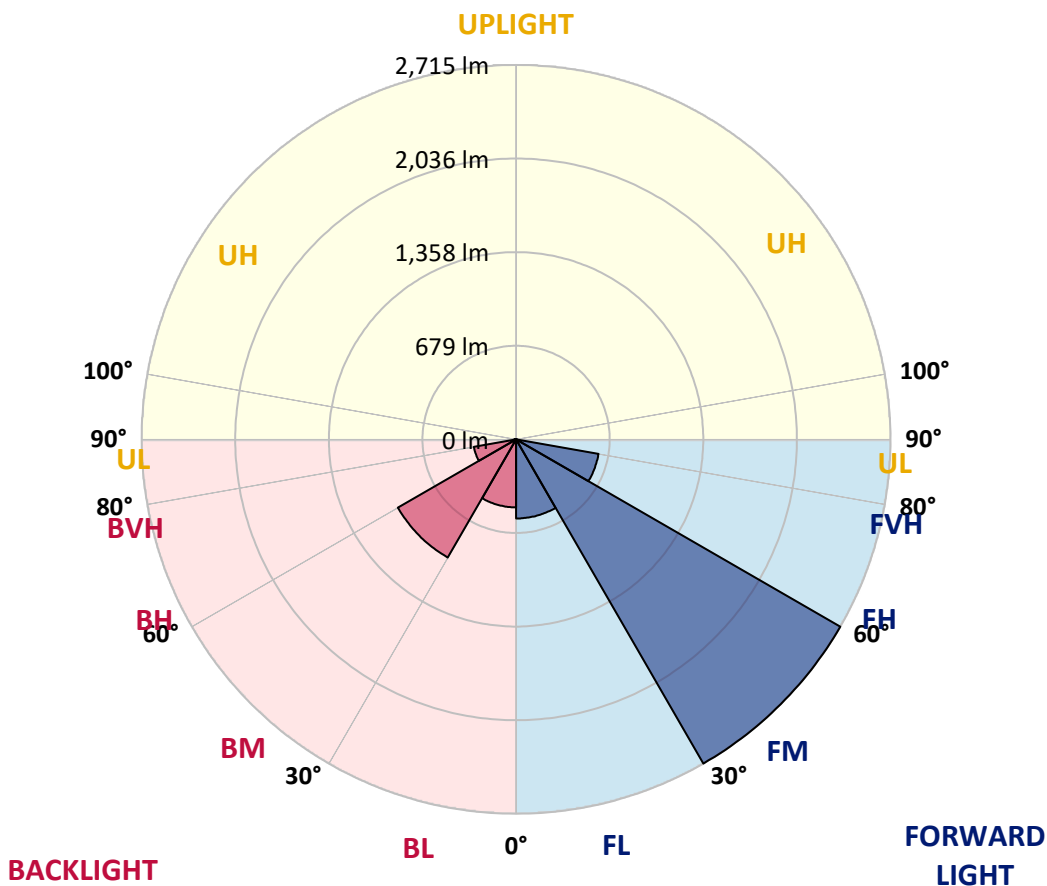
REPORT NUMBER: P631567

CATALOG NUMBER: GWS-SA1F-830-U-T3-W-GRSWH

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|--------|
| | | | B | U | G |
| FL (0°-30°) | 573.8 | 10.0 | | | |
| FM (30°-60°) | 2715.3 | 47.5 | | | |
| FH (60°-80°) | 607.0 | 10.6 | | | G0/660 |
| FVH (80°-90°) | 8.2 | 0.1 | | | G0/10 |
| BL (0°-30°) | 493.2 | 8.6 | B1/500 | | |
| BM (30°-60°) | 990.2 | 17.3 | B1/1000 | | |
| BH (60°-80°) | 311.0 | 5.4 | B1/500 | | G1/500 |
| BVH (80°-90°) | 13.6 | 0.2 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G1
 Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 47° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 |
| 2.5° | 1057.4 | 1056.9 | 1056.9 | 1059.8 | 1059.8 | 1060.8 | 1062.2 | 1063.7 | 1064.1 | 1061.7 | 1056.5 |
| 5° | 1068.9 | 1068.9 | 1068.9 | 1071.3 | 1071.3 | 1072.3 | 1074.2 | 1074.7 | 1074.2 | 1070.4 | 1065.1 |
| 7.5° | 1087.2 | 1087.2 | 1087.6 | 1090.5 | 1092.9 | 1094.4 | 1097.7 | 1097.2 | 1095.8 | 1089.6 | 1082.8 |
| 10° | 1116.9 | 1118.3 | 1119.8 | 1123.1 | 1127.9 | 1131.3 | 1133.7 | 1133.7 | 1131.8 | 1122.2 | 1113.5 |
| 12.5° | 1159.1 | 1161.0 | 1162.5 | 1165.4 | 1169.2 | 1175.0 | 1180.2 | 1180.2 | 1177.8 | 1165.8 | 1152.9 |
| 15° | 1208.5 | 1210.5 | 1210.0 | 1210.9 | 1218.1 | 1226.3 | 1230.6 | 1233.5 | 1234.5 | 1217.7 | 1197.5 |
| 17.5° | 1265.2 | 1267.1 | 1265.2 | 1262.3 | 1263.2 | 1276.2 | 1283.9 | 1294.4 | 1300.7 | 1278.1 | 1246.0 |
| 20° | 1316.5 | 1314.6 | 1314.6 | 1316.5 | 1319.4 | 1335.2 | 1346.7 | 1364.0 | 1371.7 | 1344.3 | 1294.4 |
| 22.5° | 1370.7 | 1375.0 | 1373.1 | 1373.1 | 1384.6 | 1411.0 | 1424.9 | 1447.5 | 1455.6 | 1420.1 | 1353.0 |
| 25° | 1440.8 | 1444.6 | 1443.6 | 1444.6 | 1458.0 | 1495.4 | 1509.4 | 1551.1 | 1559.3 | 1508.4 | 1417.7 |
| 27.5° | 1517.5 | 1523.8 | 1526.6 | 1525.7 | 1547.3 | 1596.2 | 1613.5 | 1671.5 | 1686.4 | 1607.2 | 1486.8 |
| 30° | 1617.3 | 1624.0 | 1626.4 | 1625.5 | 1650.9 | 1717.6 | 1737.3 | 1803.5 | 1824.6 | 1724.3 | 1574.6 |
| 32.5° | 1732.9 | 1739.7 | 1746.8 | 1749.7 | 1782.4 | 1850.5 | 1878.8 | 1947.4 | 1977.6 | 1859.6 | 1680.6 |
| 35° | 1847.6 | 1853.4 | 1867.3 | 1889.8 | 1934.4 | 2004.0 | 2029.0 | 2096.6 | 2125.9 | 2000.2 | 1808.7 |
| 37.5° | 1974.3 | 1978.1 | 1990.1 | 2021.3 | 2085.6 | 2151.8 | 2176.7 | 2241.5 | 2244.9 | 2135.9 | 1953.6 |
| 40° | 2112.9 | 2112.9 | 2110.5 | 2141.2 | 2208.4 | 2275.1 | 2296.7 | 2334.1 | 2314.4 | 2240.5 | 2094.7 |
| 42.5° | 2230.5 | 2228.5 | 2230.5 | 2259.2 | 2309.1 | 2363.4 | 2382.1 | 2374.9 | 2349.9 | 2320.7 | 2222.3 |
| 45° | 2336.5 | 2337.9 | 2355.2 | 2377.3 | 2403.2 | 2435.3 | 2446.4 | 2405.6 | 2383.0 | 2384.9 | 2324.5 |
| 47.5° | 2408.5 | 2409.9 | 2450.2 | 2487.1 | 2503.0 | 2513.0 | 2508.2 | 2451.6 | 2440.1 | 2461.7 | 2403.2 |
| 50° | 2418.0 | 2425.7 | 2495.3 | 2571.1 | 2610.4 | 2611.9 | 2598.4 | 2529.4 | 2526.0 | 2550.5 | 2445.4 |
| 52.5° | 2420.0 | 2427.6 | 2514.5 | 2651.2 | 2753.4 | 2775.0 | 2759.6 | 2687.7 | 2652.7 | 2628.2 | 2497.2 |
| 55° | 2412.8 | 2421.4 | 2517.4 | 2705.0 | 2900.7 | 2987.1 | 2988.5 | 2886.8 | 2775.0 | 2758.7 | 2645.0 |
| 57.5° | 2130.2 | 2133.5 | 2282.3 | 2568.2 | 2894.9 | 3139.6 | 3158.3 | 3020.2 | 2892.5 | 2877.2 | 2763.5 |
| 60° | 1483.9 | 1497.4 | 1659.1 | 2036.6 | 2432.0 | 2863.3 | 2923.7 | 2883.4 | 2798.0 | 2686.2 | 2371.0 |
| 62.5° | 743.2 | 754.7 | 916.8 | 1273.8 | 1677.3 | 2017.9 | 2082.7 | 2125.4 | 2145.5 | 2025.6 | 1614.4 |
| 65° | 320.0 | 328.6 | 429.4 | 665.4 | 949.5 | 1114.0 | 1136.6 | 1187.9 | 1313.6 | 1172.1 | 869.8 |
| 67.5° | 214.0 | 219.7 | 271.1 | 405.9 | 559.4 | 570.0 | 566.6 | 577.6 | 605.0 | 499.4 | 392.9 |
| 70° | 164.1 | 168.9 | 203.4 | 297.5 | 402.0 | 344.0 | 325.8 | 295.5 | 321.0 | 327.2 | 318.6 |
| 72.5° | 119.0 | 122.8 | 148.7 | 202.9 | 251.9 | 219.7 | 216.9 | 232.2 | 266.8 | 276.3 | 271.1 |
| 75° | 76.8 | 78.7 | 94.5 | 111.3 | 130.0 | 141.1 | 146.8 | 174.6 | 209.7 | 216.9 | 210.6 |
| 77.5° | 51.3 | 52.8 | 61.9 | 71.5 | 73.9 | 74.4 | 76.3 | 88.8 | 112.7 | 126.2 | 124.7 |
| 80° | 26.9 | 26.9 | 30.2 | 30.2 | 34.5 | 41.3 | 43.2 | 51.3 | 62.4 | 69.1 | 69.6 |
| 82.5° | 10.6 | 11.0 | 13.0 | 14.4 | 17.3 | 21.1 | 22.5 | 26.9 | 32.6 | 37.4 | 41.7 |
| 85° | 4.3 | 4.8 | 5.3 | 6.2 | 7.7 | 9.6 | 10.1 | 11.5 | 15.4 | 19.2 | 21.6 |
| 87.5° | 0.0 | 0.0 | 0.5 | 0.5 | 1.0 | 1.4 | 1.4 | 1.9 | 2.4 | 4.3 | 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 |



REPORT NUMBER: P631567

CATALOG NUMBER: GWS-SA1F-830-U-T3-W-GRSWH

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 | 1059.3 |
| 2.5° | 1062.7 | 1056.5 | 1062.7 | 1064.6 | 1069.9 | 1071.8 | 1068.5 | 1068.0 | 1068.0 | 1063.2 | 1061.7 |
| 5° | 1069.9 | 1064.1 | 1070.4 | 1073.2 | 1080.9 | 1085.7 | 1086.7 | 1090.5 | 1092.9 | 1091.0 | 1090.5 |
| 7.5° | 1087.6 | 1080.4 | 1087.2 | 1091.5 | 1101.6 | 1109.2 | 1112.6 | 1121.2 | 1127.5 | 1126.5 | 1126.0 |
| 10° | 1118.8 | 1109.2 | 1116.9 | 1124.1 | 1135.1 | 1144.3 | 1144.7 | 1149.5 | 1155.8 | 1153.9 | 1152.9 |
| 12.5° | 1154.8 | 1145.7 | 1154.3 | 1161.5 | 1174.5 | 1178.3 | 1172.1 | 1170.2 | 1171.1 | 1168.7 | 1166.8 |
| 15° | 1198.9 | 1186.0 | 1193.7 | 1201.8 | 1209.0 | 1204.7 | 1191.3 | 1186.0 | 1185.5 | 1182.2 | 1180.2 |
| 17.5° | 1243.1 | 1226.8 | 1232.5 | 1236.9 | 1233.5 | 1220.1 | 1203.3 | 1194.2 | 1189.8 | 1183.1 | 1181.2 |
| 20° | 1286.7 | 1266.1 | 1265.2 | 1261.8 | 1246.4 | 1222.0 | 1199.4 | 1181.2 | 1170.2 | 1161.0 | 1157.7 |
| 22.5° | 1336.6 | 1307.9 | 1293.5 | 1278.1 | 1244.5 | 1204.7 | 1170.6 | 1144.7 | 1127.0 | 1115.5 | 1111.6 |
| 25° | 1390.4 | 1349.6 | 1319.9 | 1289.1 | 1225.3 | 1167.8 | 1120.3 | 1084.8 | 1063.7 | 1051.2 | 1046.9 |
| 27.5° | 1443.6 | 1387.5 | 1342.9 | 1290.6 | 1187.0 | 1114.5 | 1050.7 | 1002.7 | 981.6 | 971.5 | 968.2 |
| 30° | 1515.6 | 1437.9 | 1370.2 | 1271.9 | 1136.6 | 1040.6 | 961.0 | 912.5 | 898.6 | 891.4 | 888.5 |
| 32.5° | 1598.6 | 1501.7 | 1406.7 | 1232.5 | 1072.3 | 954.3 | 870.3 | 836.7 | 827.1 | 813.2 | 812.7 |
| 35° | 1708.0 | 1592.8 | 1441.2 | 1174.5 | 991.2 | 861.7 | 800.7 | 776.8 | 759.5 | 737.4 | 735.5 |
| 37.5° | 1835.6 | 1706.5 | 1459.9 | 1100.6 | 896.7 | 785.4 | 748.9 | 722.1 | 694.2 | 665.0 | 661.1 |
| 40° | 1967.5 | 1839.4 | 1461.4 | 1013.3 | 804.1 | 735.0 | 704.3 | 669.3 | 634.7 | 602.1 | 597.8 |
| 42.5° | 2106.2 | 1963.2 | 1436.0 | 912.5 | 728.3 | 691.4 | 660.2 | 616.0 | 577.2 | 555.1 | 552.7 |
| 45° | 2230.0 | 2063.0 | 1378.4 | 806.5 | 672.2 | 654.9 | 615.1 | 567.6 | 546.9 | 531.1 | 527.7 |
| 47.5° | 2327.4 | 2129.2 | 1300.7 | 711.5 | 626.6 | 617.5 | 565.7 | 541.2 | 525.3 | 511.0 | 507.6 |
| 50° | 2375.3 | 2144.1 | 1199.4 | 634.3 | 584.4 | 573.3 | 537.8 | 519.1 | 508.6 | 497.0 | 494.2 |
| 52.5° | 2434.8 | 2160.9 | 1112.1 | 569.5 | 543.1 | 528.2 | 514.8 | 499.9 | 492.2 | 485.0 | 482.7 |
| 55° | 2571.6 | 2224.2 | 1066.1 | 517.7 | 503.8 | 497.0 | 495.1 | 482.7 | 480.3 | 475.5 | 471.1 |
| 57.5° | 2627.2 | 2183.4 | 957.1 | 475.5 | 472.6 | 473.5 | 478.3 | 466.8 | 464.4 | 458.7 | 455.8 |
| 60° | 2112.9 | 1650.4 | 648.2 | 439.0 | 446.7 | 452.9 | 457.7 | 446.2 | 442.8 | 441.9 | 438.0 |
| 62.5° | 1353.9 | 1015.2 | 452.4 | 404.9 | 416.4 | 424.1 | 427.0 | 416.0 | 413.6 | 421.2 | 421.7 |
| 65° | 704.8 | 553.2 | 367.0 | 368.5 | 378.1 | 389.6 | 395.3 | 391.5 | 390.5 | 398.7 | 399.2 |
| 67.5° | 359.8 | 338.2 | 320.0 | 325.3 | 333.0 | 347.8 | 361.3 | 378.1 | 383.8 | 384.8 | 385.3 |
| 70° | 306.6 | 297.0 | 287.9 | 291.2 | 299.4 | 307.5 | 320.5 | 328.6 | 319.0 | 316.6 | 315.7 |
| 72.5° | 261.0 | 253.8 | 249.5 | 253.3 | 257.6 | 256.2 | 252.4 | 256.2 | 257.6 | 258.1 | 258.6 |
| 75° | 202.9 | 197.7 | 194.3 | 194.8 | 194.8 | 189.5 | 182.3 | 178.0 | 173.2 | 169.4 | 169.4 |
| 77.5° | 124.3 | 125.2 | 128.6 | 128.1 | 127.6 | 125.7 | 118.5 | 114.7 | 103.2 | 99.8 | 99.8 |
| 80° | 71.0 | 72.4 | 75.8 | 76.8 | 76.8 | 74.4 | 67.2 | 62.9 | 57.6 | 55.2 | 54.7 |
| 82.5° | 43.2 | 45.1 | 47.0 | 48.0 | 48.5 | 45.6 | 39.3 | 36.0 | 33.1 | 30.7 | 30.7 |
| 85° | 22.5 | 23.5 | 25.4 | 25.9 | 24.5 | 21.6 | 18.2 | 16.8 | 13.9 | 13.4 | 13.4 |
| 87.5° | 6.2 | 6.7 | 7.7 | 6.2 | 5.8 | 4.3 | 2.4 | 1.9 | 1.0 | 0.5 | 0.5 |
| 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



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)