

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P1438401

Luminaire Tested: **GALN-SB2A-850-U-T4LG-HSS**

Issue Date: 03/27/202

This test was performed under the Supervised Manufacturer's Testing Program. The results of this test have not been influenced by sources from within Cooper Lighting Solutions or from external interests.

Report Generated By 670245763



Test Information

Test Method: LM-79-08
 Report Number: P1438401
 Test Lab: INNOVATION CENTER(G1)
 Issue Date: 03/27/202
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: McGRAW-EDISON
 Catalog Number: GALN-SB2A-850-U-T4LG-HSS
 Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 350mA 2xLight Square PACKAGE 80CRI 5000K FIXTURE w/ TYPE IV LOW GLARE WITH HOUSE SIDE SHIELD
 Light Source: (52) 5000K CCT, 80 CRI LEDS
 Ballast/Driver: ELECTRONIC DRIVER

Luminaire Equipment:

| <u>Sample No.</u> | <u>Condition</u> | <u>Description</u> |
|-------------------|------------------|--------------------|
| a | good | reflector |
| b | good | lens |
| c | good | housing |
| d | good | cord |

Summary

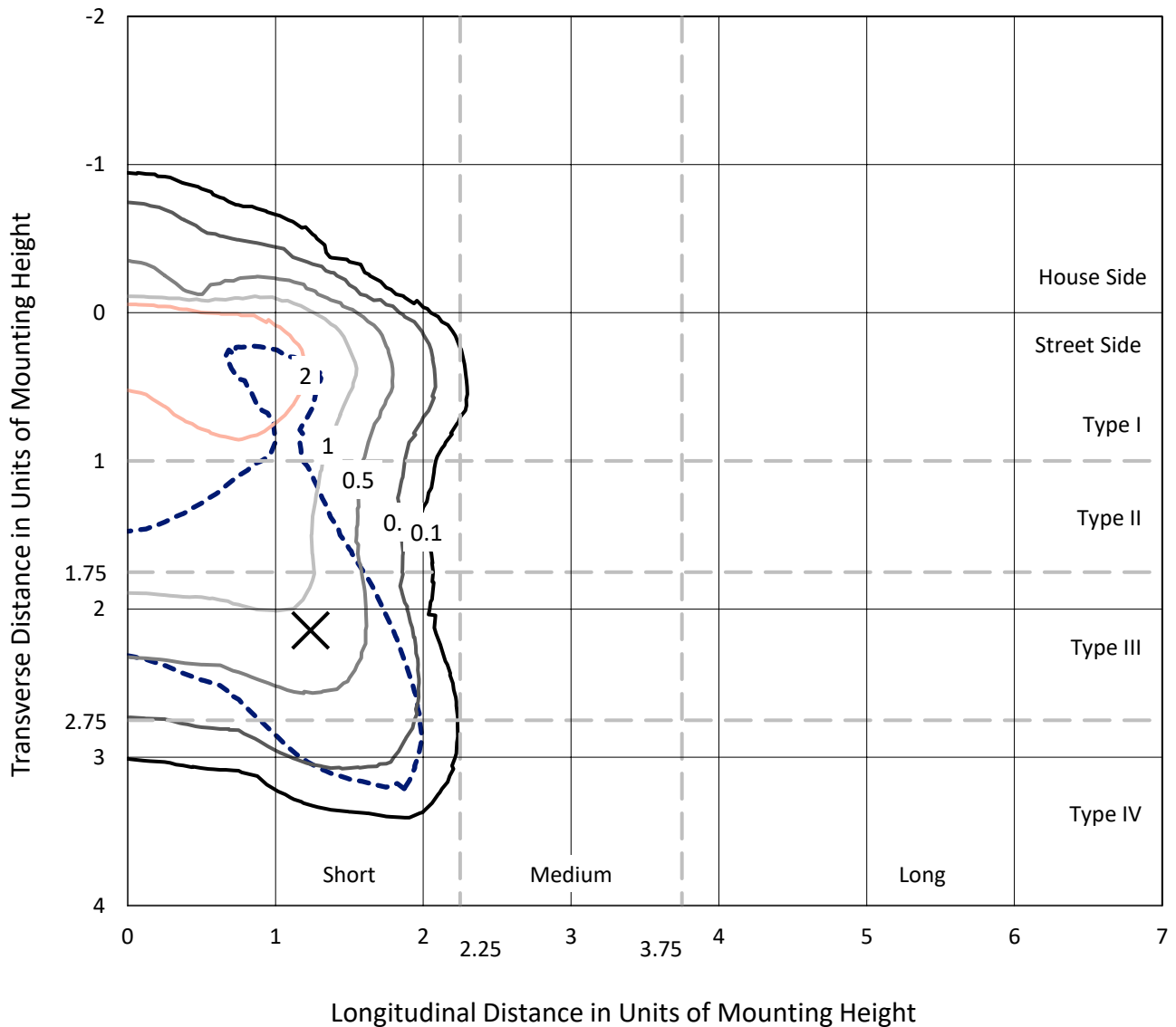
Lumens per Lamp: N/A
 Luminaire Lumens: 6221.4 lumens
 Efficiency: N/A
 Efficacy: 108.6 lumens/watt
 Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')
 IES Classification: Type IV - Short
 BUG Rating: B1 - U0 - G2

Input Watts (W): 57.3
 Input Voltage (V): 120
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: 0.97
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 28.75 FT

REPORT NUMBER: P1438401
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Iso-Footcandle Lines of Horizontal Illumination

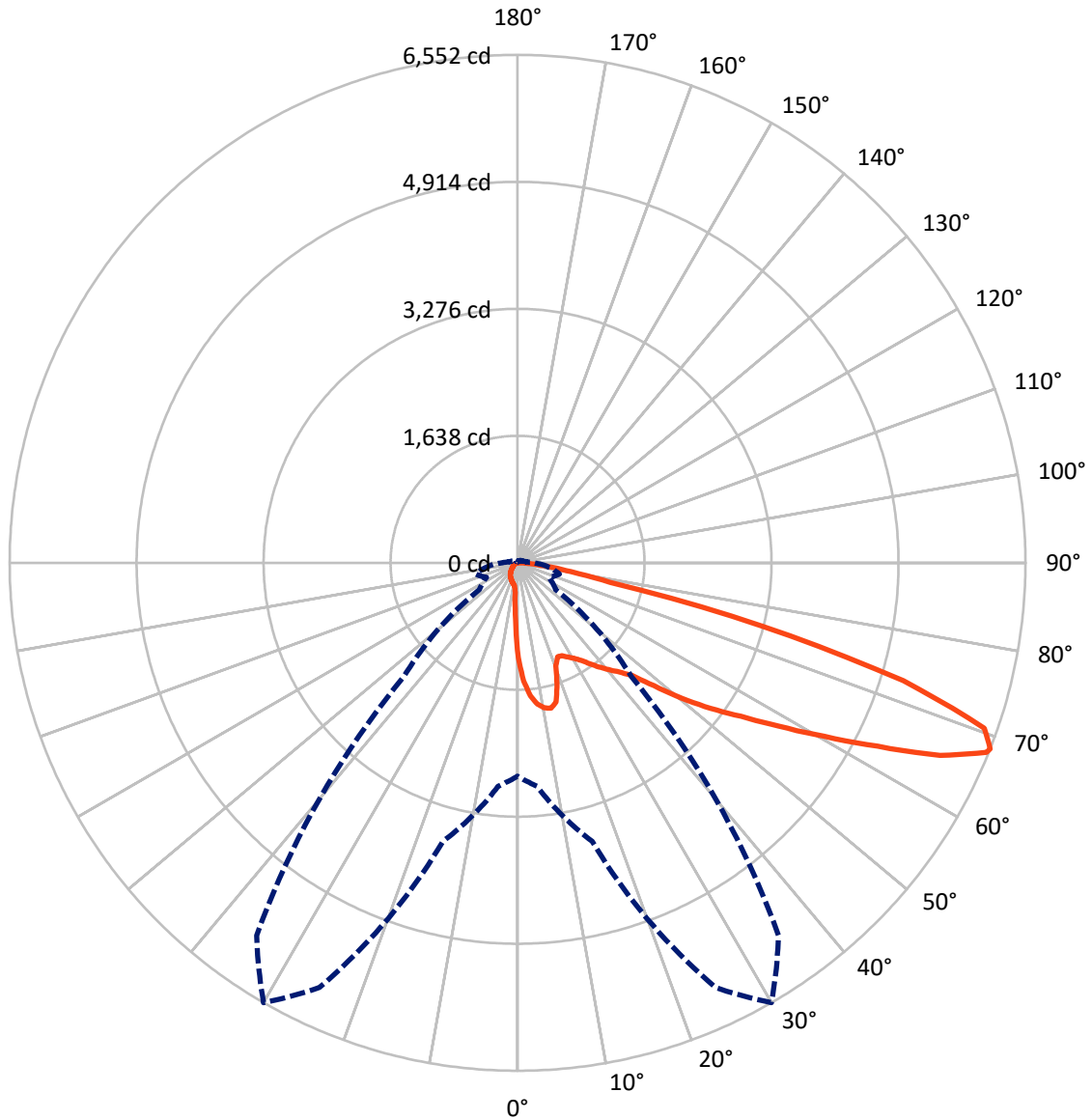
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 4.7 fc
 Type IV - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 30-Deg Lateral - - - Horizontal Cone Through 68-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 474.8 | 0.0 | 474.8 |
| | % Fixture | 7.6 | 0.0 | 7.6 |
| Street Side | Lumens | 5746.5 | 0.0 | 5746.5 |
| | % Fixture | 92.4 | 0.0 | 92.4 |
| Total | Lumens | 6221.4 | 0.0 | 6221.4 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 105.9 | 1.7 |
| 10°-20° | 302.2 | 4.9 |
| 20°-30° | 474.9 | 7.6 |
| 30°-40° | 744.9 | 12.0 |
| 40°-50° | 1113.4 | 17.9 |
| 50°-60° | 1481.1 | 23.8 |
| 60°-70° | 1431.8 | 23.0 |
| 70°-80° | 514.7 | 8.3 |
| 80°-90° | 52.5 | 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° | 6221.4 | 100.0 |
| 0°-180° | 6221.4 | 100.0 |

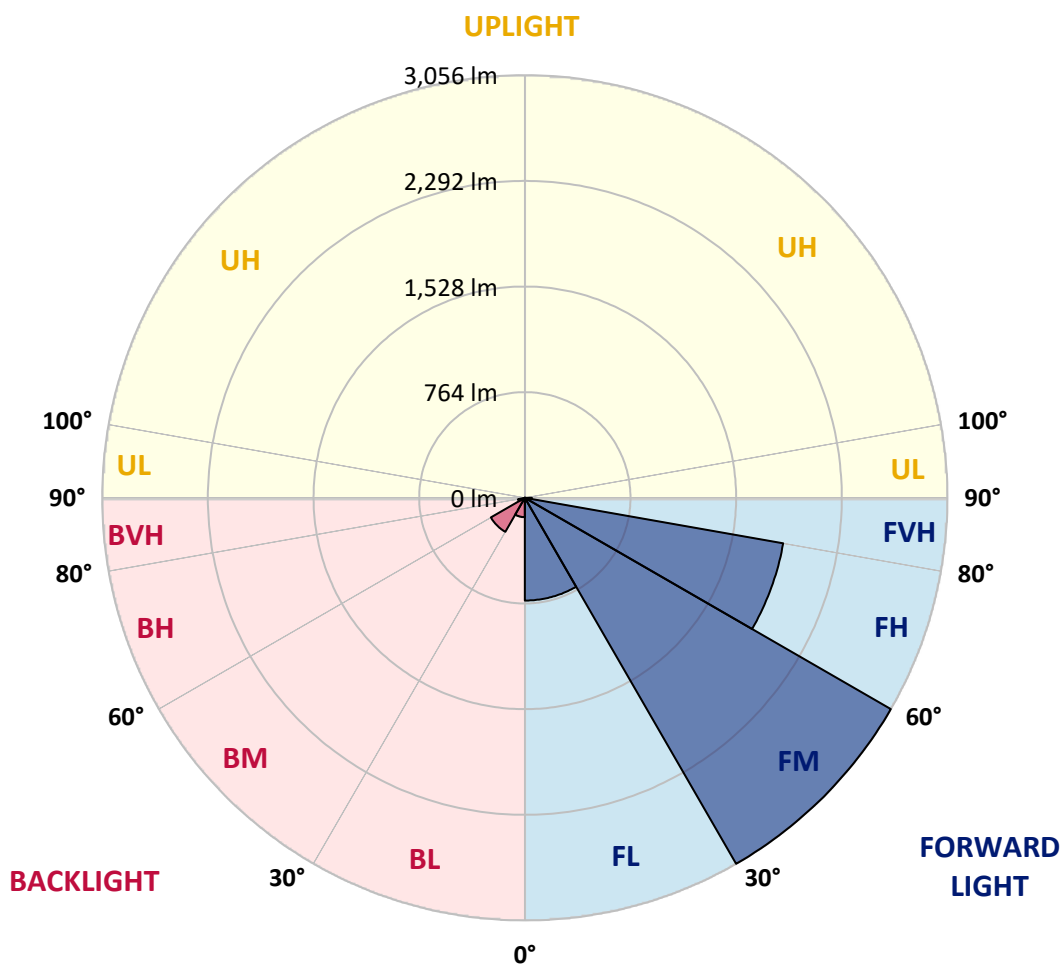


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 742.8 | 11.9 | | | |
| FM (30°-60°) | 3055.9 | 49.1 | | | |
| FH (60°-80°) | 1897.1 | 30.5 | | | G2/5000 |
| FVH (80°-90°) | 50.7 | 0.8 | | | G1/100 |
| BL (0°-30°) | 140.2 | 2.3 | B1/500 | | |
| BM (30°-60°) | 283.4 | 4.6 | B1/1000 | | |
| BH (60°-80°) | 49.4 | 0.8 | B0/110 | | G0/110 |
| BVH (80°-90°) | 1.9 | 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-G2
 Type IV Short





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CATALOG NUMBER: GALN-SB2A-850-U-T4LG-HSS

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 30° | 35° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 |
| 2.5° | 1568.0 | 1568.0 | 1556.8 | 1541.9 | 1525.1 | 1519.5 | 1487.8 | 1443.1 | 1396.4 | 1342.4 | 1264.1 |
| 5° | 1769.3 | 1767.5 | 1745.1 | 1745.1 | 1722.7 | 1702.2 | 1670.5 | 1605.3 | 1530.7 | 1433.7 | 1297.6 |
| 7.5° | 1858.8 | 1862.5 | 1853.2 | 1853.2 | 1840.2 | 1825.3 | 1806.6 | 1743.2 | 1655.6 | 1525.1 | 1331.2 |
| 10° | 1890.5 | 1892.4 | 1892.4 | 1905.4 | 1901.7 | 1899.8 | 1898.0 | 1862.5 | 1771.2 | 1618.3 | 1366.6 |
| 12.5° | 1814.1 | 1823.4 | 1849.5 | 1907.3 | 1925.9 | 1946.4 | 1974.4 | 1963.2 | 1899.8 | 1735.8 | 1420.7 |
| 15° | 1568.0 | 1569.8 | 1642.5 | 1786.1 | 1862.5 | 1940.9 | 2049.0 | 2071.4 | 2030.3 | 1862.5 | 1476.6 |
| 17.5° | 1293.9 | 1299.5 | 1357.3 | 1517.6 | 1640.7 | 1821.5 | 2091.9 | 2183.2 | 2168.3 | 1987.5 | 1528.8 |
| 20° | 1180.2 | 1187.6 | 1215.6 | 1316.3 | 1409.5 | 1577.3 | 2049.0 | 2289.5 | 2295.1 | 2112.4 | 1577.3 |
| 22.5° | 1154.1 | 1159.7 | 1182.0 | 1260.3 | 1318.1 | 1430.0 | 1903.6 | 2373.4 | 2438.7 | 2255.9 | 1635.1 |
| 25° | 1146.6 | 1152.2 | 1185.8 | 1271.5 | 1325.6 | 1418.8 | 1771.2 | 2418.1 | 2608.3 | 2405.1 | 1691.0 |
| 27.5° | 1141.0 | 1148.5 | 1202.5 | 1312.5 | 1375.9 | 1465.4 | 1747.0 | 2427.5 | 2770.5 | 2563.6 | 1782.4 |
| 30° | 1148.5 | 1159.7 | 1230.5 | 1355.4 | 1428.1 | 1528.8 | 1804.8 | 2436.8 | 2949.5 | 2744.4 | 1898.0 |
| 32.5° | 1178.3 | 1187.6 | 1273.4 | 1413.2 | 1497.1 | 1610.9 | 1903.6 | 2492.7 | 3119.2 | 2929.0 | 2008.0 |
| 35° | 1211.9 | 1224.9 | 1327.5 | 1495.3 | 1595.9 | 1724.6 | 2037.8 | 2602.7 | 3281.4 | 3104.2 | 2121.7 |
| 37.5° | 1252.9 | 1267.8 | 1390.9 | 1588.5 | 1704.1 | 1849.5 | 2183.2 | 2755.6 | 3424.9 | 3247.8 | 2235.4 |
| 40° | 1308.8 | 1325.6 | 1463.6 | 1687.3 | 1812.2 | 1957.6 | 2326.8 | 2906.6 | 3534.9 | 3333.6 | 2310.0 |
| 42.5° | 1528.8 | 1551.2 | 1609.0 | 1784.2 | 1924.1 | 2073.2 | 2468.5 | 3050.2 | 3575.9 | 3361.5 | 2324.9 |
| 45° | 1939.0 | 1961.4 | 1946.4 | 1980.0 | 2073.2 | 2213.1 | 2623.2 | 3188.1 | 3581.5 | 3354.1 | 2317.5 |
| 47.5° | 2351.0 | 2377.1 | 2364.1 | 2345.4 | 2365.9 | 2433.1 | 2796.6 | 3275.8 | 3551.7 | 3350.3 | 2317.5 |
| 50° | 2744.4 | 2729.5 | 2731.4 | 2725.8 | 2744.4 | 2779.8 | 2964.4 | 3292.6 | 3544.2 | 3385.8 | 2338.0 |
| 52.5° | 2955.1 | 2962.6 | 3009.2 | 3078.1 | 3119.2 | 3154.6 | 3156.5 | 3318.7 | 3490.2 | 3326.1 | 2313.7 |
| 55° | 3162.0 | 3177.0 | 3285.1 | 3402.6 | 3493.9 | 3561.0 | 3348.5 | 3301.9 | 3167.6 | 3126.6 | 2187.0 |
| 57.5° | 3395.1 | 3415.6 | 3568.5 | 3810.9 | 3971.2 | 4006.6 | 3538.7 | 2988.7 | 2681.0 | 2841.4 | 1940.9 |
| 60° | 3715.8 | 3740.0 | 3943.2 | 4306.8 | 4545.4 | 4472.7 | 3553.6 | 2490.9 | 2129.2 | 2358.5 | 1601.5 |
| 62.5° | 3967.5 | 4015.9 | 4383.2 | 4950.0 | 5212.9 | 4981.7 | 3275.8 | 1909.2 | 1487.8 | 1657.5 | 1169.0 |
| 65° | 3699.0 | 3792.2 | 4390.7 | 5686.5 | 5990.4 | 5580.2 | 2839.5 | 1303.2 | 839.0 | 1072.0 | 747.6 |
| 67.5° | 2990.5 | 3121.0 | 3898.5 | 6044.4 | 6523.6 | 5895.3 | 2235.4 | 691.7 | 481.0 | 622.7 | 393.4 |
| 68° | 2751.9 | 2893.6 | 3717.6 | 6044.4 | 6551.5 | 5867.3 | 2075.1 | 598.5 | 443.7 | 559.3 | 341.2 |
| 70° | 1901.7 | 2002.4 | 2858.1 | 5705.1 | 6387.5 | 5349.0 | 1366.6 | 343.1 | 333.7 | 384.1 | 225.6 |
| 72.5° | 932.2 | 1040.3 | 1528.8 | 4521.2 | 5203.6 | 4111.0 | 622.7 | 227.5 | 253.6 | 281.5 | 177.1 |
| 75° | 371.0 | 393.4 | 602.2 | 2229.8 | 3251.5 | 2623.2 | 326.3 | 171.5 | 218.1 | 220.0 | 139.8 |
| 77.5° | 212.5 | 225.6 | 333.7 | 820.3 | 1219.3 | 1172.7 | 210.7 | 123.1 | 173.4 | 158.5 | 91.4 |
| 80° | 119.3 | 121.2 | 188.3 | 432.5 | 697.3 | 624.6 | 143.6 | 89.5 | 132.4 | 111.9 | 61.5 |
| 82.5° | 59.7 | 67.1 | 119.3 | 238.6 | 387.8 | 397.1 | 76.4 | 63.4 | 106.3 | 80.2 | 50.3 |
| 85° | 42.9 | 46.6 | 85.8 | 132.4 | 179.0 | 268.5 | 46.6 | 31.7 | 80.2 | 54.1 | 35.4 |
| 87.5° | 22.4 | 28.0 | 54.1 | 65.3 | 72.7 | 91.4 | 22.4 | 14.9 | 44.7 | 31.7 | 18.6 |
| 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: P1438401

CATALOG NUMBER: GALN-SB2A-850-U-T4LG-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 | 1226.8 |
| 2.5° | 1226.8 | 1183.9 | 1096.3 | 993.7 | 913.6 | 831.5 | 764.4 | 701.0 | 671.2 | 667.5 | 674.9 |
| 5° | 1221.2 | 1128.0 | 928.5 | 732.7 | 572.4 | 460.5 | 399.0 | 367.3 | 350.5 | 343.1 | 344.9 |
| 7.5° | 1210.0 | 1068.3 | 749.5 | 495.9 | 371.0 | 322.5 | 307.6 | 302.0 | 300.2 | 300.2 | 300.2 |
| 10° | 1198.8 | 988.1 | 574.2 | 363.6 | 303.9 | 290.8 | 287.1 | 287.1 | 285.3 | 285.3 | 287.1 |
| 12.5° | 1193.2 | 913.6 | 445.6 | 303.9 | 283.4 | 277.8 | 274.1 | 272.2 | 272.2 | 272.2 | 274.1 |
| 15° | 1180.2 | 831.5 | 359.8 | 281.5 | 270.3 | 262.9 | 261.0 | 259.2 | 259.2 | 259.2 | 259.2 |
| 17.5° | 1169.0 | 751.4 | 313.2 | 266.6 | 257.3 | 249.8 | 248.0 | 246.1 | 246.1 | 248.0 | 248.0 |
| 20° | 1152.2 | 674.9 | 281.5 | 251.7 | 244.2 | 236.8 | 234.9 | 233.1 | 234.9 | 234.9 | 234.9 |
| 22.5° | 1131.7 | 611.5 | 262.9 | 240.5 | 231.2 | 223.7 | 223.7 | 223.7 | 223.7 | 223.7 | 225.6 |
| 25° | 1118.6 | 566.8 | 249.8 | 227.5 | 218.1 | 212.5 | 210.7 | 210.7 | 214.4 | 214.4 | 216.3 |
| 27.5° | 1139.2 | 555.6 | 251.7 | 223.7 | 206.9 | 201.4 | 199.5 | 199.5 | 203.2 | 205.1 | 206.9 |
| 30° | 1200.7 | 576.1 | 274.1 | 234.9 | 199.5 | 190.2 | 188.3 | 188.3 | 193.9 | 195.8 | 197.6 |
| 32.5° | 1271.5 | 619.0 | 307.6 | 249.8 | 193.9 | 179.0 | 175.3 | 175.3 | 180.8 | 182.7 | 184.6 |
| 35° | 1368.5 | 686.1 | 352.4 | 262.9 | 197.6 | 167.8 | 160.3 | 160.3 | 164.1 | 167.8 | 169.7 |
| 37.5° | 1493.4 | 796.1 | 404.6 | 272.2 | 197.6 | 154.7 | 145.4 | 143.6 | 147.3 | 147.3 | 149.2 |
| 40° | 1623.9 | 939.7 | 458.6 | 272.2 | 188.3 | 141.7 | 132.4 | 126.8 | 128.6 | 126.8 | 128.6 |
| 42.5° | 1696.6 | 1055.3 | 505.3 | 255.4 | 177.1 | 128.6 | 119.3 | 111.9 | 110.0 | 106.3 | 108.1 |
| 45° | 1737.6 | 1107.5 | 492.2 | 236.8 | 165.9 | 119.3 | 108.1 | 98.8 | 95.1 | 89.5 | 89.5 |
| 47.5° | 1737.6 | 1113.1 | 421.4 | 221.9 | 154.7 | 111.9 | 96.9 | 87.6 | 82.0 | 76.4 | 78.3 |
| 50° | 1717.1 | 1062.7 | 333.7 | 206.9 | 141.7 | 104.4 | 87.6 | 80.2 | 72.7 | 69.0 | 69.0 |
| 52.5° | 1631.4 | 898.6 | 255.4 | 188.3 | 126.8 | 95.1 | 78.3 | 70.8 | 63.4 | 61.5 | 61.5 |
| 55° | 1484.1 | 660.0 | 206.9 | 169.7 | 113.7 | 87.6 | 70.8 | 65.3 | 57.8 | 54.1 | 54.1 |
| 57.5° | 1206.3 | 451.2 | 171.5 | 152.9 | 100.7 | 78.3 | 63.4 | 57.8 | 48.5 | 44.7 | 44.7 |
| 60° | 894.9 | 294.6 | 145.4 | 134.2 | 85.8 | 70.8 | 55.9 | 48.5 | 41.0 | 37.3 | 35.4 |
| 62.5° | 604.1 | 199.5 | 121.2 | 106.3 | 72.7 | 61.5 | 48.5 | 41.0 | 31.7 | 24.2 | 24.2 |
| 65° | 376.6 | 154.7 | 100.7 | 83.9 | 63.4 | 54.1 | 41.0 | 31.7 | 22.4 | 16.8 | 14.9 |
| 67.5° | 216.3 | 124.9 | 82.0 | 65.3 | 54.1 | 42.9 | 31.7 | 26.1 | 18.6 | 13.1 | 11.2 |
| 68° | 199.5 | 119.3 | 76.4 | 61.5 | 50.3 | 41.0 | 29.8 | 24.2 | 16.8 | 11.2 | 11.2 |
| 70° | 162.2 | 106.3 | 65.3 | 50.3 | 42.9 | 33.6 | 26.1 | 20.5 | 13.1 | 7.5 | 7.5 |
| 72.5° | 143.6 | 89.5 | 55.9 | 39.2 | 29.8 | 28.0 | 20.5 | 14.9 | 9.3 | 5.6 | 3.7 |
| 75° | 117.5 | 70.8 | 44.7 | 29.8 | 20.5 | 20.5 | 14.9 | 9.3 | 3.7 | 0.0 | 0.0 |
| 77.5° | 76.4 | 52.2 | 35.4 | 18.6 | 11.2 | 13.1 | 9.3 | 3.7 | 0.0 | 0.0 | 0.0 |
| 80° | 50.3 | 39.2 | 24.2 | 9.3 | 5.6 | 5.6 | 1.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 35.4 | 26.1 | 14.9 | 3.7 | 1.9 | 1.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 22.4 | 11.2 | 5.6 | 1.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 9.3 | 3.7 | 1.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-12

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-850-U-5WQ

Data in this report applies to families of products including GSS-SB1A-850-U-5WQ

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-184-12
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/15/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: McGraw-Edison
 Catalog Number: **GSS-SB1A-850-U-5WQ**
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 80 CRI 5000K CCT 26 LEDS

Spectral Parameters

CCT (K): 4760
 CIE u': 0.2107
 CIE v': 0.4939
 Duv: 0.0050
 CIE x: 0.3537
 CIE y: 0.3685
 CIE z: 0.2779
 Peak Wavelength (nm): 443
 Dominant Wavelength (nm): 571
 Purity: 16.69598
 Rf: 82
 Rg: 99.4

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 81.1 | | |
| R1: | 79.8 | R9: | 8.7 |
| R2: | 83.5 | R10: | 62.4 |
| R3: | 87.9 | R11: | 83.8 |
| R4: | 83.1 | R12: | 63.0 |
| R5: | 80.5 | R13: | 79.9 |
| R6: | 79.1 | R14: | 93.3 |
| R7: | 86.1 | R15: | 72.7 |
| R8: | 69.0 | | |



Test Conditions

Stabilization Time: 21M
 Operation Time: 1H 21M
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-12

| 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: SP1-2407-184-12

CIE 1931 Chromaticity Diagram



CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 5000K 7-step quadrangle

REPORT NUMBER: SP1-2407-184-12

Photopic Flux vs. Wavelength



Photopic Lumens: NR

| λ (nm) | Power $\text{W}^{\wedge}/\text{nm}$ | Lumens (ϕ/nm) | λ (nm) | Power $\text{W}^{\wedge}/\text{nm}$ | Lumens (ϕ/nm) | λ (nm) | Power $\text{W}^{\wedge}/\text{nm}$ | Lumens (ϕ/nm) | λ (nm) | Power $\text{W}^{\wedge}/\text{nm}$ | Lumens (ϕ/nm) | λ (nm) | Power $\text{W}^{\wedge}/\text{nm}$ | Lumens (ϕ/nm) |
|-------------------|--|--------------------------------|-------------------|--|--------------------------------|-------------------|--|--------------------------------|-------------------|--|--------------------------------|-------------------|--|--------------------------------|
| 360 | 0 | NR | 490 | 270 | NR | 620 | 517 | NR | 750 | 17 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 335 | NR | 625 | 486 | NR | 755 | 15 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 397 | NR | 630 | 454 | NR | 760 | 12 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 451 | NR | 635 | 419 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 492 | NR | 640 | 384 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 1 | NR | 515 | 524 | NR | 645 | 347 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 545 | NR | 650 | 313 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 5 | NR | 525 | 558 | NR | 655 | 280 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 7 | NR | 530 | 568 | NR | 660 | 248 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 13 | NR | 535 | 575 | NR | 665 | 219 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 24 | NR | 540 | 579 | NR | 670 | 192 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 47 | NR | 545 | 585 | NR | 675 | 167 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 95 | NR | 550 | 588 | NR | 680 | 146 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 181 | NR | 555 | 593 | NR | 685 | 126 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 319 | NR | 560 | 595 | NR | 690 | 109 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 539 | NR | 565 | 600 | NR | 695 | 94 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 868 | NR | 570 | 603 | NR | 700 | 80 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 977 | NR | 575 | 606 | NR | 705 | 69 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 601 | NR | 580 | 609 | NR | 710 | 59 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 397 | NR | 585 | 611 | NR | 715 | 51 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 302 | NR | 590 | 610 | NR | 720 | 44 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 201 | NR | 595 | 604 | NR | 725 | 37 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 157 | NR | 600 | 596 | NR | 730 | 32 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 157 | NR | 605 | 583 | NR | 735 | 27 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 171 | NR | 610 | 566 | NR | 740 | 23 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 210 | NR | 615 | 543 | NR | 745 | 20 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-184-12

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.83

| 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 | 270 | NR | 620 | 517 | NR | 750 | 17 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 335 | NR | 625 | 486 | NR | 755 | 15 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 397 | NR | 630 | 454 | NR | 760 | 12 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 451 | NR | 635 | 419 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 492 | NR | 640 | 384 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 1 | NR | 515 | 524 | NR | 645 | 347 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 545 | NR | 650 | 313 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 5 | NR | 525 | 558 | NR | 655 | 280 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 7 | NR | 530 | 568 | NR | 660 | 248 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 13 | NR | 535 | 575 | NR | 665 | 219 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 24 | NR | 540 | 579 | NR | 670 | 192 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 47 | NR | 545 | 585 | NR | 675 | 167 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 95 | NR | 550 | 588 | NR | 680 | 146 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 181 | NR | 555 | 593 | NR | 685 | 126 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 319 | NR | 560 | 595 | NR | 690 | 109 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 539 | NR | 565 | 600 | NR | 695 | 94 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 868 | NR | 570 | 603 | NR | 700 | 80 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 977 | NR | 575 | 606 | NR | 705 | 69 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 601 | NR | 580 | 609 | NR | 710 | 59 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 397 | NR | 585 | 611 | NR | 715 | 51 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 302 | NR | 590 | 610 | NR | 720 | 44 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 201 | NR | 595 | 604 | NR | 725 | 37 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 157 | NR | 600 | 596 | NR | 730 | 32 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 157 | NR | 605 | 583 | NR | 735 | 27 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 171 | NR | 610 | 566 | NR | 740 | 23 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 210 | NR | 615 | 543 | NR | 745 | 20 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-184-12

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.74

| 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 | 270 | NR | 620 | 517 | NR | 750 | 17 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 335 | NR | 625 | 486 | NR | 755 | 15 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 397 | NR | 630 | 454 | NR | 760 | 12 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 451 | NR | 635 | 419 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 492 | NR | 640 | 384 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 1 | NR | 515 | 524 | NR | 645 | 347 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 545 | NR | 650 | 313 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 5 | NR | 525 | 558 | NR | 655 | 280 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 7 | NR | 530 | 568 | NR | 660 | 248 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 13 | NR | 535 | 575 | NR | 665 | 219 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 24 | NR | 540 | 579 | NR | 670 | 192 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 47 | NR | 545 | 585 | NR | 675 | 167 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 95 | NR | 550 | 588 | NR | 680 | 146 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 181 | NR | 555 | 593 | NR | 685 | 126 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 319 | NR | 560 | 595 | NR | 690 | 109 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 539 | NR | 565 | 600 | NR | 695 | 94 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 868 | NR | 570 | 603 | NR | 700 | 80 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 977 | NR | 575 | 606 | NR | 705 | 69 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 601 | NR | 580 | 609 | NR | 710 | 59 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 397 | NR | 585 | 611 | NR | 715 | 51 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 302 | NR | 590 | 610 | NR | 720 | 44 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 201 | NR | 595 | 604 | NR | 725 | 37 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 157 | NR | 600 | 596 | NR | 730 | 32 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 157 | NR | 605 | 583 | NR | 735 | 27 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 171 | NR | 610 | 566 | NR | 740 | 23 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 210 | NR | 615 | 543 | NR | 745 | 20 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 82$
 $R_g = 99.4$
 $CIE R_a = 81.1$
 $R_9 = 8.7$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 73 | CES51 = 92 | CES76 = 66 |
| CES02 = 60 | CES27 = 90 | CES52 = 93 | CES77 = 80 |
| CES03 = 30 | CES28 = 87 | CES53 = 84 | CES78 = 65 |
| CES04 = 69 | CES29 = 69 | CES54 = 88 | CES79 = 87 |
| CES05 = 47 | CES30 = 73 | CES55 = 88 | CES80 = 83 |
| CES06 = 50 | CES31 = 72 | CES56 = 80 | CES81 = 84 |
| CES07 = 40 | CES32 = 69 | CES57 = 78 | CES82 = 93 |
| CES08 = 39 | CES33 = 75 | CES58 = 80 | CES83 = 90 |
| CES09 = 29 | CES34 = 78 | CES59 = 93 | CES84 = 92 |
| CES10 = 73 | CES35 = 88 | CES60 = 95 | CES85 = 87 |
| CES11 = 56 | CES36 = 98 | CES61 = 93 | CES86 = 80 |
| CES12 = 62 | CES37 = 85 | CES62 = 88 | CES87 = 84 |
| CES13 = 42 | CES38 = 81 | CES63 = 83 | CES88 = 85 |
| CES14 = 74 | CES39 = 93 | CES64 = 83 | CES89 = 80 |
| CES15 = 71 | CES40 = 88 | CES65 = 77 | CES90 = 83 |
| CES16 = 46 | CES41 = 89 | CES66 = 81 | CES91 = 89 |
| CES17 = 48 | CES42 = 82 | CES67 = 80 | CES92 = 73 |
| CES18 = 55 | CES43 = 80 | CES68 = 83 | CES93 = 85 |
| CES19 = 70 | CES44 = 99 | CES69 = 89 | CES94 = 67 |
| CES20 = 64 | CES45 = 87 | CES70 = 75 | CES95 = 78 |
| CES21 = 85 | CES46 = 85 | CES71 = 73 | CES96 = 84 |
| CES22 = 77 | CES47 = 82 | CES72 = 91 | CES97 = 87 |
| CES23 = 91 | CES48 = 78 | CES73 = 67 | CES98 = 81 |
| CES24 = 90 | CES49 = 84 | CES74 = 98 | CES99 = 74 |
| CES25 = 71 | CES50 = 91 | CES75 = 70 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)