

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: P1435682

Luminaire Tested: **GALN-SB1D-940-U-T4LG**

Issue Date: 03/24/202

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: P1435682
 Test Lab: INNOVATION CENTER(G1)
 Issue Date: 03/24/202
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: McGRAW-EDISON
 Catalog Number: GALN-SB1D-940-U-T4LG
 Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 900mA 1xLight
 Square PACKAGE 90CRI 4000K FIXTURE w/ TYPE IV LOW GLARE
 Light Source: (26) 4000K CCT, 90 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

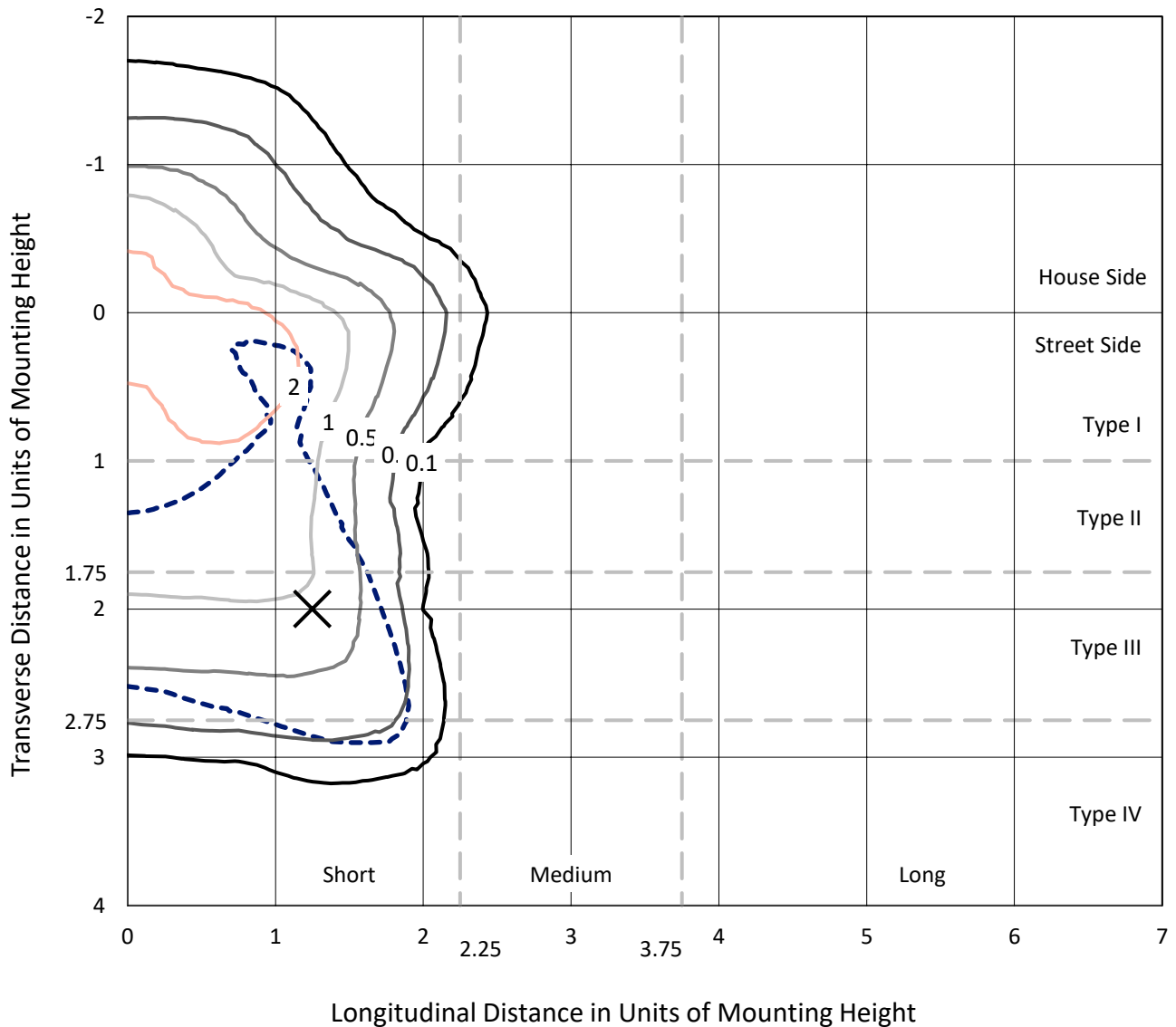
Lumens per Lamp: N/A
 Luminaire Lumens: 7219.4 lumens
 Efficiency: N/A
 Efficacy: 90.7 lumens/watt
 Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
 IES Classification: Type IV - Short
 BUG Rating: B1 - U0 - G2

 Input Watts (W): 79.6
 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: P1435682
 CATALOG NUMBER: GALN-SB1D-940-U-T4LG

Iso-Footcandle Lines of Horizontal Illumination

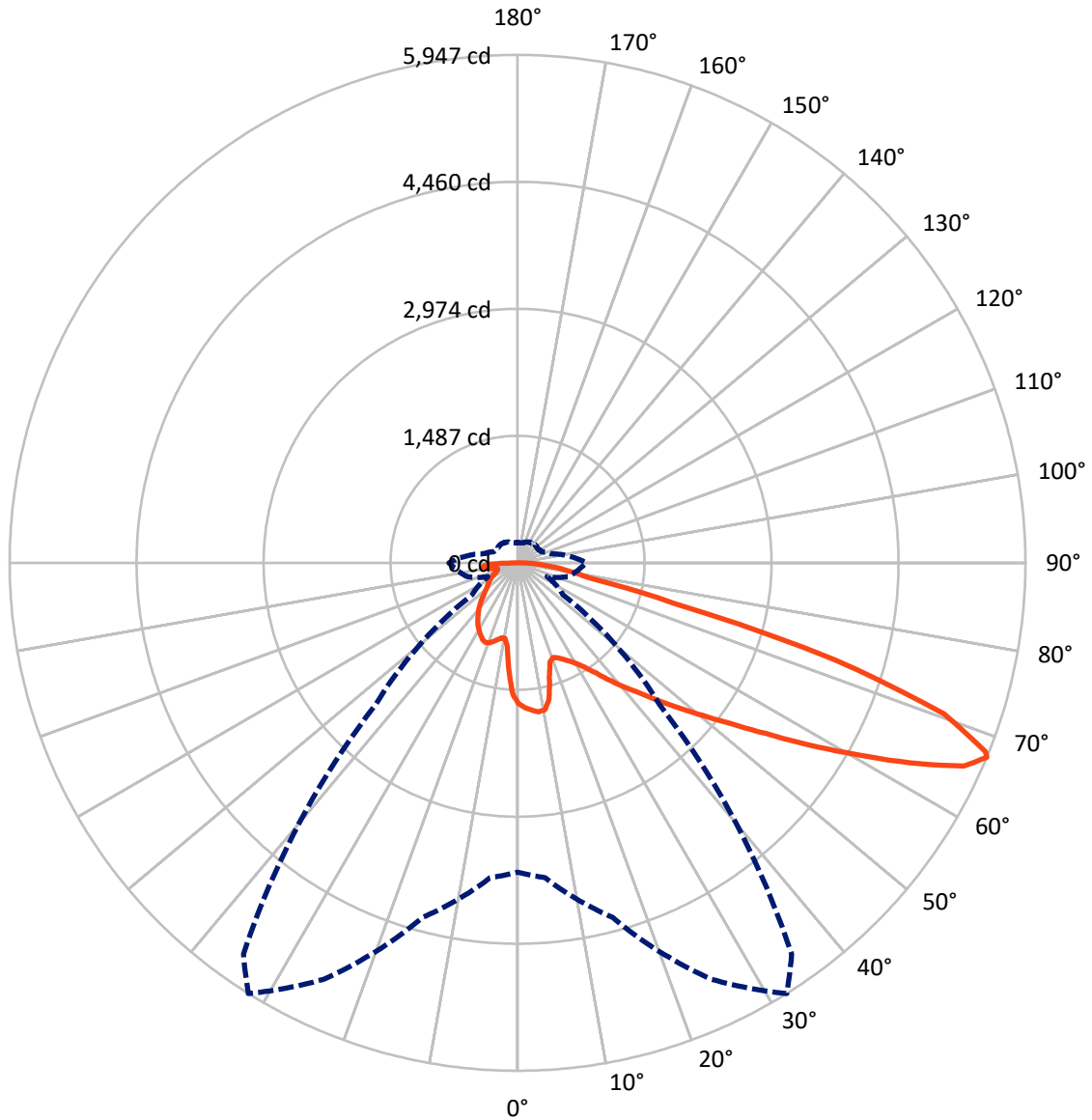
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 4.5 fc
 Type IV - Short - N/A

REPORT NUMBER: P1435682
CATALOG NUMBER: GALN-SB1D-940-U-T4LG

Luminous Intensity Polar Plot



— Vertical Plane Through 32-Deg Lateral - - - Horizontal Cone Through 67-Deg Vertical

REPORT NUMBER: P1435682
 CATALOG NUMBER: GALN-SB1D-940-U-T4LG

FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 1709.2 | 0.0 | 1709.2 |
| | % Fixture | 23.7 | 0.0 | 23.7 |
| Street Side | Lumens | 5510.3 | 0.0 | 5510.3 |
| | % Fixture | 76.3 | 0.0 | 76.3 |
| Total | Lumens | 7219.4 | 0.0 | 7219.4 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 144.1 | 2.0 |
| 10°-20° | 382.7 | 5.3 |
| 20°-30° | 624.9 | 8.7 |
| 30°-40° | 921.1 | 12.8 |
| 40°-50° | 1270.2 | 17.6 |
| 50°-60° | 1604.6 | 22.2 |
| 60°-70° | 1553.0 | 21.5 |
| 70°-80° | 554.3 | 7.7 |
| 80°-90° | 164.6 | 2.3 |
| 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° | 7219.4 | 100.0 |
| 0°-180° | 7219.4 | 100.0 |

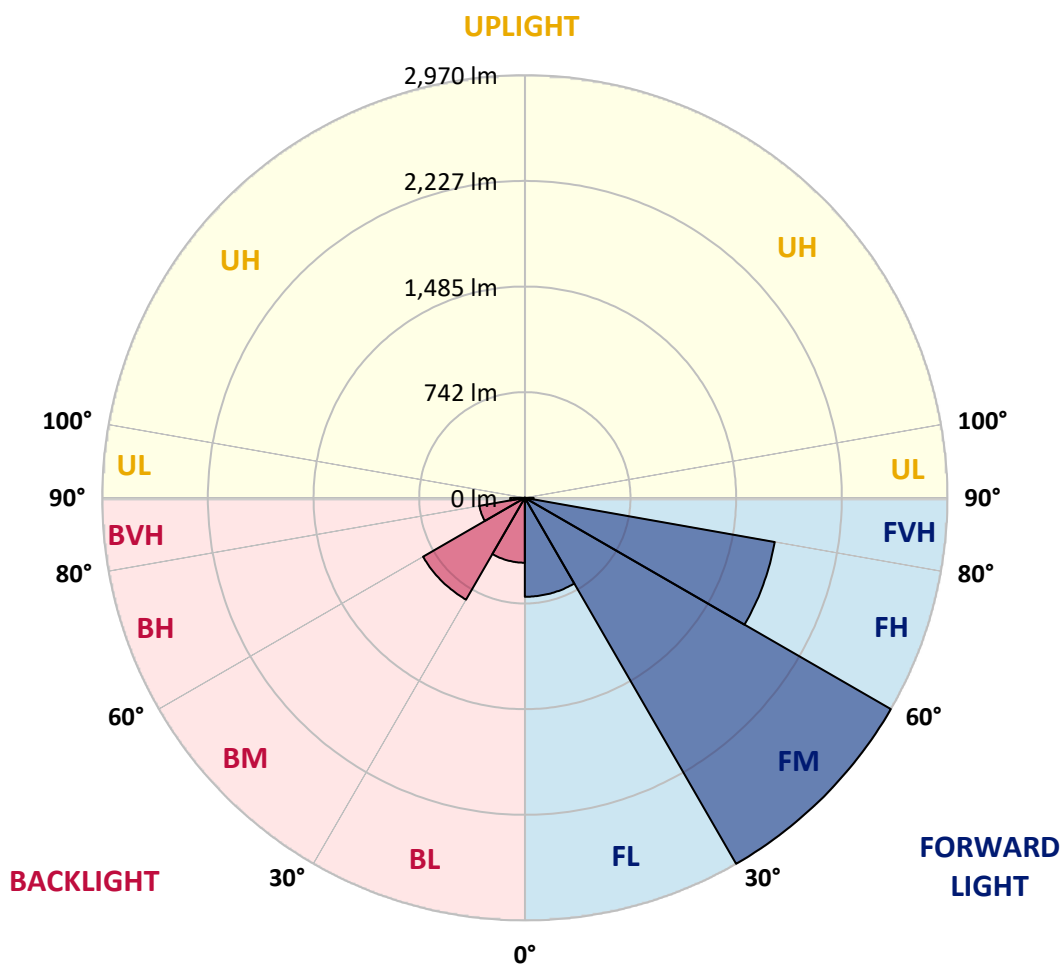


REPORT NUMBER: P1435682
 CATALOG NUMBER: GALN-SB1D-940-U-T4LG

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 695.6 | 9.6 | | | |
| FM (30°-60°) | 2969.6 | 41.1 | | | |
| FH (60°-80°) | 1783.0 | 24.7 | | | G1/1800 |
| FVH (80°-90°) | 62.0 | 0.9 | | | G1/100 |
| BL (0°-30°) | 456.1 | 6.3 | B1/500 | | |
| BM (30°-60°) | 826.3 | 11.4 | B1/1000 | | |
| BH (60°-80°) | 324.2 | 4.5 | B1/500 | | G1/500 |
| BVH (80°-90°) | 102.6 | 1.4 | | | G2/225 |
| 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





REPORT NUMBER: P1435682

CATALOG NUMBER: GALN-SB1D-940-U-T4LG

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 32° | 35° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 |
| 2.5° | 1712.0 | 1707.2 | 1702.4 | 1705.6 | 1699.2 | 1697.6 | 1689.6 | 1686.4 | 1676.7 | 1675.1 | 1657.5 |
| 5° | 1747.3 | 1737.7 | 1736.1 | 1739.3 | 1732.9 | 1732.9 | 1726.4 | 1721.6 | 1707.2 | 1699.2 | 1673.5 |
| 7.5° | 1747.3 | 1745.7 | 1748.9 | 1760.1 | 1761.7 | 1761.7 | 1761.7 | 1763.3 | 1748.9 | 1737.7 | 1697.6 |
| 10° | 1647.9 | 1631.9 | 1667.1 | 1723.2 | 1750.5 | 1766.5 | 1795.4 | 1813.0 | 1801.8 | 1793.8 | 1739.3 |
| 12.5° | 1351.3 | 1352.9 | 1409.0 | 1529.3 | 1638.3 | 1684.8 | 1805.0 | 1869.1 | 1873.9 | 1861.1 | 1792.2 |
| 15° | 1146.2 | 1154.2 | 1183.0 | 1269.6 | 1394.6 | 1463.5 | 1748.9 | 1918.8 | 1957.3 | 1944.4 | 1856.3 |
| 17.5° | 1083.6 | 1088.4 | 1101.3 | 1151.0 | 1221.5 | 1277.6 | 1596.6 | 1950.9 | 2058.3 | 2042.2 | 1928.4 |
| 20° | 1074.0 | 1077.2 | 1093.3 | 1134.9 | 1183.0 | 1215.1 | 1441.1 | 1925.2 | 2152.8 | 2146.4 | 1994.1 |
| 22.5° | 1075.6 | 1078.8 | 1099.7 | 1157.4 | 1207.1 | 1234.3 | 1391.4 | 1865.9 | 2252.2 | 2258.6 | 2061.5 |
| 25° | 1078.8 | 1080.4 | 1112.5 | 1189.4 | 1251.9 | 1285.6 | 1423.5 | 1813.0 | 2335.6 | 2390.1 | 2135.2 |
| 27.5° | 1096.5 | 1101.3 | 1144.5 | 1231.1 | 1304.8 | 1343.3 | 1498.8 | 1830.6 | 2427.0 | 2539.2 | 2223.4 |
| 30° | 1144.5 | 1147.8 | 1200.7 | 1290.4 | 1370.6 | 1410.6 | 1588.6 | 1901.2 | 2539.2 | 2693.1 | 2309.9 |
| 32.5° | 1219.9 | 1223.1 | 1284.0 | 1377.0 | 1463.5 | 1511.6 | 1705.6 | 2035.8 | 2664.2 | 2855.0 | 2396.5 |
| 35° | 1324.1 | 1325.7 | 1394.6 | 1494.0 | 1585.4 | 1639.9 | 1841.9 | 2188.1 | 2794.0 | 2992.8 | 2460.6 |
| 37.5° | 1447.5 | 1458.7 | 1529.3 | 1633.5 | 1740.9 | 1790.6 | 2002.2 | 2366.0 | 2909.5 | 3109.8 | 2497.5 |
| 40° | 1617.4 | 1620.6 | 1689.6 | 1790.6 | 1904.4 | 1952.5 | 2162.5 | 2534.4 | 3036.1 | 3178.8 | 2531.1 |
| 42.5° | 1792.2 | 1819.4 | 1877.1 | 1989.3 | 2074.3 | 2112.8 | 2345.2 | 2688.2 | 3137.1 | 3182.0 | 2516.7 |
| 45° | 2026.2 | 2047.0 | 2104.7 | 2204.1 | 2289.1 | 2334.0 | 2542.4 | 2829.3 | 3188.4 | 3154.7 | 2484.7 |
| 47.5° | 2293.9 | 2306.7 | 2353.2 | 2443.0 | 2537.6 | 2569.6 | 2747.6 | 2909.5 | 3207.6 | 3135.5 | 2470.2 |
| 50° | 2609.7 | 2609.7 | 2643.4 | 2720.3 | 2806.9 | 2851.8 | 2936.7 | 2957.5 | 3263.7 | 3101.8 | 2507.1 |
| 52.5° | 2875.8 | 2888.6 | 2933.5 | 3042.5 | 3129.1 | 3180.4 | 3084.2 | 3031.3 | 3149.9 | 2914.3 | 2518.3 |
| 55° | 3130.7 | 3145.1 | 3246.1 | 3382.3 | 3529.8 | 3585.9 | 3268.5 | 2994.4 | 2766.8 | 2640.2 | 2441.4 |
| 57.5° | 3374.3 | 3404.8 | 3531.4 | 3797.5 | 4020.3 | 4015.5 | 3502.6 | 2664.2 | 2258.6 | 2337.2 | 2273.1 |
| 60° | 3714.2 | 3746.2 | 3948.2 | 4283.2 | 4555.7 | 4441.9 | 3505.8 | 2217.0 | 1760.1 | 1865.9 | 1957.3 |
| 62.5° | 3997.9 | 4052.4 | 4349.0 | 4906.8 | 5156.9 | 4978.9 | 3215.6 | 1697.6 | 1168.6 | 1301.6 | 1513.2 |
| 65° | 3972.3 | 4044.4 | 4504.5 | 5365.3 | 5738.8 | 5573.7 | 2790.8 | 1074.0 | 602.7 | 889.7 | 1059.6 |
| 67° | 3622.8 | 3701.3 | 4297.7 | 5381.3 | 5947.2 | 5594.5 | 2356.4 | 649.2 | 383.1 | 617.2 | 735.8 |
| 67.5° | 3422.4 | 3537.8 | 4195.1 | 5350.8 | 5908.7 | 5506.3 | 2160.9 | 543.4 | 360.7 | 573.9 | 670.1 |
| 70° | 2104.7 | 2290.7 | 3148.3 | 4730.5 | 5296.3 | 4608.6 | 1200.7 | 307.8 | 293.4 | 384.7 | 463.3 |
| 72.5° | 633.2 | 689.3 | 1215.1 | 3034.5 | 3887.3 | 3416.0 | 540.2 | 237.2 | 262.9 | 309.4 | 357.5 |
| 75° | 307.8 | 328.6 | 501.7 | 1240.7 | 1893.2 | 1883.5 | 301.4 | 203.6 | 243.7 | 259.7 | 282.1 |
| 77.5° | 197.2 | 210.0 | 312.6 | 694.1 | 867.2 | 772.6 | 218.0 | 177.9 | 216.4 | 213.2 | 210.0 |
| 80° | 123.4 | 129.8 | 200.4 | 402.4 | 639.6 | 533.8 | 160.3 | 145.9 | 185.9 | 165.1 | 149.1 |
| 82.5° | 80.2 | 88.2 | 128.2 | 245.3 | 456.9 | 397.5 | 105.8 | 104.2 | 153.9 | 131.4 | 115.4 |
| 85° | 52.9 | 59.3 | 81.8 | 144.3 | 270.9 | 283.7 | 68.9 | 72.1 | 118.6 | 99.4 | 88.2 |
| 87.5° | 19.2 | 24.0 | 41.7 | 64.1 | 126.6 | 157.1 | 28.9 | 27.3 | 57.7 | 46.5 | 36.9 |
| 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: P1435682
 CATALOG NUMBER: GALN-SB1D-940-U-T4LG

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 | 1649.5 |
| 2.5° | 1654.3 | 1649.5 | 1627.1 | 1607.8 | 1593.4 | 1574.2 | 1553.3 | 1529.3 | 1513.2 | 1516.4 | 1511.6 |
| 5° | 1662.3 | 1649.5 | 1606.2 | 1540.5 | 1476.4 | 1396.2 | 1293.6 | 1232.7 | 1186.2 | 1162.2 | 1168.6 |
| 7.5° | 1680.0 | 1657.5 | 1566.1 | 1433.1 | 1266.4 | 1102.9 | 1001.9 | 944.2 | 916.9 | 905.7 | 904.1 |
| 10° | 1710.4 | 1671.9 | 1514.8 | 1266.4 | 1048.4 | 937.8 | 900.9 | 884.9 | 881.7 | 881.7 | 880.1 |
| 12.5° | 1747.3 | 1686.4 | 1428.3 | 1104.5 | 944.2 | 904.1 | 897.7 | 899.3 | 904.1 | 908.9 | 900.9 |
| 15° | 1792.2 | 1692.8 | 1320.9 | 1006.7 | 923.3 | 913.7 | 923.3 | 934.6 | 942.6 | 949.0 | 941.0 |
| 17.5° | 1837.0 | 1686.4 | 1219.9 | 960.2 | 926.5 | 939.4 | 958.6 | 976.2 | 981.0 | 990.7 | 984.2 |
| 20° | 1869.1 | 1663.9 | 1133.3 | 942.6 | 934.6 | 963.4 | 987.5 | 1006.7 | 1016.3 | 1022.7 | 1016.3 |
| 22.5° | 1893.2 | 1635.1 | 1070.8 | 924.9 | 934.6 | 969.8 | 998.7 | 1021.1 | 1032.3 | 1038.7 | 1030.7 |
| 25° | 1914.0 | 1595.0 | 1022.7 | 899.3 | 915.3 | 949.0 | 981.0 | 1003.5 | 1019.5 | 1029.1 | 1024.3 |
| 27.5° | 1939.6 | 1562.9 | 977.8 | 860.8 | 875.2 | 907.3 | 941.0 | 968.2 | 998.7 | 1014.7 | 1011.5 |
| 30° | 1968.5 | 1546.9 | 934.6 | 819.1 | 828.8 | 860.8 | 900.9 | 937.8 | 979.4 | 1000.3 | 1000.3 |
| 32.5° | 2002.2 | 1535.7 | 894.5 | 779.1 | 787.1 | 822.3 | 860.8 | 894.5 | 939.4 | 973.0 | 971.4 |
| 35° | 2016.6 | 1522.9 | 862.4 | 742.2 | 758.2 | 787.1 | 817.5 | 840.0 | 886.5 | 926.5 | 929.7 |
| 37.5° | 2031.0 | 1518.0 | 846.4 | 713.3 | 726.2 | 748.6 | 764.6 | 775.9 | 819.1 | 860.8 | 862.4 |
| 40° | 2048.6 | 1540.5 | 857.6 | 694.1 | 682.9 | 705.3 | 713.3 | 719.8 | 742.2 | 769.4 | 769.4 |
| 42.5° | 2037.4 | 1556.5 | 883.3 | 676.5 | 630.0 | 655.6 | 658.8 | 657.2 | 658.8 | 660.4 | 658.8 |
| 45° | 2008.6 | 1540.5 | 883.3 | 649.2 | 573.9 | 601.1 | 599.5 | 591.5 | 578.7 | 545.0 | 540.2 |
| 47.5° | 2002.2 | 1530.9 | 849.6 | 604.3 | 517.8 | 540.2 | 543.4 | 527.4 | 490.5 | 455.3 | 444.0 |
| 50° | 2029.4 | 1548.5 | 796.7 | 549.8 | 469.7 | 488.9 | 496.9 | 469.7 | 428.0 | 391.1 | 384.7 |
| 52.5° | 2069.5 | 1570.9 | 719.8 | 490.5 | 429.6 | 448.8 | 458.5 | 428.0 | 384.7 | 355.9 | 352.7 |
| 55° | 2064.7 | 1570.9 | 633.2 | 436.0 | 399.1 | 413.6 | 429.6 | 397.5 | 363.9 | 347.9 | 346.2 |
| 57.5° | 1960.5 | 1511.6 | 569.1 | 397.5 | 370.3 | 383.1 | 404.0 | 373.5 | 341.4 | 344.6 | 349.5 |
| 60° | 1756.9 | 1357.7 | 521.0 | 371.9 | 344.6 | 357.5 | 379.9 | 344.6 | 303.0 | 291.7 | 291.7 |
| 62.5° | 1447.5 | 1118.9 | 482.5 | 346.2 | 320.6 | 336.6 | 347.9 | 301.4 | 274.1 | 261.3 | 261.3 |
| 65° | 1085.2 | 865.6 | 442.4 | 325.4 | 299.8 | 317.4 | 304.6 | 282.1 | 254.9 | 245.3 | 246.9 |
| 67° | 804.7 | 671.7 | 408.8 | 307.8 | 286.9 | 295.0 | 285.3 | 269.3 | 242.1 | 234.0 | 242.1 |
| 67.5° | 723.0 | 638.0 | 400.8 | 303.0 | 283.7 | 290.1 | 280.5 | 267.7 | 238.8 | 230.8 | 238.8 |
| 70° | 496.9 | 490.5 | 357.5 | 280.5 | 266.1 | 259.7 | 264.5 | 248.5 | 224.4 | 221.2 | 229.2 |
| 72.5° | 378.3 | 391.1 | 320.6 | 261.3 | 246.9 | 238.8 | 250.1 | 234.0 | 210.0 | 214.8 | 222.8 |
| 75° | 296.6 | 315.8 | 286.9 | 234.0 | 224.4 | 226.0 | 248.5 | 242.1 | 222.8 | 227.6 | 229.2 |
| 77.5° | 219.6 | 254.9 | 245.3 | 203.6 | 195.6 | 218.0 | 280.5 | 299.8 | 266.1 | 258.1 | 246.9 |
| 80° | 160.3 | 182.7 | 206.8 | 168.3 | 163.5 | 210.0 | 346.2 | 383.1 | 328.6 | 296.6 | 288.5 |
| 82.5° | 118.6 | 128.2 | 169.9 | 134.7 | 118.6 | 187.6 | 384.7 | 450.4 | 391.1 | 330.2 | 320.6 |
| 85° | 85.0 | 99.4 | 134.7 | 99.4 | 78.5 | 153.9 | 376.7 | 440.8 | 387.9 | 312.6 | 304.6 |
| 87.5° | 30.5 | 43.3 | 57.7 | 44.9 | 40.1 | 105.8 | 311.0 | 317.4 | 242.1 | 110.6 | 112.2 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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



LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

McGRAW-EDISON

Report Number: SP1-2106-271-4

Luminaire Tested: GFLD-SA1-A-940-U-WR-X-BK

Test Date: 06/15/2021

Test Information

Test Method: LM-79-08
 Report Number: SP1-2106-271-4
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1
 Measurement Geometry: 4π
 Issue Date: 06/15/2021
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: MCGRAW-EDISON
 Catalog Number: **GFLD-SA1-A-940-U-WR-X-BK**
 Description: MCGRAW EDISON

N6, BLACK

Spectral Parameters

CCT (K): 3952
 CIE u': 0.2242
 CIE v': 0.5064
 Duv: 0.0032
 CIE x: 0.3848
 CIE y: 0.3864
 CIE z: 0.2287
 Peak Wavelength (nm): 614
 Dominant Wavelength (nm): 577
 Purity: 31.6
 Rf: 92.2
 Rg: 98.9

CRI (Ra): 92.2

| | |
|----------|-----------|
| R1: 92.0 | R9: 63.3 |
| R2: 93.7 | R10: 84.3 |
| R3: 94.4 | R11: 92.7 |
| R4: 93.1 | R12: 75.6 |
| R5: 91.2 | R13: 92.2 |
| R6: 91.1 | R14: 96.5 |
| R7: 95.4 | |
| R8: 86.5 | |



Test Conditions

Stabilization Time: 72M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 24.8/42%
 Sphere Temperature (°C): 24.9

REPORT NUMBER: SP1-2106-271-4

| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 76INCH SPHERE IN0058 | 1/31/2021 | 7/31/2021 |
| Power Meter | XITRON 2801 IN0071 | 12/1/2020 | 12/1/2021 |
| AC Power Source | CHROMA 61603 IN0063 | 12/1/2020 | 12/1/2021 |
| DC Power Source | AGILENT E3634A IN0208 | 12/1/2020 | 12/1/2021 |
| Sphere Thermometer | ONSET IN0085 | 12/1/2020 | 12/1/2021 |
| Room Thermometer | ONSET IN0046 | 12/1/2020 | 12/1/2021 |

REPORT NUMBER: SP1-2106-271-4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP1-2106-271-4

Photopic Flux vs. Wavelength

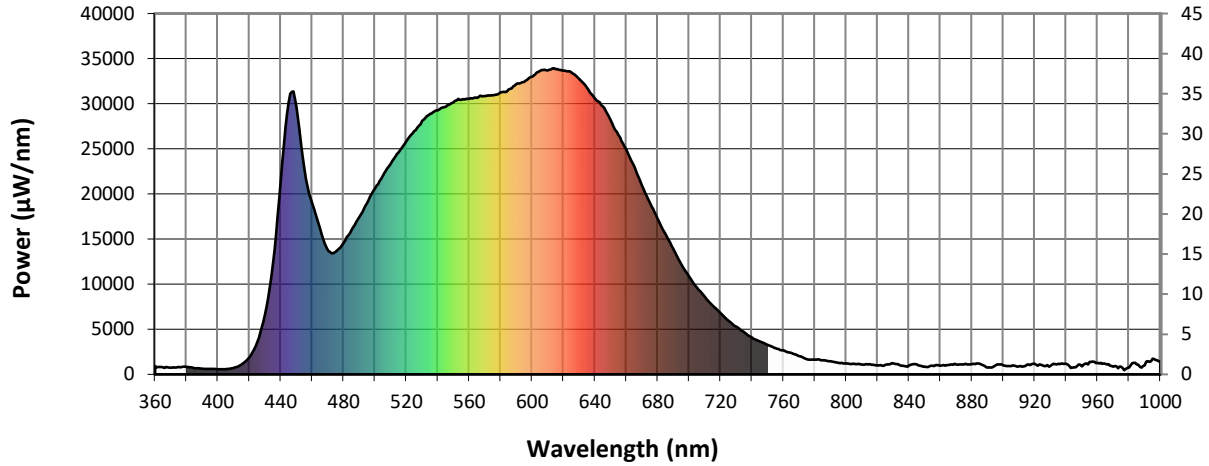


#####

| 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 | 910 | NR | 490 | 17463 | NR | 620 | 33665 | NR | 750 | 3275 | NR | 880 | 1122 | NR |
| 365 | 784 | NR | 495 | 18986 | NR | 625 | 33477 | NR | 755 | 2901 | NR | 885 | 1170 | NR |
| 370 | 741 | NR | 500 | 20627 | NR | 630 | 32742 | NR | 760 | 2665 | NR | 890 | 751 | NR |
| 375 | 805 | NR | 505 | 21980 | NR | 635 | 31767 | NR | 765 | 2371 | NR | 895 | 990 | NR |
| 380 | 830 | NR | 510 | 23346 | NR | 640 | 30561 | NR | 770 | 2039 | NR | 900 | 982 | NR |
| 385 | 690 | NR | 515 | 24600 | NR | 645 | 29699 | NR | 775 | 1676 | NR | 905 | 936 | NR |
| 390 | 625 | NR | 520 | 25854 | NR | 650 | 28202 | NR | 780 | 1616 | NR | 910 | 888 | NR |
| 395 | 599 | NR | 525 | 26952 | NR | 655 | 26484 | NR | 785 | 1573 | NR | 915 | 1068 | NR |
| 400 | 568 | NR | 530 | 28081 | NR | 660 | 24930 | NR | 790 | 1452 | NR | 920 | 1179 | NR |
| 405 | 577 | NR | 535 | 28884 | NR | 665 | 23070 | NR | 795 | 1263 | NR | 925 | 1008 | NR |
| 410 | 720 | NR | 540 | 29271 | NR | 670 | 20926 | NR | 800 | 1203 | NR | 930 | 927 | NR |
| 415 | 1084 | NR | 545 | 29657 | NR | 675 | 19011 | NR | 805 | 1175 | NR | 935 | 1185 | NR |
| 420 | 1884 | NR | 550 | 30152 | NR | 680 | 17237 | NR | 810 | 1108 | NR | 940 | 1166 | NR |
| 425 | 3574 | NR | 555 | 30445 | NR | 685 | 15540 | NR | 815 | 1125 | NR | 945 | 779 | NR |
| 430 | 6636 | NR | 560 | 30559 | NR | 690 | 13894 | NR | 820 | 988 | NR | 950 | 905 | NR |
| 435 | 12267 | NR | 565 | 30663 | NR | 695 | 12196 | NR | 825 | 1070 | NR | 955 | 1369 | NR |
| 440 | 21326 | NR | 570 | 30877 | NR | 700 | 10840 | NR | 830 | 1219 | NR | 960 | 1280 | NR |
| 445 | 30150 | NR | 575 | 30916 | NR | 705 | 9613 | NR | 835 | 944 | NR | 965 | 1177 | NR |
| 450 | 29740 | NR | 580 | 31248 | NR | 710 | 8583 | NR | 840 | 983 | NR | 970 | 868 | NR |
| 455 | 22827 | NR | 585 | 31581 | NR | 715 | 7631 | NR | 845 | 1097 | NR | 975 | 843 | NR |
| 460 | 19023 | NR | 590 | 32218 | NR | 720 | 6779 | NR | 850 | 856 | NR | 980 | 744 | NR |
| 465 | 16163 | NR | 595 | 32417 | NR | 725 | 5950 | NR | 855 | 949 | NR | 985 | 1113 | NR |
| 470 | 13739 | NR | 600 | 32976 | NR | 730 | 5282 | NR | 860 | 954 | NR | 990 | 1002 | NR |
| 475 | 13571 | NR | 605 | 33620 | NR | 735 | 4673 | NR | 865 | 1019 | NR | 995 | 1732 | NR |
| 480 | 14597 | NR | 610 | 33704 | NR | 740 | 4087 | NR | 870 | 1089 | NR | 1000 | 1390 | NR |
| 485 | 15964 | NR | 615 | 33846 | NR | 745 | 3658 | NR | 875 | 1089 | NR | | | |

REPORT NUMBER: SP1-2106-271-4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 3705.7

S/P: 1.75

| 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 | 910 | NR | 490 | 17463 | NR | 620 | 33665 | NR | 750 | 3275 | NR | 880 | 1122 | NR |
| 365 | 784 | NR | 495 | 18986 | NR | 625 | 33477 | NR | 755 | 2901 | NR | 885 | 1170 | NR |
| 370 | 741 | NR | 500 | 20627 | NR | 630 | 32742 | NR | 760 | 2665 | NR | 890 | 751 | NR |
| 375 | 805 | NR | 505 | 21980 | NR | 635 | 31767 | NR | 765 | 2371 | NR | 895 | 990 | NR |
| 380 | 830 | NR | 510 | 23346 | NR | 640 | 30561 | NR | 770 | 2039 | NR | 900 | 982 | NR |
| 385 | 690 | NR | 515 | 24600 | NR | 645 | 29699 | NR | 775 | 1676 | NR | 905 | 936 | NR |
| 390 | 625 | NR | 520 | 25854 | NR | 650 | 28202 | NR | 780 | 1616 | NR | 910 | 888 | NR |
| 395 | 599 | NR | 525 | 26952 | NR | 655 | 26484 | NR | 785 | 1573 | NR | 915 | 1068 | NR |
| 400 | 568 | NR | 530 | 28081 | NR | 660 | 24930 | NR | 790 | 1452 | NR | 920 | 1179 | NR |
| 405 | 577 | NR | 535 | 28884 | NR | 665 | 23070 | NR | 795 | 1263 | NR | 925 | 1008 | NR |
| 410 | 720 | NR | 540 | 29271 | NR | 670 | 20926 | NR | 800 | 1203 | NR | 930 | 927 | NR |
| 415 | 1084 | NR | 545 | 29657 | NR | 675 | 19011 | NR | 805 | 1175 | NR | 935 | 1185 | NR |
| 420 | 1884 | NR | 550 | 30152 | NR | 680 | 17237 | NR | 810 | 1108 | NR | 940 | 1166 | NR |
| 425 | 3574 | NR | 555 | 30445 | NR | 685 | 15540 | NR | 815 | 1125 | NR | 945 | 779 | NR |
| 430 | 6636 | NR | 560 | 30559 | NR | 690 | 13894 | NR | 820 | 988 | NR | 950 | 905 | NR |
| 435 | 12267 | NR | 565 | 30663 | NR | 695 | 12196 | NR | 825 | 1070 | NR | 955 | 1369 | NR |
| 440 | 21326 | NR | 570 | 30877 | NR | 700 | 10840 | NR | 830 | 1219 | NR | 960 | 1280 | NR |
| 445 | 30150 | NR | 575 | 30916 | NR | 705 | 9613 | NR | 835 | 944 | NR | 965 | 1177 | NR |
| 450 | 29740 | NR | 580 | 31248 | NR | 710 | 8583 | NR | 840 | 983 | NR | 970 | 868 | NR |
| 455 | 22827 | NR | 585 | 31581 | NR | 715 | 7631 | NR | 845 | 1097 | NR | 975 | 843 | NR |
| 460 | 19023 | NR | 590 | 32218 | NR | 720 | 6779 | NR | 850 | 856 | NR | 980 | 744 | NR |
| 465 | 16163 | NR | 595 | 32417 | NR | 725 | 5950 | NR | 855 | 949 | NR | 985 | 1113 | NR |
| 470 | 13739 | NR | 600 | 32976 | NR | 730 | 5282 | NR | 860 | 954 | NR | 990 | 1002 | NR |
| 475 | 13571 | NR | 605 | 33620 | NR | 735 | 4673 | NR | 865 | 1019 | NR | 995 | 1732 | NR |
| 480 | 14597 | NR | 610 | 33704 | NR | 740 | 4087 | NR | 870 | 1089 | NR | 1000 | 1390 | NR |
| 485 | 15964 | NR | 615 | 33846 | NR | 745 | 3658 | NR | 875 | 1089 | NR | | | |

REPORT NUMBER: SP1-2106-271-4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 1498.3 S/P: 0.71

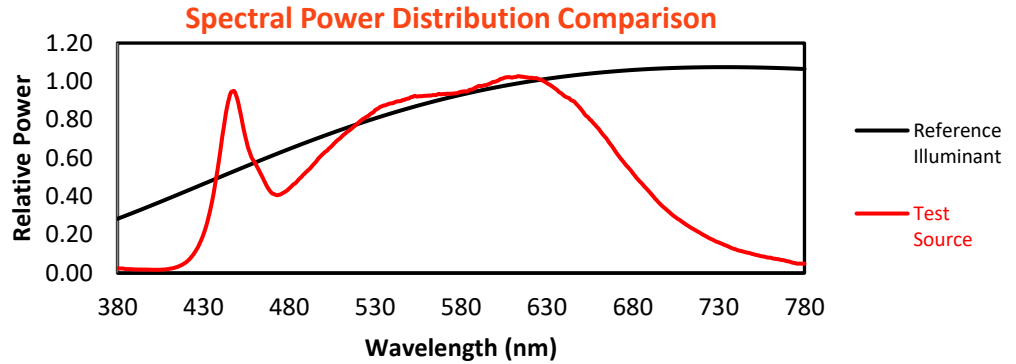
| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 910 | NR | 490 | 17463 | NR | 620 | 33665 | NR | 750 | 3275 | NR | 880 | 1122 | NR |
| 365 | 784 | NR | 495 | 18986 | NR | 625 | 33477 | NR | 755 | 2901 | NR | 885 | 1170 | NR |
| 370 | 741 | NR | 500 | 20627 | NR | 630 | 32742 | NR | 760 | 2665 | NR | 890 | 751 | NR |
| 375 | 805 | NR | 505 | 21980 | NR | 635 | 31767 | NR | 765 | 2371 | NR | 895 | 990 | NR |
| 380 | 830 | NR | 510 | 23346 | NR | 640 | 30561 | NR | 770 | 2039 | NR | 900 | 982 | NR |
| 385 | 690 | NR | 515 | 24600 | NR | 645 | 29699 | NR | 775 | 1676 | NR | 905 | 936 | NR |
| 390 | 625 | NR | 520 | 25854 | NR | 650 | 28202 | NR | 780 | 1616 | NR | 910 | 888 | NR |
| 395 | 599 | NR | 525 | 26952 | NR | 655 | 26484 | NR | 785 | 1573 | NR | 915 | 1068 | NR |
| 400 | 568 | NR | 530 | 28081 | NR | 660 | 24930 | NR | 790 | 1452 | NR | 920 | 1179 | NR |
| 405 | 577 | NR | 535 | 28884 | NR | 665 | 23070 | NR | 795 | 1263 | NR | 925 | 1008 | NR |
| 410 | 720 | NR | 540 | 29271 | NR | 670 | 20926 | NR | 800 | 1203 | NR | 930 | 927 | NR |
| 415 | 1084 | NR | 545 | 29657 | NR | 675 | 19011 | NR | 805 | 1175 | NR | 935 | 1185 | NR |
| 420 | 1884 | NR | 550 | 30152 | NR | 680 | 17237 | NR | 810 | 1108 | NR | 940 | 1166 | NR |
| 425 | 3574 | NR | 555 | 30445 | NR | 685 | 15540 | NR | 815 | 1125 | NR | 945 | 779 | NR |
| 430 | 6636 | NR | 560 | 30559 | NR | 690 | 13894 | NR | 820 | 988 | NR | 950 | 905 | NR |
| 435 | 12267 | NR | 565 | 30663 | NR | 695 | 12196 | NR | 825 | 1070 | NR | 955 | 1369 | NR |
| 440 | 21326 | NR | 570 | 30877 | NR | 700 | 10840 | NR | 830 | 1219 | NR | 960 | 1280 | NR |
| 445 | 30150 | NR | 575 | 30916 | NR | 705 | 9613 | NR | 835 | 944 | NR | 965 | 1177 | NR |
| 450 | 29740 | NR | 580 | 31248 | NR | 710 | 8583 | NR | 840 | 983 | NR | 970 | 868 | NR |
| 455 | 22827 | NR | 585 | 31581 | NR | 715 | 7631 | NR | 845 | 1097 | NR | 975 | 843 | NR |
| 460 | 19023 | NR | 590 | 32218 | NR | 720 | 6779 | NR | 850 | 856 | NR | 980 | 744 | NR |
| 465 | 16163 | NR | 595 | 32417 | NR | 725 | 5950 | NR | 855 | 949 | NR | 985 | 1113 | NR |
| 470 | 13739 | NR | 600 | 32976 | NR | 730 | 5282 | NR | 860 | 954 | NR | 990 | 1002 | NR |
| 475 | 13571 | NR | 605 | 33620 | NR | 735 | 4673 | NR | 865 | 1019 | NR | 995 | 1732 | NR |
| 480 | 14597 | NR | 610 | 33704 | NR | 740 | 4087 | NR | 870 | 1089 | NR | 1000 | 1390 | NR |
| 485 | 15964 | NR | 615 | 33846 | NR | 745 | 3658 | NR | 875 | 1089 | NR | | | |

REPORT NUMBER: SP1-2106-271-4

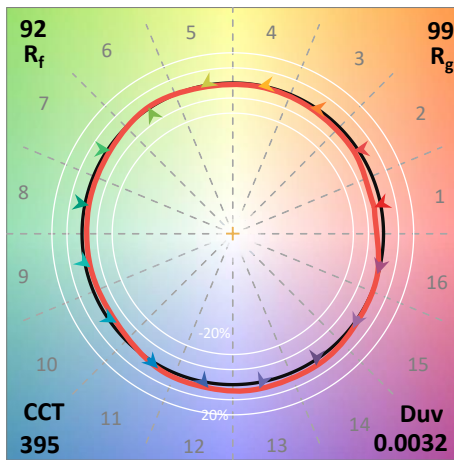
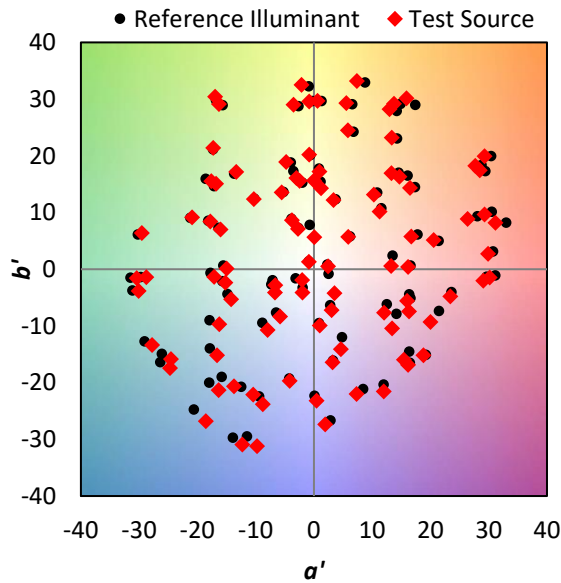
TM-30-18

Summary

$R_f = 92.2$
 $R_g = 98.9$
 CIE $R_a = 92.2$
 $R_9 = 63.3$



Color Vector Graphics

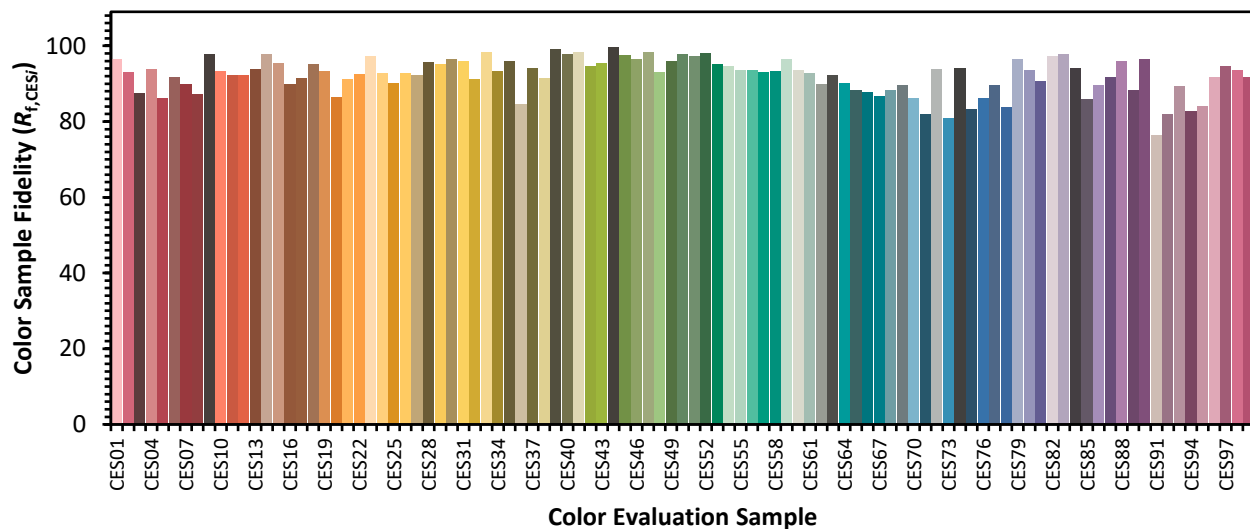


REPORT NUMBER: SP1-2106-271-4

TM-30-18

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

| | | | |
|------------|-------------|------------|------------|
| CES01 = 85 | CES26 = 93 | CES51 = 97 | CES76 = 86 |
| CES02 = 61 | CES27 = 92 | CES52 = 98 | CES77 = 90 |
| CES03 = 31 | CES28 = 96 | CES53 = 95 | CES78 = 84 |
| CES04 = 69 | CES29 = 95 | CES54 = 95 | CES79 = 97 |
| CES05 = 49 | CES30 = 97 | CES55 = 94 | CES80 = 94 |
| CES06 = 50 | CES31 = 96 | CES56 = 94 | CES81 = 91 |
| CES07 = 42 | CES32 = 91 | CES57 = 93 | CES82 = 97 |
| CES08 = 41 | CES33 = 98 | CES58 = 93 | CES83 = 98 |
| CES09 = 29 | CES34 = 93 | CES59 = 96 | CES84 = 94 |
| CES10 = 74 | CES35 = 96 | CES60 = 94 | CES85 = 86 |
| CES11 = 57 | CES36 = 85 | CES61 = 93 | CES86 = 90 |
| CES12 = 63 | CES37 = 94 | CES62 = 90 | CES87 = 92 |
| CES13 = 43 | CES38 = 91 | CES63 = 92 | CES88 = 96 |
| CES14 = 74 | CES39 = 99 | CES64 = 90 | CES89 = 88 |
| CES15 = 71 | CES40 = 98 | CES65 = 88 | CES90 = 96 |
| CES16 = 47 | CES41 = 98 | CES66 = 88 | CES91 = 76 |
| CES17 = 49 | CES42 = 95 | CES67 = 87 | CES92 = 82 |
| CES18 = 56 | CES43 = 95 | CES68 = 88 | CES93 = 89 |
| CES19 = 71 | CES44 = 100 | CES69 = 90 | CES94 = 83 |
| CES20 = 66 | CES45 = 97 | CES70 = 86 | CES95 = 84 |
| CES21 = 85 | CES46 = 97 | CES71 = 82 | CES96 = 92 |
| CES22 = 78 | CES47 = 98 | CES72 = 94 | CES97 = 95 |
| CES23 = 91 | CES48 = 93 | CES73 = 81 | CES98 = 93 |
| CES24 = 90 | CES49 = 96 | CES74 = 94 | CES99 = 92 |
| CES25 = 71 | CES50 = 98 | CES75 = 83 | |



REPORT NUMBER: SP1-2106-271-4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-2106-271-4

TM-30-18

Measure Comparisons



(END OF REPORT)