

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: P637176

Luminaire Tested: GWS-SA4C-730-U-T3-W-GRSBK

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P637176
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-24)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA4C-730-U-T3-W-GRSBK
Description: GALLEON WALL SLIM LUMINAIRE. (4) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK
Light Source: (64) 3000K CCT, 70 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 10915.5 lumens
Efficiency: N/A
Efficacy: 84.9 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')
IES Classification: Type II - Short
BUG Rating: B2 - U0 - G1

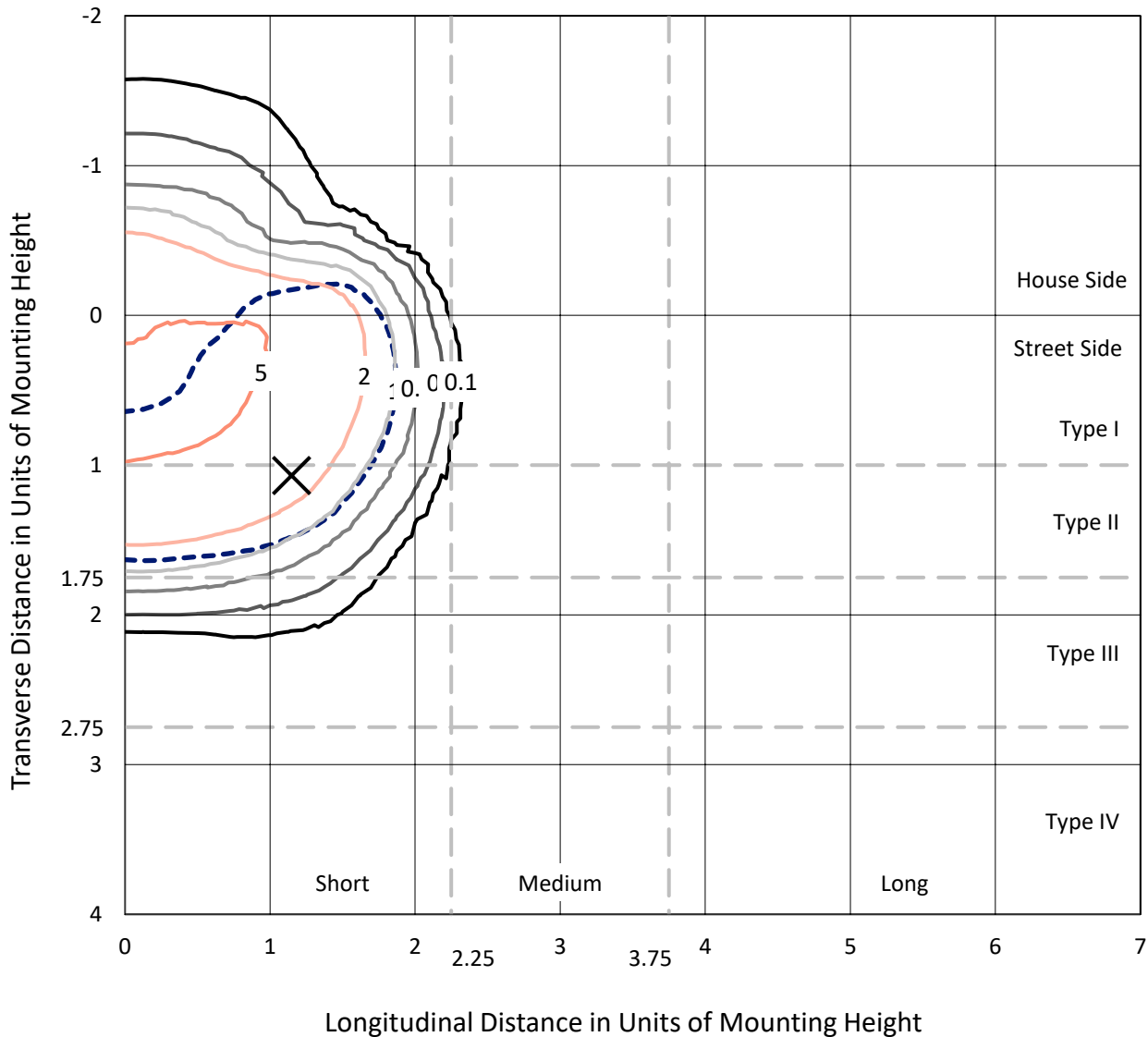
Input Watts (W): 128.5
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

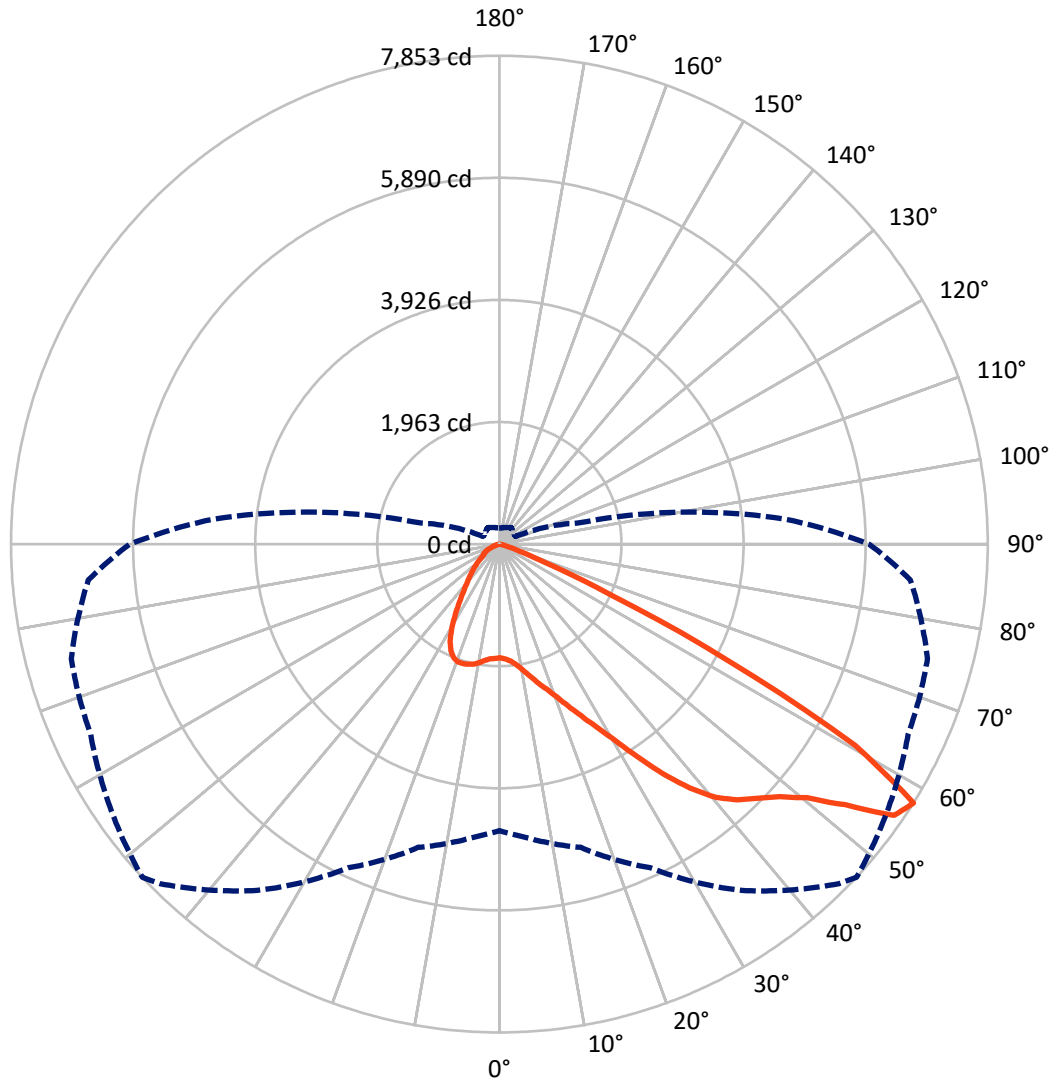
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 6.5 fc
 Type II - Short - N/A

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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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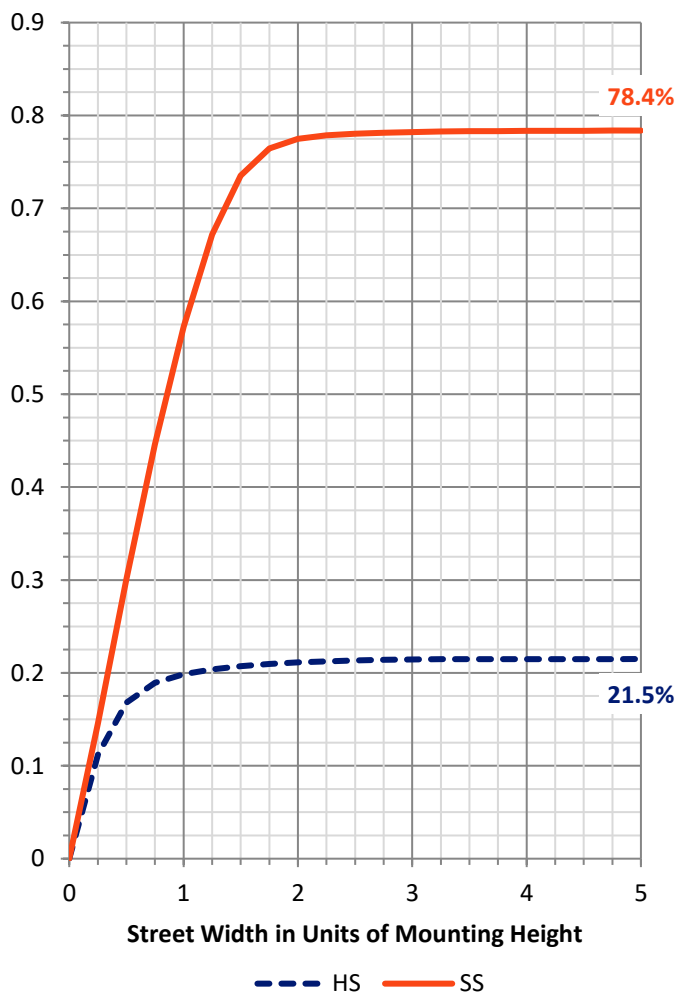
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 2368.1 | 0.0 | 2368.1 |
| | % Fixture | 21.7 | 0.0 | 21.7 |
| Street Side | Lumens | 8547.4 | 0.0 | 8547.4 |
| | % Fixture | 78.3 | 0.0 | 78.3 |
| Total | Lumens | 10915.5 | 0.0 | 10915.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 181.8 | 1.7 |
| 10°-20° | 613.4 | 5.6 |
| 20°-30° | 1139.0 | 10.4 |
| 30°-40° | 1823.3 | 16.7 |
| 40°-50° | 2665.2 | 24.4 |
| 50°-60° | 3289.3 | 30.1 |
| 60°-70° | 1099.1 | 10.1 |
| 70°-80° | 102.4 | 0.9 |
| 80°-90° | 2.1 | 0.0 |
| 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° | 10915.5 | 100.0 |
| 0°-180° | 10915.5 | 100.0 |

Coefficient of Utilization



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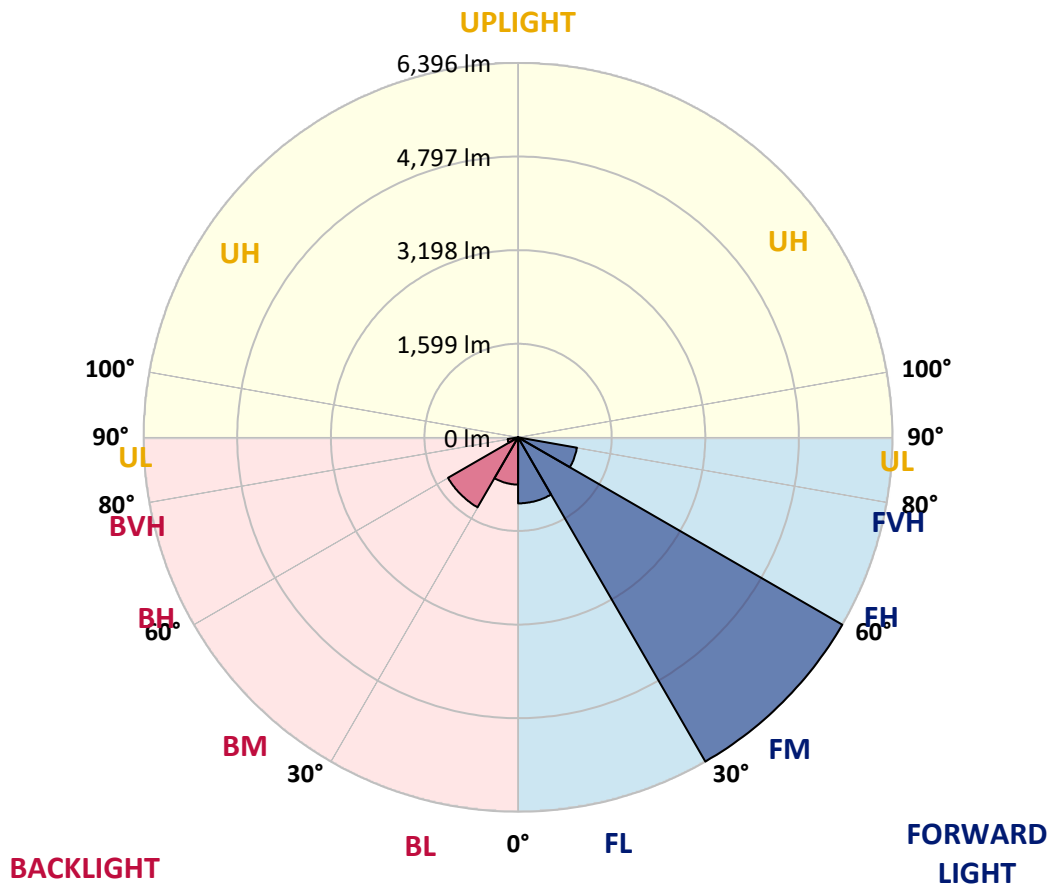
CATALOG NUMBER: GWS-SA4C-730-U-T3-W-GRSBK

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1128.1 | 10.3 | | | |
| FM (30°-60°) | 6396.4 | 58.6 | | | |
| FH (60°-80°) | 1021.5 | 9.4 | | | G1/1800 |
| FVH (80°-90°) | 1.5 | 0.0 | | | G0/10 |
| BL (0°-30°) | 806.1 | 7.4 | B2/1000 | | |
| BM (30°-60°) | 1381.3 | 12.7 | B2/2500 | | |
| BH (60°-80°) | 180.0 | 1.6 | B1/500 | | G1/500 |
| BVH (80°-90°) | 0.7 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G1

Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 47° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 |
| 2.5° | 1846.3 | 1845.0 | 1843.7 | 1851.3 | 1848.8 | 1847.5 | 1850.1 | 1850.1 | 1850.1 | 1842.5 | 1827.3 |
| 5° | 1890.6 | 1890.6 | 1889.4 | 1897.0 | 1890.6 | 1886.8 | 1888.1 | 1888.1 | 1883.0 | 1869.1 | 1850.1 |
| 7.5° | 1960.3 | 1957.8 | 1955.3 | 1962.9 | 1956.5 | 1955.3 | 1957.8 | 1950.2 | 1941.3 | 1918.5 | 1891.9 |
| 10° | 2060.4 | 2060.4 | 2056.6 | 2064.2 | 2059.2 | 2056.6 | 2056.6 | 2051.6 | 2035.1 | 1999.6 | 1960.3 |
| 12.5° | 2198.5 | 2192.2 | 2183.3 | 2177.0 | 2174.5 | 2173.2 | 2174.5 | 2166.9 | 2149.1 | 2103.5 | 2049.0 |
| 15° | 2349.3 | 2344.3 | 2330.3 | 2320.2 | 2306.3 | 2303.7 | 2311.3 | 2305.0 | 2287.3 | 2225.2 | 2147.9 |
| 17.5° | 2539.4 | 2545.8 | 2510.3 | 2488.7 | 2448.2 | 2445.6 | 2448.2 | 2458.3 | 2445.6 | 2365.8 | 2253.0 |
| 20° | 2701.6 | 2706.7 | 2680.1 | 2664.9 | 2628.1 | 2611.6 | 2616.7 | 2633.2 | 2619.3 | 2525.5 | 2368.4 |
| 22.5° | 2875.2 | 2881.6 | 2853.7 | 2822.0 | 2805.5 | 2805.5 | 2824.5 | 2847.3 | 2828.3 | 2705.4 | 2500.1 |
| 25° | 3083.0 | 3088.1 | 3065.3 | 3023.5 | 2994.3 | 3031.1 | 3059.0 | 3119.8 | 3088.1 | 2920.8 | 2656.0 |
| 27.5° | 3321.3 | 3322.5 | 3289.6 | 3246.5 | 3231.3 | 3299.7 | 3327.6 | 3421.4 | 3408.7 | 3162.9 | 2820.7 |
| 30° | 3576.0 | 3577.2 | 3569.6 | 3540.5 | 3526.5 | 3616.5 | 3654.5 | 3790.1 | 3781.3 | 3463.2 | 3045.0 |
| 32.5° | 3840.8 | 3840.8 | 3854.7 | 3852.2 | 3868.7 | 4015.7 | 4076.5 | 4231.1 | 4222.2 | 3830.7 | 3323.8 |
| 35° | 4106.9 | 4108.2 | 4132.3 | 4193.1 | 4261.5 | 4456.7 | 4536.5 | 4724.0 | 4703.8 | 4270.4 | 3679.9 |
| 37.5° | 4409.8 | 4397.1 | 4430.0 | 4521.3 | 4673.3 | 4898.9 | 4974.9 | 5153.6 | 5130.8 | 4720.2 | 4144.9 |
| 40° | 4774.7 | 4751.9 | 4751.9 | 4858.3 | 5030.7 | 5290.5 | 5355.1 | 5443.8 | 5366.5 | 5083.9 | 4601.1 |
| 42.5° | 5177.7 | 5156.1 | 5128.3 | 5222.0 | 5366.5 | 5569.2 | 5622.5 | 5598.4 | 5535.0 | 5427.3 | 5120.7 |
| 45° | 5585.7 | 5552.8 | 5571.8 | 5628.8 | 5712.4 | 5808.7 | 5829.0 | 5717.5 | 5688.3 | 5718.8 | 5550.2 |
| 47.5° | 5896.2 | 5873.4 | 5920.2 | 6000.1 | 6068.5 | 6082.4 | 6068.5 | 5913.9 | 5911.4 | 6019.1 | 5848.0 |
| 50° | 6000.1 | 6002.6 | 6131.9 | 6306.7 | 6417.0 | 6428.4 | 6409.4 | 6232.0 | 6207.9 | 6239.6 | 6008.9 |
| 52.5° | 6010.2 | 6020.3 | 6209.2 | 6542.4 | 6842.7 | 6979.6 | 6964.4 | 6773.1 | 6537.4 | 6503.1 | 6252.2 |
| 55° | 5765.6 | 5825.2 | 6088.8 | 6575.4 | 7214.0 | 7651.2 | 7701.9 | 7335.7 | 6985.9 | 6956.8 | 6775.6 |
| 57.5° | 4608.7 | 4730.4 | 5048.4 | 5741.6 | 6799.7 | 7720.9 | 7852.7 | 7589.1 | 7250.8 | 7126.6 | 6634.9 |
| 60° | 2754.8 | 2905.6 | 3211.0 | 4061.3 | 5175.1 | 6346.0 | 6572.8 | 6609.6 | 6453.7 | 6095.1 | 5090.2 |
| 62.5° | 1182.3 | 1169.6 | 1546.0 | 2197.3 | 3078.0 | 4033.4 | 4136.1 | 4295.7 | 4431.3 | 4056.2 | 3089.4 |
| 65° | 405.5 | 441.0 | 613.3 | 990.9 | 1540.9 | 1872.9 | 1964.1 | 2107.3 | 2299.9 | 1898.2 | 1131.6 |
| 67.5° | 250.9 | 266.1 | 353.5 | 585.4 | 831.3 | 818.6 | 778.0 | 755.2 | 735.0 | 503.1 | 310.5 |
| 70° | 182.5 | 195.1 | 248.4 | 403.0 | 558.8 | 392.8 | 340.9 | 276.2 | 306.7 | 282.6 | 220.5 |
| 72.5° | 122.9 | 133.1 | 171.1 | 244.6 | 286.4 | 191.3 | 177.4 | 201.5 | 243.3 | 231.9 | 179.9 |
| 75° | 73.5 | 79.8 | 97.6 | 119.1 | 116.6 | 98.8 | 100.1 | 141.9 | 186.3 | 173.6 | 128.0 |
| 77.5° | 50.7 | 53.2 | 64.6 | 77.3 | 57.0 | 30.4 | 27.9 | 39.3 | 63.4 | 63.4 | 43.1 |
| 80° | 12.7 | 16.5 | 16.5 | 10.1 | 8.9 | 7.6 | 7.6 | 11.4 | 17.7 | 12.7 | 6.3 |
| 82.5° | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 2.5 | 2.5 | 2.5 | 2.5 |
| 85° | 0.0 | 0.0 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 2.5 | 2.5 | 2.5 |
| 87.5° | 0.0 | 0.0 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 2.5 | 2.5 |
| 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: P637176

CATALOG NUMBER: GWS-SA4C-730-U-T3-W-GRSBK

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 | 1827.3 |
| 2.5° | 1836.1 | 1820.9 | 1831.1 | 1828.5 | 1836.1 | 1838.7 | 1827.3 | 1824.7 | 1826.0 | 1810.8 | 1805.7 |
| 5° | 1853.9 | 1836.1 | 1841.2 | 1836.1 | 1845.0 | 1852.6 | 1848.8 | 1853.9 | 1860.2 | 1848.8 | 1843.7 |
| 7.5° | 1891.9 | 1874.2 | 1872.9 | 1865.3 | 1878.0 | 1883.0 | 1881.8 | 1895.7 | 1908.4 | 1900.8 | 1893.2 |
| 10° | 1957.8 | 1933.7 | 1931.2 | 1924.8 | 1928.6 | 1932.4 | 1918.5 | 1921.0 | 1932.4 | 1923.6 | 1919.8 |
| 12.5° | 2038.9 | 2009.7 | 2003.4 | 1988.2 | 1988.2 | 1969.2 | 1938.8 | 1932.4 | 1941.3 | 1935.0 | 1928.6 |
| 15° | 2126.3 | 2087.0 | 2076.9 | 2050.3 | 2024.9 | 1989.5 | 1957.8 | 1950.2 | 1956.5 | 1948.9 | 1943.8 |
| 17.5° | 2223.9 | 2179.5 | 2146.6 | 2099.7 | 2044.0 | 2002.1 | 1966.7 | 1950.2 | 1940.0 | 1924.8 | 1923.6 |
| 20° | 2320.2 | 2261.9 | 2206.2 | 2131.4 | 2057.9 | 1994.5 | 1936.2 | 1893.2 | 1856.4 | 1833.6 | 1824.7 |
| 22.5° | 2431.7 | 2345.5 | 2255.6 | 2150.4 | 2045.2 | 1948.9 | 1846.3 | 1772.8 | 1709.4 | 1687.9 | 1677.7 |
| 25° | 2550.8 | 2439.3 | 2305.0 | 2168.1 | 2002.1 | 1847.5 | 1708.2 | 1599.2 | 1515.5 | 1487.7 | 1476.3 |
| 27.5° | 2682.6 | 2529.3 | 2355.7 | 2164.3 | 1913.4 | 1703.1 | 1518.1 | 1382.5 | 1300.1 | 1274.8 | 1283.6 |
| 30° | 2849.9 | 2645.9 | 2419.0 | 2125.1 | 1780.4 | 1500.3 | 1283.6 | 1169.6 | 1107.5 | 1083.4 | 1084.7 |
| 32.5° | 3072.9 | 2813.1 | 2511.5 | 2041.4 | 1609.3 | 1269.7 | 1079.6 | 996.0 | 954.2 | 922.5 | 920.0 |
| 35° | 3392.2 | 3067.8 | 2597.7 | 1907.1 | 1401.5 | 1064.4 | 926.3 | 860.4 | 802.1 | 765.4 | 771.7 |
| 37.5° | 3774.9 | 3388.4 | 2644.6 | 1725.9 | 1168.3 | 904.8 | 811.0 | 743.8 | 677.9 | 623.5 | 629.8 |
| 40° | 4228.6 | 3807.9 | 2640.8 | 1487.7 | 955.4 | 795.8 | 714.7 | 636.1 | 553.8 | 504.3 | 509.4 |
| 42.5° | 4734.2 | 4204.5 | 2558.4 | 1235.5 | 792.0 | 707.1 | 622.2 | 523.3 | 443.5 | 413.1 | 414.4 |
| 45° | 5172.6 | 4526.3 | 2414.0 | 974.5 | 666.5 | 620.9 | 525.9 | 424.5 | 389.0 | 367.5 | 366.2 |
| 47.5° | 5497.0 | 4762.0 | 2207.4 | 766.6 | 565.2 | 542.4 | 432.1 | 380.2 | 352.3 | 334.5 | 332.0 |
| 50° | 5678.2 | 4844.4 | 1979.3 | 600.6 | 477.7 | 460.0 | 386.5 | 344.7 | 325.7 | 314.3 | 311.7 |
| 52.5° | 5921.5 | 4943.2 | 1815.9 | 473.9 | 400.4 | 376.4 | 356.1 | 320.6 | 307.9 | 299.1 | 295.3 |
| 55° | 6306.7 | 5134.6 | 1673.9 | 376.4 | 333.3 | 328.2 | 335.8 | 306.7 | 299.1 | 285.1 | 280.0 |
| 57.5° | 5944.3 | 4612.5 | 1300.1 | 291.5 | 281.3 | 300.3 | 324.4 | 292.7 | 273.7 | 261.0 | 256.0 |
| 60° | 4182.9 | 3066.6 | 653.9 | 234.4 | 250.9 | 281.3 | 305.4 | 264.8 | 245.8 | 248.4 | 245.8 |
| 62.5° | 2306.3 | 1534.5 | 294.0 | 196.4 | 218.0 | 248.4 | 261.0 | 229.4 | 216.7 | 238.2 | 242.0 |
| 65° | 754.0 | 522.1 | 169.8 | 152.1 | 172.3 | 202.7 | 225.6 | 218.0 | 215.4 | 240.8 | 248.4 |
| 67.5° | 231.9 | 172.3 | 115.3 | 109.0 | 119.1 | 149.5 | 190.1 | 235.7 | 253.4 | 261.0 | 264.8 |
| 70° | 173.6 | 135.6 | 98.8 | 92.5 | 97.6 | 114.0 | 160.9 | 196.4 | 185.0 | 186.3 | 183.7 |
| 72.5° | 139.4 | 107.7 | 84.9 | 81.1 | 81.1 | 78.6 | 84.9 | 106.4 | 120.4 | 126.7 | 126.7 |
| 75° | 97.6 | 76.0 | 64.6 | 59.6 | 46.9 | 38.0 | 34.2 | 34.2 | 30.4 | 29.1 | 27.9 |
| 77.5° | 32.9 | 27.9 | 25.3 | 20.3 | 13.9 | 11.4 | 10.1 | 8.9 | 6.3 | 3.8 | 2.5 |
| 80° | 5.1 | 3.8 | 2.5 | 2.5 | 2.5 | 1.3 | 1.3 | 1.3 | 0.0 | 0.0 | 0.0 |
| 82.5° | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 1.3 | 1.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 1.3 | 1.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 2.5 | 2.5 | 2.5 | 2.5 | 1.3 | 1.3 | 1.3 | 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 |

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



LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

Data in this report applies to families of products SA1C-730-U-5WQ .

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-2-R4
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/28/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: McGRAW-EDISON
 Catalog Number: **SA1C-730-U-5WQ**
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

| | | | | | |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K): | 2993 | CRI (Ra): | 71.8 | R9: | -38.3 |
| CIE u': | 0.2508 | R1: | 67.5 | R10: | 62.5 |
| CIE v': | 0.5215 | R2: | 82.9 | R11: | 63.7 |
| Duv: | 0.0000 | R3: | 94.7 | R12: | 57.8 |
| CIE x: | 0.4374 | R4: | 67.7 | R13: | 70.4 |
| CIE y: | 0.4043 | R5: | 67.9 | R14: | 97.3 |
| CIE z: | 0.1583 | R6: | 77.6 | | |
| Peak Wavelength (nm): | 593 | R7: | 76.0 | | |
| Dominant Wavelength (nm): | 582 | R8: | 40.5 | | |
| Purity: | 53 | | | | |
| Rf: | 75.7 | | | | |
| Rg: | 93.9 | | | | |



Test Conditions

Stabilization Time: 53M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.0./44%
 Sphere Temperature (°C): 25.7

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| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/28/2019 | 12/28/2019 |
| Power Meter | IN0071 | 12/5/2018 | 12/5/2019 |
| AC Power Source | IN0063 | 12/5/2018 | 12/5/2019 |
| DC Power Source | IN0208 | 12/5/2018 | 12/5/2019 |
| Sphere Thermometer | IN0085 | 12/5/2018 | 12/5/2019 |
| Room Thermometer | IN0046 | 12/5/2018 | 12/5/2019 |

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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



#####

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

REPORT NUMBER: SP1-1908-441-2-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 8494.8

S/P: 1.23

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

REPORT NUMBER: SP1-1908-441-2-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 3101.5 M/P: 0.45

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

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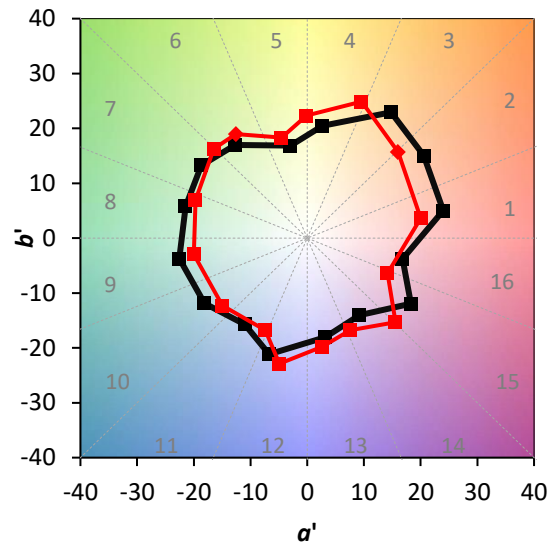
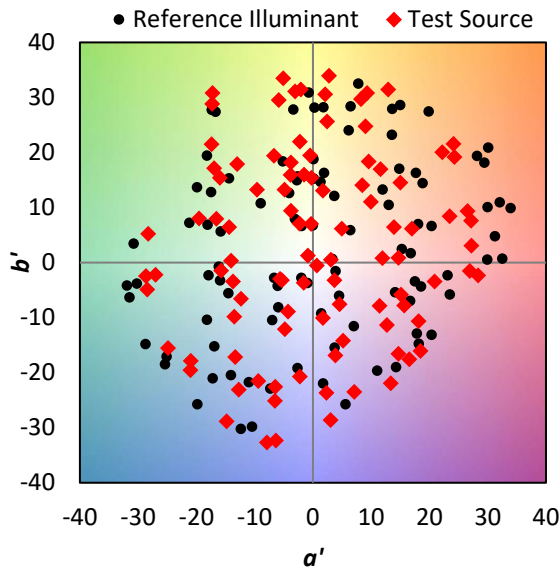
TM-30-18

Summary

$R_f = 75.7$
 $R_g = 93.9$
 $CIE R_a = 71.8$
 $R_g = -38.3$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 | |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)