

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: P318009

Luminaire Tested: **GLEON-SA5C-727-U-T2**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P318009
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-12)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: McGRAW-EDISON
Catalog Number: GLEON-SA5C-727-U-T2
Description: GALLEON AREA AND ROADWAY LUMINAIRE
(5) 70 CRI, 2700K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 29012 lumens
Efficiency: N/A
Efficacy: 104.0 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B3 - U0 - G4

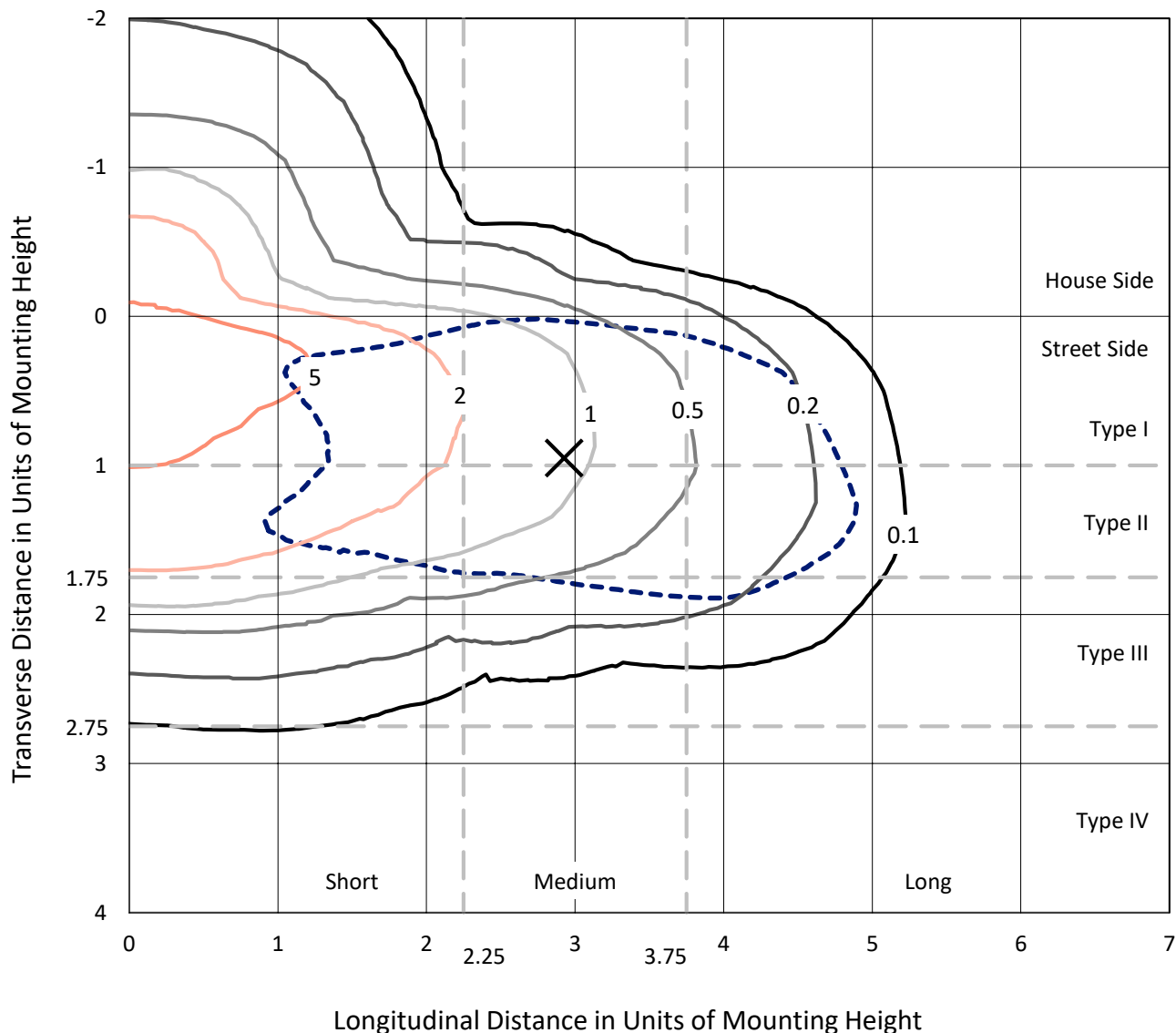
Input Watts (W): 279
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



REPORT NUMBER: P318009
 CATALOG NUMBER: GLEON-SA5C-727-U-T2

Iso-Footcandle Lines of Horizontal Illumination

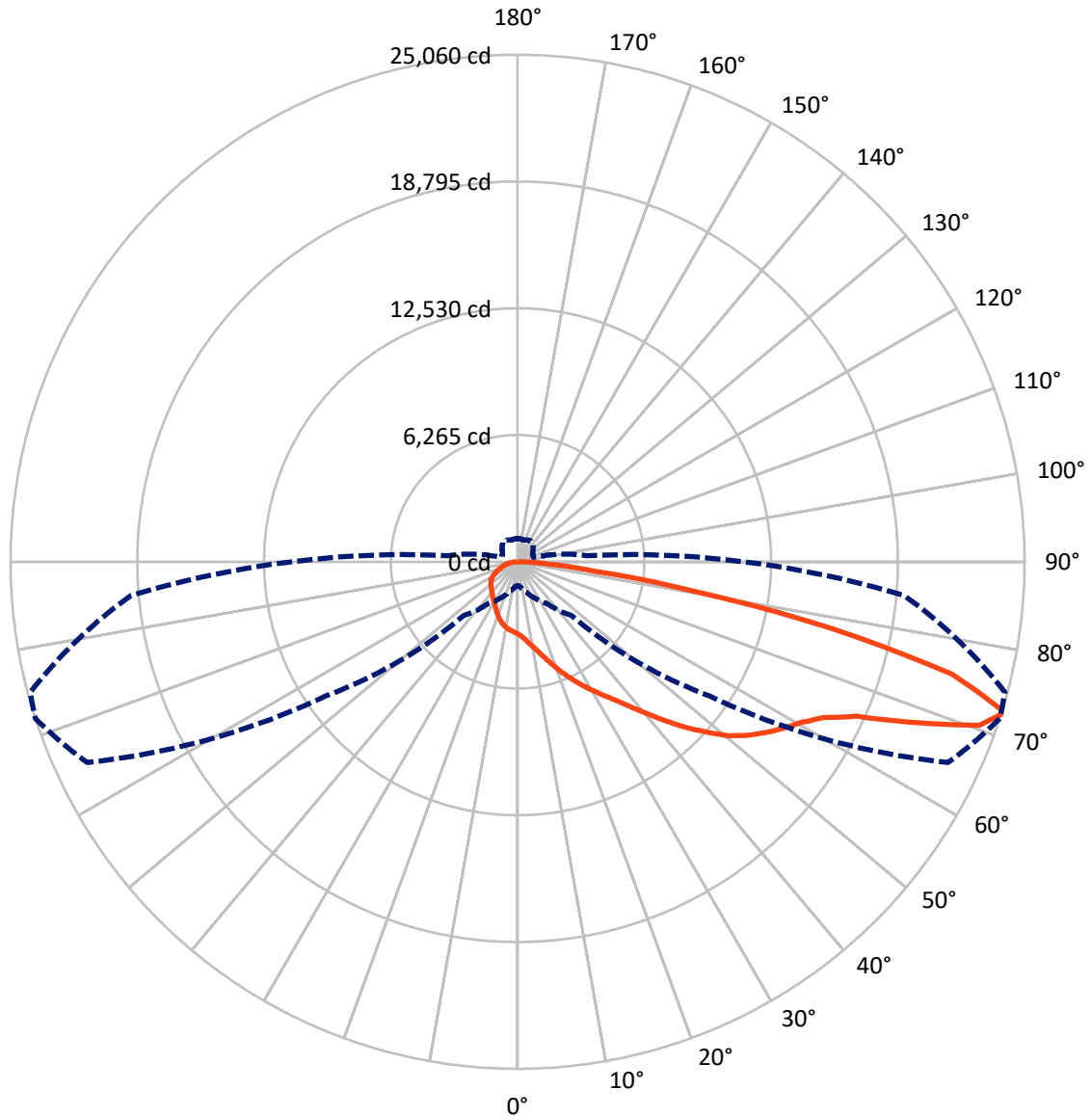
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 7.9 fc
 Type III - Medium - N/A

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CATALOG NUMBER: GLEON-SA5C-727-U-T2

Luminous Intensity Polar Plot



— Vertical Plane Through 72-Deg Lateral - - - Horizontal Cone Through 72-Deg Vertical

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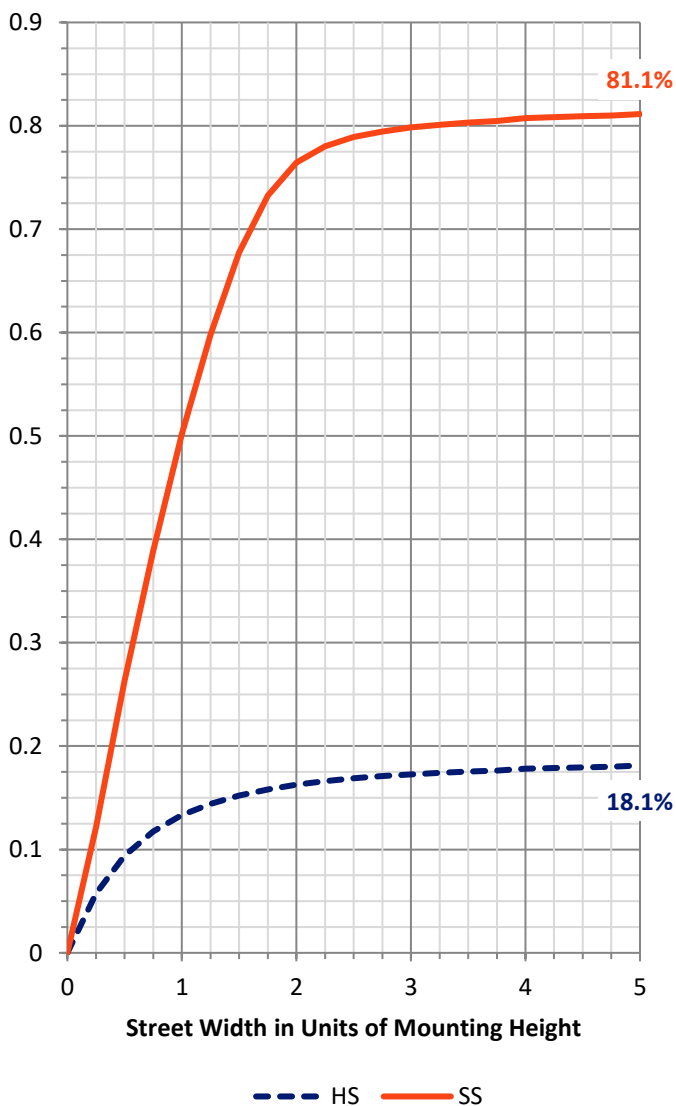
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 5381.9 | 0.0 | 5381.9 |
| | % Fixture | 18.6 | 0.0 | 18.6 |
| Street Side | Lumens | 23630.1 | 0.0 | 23630.1 |
| | % Fixture | 81.4 | 0.0 | 81.4 |
| Total | Lumens | 29012.0 | 0.0 | 29012.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 357.6 | 1.2 |
| 10°-20° | 1155.7 | 4.0 |
| 20°-30° | 2025.2 | 7.0 |
| 30°-40° | 3002.8 | 10.4 |
| 40°-50° | 4391.8 | 15.1 |
| 50°-60° | 6043.1 | 20.8 |
| 60°-70° | 6727.7 | 23.2 |
| 70°-80° | 4558.7 | 15.7 |
| 80°-90° | 749.3 | 2.6 |
| 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° | 29012.0 | 100.0 |
| 0°-180° | 29012.0 | 100.0 |

Coefficient of Utilization

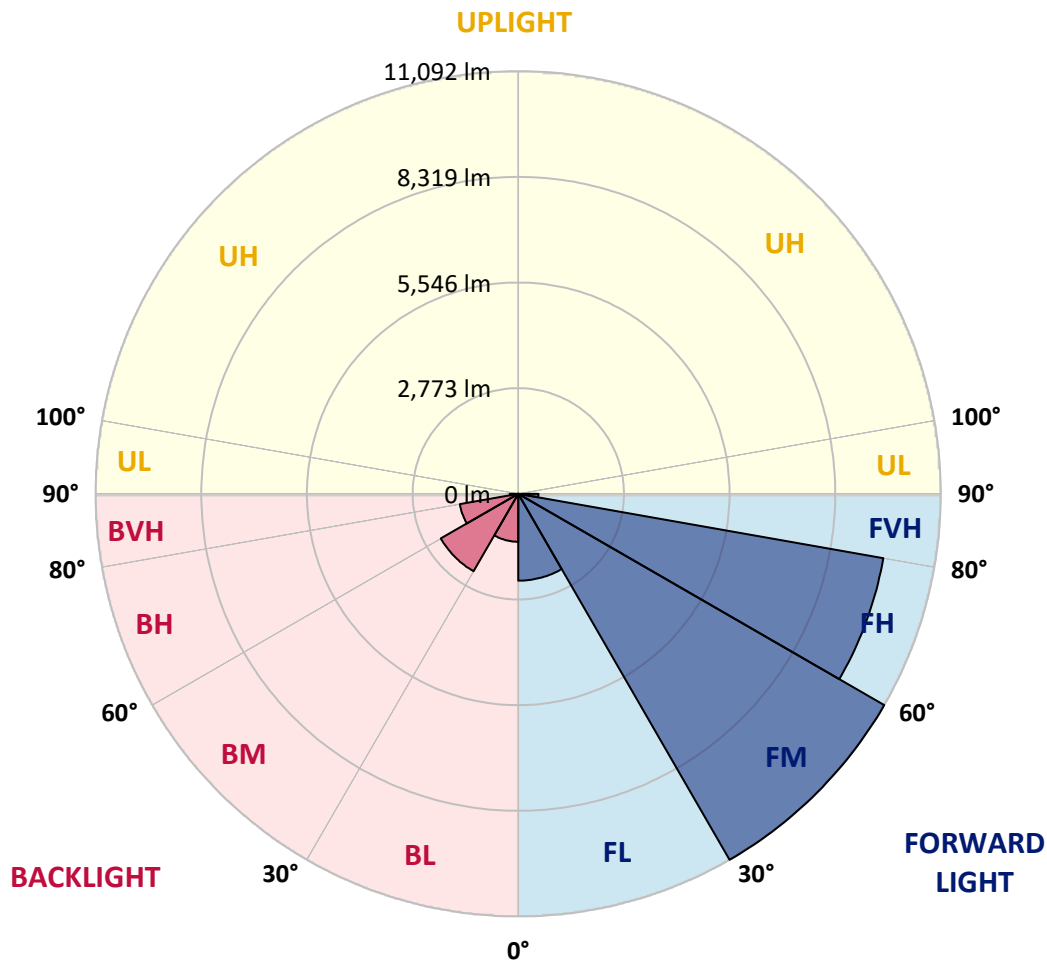


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 CATALOG NUMBER: GLEON-SA5C-727-U-T2

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|---------|-----------|-------------------------|------|----------|
| | | | B | U | G |
| FL (0°-30°) | 2280.5 | 7.9 | | | |
| FM (30°-60°) | 11091.6 | 38.2 | | | |
| FH (60°-80°) | 9729.4 | 33.5 | | | G4/12000 |
| FVH (80°-90°) | 528.5 | 1.8 | | | G4/750 |
| BL (0°-30°) | 1258.1 | 4.3 | B3/2500 | | |
| BM (30°-60°) | 2346.0 | 8.1 | B2/2500 | | |
| BH (60°-80°) | 1557.1 | 5.4 | B3/2500 | | G3/2500 |
| BVH (80°-90°) | 220.7 | 0.8 | | | G2/225 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G4
 Type III Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 72° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 |
| 2.5° | 3942.8 | 3936.8 | 3915.9 | 3915.9 | 3875.9 | 3841.9 | 3778.0 | 3735.1 | 3684.1 | 3666.1 | 3606.2 |
| 5° | 4324.4 | 4326.4 | 4300.5 | 4282.5 | 4223.5 | 4151.6 | 4042.7 | 3943.8 | 3844.9 | 3805.0 | 3682.1 |
| 7.5° | 4645.1 | 4641.1 | 4634.1 | 4619.1 | 4564.2 | 4490.3 | 4343.4 | 4196.6 | 4050.7 | 3990.8 | 3779.0 |
| 10° | 4850.9 | 4859.9 | 4865.9 | 4872.9 | 4849.9 | 4796.9 | 4658.1 | 4479.3 | 4288.5 | 4206.6 | 3894.9 |
| 12.5° | 4954.8 | 4970.8 | 4998.7 | 5046.7 | 5084.6 | 5078.6 | 4977.7 | 4787.9 | 4561.2 | 4458.3 | 4039.7 |
| 15° | 5015.7 | 5036.7 | 5080.6 | 5166.5 | 5273.4 | 5334.4 | 5307.4 | 5135.6 | 4882.8 | 4756.0 | 4216.5 |
| 17.5° | 5053.7 | 5070.6 | 5138.6 | 5253.5 | 5412.3 | 5574.1 | 5645.0 | 5501.2 | 5246.5 | 5101.6 | 4419.3 |
| 20° | 5079.6 | 5092.6 | 5177.5 | 5312.4 | 5518.2 | 5775.9 | 5973.7 | 5937.7 | 5647.0 | 5459.2 | 4631.1 |
| 22.5° | 5137.6 | 5148.6 | 5229.5 | 5365.3 | 5593.1 | 5925.7 | 6290.4 | 6344.3 | 6069.6 | 5856.8 | 4857.9 |
| 25° | 5299.4 | 5299.4 | 5367.3 | 5462.2 | 5676.0 | 6055.6 | 6558.1 | 6796.8 | 6501.1 | 6253.4 | 5067.7 |
| 27.5° | 5608.1 | 5605.1 | 5630.1 | 5663.0 | 5824.9 | 6187.5 | 6796.8 | 7196.4 | 6948.7 | 6678.0 | 5271.4 |
| 30° | 5973.7 | 5993.7 | 5996.7 | 5980.7 | 6056.6 | 6352.3 | 7017.6 | 7618.0 | 7399.2 | 7107.5 | 5480.2 |
| 32.5° | 6444.2 | 6457.2 | 6442.2 | 6389.3 | 6378.3 | 6586.0 | 7234.4 | 8059.5 | 7886.7 | 7556.0 | 5671.0 |
| 35° | 7041.6 | 7016.6 | 6969.6 | 6861.8 | 6758.9 | 6898.7 | 7482.1 | 8501.0 | 8434.1 | 8098.5 | 5933.7 |
| 37.5° | 7681.9 | 7682.9 | 7625.0 | 7380.2 | 7238.4 | 7298.3 | 7823.7 | 9001.5 | 9096.4 | 8743.8 | 6270.4 |
| 40° | 8195.4 | 8222.3 | 8258.3 | 7936.6 | 7752.8 | 7835.7 | 8258.3 | 9581.9 | 9879.6 | 9509.0 | 6708.9 |
| 42.5° | 8554.0 | 8584.9 | 8686.8 | 8485.0 | 8294.2 | 8448.1 | 8769.7 | 10201.2 | 10758.6 | 10392.0 | 7222.4 |
| 45° | 8933.6 | 8950.6 | 9022.5 | 8935.6 | 8813.7 | 9160.3 | 9346.1 | 10842.6 | 11688.7 | 11333.0 | 7796.8 |
| 47.5° | 9333.1 | 9351.1 | 9425.1 | 9367.1 | 9303.2 | 9825.6 | 9947.5 | 11446.9 | 12579.7 | 12366.9 | 8410.1 |
| 50° | 9826.6 | 9838.6 | 9908.5 | 9803.7 | 9823.6 | 10327.1 | 10484.9 | 12001.3 | 13513.7 | 13296.0 | 9025.5 |
| 52.5° | 10499.9 | 10502.9 | 10599.8 | 10504.9 | 10411.0 | 10694.7 | 10947.4 | 12523.8 | 14246.0 | 14143.1 | 9640.8 |
| 55° | 11027.4 | 11059.3 | 11377.0 | 11357.0 | 11303.1 | 11028.4 | 11334.0 | 13021.3 | 14899.3 | 14948.2 | 10294.1 |
| 57.5° | 10690.7 | 10815.6 | 11458.9 | 11912.4 | 12354.0 | 11858.5 | 11856.5 | 13581.7 | 15506.6 | 15738.4 | 11012.4 |
| 60° | 9363.1 | 9532.9 | 10480.9 | 11486.9 | 12868.4 | 13303.0 | 12941.3 | 14265.9 | 16120.0 | 16521.6 | 11912.4 |
| 62.5° | 6686.9 | 6966.6 | 8251.3 | 9857.6 | 12163.2 | 14259.9 | 15149.0 | 15351.8 | 16954.1 | 17428.6 | 13082.2 |
| 65° | 3380.4 | 3592.2 | 4669.1 | 6604.0 | 9717.7 | 13634.6 | 17548.5 | 17729.3 | 18403.6 | 18825.1 | 14883.3 |
| 67.5° | 2053.8 | 2133.7 | 2659.2 | 3673.1 | 5957.7 | 10620.8 | 18331.7 | 21692.1 | 21208.6 | 21432.4 | 17451.6 |
| 70° | 1513.4 | 1572.3 | 1900.0 | 2439.4 | 3426.4 | 6232.4 | 15928.2 | 24520.1 | 24202.5 | 24177.5 | 19349.6 |
| 72° | 1178.8 | 1221.7 | 1511.4 | 1970.9 | 2505.4 | 3739.1 | 11544.8 | 23476.2 | 25059.6 | 24933.7 | 19175.8 |
| 72.5° | 1117.8 | 1155.8 | 1419.5 | 1855.0 | 2367.5 | 3389.4 | 10380.0 | 22772.0 | 24997.6 | 24940.7 | 18951.0 |
| 75° | 880.1 | 907.0 | 1050.9 | 1434.5 | 1853.0 | 1923.0 | 5688.0 | 17647.4 | 22175.6 | 23097.6 | 17045.0 |
| 77.5° | 728.2 | 732.2 | 808.1 | 1043.9 | 1444.5 | 1359.6 | 2794.1 | 12244.1 | 15879.2 | 16893.2 | 12074.3 |
| 80° | 593.4 | 598.4 | 634.3 | 732.2 | 1092.8 | 1005.9 | 1326.6 | 7040.6 | 8890.6 | 8901.6 | 5741.9 |
| 82.5° | 472.5 | 473.5 | 513.5 | 535.4 | 785.2 | 719.2 | 760.2 | 3305.5 | 3884.9 | 3737.1 | 2063.8 |
| 85° | 332.6 | 325.7 | 501.5 | 439.5 | 513.5 | 461.5 | 419.6 | 1308.6 | 1606.3 | 1536.4 | 646.3 |
| 87.5° | 110.9 | 114.9 | 222.8 | 284.7 | 299.7 | 261.7 | 186.8 | 501.5 | 606.4 | 601.4 | 204.8 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



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 CATALOG NUMBER: GLEON-SA5C-727-U-T2

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 | 3569.2 |
| 2.5° | 3587.2 | 3555.2 | 3508.3 | 3456.4 | 3415.4 | 3373.4 | 3342.5 | 3326.5 | 3308.5 | 3293.5 | 3311.5 |
| 5° | 3625.2 | 3565.2 | 3465.3 | 3367.4 | 3295.5 | 3231.6 | 3185.6 | 3161.7 | 3139.7 | 3124.7 | 3126.7 |
| 7.5° | 3687.1 | 3590.2 | 3422.4 | 3279.5 | 3179.6 | 3110.7 | 3063.8 | 3047.8 | 3033.8 | 3029.8 | 3034.8 |
| 10° | 3753.0 | 3610.2 | 3365.4 | 3175.6 | 3061.8 | 3004.8 | 2983.9 | 2994.8 | 3004.8 | 3013.8 | 3023.8 |
| 12.5° | 3828.0 | 3628.2 | 3282.5 | 3053.8 | 2956.9 | 2934.9 | 2955.9 | 3003.8 | 3038.8 | 3059.8 | 3072.8 |
| 15° | 3925.9 | 3644.2 | 3186.6 | 2931.9 | 2867.0 | 2891.9 | 2962.9 | 3045.8 | 3106.7 | 3145.7 | 3151.7 |
| 17.5° | 4015.8 | 3643.2 | 3063.8 | 2809.0 | 2794.1 | 2867.0 | 2973.9 | 3090.7 | 3172.7 | 3227.6 | 3238.6 |
| 20° | 4108.7 | 3616.2 | 2920.9 | 2689.2 | 2720.1 | 2840.0 | 2978.9 | 3119.7 | 3218.6 | 3282.5 | 3297.5 |
| 22.5° | 4195.6 | 3569.2 | 2764.1 | 2580.3 | 2658.2 | 2804.0 | 2959.9 | 3102.7 | 3201.6 | 3253.6 | 3269.5 |
| 25° | 4254.5 | 3487.3 | 2605.3 | 2488.4 | 2603.3 | 2760.1 | 2897.9 | 3012.8 | 3086.7 | 3112.7 | 3116.7 |
| 27.5° | 4284.5 | 3380.4 | 2455.4 | 2408.5 | 2546.3 | 2688.2 | 2783.1 | 2840.0 | 2861.0 | 2859.0 | 2855.0 |
| 30° | 4288.5 | 3239.6 | 2326.5 | 2343.5 | 2480.4 | 2582.3 | 2627.2 | 2616.2 | 2589.3 | 2543.3 | 2547.3 |
| 32.5° | 4275.5 | 3080.7 | 2218.7 | 2281.6 | 2396.5 | 2453.4 | 2455.4 | 2402.5 | 2330.5 | 2257.6 | 2237.6 |
| 35° | 4279.5 | 2924.9 | 2123.8 | 2211.7 | 2294.6 | 2319.6 | 2296.6 | 2218.7 | 2120.8 | 2026.9 | 2006.9 |
| 37.5° | 4323.4 | 2789.1 | 2041.8 | 2130.8 | 2181.7 | 2187.7 | 2154.7 | 2072.8 | 2000.9 | 1909.0 | 1901.0 |
| 40° | 4428.3 | 2692.2 | 1963.9 | 2039.8 | 2068.8 | 2071.8 | 2024.9 | 1966.9 | 1972.9 | 1924.0 | 1923.0 |
| 42.5° | 4617.1 | 2650.2 | 1895.0 | 1944.9 | 1962.9 | 1968.9 | 1933.0 | 1896.0 | 1947.9 | 1916.0 | 1905.0 |
| 45° | 4860.9 | 2660.2 | 1837.1 | 1852.0 | 1885.0 | 1913.0 | 1891.0 | 1846.1 | 1866.0 | 1727.2 | 1681.2 |
| 47.5° | 5142.6 | 2724.1 | 1791.1 | 1772.1 | 1829.1 | 1882.0 | 1848.0 | 1780.1 | 1709.2 | 1571.3 | 1545.4 |
| 50° | 5472.2 | 2823.0 | 1749.2 | 1693.2 | 1768.1 | 1840.1 | 1806.1 | 1709.2 | 1602.3 | 1535.4 | 1526.4 |
| 52.5° | 5815.9 | 2943.9 | 1707.2 | 1606.3 | 1691.2 | 1808.1 | 1791.1 | 1693.2 | 1561.4 | 1495.4 | 1483.4 |
| 55° | 6205.5 | 3065.8 | 1654.3 | 1505.4 | 1608.3 | 1793.1 | 1784.1 | 1635.3 | 1530.4 | 1493.4 | 1484.4 |
| 57.5° | 6689.9 | 3204.6 | 1584.3 | 1400.5 | 1530.4 | 1739.2 | 1711.2 | 1600.3 | 1498.4 | 1470.4 | 1467.5 |
| 60° | 7321.3 | 3409.4 | 1483.4 | 1288.6 | 1435.5 | 1656.3 | 1650.3 | 1549.4 | 1447.5 | 1427.5 | 1423.5 |
| 62.5° | 8268.3 | 3748.0 | 1344.6 | 1176.8 | 1329.6 | 1515.4 | 1570.3 | 1480.4 | 1393.5 | 1392.5 | 1394.5 |
| 65° | 9736.7 | 4257.5 | 1193.7 | 1078.9 | 1222.7 | 1396.5 | 1477.4 | 1409.5 | 1338.6 | 1358.6 | 1361.6 |
| 67.5° | 11438.9 | 4680.1 | 1045.9 | 983.0 | 1113.8 | 1283.6 | 1393.5 | 1338.6 | 1265.7 | 1317.6 | 1318.6 |
| 70° | 12005.3 | 4302.5 | 916.0 | 888.1 | 1000.9 | 1174.8 | 1302.6 | 1260.7 | 1186.7 | 1238.7 | 1233.7 |
| 72° | 11172.2 | 3473.3 | 832.1 | 816.1 | 916.0 | 1084.9 | 1221.7 | 1187.7 | 1114.8 | 1149.8 | 1136.8 |
| 72.5° | 10909.5 | 3311.5 | 811.1 | 798.2 | 893.1 | 1061.9 | 1200.7 | 1169.8 | 1096.8 | 1126.8 | 1114.8 |
| 75° | 9731.7 | 2876.0 | 697.3 | 700.3 | 779.2 | 950.0 | 1082.9 | 1072.9 | 997.9 | 1000.9 | 996.9 |
| 77.5° | 7058.6 | 2108.8 | 587.4 | 607.4 | 663.3 | 835.1 | 964.0 | 958.0 | 876.1 | 861.1 | 858.1 |
| 80° | 3275.5 | 1075.9 | 478.5 | 487.5 | 545.4 | 698.3 | 822.1 | 814.1 | 748.2 | 729.2 | 718.2 |
| 82.5° | 1121.8 | 511.5 | 359.6 | 365.6 | 422.6 | 562.4 | 713.2 | 708.3 | 653.3 | 616.3 | 593.4 |
| 85° | 400.6 | 254.7 | 251.7 | 245.7 | 301.7 | 442.5 | 621.3 | 594.4 | 513.5 | 437.5 | 435.5 |
| 87.5° | 129.9 | 108.9 | 129.9 | 128.9 | 175.8 | 299.7 | 451.5 | 384.6 | 372.6 | 309.7 | 303.7 |
| 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: SP1-1908-441-1-R4

Test Date: 08/20/2019

Luminaire Tested: SA1C-727-U-5WQ

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-1-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-727-U-5WQ**
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-1-R3. TO UPDATE THE CATALOG NUMBER.TESTED IN
 SITU. (1) 70 CRI, 2700K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

CCT (K): 2741
 CIE u': 0.2605
 CIE v': 0.5272
 Duv: 0.0005
 CIE x: 0.4573
 CIE y: 0.4113
 CIE z: 0.1313
 Peak Wavelength (nm): 602
 Dominant Wavelength (nm): 583
 Purity: 61.2

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.5 | | |
| R1: | 69.2 | R9: | -16.1 |
| R2: | 79.4 | R10: | 51.4 |
| R3: | 87.8 | R11: | 63.1 |
| R4: | 69.4 | R12: | 42.0 |
| R5: | 66.4 | R13: | 70.2 |
| R6: | 69.8 | R14: | 92.4 |
| R7: | 79.8 | | |
| R8: | 50.1 | | |

Rf: 69.9
 Rg: 98.3



Test Conditions

Stabilization Time: 56M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.3./42%
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-1-R4

| 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 2700K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-1-R4

Photopic Flux vs. Wavelength



Photopic Lumens: 6211.7

| 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 | 2044 | 0.0 | 490 | 7179 | 1.0 | 620 | 118034 | 30.7 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 1.9 | 625 | 111884 | 24.7 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 3.4 | 630 | 106119 | 19.2 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 6.3 | 635 | 99706 | 15.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 10.4 | 640 | 92142 | 11.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 16.3 | 645 | 84987 | 8.2 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 22.9 | 650 | 78016 | 5.7 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 29.7 | 655 | 71541 | 4.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 36.7 | 660 | 64863 | 2.7 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 42.5 | 665 | 58485 | 1.9 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.0 | 540 | 73435 | 47.8 | 670 | 51641 | 1.1 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.0 | 545 | 78677 | 52.4 | 675 | 46030 | 0.8 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 0.0 | 550 | 83331 | 56.6 | 680 | 40590 | 0.5 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 0.1 | 555 | 89120 | 60.9 | 685 | 35691 | 0.3 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 0.3 | 560 | 94613 | 64.3 | 690 | 31631 | 0.2 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 0.6 | 565 | 99818 | 66.4 | 695 | 27437 | 0.1 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 0.9 | 570 | 106526 | 69.3 | 700 | 24589 | 0.1 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 1.1 | 575 | 111610 | 69.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 1.0 | 580 | 117163 | 69.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 0.8 | 585 | 122201 | 67.9 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 0.6 | 590 | 125662 | 65.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 0.5 | 595 | 127415 | 60.4 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 0.4 | 600 | 129155 | 55.7 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 0.4 | 605 | 128057 | 49.6 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 0.5 | 610 | 126031 | 43.3 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 0.7 | 615 | 123059 | 37.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

REPORT NUMBER: SP1-1908-441-1-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 6474.3 S/P: 1.04

| 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 | 2044 | 0.0 | 490 | 7179 | 6.0 | 620 | 118034 | 0.1 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 8.6 | 625 | 111884 | 0.1 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 12.5 | 630 | 106119 | 0.0 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 17.3 | 635 | 99706 | 0.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 21.8 | 640 | 92142 | 0.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 25.7 | 645 | 84987 | 0.0 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 27.5 | 650 | 78016 | 0.0 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 28.1 | 655 | 71541 | 0.0 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 27.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 24.7 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.1 | 540 | 73435 | 21.5 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.5 | 545 | 78677 | 18.3 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 1.6 | 550 | 83331 | 15.0 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 3.9 | 555 | 89120 | 12.0 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 8.1 | 560 | 94613 | 9.3 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 13.3 | 565 | 99818 | 7.0 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 19.1 | 570 | 106526 | 5.2 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 21.6 | 575 | 111610 | 3.7 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 18.1 | 580 | 117163 | 2.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 11.8 | 585 | 122201 | 1.8 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 8.1 | 590 | 125662 | 1.2 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 6.2 | 595 | 127415 | 0.8 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 4.8 | 600 | 129155 | 0.5 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 4.1 | 605 | 128057 | 0.4 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 4.1 | 610 | 126031 | 0.2 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 4.6 | 615 | 123059 | 0.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

REPORT NUMBER: SP1-1908-441-1-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 2145.7 M/P: 0.35

| 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 | 2044 | 0.0 | 490 | 7179 | 11.1 | 620 | 118034 | 1.5 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 16.9 | 625 | 111884 | 0.9 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 26.0 | 630 | 106119 | 0.6 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 38.2 | 635 | 99706 | 0.4 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 51.6 | 640 | 92142 | 0.2 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 65.1 | 645 | 84987 | 0.1 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 75.2 | 650 | 78016 | 0.1 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 82.9 | 655 | 71541 | 0.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 86.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.1 | 535 | 68520 | 85.4 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.2 | 540 | 73435 | 81.1 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.7 | 545 | 78677 | 75.4 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 2.3 | 550 | 83331 | 68.1 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 6.2 | 555 | 89120 | 60.9 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 13.0 | 560 | 94613 | 52.9 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 22.2 | 565 | 99818 | 44.8 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 32.0 | 570 | 106526 | 37.6 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 36.7 | 575 | 111610 | 30.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 30.4 | 580 | 117163 | 24.1 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 19.7 | 585 | 122201 | 18.7 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 13.2 | 590 | 125662 | 14.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 10.0 | 595 | 127415 | 10.2 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 7.7 | 600 | 129155 | 7.3 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 6.7 | 605 | 128057 | 5.0 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 6.9 | 610 | 126031 | 3.4 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 8.1 | 615 | 123059 | 2.3 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

REPORT NUMBER: SP1-1908-441-1-R4

TM-30-18

Summary

$R_f = 69.9$
 $R_g = 98.3$
 CIE $R_a = 71.5$
 $R_9 = -16.1$



Color Vector Graphics



REPORT NUMBER: SP1-1908-441-1-R4

TM-30-18

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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 54 | CES51 = 77 | CES76 = 48 |
| CES02 = 63 | CES27 = 74 | CES52 = 80 | CES77 = 75 |
| CES03 = 31 | CES28 = 80 | CES53 = 66 | CES78 = 56 |
| CES04 = 71 | CES29 = 44 | CES54 = 77 | CES79 = 81 |
| CES05 = 50 | CES30 = 46 | CES55 = 74 | CES80 = 80 |
| CES06 = 52 | CES31 = 50 | CES56 = 63 | CES81 = 73 |
| CES07 = 42 | CES32 = 49 | CES57 = 60 | CES82 = 91 |
| CES08 = 41 | CES33 = 53 | CES58 = 63 | CES83 = 84 |
| CES09 = 29 | CES34 = 66 | CES59 = 85 | CES84 = 90 |
| CES10 = 77 | CES35 = 82 | CES60 = 89 | CES85 = 87 |
| CES11 = 60 | CES36 = 78 | CES61 = 85 | CES86 = 65 |
| CES12 = 66 | CES37 = 75 | CES62 = 69 | CES87 = 78 |
| CES13 = 43 | CES38 = 53 | CES63 = 68 | CES88 = 73 |
| CES14 = 74 | CES39 = 91 | CES64 = 68 | CES89 = 68 |
| CES15 = 71 | CES40 = 85 | CES65 = 65 | CES90 = 68 |
| CES16 = 48 | CES41 = 76 | CES66 = 62 | CES91 = 91 |
| CES17 = 50 | CES42 = 76 | CES67 = 60 | CES92 = 71 |
| CES18 = 57 | CES43 = 65 | CES68 = 68 | CES93 = 82 |
| CES19 = 73 | CES44 = 98 | CES69 = 77 | CES94 = 57 |
| CES20 = 67 | CES45 = 75 | CES70 = 60 | CES95 = 78 |
| CES21 = 88 | CES46 = 70 | CES71 = 57 | CES96 = 80 |
| CES22 = 80 | CES47 = 63 | CES72 = 86 | CES97 = 79 |
| CES23 = 92 | CES48 = 51 | CES73 = 52 | CES98 = 71 |
| CES24 = 91 | CES49 = 68 | CES74 = 90 | CES99 = 64 |
| CES25 = 73 | CES50 = 77 | CES75 = 58 | |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)