

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: P321539

Luminaire Tested: **GLEON-SA5D-727-U-T3R-HSS**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P321539
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-11)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: McGRAW-EDISON
Catalog Number: GLEON-SA5D-727-U-T3R-HSS
Description: GALLEON AREA AND ROADWAY LUMINAIRE
(5) 70 CRI, 2700K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III
ROADWAY OPTICS WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 24941 lumens
Efficiency: N/A
Efficacy: 77.9 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B2 - U0 - G4

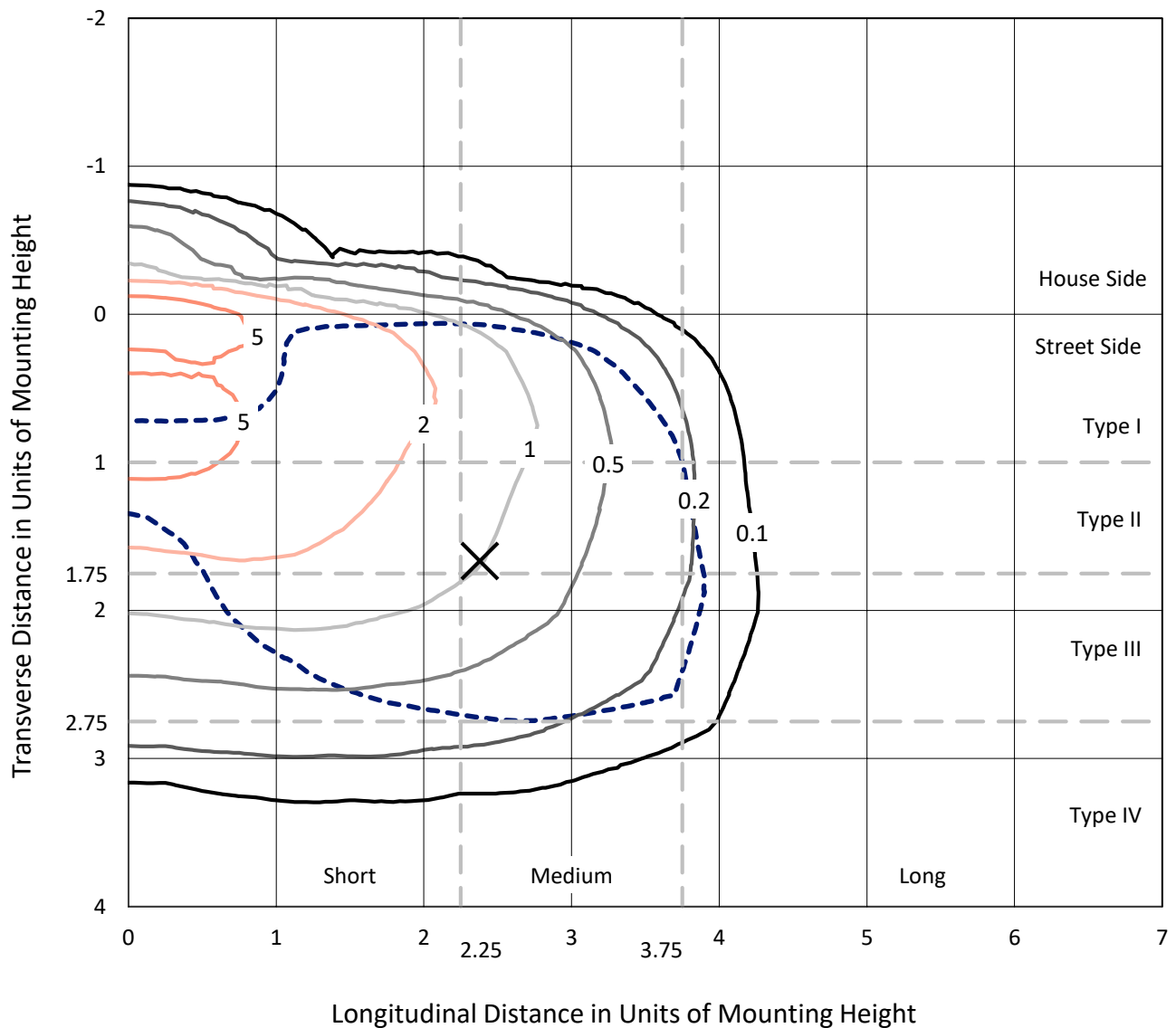
Input Watts (W): 320
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



REPORT NUMBER: P321539
 CATALOG NUMBER: GLEON-SA5D-727-U-T3R-HSS

Iso-Footcandle Lines of Horizontal Illumination

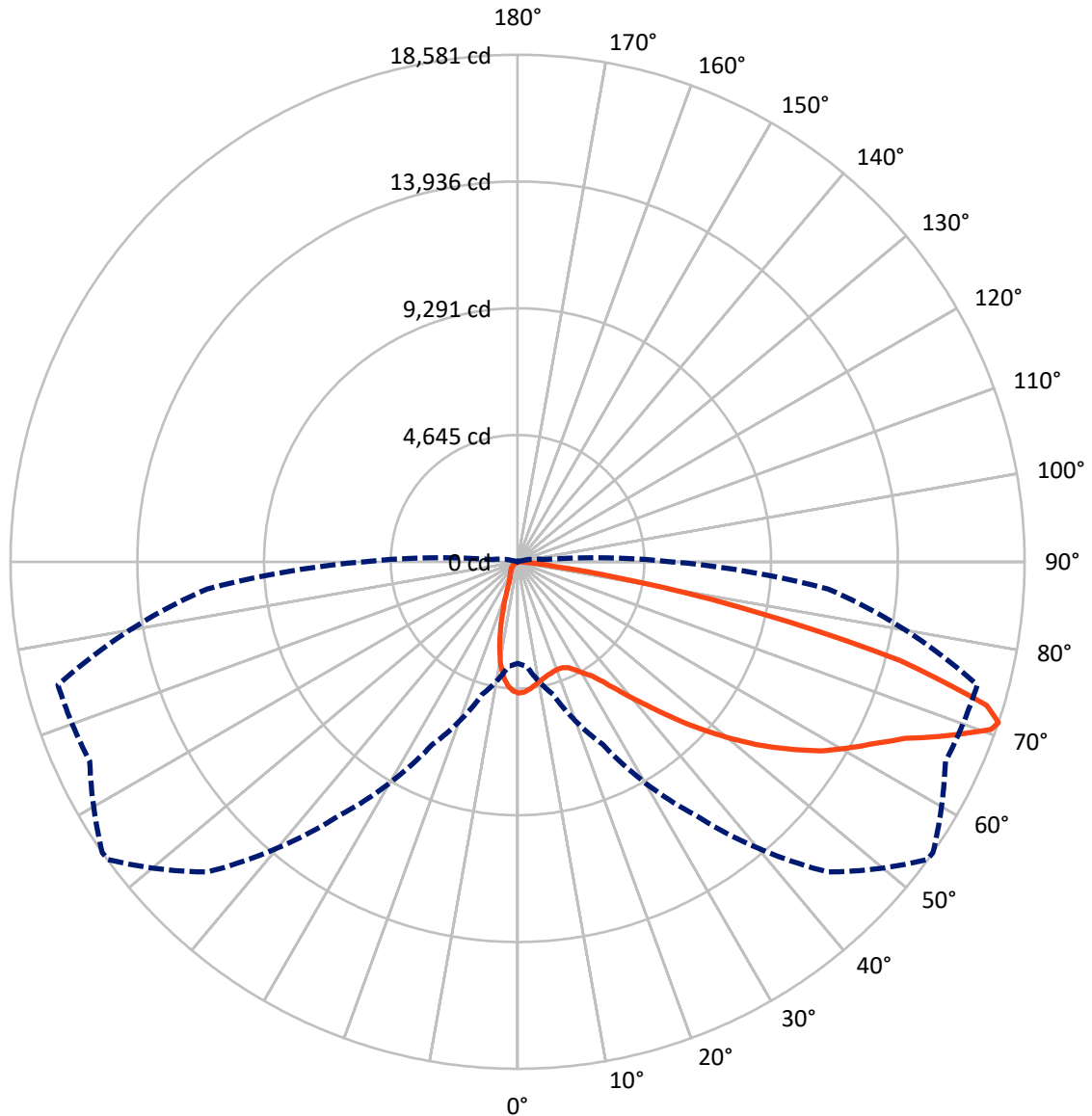
✕ Max cd
 - - - 1/2 Max cd



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

REPORT NUMBER: P321539
CATALOG NUMBER: GLEON-SA5D-727-U-T3R-HSS

Luminous Intensity Polar Plot



— Vertical Plane Through 55-Deg Lateral - - - Horizontal Cone Through 71-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 1974.6 | 0.0 | 1974.6 |
| | % Fixture | 7.9 | 0.0 | 7.9 |
| Street Side | Lumens | 22966.4 | 0.0 | 22966.4 |
| | % Fixture | 92.1 | 0.0 | 92.1 |
| Total | Lumens | 24941.0 | 0.0 | 24941.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 410.1 | 1.6 |
| 10°-20° | 925.9 | 3.7 |
| 20°-30° | 1487.9 | 6.0 |
| 30°-40° | 2528.0 | 10.1 |
| 40°-50° | 3923.8 | 15.7 |
| 50°-60° | 5275.4 | 21.2 |
| 60°-70° | 6453.6 | 25.9 |
| 70°-80° | 3773.3 | 15.1 |
| 80°-90° | 163.1 | 0.7 |
| 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° | 24941.0 | 100.0 |
| 0°-180° | 24941.0 | 100.0 |

Coefficient of Utilization

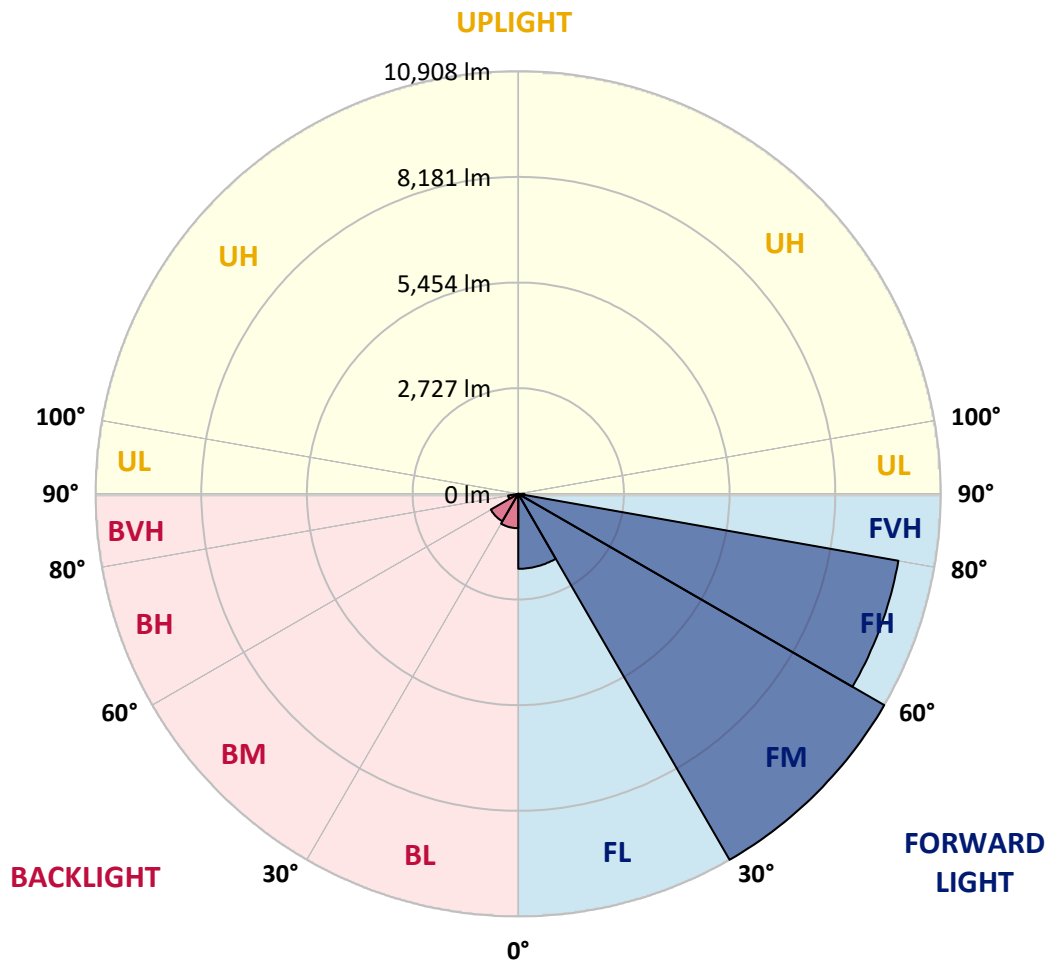


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|---------|-----------|-------------------------|------|----------|
| | | | B | U | G |
| FL (0°-30°) | 1935.1 | 7.8 | | | |
| FM (30°-60°) | 10908.5 | 43.7 | | | |
| FH (60°-80°) | 9962.3 | 39.9 | | | G4/12000 |
| FVH (80°-90°) | 160.5 | 0.6 | | | G2/225 |
| BL (0°-30°) | 888.8 | 3.6 | B2/1000 | | |
| BM (30°-60°) | 818.7 | 3.3 | B1/1000 | | |
| BH (60°-80°) | 264.6 | 1.1 | B1/500 | | G1/500 |
| BVH (80°-90°) | 2.6 | 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-G4
 Type III Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 54° | 55° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 |
| 2.5° | 4668.9 | 4674.5 | 4694.6 | 4703.6 | 4724.8 | 4760.7 | 4778.6 | 4779.7 | 4808.8 | 4820.0 | 4829.0 |
| 5° | 4338.5 | 4372.1 | 4405.7 | 4441.5 | 4506.5 | 4592.7 | 4677.8 | 4685.7 | 4779.7 | 4849.2 | 4886.1 |
| 7.5° | 4054.0 | 4084.3 | 4124.6 | 4181.7 | 4273.5 | 4409.0 | 4551.3 | 4568.1 | 4746.1 | 4904.0 | 4986.9 |
| 10° | 3761.7 | 3786.4 | 3844.6 | 3928.6 | 4055.2 | 4236.6 | 4428.1 | 4456.1 | 4715.9 | 4977.9 | 5123.5 |
| 12.5° | 3449.3 | 3463.8 | 3534.4 | 3655.3 | 3841.2 | 4071.9 | 4323.9 | 4360.9 | 4696.9 | 5063.1 | 5284.8 |
| 15° | 3211.9 | 3218.6 | 3285.8 | 3411.2 | 3624.0 | 3924.1 | 4243.3 | 4288.1 | 4701.3 | 5165.0 | 5460.6 |
| 17.5° | 3151.4 | 3154.8 | 3190.6 | 3276.8 | 3465.0 | 3792.0 | 4179.5 | 4234.3 | 4714.8 | 5264.6 | 5637.6 |
| 20° | 3396.7 | 3373.1 | 3336.2 | 3322.7 | 3403.4 | 3712.5 | 4141.4 | 4203.0 | 4732.7 | 5353.1 | 5796.6 |
| 22.5° | 4069.7 | 4000.3 | 3846.8 | 3641.9 | 3517.6 | 3718.1 | 4151.5 | 4213.1 | 4789.8 | 5461.7 | 5980.3 |
| 25° | 5068.7 | 4972.3 | 4711.4 | 4308.2 | 3920.8 | 3879.3 | 4235.5 | 4298.2 | 4900.7 | 5591.7 | 6156.1 |
| 27.5° | 6205.4 | 6110.2 | 5791.0 | 5215.4 | 4554.6 | 4198.5 | 4428.1 | 4486.3 | 5065.3 | 5707.0 | 6290.5 |
| 30° | 7293.9 | 7267.0 | 6890.7 | 6236.7 | 5352.0 | 4715.9 | 4676.7 | 4726.0 | 5187.4 | 5776.4 | 6396.9 |
| 32.5° | 8216.7 | 8174.1 | 7871.8 | 7235.7 | 6264.7 | 5337.4 | 4969.0 | 4983.5 | 5279.2 | 5866.0 | 6535.7 |
| 35° | 9072.3 | 9019.7 | 8754.2 | 8152.9 | 7200.9 | 6096.7 | 5419.2 | 5397.9 | 5479.7 | 6046.3 | 6737.3 |
| 37.5° | 9819.3 | 9867.4 | 9572.9 | 9000.6 | 8040.9 | 6886.3 | 6026.2 | 5962.3 | 5793.2 | 6339.7 | 7029.6 |
| 40° | 10444.2 | 10444.2 | 10290.7 | 9813.7 | 8948.0 | 7702.7 | 6712.7 | 6628.7 | 6264.7 | 6792.2 | 7400.3 |
| 42.5° | 10669.3 | 10717.4 | 10774.5 | 10504.6 | 9759.9 | 8551.5 | 7477.6 | 7390.2 | 6928.8 | 7433.9 | 7868.4 |
| 45° | 10682.7 | 10758.9 | 11051.2 | 11050.0 | 10493.4 | 9394.8 | 8339.9 | 8298.4 | 7779.9 | 8258.1 | 8448.5 |
| 47.5° | 10493.4 | 10588.6 | 11070.2 | 11343.4 | 11074.7 | 10179.9 | 9282.8 | 9231.3 | 8780.0 | 9268.3 | 9055.5 |
| 50° | 10201.1 | 10306.4 | 10866.4 | 11458.8 | 11470.0 | 10863.0 | 10276.2 | 10198.9 | 9880.9 | 10422.9 | 9682.6 |
| 52.5° | 9678.2 | 9882.0 | 10683.8 | 11485.7 | 11729.8 | 11453.2 | 11221.4 | 11187.8 | 11112.7 | 11534.9 | 10182.1 |
| 55° | 8559.4 | 8785.6 | 10225.8 | 11494.6 | 11970.6 | 11976.2 | 12107.2 | 12116.2 | 12267.4 | 12574.2 | 10553.9 |
| 57.5° | 8030.8 | 8158.5 | 9426.2 | 11537.2 | 12327.8 | 12569.7 | 13009.9 | 13079.3 | 13313.3 | 13560.8 | 10978.4 |
| 60° | 7698.2 | 7849.4 | 9032.0 | 11479.0 | 12888.9 | 13348.1 | 13846.4 | 13869.9 | 14120.8 | 14578.8 | 11552.9 |
| 62.5° | 7432.8 | 7581.7 | 8783.4 | 11255.0 | 13519.4 | 14284.3 | 14663.9 | 14666.2 | 14854.3 | 15791.7 | 12205.8 |
| 65° | 6777.6 | 6903.1 | 8280.5 | 11003.0 | 13936.0 | 15210.5 | 15613.6 | 15599.1 | 15752.5 | 17070.6 | 12963.9 |
| 67.5° | 5830.2 | 5926.5 | 7253.6 | 10047.7 | 13779.2 | 16052.6 | 17047.1 | 16998.9 | 16813.0 | 18175.9 | 13261.8 |
| 70° | 4507.6 | 4542.3 | 5717.1 | 8373.5 | 12309.9 | 16376.3 | 18432.4 | 18407.8 | 17463.7 | 17977.7 | 12169.9 |
| 71° | 3725.9 | 3840.1 | 5038.4 | 7390.2 | 11325.5 | 16077.3 | 18566.8 | 18581.3 | 17300.2 | 17437.9 | 11418.5 |
| 72.5° | 2163.6 | 2261.1 | 3652.0 | 5675.6 | 9615.4 | 14829.7 | 17870.2 | 17975.5 | 16536.4 | 15861.1 | 9753.2 |
| 75° | 463.6 | 496.1 | 1354.0 | 2747.1 | 5289.3 | 10393.8 | 14105.1 | 14480.3 | 13478.0 | 10790.2 | 5878.3 |
| 77.5° | 322.5 | 348.3 | 580.1 | 1246.4 | 1748.2 | 5135.9 | 8762.1 | 9185.4 | 8052.1 | 4055.2 | 1881.4 |
| 80° | 255.3 | 284.5 | 452.4 | 615.9 | 472.6 | 1656.3 | 4104.4 | 4363.1 | 2685.5 | 904.9 | 316.9 |
| 82.5° | 142.2 | 169.1 | 352.8 | 332.6 | 181.4 | 314.7 | 1149.0 | 1299.1 | 537.6 | 182.5 | 75.0 |
| 85° | 41.4 | 50.4 | 227.3 | 241.9 | 77.3 | 60.5 | 196.0 | 243.0 | 101.9 | 48.2 | 33.6 |
| 87.5° | 0.0 | 0.0 | 109.7 | 93.0 | 22.4 | 9.0 | 17.9 | 20.2 | 20.2 | 20.2 | 22.4 |
| 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: P321539

CATALOG NUMBER: GLEON-SA5D-727-U-T3R-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 | 4810.0 |
| 2.5° | 4829.0 | 4836.8 | 4808.8 | 4771.9 | 4732.7 | 4684.5 | 4634.1 | 4594.9 | 4593.8 | 4574.8 | 4555.7 |
| 5° | 4888.4 | 4883.9 | 4806.6 | 4689.0 | 4550.1 | 4405.7 | 4267.9 | 4112.3 | 4060.7 | 3996.9 | 3975.6 |
| 7.5° | 4998.1 | 4966.7 | 4803.2 | 4545.7 | 4241.1 | 3938.7 | 3626.2 | 3311.5 | 3177.2 | 3056.2 | 3034.9 |
| 10° | 5135.9 | 5076.5 | 4782.0 | 4330.6 | 3771.8 | 3214.1 | 2742.6 | 2314.8 | 2126.7 | 1982.2 | 1975.5 |
| 12.5° | 5279.2 | 5188.5 | 4722.6 | 4005.9 | 3157.0 | 2373.1 | 1829.9 | 1408.8 | 1252.0 | 1151.3 | 1160.2 |
| 15° | 5429.3 | 5293.8 | 4594.9 | 3568.0 | 2457.1 | 1610.4 | 1124.4 | 876.9 | 814.2 | 788.4 | 795.1 |
| 17.5° | 5582.7 | 5366.6 | 4416.9 | 3040.5 | 1766.1 | 1039.3 | 778.3 | 708.9 | 708.9 | 714.5 | 716.7 |
| 20° | 5716.0 | 5405.7 | 4154.8 | 2449.2 | 1197.2 | 757.1 | 680.9 | 670.8 | 676.4 | 685.4 | 686.5 |
| 22.5° | 5848.1 | 5408.0 | 3813.3 | 1850.1 | 837.7 | 663.0 | 648.4 | 643.9 | 647.3 | 657.4 | 658.5 |
| 25° | 5955.6 | 5381.1 | 3385.5 | 1315.9 | 668.6 | 624.9 | 618.2 | 615.9 | 618.2 | 630.5 | 630.5 |
| 27.5° | 5999.3 | 5283.7 | 2863.6 | 925.0 | 599.1 | 582.3 | 580.1 | 582.3 | 585.7 | 594.7 | 595.8 |
| 30° | 6003.8 | 5113.5 | 2294.7 | 669.7 | 543.2 | 525.2 | 529.7 | 537.6 | 534.2 | 532.0 | 534.2 |
| 32.5° | 6015.0 | 4916.4 | 1740.3 | 551.0 | 496.1 | 468.1 | 462.5 | 462.5 | 449.1 | 441.2 | 436.8 |
| 35° | 6051.9 | 4684.5 | 1262.1 | 495.0 | 448.0 | 415.5 | 394.2 | 369.6 | 343.8 | 330.4 | 327.0 |
| 37.5° | 6110.2 | 4441.5 | 903.8 | 458.0 | 405.4 | 368.4 | 328.1 | 284.5 | 247.5 | 237.4 | 237.4 |
| 40° | 6216.6 | 4190.7 | 668.6 | 428.9 | 371.8 | 325.9 | 265.4 | 208.3 | 174.7 | 169.1 | 169.1 |
| 42.5° | 6384.5 | 3926.4 | 533.1 | 403.2 | 342.7 | 282.2 | 202.7 | 151.2 | 126.5 | 123.2 | 122.1 |
| 45° | 6559.2 | 3635.2 | 465.9 | 378.5 | 311.3 | 231.8 | 150.1 | 112.0 | 97.4 | 94.1 | 94.1 |
| 47.5° | 6733.9 | 3325.0 | 433.4 | 355.0 | 281.1 | 180.3 | 112.0 | 88.5 | 81.8 | 81.8 | 82.9 |
| 50° | 6881.8 | 3001.3 | 409.9 | 329.2 | 241.9 | 136.6 | 88.5 | 75.0 | 72.8 | 77.3 | 78.4 |
| 52.5° | 6918.7 | 2683.3 | 380.8 | 296.8 | 193.7 | 104.2 | 72.8 | 66.1 | 66.1 | 66.1 | 66.1 |
| 55° | 6896.3 | 2436.9 | 342.7 | 256.5 | 143.3 | 82.9 | 62.7 | 58.2 | 57.1 | 57.1 | 57.1 |
| 57.5° | 6972.5 | 2291.3 | 274.4 | 199.3 | 103.0 | 67.2 | 54.9 | 51.5 | 49.3 | 48.2 | 48.2 |
| 60° | 7125.9 | 2196.1 | 196.0 | 143.3 | 77.3 | 56.0 | 47.0 | 43.7 | 40.3 | 38.1 | 38.1 |
| 62.5° | 7329.7 | 2113.2 | 145.6 | 106.4 | 59.4 | 44.8 | 39.2 | 35.8 | 31.4 | 29.1 | 29.1 |
| 65° | 7486.5 | 1965.4 | 110.9 | 79.5 | 44.8 | 35.8 | 30.2 | 29.1 | 22.4 | 20.2 | 19.0 |
| 67.5° | 7246.9 | 1640.7 | 89.6 | 58.2 | 33.6 | 28.0 | 23.5 | 22.4 | 13.4 | 11.2 | 11.2 |
| 70° | 6215.4 | 1142.3 | 71.7 | 42.6 | 24.6 | 22.4 | 19.0 | 14.6 | 10.1 | 9.0 | 9.0 |
| 71° | 5636.4 | 954.2 | 65.0 | 35.8 | 21.3 | 21.3 | 17.9 | 12.3 | 9.0 | 7.8 | 7.8 |
| 72.5° | 4682.3 | 677.5 | 54.9 | 28.0 | 19.0 | 22.4 | 19.0 | 11.2 | 9.0 | 7.8 | 6.7 |
| 75° | 2718.0 | 283.3 | 38.1 | 19.0 | 14.6 | 26.9 | 24.6 | 10.1 | 6.7 | 5.6 | 5.6 |
| 77.5° | 817.5 | 104.2 | 21.3 | 12.3 | 11.2 | 23.5 | 28.0 | 9.0 | 3.4 | 1.1 | 1.1 |
| 80° | 148.9 | 44.8 | 13.4 | 7.8 | 7.8 | 14.6 | 21.3 | 4.5 | 0.0 | 0.0 | 0.0 |
| 82.5° | 52.6 | 22.4 | 7.8 | 4.5 | 3.4 | 6.7 | 10.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 30.2 | 15.7 | 4.5 | 2.2 | 0.0 | 1.1 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 20.2 | 4.5 | 0.0 | 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 |

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
 Rf: 69.9
 Rg: 98.3

| | | | |
|-----------|------|------|-------|
| 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 | | |



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 |

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

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 | | | |

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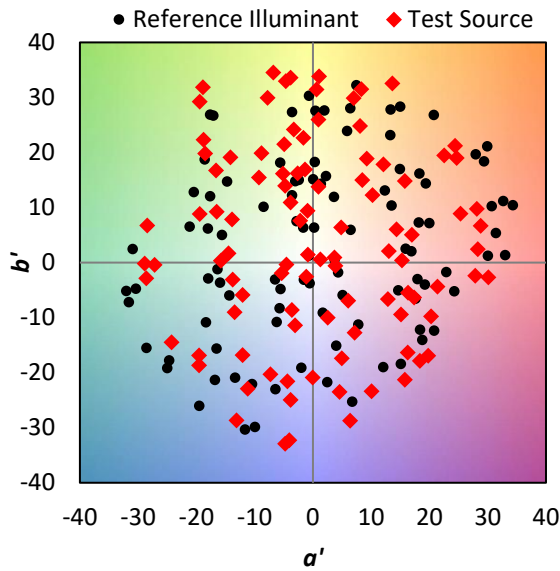
TM-30-18

Summary

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



Color Vector Graphics



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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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TM-30-18

Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)