

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: P641362

Luminaire Tested: GWS-SA5F-760-U-T3R-W-HSS

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P641362
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-18)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA5F-760-U-T3R-W-HSS
Description: GALLEON WALL SLIM LUMINAIRE. (5) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III ROADWAY OPTICS WITH HOUSE SIDE SHIELD
Light Source: (80) 5700K CCT, 70 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 32964.5 lumens
Efficiency: N/A
Efficacy: 106.2 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B3 - U0 - G5

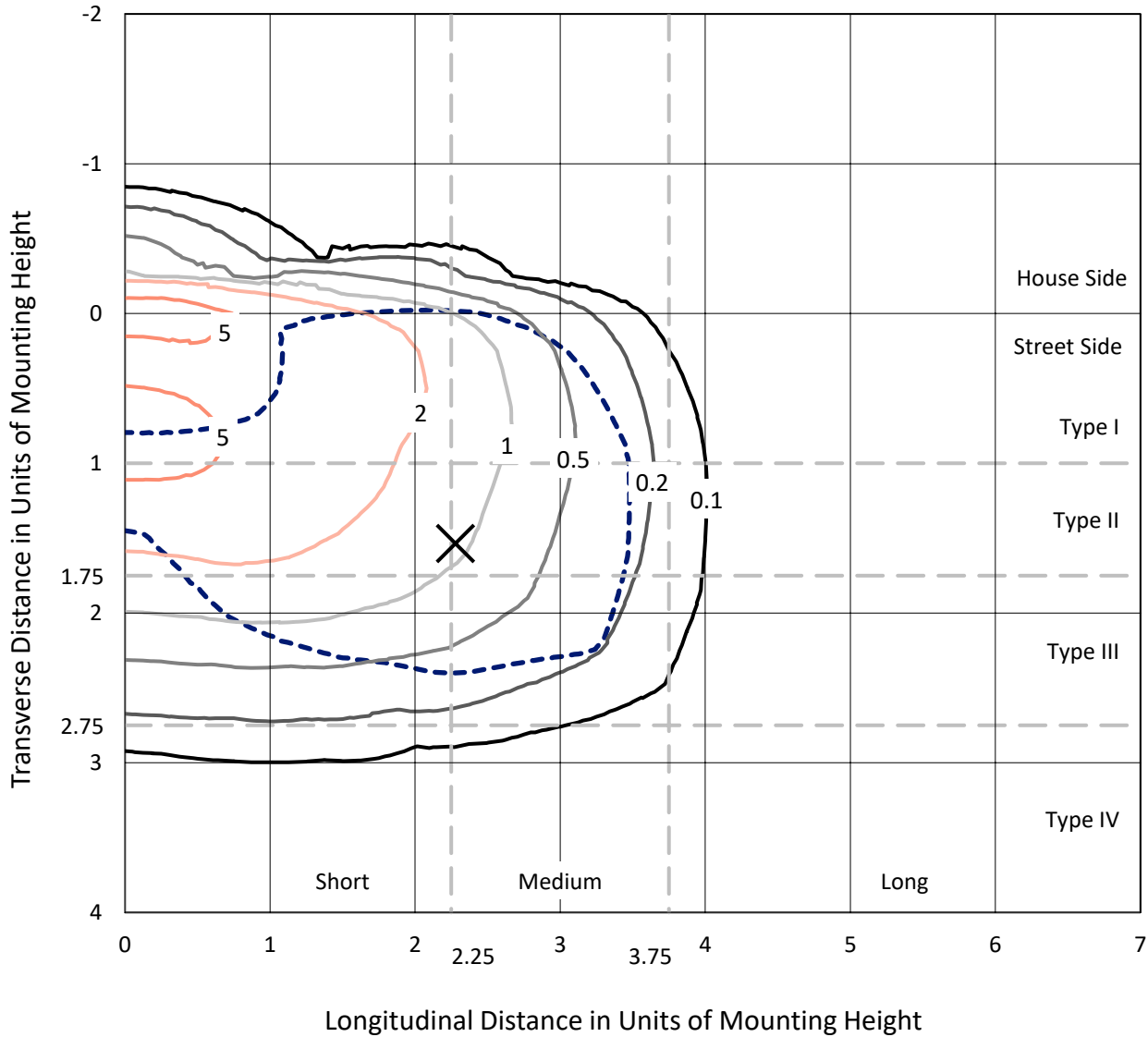
Input Watts (W): 310.3
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P641362
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Iso-Footcandle Lines of Horizontal Illumination

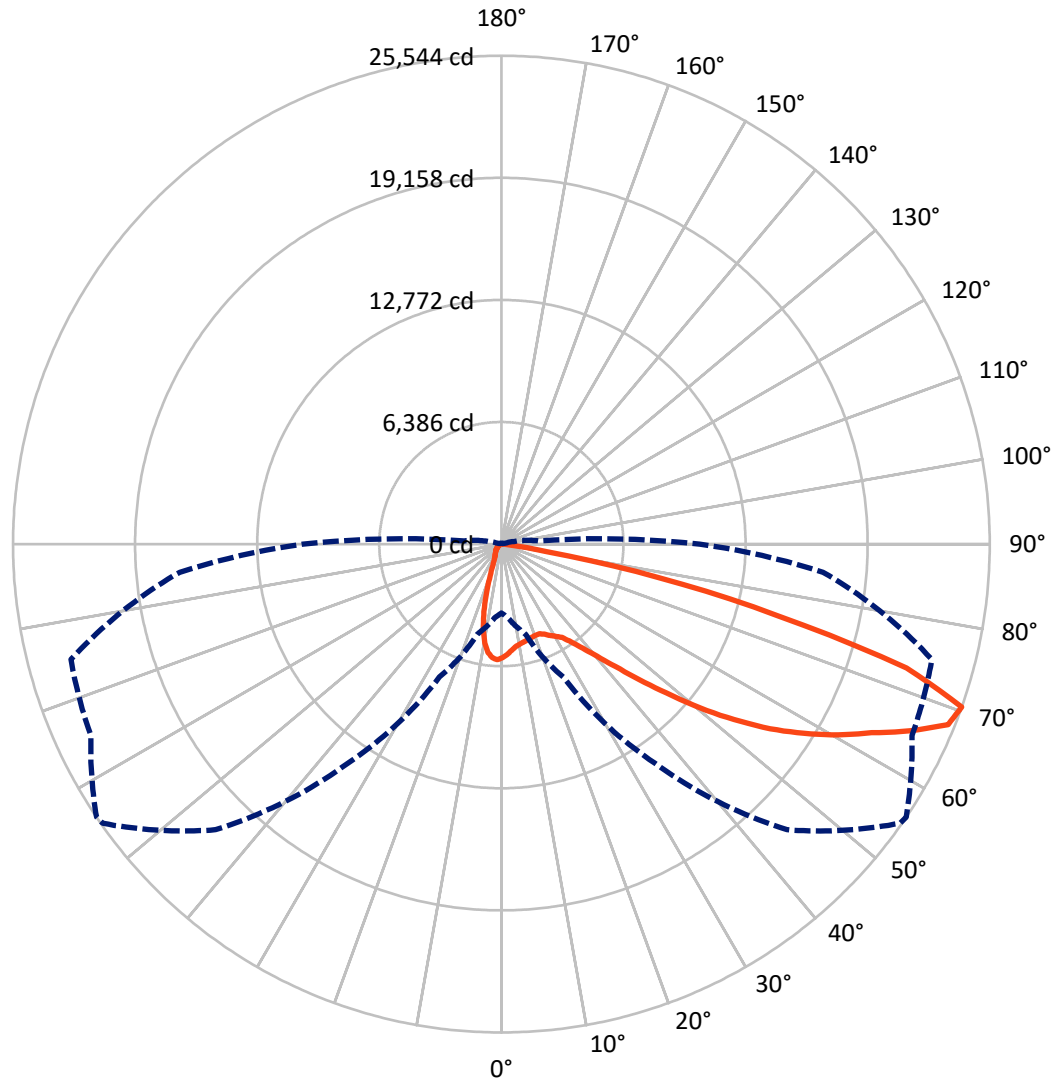
✕ Max cd
 - - - 1/2 Max cd



Based on 30 foot mounting height. Maximum calculated value = 7 fc
 Type III - Medium - N/A

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CATALOG NUMBER: GWS-SA5F-760-U-T3R-W-HSS

Luminous Intensity Polar Plot



— Vertical Plane Through 56-Deg Lateral - - - Horizontal Cone Through 70-Deg Vertical

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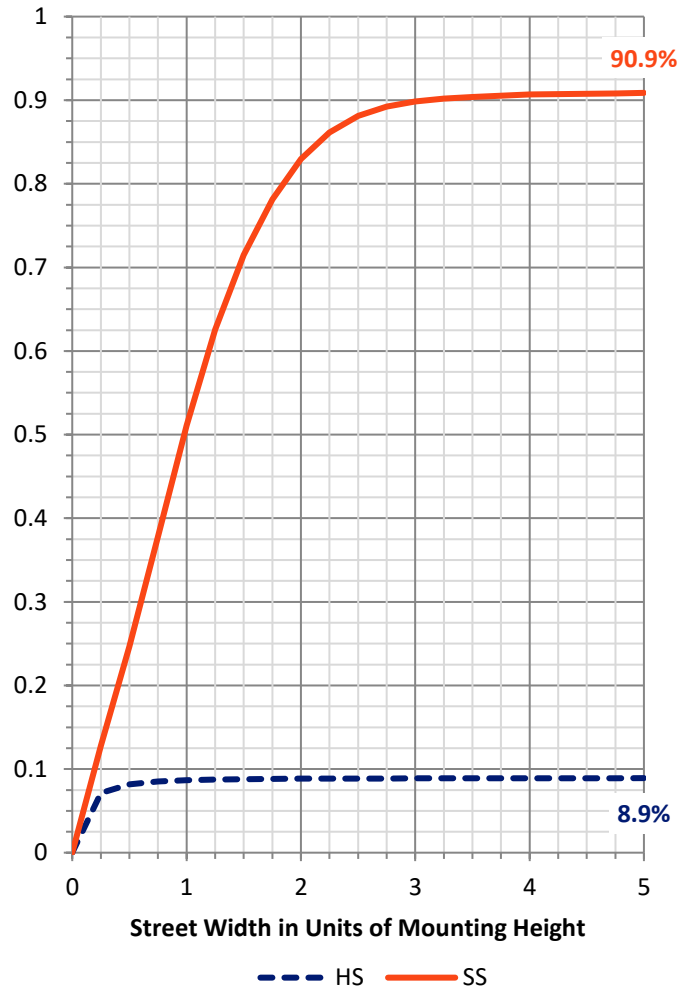
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 2960.8 | 0.0 | 2960.8 |
| | % Fixture | 9.0 | 0.0 | 9.0 |
| Street Side | Lumens | 30003.7 | 0.0 | 30003.7 |
| | % Fixture | 91.0 | 0.0 | 91.0 |
| Total | Lumens | 32964.5 | 0.0 | 32964.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 510.3 | 1.5 |
| 10°-20° | 1147.8 | 3.5 |
| 20°-30° | 1818.1 | 5.5 |
| 30°-40° | 3135.3 | 9.5 |
| 40°-50° | 5294.5 | 16.1 |
| 50°-60° | 7779.3 | 23.6 |
| 60°-70° | 9222.8 | 28.0 |
| 70°-80° | 3933.0 | 11.9 |
| 80°-90° | 123.5 | 0.4 |
| 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° | 32964.5 | 100.0 |
| 0°-180° | 32964.5 | 100.0 |

Coefficient of Utilization



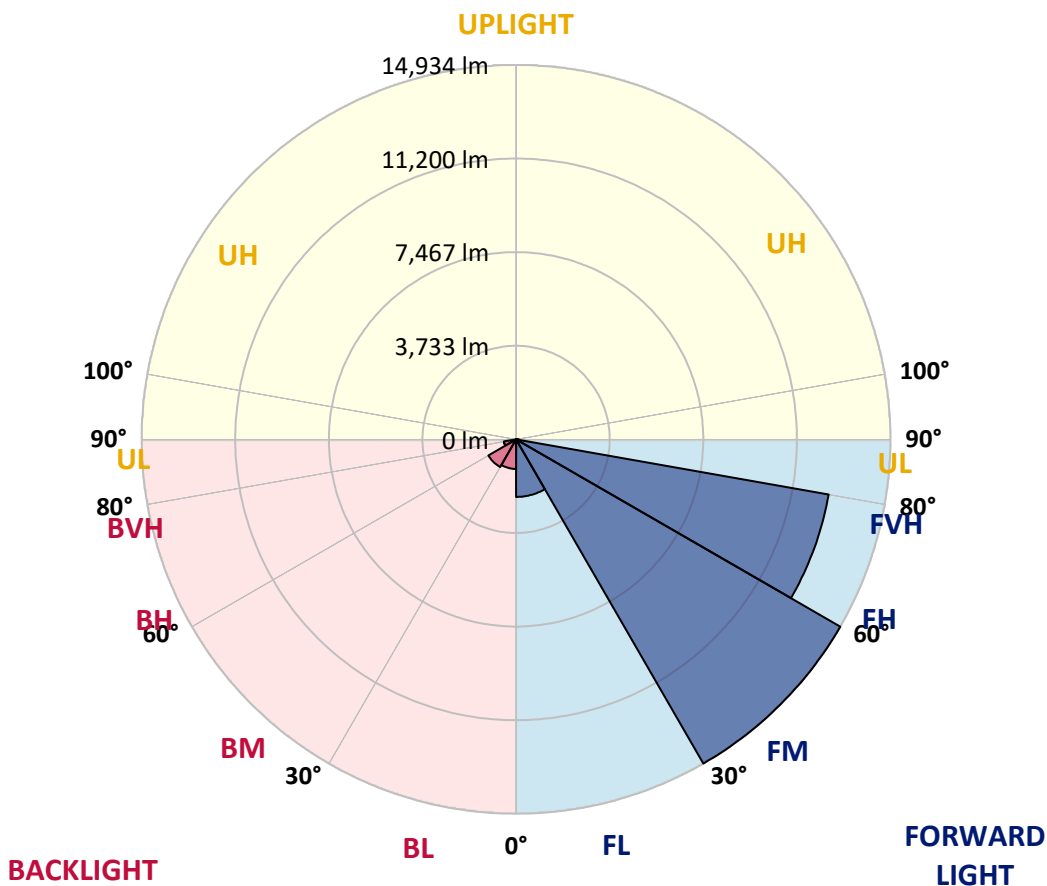
REPORT NUMBER: P641362

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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°) | 2297.0 | 7.0 | | | |
| FM (30°-60°) | 14933.8 | 45.3 | | | |
| FH (60°-80°) | 12661.9 | 38.4 | | | G5 |
| FVH (80°-90°) | 111.0 | 0.3 | | | G2/225 |
| BL (0°-30°) | 1179.2 | 3.6 | B3/2500 | | |
| BM (30°-60°) | 1275.3 | 3.9 | B2/2500 | | |
| BH (60°-80°) | 493.8 | 1.5 | B1/500 | | G1/500 |
| BVH (80°-90°) | 12.5 | 0.0 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G5
 Type III Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 56° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 |
| 2.5° | 5533.3 | 5524.2 | 5530.3 | 5575.5 | 5660.1 | 5699.3 | 5765.7 | 5777.8 | 5832.1 | 5901.6 | 5928.7 |
| 5° | 5174.1 | 5143.9 | 5159.0 | 5222.4 | 5319.0 | 5427.6 | 5551.4 | 5584.6 | 5720.4 | 5874.4 | 5989.1 |
| 7.5° | 4845.0 | 4811.8 | 4848.0 | 4947.7 | 5083.5 | 5201.2 | 5385.4 | 5406.5 | 5623.8 | 5895.5 | 6103.8 |
| 10° | 4328.8 | 4337.9 | 4410.3 | 4585.4 | 4793.7 | 5038.2 | 5285.8 | 5315.9 | 5584.6 | 5965.0 | 6288.0 |
| 12.5° | 3933.4 | 3912.2 | 3990.7 | 4190.0 | 4482.8 | 4839.0 | 5210.3 | 5249.5 | 5587.6 | 6070.6 | 6523.4 |
| 15° | 3749.2 | 3743.2 | 3776.4 | 3921.3 | 4205.1 | 4624.7 | 5140.9 | 5192.2 | 5626.9 | 6167.2 | 6746.8 |
| 17.5° | 3755.3 | 3746.2 | 3743.2 | 3827.7 | 4039.0 | 4464.7 | 5065.4 | 5131.8 | 5660.1 | 6272.9 | 6982.3 |
| 20° | 4017.9 | 3975.6 | 3900.2 | 3860.9 | 3987.7 | 4362.0 | 5014.1 | 5089.5 | 5708.4 | 6384.6 | 7232.8 |
| 22.5° | 4567.3 | 4582.4 | 4380.1 | 4168.8 | 4108.5 | 4374.1 | 5008.0 | 5095.6 | 5814.0 | 6559.6 | 7540.7 |
| 25° | 5666.1 | 5642.0 | 5267.6 | 4793.7 | 4464.7 | 4513.0 | 5113.7 | 5219.3 | 6022.3 | 6810.2 | 7830.5 |
| 27.5° | 7042.6 | 7063.8 | 6550.6 | 5795.9 | 5107.6 | 4799.7 | 5306.9 | 5412.5 | 6263.8 | 6967.2 | 8023.7 |
| 30° | 8542.9 | 8521.8 | 7972.4 | 7136.2 | 6019.3 | 5276.7 | 5500.1 | 5593.7 | 6384.6 | 7051.7 | 8223.0 |
| 32.5° | 9961.7 | 9913.4 | 9370.1 | 8494.6 | 7181.5 | 6028.4 | 5765.7 | 5820.1 | 6544.6 | 7235.8 | 8491.6 |
| 35° | 11172.2 | 11169.2 | 10695.3 | 9762.5 | 8376.9 | 6970.2 | 6221.6 | 6266.8 | 6843.4 | 7528.7 | 8887.1 |
| 37.5° | 12422.0 | 12379.7 | 11848.4 | 10997.1 | 9605.5 | 8002.6 | 6918.9 | 6900.8 | 7314.3 | 7960.3 | 9373.1 |
| 40° | 13448.3 | 13421.2 | 13013.6 | 12195.6 | 10882.4 | 9143.7 | 7764.1 | 7709.8 | 7872.8 | 8558.0 | 10049.3 |
| 42.5° | 14209.0 | 14212.1 | 14085.3 | 13587.2 | 12234.8 | 10462.8 | 8826.7 | 8742.2 | 8739.2 | 9460.6 | 10942.8 |
| 45° | 14785.6 | 14824.9 | 15015.0 | 14939.6 | 13831.7 | 11999.4 | 10188.1 | 10100.6 | 9952.7 | 10631.9 | 11966.1 |
| 47.5° | 15054.3 | 15105.6 | 15679.2 | 15981.0 | 15229.4 | 13523.8 | 11809.2 | 11625.0 | 11335.2 | 12189.5 | 13110.2 |
| 50° | 15027.1 | 15117.7 | 15917.6 | 16835.3 | 16497.2 | 15069.4 | 13575.1 | 13487.6 | 13013.6 | 13837.7 | 14242.3 |
| 52.5° | 14411.3 | 14604.5 | 15932.7 | 17354.5 | 17472.3 | 16494.2 | 15401.4 | 15238.4 | 15009.0 | 15558.4 | 15304.8 |
| 55° | 12738.9 | 12974.4 | 15295.8 | 17520.6 | 18233.0 | 17737.9 | 17188.5 | 17055.7 | 16675.3 | 17182.5 | 16231.6 |
| 57.5° | 11830.3 | 12032.6 | 13955.5 | 17439.1 | 18879.0 | 18888.0 | 18779.4 | 18670.7 | 18356.7 | 18788.4 | 17318.3 |
| 60° | 11283.9 | 11486.2 | 13240.0 | 17140.2 | 19464.6 | 20101.6 | 20273.6 | 20261.6 | 19808.7 | 20614.7 | 18592.2 |
| 62.5° | 10484.0 | 10761.7 | 12494.4 | 16364.4 | 19881.2 | 21297.0 | 21816.2 | 21734.7 | 21230.6 | 22516.5 | 19854.0 |
| 65° | 8869.0 | 9110.5 | 10967.0 | 15084.5 | 19636.7 | 22287.1 | 23488.5 | 23530.8 | 22948.2 | 24306.6 | 20850.2 |
| 67.5° | 6218.5 | 6396.6 | 8241.1 | 12397.8 | 17976.4 | 22613.1 | 25200.2 | 25197.1 | 24204.0 | 25224.3 | 20409.5 |
| 70° | 3604.3 | 3848.8 | 4869.2 | 7664.5 | 13985.7 | 21130.9 | 25456.7 | 25544.3 | 23693.8 | 23307.4 | 16889.7 |
| 72.5° | 1394.6 | 1596.9 | 2759.1 | 4072.2 | 7293.2 | 16186.3 | 21897.7 | 22154.3 | 19829.9 | 17979.4 | 11754.8 |
| 75° | 416.6 | 464.9 | 1298.0 | 2167.4 | 2928.1 | 7818.4 | 14824.9 | 14897.3 | 13602.3 | 11214.5 | 6025.3 |
| 77.5° | 310.9 | 344.1 | 567.5 | 1095.8 | 1026.4 | 2369.7 | 7670.5 | 8376.9 | 7220.7 | 4005.8 | 1660.3 |
| 80° | 211.3 | 250.6 | 404.5 | 534.3 | 380.4 | 630.9 | 2155.4 | 2366.7 | 2203.7 | 899.6 | 416.6 |
| 82.5° | 93.6 | 120.7 | 286.8 | 268.7 | 138.9 | 181.1 | 664.1 | 706.4 | 455.8 | 271.7 | 144.9 |
| 85° | 9.1 | 12.1 | 108.7 | 117.7 | 51.3 | 42.3 | 138.9 | 138.9 | 99.6 | 93.6 | 60.4 |
| 87.5° | 0.0 | 0.0 | 3.0 | 6.0 | 6.0 | 9.1 | 12.1 | 15.1 | 18.1 | 24.1 | 30.2 |
| 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: P641362
 CATALOG NUMBER: GWS-SA5F-760-U-T3R-W-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 | 5943.8 |
| 2.5° | 5998.2 | 5961.9 | 6007.2 | 6043.4 | 6052.5 | 5986.1 | 5946.8 | 5889.5 | 5877.4 | 5880.4 | 5865.3 |
| 5° | 6079.7 | 6061.6 | 6094.8 | 6055.5 | 5952.9 | 5759.7 | 5593.7 | 5409.5 | 5309.9 | 5252.5 | 5246.5 |
| 7.5° | 6230.6 | 6221.6 | 6185.3 | 6007.2 | 5687.2 | 5258.6 | 4845.0 | 4440.5 | 4190.0 | 4099.4 | 4084.3 |
| 10° | 6454.0 | 6435.9 | 6288.0 | 5865.3 | 5183.1 | 4359.0 | 3664.7 | 3085.1 | 2731.9 | 2629.3 | 2502.5 |
| 12.5° | 6710.6 | 6674.4 | 6351.4 | 5560.5 | 4422.4 | 3281.3 | 2415.0 | 1765.9 | 1461.1 | 1370.5 | 1370.5 |
| 15° | 6958.1 | 6879.6 | 6315.1 | 5056.3 | 3486.6 | 2134.2 | 1349.4 | 1020.3 | 926.7 | 902.6 | 902.6 |
| 17.5° | 7211.7 | 7060.8 | 6173.3 | 4368.1 | 2408.9 | 1261.8 | 899.6 | 836.2 | 824.1 | 827.1 | 830.1 |
| 20° | 7450.2 | 7214.7 | 5922.7 | 3540.9 | 1536.5 | 881.5 | 806.0 | 790.9 | 784.9 | 790.9 | 787.9 |
| 22.5° | 7709.8 | 7356.6 | 5542.3 | 2638.3 | 999.2 | 793.9 | 766.8 | 754.7 | 748.6 | 757.7 | 757.7 |
| 25° | 7966.4 | 7459.2 | 5038.2 | 1775.0 | 793.9 | 739.6 | 724.5 | 712.4 | 706.4 | 709.4 | 709.4 |
| 27.5° | 8099.2 | 7420.0 | 4377.1 | 1132.0 | 712.4 | 685.2 | 670.2 | 655.1 | 646.0 | 643.0 | 646.0 |
| 30° | 8189.7 | 7299.2 | 3568.1 | 806.0 | 646.0 | 612.8 | 597.7 | 585.6 | 561.5 | 546.4 | 552.4 |
| 32.5° | 8331.6 | 7178.5 | 2689.7 | 676.2 | 591.7 | 540.3 | 516.2 | 486.0 | 452.8 | 437.7 | 437.7 |
| 35° | 8500.7 | 7012.5 | 1886.7 | 609.8 | 534.3 | 480.0 | 434.7 | 383.4 | 344.1 | 332.1 | 332.1 |
| 37.5° | 8724.1 | 6855.5 | 1255.8 | 564.5 | 486.0 | 428.7 | 365.3 | 304.9 | 262.6 | 256.6 | 253.6 |
| 40° | 9059.1 | 6722.7 | 884.5 | 531.3 | 443.7 | 374.3 | 298.9 | 235.5 | 205.3 | 196.2 | 196.2 |
| 42.5° | 9493.8 | 6586.8 | 700.3 | 498.1 | 407.5 | 323.0 | 238.5 | 187.2 | 163.0 | 157.0 | 154.0 |
| 45° | 10031.2 | 6426.8 | 609.8 | 467.9 | 371.3 | 268.7 | 190.2 | 157.0 | 138.9 | 132.8 | 132.8 |
| 47.5° | 10613.8 | 6209.5 | 567.5 | 428.7 | 329.0 | 217.3 | 160.0 | 135.8 | 126.8 | 123.8 | 120.7 |
| 50° | 11187.3 | 5916.7 | 531.3 | 392.4 | 280.7 | 178.1 | 138.9 | 123.8 | 117.7 | 114.7 | 114.7 |
| 52.5° | 11688.4 | 5575.5 | 486.0 | 350.2 | 229.4 | 154.0 | 123.8 | 114.7 | 108.7 | 102.6 | 99.6 |
| 55° | 12117.1 | 5204.2 | 428.7 | 301.9 | 187.2 | 135.8 | 114.7 | 105.7 | 99.6 | 93.6 | 90.6 |
| 57.5° | 12669.5 | 4992.9 | 344.1 | 244.5 | 154.0 | 120.7 | 105.7 | 96.6 | 90.6 | 81.5 | 81.5 |
| 60° | 13282.3 | 4839.0 | 256.6 | 193.2 | 132.8 | 111.7 | 96.6 | 87.5 | 81.5 | 72.4 | 72.4 |
| 62.5° | 13774.4 | 4609.6 | 202.3 | 157.0 | 114.7 | 99.6 | 87.5 | 78.5 | 72.4 | 63.4 | 63.4 |
| 65° | 13961.5 | 4135.6 | 166.0 | 123.8 | 93.6 | 87.5 | 78.5 | 72.4 | 63.4 | 54.3 | 54.3 |
| 67.5° | 13116.3 | 3187.8 | 138.9 | 99.6 | 78.5 | 75.5 | 69.4 | 66.4 | 54.3 | 48.3 | 45.3 |
| 70° | 10387.4 | 1944.0 | 114.7 | 81.5 | 66.4 | 63.4 | 63.4 | 57.4 | 48.3 | 45.3 | 42.3 |
| 72.5° | 7118.1 | 1002.2 | 93.6 | 66.4 | 57.4 | 57.4 | 54.3 | 51.3 | 45.3 | 42.3 | 42.3 |
| 75° | 3697.9 | 335.1 | 72.4 | 51.3 | 45.3 | 48.3 | 48.3 | 45.3 | 42.3 | 42.3 | 39.2 |
| 77.5° | 1059.6 | 150.9 | 54.3 | 39.2 | 36.2 | 36.2 | 39.2 | 39.2 | 39.2 | 36.2 | 36.2 |
| 80° | 274.7 | 87.5 | 39.2 | 30.2 | 30.2 | 30.2 | 30.2 | 33.2 | 36.2 | 33.2 | 33.2 |
| 82.5° | 111.7 | 48.3 | 27.2 | 24.1 | 24.1 | 24.1 | 24.1 | 27.2 | 30.2 | 30.2 | 30.2 |
| 85° | 69.4 | 24.1 | 21.1 | 21.1 | 21.1 | 18.1 | 18.1 | 21.1 | 21.1 | 24.1 | 24.1 |
| 87.5° | 42.3 | 18.1 | 18.1 | 18.1 | 18.1 | 15.1 | 15.1 | 15.1 | 15.1 | 15.1 | 15.1 |
| 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: SP1-1908-441-9-R4

Test Date: 10/23/2019

Luminaire Tested: SA1C-760-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-9-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-760-U-5WQ**
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

| | | | | | |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K): | 5474 | CRI (Ra): | 71.7 | R9: | -27.1 |
| CIE u': | 0.2052 | R1: | 70.6 | R10: | 40.8 |
| CIE v': | 0.4804 | R2: | 74.6 | R11: | 74.6 |
| Duv: | 0.0025 | R3: | 78.3 | R12: | 50.4 |
| CIE x: | 0.3330 | R4: | 73.8 | R13: | 70.0 |
| CIE y: | 0.3466 | R5: | 72.4 | R14: | 87.8 |
| CIE z: | 0.3204 | R6: | 67.5 | | |
| Peak Wavelength (nm): | 442 | R7: | 77.5 | | |
| Dominant Wavelength (nm): | 554 | R8: | 58.9 | | |
| Purity: | 4.1 | | | | |
| Rf: | 72.1 | | | | |
| Rg: | 97.2 | | | | |



Test Conditions

Stabilization Time: 240M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 24.6/31%
 Sphere Temperature (°C): 25.9

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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 5700K 4-step quadrangle

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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 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

REPORT NUMBER: SP1-1908-441-9-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 13759.3 S/P: 1.85

| 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 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

REPORT NUMBER: SP1-1908-441-9-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 5527.6 M/P: 0.74

| 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 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

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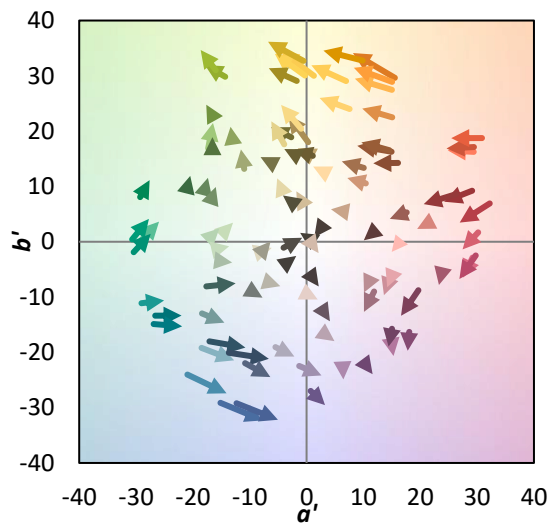
TM-30-18

Summary

$R_f = 72.1$
 $R_g = 97.2$
 CIE $R_a = 71.7$
 $R_g = -27.1$



Color Vector Graphics



REPORT NUMBER: SP1-1908-441-9-R4

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

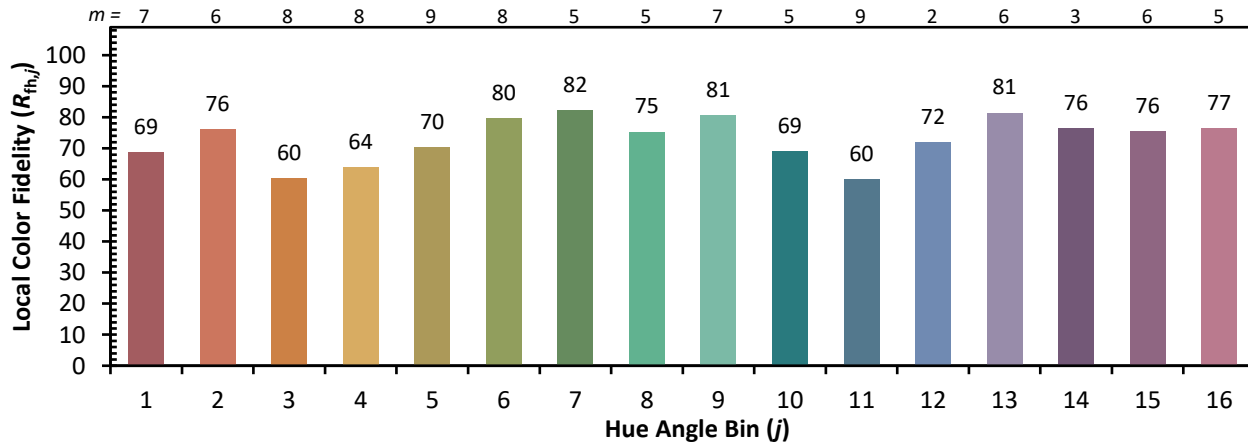
| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 54 | CES51 = 88 | CES76 = 43 |
| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
| CES11 = 55 | CES36 = 90 | CES61 = 88 | CES86 = 76 |
| CES12 = 61 | CES37 = 72 | CES62 = 81 | CES87 = 75 |
| CES13 = 41 | CES38 = 68 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
| CES16 = 46 | CES41 = 84 | CES66 = 66 | CES91 = 92 |
| CES17 = 48 | CES42 = 70 | CES67 = 64 | CES92 = 70 |
| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
| CES21 = 85 | CES46 = 78 | CES71 = 55 | CES96 = 79 |
| CES22 = 77 | CES47 = 76 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 | |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)