

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: P322339

Luminaire Tested: **GLEON-SA5D-760-U-T3-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P322339  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-15)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA5D-760-U-T3-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(5) 70 CRI, 5700K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 28259 lumens  
Efficiency: N/A  
Efficacy: 88.3 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B2 - U0 - G4

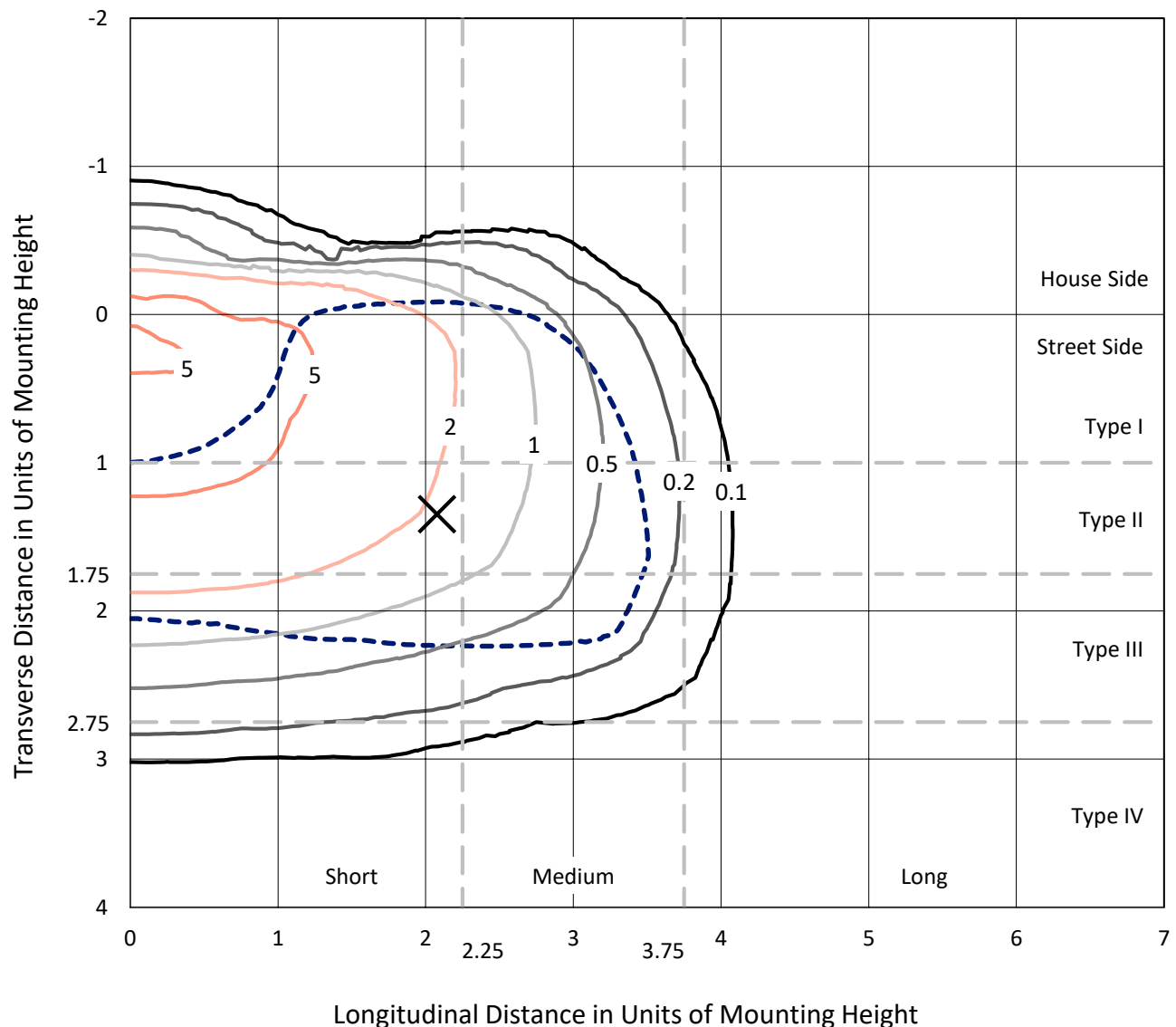
Input Watts (W): 320  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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 CATALOG NUMBER: GLEON-SA5D-760-U-T3-HSS

## Iso-Footcandle Lines of Horizontal Illumination

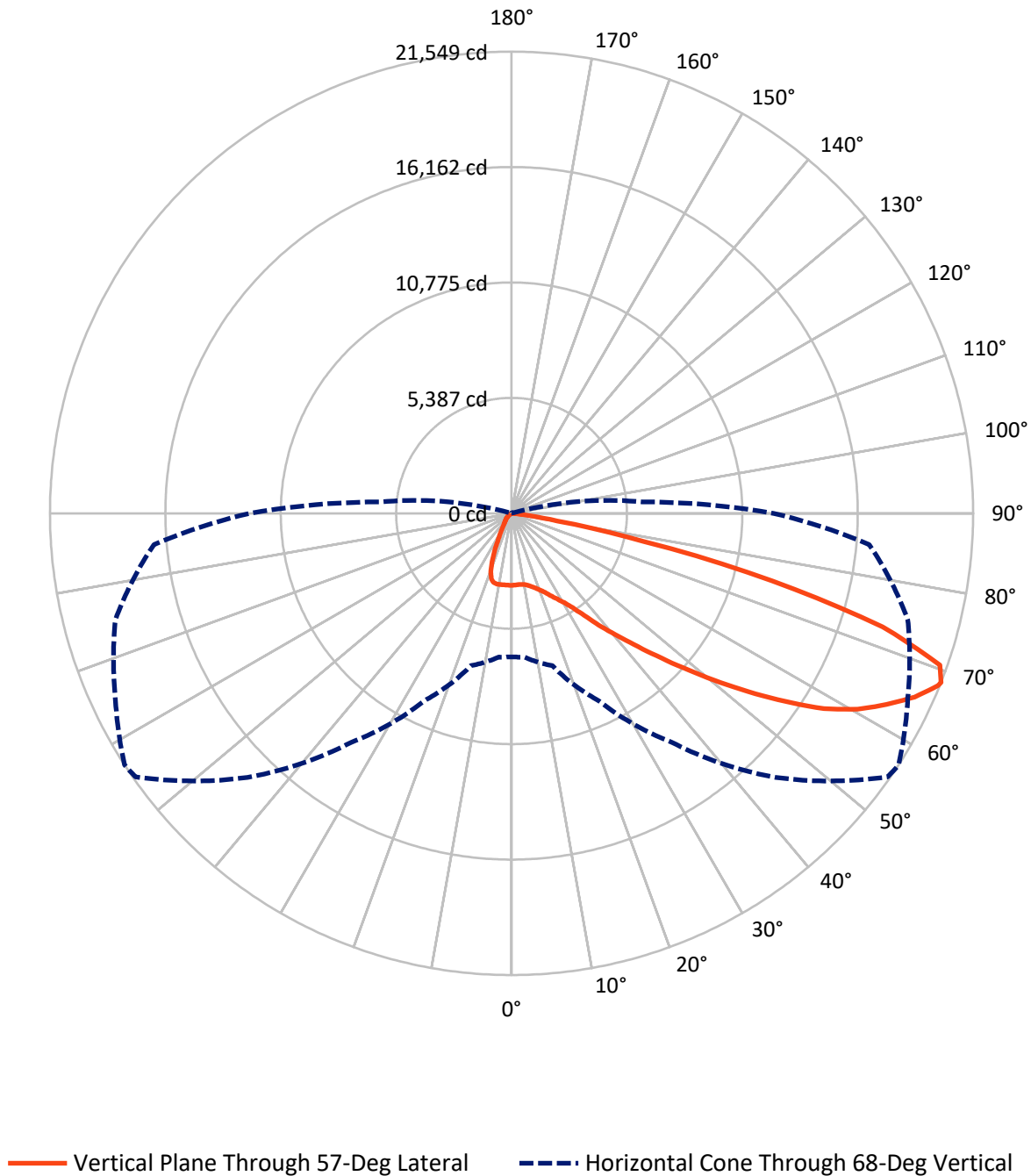
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 6.9 fc  
 Type III - Short - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 3098.8   | 0.0    | 3098.8  |
|                    | % Fixture | 11.0     | 0.0    | 11.0    |
| <b>Street Side</b> | Lumens    | 25160.2  | 0.0    | 25160.2 |
|                    | % Fixture | 89.0     | 0.0    | 89.0    |
| <b>Total</b>       | Lumens    | 28259.0  | 0.0    | 28259.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 314.3   | 1.1       |
| 10°-20°   | 870.8   | 3.1       |
| 20°-30°   | 1502.2  | 5.3       |
| 30°-40°   | 2592.8  | 9.2       |
| 40°-50°   | 4435.0  | 15.7      |
| 50°-60°   | 7095.6  | 25.1      |
| 60°-70°   | 8198.2  | 29.0      |
| 70°-80°   | 3132.6  | 11.1      |
| 80°-90°   | 117.4   | 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°    | 28259.0 | 100.0     |
| 0°-180°   | 28259.0 | 100.0     |

**Coefficient of Utilization**



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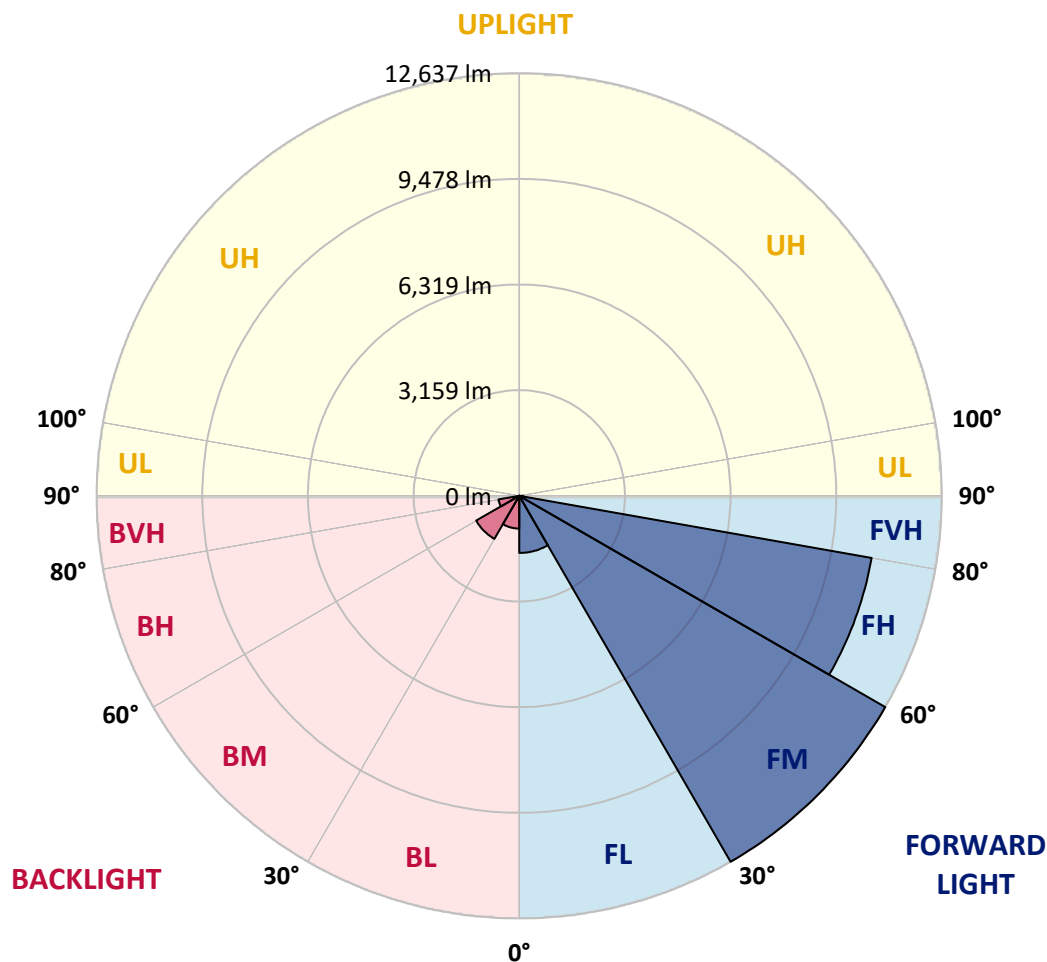
CATALOG NUMBER: GLEON-SA5D-760-U-T3-HSS

**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|---------|-----------|-------------------------|------|----------|
|      |             |         |           | B                       | U    | G        |
| FL   | (0°-30°)    | 1708.0  | 6.0       |                         |      |          |
| FM   | (30°-60°)   | 12637.2 | 44.7      |                         |      |          |
| FH   | (60°-80°)   | 10699.8 | 37.9      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 115.3   | 0.4       |                         |      | G2/225   |
| BL   | (0°-30°)    | 979.3   | 3.5       | B2/1000                 |      |          |
| BM   | (30°-60°)   | 1486.2  | 5.3       | B2/2500                 |      |          |
| BH   | (60°-80°)   | 631.1   | 2.2       | B2/1000                 |      | G2/1000  |
| BVH  | (80°-90°)   | 2.1     | 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 Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 57°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 3357.9  | 3357.9  | 3357.9  | 3357.9  | 3357.9  | 3357.9  | 3357.9  | 3357.9  | 3357.9  | 3357.9  | 3357.9  |
| 2.5°  | 3279.1  | 3293.8  | 3304.5  | 3311.1  | 3319.2  | 3336.5  | 3341.9  | 3349.9  | 3353.9  | 3353.9  | 3363.3  |
| 5°    | 3149.5  | 3165.5  | 3188.2  | 3206.9  | 3244.3  | 3292.4  | 3327.2  | 3340.5  | 3364.6  | 3386.0  | 3398.0  |
| 7.5°  | 3029.2  | 3047.9  | 3074.6  | 3118.7  | 3182.9  | 3260.4  | 3332.5  | 3351.2  | 3398.0  | 3443.4  | 3466.1  |
| 10°   | 2951.7  | 2966.4  | 3001.1  | 3063.9  | 3148.1  | 3256.4  | 3357.9  | 3380.6  | 3460.8  | 3537.0  | 3579.7  |
| 12.5° | 2925.0  | 2938.3  | 2974.4  | 3045.2  | 3149.5  | 3276.4  | 3416.7  | 3450.1  | 3567.7  | 3678.6  | 3738.7  |
| 15°   | 2963.7  | 2966.4  | 3005.2  | 3072.0  | 3174.9  | 3325.8  | 3514.3  | 3554.3  | 3702.7  | 3847.0  | 3921.8  |
| 17.5° | 3113.4  | 3101.4  | 3121.4  | 3150.8  | 3232.3  | 3391.3  | 3617.1  | 3677.3  | 3875.0  | 4044.7  | 4115.5  |
| 20°   | 3487.5  | 3487.5  | 3442.1  | 3361.9  | 3363.3  | 3492.9  | 3756.1  | 3824.3  | 4066.1  | 4262.5  | 4326.7  |
| 22.5° | 4127.6  | 4115.5  | 4024.7  | 3828.3  | 3647.9  | 3667.9  | 3925.8  | 4014.0  | 4295.9  | 4505.7  | 4527.1  |
| 25°   | 4897.2  | 4882.5  | 4742.2  | 4465.6  | 4153.0  | 3951.2  | 4155.6  | 4257.2  | 4569.9  | 4755.6  | 4711.5  |
| 27.5° | 5712.3  | 5700.3  | 5561.3  | 5217.9  | 4773.0  | 4402.8  | 4429.6  | 4525.8  | 4849.1  | 5032.2  | 4891.9  |
| 30°   | 6502.0  | 6506.0  | 6368.4  | 6015.7  | 5511.9  | 4978.7  | 4777.0  | 4833.1  | 5120.4  | 5306.1  | 5105.7  |
| 32.5° | 7253.0  | 7258.3  | 7139.4  | 6745.2  | 6274.9  | 5648.2  | 5258.0  | 5243.3  | 5435.7  | 5618.8  | 5389.0  |
| 35°   | 7922.4  | 7935.8  | 7854.3  | 7548.3  | 7049.9  | 6393.8  | 5882.0  | 5847.3  | 5883.4  | 6090.5  | 5823.2  |
| 37.5° | 8567.8  | 8575.8  | 8514.4  | 8256.5  | 7839.6  | 7212.9  | 6670.4  | 6621.0  | 6543.5  | 6702.5  | 6396.5  |
| 40°   | 9274.7  | 9254.6  | 9183.8  | 8950.0  | 8591.9  | 8117.5  | 7517.6  | 7432.0  | 7297.1  | 7438.7  | 7150.1  |
| 42.5° | 9932.1  | 9909.4  | 9921.4  | 9656.8  | 9354.9  | 9047.5  | 8505.0  | 8358.0  | 8279.2  | 8442.2  | 8074.8  |
| 45°   | 10753.9 | 10741.9 | 10781.9 | 10552.1 | 10307.6 | 10084.4 | 9636.8  | 9476.5  | 9441.7  | 9632.8  | 9193.2  |
| 47.5° | 11565.0 | 11594.4 | 11718.6 | 11621.1 | 11522.2 | 11325.8 | 10835.4 | 10763.2 | 10784.6 | 11015.8 | 10373.1 |
| 50°   | 12241.1 | 12275.8 | 12616.6 | 12728.8 | 12871.8 | 12756.9 | 12265.1 | 12221.0 | 12305.2 | 12513.7 | 11642.5 |
| 52.5° | 12730.1 | 12801.0 | 13224.5 | 13741.7 | 14262.8 | 14340.3 | 13849.9 | 13809.8 | 13923.4 | 13955.5 | 12623.2 |
| 55°   | 13069.5 | 13132.3 | 13612.0 | 14558.1 | 15619.0 | 15953.1 | 15648.4 | 15493.4 | 15472.1 | 15155.4 | 13654.8 |
| 57.5° | 13129.7 | 13123.0 | 13812.5 | 15085.9 | 16682.7 | 17544.5 | 17352.1 | 17199.8 | 16761.5 | 16264.4 | 14837.4 |
| 60°   | 12790.3 | 12829.0 | 13629.4 | 15269.0 | 17350.8 | 18748.5 | 18763.2 | 18565.4 | 17882.6 | 17342.8 | 15983.8 |
| 62.5° | 11745.4 | 11903.0 | 12711.4 | 14789.3 | 17342.8 | 19233.5 | 19797.4 | 19646.4 | 18830.0 | 18226.0 | 17146.3 |
| 65°   | 10051.0 | 10107.1 | 10878.1 | 13145.7 | 16170.9 | 19030.4 | 20728.7 | 20672.6 | 19683.8 | 19083.9 | 17743.6 |
| 67.5° | 7339.8  | 7218.2  | 8028.0  | 10351.7 | 13690.9 | 17846.5 | 21396.8 | 21467.7 | 20342.6 | 19260.2 | 17107.6 |
| 68°   | 6698.5  | 6734.5  | 7365.2  | 9660.9  | 13041.5 | 17428.3 | 21440.9 | 21549.2 | 20408.0 | 19145.3 | 16760.2 |
| 70°   | 3992.6  | 4062.1  | 4624.6  | 6651.7  | 9921.4  | 15061.8 | 20965.3 | 21212.5 | 20017.9 | 17960.1 | 14496.6 |
| 72.5° | 1019.5  | 1102.4  | 1634.2  | 2977.1  | 5666.9  | 10612.2 | 17698.2 | 18116.4 | 17380.2 | 14570.1 | 9786.5  |
| 75°   | 419.6   | 441.0   | 583.9   | 980.8   | 2111.2  | 4781.0  | 11665.2 | 12560.4 | 12048.7 | 8722.8  | 4422.9  |
| 77.5° | 290.0   | 304.7   | 375.5   | 543.8   | 914.0   | 1620.8  | 5719.0  | 6365.7  | 5735.0  | 2977.1  | 964.7   |
| 80°   | 208.4   | 220.5   | 268.6   | 362.1   | 525.1   | 578.6   | 1864.0  | 2155.3  | 1711.7  | 653.4   | 239.2   |
| 82.5° | 124.3   | 133.6   | 200.4   | 257.9   | 319.4   | 276.6   | 463.7   | 526.5   | 495.7   | 324.7   | 106.9   |
| 85°   | 61.5    | 72.2    | 135.0   | 184.4   | 172.4   | 116.3   | 141.6   | 157.7   | 195.1   | 197.8   | 57.5    |
| 87.5° | 4.0     | 8.0     | 78.8    | 110.9   | 48.1    | 26.7    | 41.4    | 50.8    | 69.5    | 97.5    | 24.1    |
| 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: P322339

CATALOG NUMBER: GLEON-SA5D-760-U-T3-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3357.9  | 3357.9 | 3357.9 | 3357.9 | 3357.9 | 3357.9 | 3357.9 | 3357.9 | 3357.9 | 3357.9 | 3357.9 |
| 2.5°  | 3367.3  | 3368.6 | 3359.3 | 3355.2 | 3357.9 | 3341.9 | 3335.2 | 3337.9 | 3337.9 | 3341.9 | 3335.2 |
| 5°    | 3400.7  | 3400.7 | 3384.6 | 3363.3 | 3351.2 | 3320.5 | 3300.5 | 3295.1 | 3291.1 | 3288.4 | 3283.1 |
| 7.5°  | 3472.8  | 3464.8 | 3436.8 | 3390.0 | 3349.9 | 3283.1 | 3232.3 | 3205.6 | 3192.2 | 3186.9 | 3182.9 |
| 10°   | 3589.1  | 3574.4 | 3527.6 | 3440.8 | 3348.6 | 3229.6 | 3118.7 | 3039.9 | 2974.4 | 2947.7 | 2931.7 |
| 12.5° | 3745.4  | 3724.0 | 3645.2 | 3500.9 | 3339.2 | 3120.1 | 2879.5 | 2648.4 | 2433.3 | 2345.1 | 2301.0 |
| 15°   | 3925.8  | 3895.1 | 3770.8 | 3551.7 | 3284.4 | 2872.9 | 2350.4 | 1945.5 | 1647.6 | 1535.3 | 1487.2 |
| 17.5° | 4108.9  | 4068.8 | 3880.4 | 3583.7 | 3120.1 | 2361.1 | 1648.9 | 1245.4 | 1046.3 | 992.8  | 974.1  |
| 20°   | 4293.3  | 4234.5 | 3975.2 | 3559.7 | 2748.6 | 1702.3 | 1087.7 | 910.0  | 852.5  | 836.5  | 831.1  |
| 22.5° | 4468.3  | 4377.4 | 4060.8 | 3466.1 | 2176.7 | 1142.5 | 860.5  | 804.4  | 785.7  | 776.3  | 773.7  |
| 25°   | 4620.6  | 4493.7 | 4135.6 | 3177.5 | 1540.7 | 863.2  | 775.0  | 756.3  | 732.2  | 714.9  | 716.2  |
| 27.5° | 4763.6  | 4609.9 | 4181.0 | 2701.8 | 1027.6 | 737.6  | 717.5  | 692.2  | 648.1  | 622.7  | 622.7  |
| 30°   | 4936.0  | 4765.0 | 4214.4 | 2079.2 | 756.3  | 652.1  | 636.0  | 597.3  | 537.2  | 503.8  | 503.8  |
| 32.5° | 5195.2  | 5000.1 | 4193.1 | 1459.1 | 626.7  | 573.2  | 535.8  | 482.4  | 416.9  | 384.8  | 383.5  |
| 35°   | 5592.1  | 5363.6 | 4040.7 | 956.7  | 553.2  | 498.4  | 438.3  | 372.8  | 315.3  | 288.6  | 287.3  |
| 37.5° | 6126.6  | 5850.0 | 3698.6 | 684.1  | 495.7  | 428.9  | 356.8  | 284.6  | 241.9  | 224.5  | 223.1  |
| 40°   | 6820.1  | 6415.2 | 3209.6 | 554.5  | 442.3  | 362.1  | 275.3  | 220.5  | 191.1  | 177.7  | 179.1  |
| 42.5° | 7652.5  | 7020.5 | 2623.0 | 478.4  | 390.2  | 298.0  | 215.1  | 173.7  | 155.0  | 145.6  | 143.0  |
| 45°   | 8577.2  | 7617.8 | 2008.3 | 426.3  | 338.1  | 240.5  | 168.4  | 137.6  | 122.9  | 117.6  | 117.6  |
| 47.5° | 9594.0  | 8199.0 | 1469.8 | 380.8  | 281.9  | 185.7  | 135.0  | 112.2  | 100.2  | 96.2   | 94.9   |
| 50°   | 10517.4 | 8602.6 | 1059.6 | 332.7  | 231.2  | 147.0  | 109.6  | 93.5   | 85.5   | 80.2   | 80.2   |
| 52.5° | 11287.0 | 8729.5 | 780.4  | 280.6  | 187.1  | 117.6  | 90.9   | 80.2   | 72.2   | 68.1   | 68.1   |
| 55°   | 11964.5 | 8677.4 | 579.9  | 231.2  | 151.0  | 96.2   | 77.5   | 68.1   | 61.5   | 57.5   | 57.5   |
| 57.5° | 12613.9 | 8509.0 | 432.9  | 188.4  | 121.6  | 77.5   | 65.5   | 57.5   | 50.8   | 48.1   | 48.1   |
| 60°   | 13144.4 | 8228.4 | 322.0  | 152.3  | 97.5   | 62.8   | 54.8   | 46.8   | 41.4   | 37.4   | 37.4   |
| 62.5° | 13574.6 | 7918.4 | 236.5  | 125.6  | 77.5   | 49.4   | 42.8   | 38.8   | 30.7   | 26.7   | 26.7   |
| 65°   | 13577.3 | 7404.0 | 177.7  | 104.2  | 60.1   | 38.8   | 32.1   | 30.7   | 20.0   | 16.0   | 14.7   |
| 67.5° | 12595.2 | 6383.1 | 136.3  | 89.5   | 46.8   | 29.4   | 24.1   | 25.4   | 10.7   | 6.7    | 5.3    |
| 68°   | 12238.4 | 6123.9 | 128.3  | 88.2   | 44.1   | 28.1   | 22.7   | 25.4   | 9.4    | 5.3    | 4.0    |
| 70°   | 10318.3 | 4871.8 | 102.9  | 85.5   | 38.8   | 21.4   | 18.7   | 25.4   | 8.0    | 4.0    | 2.7    |
| 72.5° | 6599.6  | 2827.4 | 76.2   | 68.1   | 29.4   | 16.0   | 12.0   | 22.7   | 8.0    | 2.7    | 1.3    |
| 75°   | 2808.7  | 876.6  | 52.1   | 48.1   | 17.4   | 12.0   | 8.0    | 14.7   | 5.3    | 1.3    | 0.0    |
| 77.5° | 591.9   | 197.8  | 30.7   | 29.4   | 12.0   | 8.0    | 5.3    | 4.0    | 1.3    | 0.0    | 0.0    |
| 80°   | 152.3   | 57.5   | 16.0   | 14.7   | 6.7    | 4.0    | 2.7    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 48.1    | 22.7   | 9.4    | 6.7    | 2.7    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 24.1    | 13.4   | 5.3    | 2.7    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 13.4    | 4.0    | 1.3    | 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    |

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:  $4\pi$   
 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 |      |       |
| CIE u':                   | 0.2052 | R1:       | 70.6 | R9:  | -27.1 |
| CIE v':                   | 0.4804 | R2:       | 74.6 | R10: | 40.8  |
| Duv:                      | 0.0025 | R3:       | 78.3 | R11: | 74.6  |
| CIE x:                    | 0.3330 | R4:       | 73.8 | R12: | 50.4  |
| CIE y:                    | 0.3466 | R5:       | 72.4 | R13: | 70.0  |
| CIE z:                    | 0.3204 | R6:       | 67.5 | R14: | 87.8  |
| 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<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(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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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 13759.3**

**S/P: 1.85**

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 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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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5527.6 M/P: 0.74**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(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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**Summary**

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



**Color Vector Graphics**



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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)