

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: P321424

Luminaire Tested: **GLEON-SA0D-827-U-T2R-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321424  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-9)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA0D-827-U-T2R-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(10) 80 CRI, 2700K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II  
ROADWAY OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 45570 lumens  
Efficiency: N/A  
Efficacy: 71.2 lumens/watt  
Luminous Opening: Rectangular (W 2.5' x L: 1' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B2 - U0 - G4

Input Watts (W): 640  
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

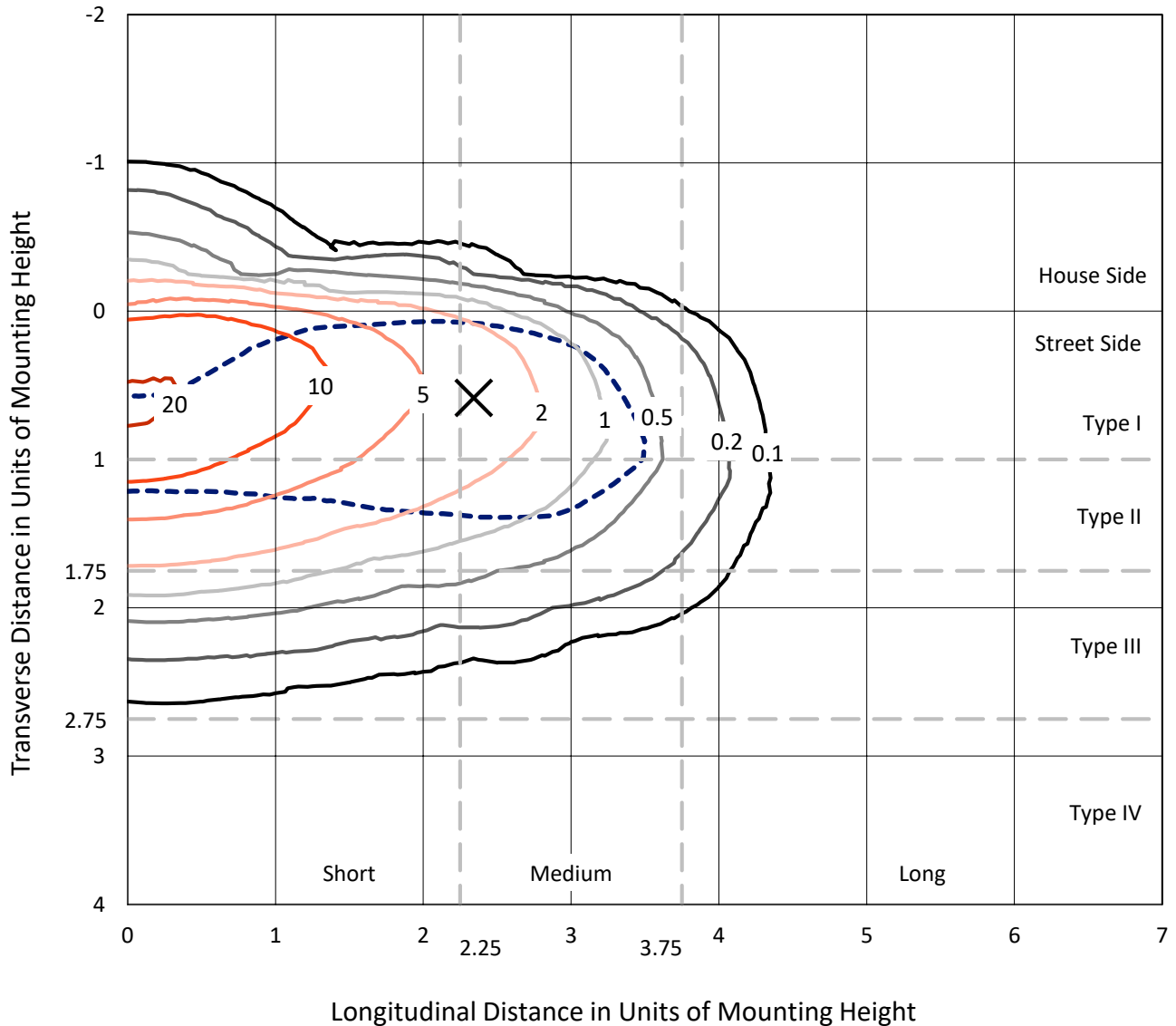




REPORT NUMBER: P321424  
 CATALOG NUMBER: GLEON-SA0D-827-U-T2R-HSS

### Iso-Footcandle Lines of Horizontal Illumination

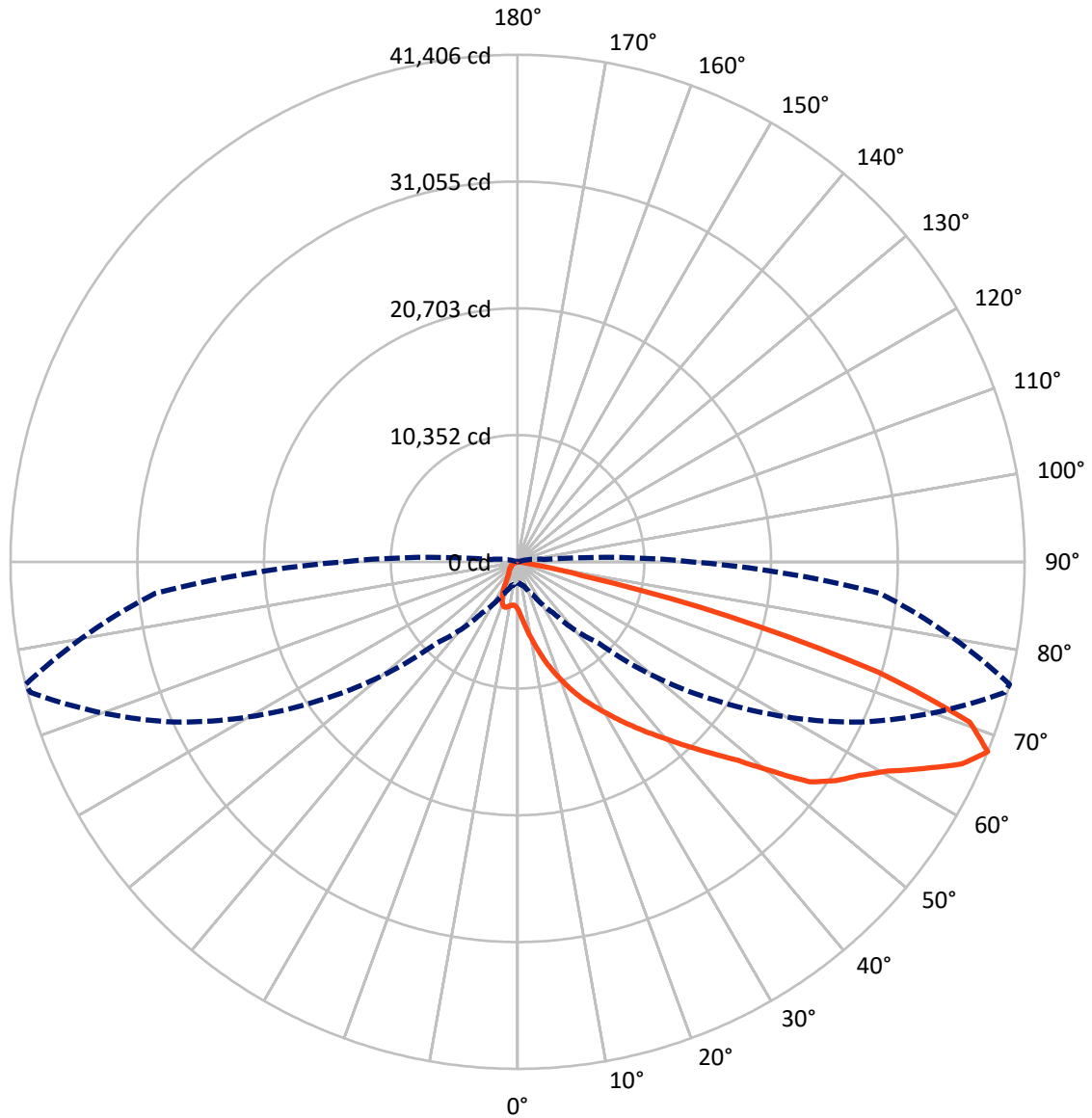
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 21.8 fc  
 Type II - Medium - N/A

REPORT NUMBER: P321424  
CATALOG NUMBER: GLEON-SA0D-827-U-T2R-HSS

### Luminous Intensity Polar Plot



— Vertical Plane Through 76-Deg Lateral      - - - Horizontal Cone Through 67.5-Deg Vertical

REPORT NUMBER: P321424  
 CATALOG NUMBER: GLEON-SA0D-827-U-T2R-HSS

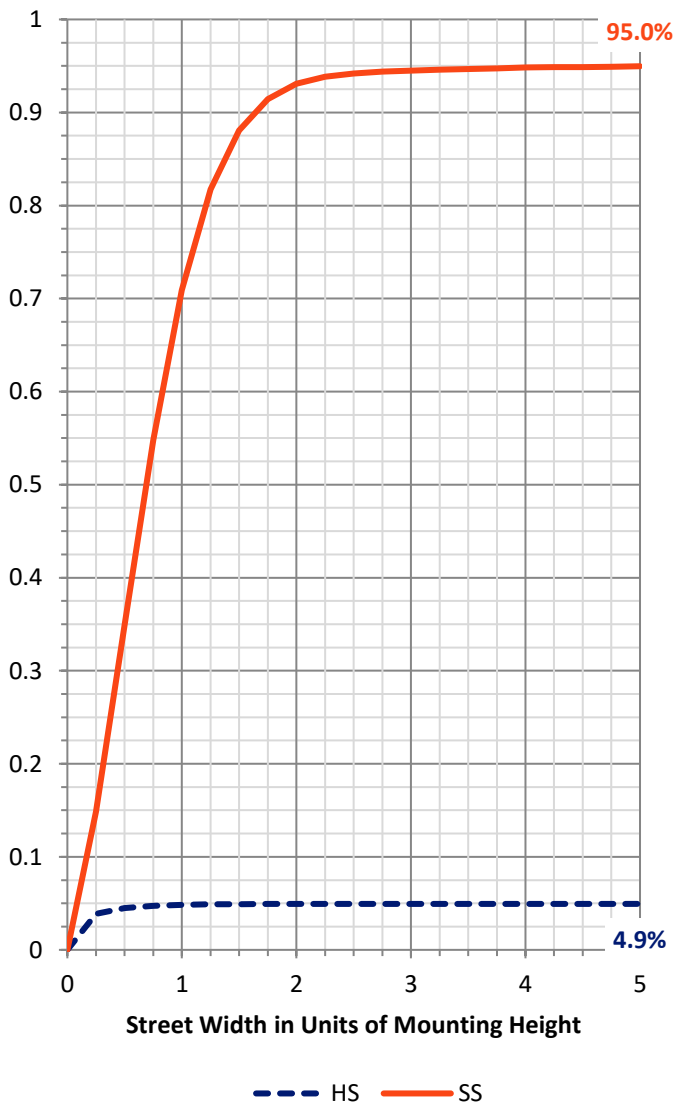
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2262.9   | 0.0    | 2262.9  |
|                    | % Fixture | 5.0      | 0.0    | 5.0     |
| <b>Street Side</b> | Lumens    | 43307.1  | 0.0    | 43307.1 |
|                    | % Fixture | 95.0     | 0.0    | 95.0    |
| <b>Total</b>       | Lumens    | 45570.0  | 0.0    | 45570.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 480.7   | 1.1       |
| 10°-20°   | 1905.5  | 4.2       |
| 20°-30°   | 3877.1  | 8.5       |
| 30°-40°   | 6729.4  | 14.8      |
| 40°-50°   | 9507.8  | 20.9      |
| 50°-60°   | 10782.3 | 23.7      |
| 60°-70°   | 8942.9  | 19.6      |
| 70°-80°   | 3239.4  | 7.1       |
| 80°-90°   | 105.0   | 0.2       |
| 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°    | 45570.0 | 100.0     |
| 0°-180°   | 45570.0 | 100.0     |

**Coefficient of Utilization**

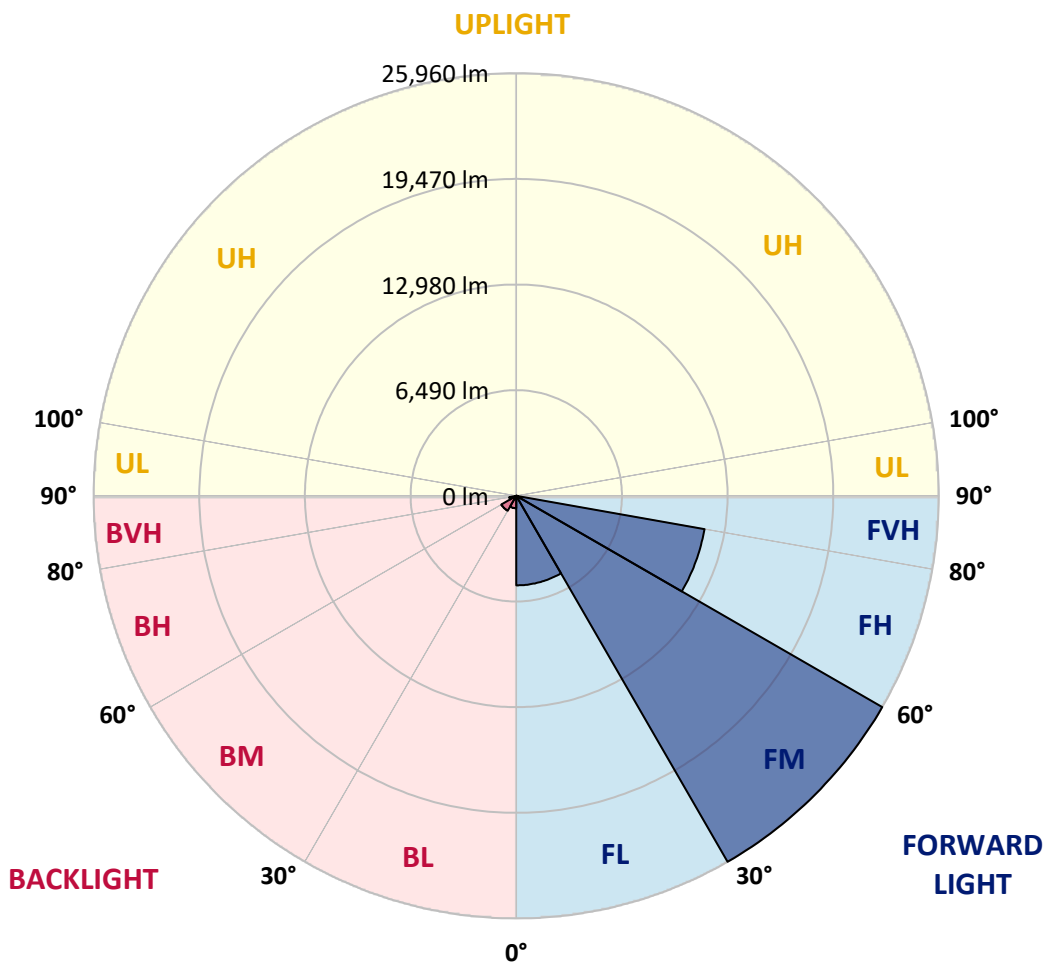


REPORT NUMBER: P321424  
 CATALOG NUMBER: GLEON-SA0D-827-U-T2R-HSS

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

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|----------------|---------|-----------|-------------------------|------|----------|
|                |         |           | B                       | U    | G        |
| FL (0°-30°)    | 5500.1  | 12.1      |                         |      |          |
| FM (30°-60°)   | 25960.3 | 57.0      |                         |      |          |
| FH (60°-80°)   | 11744.9 | 25.8      |                         |      | G4/12000 |
| FVH (80°-90°)  | 101.7   | 0.2       |                         |      | G2/225   |
| BL (0°-30°)    | 763.2   | 1.7       | B2/1000                 |      |          |
| BM (30°-60°)   | 1059.1  | 2.3       | B2/2500                 |      |          |
| BH (60°-80°)   | 437.3   | 1.0       | B1/500                  |      | G1/500   |
| BVH (80°-90°)  | 3.3     | 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 II Medium





REPORT NUMBER: P321424

CATALOG NUMBER: GLEON-SA0D-827-U-T2R-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 76°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 3865.7  | 3865.7  | 3865.7  | 3865.7  | 3865.7  | 3865.7  | 3865.7  | 3865.7  | 3865.7  | 3865.7  | 3865.7  |
| 2.5°  | 5770.5  | 5640.7  | 5670.7  | 5586.8  | 5435.1  | 5123.6  | 4858.0  | 4606.4  | 4312.9  | 4302.9  | 4061.3  |
| 5°    | 7781.2  | 7671.4  | 7657.4  | 7487.7  | 7212.2  | 6683.0  | 6167.9  | 5580.8  | 4925.9  | 4878.0  | 4364.8  |
| 7.5°  | 9606.2  | 9518.4  | 9486.4  | 9284.8  | 8771.6  | 8256.4  | 7585.6  | 6723.0  | 5698.6  | 5610.8  | 4774.2  |
| 10°   | 11007.9 | 10966.0 | 10974.0 | 10830.2 | 10390.9 | 9911.7  | 9031.2  | 7931.0  | 6575.2  | 6439.4  | 5265.4  |
| 12.5° | 12070.2 | 12080.2 | 12152.1 | 12064.2 | 11818.6 | 11463.2 | 10522.7 | 9218.9  | 7545.6  | 7359.9  | 5826.4  |
| 15°   | 12850.9 | 12900.8 | 13032.6 | 13142.4 | 13124.5 | 12817.0 | 11954.4 | 10526.7 | 8575.9  | 8370.3  | 6451.4  |
| 17.5° | 13356.1 | 13412.0 | 13603.7 | 13847.3 | 14070.9 | 13999.0 | 13336.1 | 11788.7 | 9618.2  | 9380.6  | 7120.3  |
| 20°   | 13799.4 | 13865.2 | 14070.9 | 14392.4 | 14809.7 | 14899.5 | 14464.3 | 13012.6 | 10658.5 | 10369.0 | 7811.2  |
| 22.5° | 14759.8 | 14757.8 | 14883.6 | 15071.3 | 15468.6 | 15700.2 | 15424.7 | 14148.8 | 11686.8 | 11385.3 | 8516.0  |
| 25°   | 16496.9 | 16431.0 | 16387.1 | 16239.3 | 16327.2 | 16471.0 | 16317.2 | 15211.0 | 12721.1 | 12415.6 | 9230.9  |
| 27.5° | 18561.5 | 18601.5 | 18246.1 | 17848.7 | 17541.2 | 17393.5 | 17141.9 | 16195.4 | 13715.5 | 13380.0 | 9929.7  |
| 30°   | 20740.0 | 20751.9 | 20332.6 | 19825.5 | 19148.6 | 18587.5 | 18152.2 | 17135.9 | 14737.8 | 14372.4 | 10608.6 |
| 32.5° | 22704.7 | 22626.9 | 22211.5 | 21520.7 | 20666.1 | 20035.1 | 19130.6 | 18186.2 | 15820.0 | 15466.6 | 11363.4 |
| 35°   | 24262.2 | 24170.3 | 23665.2 | 23036.2 | 22149.6 | 21514.7 | 20426.5 | 19234.4 | 16958.2 | 16612.7 | 12120.1 |
| 37.5° | 25400.3 | 25292.5 | 24773.3 | 24126.4 | 23361.7 | 22992.3 | 21930.0 | 20374.6 | 18200.1 | 17828.7 | 12916.8 |
| 40°   | 25795.7 | 25701.8 | 25376.4 | 24903.1 | 24288.1 | 24204.3 | 23525.4 | 21686.4 | 19551.9 | 19156.6 | 13819.3 |
| 42.5° | 25560.1 | 25468.2 | 25352.4 | 25192.7 | 24937.1 | 25016.9 | 25030.9 | 23182.0 | 21053.4 | 20664.1 | 14815.7 |
| 45°   | 24625.6 | 24543.7 | 24663.5 | 24897.1 | 25214.6 | 25610.0 | 26404.7 | 24789.3 | 22730.7 | 22315.4 | 15967.8 |
| 47.5° | 23249.8 | 23189.9 | 23521.4 | 24104.4 | 25032.9 | 26123.1 | 27660.6 | 26478.5 | 24613.6 | 24228.2 | 17405.4 |
| 50°   | 21293.1 | 21283.1 | 21946.0 | 23010.2 | 24437.9 | 26370.7 | 28958.5 | 28399.4 | 27229.3 | 26824.0 | 19404.2 |
| 52.5° | 18246.1 | 18266.0 | 19569.9 | 21273.1 | 23393.6 | 26203.0 | 29793.1 | 30867.3 | 30272.3 | 29851.0 | 21135.3 |
| 55°   | 15344.8 | 15464.6 | 16389.1 | 18845.1 | 21792.2 | 25580.0 | 30080.6 | 32019.5 | 31951.6 | 31552.2 | 22097.7 |
| 57.5° | 12503.5 | 12721.1 | 13611.7 | 15905.9 | 19454.1 | 24144.4 | 29922.9 | 32518.6 | 33201.5 | 32896.0 | 23367.6 |
| 60°   | 9424.5  | 9524.4  | 10550.7 | 12695.2 | 16453.0 | 21524.7 | 28778.8 | 32790.2 | 34910.7 | 34699.1 | 25210.6 |
| 62.5° | 5996.2  | 6245.7  | 7156.3  | 9224.9  | 12811.0 | 17886.6 | 26849.9 | 32786.2 | 37049.2 | 37165.0 | 27588.7 |
| 65°   | 3158.8  | 3450.3  | 3933.5  | 5716.6  | 8803.6  | 13823.3 | 23948.7 | 32478.7 | 39672.9 | 39834.6 | 29447.7 |
| 67.5° | 1703.2  | 1787.1  | 2042.6  | 2967.1  | 5105.6  | 9364.6  | 19685.7 | 30961.2 | 41192.4 | 41406.0 | 29707.2 |
| 70°   | 1246.0  | 1291.9  | 1387.7  | 1641.3  | 2569.8  | 5439.1  | 14364.4 | 27520.8 | 39233.6 | 39153.7 | 26394.7 |
| 72.5° | 956.4   | 1028.3  | 1100.2  | 1202.0  | 1477.6  | 2903.2  | 8943.3  | 21550.6 | 31304.6 | 30777.5 | 19729.6 |
| 75°   | 754.8   | 766.7   | 868.6   | 960.4   | 1108.2  | 1653.3  | 3971.5  | 12551.4 | 19106.6 | 17858.7 | 10231.2 |
| 77.5° | 603.0   | 611.0   | 670.9   | 750.8   | 890.5   | 1086.2  | 1230.0  | 4937.9  | 6100.0  | 5443.1  | 2220.4  |
| 80°   | 357.4   | 377.4   | 499.2   | 579.0   | 738.8   | 684.9   | 449.3   | 1072.2  | 952.4   | 862.6   | 373.4   |
| 82.5° | 199.7   | 215.6   | 281.5   | 457.2   | 515.2   | 327.5   | 223.6   | 289.5   | 223.6   | 217.6   | 105.8   |
| 85°   | 0.0     | 10.0    | 181.7   | 283.5   | 209.7   | 71.9    | 93.8    | 95.8    | 65.9    | 61.9    | 41.9    |
| 87.5° | 0.0     | 0.0     | 55.9    | 53.9    | 8.0     | 12.0    | 22.0    | 31.9    | 26.0    | 26.0    | 22.0    |
| 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: P321424

CATALOG NUMBER: GLEON-SA0D-827-U-T2R-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3865.7  | 3865.7 | 3865.7 | 3865.7 | 3865.7 | 3865.7 | 3865.7 | 3865.7 | 3865.7 | 3865.7 | 3865.7 |
| 2.5°  | 3941.5  | 3833.7 | 3630.0 | 3430.4 | 3262.6 | 3124.9 | 3001.1 | 2951.2 | 2911.2 | 2905.2 | 2873.3 |
| 5°    | 4117.2  | 3899.6 | 3510.2 | 3190.8 | 2977.1 | 2825.4 | 2695.6 | 2615.7 | 2553.8 | 2529.8 | 2507.9 |
| 7.5°  | 4382.8  | 4053.3 | 3494.3 | 3126.9 | 2871.3 | 2615.7 | 2376.1 | 2116.5 | 1954.8 | 1892.9 | 1857.0 |
| 10°   | 4706.3  | 4257.0 | 3554.2 | 3108.9 | 2661.6 | 2122.5 | 1725.2 | 1395.7 | 1261.9 | 1218.0 | 1206.0 |
| 12.5° | 5083.7  | 4510.6 | 3658.0 | 2997.1 | 2214.4 | 1507.5 | 1190.0 | 1078.2 | 1048.3 | 1034.3 | 1034.3 |
| 15°   | 5516.9  | 4788.1 | 3731.9 | 2673.6 | 1637.3 | 1140.1 | 1030.3 | 978.4  | 946.4  | 928.5  | 930.5  |
| 17.5° | 5960.2  | 5059.7 | 3695.9 | 2204.4 | 1208.0 | 1014.3 | 932.5  | 876.6  | 832.6  | 814.7  | 810.7  |
| 20°   | 6407.5  | 5311.3 | 3496.3 | 1641.3 | 1022.3 | 920.5  | 828.6  | 766.7  | 722.8  | 704.8  | 700.8  |
| 22.5° | 6870.7  | 5524.9 | 3144.8 | 1204.0 | 918.5  | 816.7  | 726.8  | 664.9  | 623.0  | 607.0  | 599.0  |
| 25°   | 7322.0  | 5698.6 | 2653.6 | 974.4  | 820.7  | 718.8  | 633.0  | 575.1  | 537.1  | 521.1  | 519.1  |
| 27.5° | 7743.3  | 5808.5 | 2084.6 | 860.6  | 734.8  | 631.0  | 553.1  | 501.2  | 469.2  | 457.2  | 455.3  |
| 30°   | 8122.7  | 5818.5 | 1541.5 | 776.7  | 658.9  | 555.1  | 483.2  | 437.3  | 409.3  | 397.3  | 393.4  |
| 32.5° | 8506.0  | 5734.6 | 1122.2 | 700.8  | 589.0  | 489.2  | 419.3  | 383.4  | 363.4  | 353.4  | 353.4  |
| 35°   | 8867.4  | 5540.9 | 874.6  | 635.0  | 521.1  | 425.3  | 369.4  | 343.4  | 331.5  | 321.5  | 321.5  |
| 37.5° | 9220.9  | 5263.4 | 742.8  | 577.1  | 457.2  | 371.4  | 325.5  | 309.5  | 299.5  | 289.5  | 289.5  |
| 40°   | 9580.3  | 4913.9 | 674.9  | 523.1  | 405.3  | 329.5  | 289.5  | 275.5  | 265.6  | 257.6  | 255.6  |
| 42.5° | 10021.6 | 4510.6 | 631.0  | 473.2  | 359.4  | 291.5  | 255.6  | 239.6  | 231.6  | 223.6  | 219.6  |
| 45°   | 10532.7 | 4163.2 | 595.0  | 423.3  | 321.5  | 259.6  | 221.6  | 205.7  | 193.7  | 183.7  | 181.7  |
| 47.5° | 11269.5 | 3911.6 | 547.1  | 369.4  | 285.5  | 225.6  | 191.7  | 173.7  | 155.7  | 145.8  | 143.8  |
| 50°   | 12210.0 | 3703.9 | 485.2  | 321.5  | 249.6  | 191.7  | 159.7  | 137.8  | 121.8  | 111.8  | 111.8  |
| 52.5° | 12677.2 | 3432.4 | 429.3  | 279.5  | 209.7  | 161.7  | 129.8  | 103.8  | 95.8   | 85.9   | 85.9   |
| 55°   | 12864.9 | 3224.7 | 373.4  | 237.6  | 173.7  | 133.8  | 101.8  | 79.9   | 73.9   | 67.9   | 65.9   |
| 57.5° | 13392.0 | 3164.8 | 325.5  | 201.7  | 143.8  | 105.8  | 77.9   | 59.9   | 55.9   | 47.9   | 47.9   |
| 60°   | 14240.6 | 3194.8 | 281.5  | 171.7  | 115.8  | 81.9   | 57.9   | 45.9   | 41.9   | 33.9   | 33.9   |
| 62.5° | 15157.1 | 3156.8 | 237.6  | 147.8  | 89.9   | 59.9   | 39.9   | 33.9   | 33.9   | 20.0   | 18.0   |
| 65°   | 15332.8 | 2811.4 | 203.7  | 121.8  | 69.9   | 43.9   | 26.0   | 22.0   | 30.0   | 4.0    | 0.0    |
| 67.5° | 14230.6 | 2180.4 | 175.7  | 93.8   | 51.9   | 33.9   | 20.0   | 10.0   | 26.0   | 0.0    | 0.0    |
| 70°   | 11379.3 | 1385.7 | 141.8  | 67.9   | 39.9   | 28.0   | 16.0   | 4.0    | 20.0   | 0.0    | 0.0    |
| 72.5° | 8046.8  | 804.7  | 111.8  | 47.9   | 33.9   | 22.0   | 12.0   | 0.0    | 12.0   | 0.0    | 0.0    |
| 75°   | 4069.3  | 429.3  | 69.9   | 35.9   | 26.0   | 16.0   | 8.0    | 0.0    | 2.0    | 0.0    | 0.0    |
| 77.5° | 880.6   | 199.7  | 43.9   | 26.0   | 18.0   | 10.0   | 4.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 80°   | 191.7   | 87.9   | 28.0   | 16.0   | 10.0   | 6.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 69.9    | 45.9   | 14.0   | 8.0    | 4.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 37.9    | 24.0   | 8.0    | 4.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 20.0    | 8.0    | 2.0    | 2.0    | 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    |



Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Invue

Report Number: SP1-2407-157-9

Test Date: 10/03/2024

Luminaire Tested: EMM2-HTN-SA1A-827-U-5WQ

Data applicable to all product families utilizing light square engine

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-157-9  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/03/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Invue  
 Catalog Number: **EMM2-HTN-SA1A-827-U-5WQ**  
 Description: Epic Modern Light Square 40W 5WQ Optic

**Spectral Parameters**

CCT (K): 2764  
 CIE u': 0.2591  
 CIE v': 0.5290  
 Duv: 0.0020  
 CIE x: 0.4581  
 CIE y: 0.4156  
 CIE z: 0.1263  
 Peak Wavelength (nm): 603  
 Dominant Wavelength (nm): 583  
 Purity: 62.2537  
 Rf: 84.7  
 Rg: 94.6

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 80.9 |      |      |
| R1:       | 78.8 | R9:  | -1.5 |
| R2:       | 89.9 | R10: | 77.9 |
| R3:       | 96.2 | R11: | 78.9 |
| R4:       | 79.1 | R12: | 71.6 |
| R5:       | 79.1 | R13: | 81.2 |
| R6:       | 88.8 | R14: | 98.5 |
| R7:       | 81.3 | R15: | 69.9 |
| R8:       | 54.3 |      |      |



**Test Conditions**

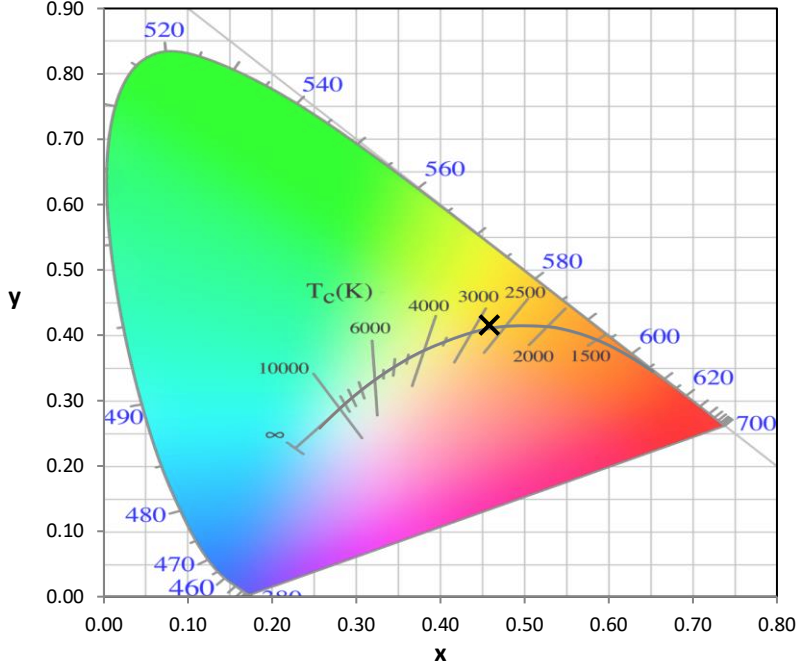
Stabilization Time: 81M  
 Operation Time: 2H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-157-9

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/18/2024        | 12/18/2024           |
| Power Meter                    | INXT2011004           | 2/8/2024         | 2/8/2025             |
| AC Power Source                | IN0063                | 10/24/2023       | 10/24/2024           |
| DC Power Source                | IN0208                | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | IN0085                | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | IN0046                | 10/24/2023       | 10/24/2024           |

REPORT NUMBER: SP1-2407-157-9

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: SP1-2407-157-9

**Photopic Flux vs. Wavelength**



**Photopic Lumens: 4337.9**

| 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    | 0             | 0.0           | 490    | 18018         | 2.6           | 620    | 87426         | 22.8          | 750    | 2680          | 0.0           | 880    | 58            | 0.0           |
| 365    | 0             | 0.0           | 495    | 22295         | 3.9           | 625    | 83013         | 18.2          | 755    | 2287          | 0.0           | 885    | 46            | 0.0           |
| 370    | 0             | 0.0           | 500    | 26478         | 5.8           | 630    | 78077         | 14.1          | 760    | 1944          | 0.0           | 890    | 45            | 0.0           |
| 375    | 0             | 0.0           | 505    | 30524         | 8.5           | 635    | 72080         | 10.7          | 765    | 1653          | 0.0           | 895    | 41            | 0.0           |
| 380    | 0             | 0.0           | 510    | 33611         | 11.5          | 640    | 66249         | 7.9           | 770    | 1413          | 0.0           | 900    | 38            | 0.0           |
| 385    | 0             | 0.0           | 515    | 36490         | 15.2          | 645    | 59973         | 5.7           | 775    | 1198          | 0.0           | 905    | 33            | 0.0           |
| 390    | 0             | 0.0           | 520    | 38610         | 18.7          | 650    | 53972         | 3.9           | 780    | 1025          | 0.0           | 910    | 30            | 0.0           |
| 395    | 0             | 0.0           | 525    | 40511         | 21.9          | 655    | 48369         | 2.7           | 785    | 874           | 0.0           | 915    | 23            | 0.0           |
| 400    | 48            | 0.0           | 530    | 42223         | 24.9          | 660    | 42641         | 1.8           | 790    | 747           | 0.0           | 920    | 24            | 0.0           |
| 405    | 201           | 0.0           | 535    | 44137         | 27.6          | 665    | 37602         | 1.1           | 795    | 639           | 0.0           | 925    | 22            | 0.0           |
| 410    | 457           | 0.0           | 540    | 46032         | 30.0          | 670    | 32798         | 0.7           | 800    | 547           | 0.0           | 930    | 22            | 0.0           |
| 415    | 925           | 0.0           | 545    | 48553         | 32.5          | 675    | 28558         | 0.5           | 805    | 473           | 0.0           | 935    | 17            | 0.0           |
| 420    | 1816          | 0.0           | 550    | 51408         | 34.9          | 680    | 24782         | 0.3           | 810    | 401           | 0.0           | 940    | 13            | 0.0           |
| 425    | 3217          | 0.0           | 555    | 54711         | 37.4          | 685    | 21386         | 0.2           | 815    | 351           | 0.0           | 945    | 6             | 0.0           |
| 430    | 5520          | 0.0           | 560    | 58847         | 40.0          | 690    | 18413         | 0.1           | 820    | 307           | 0.0           | 950    | 10            | 0.0           |
| 435    | 9225          | 0.1           | 565    | 63386         | 42.4          | 695    | 15721         | 0.1           | 825    | 261           | 0.0           | 955    | 11            | 0.0           |
| 440    | 15522         | 0.2           | 570    | 68196         | 44.3          | 700    | 13432         | 0.0           | 830    | 228           | 0.0           | 960    | 8             | 0.0           |
| 445    | 27642         | 0.6           | 575    | 73613         | 46.0          | 705    | 11513         | 0.0           | 835    | 193           | 0.0           | 965    | 12            | 0.0           |
| 450    | 36602         | 0.9           | 580    | 79207         | 47.1          | 710    | 9780          | 0.0           | 840    | 174           | 0.0           | 970    | 3             | 0.0           |
| 455    | 28292         | 0.9           | 585    | 84248         | 47.0          | 715    | 8356          | 0.0           | 845    | 151           | 0.0           | 975    | 8             | 0.0           |
| 460    | 21166         | 0.9           | 590    | 88397         | 45.7          | 720    | 7161          | 0.0           | 850    | 123           | 0.0           | 980    | 2             | 0.0           |
| 465    | 19092         | 1.0           | 595    | 91428         | 43.4          | 725    | 6067          | 0.0           | 855    | 106           | 0.0           | 985    | 13            | 0.0           |
| 470    | 14951         | 0.9           | 600    | 93452         | 40.3          | 730    | 5164          | 0.0           | 860    | 95            | 0.0           | 990    | 16            | 0.0           |
| 475    | 12606         | 1.0           | 605    | 93959         | 36.4          | 735    | 4393          | 0.0           | 865    | 82            | 0.0           | 995    | 20            | 0.0           |
| 480    | 13323         | 1.3           | 610    | 93079         | 32.0          | 740    | 3694          | 0.0           | 870    | 77            | 0.0           | 1000   | 0             | 0.0           |
| 485    | 15164         | 1.8           | 615    | 90707         | 27.3          | 745    | 3157          | 0.0           | 875    | 65            | 0.0           |        |               |               |

REPORT NUMBER: SP1-2407-157-9

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 5286.7**

**S/P: 1.22**

| 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    | 0             | 0.0           | 490    | 18018         | 75.9          | 620    | 87426         | 0.4           | 750    | 2680          | 0.0           | 880    | 58            | 0.0           |
| 365    | 0             | 0.0           | 495    | 22295         | 93.2          | 625    | 83013         | 0.2           | 755    | 2287          | 0.0           | 885    | 46            | 0.0           |
| 370    | 0             | 0.0           | 500    | 26478         | 107.8         | 630    | 78077         | 0.1           | 760    | 1944          | 0.0           | 890    | 45            | 0.0           |
| 375    | 0             | 0.0           | 505    | 30524         | 118.7         | 635    | 72080         | 0.1           | 765    | 1653          | 0.0           | 895    | 41            | 0.0           |
| 380    | 0             | 0.0           | 510    | 33611         | 122.2         | 640    | 66249         | 0.1           | 770    | 1413          | 0.0           | 900    | 38            | 0.0           |
| 385    | 0             | 0.0           | 515    | 36490         | 120.8         | 645    | 59973         | 0.0           | 775    | 1198          | 0.0           | 905    | 33            | 0.0           |
| 390    | 0             | 0.0           | 520    | 38610         | 113.9         | 650    | 53972         | 0.0           | 780    | 1025          | 0.0           | 910    | 30            | 0.0           |
| 395    | 0             | 0.0           | 525    | 40511         | 104.1         | 655    | 48369         | 0.0           | 785    | 874           | 0.0           | 915    | 23            | 0.0           |
| 400    | 48            | 0.0           | 530    | 42223         | 92.4          | 660    | 42641         | 0.0           | 790    | 747           | 0.0           | 920    | 24            | 0.0           |
| 405    | 201           | 0.0           | 535    | 44137         | 80.5          | 665    | 37602         | 0.0           | 795    | 639           | 0.0           | 925    | 22            | 0.0           |
| 410    | 457           | 0.1           | 540    | 46032         | 68.2          | 670    | 32798         | 0.0           | 800    | 547           | 0.0           | 930    | 22            | 0.0           |
| 415    | 925           | 0.3           | 545    | 48553         | 57.1          | 675    | 28558         | 0.0           | 805    | 473           | 0.0           | 935    | 17            | 0.0           |
| 420    | 1816          | 1.1           | 550    | 51408         | 46.7          | 680    | 24782         | 0.0           | 810    | 401           | 0.0           | 940    | 13            | 0.0           |
| 425    | 3217          | 2.5           | 555    | 54711         | 37.4          | 685    | 21386         | 0.0           | 815    | 351           | 0.0           | 945    | 6             | 0.0           |
| 430    | 5520          | 5.9           | 560    | 58847         | 29.4          | 690    | 18413         | 0.0           | 820    | 307           | 0.0           | 950    | 10            | 0.0           |
| 435    | 9225          | 12.5          | 565    | 63386         | 22.5          | 695    | 15721         | 0.0           | 825    | 261           | 0.0           | 955    | 11            | 0.0           |
| 440    | 15522         | 26.3          | 570    | 68196         | 16.9          | 700    | 13432         | 0.0           | 830    | 228           | 0.0           | 960    | 8             | 0.0           |
| 445    | 27642         | 55.2          | 575    | 73613         | 12.4          | 705    | 11513         | 0.0           | 835    | 193           | 0.0           | 965    | 12            | 0.0           |
| 450    | 36602         | 85.4          | 580    | 79207         | 9.0           | 710    | 9780          | 0.0           | 840    | 174           | 0.0           | 970    | 3             | 0.0           |
| 455    | 28292         | 75.1          | 585    | 84248         | 6.3           | 715    | 8356          | 0.0           | 845    | 151           | 0.0           | 975    | 8             | 0.0           |
| 460    | 21166         | 63.2          | 590    | 88397         | 4.4           | 720    | 7161          | 0.0           | 850    | 123           | 0.0           | 980    | 2             | 0.0           |
| 465    | 19092         | 63.2          | 595    | 91428         | 3.0           | 725    | 6067          | 0.0           | 855    | 106           | 0.0           | 985    | 13            | 0.0           |
| 470    | 14951         | 54.2          | 600    | 93452         | 2.0           | 730    | 5164          | 0.0           | 860    | 95            | 0.0           | 990    | 16            | 0.0           |
| 475    | 12606         | 48.8          | 605    | 93959         | 1.3           | 735    | 4393          | 0.0           | 865    | 82            | 0.0           | 995    | 20            | 0.0           |
| 480    | 13323         | 54.2          | 610    | 93079         | 0.9           | 740    | 3694          | 0.0           | 870    | 77            | 0.0           | 1000   | 0             | 0.0           |
| 485    | 15164         | 63.3          | 615    | 90707         | 0.5           | 745    | 3157          | 0.0           | 875    | 65            | 0.0           |        |               |               |

REPORT NUMBER: SP1-2407-157-9

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 9797**

**M/P: 2.26**

| 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    | 0             | 0.0           | 490    | 18018         | 27.7          | 620    | 87426         | 1.1           | 750    | 2680          | 0.0           | 880    | 58            | 0.0           |
| 365    | 0             | 0.0           | 495    | 22295         | 36.0          | 625    | 83013         | 0.7           | 755    | 2287          | 0.0           | 885    | 46            | 0.0           |
| 370    | 0             | 0.0           | 500    | 26478         | 44.2          | 630    | 78077         | 0.4           | 760    | 1944          | 0.0           | 890    | 45            | 0.0           |
| 375    | 0             | 0.0           | 505    | 30524         | 51.8          | 635    | 72080         | 0.3           | 765    | 1653          | 0.0           | 895    | 41            | 0.0           |
| 380    | 0             | 0.0           | 510    | 33611         | 57.0          | 640    | 66249         | 0.2           | 770    | 1413          | 0.0           | 900    | 38            | 0.0           |
| 385    | 0             | 0.0           | 515    | 36490         | 60.5          | 645    | 59973         | 0.1           | 775    | 1198          | 0.0           | 905    | 33            | 0.0           |
| 390    | 0             | 0.0           | 520    | 38610         | 61.4          | 650    | 53972         | 0.1           | 780    | 1025          | 0.0           | 910    | 30            | 0.0           |
| 395    | 0             | 0.0           | 525    | 40511         | 60.6          | 655    | 48369         | 0.0           | 785    | 874           | 0.0           | 915    | 23            | 0.0           |
| 400    | 48            | 0.0           | 530    | 42223         | 58.2          | 660    | 42641         | 0.0           | 790    | 747           | 0.0           | 920    | 24            | 0.0           |
| 405    | 201           | 0.0           | 535    | 44137         | 55.0          | 665    | 37602         | 0.0           | 795    | 639           | 0.0           | 925    | 22            | 0.0           |
| 410    | 457           | 0.0           | 540    | 46032         | 50.9          | 670    | 32798         | 0.0           | 800    | 547           | 0.0           | 930    | 22            | 0.0           |
| 415    | 925           | 0.1           | 545    | 48553         | 46.6          | 675    | 28558         | 0.0           | 805    | 473           | 0.0           | 935    | 17            | 0.0           |
| 420    | 1816          | 0.3           | 550    | 51408         | 42.0          | 680    | 24782         | 0.0           | 810    | 401           | 0.0           | 940    | 13            | 0.0           |
| 425    | 3217          | 0.8           | 555    | 54711         | 37.4          | 685    | 21386         | 0.0           | 815    | 351           | 0.0           | 945    | 6             | 0.0           |
| 430    | 5520          | 1.9           | 560    | 58847         | 32.9          | 690    | 18413         | 0.0           | 820    | 307           | 0.0           | 950    | 10            | 0.0           |
| 435    | 9225          | 4.1           | 565    | 63386         | 28.4          | 695    | 15721         | 0.0           | 825    | 261           | 0.0           | 955    | 11            | 0.0           |
| 440    | 15522         | 8.7           | 570    | 68196         | 24.1          | 700    | 13432         | 0.0           | 830    | 228           | 0.0           | 960    | 8             | 0.0           |
| 445    | 27642         | 18.5          | 575    | 73613         | 20.0          | 705    | 11513         | 0.0           | 835    | 193           | 0.0           | 965    | 12            | 0.0           |
| 450    | 36602         | 28.3          | 580    | 79207         | 16.3          | 710    | 9780          | 0.0           | 840    | 174           | 0.0           | 970    | 3             | 0.0           |
| 455    | 28292         | 24.7          | 585    | 84248         | 12.9          | 715    | 8356          | 0.0           | 845    | 151           | 0.0           | 975    | 8             | 0.0           |
| 460    | 21166         | 20.4          | 590    | 88397         | 9.8           | 720    | 7161          | 0.0           | 850    | 123           | 0.0           | 980    | 2             | 0.0           |
| 465    | 19092         | 20.1          | 595    | 91428         | 7.3           | 725    | 6067          | 0.0           | 855    | 106           | 0.0           | 985    | 13            | 0.0           |
| 470    | 14951         | 17.2          | 600    | 93452         | 5.3           | 730    | 5164          | 0.0           | 860    | 95            | 0.0           | 990    | 16            | 0.0           |
| 475    | 12606         | 15.7          | 605    | 93959         | 3.7           | 735    | 4393          | 0.0           | 865    | 82            | 0.0           | 995    | 20            | 0.0           |
| 480    | 13323         | 18.0          | 610    | 93079         | 2.5           | 740    | 3694          | 0.0           | 870    | 77            | 0.0           | 1000   | 0             | 0.0           |
| 485    | 15164         | 21.9          | 615    | 90707         | 1.7           | 745    | 3157          | 0.0           | 875    | 65            | 0.0           |        |               |               |

**Summary**

$R_f = 84.7$   
 $R_g = 94.6$   
 $CIE R_a = 80.9$   
 $R_g = -1.5$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 84 | CES51 = 95 | CES76 = 81 |
| CES02 = 63 | CES27 = 95 | CES52 = 94 | CES77 = 84 |
| CES03 = 31 | CES28 = 94 | CES53 = 89 | CES78 = 81 |
| CES04 = 71 | CES29 = 87 | CES54 = 91 | CES79 = 89 |
| CES05 = 50 | CES30 = 94 | CES55 = 90 | CES80 = 89 |
| CES06 = 52 | CES31 = 89 | CES56 = 86 | CES81 = 69 |
| CES07 = 43 | CES32 = 82 | CES57 = 85 | CES82 = 96 |
| CES08 = 41 | CES33 = 91 | CES58 = 86 | CES83 = 93 |
| CES09 = 29 | CES34 = 92 | CES59 = 91 | CES84 = 92 |
| CES10 = 77 | CES35 = 96 | CES60 = 94 | CES85 = 76 |
| CES11 = 60 | CES36 = 90 | CES61 = 89 | CES86 = 65 |
| CES12 = 66 | CES37 = 96 | CES62 = 94 | CES87 = 84 |
| CES13 = 44 | CES38 = 98 | CES63 = 87 | CES88 = 86 |
| CES14 = 74 | CES39 = 98 | CES64 = 82 | CES89 = 73 |
| CES15 = 72 | CES40 = 95 | CES65 = 78 | CES90 = 88 |
| CES16 = 48 | CES41 = 96 | CES66 = 81 | CES91 = 82 |
| CES17 = 50 | CES42 = 97 | CES67 = 80 | CES92 = 64 |
| CES18 = 57 | CES43 = 91 | CES68 = 83 | CES93 = 78 |
| CES19 = 73 | CES44 = 99 | CES69 = 88 | CES94 = 59 |
| CES20 = 67 | CES45 = 93 | CES70 = 80 | CES95 = 74 |
| CES21 = 87 | CES46 = 89 | CES71 = 79 | CES96 = 83 |
| CES22 = 79 | CES47 = 92 | CES72 = 92 | CES97 = 88 |
| CES23 = 92 | CES48 = 83 | CES73 = 75 | CES98 = 83 |
| CES24 = 91 | CES49 = 90 | CES74 = 91 | CES99 = 74 |
| CES25 = 72 | CES50 = 94 | CES75 = 81 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)