

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: P316930

Luminaire Tested: **GLEON-SA6C-827-U-5NQ**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P316930  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-5)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA6C-827-U-5NQ  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(6) 80 CRI, 2700K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE V  
NARROW OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 32078 lumens  
Efficiency: N/A  
Efficacy: 96.3 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B5 - U0 - G2

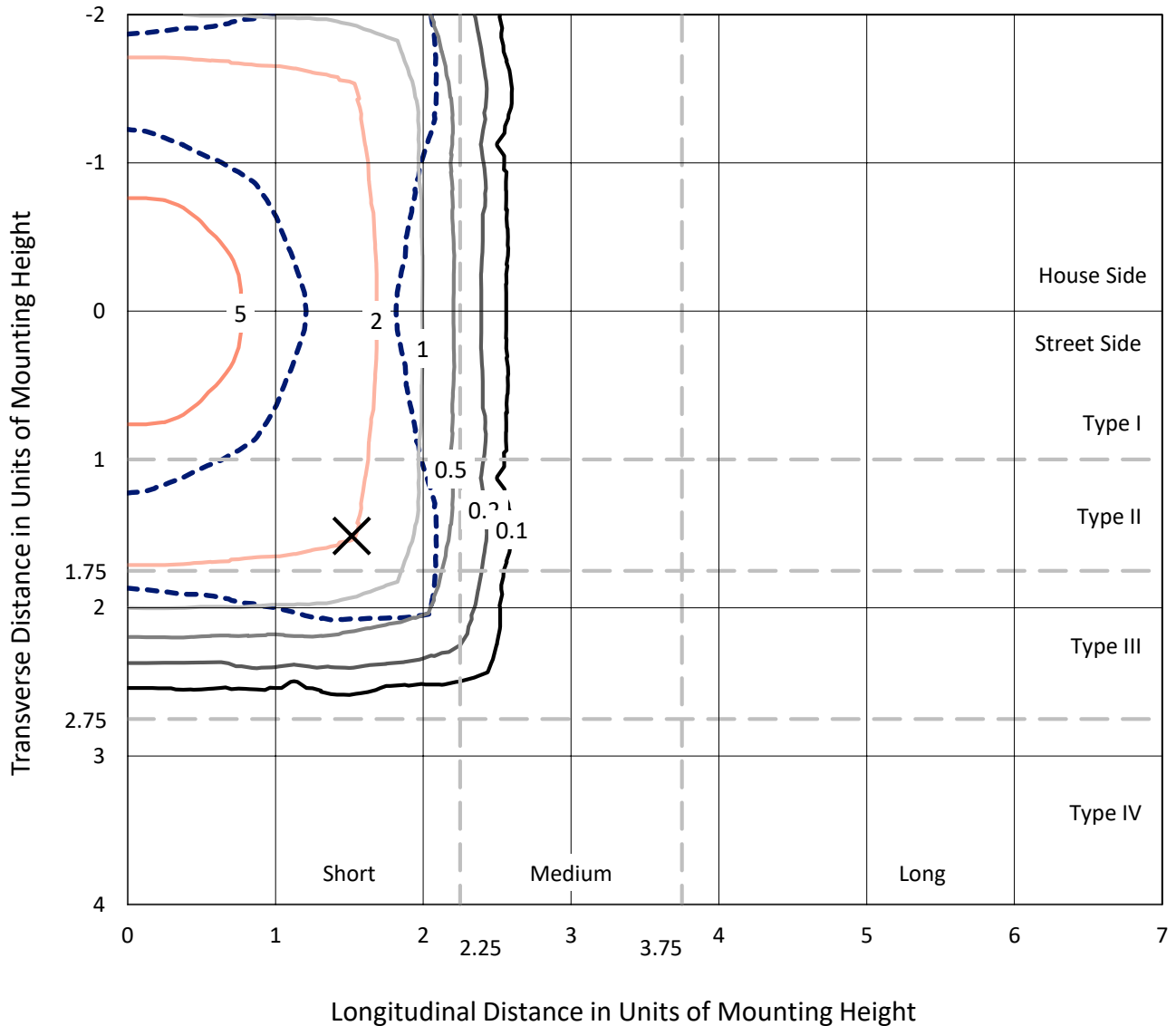
Input Watts (W): 333  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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### Iso-Footcandle Lines of Horizontal Illumination

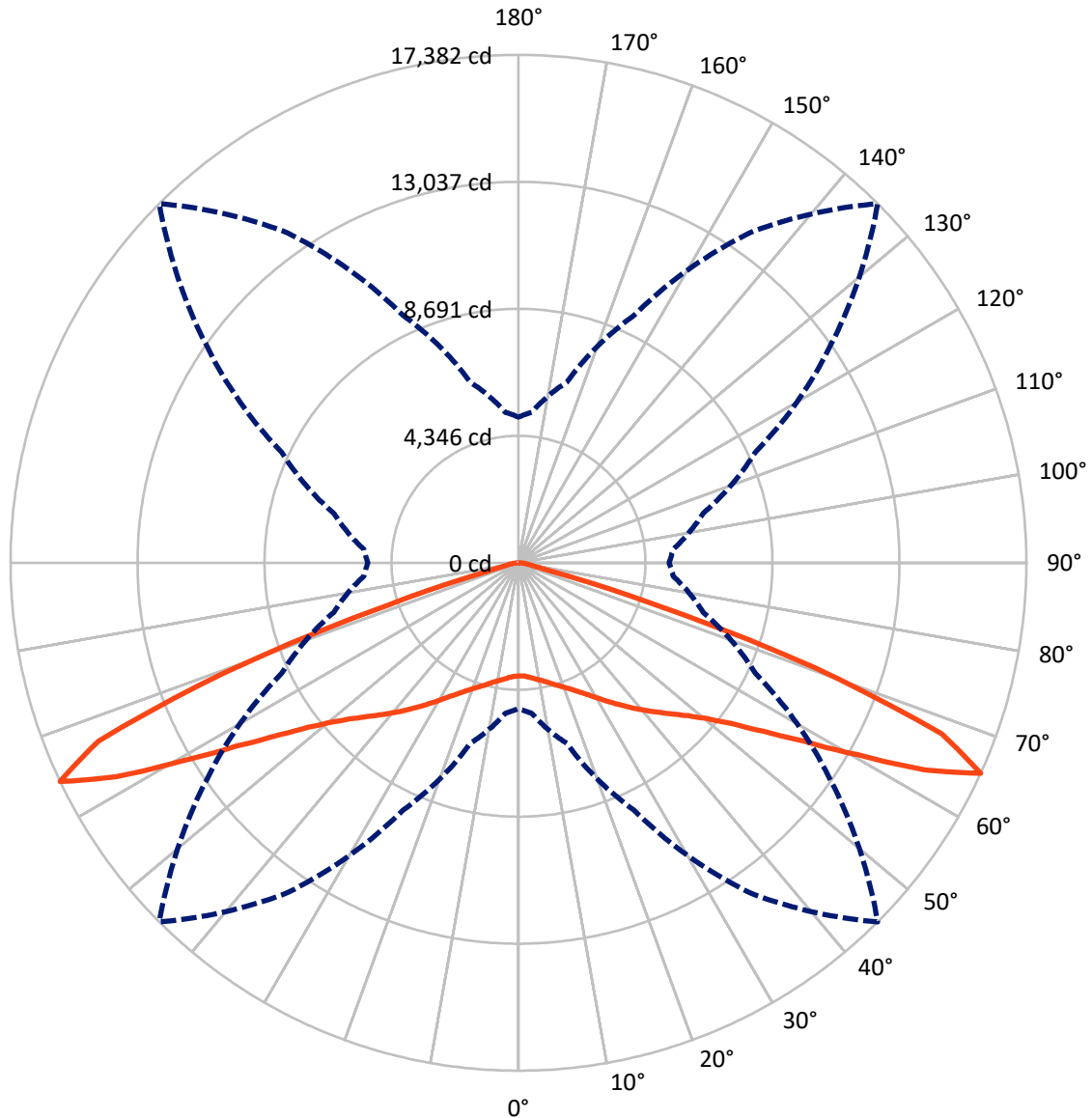
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 6.2 fc  
 Type V - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral      - - - Horizontal Cone Through 65-Deg Vertical

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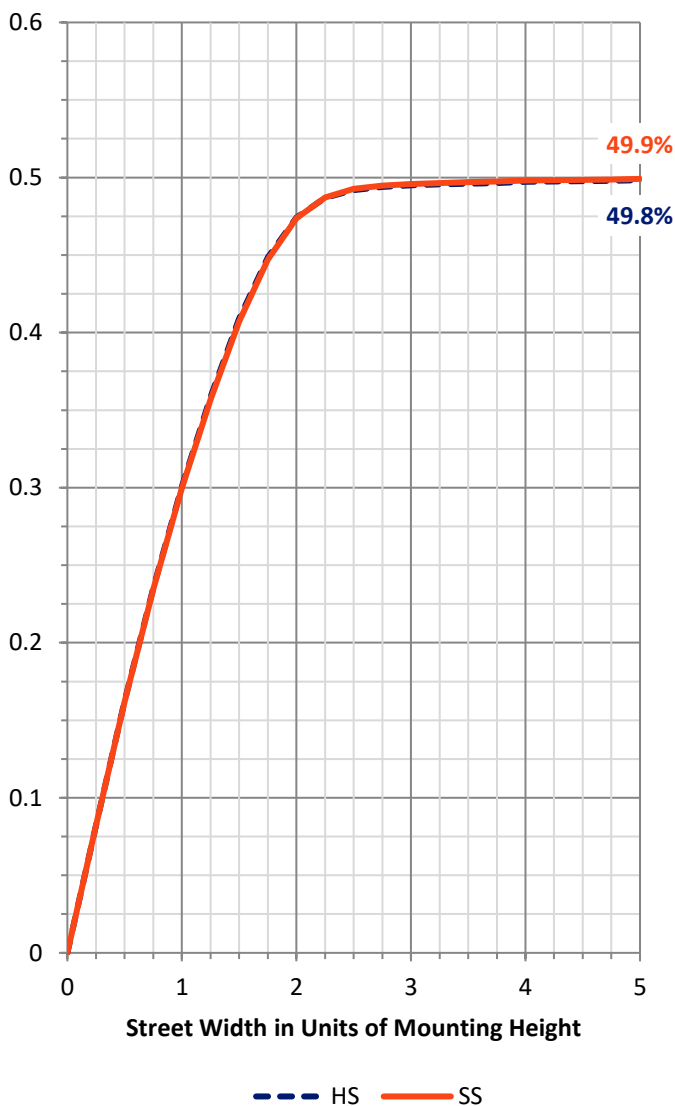
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 16039.0  | 0.0    | 16039.0 |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Street Side</b> | Lumens    | 16039.0  | 0.0    | 16039.0 |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Total</b>       | Lumens    | 32078.0  | 0.0    | 32078.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 380.1   | 1.2       |
| 10°-20°   | 1221.7  | 3.8       |
| 20°-30°   | 2292.1  | 7.1       |
| 30°-40°   | 3790.6  | 11.8      |
| 40°-50°   | 5871.2  | 18.3      |
| 50°-60°   | 9004.7  | 28.1      |
| 60°-70°   | 8402.4  | 26.2      |
| 70°-80°   | 977.9   | 3.0       |
| 80°-90°   | 137.4   | 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°    | 32078.0 | 100.0     |
| 0°-180°   | 32078.0 | 100.0     |

**Coefficient of Utilization**

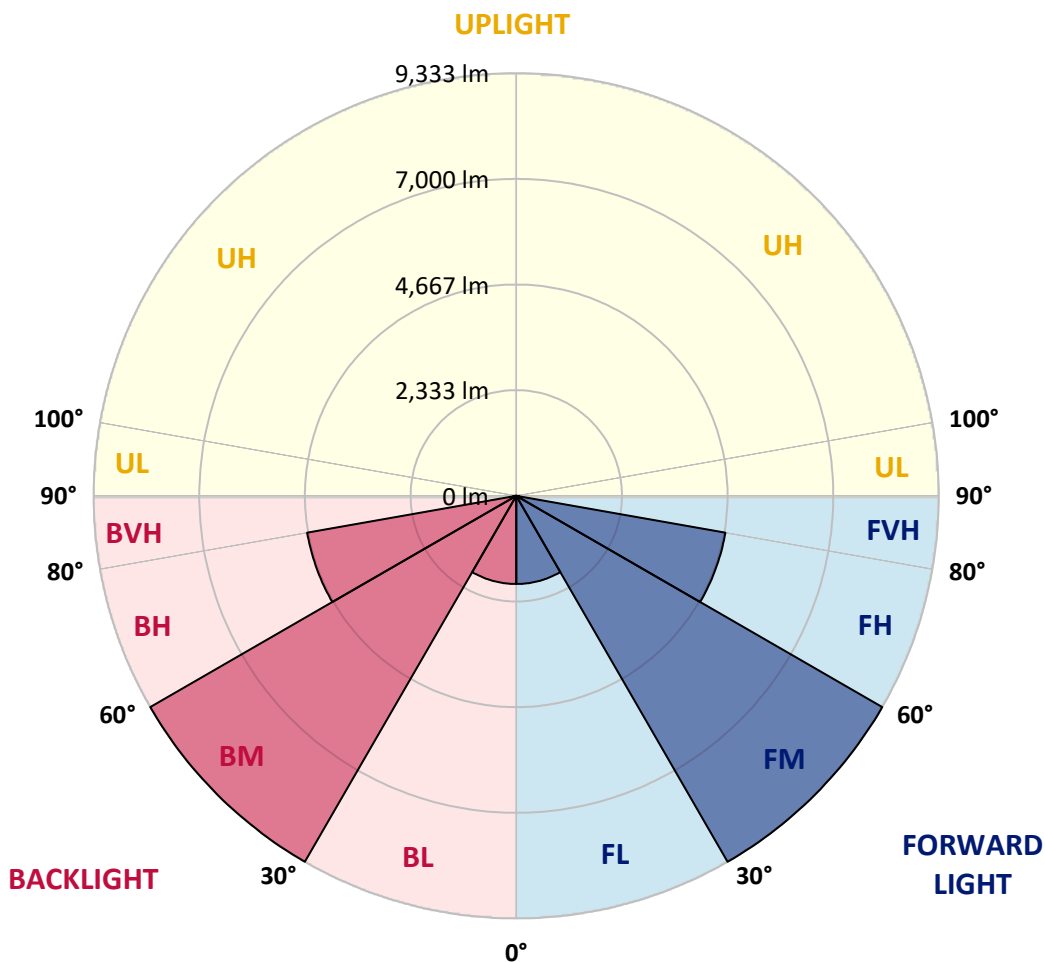


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1946.9 | 6.1       |                         |      |         |
| FM (30°-60°)   | 9333.2 | 29.1      |                         |      |         |
| FH (60°-80°)   | 4690.2 | 14.6      |                         |      | G2/5000 |
| FVH (80°-90°)  | 68.7   | 0.2       |                         |      | G1/100  |
| BL (0°-30°)    | 1946.9 | 6.1       | B3/2500                 |      |         |
| BM (30°-60°)   | 9333.2 | 29.1      | B5                      |      |         |
| BH (60°-80°)   | 4690.2 | 14.6      | B4/5000                 |      | G2/5000 |
| BVH (80°-90°)  | 68.7   | 0.2       |                         |      | G1/100  |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B5-U0-G2**  
 Type V Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 85°    | 90°    |
|-------|--------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|
| 0°    | 3873.8 | 3873.8  | 3873.8  | 3873.8  | 3873.8  | 3873.8  | 3873.8  | 3873.8  | 3873.8  | 3873.8 | 3873.8 |
| 2.5°  | 3886.6 | 3884.5  | 3886.6  | 3887.7  | 3881.3  | 3884.5  | 3883.4  | 3888.7  | 3890.9  | 3888.7 | 3888.7 |
| 5°    | 3931.3 | 3928.1  | 3932.4  | 3937.7  | 3929.2  | 3931.3  | 3928.1  | 3934.5  | 3936.6  | 3932.4 | 3935.6 |
| 7.5°  | 3993.1 | 3994.1  | 3998.4  | 4008.0  | 4002.7  | 4006.9  | 4000.5  | 4001.6  | 4000.5  | 3994.1 | 3995.2 |
| 10°   | 4060.2 | 4061.2  | 4068.7  | 4081.5  | 4083.6  | 4083.6  | 4079.3  | 4076.1  | 4071.9  | 4067.6 | 4068.7 |
| 12.5° | 4141.1 | 4146.4  | 4151.7  | 4167.7  | 4167.7  | 4176.2  | 4174.1  | 4165.6  | 4158.1  | 4151.7 | 4151.7 |
| 15°   | 4250.8 | 4249.7  | 4256.1  | 4272.1  | 4279.5  | 4293.4  | 4293.4  | 4281.7  | 4272.1  | 4265.7 | 4263.5 |
| 17.5° | 4365.8 | 4369.0  | 4373.2  | 4392.4  | 4404.1  | 4420.1  | 4422.2  | 4412.6  | 4406.2  | 4397.7 | 4392.4 |
| 20°   | 4499.9 | 4505.3  | 4522.3  | 4529.8  | 4540.4  | 4555.3  | 4560.6  | 4558.5  | 4552.1  | 4547.9 | 4548.9 |
| 22.5° | 4656.5 | 4670.3  | 4681.0  | 4691.6  | 4704.4  | 4715.0  | 4720.4  | 4727.8  | 4721.4  | 4718.2 | 4716.1 |
| 25°   | 4846.0 | 4855.6  | 4876.9  | 4896.1  | 4904.6  | 4907.8  | 4914.2  | 4924.8  | 4923.7  | 4916.3 | 4916.3 |
| 27.5° | 5061.1 | 5079.2  | 5105.8  | 5133.5  | 5133.5  | 5122.9  | 5144.2  | 5162.3  | 5155.9  | 5146.3 | 5133.5 |
| 30°   | 5322.0 | 5339.0  | 5369.9  | 5408.2  | 5389.1  | 5381.6  | 5410.4  | 5443.4  | 5433.8  | 5417.8 | 5415.7 |
| 32.5° | 5603.1 | 5619.1  | 5659.5  | 5701.1  | 5676.6  | 5665.9  | 5696.8  | 5744.7  | 5727.7  | 5695.7 | 5676.6 |
| 35°   | 5907.6 | 5923.6  | 5981.1  | 6031.2  | 5989.6  | 5971.5  | 5997.1  | 6049.3  | 6019.4  | 5959.8 | 5944.9 |
| 37.5° | 6238.8 | 6247.3  | 6321.9  | 6373.0  | 6344.2  | 6296.3  | 6328.2  | 6366.6  | 6341.0  | 6268.6 | 6239.9 |
| 40°   | 6582.7 | 6613.6  | 6699.9  | 6759.5  | 6709.4  | 6633.8  | 6687.1  | 6740.3  | 6702.0  | 6609.4 | 6560.4 |
| 42.5° | 6984.2 | 7007.6  | 7122.6  | 7175.8  | 7094.9  | 6988.4  | 7060.8  | 7133.2  | 7094.9  | 7005.5 | 6962.9 |
| 45°   | 7401.6 | 7437.8  | 7575.1  | 7628.4  | 7511.3  | 7376.0  | 7464.4  | 7591.1  | 7587.9  | 7459.1 | 7414.4 |
| 47.5° | 7856.3 | 7892.5  | 8056.4  | 8126.7  | 8000.0  | 7819.0  | 7943.6  | 8122.5  | 8109.7  | 7968.1 | 7931.9 |
| 50°   | 8381.2 | 8419.6  | 8624.0  | 8712.4  | 8594.2  | 8383.3  | 8570.8  | 8728.4  | 8704.9  | 8530.3 | 8533.5 |
| 52.5° | 9040.3 | 9038.2  | 9292.7  | 9446.0  | 9324.7  | 9138.3  | 9310.8  | 9464.1  | 9367.2  | 9125.5 | 9118.1 |
| 55°   | 9617.5 | 9652.6  | 9967.8  | 10258.5 | 10251.0 | 10179.7 | 10248.9 | 10255.3 | 9978.5  | 9656.9 | 9617.5 |
| 57.5° | 9996.6 | 10063.6 | 10507.7 | 11033.7 | 11427.7 | 11522.4 | 11388.3 | 10981.5 | 10333.0 | 9818.7 | 9755.9 |
| 60°   | 9763.4 | 9865.6  | 10563.0 | 11635.3 | 12796.0 | 13352.9 | 12595.8 | 11334.0 | 10057.2 | 9340.6 | 9255.4 |
| 62.5° | 8189.6 | 8362.1  | 9383.2  | 11344.6 | 13973.7 | 15601.8 | 13471.1 | 10768.6 | 8960.5  | 7973.4 | 7827.5 |
| 65°   | 4987.6 | 5169.7  | 6400.6  | 9337.4  | 13783.1 | 17382.2 | 13071.8 | 8938.1  | 6540.1  | 5312.4 | 5154.8 |
| 67.5° | 1662.2 | 1715.4  | 2440.6  | 5161.2  | 10832.4 | 15617.8 | 10850.5 | 5350.7  | 2846.3  | 1886.9 | 1831.5 |
| 70°   | 650.6  | 655.9   | 774.1   | 1496.1  | 5115.4  | 10727.0 | 5644.6  | 1522.7  | 809.3   | 640.0  | 653.8  |
| 72.5° | 478.1  | 480.2   | 513.2   | 625.1   | 1333.2  | 4725.7  | 1381.1  | 628.2   | 499.4   | 448.3  | 448.3  |
| 75°   | 384.4  | 384.4   | 407.8   | 455.7   | 597.4   | 1084.0  | 605.9   | 450.4   | 390.8   | 357.8  | 353.5  |
| 77.5° | 303.5  | 309.9   | 328.0   | 358.8   | 404.6   | 521.8   | 419.5   | 356.7   | 315.2   | 284.3  | 277.9  |
| 80°   | 225.7  | 232.1   | 261.9   | 276.9   | 290.7   | 362.0   | 309.9   | 279.0   | 249.2   | 213.0  | 206.6  |
| 82.5° | 148.0  | 154.4   | 191.7   | 200.2   | 197.0   | 236.4   | 208.7   | 205.5   | 183.1   | 137.4  | 131.0  |
| 85°   | 96.9   | 99.0    | 127.8   | 133.1   | 122.5   | 107.5   | 133.1   | 140.6   | 127.8   | 89.4   | 86.3   |
| 87.5° | 45.8   | 45.8    | 65.0    | 60.7    | 55.4    | 44.7    | 60.7    | 71.3    | 72.4    | 43.7   | 42.6   |
| 90°   | 0.0    | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0    | 0.0    |

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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

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| 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           |

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CIE 1931 Chromaticity Diagram



CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 2700K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



**Photopic Lumens: 4337.9**

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

| $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) | $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) | $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) | $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) | $\lambda$ (nm) | Power ( $\mu\text{W}/\text{nm}$ ) | Lumens ( $\phi/\text{nm}$ ) |
|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|
| 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**

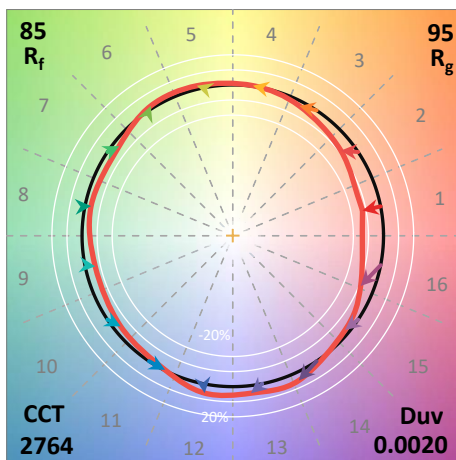
| $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 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  $R_a = 80.9$   
 $R_9 = -1.5$



**Color Vector Graphics**



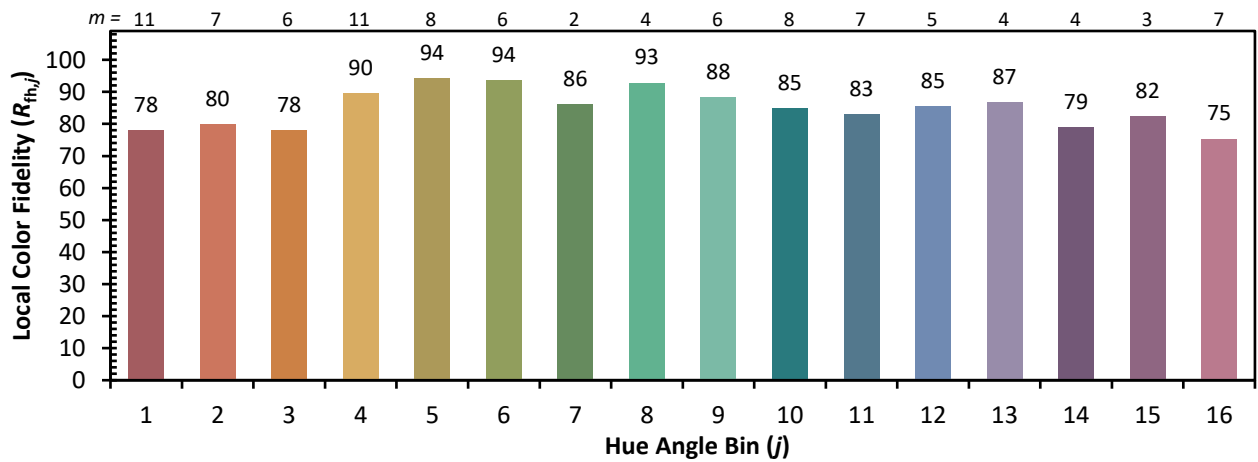
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

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

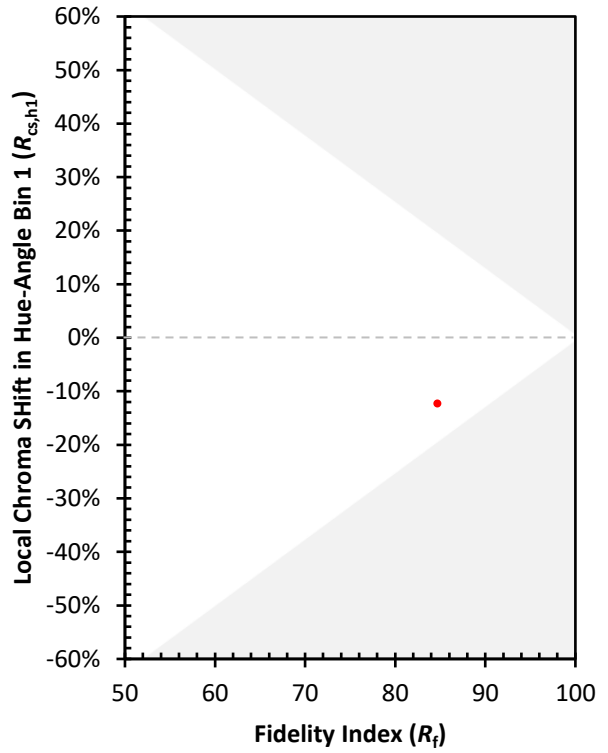
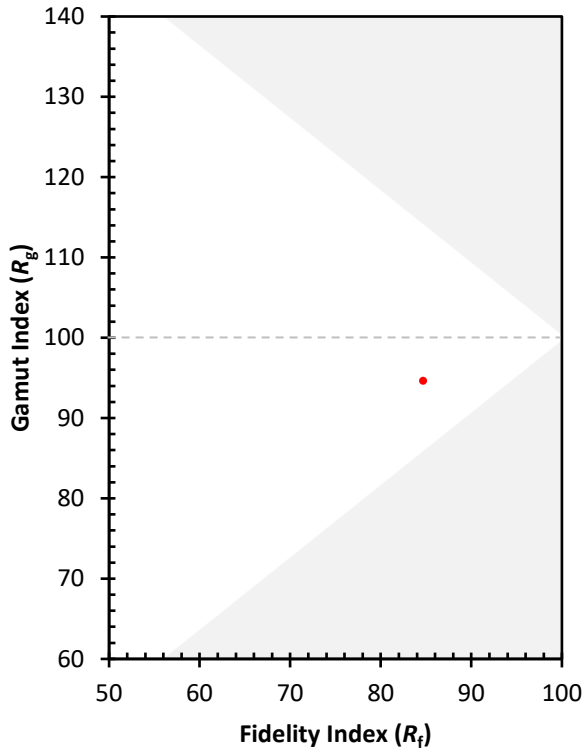




Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)